

An aerial photograph of a wide river system, likely the Upper Mississippi River, showing numerous islands and wetlands. The water is a deep blue, and the land is a mix of green and brown, indicating various vegetation and possibly some agricultural or developed areas. The perspective is from a high angle, looking down at the river and its surrounding landscape.

U.S. Fish & Wildlife Service

Upper Mississippi River *National Wildlife & Fish Refuge*

Draft **Environmental Impact Statement** **and** **Comprehensive Conservation Plan**

Cover photograph by Robert J. Hurt



The mission of the U.S. Fish & Wildlife Service is working with others to conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of the American people.

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management and, where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

Mission of the National Wildlife Refuge System

Comprehensive Conservation Plans provide long-term guidance for management decisions; set forth goals, objectives and strategies needed to accomplish refuge purposes; and, identify the Fish and Wildlife Service's best estimate of future needs. These plans detail program planning levels that are sometimes substantially above current budget allocations and, as such, are primarily for Service strategic planning and program prioritization purposes. The plans do not constitute a commitment for staffing increases, operational and maintenance increases, or funding for future land acquisition.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Upper Mississippi River National Wildlife and Fish Refuge
51 E. Fourth Street - Room 101
Winona, Minnesota 55987

IN REPLY REFER TO:

Dear Reviewer:

We are pleased to provide you this Draft Comprehensive Conservation Plan and Environmental Impact Statement for the Upper Mississippi River National Wildlife and Fish Refuge.

Established by Congress in 1924, the Refuge remains a national treasure in terms of its importance to fish, wildlife, and people; and in terms of its size, scope, and scenic beauty. The Refuge is also a natural legacy worth conserving through thoughtful management and planning.

The Plan will guide management for the next 15 years and help the Refuge meet its original purpose and contribute to the mission of the National Wildlife Refuge System. The Plan will provide both broad and specific policy on various issues; set a vision, goals, and measurable objectives; and outline strategies for reaching those objectives.

We invite your review of the Plan and Environmental Impact Statement, and most importantly, your comment and counsel to help ensure the Final Plan is both visionary and practical. We will host a series of public meetings or workshops where you will be able to ask questions, seek understanding, and voice concerns and suggestions. Meeting dates and locations have been announced through the media and other means.

Written comments are also welcome during the 120-day comment period and should be addressed to: Upper Mississippi River NW&FR, CCP Comment, Room 101, 51 East Fourth Street, Winona, MN 55987. You may also send comments to us through the following web address: <http://www.fws.gov/midwest/planning/uppermiss/index.html>. To be considered in preparing the Final Plan, comments must be received by August 31, 2005.

We look forward to continuing the dialogue on the future of the Refuge, and thank you for your continued interest in keeping this Refuge a special place for wildlife and people.

Sincerely,

Don Hultman
Refuge Manager

Draft Environmental Impact Statement for the Upper Mississippi River National Wildlife and Fish Refuge Comprehensive Conservation Plan

May 2005

Type of Action: Administrative

Lead Agency: U.S. Department of Interior,
Fish and Wildlife Service

Responsible Official: Robyn Thorson, Regional Director
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Abstract

The U.S. Fish and Wildlife Service is proposing to adopt and implement a Comprehensive Conservation Plan (CCP) for the Upper Mississippi River National Wildlife and Fish Refuge. The Refuge was established by Congress in 1924 to provide a refuge and breeding ground for migratory birds, fish, other wildlife, and plants. The Refuge encompasses approximately 240,000 acres and 261 river miles in four states. The CCP will guide the management and administration of the Refuge for 15 years and help ensure that it meets the purposes for which established and contributes to the mission of the National Wildlife Refuge System. Four alternatives for future management are described: A) no action or current direction, B) wildlife focus, C) public use focus, and D) wildlife and integrated public use focus. The preferred alternative is Alternative D. This Environmental Impact Statement considers the physical, biological, and socioeconomic effects that the four alternatives would have in terms of the issues and concerns identified during the planning process.

Reader's Guide

Upper Mississippi River National Wildlife and Fish Refuge Draft EIS and CCP

This is a large and daunting document! Below are some questions and answers to help you, whether your review is short and specific or long and comprehensive.

How is the document organized?

Like a book, the document is organized by chapters. Chapter 1 provides the purpose and need, background information, and details on nearly 40 issues addressed in the plan and EIS. Chapter 2 describes the four alternatives considered, with each issue an objective. These alternatives are like four separate plans, arranged identical. Chapter 3 describes the physical, biological, and socioeconomic environment of the Refuge and contains the facts and figures related to the issues. Chapter 4 discusses the impacts or consequences of the four alternatives by a series of parameters. Other chapters provide detail on public involvement, preparers, and references. Appendices provide great detail in maps, tables, and supporting documents.

I just have time for an overview. What should I look at?

Start with the EIS Summary which briefly describes the Refuge, the issues, the alternatives, and the consequences of each. Tables 1 and 2 at the end of Chapter 2 provide a quick and easy guide to what is proposed in each alternative.

I'm just interested in a couple issues. How can I find them?

The Table of Contents is useful in finding a particular issue of interest. For example, if you are interested in waterfowl hunting, start with the discussion of the related issues in the wildlife-dependent recreation section of Chapter 1, then you can find waterfowl hunting related objectives in Chapter 2, background on waterfowl and hunting in Chapter 3, and a section on impacts of alternatives on hunting in Chapter 4. Maps in Appendix P (bound separately or available on the web at <http://midwest.fws.gov/planning/uppermiss/index.html>) will show the areas affected by the alternative objectives.

How do I keep from getting lost?

If you look at the Table of Contents, you'll see a decimal numbering system used throughout. The first number is the chapter, the second number is subchapter, the third number a section, and so on. Notes on the bottom of each page (footers) also tell you where you are. In the alternatives, a reminder of which alternative you are looking at is in the upper margin of each page, and each objective is numbered the same regardless of alternative. So, if forest management is your issue of interest, its 3.9 in all four alternatives and in Table 1, the useful comparison matrix.

How much will it cost to implement the plan?

Appendix L is a plan of implementation and summarizes the actions to be taken and their estimated cost.

Upper Mississippi River

National Wildlife and Fish Refuge

Draft Environmental Impact Statement

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Summary

Draft Environmental Impact Statement



Egrets. Copyright by Sandra Lines

Introduction

A Comprehensive Conservation Plan (CCP) is being prepared to guide the administration and management of the Upper Mississippi River National Wildlife and Fish Refuge (Refuge) for the next 15 years. The draft document integrates the components of a CCP, namely goals, objectives, and strategies; with the requirements of an Environmental Impact Statement, namely alternatives and consequences.

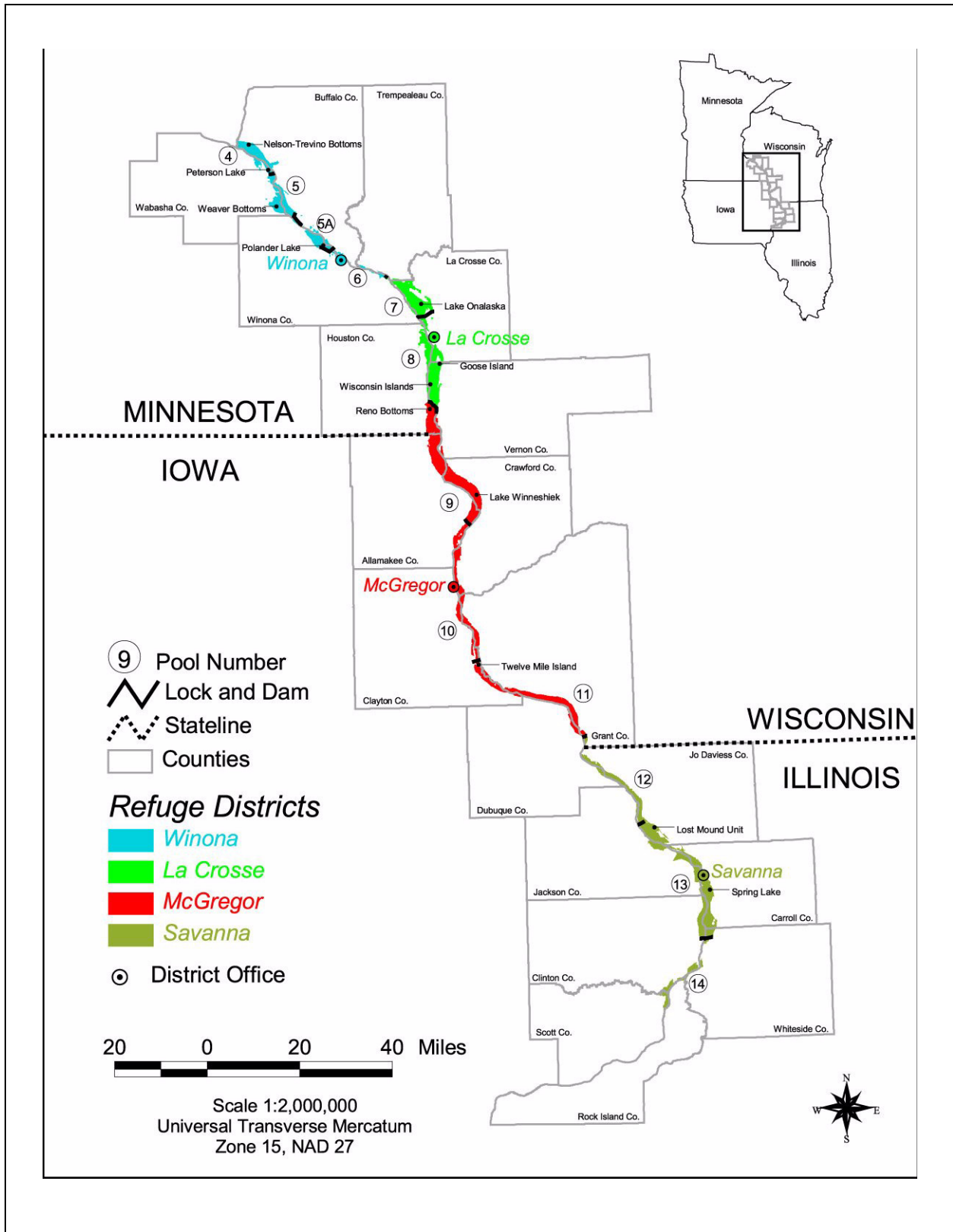
Comprehensive conservation plans are required by the National Wildlife Refuge System Improvement Act of 1997 to ensure that refuges are managed in accordance with their purposes and the mission of the

National Wildlife Refuge System, which is part of the U.S. Fish and Wildlife Service. The Refuge System is the largest collection of lands and waters in the world set aside for the conservation of wildlife, with over 540 units covering more than 95 million acres in the U.S. and its territories.

The Refuge was established by act of Congress in 1924 for the purpose of providing a refuge and breeding ground for migratory birds, fish, other wildlife, and plants. The Refuge encompasses approximately 240,000 acres in four states in a more-or-less continuous stretch of 261 miles of Mississippi River floodplain from near Wabasha, Minnesota to near Rock Island, Illinois (Figure A). The seemingly endless panorama of river, backwaters, marshes, islands, and forest, framed by steep bluffs, makes the Refuge a national scenic treasure.

The Refuge is perhaps the most important corridor of fish and wildlife habitat in the central United States, an importance which has increased over time as habitat losses or degradation have occurred elsewhere. Fish and wildlife is varied and generally abundant with 306 bird, 119 fish, 51 mammal, and 42 mussel species recorded. Up to 40 percent of the continent's waterfowl use the Mississippi Flyway during migration, and up to 50 percent of the world's canvasback ducks and 20 percent of the eastern United States population of Tundra Swans stop on the Refuge during fall migration. There were 136 active Bald Eagle nests in 2004 and up to 1,000 eagles can be on the Refuge in the winter. Approximately 5,000 heron and egret nests can be found in up to 15 colonies.

Figure A: Location of Upper Mississippi River NW&FR



With an estimated 3.7 million annual visitors, the Refuge is the most heavily visited in the Refuge System. It has interface with 4 states, 70 communities, 2 Corps of Engineers districts, 11 locks and dams which help maintain water depths for commercial navigation, and is represented in Congress by 8 senators and 6 representatives.

The Refuge has its headquarters in Winona, Minnesota, and district offices with managers and staff in Winona; La Crosse, Wisconsin; McGregor, Iowa; and Savanna, Illinois. There are currently 37 full-time permanent employees and a base annual budget of \$3.1 million.



Participants in a scoping meeting identify priority issues.
USFWS

Public Involvement and Decision Process

Internal scoping of issues began in March 2002 followed by 10 public scoping meetings held in August and September of that year. Day-long public workshops on issues and potential solutions were held in four locations in January and March 2003, and there were three special public meetings on Waterfowl Hunting Closed Areas the same year. Four Interagency Planning Team meetings involving the Corps of Engineers, and Minnesota, Iowa, Wisconsin, and Illinois departments of natural resources were held in 2001 to 2004; follow-up meetings were

held with the St. Paul and Rock Island Districts, Corps of Engineers, and the Minnesota and Wisconsin departments of natural resources. Briefings with various commissions, associations, and Congressional offices occurred throughout the process, along with periodic news releases to 52 media outlets, and special CCP newsletters mailed to 2,600 citizens.

Following public review and meetings on the Draft CCP and EIS, the Regional Director, U.S. Fish and Wildlife Service, Twin Cities, Minnesota, will make a decision on which alternative in the Draft CCP and EIS will become the Final CCP. This decision will be recorded in a formal Record of Decision included in the final documents. Substantive comments from the public, agencies, and other groups will be included in the Final EIS, along with a Service response.

Refuge Vision and Goals

The Refuge Vision provides a simple statement of the desired, overall future condition of the Refuge. Goals provide the themes or framework for measurable objectives and strategies which are the heart of the CCP and the basic structure of the alternatives considered.

Refuge Vision:

The Upper Mississippi River National Wildlife and Fish Refuge is beautiful, healthy, and supports abundant and diverse native fish, wildlife, and plants for the enjoyment and thoughtful use of current and future generations.

Refuge Goals:

<i>Landscape</i>	We will strive to maintain and improve the scenic qualities and wild character of the Upper Mississippi River Refuge.
<i>Environmental Health</i>	We will strive to improve the environmental health of the Refuge by working with others.
<i>Wildlife and Habitat</i>	Our habitat management will support diverse and abundant native fish, wildlife, and plants.
<i>Wildlife-Dependent Recreation</i>	We will manage programs and facilities to ensure abundant and sustainable hunting, fishing, wildlife observation, wildlife photography, interpretation, and environmental education opportunities for a broad cross-section of the public.
<i>Other Recreational Use</i>	We will provide opportunities for the public to use and enjoy the Refuge for traditional and appropriate non-wildlife-dependent recreation that is compatible with the purpose for which the Refuge was established and the mission of the Refuge System.
<i>Administration and Operations</i>	We will seek adequate funding, staffing, and facilities, and improve public awareness and support, to carry out the purposes, vision, goals, and objectives of the Refuge.

Planning Issues, Concerns and Opportunities

Scoping and public involvement helped identify numerous issues facing the Refuge and formed the basis for crafting the Draft CCP and EIS. These issues are summarized below by related Refuge goal.

Landscape Issues

Refuge Boundary	Maintaining an accurate and clearly marked boundary is a critical basic need of resource protection.
Land Acquisition	Approximately 30,000 acres within the approved Refuge boundary has yet to be acquired. These lands and waters will fill habitat gaps between existing Refuge lands and benefit fish, wildlife, plants, and public use.
Bluffland Protection	The 1987 Master Plan identified 13 bluff areas with notable wildlife values, namely peregrine falcon nesting potential. None have been acquired, either fee or easement, to date.
Natural Areas and Special Designations	Management plans are needed for the four federally-designated Research Natural Areas within the Refuge, and the Refuge should be nominated as a “Wetland of International Importance.”

Environmental Health Issues

Water Quality

Water quality related concerns include sedimentation which is filling backwaters and nutrient loads from land use in the Refuge watershed.

Water Level Management

A substantial loss of islands and marsh habitat has occurred due to stable water management for navigation and erosive actions of wind and waves. Fish and wildlife use and productivity has declined.

Invasive Plants and Animals

Invasive species like reed canary grass, Eurasian milfoil, zebra mussel, and various Asian carp pose a threat to native species and their habitat.

Wildlife and Habitat Issues

Environmental Pool Plans

This 50-year habitat vision for each of the pools on the Refuge seeks to reverse the long-term trend of habitat loss or degradation. Implementing the plans presents a challenge from both a priority-setting and funding perspective.

Guiding Principles for Habitat Projects

Guiding principles for habitat projects on the Refuge are needed to ensure adherence to policy and to help conserve the natural and scenic qualities of the Refuge.

Monitoring Fish, Wildlife, and Plants

Monitoring is a requirement of the Refuge Improvement Act, but meeting this requirement on the Refuge has been hampered by funding and staffing levels.

Threatened and Endangered Species

Increased attention is needed on listed species due to their often precarious population status and the need for special management consideration and protection.

Furbearer Trapping

The Refuge needs to update the 1988 Trapping Plan to reflect recent national policy and regulation changes governing compatibility of uses and economic uses.

Fishery and Mussel Management

The Refuge needs to play a larger role in fishery and mussel management in keeping with its mandated purposes, and because of the high intrinsic, recreational, and commercial value of these resources.

Commercial Fishing, Clamming and Turtle Harvest.

Refuge oversight of these uses needs to be brought in line with current policy and regulations through cooperative work with the states.

Turtle Management

New and emerging information on the importance of the Refuge to a variety of turtle species calls for increased monitoring and research on turtle ecology and effects of certain public use.

Forest Management

The 51,000 acres of floodplain forest on the Refuge is even aged, growing old, and in many cases, not regenerating itself. Proactive management is needed to safeguard this important resource.

Grassland Management

The 5,700 acres of grassland on the Refuge, some of which is rare tallgrass prairie, needs to be monitored and actively managed to ensure its continued diversity and health.

Wildlife-Dependent Recreation Issues

General Hunting

Hunting is an important priority public use on the Refuge and a vital part of the cultural, social, and economic fabric of adjacent communities. The Refuge Hunting Plan needs to be updated to reflect land acquisitions and new policies.

Waterfowl Hunting Closed Areas

Established in 1958, the current closed area system is no longer providing a desirable distribution of feeding and resting areas or an equitable distribution of hunting and wildlife observation opportunities due to habitat decline. With birds predominantly using only a few areas, there is a risk of serious impacts from an environmental accident or crash in aquatic food resources.

Waterfowl Hunting Regulations

Due to continued high hunter numbers on the Refuge, there is a need to review current waterfowl hunting regulations to ensure continued hunt quality and fairness, and to minimize crippling loss.

Firing Line, Pool 7, Lake Onalaska

Crowding, hunter behavior, and crippling loss need to be addressed in this highly popular hunting area to help maintain a quality and equitable hunting experience.

Permanent Blinds on Savanna District

The use of permanent blinds for waterfowl hunting has led to increased debris, confrontations between hunters, private use of public land, and reduced hunting opportunities for many hunters. There is also an issue of consistency since permanent blinds are not allowed on the other three districts of the Refuge.

Potter's Marsh Managed Hunt

This hunt has entailed high administrative and management costs, problems with permanent blinds as noted above, and a drawing process that has evolved into private exclusive use for some parties. Changes are needed to maintain a quality and equitable hunting experience in this popular area.

Blanding Landing Managed Hunt

This hunt, inherited with the transfer to the Refuge of the former Savanna Army Depot, Savanna District, needs to be reviewed for consistency with other Refuge hunts and to address permanent blind issues noted above.

General Fishing

Fishing is an important priority public use on the Refuge with over one million angler visits yearly. Attention to quality habitat and support facilities (boat ramps, other accesses, and fishing docks) is needed to maintain and improve this sport.

Fishing Tournaments	Tournament fishing continues to grow and is posing conflicts with other anglers and small craft users on the Refuge, and can cause habitat damage and fish and wildlife disruption in shallow backwater areas. Oversight is needed to help coordinate timing and spacing of tournaments with the states.
Wildlife Observation and Photography	Public interest in these activities on the Refuge continues to grow, and there is a need for additional facilities that foster these priority public uses while limiting wildlife and habitat disturbance.
Interpretation and Environmental Education	Demand for these priority public uses of the Refuge needs to be addressed through facilities and staffing levels.
Commercial Fish Floats	These private fishing platforms below locks and dams provide an important fishing option for visitors. However, administration of this commercial use has been expensive due to permit compliance issues. Also, new standards need to be developed to ensure adequate and safe operations.
Guiding Services	Guiding businesses are increasing on the Refuge and oversight has been inconsistent. The potential for conflicts with the general public and among competing guides is growing. Some guides are operating without the proper Coast Guard licensing.

Other Recreational Use Issues

Beach Use and Maintenance	Beach-related uses on the Refuge such as camping, social gatherings, recreational boating, picnicking, and swimming account for over one million visits and these uses continue to increase. There are concerns with Refuge regulation violations, human health and safety, officer safety in crowds, disturbance to other visitors, and wildlife and habitat disturbance. New policies and regulations are needed to ensure these popular uses remain compatible with the purposes of the Refuge.
Disturbance in Backwater Areas	Technology in the form of jet skis, air boats, bass boats, and shallow water motors have introduced more users, more noise, and more disturbance into backwater areas of the Refuge. Citizens have expressed concern over the declining opportunities to experience the quiet and solitude of these unique Refuge areas, while managers are concerned about the effects of disturbance on sensitive wildlife species.
Slow, No-Wake Zones	On a few areas, boat traffic levels and size of boats is creating a safety hazard due to blind spots in boating routes, or causing erosion to island and shoreline habitat. Creating slow, no-wake zones on these areas needs to be explored.

Dog Use Policy

The current regulation is causing confusion with the public and enforcement challenges for officers. The result is visitors letting dogs run free, posing a threat to other visitors and disturbance to wildlife. A clear policy on the use of dogs and other domestic animals is needed to protect visitors and the resource while taking into account the public's interest in training and exercising their dogs.

General Public Use Regulations

The current public use regulations for the Refuge were updated in 1999. A general update is needed to reflect changing use levels and patterns and to provide clear guidance to visitors and enforcement officers.

Administration and Operations Issues

General

With nearly 240,000 acres over 261 miles and 3.7 million visitors, management and administration of the Refuge is a huge undertaking requiring staffing and funding for programs, facilities, and equipment. Current office and maintenance facilities are inadequate at most locations, both from an employee and public service standpoint. Public information efforts are inadequate to keep the public abreast of opportunities and issues. Public access to the Refuge needs to be increased where feasible to meet demand and distribute visitor opportunities.

Summary of Alternatives Considered

Four reasonable alternatives were developed to address the variety of issues and opportunities facing the Refuge now and during the 15-year horizon of the CCP. These alternatives are summarized below in terms of the actions that would be undertaken under each alternative. Alternative D is the Service's preferred alternative. However, the final decision can be any of the alternatives, and may reflect a modification of certain elements of any alternative based on consideration of public comment.



Turtles basking in the sun. Copyright Sandra Lines

Alternative A: No Action (Current Direction)

Continue current level of effort on fish and wildlife and habitat management. Public use programs would remain virtually unchanged.

Alternative A Summary

Boundary issues would be addressed as time and funding for surveying allow. There would be a continuation of acquisition of lands at a modest rate within the approved boundary, or about 200 acres per year. No special effort would be undertaken to safeguard bluffs and manage Research Natural Areas. Guiding principles for habitat projects would not be established.



Monarch butterfly amidst duckweed. Copyright by Sandra Lines

Existing programs and effort would address sedimentation and other water quality issues. Pool-scale drawdowns would continue at current, intermittent level. Control of invasive plant species would be modest, and control of invasive animals would be minimal, relying on the work of the states and other agencies. Environmental Pool Plans would be implemented on a strategic and opportunistic basis using the Environmental Management Program. Wildlife inventory and monitoring would remain unchanged with continued focus on waterfowl, colonial nesting birds, eagles, and aquatic invertebrate/vegetation sampling. Management of threatened and endangered species would focus on protection versus recovery. The furbearer trapping program

would continue but be brought into compliance with policies by doing a new plan. There would continue to be limited emphasis on fishery and mussel management and commercial fishing oversight. Cooperation with the states and Corps of Engineers on turtle monitoring and research would continue, and a forest inventory on the Refuge would be completed in cooperation with the Corps of Engineers. Existing grassland habitat on the Refuge would be maintained and enhanced using fire and other tools.

Hunting and fishing opportunities would continue on a large percentage of the Refuge. The system of waterfowl hunting closed areas would remain the same except for minor boundary adjustments. Entry into closed areas for purposes other than hunting, trapping and camping would continue to be allowed, although the voluntary avoidance area on Lake Onalaska would remain in place. No action would be taken on the firing line issue north of the closed area in Lake Onalaska. No major changes would be made to current hunting regulations. Permanent blinds for waterfowl hunting and the Potter's Marsh and Blanding Landing managed hunts in the Savanna District would continue, although administrative changes would be made to promote fairness and efficiency. No action would be taken on regulating fishing tournaments.

There would be no increase in facilities or programming for wildlife observation, photography, interpretation and environmental education, with a focus on maintaining the status quo. There would be a modest increase in Refuge access through improvement of existing boat ramps, pull offs, and overlooks. Commercial fish floats or piers would be governed by current permit procedures and stipulations. Guiding on the refuge would continue with little oversight. Beach-related public use (camping, swimming, picnicking, social gatherings) would continue with little change and beach planning and maintenance would continue at low levels. One electric motor area would remain (Mertes Slough, Pool 6), and no new slow, no-wake zones established. Current regulations on the use of dogs would remain in place. There would be no substantive changes made to current public use regulations.

There would be no new offices or shops constructed for Headquarters or the Districts, with the exception of a new shop for the Winona and Savanna districts since they are already scheduled.

Staffing levels for the Refuge would remain the same as current, as would public outreach and awareness efforts.

Alternative B: Wildlife Focus

Increase level of effort on fish and wildlife and habitat management. Some public use opportunities and programs would remain the same, others reduced in favor of wildlife and habitat protection.

Alternative B Summary

Boundary issues would be aggressively addressed and the entire Refuge boundary would be surveyed. The rate of land acquisition within the approved boundary would increase to complete 58 percent of the total, an average of 1,000 acres per year. All bluffland areas identified in the 1987 Master Plan would be protected by fee-title acquisition or easement, and there would be an increase in oversight and administration of Research Natural Areas. Guiding principles for habitat projects would be established.

There would be an increase in efforts to achieve continuous improvement in the quality of water flowing through the Refuge, including decreasing sedimentation. Pool-scale drawdowns would be accomplished by working with the Corps of Engineers and the states. Control of invasive plant species would increase, and there would be increased emphasis on the control of invasive animals. Environmental Pool Plans would be implemented on a strategic and opportunistic basis using the Environmental Management Program or other programs and funding sources. Wildlife inventory and monitoring would increase and include more



Egrets wading. Copyright by Sandra Lines

species groups beyond the current focus of waterfowl, colonial nesting birds, eagles, and aquatic invertebrates/vegetation. Management of threatened and endangered species would focus on helping recovery, not just protection. The furbearer trapping program would continue but be brought into compliance with policies by doing a new plan. The Refuge would become much more active in fishery and mussel management, and provide commercial fishing oversight. The knowledge of turtle ecology would be increased through research, and there would be continued cooperation with the states and Corps of Engineers on turtle conservation efforts. A forest inventory on the Refuge would be completed in cooperation with the Corps of Engineers, leading to completion of a forest management plan and more active forest management. The existing 5,700 acres of grassland habitat on the Refuge would be maintained and enhanced using fire and other tools.

Hunting and fishing opportunities would continue on a large percentage of the Refuge. The system of waterfowl hunting closed areas would increase substantially with 14 new areas. Entry into closed areas would be prohibited during the respective state duck season, although the voluntary avoidance area on Lake Onalaska would remain in place. The firing line issue north of the closed area in Lake Onalaska would be addressed by expanding the closed area northward. Current Refuge-wide hunting regulations would be changed to include a 25 shotshell limit during waterfowl season and to address open water hunting in portions of Pools 9 and 11. Permanent blinds for waterfowl hunting would be eliminated Refuge-wide, including those used in the Potter's Marsh and Blanding Landing managed hunts in the Savanna District. The Potter's Marsh managed hunt would continue with administrative changes to promote fairness and efficiency. The Blanding Landing managed hunt would be eliminated, but the area would remain open to hunting. General fishing would continue to be promoted, although the Refuge would begin oversight of fishing tournaments in cooperation with the states and other agencies.

There would be no increase in facilities or programming for wildlife observation, photography, interpretation and environmental education. There would be a modest increase in Refuge access through improvement of existing boat ramps, pull offs, and overlooks, and a boat launch fee would be initiated at Refuge-operated boat ramps. Commercial fish floats or piers below locks and dams 6, 7, 8, and 9 would be eliminated to reduce administrative and oversight costs. Commercial guiding on the Refuge would be prohibited. Areas open to beach-related public use (camping, swimming, picnicking, social gatherings) would be reduced under a “closed-until-open” policy, and beach planning and maintenance would not be allowed on Refuge lands. A total of 10 electric motor areas and 10 new slow, no-wake zones would be established. Current regulations on use of dogs would be changed to require that dogs and other domestic animals be leashed at all times except when used for hunting. General public use regulations would be reviewed annually and changed as needed. Existing offices would be maintained, but new maintenance facilities or shops would be constructed at the Winona, McGregor, and Savanna districts, and eventually, at the Lost Mound Unit. Public information and awareness efforts would be decreased 50 percent to focus on wildlife-related work. Staffing levels for the Refuge would increase by 17.5 full-time equivalents with the priority being biologists, a forester, other specialists, and maintenance persons.



Bicyclists on the Refuge. Cindy Samples, USFWS

Alternative C: Public Use Focus

Increase level of effort on public use opportunities and programs. Continue current level of effort on many fish and wildlife and habitat management activities, and decrease effort on others in favor of public use.

Alternative C Summary

Boundary issues would be addressed and the entire Refuge boundary would be surveyed. The rate of land acquisition within the approved boundary would increase to complete 58 percent of the total, an average of 1,000 acres per year, with priority given to tracts that also further public use access and opportunities. All bluffland

areas identified in the 1987 Master Plan would be protected through fee-title acquisition or easement, and low-key oversight and administration of Research Natural Areas would continue. Guiding principles for habitat projects would be established, but they would not restrict any public use opportunities.

There would be increased effort to achieve continuous improvement in the quality of water flowing through the Refuge, including decreasing sedimentation. Pool-scale drawdowns would continue at current, intermittent level. Control of invasive plant species would be modest, and control of invasive animals would be minimal, relying on the work of the states and other agencies. Environmental Pool Plans would be implemented on a strategic and opportunistic basis using the Environmental Management Program or other programs and funding sources. Wildlife inventory and monitoring would decrease by reducing the number of species groups surveyed. Management of threatened and endangered species would focus on protection versus recovery. The furbearer trapping program would continue but be brought into compliance with policies by doing a new plan. There would continue to be limited emphasis on fishery and mussel management and commercial fishing oversight. Cooperation with the states and Corps of Engineers on turtle monitoring and research would continue, and a forest inventory on the Refuge completed in cooperation with the Corps of Engineers. The existing 5,700 acres of grassland habitat on the Refuge would be maintained and enhanced using fire and other tools.

Hunting and fishing opportunities would continue on a large percentage of the Refuge. The system of waterfowl hunting closed areas would remain the same except for minor boundary adjustments. Entry into closed areas for purposes other than hunting, trapping and camping would continue to be allowed, and the voluntary avoidance area on Lake Onalaska would remain in place. The firing line issue north of the closed area in Lake Onalaska would be addressed by moving the north boundary southward. Current Refuge-wide waterfowl hunting regulations would be changed to include a hunting party spacing requirement of 100 yards. No action would be taken in regards to open water hunting in Pools 9 and 11. Permanent blinds for waterfowl hunting would be eliminated Refuge-wide, including those used in the Potter's Marsh and Blanding Landing managed hunts in the Savanna District. The Potter's Marsh managed hunt would continue, but administrative changes would be made to promote fairness and efficiency. The Blanding Landing managed hunt would be eliminated, but the area would remain open to hunting. General fishing would continue to be promoted, although the Refuge would begin oversight of fishing tournaments in cooperation with the states and other agencies.

There would be a major increase in facilities or programming for wildlife observation, photography, interpretation and environmental education. There would be some increase in Refuge access through new facilities and improvement of existing boat ramps, pull offs, and overlooks. A boat launch fee would be initiated at Refuge-operated boat ramps. Commercial fish floats or piers below locks and dams 6, 7, 8, and 9 would be retained if standards met, and a new fish float proposed in the Savanna District. Commercial guiding on the Refuge would be allowed, but with consistent policy and permit procedures. Areas open to beach-related public use (camping, swimming, picnicking, social gatherings) would remain virtually unchanged, although regulations would be changed to safeguard users, a policy on beach maintenance would be implemented, and an annual Refuge Recreation Use Permit and fee would be initiated to improve recreation management. A total of 15 electric motor areas and 9 new slow, no-wake zones would be established. Current regulations on use of dogs would be changed to allow dogs to be exercised and trained under certain conditions. General public use regulations would be reviewed annually and changed as needed.

New offices and maintenance facilities would be constructed at the Winona, La Crosse, McGregor, and Savanna Districts (shop only at Savanna), and eventually the office and shop facilities at Lost Mound Unit would be remodeled or replaced. A major new visitor center would be constructed in either Winona or La Crosse. Public information and awareness efforts would be increased 50 percent. Staffing levels for the Refuge would increase by 17.5 full-time equivalents with the priority being public use related positions.

Alternative D: Wildlife and Integrated Public Use Focus (Preferred Alternative)

Increase level of effort on fish and wildlife and habitat management. Take a more proactive approach to public use management to ensure a diversity of opportunities for a broad spectrum of users, both for wildlife-dependent uses and traditional and appropriate non-wildlife-dependent uses.

Alternative D Summary

Boundary issues would be aggressively addressed and the entire Refuge boundary would be surveyed. The rate of land acquisition would increase within the approved boundary to complete 58 percent of the total, an average of 1,000 acres per year. There would be more effort to protect through easements or fee-title acquisition all bluffland areas identified in the 1987 Master Plan, and an increase in oversight and administration of Research Natural Areas. The Refuge would be nominated as a "Wetland of International Importance" (Ramsar). Guiding principles for habitat projects would be established and stress an integrated approach.

There would be an increase in effort to achieve continuous improvement in the quality of water flowing through the Refuge, including decreasing sedimentation. Pool-scale drawdowns would be

accomplished by working with the Corps of Engineers and the states. The control of invasive plant species would increase, and there would be increased emphasis on the control of invasive animals. Environmental Pool Plans would be implemented on a strategic and opportunistic basis using the Environmental Management Program or other programs and funding sources. Wildlife inventory and monitoring would increase and include more species groups beyond the current focus of waterfowl, colonial nesting birds, eagles, and aquatic invertebrates/vegetation. The management of threatened and endangered species would focus on helping recovery, not just protection. The furbearer trapping program would continue but be brought into compliance with policies by doing a new plan. The Refuge would become much more active in fishery and mussel management, and provide commercial fishing oversight. Knowledge of turtle ecology through research would increase, as would turtle conservation efforts in cooperation with the states and Corps of Engineers. A forest inventory on the Refuge would be completed in cooperation with the Corps of Engineers, and a forest management plan prepared, leading to more active forest management. The 5,700 acres of grassland habitat on the Refuge would be maintained and enhanced using fire and other tools.



Ben Freeman, the great-grandson of conservation leader Aldo Leopold, observes wildlife at the Refuge. Cindy Samples, USFWS

There would be a continuation of hunting and fishing opportunities on a large percentage of the Refuge. The system of waterfowl hunting closed areas would change with some eliminated, some reduced in size, and several new areas added for a total of 21 closed areas. Motorized watercraft and entry into closed areas for fishing, along with hunting, trapping, and camping would be prohibited during the respective state duck season, although the voluntary avoidance area on Lake Onalaska would remain in place. The firing line issue north of the closed area in Lake Onalaska would be addressed by initiating the Gibbs Lake Managed Hunting Program involving a limit to the number of hunters through drawing, assigning hunters to areas, and charging a fee. The current Refuge-wide hunting regulations would be

changed to include a 25 shotshell limit during the waterfowl season and a 100-yard waterfowl hunting party spacing requirement, and a provision to address open water hunting in portions of Pools 9 and 11. Permanent blinds for waterfowl hunting would be eliminated Refuge-wide, including those used in the Potter's Marsh and Blanding Landing managed hunts in the Savanna District. The Potter's Marsh managed hunt would continue with administrative changes to promote fairness and efficiency. The Blanding Landing managed hunt would be eliminated, but the area would remain open to hunting. General fishing would continue to be promoted, although the Refuge would begin issuing permits for fishing tournaments in cooperation with the states and other agencies.

There would be an increase in facilities and programming for wildlife observation, photography, interpretation and environmental education. There would be a modest increase in Refuge access through new facilities and improvement of existing boat ramps, pull offs, and overlooks. A boat launch fee would be initiated on Refuge-operated boat ramps. New standards for the commercial fish floats or piers below locks and dams 6, 7, 8, and 9 would be developed and implemented, with a phase out of floats which do not meet the standards. A consistent process for issuing permits for commercial guiding on the Refuge would be implemented. Areas open to beach-related public use (camping, swimming, picnicking, social gatherings) would be reduced to some degree under an "open-unless-closed" policy, new regulations would be implemented, and a beach maintenance policy established. Initiating a Refuge Recreation Use Permit and fee would be explored to defray costs of managing beach-related uses. A total of 16 electric motor areas and 10 new slow, no-wake zones would be established. Current regulations on the use of dogs would be changed to allow dogs to be

exercised and trained under certain conditions. General public use regulations would be reviewed annually and changed as needed.

New offices and maintenance shops would be constructed at the Winona, La Crosse, and McGregor Districts, and at the Lost Mound Unit. The office would be expanded at the Savanna District and a new shop constructed. Public information and awareness efforts would be increased 50 percent. Staffing levels for the Refuge would increase by 19.5 full-time equivalents with a balance among biological, maintenance, visitor services, technical, and administrative staff.

Summary of Environmental Consequences

Consequences Common to All Alternatives

Under all alternatives, there would be no disproportionate adverse effect on minority or low-income populations. Cultural and historical resource preservation would be addressed in accordance with current laws, regulations, and policies. Prescribed fire would be used under all alternatives to maintain health and vigor of grassland habitat. Any negative effects would be short-term in nature and mitigated by long-term habitat improvements and higher grassland species populations. Landowners adjacent to the Refuge would not see a significant effect on the use or value of their property since none of the alternatives radically change land management direction. The economic activity of marinas, other water-related businesses, and commercial navigation would not be affected by any of the alternatives, although marinas and private campgrounds could see some inconvenience during periodic pool drawdowns proposed in all alternatives. Commercial tree harvest on the Refuge is expected to be modest, selective, and restrictive across all alternatives once a Forest Management Plan is completed. This harvest will have a minor and local positive economic impact, and a long-term forest health and wildlife impact. All alternatives continue furbearer trapping without change until a new Trapping Plan is completed. A separate environmental assessment will be done for this plan.



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Consequences, Alternative A: No Action (Current Direction)

This alternative will cause little change in water quality, sedimentation rates, geomorphology of the floodplain, or river hydrology since current modest programs will continue. There will likely be a continued long-term decline in the scenic and wild qualities of the Refuge due to little land acquisition within the approved boundary and loss of lands to development.

Biologically, Alternative A would have a neutral impact on threatened and endangered species, reptiles and amphibians, mammals, wetlands, and upland habitat. Sport fish populations would likely increase due to specific habitat projects and pool drawdowns. Waterfowl, other migratory birds, other fish, and mussels would likely continue their long-term trend downward in terms of species diversity, use of the Refuge, or overall population. The floodplain forest would continue to decline in diversity and structure. Invasive species will likely continue to expand under this alternative, negatively impacting both species and habitat. Disturbance to wildlife and habitat disruption or loss is likely to increase under this alternative since no new restrictions will be placed on public uses of the Refuge.

Socioeconomic impacts under Alternative A will be mixed. All current uses will continue with an estimated \$89.9 million in economic output. Hunting, fishing, commercial fish floats, interpretation, environmental education, wildlife observation, and photography will continue, although opportunities for certain user groups will continue to be limited. Keeping current policies or regulations will be favored by many long-term visitors, while others may be disappointed that issues are not being addressed, with a resulting decline in the quality of the experience. Recreational boating, camping, and other beach-related uses will not be affected since no major time and space restrictions or regulations will be implemented. This is likely to be viewed positively by this user group and visits should continue to increase. Likewise, fishing tournaments and commercial guiding will not be subject to new Refuge oversight and sponsors/operators will benefit. However, the general public is likely to face continued frustration with disturbance from these activities. Staffing levels and facilities will continue to be inadequate and negatively impact wildlife and habitat monitoring, habitat improvements, interagency coordination, and personal contact, programs, and facilities for the public.

Consequences, Alternative B: Wildlife Focus

This alternative should result in improvements in water quality, sedimentation rates, floodplain geomorphology, and river hydrology due to increased effort on private lands in watersheds and an emphasis on habitat projects and pool drawdowns. There will likely be a long-term improvement in the scenic and wild qualities of the Refuge due to increased emphasis on finishing land acquisition within the approved boundary of the Refuge, management plans for Research Natural Areas, and increased effort on floodplain forest management.

Biologically, Alternative B would have a positive impact on threatened and endangered species, reptiles and amphibians, mammals, wetlands, and upland habitat. Sport fish populations would likely increase due to specific habitat projects and pool drawdowns. Waterfowl, other migratory birds, other fish, and mussels would improve in terms of use of the Refuge or overall population. The floodplain forest should improve in terms of sustainability, diversity of species, and structure. Invasive plant species would likely stabilize or decline under more aggressive management. Invasive animals may increase, decrease, or stabilize depending on the outcome of interagency initiatives, biological or technological solutions, and funding. Disturbance to wildlife and habitat disruption or loss is likely to decrease markedly under this alternative due to a more restrictive approach to managing public uses on the Refuge.

Socioeconomic impacts under Alternative B will be the greatest of all alternatives considered. Although most current uses will continue, many will be subject to new regulations and restrictions, resulting in an estimated loss of \$7.5 million, or 8 percent, in economic output due to decreased visitation. However, opportunities for hunting, fishing, wildlife observation, and photography will remain abundant, while interpretation and environmental education programs will likely decline. Time, space or other restrictions in some areas and for some uses will be viewed negatively by many long-term users, while others will welcome the diversity of opportunity provided. Commercial fish floats and guides will be severely impacted since these uses would be phased out. Camping and other beach-related recreational opportunities would decline as many areas would be closed to these uses to protect wildlife and habitat. Fishing tournaments would be subject to Refuge permitting requirements which could reduce the number of tournaments, improve the quality of tournaments, and reduce impacts to others using the Refuge for recreation. Staffing levels and facilities would be better suited to meet the demands for wildlife and habitat monitoring, habitat improvements, and interagency coordination, and eventually, improve personal contact and programs for the public.

Consequences, Alternative C: Public Use Focus

This alternative should result in improvements in water quality, sedimentation rates, floodplain geomorphology, and river hydrology due to increased effort on private lands in watersheds. There will likely be a long-term improvement in the scenic and wild qualities of the Refuge due to increased emphasis on finishing land acquisition within the approved boundary of the Refuge and management plans for Research Natural Areas. However, this effect will be negated by no increased emphasis in forest management or pool drawdowns, and an overall emphasis on recreation benefits of projects versus fish and wildlife benefits.

Biologically, impacts of this alternative are similar to Alternative A. However, disturbance to wildlife and habitat disruption or loss is likely to increase above levels in Alternative A due to a more liberal approach to regulations and policy.

Socioeconomic impacts under Alternative C will be mixed. All current uses will continue, and likely increase, resulting in an estimated gain of \$5.6 million, or 6 percent, in economic output. Opportunities for hunting and fishing will remain virtually unchanged, while opportunities for commercial fish floats, interpretation, environmental education, wildlife observation, and photography will increase through new facilities and programs. Changes in current policies or regulations (for example electric motor areas and elimination of permanent hunting blinds) will be opposed by many long-term area users, while others will welcome the increase in diversity of opportunity. Camping and other beach-related uses will not be measurably affected, although boaters will be restricted in electric motor areas. Commercial guides will be impacted since Refuge permits will be required which could limit the number of qualified guides. This may be viewed positively by the general public who views guides as competition for public hunting and fishing. Fishing tournaments would be subject to Refuge permitting requirements which could reduce the number of tournaments, improve the quality of tournaments, and reduce impacts to others using the Refuge for recreation. Staffing levels and facilities would be better suited to meet the demands for public information and programs, but at some expense to wildlife and habitat monitoring, habitat improvements, and interagency coordination.

Consequences, Alternative D: Wildlife and Integrated Public Use Focus (Preferred Alternative)

Physical environment impacts of Alternative D would be similar to Alternative B. However, there would be more improvement in conserving the scenic and wild values of the Refuge through the implementation of guiding principles for habitat projects which include a principle for considering esthetics in project design.

This alternative would have similar positive impacts to fish, wildlife, and habitat as in Alternative B. Disturbance to wildlife and habitat disruption or loss is also likely to decrease under this alternative due to a more balanced approach to fish and wildlife conservation and public use.



Sandhill Cranes and chicks. Copyright by Sandra Lines

Socioeconomic impacts under Alternative D will also be mixed. All current uses will continue, and likely show modest increases, resulting in an estimated gain of \$3.5 million, or 4 percent, in economic

output. Opportunities for hunting and fishing will remain abundant, but methods or seasonal restrictions in some areas will change long-standing expectations and practices. Opportunities for commercial fish floats will remain the same depending on operator compliance with new guidelines, while interpretation, environmental education, wildlife observation, and photography will increase through new facilities and programs. Change in current policies or regulations (for example electric motor areas and elimination of permanent hunting blinds) will be opposed by many long-term area users, while others will welcome the increase in diversity of opportunity. Camping and other beach-related uses will continue, but restricted on certain areas important for wildlife. Impacts to recreational boating, commercial guiding, and fishing tournaments will be similar to impacts in Alternative C. Staffing levels and facilities would be better suited to meet the needs of an overall program balanced between fish and wildlife monitoring, habitat management, and public use.

Chapter 1: Introduction, Purpose and Need, and Planning Background



Entrance sign at Upper Mississippi River NW&FR.

1.1 Introduction

This document is an integrated Draft Comprehensive Conservation Plan (CCP) and Environmental Impact Statement (EIS) for the Upper Mississippi River National Wildlife and Fish Refuge (Refuge). It will follow the basic and accepted format for an EIS and each alternative presented will contain the core of a CCP, namely goals, objectives, and strategies. Since it is an integrated document designed to meet the requirements for both an EIS and a CCP, some sections in the EIS format were expanded (notably Chapter 1, Planning Background) to meet this dual function. In addition, various referenced appendices relate to either the EIS, CCP, or both, as applicable.

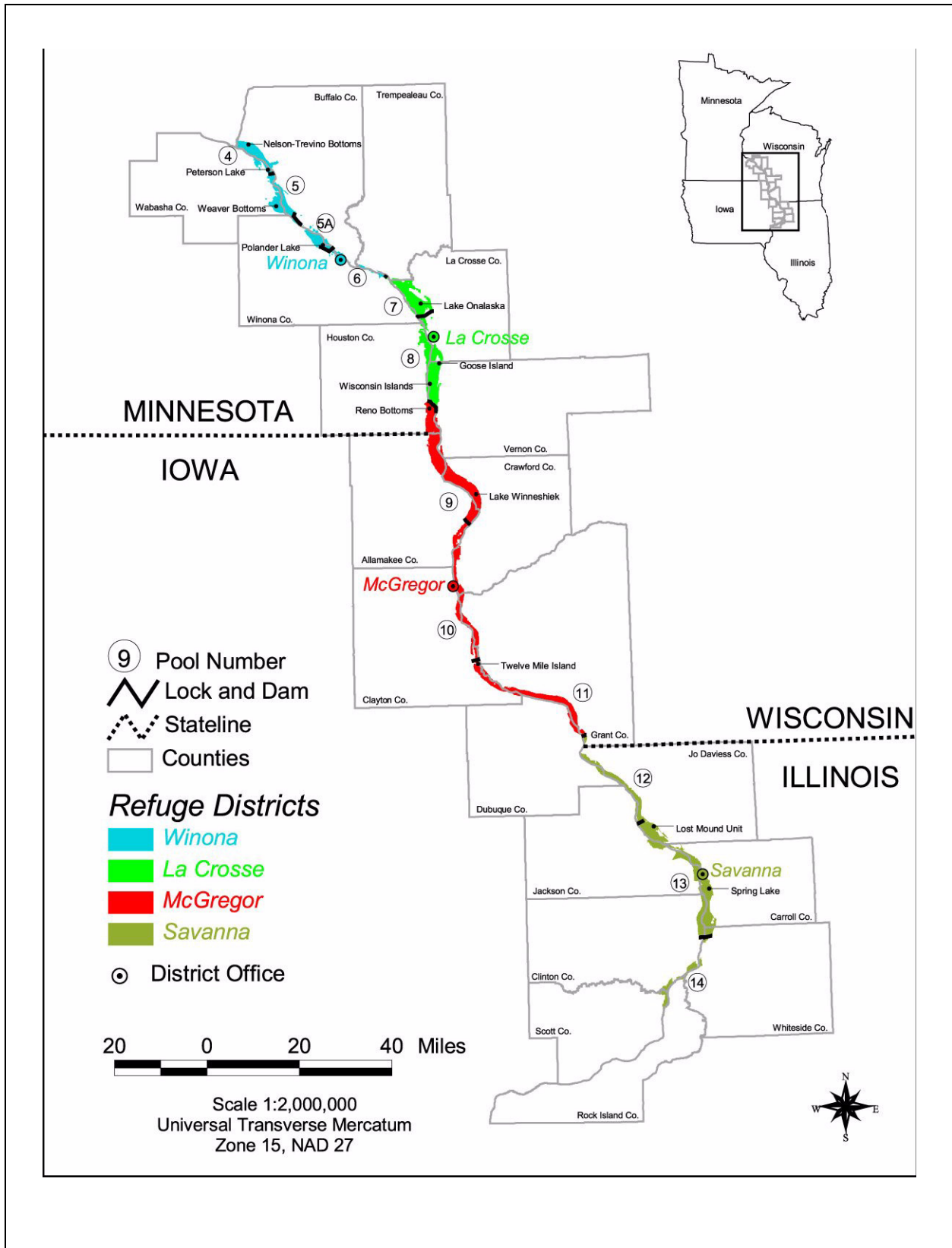
The Refuge was established by an Act of Congress on June 7, 1924, as a refuge and breeding place for migratory birds, fish, other wildlife, and plants. The Refuge encompasses approximately 240,000 acres of Mississippi River floodplain in a more-or-less continuous stretch of 261 river-miles from near Wabasha, Minnesota to near Rock Island, Illinois. See Appendix C for the legislation establishing the Upper Mississippi River National Wildlife and Fish Refuge.

The location and surrounding area of the Refuge is shown in Figure 1.

The Refuge is an invaluable natural legacy in a complex geopolitical landscape:

- A national scenic treasure – river, backwaters, islands, and forest framed by 500-foot high bluffs;
- Interface with four states, 70 communities, and two Corps of Engineers districts;
- A series of 11 navigation locks and dams within overall boundary;
- Represented by eight U.S. Senators and six U.S. Representatives;
- National Scenic Byways on both sides;
- 3.7 million visitors in 2004, the most of any national wildlife refuge;
- Diverse wildlife: 306 species of birds, 119 species of fish, 51 species of mammals, and 42 species of mussels;
- Designated a Globally Important Bird Area;

Figure 1: Location of Upper Mississippi River NWFR



- Up to 40 percent of the continent's waterfowl use the river flyway during migration;
- Up to 50 percent of the world's Canvasback ducks stop during fall migration;
- Up to 20 percent of the eastern United States population of Tundra Swans stop during fall migration;
- 136 active Bald Eagle nests in recent years;
- A peak of up to 1,000 Bald Eagles during winter months;
- Approximately 5,000 heron and egret nests in up to 15 colonies;

The Refuge is a part of the National Wildlife Refuge System, which includes more than 540 refuges and more than 3,000 waterfowl production areas, a total of 95 million acres of lands set aside for wildlife habitat. The Refuge System is administered by the U.S. Fish and Wildlife Service, Department of the Interior.

The Refuge is divided into four districts for management, administrative, and public service effectiveness and efficiency. The Refuge is also divided geographically by river pools that correspond with the navigation pools created by the series of locks and dams on the Upper Mississippi River. District offices are located in Winona, Minnesota (Pools 4-6), La Crosse, Wisconsin (Pools 7-8), McGregor, Iowa (Pools 9-11) and Savanna, Illinois (Pools 12-14). The Refuge currently has 37 permanent employees and an annual base operations and maintenance budget of \$3.1 million.

The Refuge has an overall Headquarters in Winona, Minnesota which provides administrative, biological, mapping, visitor services, planning, and policy support to the districts. District managers are supervised by the refuge manager located in Winona. Two other national wildlife refuges, Trempealeau and Driftless Area, are also part of the Refuge Complex and are under the supervision of the Winona and McGregor district managers, respectively. Separate CCPs are also being prepared for Trempealeau NWR and Driftless NWR, although scoping was done concurrently with scoping for this CCP and EIS.

1.2 Purpose and Need for Action

1.2.1 Purpose

The purpose of this Environmental Impact Statement (EIS) is to adopt and implement a Comprehensive Conservation Plan (CCP) for Upper Mississippi River National Wildlife and Fish Refuge. The Service is considering a range of alternatives of how best to manage the Refuge. A second purpose of the EIS is to present and adopt a Fire Management Plan for the Refuge.

Comprehensive conservation plans are designed to guide the management and administration of national wildlife refuges for a period of 15 years and help ensure that each refuge meets the purpose for which it was established and contributes to the overall mission of the Refuge System. The CCP helps describe a desired future condition of the refuge, and provides both long-term and day-to-day guidance for management actions and decisions. It provides both broad and specific policy on various issues, sets goals and measurable objectives, and outlines strategies for reaching those objectives. A CCP also helps communicate to other agencies and the public a management direction for a refuge to meet the needs of both wildlife and people.

The Refuge Improvement Act of 1997 mandates that the Secretary of the Interior, and thus the Service, prepare CCPs for all units of the National Wildlife Refuge System by October 2012. In addition to this mandate, there are other reasons why preparation of a CCP is needed at this time.

The last comprehensive plan (known as a Master Plan) was completed in 1987. Since then, the river environment has undergone change affecting habitat and wildlife; new laws and policies have been put in place; new scientific information is available; and levels of public use and interest have increased. The planning process is also an excellent way to inform and involve the general public, state and federal agencies, and non-government groups who have an interest, responsibility, or authority in the management or use of certain aspects of the Upper Mississippi River and the Refuge.



Lesser Scaup
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Finally, the National Environmental Policy Act of 1969 requires that federal agencies, and thus the Service, follow basic requirements for major actions significantly affecting the quality of the human environment. These requirements are: 1) consider every significant aspect of the environmental impact of a proposed action; 2) involve the public in its decision-making process when considering environmental concerns; 3) use a systematic, interdisciplinary approach to decision making; and 4) consider a reasonable range of alternatives. This EIS documents those requirements and provides the necessary information and analysis to the decision-maker or responsible official.

1.2.2 Need

The CCP that ultimately arises from this Draft CCP and EIS will help ensure that management and administration of the Refuge meets the mission of the Refuge System, the purpose for which the Refuge was established, and the goals for the Refuge. The mission, purpose, and goals are considered the needs or benchmarks for defining reasonable alternatives presented in Chapter 2, and along with an evaluation of consequences in Chapter 4, will form the basis for a decision. These three needs are summarized below. More detail on issues related to these needs can be found in Section 1.4.5.

Need 1: Contribute to the Mission The mission of the National Wildlife Refuge System set forth in the Refuge Improvement Act of 1997 is:

“To administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Need 2: Help Fulfill the Purposes The 1924 Refuge act set forth the purposes of the Refuge, which remain valid to this day, and guide planning, management, administration, and use of the refuge:

“a. as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and

b. to such extent as the Secretary of Interior may by regulations prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and

c. to such extent as the Secretary of Interior may by regulations prescribe as a refuge and breeding place for fish and other aquatic animal life.”

Need 3: Help Achieve Refuge Goals 1. Landscape. We will strive to maintain and improve the scenic qualities and wild character of the Upper Mississippi River NW&FR.

Related needs are to:

- a. maintain the integrity of the refuge boundary
- b. complete acquisition within approved boundary
- c. protect blufflands for scenic qualities and migratory birds
- d. ensure integrity of designated Research Natural Areas
- e. seek designation as a Wetland of International Importance.

2. Environmental Health. We will strive to improve the environmental health of the Refuge by working with others.

Related needs are to:

- a. reduce sediment, nutrient, and contaminants in water
- b. restore aquatic vegetation in navigation pools on the Refuge
- c. understand and reduce invasive species

3. Wildlife and Habitat. Our habitat management will support diverse and abundant native fish, wildlife, and plants.

Related needs are to:

- a. improve habitat on all pools within Refuge
- b. provide guidance for habitat management projects
- c. monitor status and trends of key fish and wildlife
- d. protect and enhance federally listed threatened, endangered and candidate species
- e. evaluate and update furbearer trapping program
- f. improve fishery and mussel conservation efforts
- g. improve management and oversight of commercial fishing
- h. improve understanding and management of turtles
- i. evaluate and manage forest resources
- j. maintain and enhance grassland habitat

4. Wildlife-Dependent Recreation. We will manage programs and facilities to ensure abundant and sustainable hunting, fishing, wildlife observation, wildlife photography, interpretation, and environmental education opportunities for a broad cross-section of the public.

Related needs are to:

- a. ensure diverse and abundant hunting and fishing opportunities

- b. improve effectiveness of Closed Area system to meet the food and rest needs of waterfowl
- c. ensure consistency and efficiency of hunting programs
- d. reduce user conflicts and ensure equitable hunting opportunities for a broad cross-section of the public
- e. reduce environmental and social impacts from competitive sporting activities
- f. improve opportunities for wildlife observation and photography
- g. improve opportunities for interpretation and environmental education
- h. bring all commercial fish floats/piers into compliance with safety and administrative guidelines
- i. improve management and oversight of growing number of commercial guide services

5. Other Recreational Use. We will provide opportunities for the public to use and enjoy the Refuge for traditional and appropriate non-wildlife-dependent recreation that is compatible with the purpose for which the Refuge was established and the mission of the Refuge System.

Related needs are to:

- a. reduce environmental and social impacts from beach-related uses and develop beach maintenance policy
- b. address fish and wildlife disturbance and user conflicts in backwater areas
- c. reduce safety and erosion problems on some boating corridors
- d. clarify domestic animal use regulations
- e. update public use regulations for clarity and effectiveness

6. Administration and Operations. We will seek adequate funding, staffing, and facilities, and improve public awareness and support, to carry out the purposes, vision, goals, and objectives of the Refuge.

Related needs are to:

- a. provide adequate staff to meet resource and public challenges and opportunities
- b. provide staff with adequate office and maintenance facilities
- c. provide adequate information to the public on recreational opportunities and resource challenges
- d. improve access to the Refuge for public enjoyment
- e. identify operational and maintenance shortfalls

1.3 Decision Framework

The Service's Regional Director at Ft. Snelling, Minnesota, is the responsible official for approving the Final CCP and EIS in a Record of Decision. The Record of Decision will identify the selected alternative which will become the Final CCP. The selected alternative will be one of the alternatives in this Draft CCP and EIS, although the final decision may reflect modification of certain elements

of the alternatives based on public review and comment. The Final EIS will also contain individual substantive comments, or a summary of like-comments, received from the public, agencies, and other interested parties, along with a Service response.

1.4 Planning Background

1.4.1 Legal and Policy Framework

The Upper Mississippi River National Wildlife and Fish Refuge is managed and administered as part of the National Wildlife Refuge System within a framework of organizational setting, laws, and policy. Key aspects of this framework are outlined below. A list of other laws and executive orders that have guided preparation of the CCP and EIS, and guide future implementation, are provided in Appendix D.

U.S. Fish and Wildlife Service

The Refuge is administered by the U.S. Fish and Wildlife Service, Department of the Interior. The Service is the primary federal agency responsible for conserving and enhancing the nation's fish and wildlife populations and their habitats. Although the Service shares this responsibility with other federal, state, tribal, local, and private entities, the Service has specific trust responsibilities for migratory birds, threatened and endangered species, certain interjurisdictional fish and marine mammals, and the National Wildlife Refuge System. The mission of the Service is:

“Working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people.”

1.4.1.1 The National Wildlife Refuge System

The Refuge System had its beginning in 1903 when President Theodore Roosevelt used an Executive Order to set aside tiny Pelican Island in Florida as a refuge and breeding ground for birds. From that small beginning, the Refuge System has become the world's largest collection of lands specifically set aside for wildlife conservation. The administration, management, and growth of the Refuge System are guided by the following goals (Director's Order, January 18, 2001):

- To fulfill our statutory duty to achieve Refuge purpose(s) and further the System mission.
- To conserve, restore where appropriate, and enhance all species of fish, wildlife, and plants that are endangered or threatened with becoming endangered.
- To perpetuate migratory bird, interjurisdictional fish, and marine mammal populations.
- To conserve a diversity of fish, wildlife, and plants.
- To conserve and restore where appropriate representative ecosystems of the United States, including the ecological processes characteristic of those ecosystems.
- To foster understanding and instill appreciation of native fish, wildlife, and plants, and conservation, by providing the public with safe, high-quality, and compatible wildlife-dependent public use. Such use includes hunting, fishing, wildlife observation and photography, and environmental education and interpretation.

1.4.1.2 The National Wildlife Refuge System Improvement Act of 1997 and Related Policy

The Improvement Act of 1997 amended the National Wildlife Refuge System Administrative Act of 1966 and became a true organic act for the System by providing a mission, policy direction, and management standards. Below is a summary of the key provisions of this landmark legislation, and subsequent policies to carry out the Act's mandates.

Established Broad National Policy for the Refuge System:

- Each refuge shall be managed to fulfill the mission and its purposes.
- Compatible wildlife-dependent recreation is a legitimate and appropriate use.
- Compatible wildlife-dependent uses are the priority public uses of the System.
- Compatible wildlife-dependent uses should be facilitated, subject to necessary restrictions.

Directed the Secretary of the Interior to:

- Provide for the conservation of fish, wildlife, and plants within the System.
- Ensure biological integrity, diversity, and environmental health of the System for the benefit of present and future generations.
- Plan and direct the continued growth of the System to meet the mission.
- Carry out the mission of the System and purposes of each refuge; if conflict between, purposes takes priority.
- Ensure coordination with adjacent landowners and the states.
- Assist in the maintenance of adequate water quantity and quality for refuges; acquire water rights as needed.
- Recognize compatible wildlife-dependent recreational uses as the priority general public uses of the System.
- Ensure that opportunities for compatible wildlife-dependent recreation are provided.
- Ensure that wildlife-dependent recreation receives enhanced consideration over other uses of the System.
- Provide increased opportunities for families to enjoy wildlife-dependent recreation.
- Provide cooperation and collaboration of other federal agencies and states, and honor existing authorized or permitted uses by other federal agencies.
- Monitor the status and trends of fish, wildlife, and plants in each refuge.

Provide Compatibility of Uses Standards and Procedures:

- New or existing uses should not be permitted, renewed, or expanded unless compatible with the mission of the System or the purpose(s) of the refuge, and consistent with public safety.
- Wildlife-dependent uses may be authorized when compatible and not inconsistent with public safety.
- The Secretary shall issue regulations for compatibility determinations.

Planning:

- Each unit of the Refuge System shall have a Comprehensive Conservation Plan completed by 2012.
- Planning should involve adjoining landowners, state conservation agencies, and the general public.

Compatibility Policy

No use for which the Service has authority to regulate may be allowed on a unit of Refuge System unless it is determined to be compatible. A compatible use is a use that, in the sound professional judgment of the refuge manager, will not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purposes of the national wildlife refuge.

Managers must complete a written compatibility determination for each use, or collection of like-uses, that is signed by the manager and the Regional Chief of Refuges in the respective Service region. Draft compatibility determinations applicable to uses described in this draft CCP and EIS are included in Appendix E.

Biological Integrity, Diversity, and Environmental Health Policy

The Service is directed in the Refuge Improvement Act to “ensure that the biological integrity, diversity, and environmental health of the Refuge System are maintained for the benefit of present and future generations of Americans...” The biological integrity policy helps define and clarify this directive by providing guidance on what conditions constitute biological integrity, diversity, and environmental health; guidelines for maintaining existing levels; guidelines for determining how and when it is appropriate to restore lost elements; and guidelines in dealing with external threats to biological integrity, diversity and health.

1.4.1.3 Research Natural Area Policy

The Refuge currently has four Research Natural Areas (Nelson-Trevino, 3,740 acres, Wisconsin, Winona District; Reno Bottoms, 1,980 acres, Minnesota, McGregor District; Twelve Mile Island, 900 acres, Iowa, McGregor District; and Thomson-Fulton Sand Prairie, 321 acres, Illinois, Savanna District). The Service’s Refuge Manual, Section 8 RM 10, provides guidance for management, administration, and public use of Research Natural Areas, and lists the following objectives of the designations:

- To participate in the national effort to preserve adequate examples of all major ecosystem types or other outstanding physical or biological phenomena;
- To provide research and educational opportunities for scientists and others in the observation, study, and monitoring of the environment; and
- To contribute to the national effort to preserve a full range of genetic and behavioral diversity for native plants and animals, including endangered and threatened species.



Bald Eagle
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1.4.2 Brief Refuge History and Purposes

The creation of the Refuge was largely the result of the Izaak Walton League, and in particular, the efforts of its founder and leader, Will Dilg. Dilg, an advertising executive in Chicago and an avid angler and lover of the outdoors, formed the Izaak Walton League in 1922. For nearly two decades, Dilg had spent much of the summer fishing and enjoying the Upper Mississippi River. In the summer of 1923, he learned of a plan to drain a large portion of the river backwaters and came up with an ambitious solution to the drainage scheme: turn the entire stretch of river into a federal refuge. Remarkably, one year later, due to Dilg’s determination, Congress passed the Upper Mississippi River Wild Life and Fish Refuge Act on June 7, 1924. The act authorized the acquisition of land for a refuge between Rock Island, Illinois and Wabasha, Minnesota.

The Refuge name was changed administratively to the Upper Mississippi River National Wildlife and Fish Refuge in 1983 by adding the word “National” and changing the two-word Wild Life to the accepted and widely-used single-word “Wildlife” (Regional Director Bulletin, February 28, 1983). The new name was affirmed legislatively by Congress in 1998 through amendment to the original act (Public Law 105-312, October 30, 1998).

The 1924 act set forth the purposes of the Refuge as follows:

- “...as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and
- to such extent as the Secretary of Agriculture¹ may by regulations prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and
- to such extent as the Secretary of Commerce² may by regulations prescribe as a refuge and breeding place for fish and other aquatic animal life.”

The 1924 Act also had stipulations that would prove to have management implications to this day. First, the states of Minnesota, Wisconsin, Iowa, and Illinois had to give their consent before land acquisition could occur. This consent was granted, with varying conditions, by all the states in 1925. Second, the act specifically prohibited any interference with the operations of the War Department in carrying out any project now or in the future for the improvement of the river for navigation. Both of these stipulations are discussed more fully in section 1.4.3.

Land acquisition proceeded rapidly beginning in 1925 using funds appropriated by Congress, and from the withdrawal of public domain or federally-owned islands and other lands in the floodplain. Approximately 90,000 acres were acquired. In 1930, Congress authorized the 9-foot navigation project on the Upper Mississippi River, and the Bureau of Biological Survey (precursor to the Fish and Wildlife Service) soon suspended most acquisition. The Corps of Engineers acquired approximately 106,000 acres within the generally accepted boundary of the Refuge that was needed for the construction of a series of locks and dams and subsequent raising of water levels. Management jurisdiction over much of the Corps-acquired land was transferred to the Service, with reservations, through a series of cooperative agreements in 1945, 1954, and 1963. The agreement was simplified and language updated in a 2001 amendment. The agreement is discussed more fully in section 1.4.3.1.

Spanning 80 years, the history of the Refuge is varied, storied, and complex, and shaped by organizational, political, and social influences. Surprisingly, there is no consolidated history of the Refuge and historic information remains a mostly disjointed collection of notes, memos, files, and reports. The most complete legal history is contained in a report done by law intern Michael Fairchild in 1982 titled “The Legal and Administrative History of the Upper Mississippi River Wild Life and Fish Refuge.” This report is available at Refuge headquarters in Winona.

Today, the Refuge encompasses nearly 240,000 acres of land and water as determined by Geographic Information System, or GIS, analysis. The Refuge remains perhaps the most important corridor of fish and wildlife habitat in the central United States, an importance which has increased over time as habitat losses or degradation have occurred elsewhere.

1.4.3 Relationship to Corps of Engineers and the States, and Other Conservation Initiatives

1.4.3.1 Corps of Engineers

The Corps of Engineers, Department of the Army, has played an active role in the physical and environmental changes on the Mississippi River, and thus the Refuge, for more than 100 years. In

1.Changed to Secretary of the Interior pursuant to reorganization and transfer of functions in 1939 (16 USC 721-731).

2.Changed to Secretary of the Interior pursuant to reorganization and transfer of functions in 1939 (16 USC 721-731).

1871, Congress approved funding for the Corps to improve the river for navigation, mainly through the removal of snags and occasional dredging. By 1878, the Corps was maintaining a 4-foot deep navigation channel on the river and in 1910, Congress authorized a 6-foot navigation channel. The channel was maintained mainly by directing more river current to the main channel of the river through wing dams and backwater closing structures. Demand for greater river shipping capacity and reliability led to Congress in 1930 authorizing and funding a 9-foot navigation channel, and eventually, a series of 29 locks and dams between St. Louis, Missouri and Minneapolis, Minnesota (11 are within the generally accepted boundary of the Refuge). With the Refuge already established, the 9-foot channel would forever link the fate of the Refuge with the Corps of Engineers.

First, acquisition of land for the Refuge by the Bureau of Biological Survey (now the Service) was suspended since the Corps had more funding and needed to move quickly to keep the 9-foot project on track. The planned locks and dams would flood thousands of acres of floodplain that needed to be acquired. It also made sense to not have two federal agencies competing for the same land. The Corps thus acquired approximately 106,000 acres within the generally accepted boundary of the Refuge. Some of the Corps-acquired land was transferred to the Service via Executive Orders in 1935 and 1936. Locks and dams were completed on the stretch of the river designated for the Refuge between 1935 (Lock and Dam 4 and 5) and 1939 (Lock and Dam 13).

However, it did not take long for conflicts to emerge since the Service and the Corps acquired land under different authorities for markedly different purposes: fish and wildlife conservation versus commercial navigation. To help clarify agency roles and responsibilities, cooperative agreements were negotiated and signed in 1945, 1954, 1963, and 2001 (amended the 1963 agreement), each time bringing more clarity to who managed what within the Refuge. An excellent and thorough history of the cooperative agreements is found in the CCP for Mark Twain National Wildlife Refuge Complex, Chapter 3, available on-line at <http://midwest.fws.gov/planning/marktwain/index.html>.

In summary, the cooperative agreement grants to the Service the rights to manage fish and wildlife and its habitat on those lands acquired by the Corps. These lands are considered part of the Refuge and the National Wildlife Refuge System. The Corps retained the rights to manage as needed for the navigation project, forestry, and Corps-managed recreation areas, and all other rights not specifically granted to the Service. A copy of the cooperative agreement can be found in Appendix F. As part of the planning process, the Refuge initiated efforts with the Corps to amend the current agreement to clarify language on the responsibility and authority of each agency, especially in regard to recreational uses.

Other conflicts over the years between navigation, fish and wildlife conservation, and recreation influenced Refuge and Corps cooperative working arrangements. In the 1950s and 1960s, there was growing concern over the common practice of placing dredged material from navigation channel maintenance in the marshes and backwaters of the river. These concerns were heightened with talk of a 12-foot navigation channel in the mid-1960s; new studies on dredging impacts; and new national environmental laws such as the Water Resources Planning Act of 1962, National Environmental Policy Act of 1969, and the Federal Water Pollution Control Act of 1972. In 1974, the State of Wisconsin filed suit against the Corps prohibiting further dredge spoil on lands within the state. Minnesota followed with their own prohibition. These actions were the impetus for more structured cooperation.

In 1974, the Corps and the Service began work on a long-range management strategy for the Upper Mississippi River. A broad-based task force representing five states and several federal agencies was formed under the auspices of the Upper Mississippi River Basin Commission, and became the Great River Environmental Action Teams (GREAT). The Great River Study was authorized by Congress in 1976 and called upon the Corps, in concert with other agencies and the states, to develop a management plan that looked at the needs of navigation, barge traffic, fish and wildlife, recreation, watershed management, and water quality. The resulting GREAT studies not only provided a

comprehensive look at all aspects of the Upper Mississippi River, but provided the institutional framework for the Service, Corps, states and other agencies to work together to meet often divergent needs and mandates.

In 1978, Congress mandated that the Upper Mississippi River Basin Commission complete a comprehensive master plan for the Upper Mississippi River, which includes the Refuge. The plan was completed in 1982 and encompassed many of the recommendations developed in the GREAT studies for dredge material disposal, fish and wildlife conservation, and recreation management.

In 1983, the Service and the Corps (St. Paul District), in cooperation with Minnesota, Wisconsin, and Iowa, completed a Land Use Allocation Plan for Refuge- and Corps-acquired lands in Pools 1-10 (Pools 4-10 affect the Refuge). The plan, through policy statements and detailed maps, provided a clear, practical, and balanced plan to guide future federal land use actions. In effect, the plan was a zoning plan for federal lands, allocating lands in the floodplain for wildlife management, navigation project operations, low-density recreation, intensive recreation, and natural areas. A similar plan for Pools 11-14 was completed with the Corps (Rock Island District), in cooperation with Wisconsin, Iowa, and Illinois in 1986 as part of the Refuge Master Plan process completed in 1987. Both Land Use Allocation Plans remain important references for day-to-day operations and project planning for the Refuge and the Corps, although updates are needed to reflect new acquisitions and changing resource needs.

In 1986, Congress authorized the Corps of Engineers to carry out an Environmental Management Program (EMP) as part of the Water Resource Development Act of the same year. The EMP is composed of two elements: 1) planning, construction and evaluation of fish and wildlife habitat rehabilitation and enhancement projects, or HREPs, and 2) long-term resource monitoring including analysis and applied research, known as LTRMP. To date, the EMP has completed 40 habitat projects with another 8 under construction and 16 in various stages of design with a total affected area of 140,000 acres. Many of these projects are on the Refuge as well as the other Upper Mississippi River refuges of Trempealeau, Mark Twain Complex, and Illinois River Complex. The LTRMP element has provided critical information on the status and trends of fish, wildlife, and aquatic plants; GIS habitat analysis; and other useful scientific information used in refuge management and planning.

In 2004, the Corps of Engineers released a Draft Upper Mississippi River-Illinois Waterway System Navigation Feasibility Study after nearly 10 years of effort. The Service and the Refuge have been involved in review and comment of the study at virtually every stage. The study recommends a dual-purpose approach of improving both navigation efficiency and river ecosystem restoration, the latter at a scale that would be many times larger than the current EMP, and more comprehensive in terms of the floodplain affected and the scope of projects that could be undertaken. Although action by Congress is uncertain, the study may hold great promise in reversing decades of habitat decline on the Upper Mississippi River and the Refuge.

Ongoing Refuge coordination with the Corps and the states is accomplished at several levels. One of the long-standing coordination frameworks is the interagency teams organized by each of the three Corps Districts on the Upper Mississippi River. These teams provide field-level coordination for dredging and other navigation operations, habitat project planning, pool habitat plans, monitoring efforts, recreation planning, water level management (pool drawdowns), forestry, and education and outreach programs. Teams include the River Resources Forum (St. Paul District, Pools 1-10), River Resources Coordination Team (Rock Island District, Pools 11-22), and the River Action Team (St. Louis District, Pools 24 to open river). The Refuge is active on the St. Paul and Rock Island district teams, and their various subteams and workgroups.

1.4.3.2 The States

The Refuge has always enjoyed a unique relationship with the four states of Minnesota, Wisconsin, Iowa, and Illinois. As noted earlier, the Act which created the Refuge in 1924 had a specific stipulation which said:

“No such area shall be acquired ... until the legislature of each State in which is situated any part of the areas to be acquired under this Act has consented to the acquisition of such part by the United States for the purposes of this Act ...”

Consent from the state legislatures was granted in 1925, and each state had varying conditions for their consent. In Minnesota, the legislature granted consent March 19 without condition and ceded all state-owned overflow lands to the United States. The ceded lands provision was later rescinded in 1943.

Iowa gave their consent March 31 provided that acquisitions were first approved by various state conservation boards and officials. An additional condition by Iowa granted the United States exclusive jurisdiction over the lands acquired, a condition that would later be reduced in scope to just “jurisdiction” in 1943.

Wisconsin granted consent on May 19 with several conditions. First, their consent was conditioned on the other three states granting consent and that acquisition of tracts be approved by the Governor on the advice of the Conservation Commission. Secondly, the state and its agents reserved the rights of access for fish-related conservation work such as fish rescue in backwaters and operation of hatcheries. Third, Wisconsin retained title to, and custody and protection of, the fishery in the river and adjacent waters. And lastly, their approval was on the condition that “the navigable waters leading into the Mississippi and the carrying places between the same, and the navigable lakes, sloughs and ponds within or adjoining such areas, shall remain common highways for navigation and portaging, and the use thereof, as well to the inhabitants of this state as to the citizens of the United States, shall not be denied.”

Illinois granted consent June 30 with the condition that the state retained concurrent jurisdiction over the areas acquired.

Due to often overlapping and shared responsibilities and authorities for fish and wildlife resources between the states and the Refuge, cooperation and coordination have been standard practice since the Refuge was established. The Refuge generally adopts or defers to state regulations and license requirements for the use and enjoyment of fish and wildlife resources. Refuge law enforcement efforts are coordinated with respective state conservation officers. The states are also closely involved in the efforts outlined in the preceding Corps of Engineers section, and often provide the lead for interjurisdictional issues such as pool drawdowns. The Refuge Improvement Act of 1997 also solidified the role of the states in coordinating Refuge management plans and activities.

The states also manage some important and often magnificent wildlife management areas, parks, and forests adjacent to the Refuge, both in and outside the floodplain. Coordination of similar land management needs and programs is regular and ongoing since fish and wildlife, and at times the public, do not distinguish between administrative boundaries. Notable state resource lands are summarized in Chapter 3, Section 3.2.3.

Structured coordination with the states is provided through the Upper Mississippi River Basin Association and the Upper Mississippi Conservation Committee. Both are key coordination and communication links with the states for conservation efforts on the Mississippi and the Refuge.

The Basin Association was formed by a joint resolution of the Governors of Missouri, Illinois, Wisconsin, Iowa, and Illinois in 1981 to replace the former federally-authorized Upper Mississippi River Basin Commission. Several federal agencies, including the Service, are non-voting advisory members, but never-the-less, the Basin Association provides an important regional forum to discuss major policy and management issues that affect the Mississippi River and the Refuge.

The Conservation Committee is also a state-sponsored organization with executive board delegates from Minnesota, Wisconsin, Iowa, Illinois, and Missouri. However, its membership since establishment in 1943 has grown to more than 200 resource managers from both state and federal agencies. The manager of the Refuge is a recognized, but non-voting, participant at board meetings, and the Service's Rock Island Field Office provides a coordinator.

1.4.3.3 Other Conservation Initiatives

The Refuge's location in the floodplain of the Mississippi River makes it an important component of a host of conservation initiatives, plans, and reports. Several of these efforts are outlined below and contain important guidance and direction for preparation of this Draft CCP and EIS.

Ecosystem Approach

The Service has adopted an ecosystem approach to conservation which stresses a landscape perspective and cooperation across Service programs and with the wide variety of partners and stakeholders. The Refuge is part of the Service's Upper Mississippi River and Tallgrass Prairie Ecosystem and strives to contribute to these five team goals:

- Protect, restore, and enhance populations of native and trust species and their habitats.
- Restore natural ecosystem processes, including hydrology and sediment transport to maintain species and habitat diversity.
- Promote environmental awareness of the ecosystem and its needs with emphasis on sustainable land use management.
- Identify water quality problems affecting native biodiversity and habitat of trust species.
- Reduce conflicts between fish and wildlife needs and other uses.

Migratory Bird Conservation Initiatives

Blueprint for Migratory Birds (USFWS, 2004): The U.S. Fish and Wildlife Service is responsible for the conservation and management of more than 800 species of migratory birds that occur in the country. In 2004, the Service released the Migratory Bird Program's ten-year strategic plan entitled: "A Blueprint for the Future of Migratory Birds." It calls for cooperation from all governments and partners to ensure the continued survival of migratory birds. The Blueprint identifies three priorities for the Migratory Bird Program: 1) address the loss and degradation of migratory bird habitat; 2) improve scientific information on bird populations; and 3) increase partnerships to achieve bird conservation. Refuge management activities stemming from the CCP will complement these priorities by addressing needs of some Birds of Management Concern listed in the Blueprint.

North American Waterfowl Management Plan (USDOI and EC, 1986): This plan is a partnership effort to restore waterfowl populations to historic levels through habitat conservation. The plan outlines several geographic areas, called joint venture areas. The Refuge is a part of the Upper Mississippi River and Great Lakes Region Joint Venture. The goal of the joint venture is to increase populations of waterfowl and other wetland wildlife by protecting, restoring, and enhancing wetland and associated upland habitat. Objectives for the joint venture are 1.54 million breeding ducks and 773 million use-days during migration.

Partners in Flight (Pashley et al. 2000): This initiative seeks to conserve songbirds by identifying priority species, important habitats, and management strategies. Conservation plans have been developed for different regions across the continent and the Refuge lies within the Upper Great Lakes Plain, also known as Physiographic Area 16.

U.S. Shorebird Conservation Plan. (Manomet, 2001): This plan seeks to conserve shorebirds by identifying priority species and important breeding and migration areas, and outlining strategies. The Refuge is included in the Upper Mississippi Valley/Great Lakes Regional Shorebird Conservation Plan.

North American Waterbird Conservation Plan: Volume One of this plan focuses on 165 species of seabirds and colonial nesting birds such as herons, egrets, and terns. Volume Two focuses on 44 species of non-colonial marsh birds. The plan outlines species' population status, habitat needs, and strategies for conservation.

North American Bird Conservation Initiative (<http://www.bsc-eoc.org/nabci.html>): This initiative is a continental effort to bring all migratory bird conservation programs together to optimize conservation objectives and strategies. The goal is to facilitate the full spectrum of bird conservation through regionally-based, biologically-driven, landscape-oriented partnerships.

Globally Important Bird Area (American Bird Conservancy, 2004): The Refuge was designated a "Globally Important Bird Area" by the American Bird Conservancy in 1997 due to its national and international importance for migratory birds. The designation helps protect the Refuge through recognition and awareness.

Regional Resource Priorities

In 2002, Region 3 of the Service assembled a list of 243 species in the greatest need of attention under the Service's full span of authorities. The priorities are linked to key habitats, concerns, desired outcomes, obstacles, and broad strategies. The priorities help direct human and fiscal resources and are a useful reference and guide when preparing CCPs.

Partners for Fish and Wildlife Program

Since 1987, the Service has worked beyond the boundaries of refuges with landowners and other partners to improve habitat on private land for fish and wildlife. The program is voluntary, relies heavily on a partnership approach, and leverages both ideas and funding from a variety of sources. Through the Partners program, the Service in Region 3 has restored or enhanced 24,780 wetland basins, nearly 189,000 acres of uplands, and nearly 200 miles of streams and riparian areas. Cost sharing agreements and technical assistance are an important part of the program. The Partners program remains an effective tool in influencing land use off-refuge to improve water quality and quantity on-refuge, as well as meeting the landscape needs of fish and wildlife.

Interagency Reports and Assessments

Over the years, there have been scores of reports, studies, assessments, and action plans done by federal and state agencies, commissions, and workgroups, either singly or as cooperative efforts. Below is a summary of recent works which have been important guides for the preparation of this Draft CCP and EIS. Many are referenced in various sections of this document, and many other important works are listed in the references section, Chapter 8.

Ecological Status and Trends of the Upper Mississippi River System 1998(USGS, 1999): This report of the Long Term Resource Monitoring Program examines and summarizes data collected in the monitoring program since the late-1980s, provides historical observations, and other scientific findings. The report, along with unpublished updates since 1998, provides invaluable science in the areas of river geomorphology and floodplain habitats, watershed relations and changes, hydrology,

water and sediment quality, submersed aquatic vegetation, floodplain forest, macroinvertebrates, freshwater mussels, fishes, and birds.

A River That Works and a Working River (UMRCC, 2000): Completed by the Upper Mississippi River Conservation Committee in 2000, the report presents a strategy for the natural resources of the Upper Mississippi River System. The report lists 9 objective areas and discusses tools and measures, or strategies, for achieving. The 9 objective areas are:

- Improve water quality
- Reduction in erosion, sediment and nutrient impacts
- Return of natural floodplain to enable more habitat diversity
- Seasonal flood pulse and periodic low flow conditions
- Restore backwater/main channel connectivity
- Management of sediment transport, deposition and side channels
- Manage dredging and channel maintenance
- Sever pathways for exotic species
- Provide opportunities for native fish passage at the dams

Habitat Needs Assessment (USACE, 2000): This assessment was prepared by the Corps of Engineers in 2000 under the Environmental Management Program in cooperation with the states and federal agencies involved in Upper Mississippi River management. The assessment provides a system-wide analysis of historical and existing habitat conditions, and desired future habitat conditions. It is an important guide to ongoing and future habitat restoration projects.

Environmental Pool Plans (River Resources Forum, 2004): Completed by the interagency Fish and Wildlife Workgroup for Pools 1-10 in 2004, and underway by the River Resources Coordinating Team for Pools 11-22, the Environmental Pool Plans provide a detailed desired future condition of each pool in a 50-year planning framework. These plans have been adopted as the desired future habitat conditions for the Refuge in the Draft CCP and EIS (see Appendix O for an example of Environmental Pool Plans) .

Upper Mississippi and Illinois River Floodplain Forests (UMRCC 2002): This report was issued in 2002 by the Upper Mississippi River Conservation Committee, Wildlife Technical Section. It provides a historic context, current status and future outlook for the expansive floodplain forest of the Upper Mississippi River System, and recommended actions to sustain and improve the forest habitat on the river and the Refuge.

Conservation Plan for Freshwater Mussels of the Upper Mississippi River System UMRCC, 2004b): This report was released in 2004 by the Upper Mississippi River Conservation Committee, Mussel Ad Hoc Subcommittee. The plan outlines the history of harvest, biology, status, concerns, and numerous strategies for the conservation, including restoration, of the freshwater mussels in the Mississippi and other rivers.

1.4.4 Refuge Vision and Goals

The vision for the Refuge provides a simple statement of the desired, overall future condition of the Refuge. From the vision flow more specific goals which in turn provide the framework to craft more detailed and measurable objectives which are the heart of the CCP. The vision and goals are also important in developing alternatives, and are important reference points for keeping objectives and strategies meaningful, focused, and attainable.

1.4.4.1 Refuge Vision

The Upper Mississippi River National Wildlife and Fish Refuge is beautiful, healthy, and supports abundant and diverse native fish, wildlife, and plants for the enjoyment and thoughtful use of current and future generations.

1.4.4.2 Refuge Goals

<i>Landscape</i>	We will strive to maintain and improve the scenic qualities and wild character of the Upper Mississippi River Refuge.
<i>Environmental Health</i>	We will strive to improve the environmental health of the Refuge by working with others.
<i>Wildlife and Habitat</i>	Our habitat management will support diverse and abundant native fish, wildlife, and plants.
<i>Wildlife-Dependent Public Use</i>	We will manage public use programs and facilities to ensure abundant and sustainable hunting, fishing, wildlife observation, wildlife photography, interpretation, and environmental education opportunities for a broad cross-section of the public.
<i>Other Recreational Use</i>	We will provide opportunities for the public to use and enjoy the Refuge for traditional and appropriate non-wildlife-dependent recreation that is compatible with the purpose for which the Refuge was established and the mission of the Refuge System.
<i>Administration and Operations</i>	We will seek adequate funding, staffing, and facilities, and improve public awareness and support, to carry out the purposes, vision, goals, and objectives of the Refuge.



*White-tailed deer buck.
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1.4.5 Planning Issues, Concerns and Opportunities

Issues, which are often synonymous with concerns and opportunities, were identified through the scoping and public involvement process described in Chapter 6. The issues below represent input from the public, other agencies and organizations, and Refuge managers and staff, as well as the mandates and guidance reflected in earlier sections of this chapter. This Draft CCP and EIS is issue-driven, and as such, each issue is defined and discussed below. More details pertaining to each issue can be gleaned from Chapter 3, Affected Environment.

The issues were critical in framing the objectives and strategies for the various alternatives, and form the basis for evaluating the environmental consequences of each alternative. Care has been taken to ensure these issues track through the document, recognizing that required formats and contents for CCPs and EISs do not always present a perfect crosswalk to and from issues.

Also, these issues do not represent every issue which faces the Refuge and the Upper Mississippi River as a whole, as issues had to be pared to a reasonable level in terms of planning horizon, implementation practicalities, and jurisdictional realities. However, they do represent a reasonable

and comprehensive set of issues, which, when converted to measurable objectives in Chapter 2, Alternatives, create a meaningful plan of action to help meet the mission of the Refuge System and the purposes and goals of the Refuge.

1.4.5.1 Landscape Issues

Refuge Boundary: In many areas of the Refuge, a visitor can locate the Refuge boundary by recognizing where the natural vegetation of the floodplain stops and human development begins. This presence of the Refuge in the floodplain has played a crucial role in protecting the natural and wild character of the river for 80 years. However, there is constant pressure to the integrity of the Refuge from development that encroaches upon Refuge land via tree cutting, dumping, construction, and mowing along the Refuge boundary. Maintaining an accurate and clearly marked Refuge boundary is a critical basic need of resource protection.

Land Acquisition: Acquisition of land remains a key conservation tool for the well being of fish and wildlife resources, for providing public use opportunities, and for maintaining the wild and scenic character of the Refuge and the Upper Mississippi River as a whole. It is also cost effective to acquire key lands before they are developed, both from a land-cost perspective and from the cost of dealing with negative impacts associated with development adjacent to a national wildlife refuge.

The 1987 Refuge Master Plan identified approximately 36,000 acres of additional lands to be acquired to meet various resource needs. Goal acres by state were: Minnesota – 6,770 acres; Wisconsin – 9,130 acres; Iowa – 7,000 acres; and Illinois – 13,100 acres. Many of these areas are gaps in floodplain habitat between what the Service originally acquired through 1934, and what the Corps acquired for the navigation project. Approximately 6,800 acres have been acquired since 1987, or 19 percent of the Refuge Master Plan objective. In addition to Master Plan goals, the Service has previously approved acquisition of approximately 900 acres in the Halfway Creek area of the La Crosse District as part of a water quality and sediment control partnership. To date, about 146 acres have been acquired in this area. A previous proposal to acquire approximately 5,800 acres in the lower Root River floodplain, La Crosse District, is not being carried forward at this time, mainly because the Minnesota Department of Natural Resources has been actively pursuing acquisition in this area. Collectively, there are 25,923 acres remaining to be acquired within the approved boundary of the Refuge (see maps, Appendix G).

In September 2003, the Service and the Department of the Army signed an agreement to add 9,404 acres of the former Savanna Army Depot to the Refuge. An amendment to the agreement in August 2004 added another 311 acres, for a total of 9,715 acres. Approximately 3,000 acres of this total was transferred outright with the September 2003 agreement, with the remaining 6,715 acres to be managed as part of the Refuge and transferred as clean-up is completed. This sizeable addition is known as the Lost Mound Unit of the Refuge. In October 2004 another 143 acres (Apple River Island) was added to the Lost Mound Unit by including it in the Cooperative Agreement between the Corps and the Service, for a total of 9,858 acres.

There are also a few Refuge tracts intermingled with state wildlife management areas. It would benefit both the Refuge and the states to consolidate ownerships through land exchanges. Examples include tracts within the Whitman Dam Wildlife Management Area (Pool 5) and Van Loon Wildlife Management Area (Pool 7), Wisconsin. Consolidation would provide consistent management and regulations and reduce confusion by visitors to these areas.

Bluffland Protection: The stunning bluffs which frame the 261-mile long Refuge are a key component of its scenic and wild character, and critical to the entire viewshed of the river valley. Most of the bluffs are in private ownership, while some are protected by state and local parks, forests, and wildlife management areas. The 1987 Master Plan identified 13 bluff land areas for acquisition, primarily to protect potential nesting sites for the peregrine falcon, an endangered

species at that time. These areas contain bluffs, rock outcrops, dry “goat” prairies, and other relatively inaccessible features that contribute to the wild and scenic qualities of the river corridor, and harbor a stunning plant and wildlife diversity. However, bluff areas are increasingly being developed for private residences or other uses which threaten these values.

Natural Areas and Special Designations: The Refuge currently contains 4 federally-designated Research Natural Areas totaling 6,946 acres. Some of the biological values which led to the designation of these areas are threatened by habitat changes. Management plans are needed to ensure the future integrity of these areas and to increase public awareness and appreciation.

There is also an opportunity to add the Refuge to the list of Internationally Important Wetlands under provisions of the Ramsar Convention. The treaty resulting from the convention, ratified by the U.S., maintains a global registry in Switzerland of wetlands designated as internationally significant for migratory birds and other natural and cultural values. An attempt to get the Refuge designated fell short in the 1990s.

1.4.5.2 Environmental Health Issues

Water Quality: The Refuge Improvement Act of 1997 called upon the Secretary of the Interior to administer the Refuge System in a way that will “ensure that the biological integrity, diversity, and environmental health of the System are maintained for the benefit of present and future generations” and “assist in the maintenance of adequate water quantity and quality to fulfill the mission of the System and the purposes of each Refuge.” Water quality is a key to the overall health of the food chain which drives and sustains the multitude of fish, wildlife, and plant species which rely on the Refuge for critical parts, or all, of their life cycle requirements. Although pollution from urban centers has been drastically reduced, and certain toxic chemicals such as DDT have been banned, several water quality concerns remain. These include sediment which is filling main pools, channels and backwaters; toxic substances in both the water and sediment which pose direct and indirect threats to animals and humans; and nutrient loads from land use practices or inadequate waste treatment.

Water Level Management: Completion of the current 9-foot navigation project with its series of low head dams had a tremendous ecological impact on the Upper Mississippi River, and the Refuge. This system of locks and dams (11 on the Refuge) changed the previously free flowing river to a series of shallow reservoirs from St. Louis, Missouri to Minneapolis, Minnesota.

For several decades, the newly created “pools” supported a wealth of fish, wildlife, and aquatic habitats. However, typical of dammed river systems, the initial productivity of the pools diminished significantly over time. Although water level management of the pools changed some over the years, the defining purpose for water level management was, and is, to ensure navigation pool water depths for a defined commercial navigation channel. The result is a deeper, relatively stabilized water system, especially during the summer. Over time, stable water levels have adversely affected many of the biological resources of the river, and thus the Refuge. Among the principal results have been a reduction in seasonal mudflat/sandbar areas; loss of islands; and a significant decline in aquatic plant community abundance, diversity, and distribution. Fish and wildlife dependent on these plant communities have also declined and/or moved elsewhere. Recent efforts to reverse this resource decline through pool-wide summer drawdowns show great promise, but funding levels or sources remain a limiting factor for broader application.

Invasive Plants: Invasive plants continue to pose a major threat to native plant communities on the Refuge and beyond. Invasive plants displace native species and often have little or no food value for wildlife. The result is a decline in the carrying capacity of the Refuge for native fish, wildlife, and plants. Control of invasive plants on a predominantly floodplain environment is extremely

challenging due to difficulty of access and the rapid dispersal of plants. In addition, control has been hampered by staff and funding limits for basic inventory, direct control, and research into species-specific biological controls.

Invasive Animals: Invasive animal species can often be a biological storm which wreaks havoc on native plants and animals in a matter of years. Zebra mussels swept through the Upper Mississippi River incredibly fast, decimating many native mussel beds. A variety of Asian carp are poised to make a similar assault and are perhaps of most concern since they may compete directly with a large number of native fish species through direct food competition. In some areas where Asian carp have taken hold they represent 98 percent of the animal biomass. Direct control of invasive animal species is difficult in a large riverine system due to the mobility of the animals and the rich nutrient base which provides abundant food.

1.4.5.3 Wildlife and Habitat Issues

Environmental Pool Plans: As noted earlier in Section 1.4.3.3, Environmental Pool Plans detail the desired future habitat conditions of each navigation pool of the Mississippi River. The challenge is to mesh the purposes and goals of the Refuge with these interagency plans, and to set priorities for the 15-year planning framework in the CCP within the 50-year vision of the pool plans (see Appendix O for an example of Environmental Pool Plans) .

Guiding Principles for Habitat Projects: Virtually all habitat improvement projects undertaken on the Refuge are interagency in nature due to shared and overlapping jurisdictions, responsibilities, and interests. Guiding principles for projects on the Refuge are needed to provide consistency throughout the Refuge, help communicate to cooperating agencies and citizens our needs and standards for project design, and help ensure that Refuge System policy is reflected.

Monitoring Fish, Wildlife, and Plant Populations: One of the directives in the Refuge Improvement Act of 1997 was to monitor the status and trends of fish, wildlife, and plants on each national wildlife refuge. Although monitoring has been a part of managing the Refuge for decades, gaps remain in baseline population data for a large number of species. A Refuge Wildlife Inventory Plan was completed in 1993 but needs updating to reflect changes in habitat, the status of many species, and new policies and procedures for monitoring. In addition, management in a changing river environment must be adaptive in nature which requires ongoing monitoring and nimble investigative capability as issues arise and change. Meeting these needs have been hampered by biological staffing and funding levels.

Threatened and Endangered Species: There are currently two federally-listed threatened or endangered species (bald eagle and Higgins eye pearlymussel) and two candidate species (massasauga rattlesnake and sheepsnose mussel) confirmed on the Refuge. One candidate species, the spectaclecase mussel, may occur on the Refuge but there are no recent records. Threatened and endangered species are issues due to their often precarious population status, and the need for special considerations and protection which influences Refuge use and management activities.

Furbearer Trapping: Furbearer trapping on the Refuge has a long-standing tradition and has been a useful tool in maintaining balance between furbearers and habitat, and safeguarding Refuge infrastructure. The Refuge has regulated trapping within its boundaries since 1929. The existing trapping program is regulated by issuing Special Use Permits to state-licensed individuals who may use a maximum of 40 traps (all marked with Refuge tags) per day, during the state season, except the final day of trapping on the Refuge is no later than March 15. All trappers must submit a Fur Catch Report following the season. The 1988 Trapping Plan needs to be updated to reflect recent national policy and regulation changes governing compatibility of uses, commercial uses on Refuges, the latest furbearer population and Refuge habitat information, and new management needs.

Fishery and Mussel Management: The fishery and mussel resources of the Mississippi River are an important aspect of both federal and state management efforts due to their recreational and/or commercial value. Even prior to establishment of the Refuge in 1924, federal and state governments were actively involved in fish rescue operations in isolated backwaters, returning millions of fish to the main channel during low flow periods. Agencies were also involved in mussel propagation, and eventually regulations, due to a thriving button-making industry using mussel shells. Congressional hearings on the establishment of the Refuge included abundant testimony on the value of the area to fish, and especially the black or largemouth bass due to its sportfishing value. After Refuge establishment, the Refuge and states were still heavily involved in fish rescue operations. These efforts were curtailed after the locks and dams went into operation and higher water levels reduced the entrapment of fish in backwaters.

Changes in river ecology have had a dramatic impact on fishery and mussel resources. Many fish species dependent on a free-flowing river declined with the construction of navigation improvements, while others increased under stable pool conditions. Mussels have been impacted by pollution, harvest, sedimentation, loss of free-flowing habitat, reduction in species-specific host fish, and zebra mussels. Asian carp pose an increasing threat to both fish and mussels. Of the 35 mussel species in the Service's Region 3 Conservation Priority list, 19 are found in the Upper Mississippi River ecosystem. Several species are listed as either federally listed threatened, are candidates for federal listing, or are on state threatened and endangered species lists.

Fish and other aquatic life conservation is one of the major purposes of the Refuge. It also accounts for one of the highest public use activities on the Refuge, with more than a million fishing visits per year. However, the Refuge has played a relatively minor role in fishery management, deferring to the states for most monitoring, management, and regulations. In 1981, the Service established a Fishery Resource Office in Winona, which was moved to La Crosse in 1995. Staff at this office are an important resource for addressing Refuge fishery questions and needs, as well as assisting other Refuges, tribes, military bases, and the states. But the La Crosse Fishery Office covers a large geographic area, and with multiple responsibilities, cannot limit its activities to the needs of the Refuge. The Genoa National Fish Hatchery, located along the Mississippi River and established in 1932, also provides assistance to the Refuge primarily through limited stocking of panfish and work on threatened and endangered mussels.

The Refuge should play a larger role in fishery and mussel management in keeping with its mandated purposes and the high intrinsic, recreational, and commercial values of the resource. A Fishery and Mussel Management Plan should be in place to help communicate to the states and public the Refuge and Service perspective on fishery and mussel management issues and needs, and to help set common goals, objectives, and means of collecting and sharing information. The plan would be programmatic in nature, as the states should rightly continue to be the main lead for fishery and mussel management and regulations. The Refuge is currently hampered by having no fishery biologist on staff for full time coordination of fishery and mussel monitoring and management efforts with other Service offices, the states, and the Corps of Engineers. A fishery biologist would help ensure that fishery and mussel considerations are integrated with Refuge habitat, biological, and public use decisions.

Commercial Fishing, Clamming, and Turtle Harvest: Commercial fishing on the Refuge is an important economic use for scores of people and communities along the river. Besides its economic value, commercial fishing has strong cultural and social ties for many. In 1998, 6.27 million pounds of fish of 17 species were reported caught. Carp, buffalo, drum, channel catfish, carpsucker, and redhorse and sucker make up the bulk of the catch by pound. Commercial fishing is a viable use of a renewable resource, and it can be an important tool in reducing populations of some invasive species. However, there can be some impact to non-target species such as paddlefish, sturgeon, and diving ducks, and disturbance to rafts of waterfowl in the fall from commercial fishing activities in closed areas.

Mussel harvest, or clamming, has enjoyed a colorful history on the Mississippi River, first with a thriving button industry from the late 1800s to the 1930s, and secondly, beginning in the 1950s, with harvest to provide mussel shell “seeds” for the Japanese cultured pearl industry. The states regulate the harvest of mussel and have been moving toward standardizing regulations and reporting. Mussel harvest can be a concern due to often incomplete population information, continued environmental stressors on mussels, threatened and endangered status for some species, and enforcement challenges.

New information on turtle ecology and populations has raised questions about the effects of commercial harvest, for both the food and pet trade, on turtle populations. In 1998, the states reported a commercial catch of nearly 10,000 pounds of unspecified species on the Mississippi River.

The number of commercial operators harvesting fish, mussels, and turtles on the Refuge is not known since records kept by the states do not distinguish by pool number. However, in 1998 the total number of commercial fishermen on the Refuge was 576 and their total catch had an estimated value of nearly \$8.5 million.

The Refuge has provided little to no oversight of the commercial fish, mussel, and turtle harvest on the Refuge, deferring to the states’ expertise and experience. However, federal regulations state that “fishery resources of commercial importance on wildlife refuge areas may be taken under permit in accordance with federal and state law and regulations” as long as such economic use “contributes to the achievement of the national wildlife refuge purposes” and is determined to be compatible (50 CFR 31.13 and 29.1). Some Refuge oversight is thus required to ensure compliance with regulations and policy.

Turtle Management: The Refuge provides important and often critical habitat for a variety of turtle species, some of which are listed as threatened or endangered by the states. Recent surveys in the Weaver Bottoms area of Pool 5 revealed that the area harbors one of the largest and most diverse turtle assemblages in the U.S. (8 species). There are numerous potential negative and positive impacts from activities on the Refuge since turtles nest on sand areas that are also important for navigation channel maintenance and used heavily by recreationists. Marsh and backwater areas also provide important food and cover for young turtles. More rigorous monitoring and research is needed to understand turtle populations and ecology on the Refuge, and to guide a coordinated approach to population monitoring and harvest regulations.

Forest Management: The Refuge includes approximately 51,000 acres of floodplain forests, one of the largest contiguous areas of floodplain forest in the Midwest. This habitat is critical to the river ecosystem, providing habitat for a variety of wildlife including songbirds, Wood Ducks, Bald Eagles, Red-shouldered Hawks, herons, egrets, and numerous mammals and amphibians. It also provides scenic beauty, a welcome place for recreation, protects soils, and improves water quality.

The floodplain forest of the Refuge has undergone a series of changes since Refuge establishment. A more diverse forest gave way to a more monotypic forest dominated by silver maple. The current forest is even aged, growing old, and in many cases, not regenerating itself. In many areas, reed canary grass is replacing former forest areas by choking tree regeneration. If current trends continue, there could be a marked loss of forest within the Refuge and elsewhere in the river floodplain. A baseline forest inventory plan needs to be completed as a first step in developing a management plan, or prescription, for forest health. Despite the size and importance of the forest resource on the Refuge, there are currently no foresters on staff.

Grassland Management: Although mainly a river floodplain, the Refuge does contain 5,700 acres of scattered grassland habitat important to numerous species of grassland birds and other wildlife. Some of these grasslands are tallgrass native prairie, one of the rarest ecosystems in the United

States. Active management is critical to safeguard and maintain these grassland areas. Management tools include prescribed or controlled fire to setback the natural succession of shrubs and trees, and the control of invasive species.



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1.4.5.4 Wildlife-Dependent Recreation Issues

General Hunting: Hunting remains an important and popular form of wildlife-dependent recreation on the Refuge. In 2003, an estimated 285,000 visits were recorded for hunting, with waterfowl hunting accounting for 87 percent. Hunting is one of the priority public uses of the Refuge System, and remains a vital part of the cultural, social, and economic fabric of the communities along the Refuge. The Refuge Hunting Plan needs revision to reflect land acquisitions and new policies.

In recent years, six administrative “No Hunting Zones” totaling 1,073 acres were established (5 on Pool 13 and 1 on Pool 7) for public safety, to reduce potential user group conflicts, and provide opportunities for wildlife observation. In addition, approximately 2,400 acres of the recently established Lost Mound Unit remains closed to all entry because of contaminant issues. These areas need to be reviewed in light of new acquisitions, and changes in public use facilities and use levels. There are several specific issues related to hunting outlined below.

Waterfowl Hunting Closed Areas: Portions of the Refuge currently designated as closed areas are actually areas closed only to hunting, furbearer trapping and camping during the duck hunting season and to migratory bird hunting at all times. They are generally open for other uses, including recreational boating and sport and commercial fishing. The only exceptions are the Spring Lake Closed Area (Pool 13) which is a sanctuary and closed to all public entry October 1 to the end of the duck hunting season, and the Goose Island No Hunting Zone (Pool 8) which is closed to hunting at all times.

The core of the current Refuge closed area system was established in 1957-58 after nearly 10 years of coordination. The system began with 14 closed areas, including Trempealeau National Wildlife Refuge, and encompassed about 41,600 acres. Considering the dominant role of the Refuge in the Mississippi Flyway migration corridor, the closed area system was established to provide migrating waterfowl with a network of feeding and resting areas, and to disperse waterfowl hunting opportunities on the Refuge. These goals were initially met.

After nearly 45 years, changes have occurred in the closed area system, including the amount and quality of habitat available, the number and species of waterfowl using the system, and the size and number of closed areas. Fewer islands and acres of plants are generally available to provide shelter, food, and cover. More diving ducks, tundra swans, and Canada Geese are now present, but fewer puddle ducks. For example, because of habitat decline, fewer mallards are using closed areas today compared to the early years of the closed area system. In addition, some waterfowl (e.g., canvasbacks) are now concentrated in a few functioning closed areas rather than dispersed throughout the Refuge. Up to 50 percent of the continent’s canvasback duck population utilizes the Refuge, however, the vast majority of these birds are found only on Pools 7-9. An environmental accident or crash in submergent vegetation or other food sources in these pools could have serious impacts to the canvasback population.

The impact of human-caused disturbance to waterfowl concentrated in closed areas is also being reviewed. The public can motor through closed areas and fish in them during the fall migration, and new shallow water boating technology makes most areas accessible. As a result, not all closed areas are fully functional, that is, they are not providing food and rest for migrating waterfowl. Human disturbance disrupts feeding activities of waterfowl and potentially could reduce the quality of

staging sites. To waterfowl, the energy cost of disturbance may be appreciable in terms of disruption of feeding, displacement from preferred habitat, and the added energy expended to avoid disturbance. One tool currently being used by the Refuge to address human-caused disturbance during fall migration is the Lake Onalaska Voluntary Waterfowl Avoidance Area (Pool 7). This program has been operational each year from October 15 through mid-November since 1986. Although the program has reduced disturbance, disturbance still occurs. It is also a costly and challenging program to administer in terms of buoy placement and maintenance, especially given the ice conditions that form late in the waterfowl season.

Besides providing sanctuary for waterfowl, the closed area system was also designed to provide better hunting opportunities to more people through the length of the Refuge. However, with habitat decline in many closed areas, birds are being concentrated in fewer and fewer areas, thus creating gaps in hunting opportunity. Hunters tend to congregate near concentrations of waterfowl. As a result, “firing lines” have developed along some sections of closed area boundaries. Firing lines have an increased incidence of waterfowl crippling loss. Also, firing lines create a climate of competition which fosters poor hunter behavior reducing the quality of the experience for many.

The need for modifying the closed area system was recognized as early as 1978, when the Upper Mississippi River Conservation Committee issued proposed changes to several of the Refuge closed areas (in Pools 4, 5A, 8, 9, 10, 13, and 14). However, some of these changes would not be appropriate under today’s habitat conditions.

Waterfowl Hunting Regulations: The Refuge provides outstanding public waterfowl hunting opportunities and is very popular with the public. Annual visits for waterfowl hunting are approximately 250,000. Competition for birds and hunting spots can lead to disruptive and unethical behavior among some hunters, affecting the quality of the hunt for many and having a direct impact on birds through crippling losses. There is a need to review current Refuge waterfowl hunting regulations to ensure continued hunt quality and fairness, and to minimize crippling loss.

Firing Line, Pool 7, Lake Onalaska: Hunters tend to congregate near concentrations of waterfowl. Some sections of the closed area boundary, particularly those that bisect emergent marsh, are popular and can attract large concentrations of hunters who pass shoot as waterfowl leave closed areas. One such area is the so-called Barrel Blinds area just north of the Lake Onalaska Closed Area.

Unfortunately, “skybusting,” or shooting at birds out of range, often results in increased crippling loss. For example, 63 of 141 (44.7 percent) hunting parties observed by law enforcement personnel during the 1991-93 seasons hunting along firing lines in Pool 7 skybusted at least once during the time they were observed. Skybusting was defined as shooting at waterfowl at distances of 50 yards or more. The number of shots required to retrieve one bird was 11. During the 1992 hunting season, these same observers working Pool 7 firing lines and other areas, found that hunters who did not skybust had a crippling loss rate of about 27 percent for the ducks or coots they downed. The crippling loss rate for ducks and coots downed through skybusting increased to nearly 57 percent.

Hunter behavior can also deteriorate in crowded, competitive situations. Behavior observed or reported along the Barrels Blinds area includes people claiming preferred sites by spending the night, handing-off sites to friends or co-workers after a party’s hunt is over; verbal confrontations, late arriving hunters disrupting those set-up, flaring birds before they can work decoy sets, failure to retrieve birds, and increased littering.

These behaviors are not in keeping with guidance in the Refuge Manual which helps set the standard for hunting on refuges: “Refuge hunting programs should be planned, supervised, conducted, and evaluated to promote positive hunting values and hunter ethics such as fair chase and sportsmanship. In general, hunting on refuges should be superior to that available on other public or

private lands and should provide participants with reasonable harvest opportunities, uncrowded conditions, fewer conflicts between hunters, relatively undisturbed wildlife, and limited interference from or dependence on mechanized aspects of the sport. This may require zoning the hunt unit and limiting the number of participants.”

Permanent Blinds on Savanna District: Permanent hunting blinds are wooden (dimensional lumber) structures built by waterfowl hunters and placed along some areas of the Refuge for a dry, stable hunting platform. The blind does not have to be removed at the end of the hunt season, thus it is considered a permanent structure.

In some Mississippi River areas, permanent blinds have been part of the waterfowl hunting tradition for many decades. In other Mississippi River areas, permanent blinds have been eliminated due to management problems associated with the permanent structures. In 2000, the northern Districts (Pools 4-11) of the Refuge eliminated permanent blinds and now only allow blinds to be made out of natural vegetation. Presently, only the Savanna District still allows permanent blinds.

The placement of wooden structures within the river eventually results in those materials being deposited in the river due to deterioration, floods, and ice or wind/wave action. These materials may become safety hazards for boaters.

Most permanent blinds sites are claimed year after year by the same group of individuals. This regulation promotes private exclusive use, which is inconsistent with Refuge objectives to allow equal opportunity for public recreation.

Permanent blinds limit hunting opportunities due to: a) the 200 yard spacing requirement, even for boat blinds - regardless if the blind is empty; b) no shoreline jump-shooting allowed; and c) the best hunting sites are taken year after year.

Due to an increase in new hunters to the Savanna District, confrontations and incidents related to permanent blinds have increased. Incidents include verbal threats, physical confrontations, assaults, blind burnings, and guns being pointed in a threatening manner.

Potter’s Marsh Managed Hunt: Since 1980, the Savanna District has conducted a lottery drawing for waterfowl hunting blind sites on 1,923 acres of Potter’s Marsh in Pool 13. Applicants pay a \$10 non-refundable application fee, and successful applicants pay an additional \$100 fee for one of the 49 blind sites. Successful applicants construct blinds for the season using materials in the guidelines provided. Over 500 persons apply for a blind permit annually. In 2002, hunter bag checks showed that hunters using Potter’s Marsh blinds averaged 3.8 birds/day compared to 2.9 birds/day on other areas in Pool 13.

This hunt requires more than 400 hours of staff time, annually, to answer inquiries, accept applications, collect and process fees, conduct two drawings, inspect blinds for compliance, and post the area. The time spent on this hunt detracts from other resource projects and needs. In addition, 90 percent of the hunters selected hunt less than 10 days, which is not a very high public use return for the effort involved.

The fees collected do not cover the total expenses incurred for administering and managing the hunt due to the amount of staff time required. Additionally, under new national policy implemented in 2003, only 80 percent of fees are returned to the Refuge, compared to 100 percent returned in previous years.

The random drawing process has been manipulated to the point that it is no longer an equal opportunity program. Some hunting parties hunt from the same blind year after year and the program has evolved into private exclusive use of public lands and waters.

Blanding Landing Managed Hunt: Blanding Landing is an area within the former Savanna Army Depot that is now part of the Lost Mound Unit of the Refuge. The Illinois Department of Natural Resources conducts a managed hunt on the area with 15 hunting sites. This hunt, now on the Refuge, needs to be reviewed for consistency with other Refuge hunts and hunting issues associated with permanent blinds and administrative costs, as noted previously.

General Fishing: Fishing is an important, traditional use of the Refuge enjoyed by nearly a million visitors each year and contributes substantially to many local economies. Fishing is also one of the priority wildlife-dependent uses of the Refuge System that is to be encouraged when compatible with Refuge purposes.



*Fishing on Upper Mississippi River
NW&FR.
Cindy Samples, USFWS*

The Refuge has made great improvements in facilities that promote fishing including the rehabilitation of numerous boat ramps and parking areas, dock facilities, and accessible fishing piers. In 2003 alone, work was started on five fishing piers. Maintaining fish habitat and fishing opportunity remains an important issue for anglers, businesses, and the general public.

Fishing Tournaments: Fishing tournaments, particularly for bass and walleye, are growing recreational, commercial, and fund-raising events on the Refuge. To date, the Refuge has deferred to the states for management and permitting of these events and has provided little to no oversight or review. Exact numbers of fishing tournaments are unknown since each state or other authority often has different permit and reporting requirements, or, may not issue permits at all.

There is growing concern about the impacts of fishing tournaments on other users of the Refuge. Large boats, high speeds, and the competition involved in tournaments disturb other anglers and small craft users, and can churn-up vegetation and sediment in backwaters, thus impacting fish and wildlife habitat. Increased wake action can accelerate shoreline erosion. There is some concern about the impacts of handling, holding, and later release of fish caught in tournaments, both on individual fish and overall populations.

Wildlife Observation and Photography: Wildlife observation and photography are becoming increasingly popular activities for visitors, and a source of economic growth for many communities. As two of the six priority public uses of the Refuge system, these uses are to be encouraged when compatible with the purposes of the Refuge. The Refuge provides outstanding wildlife viewing opportunities due to the abundance of eagles, swans, ducks, warblers, pelicans, herons and other birds people find unique and interesting. The National Scenic Byways which border the Refuge for hundreds of miles, and the relatively open access to lands and waters of the Refuge, make the Refuge one of the premier wildlife viewing and photography areas in the nation. The public and communities desire more opportunities for these uses, while managers must balance opportunities with the need to limit disturbance.

Interpretation and Environmental Education: Interpretation and environmental education are also priority public uses as outlined in the Refuge Improvement Act of 1997. Interpreting the resources and challenges of the Refuge to the general public and incorporating these topics into school curricula is a service welcomed by the general public, communities, and schools. The major issue facing the Refuge is how to meet the demand for these staff-intensive services, a demand which is expected to grow.

Commercial Fish Floats: Fish floats are private businesses which provide very popular fishing opportunities to the public for a fee. Operators pick up customers via boat and transport them to the

fishing facility (float) below a lock and dam where fishing can be excellent. The Refuge currently allows four fish floats through an annual permit and annual fee of \$100. At least one fishing float has been in operation since 1937. However, administration and enforcement of fish float operations greatly exceeds the permit fees collected. There is also a history of permit noncompliance with some operations which has increased the staff time needed to oversee the use. In 2003, three of the four fish float operations were not in compliance with one or more permit requirements. Other concerns include the condition and safety of the fish floats and compliance with policies and regulations governing for-profit concessions on a national wildlife refuge.

Guiding Services: Guiding businesses are on the rise and promise to become an increasingly common activity on the Refuge. Without proper oversight, this activity could lead to disturbance to sensitive areas and wildlife, and increase conflict with individuals or other guides as volume and frequency increases. In addition, some guides are not in compliance with regulations designed to safeguard clients, such as Coast Guard regulations governing licensing of persons transporting the public.

1.4.5.5 Other Recreational Use Issues

Beach Use and Maintenance: There is a long history of beach use on the Upper Mississippi River as the public took advantage of beach areas created by side-channel disposal of dredged sand during navigation channel maintenance operations. The creation of new beaches and additions to existing beaches came to a virtual end following a lawsuit on dredge disposal by the State of Wisconsin and the subsequent Great River Environmental Action Team (GREAT) reports and recommendations.

There are basically three types of manmade or natural beach areas on the Refuge:

- Remnant channel maintenance islands and shore areas formed by the side-casting of dredged sand material. These are used for a variety of day uses and the majority of camping. Some sites remain relatively open while others are nearly covered with woody vegetation.
- Permanent dredged sand disposal sites traditionally used by multiple boats for day and overnight mooring, camping, and other uses. These are often called “bathtubs” when in empty or part-empty state, and designated Project Operations (9-foot navigation project) in the Land Use Allocation Plan (LUAP).
- Natural sand bars and shorelines which are scattered throughout the Refuge, both along the main river channel and in and around backwater areas, and used predominantly for day use and overnight mooring. Seasonal water levels often determine the number and size of these natural sand shorelines and their attractiveness to users.

The 1983 and 1987 Land Use Allocation Plans by the Corps and the Fish and Wildlife Service identified existing beach areas as “low density recreation.” This designation was in deference to the GREAT report on recreation even though on many areas beach use is very high density.

The 1987 Master Plan for the Upper Mississippi River NW&FR took a low-key, status quo approach to beach uses and maintenance. The objective in the Master Plan was to “provide non-wildlife traditional recreation – swimming, camping, picnicking, sunbathing,” and the level was described as “maintain at levels that can be accommodated at existing beaches and at low density recreation allocation areas established by LUAPs.” The Master Plan deferred to the beach plan process with the Corps and others for exactly how the objective and level would be met.

Over the years, beach planning through interagency teams (e.g. the Recreation Work Group of the River Resources Forum) has continued with starts and stops, and rehabilitation of some beaches completed in several pools. New beach issues have emerged. These include permanent spoil sites, which when emptied, create high density use areas with concerns for human-caused water quality

issues and visitor safety. In addition, new information on wildlife use of beach areas, especially turtles, has raised the issue of how to balance the needs of wildlife with recreation and channel maintenance activities.

Non-wildlife-dependent recreation continues to increase on the Mississippi River and the Refuge. It is estimated that 1.3 million persons per year use the Refuge for camping, recreational boating, picnicking, swimming, social gatherings, and other uses not dependent on the presence of fish and wildlife. Proper regulation and control of these uses has been relatively absent for decades, leading to unlawful and unruly behavior; increased concern for public and Refuge Officer safety, and a general decline in the refuge experience for many users. Litter and human waste are increasing, and a lack of intoxication standard has hampered law enforcement efforts, putting both individuals and others who share river traffic at risk. In addition, the Refuge does not receive specific funding for managing non-wildlife-dependent recreation, and there are no user fees to defer the costs of law enforcement, signing, planning, and access development and maintenance.

More specific problems and issues related to current beach-related uses on the Refuge include:

- Refuge regulation violations can be high: dogs running loose, intoxication, illegal drugs, firearm use, fireworks, noise, human waste, littering, interference with other users, private structures, large parties, loud boats, and habitat destruction.
- Public use of beaches requires a very high law enforcement effort and takes away from resource-related enforcement. There is concern for officer safety in large crowds, especially when alcohol use is involved.
- Wildlife disturbance and displacement can be a problem in some areas, especially as uses move to backwater areas.
- High peaks of use, both seasonally and site-specific, contribute to the above problems.
- Current use may not match intended use (e.g. areas originally designed for family or small group use have become large, party areas, or, areas originally set aside for wildlife now receive heavy public use).
- Many beach uses on the Refuge are non-wildlife-dependent uses and not allowed on most national wildlife refuges. Thus, these uses are inconsistent with the norm in the Refuge System. (Note: The Refuge Manual of 1982 (8 RM 9) included a special policy statement which acknowledged unique cases of non-wildlife-dependent uses on refuges, and cited the Upper Mississippi River National Wildlife and Fish Refuge as an example. The policy stated that Master Plans, or CCPs, should contain specifics on how these traditional non-wildlife-dependent activities will be managed. The compatibility standard still applies, however).

Disturbance in Backwater Areas: When the Refuge was established in 1924, the Mississippi River floodplain was a braided maze of backwater channels and sloughs. Much of this unique habitat disappeared when the locks and dams went into operation. However, in the upper reaches of many pools, this unique bottomland habitat remains and offers fish, wildlife, and people a refuge from the sights and sounds of a modern and mechanized world. Many backwater areas are preferred breeding and nesting areas for species sensitive to certain human disturbance. Also, these more remote areas of the Refuge are an important component of the river experience to many.

Technology in the form of jet skis, bass boats, shallow water motors such as Go-DevilsTM, airboats, and hovercraft has made the shallow backwaters of the Refuge accessible to more and more people, and introduced more and more noise, wildlife disturbance, and user conflict. The declining opportunity to experience the quiet and solitude of the backwaters was cited by many citizens during scoping meetings.

Slow, No-Wake Zones: On a few areas of the Refuge, boat traffic levels and size of boats is leading to erosion of island and shoreline habitat. Some areas also present a safety hazard for boaters due to level of use and blind spots in the channel. The addition of slow, no-wake zones needs to be reviewed to protect visitors and the environment.

Dog Use Policy: Unless specifically authorized, national wildlife refuges are closed to dogs, cats, livestock and other animals per federal regulations (50 CFR 26). Domestic animals can harass and kill wildlife, and at times become a direct threat to other persons engaged in recreation. Current regulations have been confusing since they prohibit unconfined domestic animals, but the term unconfined was never well-defined in the regulation, leading to various interpretations by the public and inconsistent enforcement by the Refuge.

However, there is a strong tradition of people using the waters of the Refuge for working and exercising dogs, especially retrievers. The size, configuration of lands and waters, and relative remote nature of the Refuge lends itself to considering a reasonable approach to dog use. The public desires a new regulation that will ensure public safety and minimal disturbance to wildlife, while providing the option of working with dogs, especially hunting dogs, which are often an integral part of the traditions and enjoyment of hunting.

General Public Use Regulations: The current public use regulations were last reviewed and updated in 1999. Regulations need to be reviewed to address new laws and policy and to help correct problems or circumstances unique to the Refuge and not specifically or sufficiently covered in current regulations or the regulations governing the National Wildlife Refuge System (50 CFR, subchapter C part 26). Refuge Officers, and the public, need to understand clearly what is and is not allowed on the Refuge.

1.4.5.6 Administration and Operations Issues

Administration, Operations, and Public Awareness: With nearly 240,000 acres over 261 miles and 3.7 million annual visitors, managing and administering the refuge is a huge undertaking requiring staff and funding for programs, facilities, and equipment. Plans and planning need to articulate these needs and ensure they are represented in databases and other documents which are used in budget decision-making at the national and regional level. Current staffing levels are below essential staffing standards and reflect gaps between what should be done and what can be done.

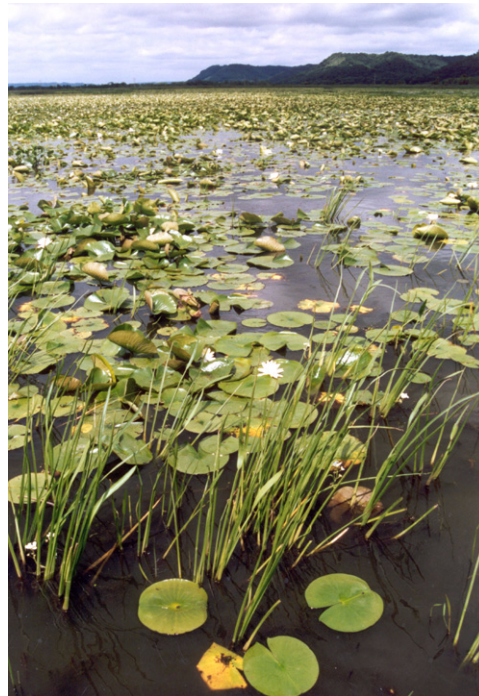
There is a lack of adequate office, maintenance, and visitor contact facilities. Office facilities at the Headquarters of the Refuge, and on some of the Districts, are woefully inadequate to meet the needs of employees and the visiting public. The Headquarters and Winona District offices are located in a quaint but ancient building with unreliable heat, plumbing problems, inadequate parking, inadequate disabled access, and no public information or interpretive facilities. The McGregor District has a tiny office with unsafe access off a major highway, and limited onsite parking. Some staff offices, files, and a makeshift conference/meeting room at McGregor are in a surplus trailer adjacent to the existing building, and a small maintenance facility is crammed on the same lot. The La Crosse District has an excellent rented office/garage, but space is limited and it is located in a dense retail business area some distance from the Refuge. Savanna District has a new office but expansion is needed for environmental education. New maintenance shops are scheduled to be built at Winona and Savanna, but others are needed at McGregor and La Crosse. Eventually, an office and shop will need to be constructed at the Lost Mound Unit, Savanna District.

The future well-being of the Refuge is tied to the public's awareness of its existence and significance. Many river visitors do not know they are on a national wildlife refuge, and the public as a whole is not aware of the ecological and social significance of the Refuge. As public lands and waters, the public desires information on opportunities their national wildlife refuge provides them, as well as the challenges to be addressed.

Chapter 2: Alternatives, Including the Proposed Action

2.1 Introduction

The Service proposes to adopt and implement a CCP to guide the management and administration of the Refuge for the next 15 years. This Chapter presents and compares a range of reasonable alternatives for this proposed action, including a preferred alternative. It also includes information on the development of the alternatives, alternatives or components considered but dropped from further analysis, and elements or actions common to all alternatives. Table 1 on page 133, Table 2 on page 145, and Table 3 on page 147 summarize, compare, and contrast each alternative.



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2.2 Development of Alternatives

Initial alternatives were developed in spring 2003, after 8 months of initial scoping and public involvement. These alternatives were no action, protection, conservation, and multiple-use. These draft alternatives, with general descriptions, were presented to the public through a newsletter in July, 2003. After further internal review, the themes or titles of these alternatives were changed to provide clarity and reduce overlap.

The four alternatives are listed below and described in detail in Section 2.4.

No Action (Current Direction)	Continue current level of effort on fish and wildlife and habitat management. Public use programs would remain virtually unchanged.
Wildlife Focus	Increase level of effort on fish and wildlife and habitat management. Some public use opportunities and programs would remain the same, others reduced in favor of wildlife and habitat protection.
Public Use Focus	Increase level of effort on public use opportunities and programs. Continue current level of effort on many fish and wildlife and

habitat management activities, and decrease effort on others in favor of public use.

Wildlife and Integrated Public

Use Focus (Preferred Alternative)

Increase level of effort on fish and wildlife and habitat management. Take a more proactive approach to public use management to ensure a diversity of opportunities for a broad spectrum of users, both for wildlife-dependent uses and traditional and appropriate non-wildlife-dependent uses.

These alternatives represent broad, thematic approaches to management and administration of the Refuge, recognizing the latitude managers have in focusing human and fiscal resources within the framework of Refuge System laws and policy.

The alternatives reflect direction in the Refuge Improvement Act of 1997, Service policy for administration and management of refuges, and a host of ongoing conservation initiatives affecting the Mississippi River. The alternatives were also developed to address a suite of issues, and indeed, are structured to track the issues, challenges, and opportunities presented in Chapter 1. As an integrated EIS and CCP, the details of the alternatives are described in terms of the main components of a CCP, namely measurable objectives and strategies to achieve those objectives.

Most importantly, these alternatives are designed to help the Refuge contribute to the mission of the Refuge System; meet the purposes for which Congress established the Refuge in 1924; and help achieve the Refuge vision, goals, and related needs. The degree to which each alternative meets these needs (Table 3 on page 147), along with the environmental consequences of each alternative (Chapter 4), will provide the basis for a final decision and a CCP for the Refuge.

Many elements of the alternatives were continually reviewed and fine-tuned during development of this Draft EIS and CCP. Many changes resulted from discussions with the interagency planning team representing the Corps of Engineers and the states of Minnesota, Iowa, Wisconsin, and Illinois, and subsequent meetings or comments from individual states and Service officials.

2.3 Alternative Components Not Considered for Detailed Analysis

The wide range of issues, high public and agency interest, and complexities of the river environment provide fertile ground for a diversity of management approaches. During scoping, public involvement, and the development of the objectives which make up each alternative, many different ideas and solutions were presented, explored, and debated. The following alternative components were considered but not selected for further analysis in this Draft CCP and EIS for the reason(s) described.

Expansion of the Refuge: The approved Refuge boundary was expanded during the 1987 Master Plan process and subsequent expansion proposals for special resource areas at Halfway Creek near Onalaska, Wisconsin and the former Savanna Army Depot near Savanna, Illinois. Given the current rate of acquisition, the 15-year time frame of the CCP, and the approximately 30,000 acres yet to be acquired, an expansion of the Refuge was not included in the alternatives.

Expand Research Natural Areas and Establish Wilderness: It is a requirement in Service policy to review a refuge for special designation during the planning process. No areas were deemed suitable

for either additional Research Natural Areas (there are currently four) or Wilderness status due to habitat conditions, the overlapping navigation project, and current development and use. Thus, this alternative component was not analyzed further.

Establish Fish Sanctuaries on the Refuge: Iowa, Wisconsin, and Illinois have implemented seasonal closures and/or size limits below locks and dams 11, 12, and 13 to protect walleye and sauger from overharvest during vulnerable times of the year. This alternative component was considered, but since data on these areas is still being collected, impacts are yet uncertain, and not all states or fishery biologists agree on the need for or effectiveness of fish sanctuaries, this alternative was not explored further. However, it could be considered during future reviews of this plan.

Establish Turtle Sanctuaries on the Refuge: The importance of the Refuge to many species of turtles is beginning to be understood. Many beach areas on the Refuge are used extensively by turtles for nesting and used extensively by the public for recreation. Delineating sanctuary or no entry areas to protect turtle nests was explored. However, there is not enough information on turtle nesting ecology and human impacts at this time to establish turtle sanctuaries. The alternatives do, however, address the needs of turtles and do explore other alternatives for addressing human impacts.

Prohibit Non-Wildlife-Dependent Recreation on the Refuge: This alternative component would ban public uses such as swimming, camping, waterskiing, and picnicking. It was not deemed realistic given the mix of navigable waters, various jurisdictions and authorities, enforcement practicalities, and commercial and social considerations. However, more proactive management of these uses is proposed in some alternatives.

Limit Watercraft Types on the Refuge: During scoping and public involvement, concerns were expressed about airboats, jet skis and other modern watercraft disturbing wildlife and other Refuge user groups. Banning any type of watercraft was not deemed a reasonable alternative due to the mix of jurisdictions and authorities within the Refuge. The issue of disturbance from these types of craft is, however, addressed in other ways in the alternatives.

2.4 Alternatives Carried Forward for Detailed Analysis

2.4.1 Elements Common to All Alternatives

National Environmental Policy Act (NEPA) Compliance: Since this EIS and CCP are programmatic in many issue areas, it may not contain the necessary detail on every future action outlined to adequately present and evaluate all physical, biological and socioeconomic impacts. For example, although the EIS and CCP alternatives may show the number and location of constructed features such as trails, overlooks, boat ramps, and offices, exact sites, size, design, and other features would be determined at a later date depending on funding and implementation schedules. Another example is the various sub or “step-down” plans required for various management actions such as forestry, biological monitoring, fishery and mussel resources, hunting, and trapping. Thus, before certain objectives or actions are implemented, a decision will be made in coordination with the Regional NEPA Coordinator on whether this EIS was adequate for each specific construction, planning, or other action, or whether separate step-down NEPA compliance (categorical exclusions or environmental assessments) is needed.

Threatened and Endangered Species Protection: Although different levels of monitoring for threatened and endangered species is proposed in the alternatives, protection of these species is common across all alternatives. The protection of federally-listed species is the law of the land through the Endangered Species Act of 1973. It is also Service policy to give priority consideration

to the protection, enhancement, and recovery of these species on national wildlife refuges (7 RM 2). To ensure adequate protection, the Refuge is required to review all activities, programs, and projects occurring on lands and waters of the Refuge to determine if they may affect listed species. If the determination is “may affect,” the Refuge does a formal consultation with the responsible Ecological Services office of the Service.

Archeological and Cultural Resource Protection: Cultural resources on federal lands receive protection and consideration that would not normally apply to private or local and state government lands. This protection is through several federal cultural resources laws, executive orders, and regulations, as well as policies and procedures established by the Department of the Interior and the Service. The presence of cultural resources including historic properties cannot stop a federal undertaking since the several laws require only that adverse impacts on historic properties be considered before irrevocable damage occurs. However, the Refuge will seek to protect cultural resources whenever possible.

During early planning of any projects, the Refuge will provide the Regional Historic Preservation Officer (RHPO) a description and location of all projects and activities that affect ground and structures, including project requests from third parties. Information will also include any alternatives being considered. The RHPO will analyze these undertakings for potential to affect historic properties and enter into consultation with the State Historic Preservation Officer and other parties as appropriate. The Refuge will also notify the public and local government officials to identify any cultural resource impact concerns. This notification is generally done in conjunction with the review required by the National Environmental Policy Act or Service regulations on compatibility of uses.

Fire Management: The suppression of wildfires and the use of prescribed or controlled fire are a long-standing part of resource protection, public safety, and habitat management on national wildlife refuges. In 2002, a comprehensive Fire Management Plan was approved for the Refuge and provides detailed guidance for the suppression or use of fire. The plan outlines wildfire response and prescribed fire objectives, strategies, responsibilities, equipment and staffing; burn units; implementation; monitoring; and evaluation. A section on the environmental consequences of prescribed fire is included in Chapter 4. The complete Fire Management Plan and Burn Unit Maps are available at the Winona Headquarters Office, or on-line at <http://midwest.fws.gov/planning/uppermiss/index.html>.

Prescribed fire will be used every 3-5 years on approximately 5,800 acres of Refuge grassland. This area is divided into approximately 40 burn units, most of which range in size from 1 to 125 acres. These units are scattered throughout the Refuge and include islands and natural rises or terraces in the floodplain, and former agricultural fields in or adjacent to the floodplain. Units are generally isolated from private dwellings or other development and they are generally flat or gradually sloping. During a recent 10-year period, the yearly average was eight prescribed burns on a total of 160 acres. Most burns occurred during the April-May time period. The annual average acreage burned is expected to increase due to the 2001 addition of the Lost Mound Unit, Savanna District, which includes approximately 4,000 acres of native prairie, a fire-dependent ecosystem.

Each prescribed burn is governed by a specific prescribed burn plan which dictates the criteria or prescription for air temperature, fuel moisture, wind direction and velocity, soil moisture, relative humidity, and other environmental factors. Burns are not conducted unless these prescriptions are met, and possible impacts to archaeological resources or endangered species avoided or mitigated. Each plan also outlines required staffing and equipment including contingency actions for smoke management and escaped fire. Coordination with local and state fire management officials, as well as adjacent landowners, is done prior to conducting a burn. A strict chain-of-command and “burn-no burn” protocol is followed.

General Water-Based Recreation: Due to the Refuge's overlap with varied jurisdictions, navigable waters, and a major commercial navigation project, existing uses related to water recreation will not be eliminated and their continuation is common to all alternatives. These water-based uses include, but are not limited to, powerboating, waterskiing, jetskiing or other personal watercraft use, sailing, swimming, picnicking, and social gatherings. However, these uses will continue to be subject to applicable Refuge, state, Corps of Engineers, and Coast Guard regulations, and may be restricted in terms of location and/or season in some elements of some of the alternatives presented.

Mosquito Management: Although not specifically raised as an issue during scoping and public involvement, the management of mosquito populations may emerge as a future concern given the increased incidence of mosquito-borne illnesses in parts of the Midwest. Due to the possible harmful effects, mosquito population control will only be allowed in cases of a documented health emergency by state departments of health or similar disease control agencies. Control efforts would be species and location specific, based on population sampling and identified population thresholds, and use the least intrusive means possible.

Fish and Wildlife Disease Control: Periodically, the Refuge may experience threats to fish and wildlife from a variety of ongoing or sporadic outbreaks of diseases or ailments such as Chronic Wasting Disease in deer and avian botulism, trematode infestations, or avian cholera in waterfowl. Regardless of alternative, appropriate control efforts will be undertaken if warranted, feasible, and effective to limit the impacts on fish and wildlife populations. The Refuge will cooperate and coordinate with the states in these efforts. The Refuge has prepared a Chronic Wasting Disease monitoring and surveillance plan which details efforts with the states on this disease.

Volunteers and Friends Groups: The Refuge currently has an active volunteer program involving dozens of citizens. These volunteers contribute over 8,000 hours annually, assisting with a full-range of administrative, biological monitoring, invasive species control, and visitor services tasks. The nurturing and use of volunteers will continue and is a vital component of many of the objectives outlined in the Draft CCP and EIS. The Refuge also has an active friends group called the Friends of the Upper Mississippi River Refuges (FUMRR). This citizen-based support group raises funds for needed projects, conducts special programs which support the goals of the Refuge and the mission of the Refuge System, and serves as an advocate for the Refuge at various levels of government. Like volunteers, FUMRR will play an important role in the strategies to achieve many of the objectives outlined in this document.

2.4.2 Alternative A: No Action (Current Direction)

Alternative A Summary

Boundary issues would be addressed as time and funding for surveying allow. There would be a continuation of acquisition of lands at a modest rate within the approved boundary, or about 200 acres per year. No special effort would be undertaken to safeguard blufflands and manage Research Natural Areas. Guiding principles for habitat projects would not be established.

Existing programs and effort would address sedimentation and other water quality issues. Pool-scale drawdowns would continue at current, intermittent level. Control of invasive plant species would be modest, and control of invasive animals would be minimal, relying on the work of the states and other agencies. Environmental Pool Plans would be implemented on a strategic and opportunistic basis using the Environmental Management Program. Wildlife inventory and monitoring would remain unchanged with continued focus on waterfowl, colonial nesting birds, eagles, and aquatic invertebrate/vegetation sampling. Management of threatened and endangered species would focus on protection versus recovery. The furbearer trapping program would continue but be brought into compliance with policies by doing a new plan. There would continue to be limited emphasis on fishery and mussel management and commercial fishing oversight. Cooperation with the states and Corps of Engineers on turtle monitoring and research would continue, and a forest

inventory on the Refuge would be completed in cooperation with the Corps of Engineers. Existing grassland habitat on the Refuge would be maintained and enhanced using fire and other tools.

Hunting and fishing opportunities would continue on a large percentage of the Refuge. The system of waterfowl hunting closed areas would remain the same except for minor boundary adjustments. Entry into closed areas for purposes other than hunting, trapping, and camping would continue to be allowed, although the voluntary avoidance area on Lake Onalaska would remain in place. No action would be taken on the firing line issue north of the closed area in Lake Onalaska. No major changes would be made to current hunting regulations. Permanent blinds for waterfowl hunting and the Potter's Marsh and Blanding Landing managed hunts in the Savanna District would continue, although administrative changes would be made to promote fairness and efficiency. No action would be taken on regulating fishing tournaments.

There would be no increase in facilities or programming for wildlife observation, photography, interpretation and environmental education, with a focus on maintaining the status quo. There would be a modest increase in Refuge access through improvement of existing boat ramps, pull offs, and overlooks. Commercial fish floats or piers would be governed by current permit procedures and stipulations. Guiding on the refuge would continue with little oversight. Beach-related public use (camping, swimming, picnicking, social gatherings) would continue with little change and beach planning and maintenance would continue at low levels. One electric motor area would remain (Mertes Slough, Pool 6), and no new slow, no-wake zones established. Current regulations on the use of dogs would remain in place. There would be no substantive changes made to current public use regulations.

There would be no new offices or shops constructed for Headquarters or the Districts, with the exception of a new shop for the Winona and Savanna districts since they are already scheduled. Staffing levels for the Refuge would remain the same as current, as would public outreach and awareness efforts.

Goal 1: Landscape. We will strive to maintain and improve the scenic qualities and wild character of the Upper Mississippi Refuge.

Objective 1.1: Maintain the integrity of the Refuge boundary. Each year, request survey of problem boundary areas to curb encroachment issues.

Rationale: Current funding and surveying capabilities limit a systematic surveying of the Refuge boundary. This objective would address problems on a case-by-case basis as they occur.

Strategies

- Conduct yearly surveillance of problem boundary areas which are normally those which border private lands.
- Work with Corps of Engineers on those boundary issues affecting Corps-acquired lands that are part of the Refuge.

Objective 1.2. Land Acquisition: By 2020, acquire from willing sellers 12 percent of the lands identified for acquisition in the 1987 Master Plan and subsequent approvals, as identified on the maps in Appendix G (approximately 200 acres/year).

Rationale: Land acquisition can be a cost effective tool to ensure protection of important fish and wildlife habitat and to close gaps between existing parts of the Refuge. On the Service's Land Acquisition Priority System, the Refuge

ranks 6th nationally due to its resource importance. This objective represents the current modest and opportunistic land acquisition program of about 200 acres per year to achieve goals set in the 1987 Master Plan and other approved acquisition documents.

Strategies

- Seek consistent Land and Water Conservation Fund appropriations to meet the objective (approximately \$300,000 per year at \$1,500 per acre).
- Explore land exchanges with the states to remove intermingled ownerships. Continue to work with the Department of the Army to transfer title of tracts as they are cleaned of contaminants at the Lost Mound Unit (former Savanna Army Depot).

Objective 1.3

Bluffland Protection: By 2020, acquire from willing sellers protective easements or fee-title interest in at least 1 of 13 bluffland areas within the approved boundary of the Refuge as identified in the 1987 Master Plan. (See maps, Appendix G.)

Rationale: There have been no acquisitions of bluffland areas since first identified in the 1987 Master Plan, so current efforts are minimal, as represented by this objective. Blufflands are an important part of maintaining the scenic quality of the Refuge landscape and harbor unique and diverse plants and animals. In recent years, peregrines have once again started nesting on the rock faces of some bluffs. Peregrines, at one time an endangered species, were the main rationale for including the 13 areas in the acquisition boundary.

Strategies

- Seek consistent acquisition funding as noted in Objective 1.2. Work with the states, local governments, and various private land trusts to protect bluffland habitat and scenic values.
- Work with local units of government to encourage zoning regulations which protect bluffland scenic qualities.
- Educate the public on the values of blufflands for birds and unique plant communities.

Objective 1.4

Research Natural Areas and Special Designations: Conduct yearly visits to the Refuges' four federally-designated Research Natural Areas and document condition, check boundary signing, and conduct ongoing wildlife surveys. No new Natural Areas would be established. (See maps, Appendix P and Table 7 in Chapter 3.)

Rationale: This objective represents the current level of management which is expected to continue under this alternative. No areas of the Refuge are deemed suitable for new Natural Area designation. Designating the Refuge a Wetland of International Importance would raise its stature in line with previously designated national wildlife refuges including Horicon National Wildlife Refuge in Wisconsin and Sand Lake National Wildlife Refuge in South Dakota.

Strategies

- Ensure yearly visits remain a part of annual work plans in each Refuge District containing Research Natural Areas.

Goal 2: Environmental Health. We will strive to improve the environmental health of the Refuge by working with others.

Objective 2.1:

Water Quality: Working with others, seek a continuous improvement in the quality of water flowing through and into the Refuge in terms of parameters measured by the Long Term Monitoring Program of the Environmental Management Program (dissolved oxygen, major plant nutrients, suspended material, turbidity, sedimentation, and contaminants).

Rationale: The quality of water on the Refuge is one of the most important factors influencing fish, wildlife, and aquatic plant populations and health, which in turn influence the opportunity for public use and enjoyment. Water quality is also beyond the Refuge’s ability to influence directly given the immense size of the Refuge’s watershed and current funding levels and staffing. This objective recognizes these limitations, but highlights the advocacy role the Refuge can play in supporting the myriad of agencies which together can influence water quality.

Strategies

- Continue conservation assistance agreements with Soil and Water Conservation Districts.
- Use the Service’s Partners for Fish and Wildlife Program to restore and enhance wetland and riparian habitat off-refuge.
- Consider water quality aspects in all habitat enhancement projects, especially habitat projects which reduce sediment in backwaters.
- Link planning and projects for tributary watersheds to Pool Plan implementation.
- Support cooperative water quality monitoring and improvement efforts through the Upper Mississippi River Conservation Committee and other groups and agencies.

Objective 2.2:

Water Level Management: By 2020, complete drawdowns of all Refuge pools during the summer growing season in cooperation with the Corps of Engineers and the state.

Rationale: Lowering the water levels in impoundments during the growing season is a proven management practice to dramatically increase emergent vegetation. Improved vegetation results in more food and cover for a wide range of fish and wildlife species. Much of the emergent vegetation on the Refuge has been lost due to stable water regimes created for navigation, and this objective seeks to restore productive marsh habitat to thousands of acres. All pools would benefit from drawdowns. However, Pool 14 does not appear to be feasible in the 15-year horizon of this plan.

Strategies

- Continue to work in partnership with the interagency water level management taskforce to plan and facilitate drawdowns.

- Inform and involve citizens through public meetings, workshops, and citizen advisory groups.
- Seek all available funding sources to carry out needed recreational access dredging to lessen social and economic impacts during drawdowns (proposals in Corps of Engineers Navigation Study released in 2004 includes funding for drawdowns).

Objective 2.3:

Invasive Plants: Each year, conduct at least one biological control effort on purple loosestrife and/or leafy spurge on each District of the Refuge, and continue ongoing education and outreach efforts on the effects of invasive plants.

Rationale: This objective represents the current program of invasive plant control by the Refuge due to the restraints of funding for invasive plant work. Biological control consists of release of insects which prey directly on purple loosestrife or leafy spurge plants or disrupt part of their life cycle, and is a more long-term and cost efficient solution compared to herbicide spraying. Biological control methods are not yet readily available for other invasive plant species. Education and outreach is ongoing as a part of regular displays, programs, and media work.

Strategies

- Continue to work with the Department of Agriculture, other agencies, the states, and other refuge field stations in securing insects and beetles for release in high-infestation areas.
- Take advantage of periodic invasive species grants, cost-sharing, or special funding opportunities offered through the Service or other agencies and foundations.
- Continue to provide information and education to the public through the media, brochures, signage, and programs.

Objective 2.4:

Invasive Animals: Continue ongoing information and education efforts on the issue of invasive animal species and their impact on the resources of the Refuge.

Rationale: This objective represents the current direction of the Refuge in regards to invasive animals and is difficult to measure and minimal at best. It represents basic limitations of resources, but perhaps just as important, the reality that invasive animal species do not lend themselves to direct control in a large river system and that addressing invasive animals is dependent on political and management actions beyond the boundary of the Refuge.

Strategies

- Continue to support the efforts of other agencies and groups in the monitoring, research, and control of invasive animals.
- Continue to provide information and education to the public through the media, brochures, signage, and programs

Goal 3: Wildlife and Habitat. Our habitat management will support diverse and abundant native fish, wildlife, and plants.

Objective 3.1

Environmental Pool Plans: By 2020, implement at least 30 percent of the Refuge-priority Environmental Pool Plan actions and strategies in Pools 4-14 as summarized in Table 4 on page 148 at the end of this Chapter (see Appendix N for examples of Environmental Pool Plan maps).

Rationale: Environmental Pool Plans represent a desired future habitat condition developed by an interagency team of resource professionals, including Refuge staff. The Pool Plans represent what is necessary to reverse the negative trends in habitat quality and quantity on the Upper Mississippi River. The Refuge represents a sizeable subset of the habitat vision presented in each Pool Plan. The Refuge also has different resource mandates and responsibilities than the Corps of Engineers and the states. Thus, the Refuge prioritized various actions to meet these needs as represented in Table 4 on page 148. The objective of 30 percent represents a reasonable rate of implementing priority actions given current funding levels (mainly through the Environmental Management Program, Corps of Engineers) for habitat conservation work, and the 15-year horizon of this CCP versus the 50-year horizon of the Pool Plans. Some of the actions and strategies in the Table overlap with other objectives in this plan (e.g. forest management, land acquisition, watershed work, and water level drawdowns).

Strategies

- Continue to coordinate with the River Resources Forum’s Fish and Wildlife Workgroup, and the River Resources Coordinating Team’s Fish and Wildlife Interagency Committee, to implement pool plan priorities.
- Continue to work for full and expanded funding of the Environmental Management Program through public and Congressional information and outreach.
- Take advantage of any new funding sources that emerge, such as appropriations from Congress for implementing the Navigation Study ecosystem restoration recommendations.

Objective 3.2.

Guiding Principles for Habitat Management Programs: Do not adopt any formal guiding principles for habitat management programs.

Rationale: Guiding principles for habitat restoration or enhancement projects would provide consistency between the four Districts of the Refuge and help communicate to cooperating agencies and the public standards from which we will design projects. Formal guiding principles do not now exist, so not adopting any represents no action. However, the Refuge would continue to rely on existing goals, objectives, and policies in seeking projects that benefit a diversity of fish and wildlife while taking into account public use needs and issues.

Strategies

- None warranted for this alternative.

Objective 3.3.

Monitor and Investigate Fish and Wildlife Populations and Their Habitats: Continue yearly monitoring of aquatic invertebrates, submerged aquatic

vegetation, waterfowl, colonial nesting birds, bitterns and rails, breeding songbirds, bald eagle nesting, and frogs and toads in accordance with the 1993 Wildlife Inventory Plan.

Rationale: Monitoring is essential to understanding the status and trends of selected species groups and habitats. This in turn provides some indication of overall biological integrity, diversity, and environmental health of the Refuge, and is critical in planning habitat management and public use programs. This objective represents a modest or “sampler” inventory program, using standardized protocols, in line with current funding and staffing levels. It is also skewed toward migratory birds and their aquatic foods in keeping with the federal responsibilities for these species. The Refuge would continue to rely on monitoring done by others to help fill the gaps in status and trends information for fish, mussels, reptiles, forests and other land cover, and environmental factors such as water chemistry and sedimentation.

Strategies

- Review and amend as needed the Wildlife Inventory Plan to ensure the latest protocols are being followed, but do not expand species or habitats being monitored.
- Continue to work with the states, U.S. Geological Survey, and Corps of Engineers in the sharing of data on other species and habitats.
- Continue to use volunteers for certain monitoring efforts such as the breeding bird survey point counts.
- Complete a Habitat Management Plan which integrates species status and trends with the Environmental Pool Plans (Objective 3.1).

Objective 3.4.

Threatened and Endangered Species Management: Continue ongoing protection of federally listed threatened, endangered and candidate species and conduct yearly survey of bald eagle nesting.

Rationale: As noted in an earlier section of this chapter, it is Service policy to give priority consideration to the protection, enhancement, and recovery of these species on national wildlife refuges. This objective represents the continuation of a minimum threatened and endangered species program, mainly through the protection of habitat and review and consultation of management actions in light of possible impacts to these species. The only species actively monitored by the Refuge are bald eagles due to public interest and their symbolic stature.

Strategies

- Consider the needs of threatened, endangered and candidate species in all habitat and public use management decisions.
- Continue to consult with the Service’s Ecological Services Offices on all actions which may affect listed species.
- Continue monitoring bald eagle nesting populations and success.
- Continue assistance to other offices and agencies with Higgins eye pearl mussel recovery efforts.

- Objective 3.5.** Furbearer Trapping: Update the Refuge trapping plan by June 2007, continuing the existing trapping program until the update is completed.
Rationale: Furbearer trapping has a long history on the Refuge and can be an important management tool in reducing furbearer disease and habitat impacts, and in safeguarding certain Refuge infrastructure such as dikes, islands, and water control structures. The current trapping plan is dated by time (1988), new furbearer ecology and population information, and by new policies governing compatibility of uses and commercial uses on national wildlife refuges.
- Strategies*
- The Refuge wildlife biologists, in consultation with Refuge district managers and state furbearer biologists, will develop a revised trapping plan for approval by the Refuge manager.
 - Afford the public an opportunity for review and comment on the plan.
 - Complete a new compatibility determination for public review and comment.
- Objective 3.6.** Fishery and Mussel Management: Continue to defer fishery and mussel management on the Refuge to the states and the Service's Fishery Resource Office in La Crosse, Wisconsin.
- Rationale:* This objective reflects the current and projected Refuge involvement in fishery and mussel management given current funding and staffing restraints.
- Strategies*
- Continue to gather information from state and other Service offices on the status of fish and mussels on the Refuge.
 - Rely on fisheries status and trends provided by the Long Term Resource Monitoring Program of the Environmental Management Program administered by the Corps of Engineers.
- Objective 3.7.** Commercial Fishing and Clamming: Continue to defer to state departments of natural resources to monitor, regulate, and permit commercial fishing and clamming.
- Rationale:* This objective reflects the current and projected Refuge involvement in commercial fishing and mussel harvest given current funding and staffing restraints.
- Strategies*
- Continue to gather information from the states and the Upper Mississippi River Conservation Committee on harvest levels.
 - Conduct license and permit compliance on an opportunistic basis during routine Refuge law enforcement efforts.
- Objective 3.8.** Turtle Management: Continue to cooperate with state departments of natural resources and the Corps of Engineers in monitoring turtle populations on certain Refuge areas, but continue to defer to the states on commercial harvest management of certain turtle species.

Rationale: This objective reflects the current and projected Refuge involvement in turtle management and harvest given current funding and staffing restraints. The Refuge has contributed funds and staff to monitoring and study efforts, but availability is unpredictable from year to year.

Strategies

- Work in partnership with the states and Corps of Engineers on monitoring and research efforts for turtles.
- Seek funding for research into turtle ecology and population status through grants.
- Increase public awareness of the importance of the Refuge and river to turtles.
- Consider the needs of turtles in habitat and public use planning and projects.

Objective 3.9.

Forest Management: Complete by the end of 2008, in cooperation with the Corps of Engineers, a forest inventory of the Refuge.

Rationale: A baseline forest inventory of the approximately 51,000 acres of floodplain forest on the Refuge is the first step in addressing concerns for the long-term health of this important resource. The Corps has been actively working on a forest inventory for several years on Corps-acquired lands, and it makes fiscal and efficiency sense to partner with the Corps on this objective.

Strategies

- As Refuge funding allows, continue to fund seasonal technicians to help with the Corps' inventory project on Service-acquired lands.
- Continue to work with the Corps and other partners on forest rejuvenation and research projects.
- Continue small scale reforestation, especially mast-producing hardwoods, on suitable Refuge lands.

Objective 3.10.

Grassland Management: Maintain 5,700 acres of grassland habitat on the Refuge through the use of various management tools including prescribed fire, haying, grazing, and control of invasive plants.

Rationale: Many species of wildlife, particularly birds, are dependent on grassland habitat. In addition, some of these grasslands are remnant tallgrass native prairie, a diverse and rare ecosystem throughout the Midwest and home to rare or declining plant and animal species. Active management is needed to curb loss of grasslands to forest succession or invasive species, and to maintain species diversity and health.

Strategies

- Implement the Refuge's Fire Management Plan.
- Use haying, rotational grazing, and control of invasive plants as appropriate to maintain grasslands.
- Restore native prairie where feasible using a combination of rest, fire, farming, and reseeding as appropriate to the site.

Goal 4: Wildlife-Dependent Recreation. We will manage public use programs and facilities to ensure abundant and sustainable hunting, fishing, wildlife observation, wildlife photography, interpretation, and environmental education opportunities for a broad cross-section of the public.

Objective 4.1.

General Hunting: Maintain a minimum of 191,644 acres (80.0%) of land and water of the Refuge open to all hunting in accordance with respective state seasons, and make no changes to the current 7 administrative No Hunting Zones (3,473 acres). (See Table 2 and Table 7 in Appendix H and maps in Appendix P.)

Rationale: This objective represents the current areas open to hunting during all respective state seasons. In addition, Waterfowl Closed Areas re-open to some hunting after the duck season. Administrative No Hunting Zones are generally closed year-round to hunting for visitor safety or to reduce user conflict. No change represents the no action or current direction of this alternative. Hunting is one of the priority uses of the Refuge System and is to be facilitated when compatible with the purposes of the Refuge and the mission of the Refuge System.

Strategies

- Continue yearly review of Refuge Hunting Regulations to ensure clarity and to address any emerging issues or concerns, and give public opportunity to review and comment on any changes.
- Continue to publish the Refuge Hunting Regulations brochure to inform the public of hunting opportunities and Refuge-specific regulations.
- Continue to improve the hunting experience by ongoing improvements to habitat and enforcement of regulations.
- Review the 1989 Refuge Hunting Plan and modify as needed to comply with new regulations and policies.

Objective 4.2.

Waterfowl Hunting Closed Areas: Continue current system of 14 Closed Areas (40,809 acres) and 1 Sanctuary Area (3,686 acres) and current regulations, but make boundary adjustments to clarify boundary or address operation and maintenance needs. (See Table 5 on page 160 and maps, Appendix P.)

Rationale: Closed Areas are designed to provide relatively undisturbed fall resting and feeding areas for the length of the Refuge, and to more evenly distribute waterfowl hunting opportunities. This objective represents the current direction of the Closed Area system. Minor boundary adjustments have been made to some areas over the years and are needed periodically to address physical changes in the environment (such as island erosion) and to reduce confusion or annual signing concerns.

Strategies

- Improve habitat in Closed Areas by ongoing programs such as pool drawdowns, Environmental Management Program projects, and other agency initiatives and regulations.
- Continue Voluntary Avoidance Area program for the Lake Onalaska (Pool 7) closed area, and seek to expand to other Closed Areas where feasible.

- Continue to monitor waterfowl use of closed areas through weekly aerial surveys in the fall.
- As funding allows, monitor frequency and effect of disturbance by commercial, public, and agency entry into Closed Areas.

Objective 4.3

Waterfowl Hunting Regulation Changes: Make no major changes to current Refuge-specific regulations governing the means and methods of waterfowl hunting on the Refuge (see Appendix I for current regulations).

Rationale: This objective represents the current direction of waterfowl hunting regulations on the Refuge, recognizing that periodic minor changes are needed to clarify language, or to address an emerging issue or changes in state regulations. These minor changes are published in the Federal Register for public review and comment prior to implementation.

Strategies

- Continue to publish and distribute the Refuge Hunting Regulations brochure.
- Issue news releases to local media in the event any minor changes are to be published in the Federal Register since most of the interested public is not aware of, or has access to, the Federal Register.

Objective 4.4.

Firing Line – Pool 7, Lake Onalaska: Make no changes in boundaries or methods of hunting that would affect the waterfowl hunting fire line that has developed at the north end of the Pool 7 Closed Area (“The Barrels”). (See map, Appendix P, La Crosse District.)

Rationale: This objective represents the no action alternative to address hunter behavior issues and crippling losses from long-range pass shooting at waterfowl.

Strategies

- Continue to educate the waterfowl hunting public about the issues and seek self-regulation of behavior.
- Work with the La Crosse County Conservation Alliance and other conservation organizations in the education effort.
- Increase law enforcement presence and contacts in the Barrels Area and more aggressively enforce violations.

Objective 4.5.

Permanent Hunting Blinds on Savanna District: Continue allowing permanent waterfowl hunting blinds on the Savanna District. (See maps, Appendix P, Savanna District.)

Rationale: This objective represents taking no action on issues surrounding the use of permanent blinds at the Savanna District. These issues include unsafe and unsightly debris, private exclusive use of public lands, conflicts between users, reduction in overall hunting opportunity, and inconsistency with regulations on other districts of the Refuge.

Strategies

- Continue to educate the waterfowl hunting public about the issues and seek self-regulation of behavior.
- Work with local and area waterfowl conservation organizations on the education effort.
- Increase law enforcement presence and contacts to ensure compliance with regulations governing blind use.

Objective 4.6.

Potter’s Marsh Managed Hunt on Savanna District: Continue current Potter’s Marsh Managed Hunt with permanent blinds, but implement the following application and drawing changes: (See Table 16 in Appendix H and maps in Appendix P, Pool 13.)

- 1.) Accept applications and hold drawing for blind area on same day, generally on a Saturday in July.
- 2.) Applicant must be present at drawing.
- 3.) Applicant must have current Firearm Owners Identification if Illinois resident and current year license and state and federal duck stamps.
- 4.) Applicants must be 16 years of age by date of drawing.
- 5.) Applications accepted 10 a.m. to 2 p.m. with drawing at 2 p.m.
- 6.) Successful applicant receives blind site for entire season.
- 7.) Application fee \$10 plus \$100 fee for successful applicants.

Rationale: Allowing the continued use of permanent blinds for this hunt represents the no action alternative. However, reducing staff time and administrative costs, while making the drawing process more equitable, makes good management sense and represents the current direction.

Strategies

- Continue to educate the waterfowl hunting public about the issues and seek self-regulation of behavior in regard to permanent blind use with this hunt.
- Work with local and area waterfowl conservation organizations on the education effort.
- Increase law enforcement presence and contacts to ensure compliance with regulations governing the hunt.
- Ensure that information on administrative changes is provided to the public well in advance of changes.

Objective 4.7.

Blanding Landing Managed Hunt: Continue the current program and administrative procedures (drawing for permanent blinds) for the Blanding Landing Managed Hunt on the Lost Mound Unit, Savanna District. (See Table 16 in Appendix H and maps, Appendix P, Pool 12.)

Rationale: This hunt is managed by the Illinois Department of Natural Resources on the former Savanna Army Depot. This area has now been transferred to the Refuge as part of the Lost Mound Unit. This objective represents no action from the current managed hunt, namely use of permanent blinds and a yearly drawing for limited blind locations.

Strategies

- Continue to educate the waterfowl hunting public about the issues and seek self-regulation of behavior in regard to permanent blind use with this hunt.
- Work with local and area waterfowl conservation organizations on the education effort.
- Increase law enforcement presence and contacts to ensure compliance with regulations governing the hunt.
- Ensure that information on the change of hunt administration from the Illinois Department of Natural Resources to the Refuge is made available to the public, along with any Refuge-specific regulations that apply.
- Use news releases and other means to disseminate information.

Objective 4.8

General Fishing: Provide and enhance year-round fishing on 140,545 acres of surface water within the Refuge, and an additional 2,736 acres in Waterfowl Closed Areas (Spring Lake, Pool 13) in spring, summer, and winter. (Note: Iowa, Wisconsin, and Illinois regulations maintain fish “refuges” below lock and dams 11,12, and 13, December 1 through March 15). Maintain 15 accessible fishing piers or docks. (Table 7 and Table 13 in Appendix H and maps, Appendix P)

Rationale: This objective represents the current areas available and open to fishing and the area currently closed to fishing from October 1 to the end of the duck hunting season to limit disturbance to waterfowl (Spring Lake, Pool 13). Fishing is one of the priority uses of the Refuge System and is to be facilitated when compatible with the purposes of the Refuge and the mission of the Refuge System. Enhanced fishing opportunities are also a reflection of river and Refuge health. Maintaining the existing 14 accessible fishing piers assumes continued funding for staff and maintenance.

Strategies

- Enhance fishing opportunities on suitable areas of the Refuge through habitat, access, and facility improvements as outlined in other plan objectives.
- Continue to promote fishing through Fishing Days and other outreach and educational programming.
- Cooperate with the states in their ongoing fishery management programs.
- Schedule yearly inspection and maintenance of fishing piers.

Objective 4.9.

Fishing Tournaments: Continue current “hands-off” approach to regulating fishing tournaments on the Refuge, deferring to the individual state’s permit procedures and regulations (and Corps of Engineers for Corps-managed landings used for tournaments).

Rationale: This objective represents the no action or current direction alternative on the issue of Refuge involvement in fishing tournament permits and oversight.

Strategies

- None since there is no action under this alternative.

Objective 4.10.

Wildlife Observation and Photography: Maintain the following existing facilities to foster wildlife observation and photography opportunities: 15 observation decks and areas, 6 hiking trails, 4 canoe trails, 3 biking trails, and 1 auto tour route. (See Table 3, Table 4, Table 5, Table 14 and Table 18 in Appendix H and maps, Appendix P)

Rationale: Wildlife observation and photography are two of the six priority public uses of the Refuge System and are to be facilitated when compatible. This objective represents the current direction of the wildlife observation and photography program on the Refuge and assumes continuing funding and staffing for operations and maintenance.

Strategies

- Schedule annual inspection and maintenance of the facilities.
- Ensure adequate signing and information in brochures, websites, and maps so the public is aware of the facilities.
- Continue to promote the wildlife observation and photography opportunities of the Refuge through public education, outreach, special programs, and partnerships with the states, Corps of Engineers and private conservation groups.
- Enhance observation and photography opportunities on suitable areas of the Refuge through habitat, access, and facility improvements as outlined in other plan objectives.

Objective 4.11.

Interpretation and Environmental Education: Maintain and update 59 interpretive signs (see Table 15 in Appendix H, and maps in Appendix P for details). Continue to print and distribute Refuge General Brochure, and update websites quarterly. Continue to sponsor at least one major annual interpretive event on each Refuge District, and continue environmental education efforts at Districts with visitor services staff (Savanna and La Crosse).

Rationale: Interpretation and environmental education are two of the six priority public uses of the Refuge System and are to be fostered if compatible with the Refuge purpose and Refuge System mission. Interpreting the resources and challenges of the Refuge to the general public and incorporating these topics into school curricula are important ways to influence the future well-being of the Refuge and the river. Only through understanding and appreciation will people be moved to personal and collective action to ensure a healthy Refuge for the future. Interpretation and environmental education are also key to changing attitudes and behavior which affect the Refuge through off-Refuge land use decisions and on-Refuge conduct and use.

This objective reflects the current interpretation and environmental education program on the Refuge, a level which is expected to continue. Environmental education is labor intensive since it is curriculum-based, so efforts are generally limited to those Districts with public use staff.

Strategies

- Participate in national interpretive events such as National Wildlife Refuge Week or Migratory Bird Day for efficiency and effectiveness.
- Schedule quarterly review of kiosks and interpretive signs and conduct maintenance and sign replacement as needed.
- Cooperate with existing interpretive and environmental education programs offered by the states, Corps of Engineers, other agencies and private conservation groups, and continue to seek grants to fund events and programs.

Objective 4.12.

Commercial Fish Floats: Continue to permit 4 commercial fish floats or floating piers below locks and dams and make no major changes to current fee schedule and permit stipulations. (See Table 11 in Appendix H and maps, Appendix P.)

Rationale: This objective represents the current and long-standing low-key management and administration of commercial fishing floats on the Refuge. Fishing floats remain very popular with a segment of the public which does not own boats or desires not to use boats below the locks and dams. The floats help provide fishing opportunities for young and old, able or less able, and facilitate one of the priority public uses of the Refuge System. The floats also provide economic benefit to the owners/operators and an economic stimulus for nearby businesses.

Strategies

- Continue yearly coordination meeting with float owners and operators to address concerns and permit conditions.
- Continue enforcement of permit stipulations and suspend permits of those operations not meeting the stipulations.
- Inspect facilities for safety at least once yearly.

Objective 4.13.

Guiding Services: Continue inconsistent, low-key approach to issuing permits for commercial hunting, fishing, and wildlife observation guiding.

Rationale: This objective represents the no action or current direction alternative for this use.

Strategies

- Continue to defer to the states for any licensing or regulatory oversight.
- Continue to ignore or apply haphazardly Refuge System regulations governing commercial uses on national wildlife refuges.

Goal 5: Other Recreational Use. We will provide opportunities for the public to use and enjoy the Refuge for traditional and appropriate non-wildlife-dependent recreation that is compatible with the purpose for which the Refuge was established and the mission of the Refuge System.

Objective 5.1.

Beach Use and Maintenance: Continue current open policy for beach-related uses such as camping, mooring, picnicking, and social gatherings in accordance with existing public use regulations (see Appendix J). Continue to use the following interim beach maintenance criteria when requests are made for beach maintenance:

- 1.) Only on beach areas classified as low-density recreation on Land Use Allocation Plans.
- 2.) Only on former or existing dredge material disposal sites.
- 3.) No maintenance on active dredge disposal sites (including sites recently emptied, known locally as “bathtubs”).
- 4.) No maintenance of beaches in Waterfowl Hunting Closed Areas.
- 5.) Time maintenance work to lessen impacts to turtles and other wildlife.

Rationale: This objective represents the no action or current direction alternative that was set in the 1987 Master Plan. Interim beach maintenance criteria were developed in response to work in Pool 4 in cooperation with the Wisconsin Department of Natural Resources in 2003 using Wisconsin recreation boating fuel tax revenues.

Strategies

- Continue to coordinate with the states and the Corps of Engineers through established interagency workgroups such as the Recreation Workgroup of the River Resources Forum.
- Complete beach inventory for all Districts and use information for interagency beach planning effort.
- Continue to use the principles and components of the “Leave No Trace” program.
- Continue to print and distribute Refuge Public Use Regulations, and continue law enforcement effort to address visitor behavior and physical impacts associated with beach-related uses.

Objective 5.2.

Electric Motor Areas: Maintain the one current electric motor area of 222 acres (Mertes Slough, Pool 6, Winona District). (See Table 12 in Appendix H, and maps, Appendix P.)

Rationale: The Mertes Slough electric motor area was established to protect from disturbance the northernmost heron rookery on the Refuge. Entry into the area by personal watercraft had become more common due to the proximity to Winona, Minnesota and other non-Refuge recreation sites.

Strategies

- Continue to inform the public of this electric motor area by signing and providing information at the Mertes Slough boat landing.
- Continue to conduct periodic enforcement of the restriction.

Objective 5.3.

Slow, No-Wake Zones: Maintain the 2 existing Refuge-administered slow, no-wake zones and assist local or other units of government in the enforcement of 43 other slow, no-wake zones. (See Table 17, Appendix H, and maps, Appendix P.)

Rationale: This objective represents the current number of slow, no-wake zones on the Refuge. The zones were established for safety at high congestion areas or in narrow, blind corner channels, or to lessen the amount of shoreline erosion from boat wakes.

Strategies

- Continue to inform the public of the slow, no wake areas through seasonal buoy placement and signing as appropriate.
- Continue to conduct periodic enforcement of the slow, no-wake restriction.
- Continue to cooperate and coordinate with local units of government which establish most slow, no wake zones.

Objective 5.4.

Dog Use Policy: Continue to use the current domestic animal regulation which says that “unconfined domestic animals are prohibited on the Refuge, except for controlled hunting and retrieving dogs during the hunting season.” The current prohibition of dog field trials or training of dogs would also remain in effect.

Rationale: This alternative reflects no action in regards to the regulation governing the use of dogs and other domestic animals on the Refuge. Unless specifically authorized, national wildlife refuges are closed to dogs, cats, livestock and other animals per federal regulations. Domestic animals can harass and kill wildlife, and at times become a perceived or direct threat to other persons engaged in recreation.

Strategies

- Refuge law enforcement officers will continue to use discretion in enforcing this regulation due to the ambiguity inherent in the meaning of the word “confined.”

Objective 5.5.

General Public Use Regulations: Make no changes to current general public use regulations governing entry and use of the Refuge, as outlined in Appendix J.

Rationale: This objective represents the no action alternative. As a unit of the Refuge System, the current regulations governing entry, use, and prohibited acts of the Refuge are adopted from Title 50, Code of Federal Regulations, Parts 26-28. Over the years, Refuge-specific regulations have been adopted to reflect special circumstances or address unique problems.

Strategies

- Continue to print and distribute the Public Use Regulations brochure.
- Post pertinent regulations at boat landings and other public use areas, such as trail heads and beach areas.
- Continue proactive law enforcement to inform and educate the public on Refuge regulations and to seek their compliance.
- Annually review Refuge regulations and clarify language as needed.

Goal 6: Administration and Operations. We will seek adequate funding, staffing, and facilities, and improve public awareness and support, to carry out the purposes, vision, goals, and objectives of the Refuge.

Objective 6.1.

Office, Shop and Visitor Contact Facilities: Maintain existing offices (6) and shops (5), and replace the Winona District and Savanna District shops by 2006.

Rationale: This objective represents the no action or current direction for providing office space and maintenance facilities for Refuge Headquarters, the four District Offices, and the Lost Mound Unit. Three of the offices and 4 of the shops are Service-owned, 2 are government-leased, and the Lost Mound office and shop is used by agreement with Department of the Army. The Headquarters and Winona District currently share the same building for offices, and share a shop. The Savanna, Lost Mound, McGregor, and La Crosse offices also have modest visitor reception areas with exhibits and other information. Replacement of the Winona and Savanna District shops is currently in the planning stage and they should be replaced by 2006, dependent on funding through the Service's Maintenance Management System. The existing offices are needed due to the size and length of the Refuge and for effectiveness and efficiency of management, administration, and public service.

Strategies

- Continue to maintain Service-owned facilities using annual maintenance budget allocations.
- Continue work to complete exhibits at Savanna and La Crosse offices, and seek funding to replace exhibits at McGregor District and the Lost Mound Unit.
- Ensure that office needs are reflected in Refuge System needs databases.

Objective 6.2.

Public Access Facilities: Maintain and modernize as needed, 26 public boat accesses on the Refuge. (See Table 1 in Appendix H, and maps, Appendix P)

Rationale: This objective represents the current number of boat accesses on the Refuge that are maintained by Refuge staff. In addition to these accesses, there are 222 other public and private boat accesses that provide access to the Mississippi River or its tributaries, and thus the Refuge.

Strategies

- Continue routine upkeep of boat accesses by Refuge staff, temporary employees and Youth Conservation Corps members when available, and volunteers.
- Continue to modernize accesses using Maintenance Management System funding or special funding which is provided periodically.
- In cooperation with states and local governments, explore Transportation Enhancement Act projects and funding to upgrade Refuge accesses.

Objective 6.3.

Operations and Maintenance Needs: Complete annual review of Refuge Operating Needs System (RONS), Maintenance Management System (MMS), and Service Assessment and Maintenance Management System (SAMMS) databases to ensure these reflect the funding needs for carrying out the current direction alternative.

Rationale: The RONS, MMS, and SAMMS databases are the chief mechanisms for documenting ongoing and special needs for operating and maintaining a national wildlife refuge. These databases are part of the information used in the formulation of budgets at the Washington and

Regional levels, and for the allocation of funding to the field. It is important that the databases be updated periodically to reflect the needs of the Refuge.

Strategies

- None warranted.

Objective 6.4.

Public Information and Awareness: Continue current annual average of 80 media interviews, 125 news releases, and 25 special events (special programs, presentations, and displays at others' events) to maintain current levels of public awareness of the Refuge, and its purpose, programs, and challenges. Maintain existing 63 information kiosks.

Rationale: Keeping the public aware of the Refuge and its purpose, programs, and challenges is a basic part of public lands stewardship. An informed public can not only take advantage of the recreation afforded by the Refuge, but can play a role in influencing and shaping management direction and the challenges which face the Refuge. This objective reflects a relatively high level of continuous effort despite a limited number of visitor services staff.

Strategies

- Continue to make public information and awareness a part of all employees positions.
- Continue to look for creative ways to leverage efforts and funding for public information.
- Carry out related objectives dealing with trails, kiosks, leaflets, and interpretive signs.
- Cooperate with the states and the Corps of Engineers on visitor surveys to gauge public awareness of the Refuge and Mississippi River resources.

Objective 6.5.

Staffing Needs: Maintain current permanent, full-time staffing of 37 people. (See Table 19 in Appendix H.)

Rationale: This objective reflects the no action or current direction alternative. Like all land management, refuge management is labor intensive and labor costs represent over 95 percent of the base operations funding received each year. Thus, staffing levels are tied to budget appropriations from Congress and budget allocations from the national and regional offices of the Service and could remain the same or go down under this alternative.

Strategies

- Continue to evaluate current staffing patterns at the District and Headquarters level to ensure that personnel are assigned to the greatest resource and public service needs.
- Maintain other sources of funding for staff who coordinate the Environmental Management Program and the Partners for Fish and Wildlife Program.

2.4.3 Alternative B: Wildlife Focus

Increase level of effort on fish and wildlife and habitat management. Some public use opportunities and programs would remain the same, others reduced in favor of wildlife and habitat protection.



Common Egret. Copyright Sanda Lines

Alternative B Summary

Boundary issues would be aggressively addressed and the entire Refuge boundary would be surveyed. The rate of land acquisition within the approved boundary would increase to complete 58 percent of the total, an average of 1,000 acres per year. All bluffland areas identified in the 1987 Master Plan would be protected by fee-title acquisition or easement, and there would be an increase in oversight and administration of Research Natural Areas. Guiding principles for habitat projects would be established.

There would be an increase in efforts to achieve continuous improvement in the quality of water flowing through the Refuge, including decreasing sedimentation. Pool-scale drawdowns would be accomplished by

working with the Corps of Engineers and the states. Control of invasive plant species would increase, and there would be increased emphasis on the control of invasive animals. Environmental Pool Plans would be implemented on a strategic and opportunistic basis using the Environmental Management Program or other programs and funding sources. Wildlife inventory and monitoring would increase and include more species groups beyond the current focus of waterfowl, colonial nesting birds, eagles, and aquatic invertebrates/vegetation. Management of threatened and endangered species would focus on helping recovery, not just protection. The furbearer trapping program would continue but be brought into compliance with policies by doing a new plan. The Refuge would become much more active in fishery and mussel management, and provide commercial fishing oversight. The knowledge of turtle ecology would be increased through research, and there would be continued cooperation with the states and Corps of Engineers on turtle conservation efforts. A forest inventory on the Refuge would be completed in cooperation with the Corps of Engineers, leading to completion of a forest management plan and more active forest management. The existing 5,700 acres of grassland habitat on the Refuge would be maintained and enhanced using fire and other tools.

Hunting and fishing opportunities would continue on a large percentage of the Refuge. The system of waterfowl hunting closed areas would increase substantially with 14 new areas. Entry into closed areas would be prohibited during the respective state duck season, although the voluntary avoidance area on Lake Onalaska would remain in place. The firing line issue north of the closed area in Lake Onalaska would be addressed by expanding the closed area northward. Current Refuge-wide hunting regulations would be changed to include a 25 shotshell limit during the waterfowl season and to address open water hunting in portions of Pools 9 and 11. Permanent blinds for waterfowl hunting would be eliminated Refuge wide, including those used in the Potter's Marsh and Blanding Landing managed hunts in the Savanna District. The Potter's Marsh managed hunt would continue with administrative changes to promote fairness and efficiency. The Blanding Landing managed hunt would be eliminated, but the area would remain open to hunting. General fishing would continue to be promoted, although the Refuge would begin oversight of fishing tournaments in cooperation with the states and other agencies.

There would be no increase in facilities or programming for wildlife observation, photography, interpretation and environmental education. There would be a modest increase in Refuge access through improvement of existing boat ramps, pull offs, and overlooks, and a boat launch fee would be

initiated at Refuge-operated boat ramps. Commercial fish floats or piers below locks and dams 6, 7, 8, and 9 would be eliminated to reduce administrative and oversight costs. Commercial guiding on the Refuge would be prohibited. Areas open to beach-related public use (camping, swimming, picnicking, social gatherings) would be reduced under a “closed-until-open” policy, and beach planning and maintenance would not be allowed on Refuge lands. A total of 10 electric motor areas and 10 new slow, no-wake zones would be established. Current regulations on use of dogs would be changed to require that dogs and other domestic animals be leashed at all times except when used for hunting. General public use regulations would be reviewed annually and changed as needed. Existing offices would be maintained, but new maintenance facilities or shops would be constructed at the Winona, McGregor, and Savanna districts, and eventually, at the Lost Mound Unit. Public information and awareness efforts would be decreased 50 percent to focus on wildlife-related work. Staffing levels for the Refuge would increase by 17.5 full-time equivalents with the priority being biologists, a forester, other specialists, and maintenance persons.

Goal 1: Landscape: We will strive to maintain and improve the scenic qualities and wild character of the Upper Mississippi Refuge.

Objective 1.1. Maintain the integrity of the Refuge boundary: In coordination with the Corps of Engineers, re-survey and post the entire Refuge boundary by 2020.

Rationale: Maintaining and enforcing a boundary is one of the basic and critical components of refuge management to ensure the integrity of an area over time. Without attention to this basic task, there is a tendency for adjacent development and use to creep and take over Refuge lands and waters. This encroachment includes tree cutting, dumping, construction, storing of equipment and materials, and mowing Refuge lands. In addition, there are a few boundaries between Refuge and Corps-managed lands that remain unclear, leading to mixed messages to the public using these lands via permits, leases, or out grants. The size, length, age, and floodplain setting of the Refuge, coupled with a mix of Corps-acquired and Service-acquired lands, creates boundary clarity problems that can only be addressed through modern re-surveying techniques.

Strategies

- Enter into a joint Service/Corps of Engineers project to complete a cadastral survey of the Refuge boundary.
- With the Corps of Engineers, complete a plan of action to prioritize and schedule the completion of the survey by 2020. Seek the funding necessary for the survey work.
- Also with the Corps of Engineers, review, update, and publish a new Land Use Allocation Plan for lands within the Refuge (see Chapter 1, section 1.4.3.1 for discussion of this plan).

Objective 1.2. Land Acquisition: By 2020, acquire from willing sellers 58 percent of the lands identified for acquisition in the 1987 Master Plan and subsequent approvals, as identified on the maps in Appendix G (approximately 1,000 acres/year).

Rationale: Land acquisition is a critical component of fish and wildlife conservation since it permanently protects their basic need of habitat. On a narrow, linear refuge, land acquisition is a critical component of restoring the habitat connectivity needed for the health of many species. The Refuge currently ranks 6th nationally on the Service’s Land Acquisition Priority

System due to its resource importance. Land acquisition can also be cost effective in the long-term due to inflation of land costs and the costs of acquiring undeveloped land versus developed land that also needs restoration. This objective represents an aggressive land acquisition program of about 1,000 acres per year to achieve goals set in the 1987 Master Plan and other approved acquisition documents. Lands and waters most important to fish and wildlife would be the highest priority acquisitions in keeping with the wildlife focus of this alternative. Lands with the highest fish and wildlife values were coded “A” in the 1987 Master Plan, and this ranking system remains a useful prioritization tool.

Strategies

- Seek consistent Land and Water Conservation Fund appropriations to meet the objective (approximately \$1.5 million per year at \$1,500 per acre).
- Explore land exchanges with the states to remove intermingled ownerships.
- Continue to work with the Department of the Army to transfer title of tracts as they are cleaned of contaminants at the Lost Mound Unit (former Savanna Army Depot).

Objective 1.3.

Bluffland protection: By 2020, acquire from willing sellers protective easements or fee-title interest in all undeveloped bluffland areas within the approved boundary of the Refuge as identified in the 1987 Master Plan. (See maps, Appendix G.)

Rationale: There have been no acquisitions of bluffland areas since first identified in the 1987 Master Plan, and this objective represents a more aggressive approach to safeguarding the wildlife values of these areas. In recent years, peregrines have once again started nesting on the rock faces of some bluffs. Peregrines, at one time an endangered species, were the main rationale for including the 13 areas in the acquisition boundary. Blufflands are also an important part of maintaining the scenic quality of the Refuge landscape and harbor unique and diverse plants and animals. Since some areas identified have been developed for housing or other uses since 1987, the focus would be on the undeveloped areas. However, there may be an opportunity to protect remaining values of these developed areas through creative easements.

Strategies

- Seek consistent acquisition funding as noted in Objective 1.2 and favor easements over fee-title acquisition since it is more cost-effective for a wildlife focus approach.
- Work with the state, local governments, and private land trusts to protect bluffland habitat and scenic values.
- Work with local units of government to encourage zoning regulations which protect bluffland scenic qualities.
- Help educate the public on the values of blufflands for birds and unique plant communities.

Objective 1.4

Research Natural Areas and Special Designations: By 2010, complete a management plan for each of the Refuge's four federally-designated Research Natural Areas. No new Natural Areas would be established. (See maps, Appendix P and Table 7.)

Rationale: The Refuge has done little in the way of monitoring or research of the existing Research Natural Areas. Although the main goal of the area designation is the preservation of unique floodplain forest areas, preservation is a form of management. No management plans have been written to guide monitoring and research of current habitat conditions and changes since the areas were designated in the 1970s. Completing a management plan for each area would identify monitoring protocols, any habitat management needed to retain original biological values or address threats, address any special public use considerations, and identify ways to foster public awareness and appreciation of these unique areas. No areas of the Refuge are deemed suitable for new Natural Area designation.

Strategies

- District Managers will be responsible for completion of a management plan for natural areas in their District, using a consistent approach and format and in cooperation with the states and other federal agencies as appropriate (e.g., Nelson-Trevino).
- Seek cooperative research and monitoring opportunities with other agencies and colleges and universities.
- Ensure yearly reviews of Research Natural Area boundaries to ensure integrity of the areas.

Goal 2: Environmental Health. We will strive to improve the environmental health of the Refuge by working with others.

Objective 2.1.

Water Quality: Working with others and through a more aggressive Refuge program, seek a continuous improvement in the quality of water flowing through and into the Refuge in terms of parameters measured by the Long Term Monitoring Program of the Environmental Management Program (dissolved oxygen, major plant nutrients, suspended material, turbidity, sedimentation, and contaminants).

Rationale: The quality of water on the Refuge is one of the most important factors influencing fish, wildlife, and aquatic plant populations and health, which in turn influence the opportunity for public use and enjoyment. Water quality is also beyond the Refuge's ability to influence alone given the immense size of the Refuge's watershed and multiple-agency responsibilities. This objective recognizes these limitations, but charts a more aggressive role for the Refuge through the strategies below. The objective also highlights the advocacy role the Refuge can play in educating the public and supporting the myriad of agencies which together can influence water quality.

Strategies

- Hire a Private Lands Biologist or Technician for each of the Refuge's four Districts to restore and enhance wetland, upland, and riparian habitat on private lands in and along sub-watersheds feeding into the

Refuge, and to broker the myriad of private land and conservation opportunities available through the Department of Agriculture and others.

- Increase conservation assistance agreements with Soil and Water Conservation Districts and Resource Conservation and Development boards.
- Cooperate with local government land use planning efforts to ensure that water quality impacts to the Refuge are considered.
- Emphasize water quality aspects, especially sediment deposit in backwaters, in all habitat enhancement projects.
- Link the planning and projects for tributary watersheds to Pool Plan implementation using the latest GIS-based mapping and modeling. Support cooperative water quality monitoring and improvement efforts through the Upper Mississippi River Conservation Committee and other groups and agencies.
- Continue to stress the importance of water quality in public information and interpretive and education programs.

Objective 2.2.

Water Level Management: By 2020, complete drawdowns of all Refuge pools during the summer growing season in cooperation with the Corps of Engineers and the state.

Rationale: Lowering the water levels in impoundments during the growing season is a proven management practice to dramatically increase emergent vegetation. Improved vegetation results in more food and cover for a wide range of fish and wildlife species. Much of the emergent vegetation on the Refuge has been lost due to stable water regimes created for navigation, and this objective seeks to restore productive marsh habitat to thousands of acres. All pools would benefit from drawdowns. However, Pool 14 does not appear to be feasible in the 15-year horizon of this plan.

Strategies

- Continue to work in partnership with the interagency water level management taskforce to plan and facilitate drawdowns.
- Inform and involve citizens through public meetings, workshops, and citizen advisory groups.
- Seek all available funding sources to carry out needed recreational access dredging to lessen social and economic impacts during drawdowns (proposals in Corps of Engineers Navigation Study released in 2004 includes funding for drawdowns).
- Explore options for funding an Access Trust Fund to ensure adequate funding when needed to accomplish drawdowns.

Objective 2.3.

Invasive Plants: By 2008, complete an invasive plant inventory and by 2010, achieve a 10 percent reduction in acres affected by invasive plants such as purple loosestrife, reed canary grass, Eurasian milfoil, leafy spurge, crown vetch, Russian knapweed, knotweed, European buckthorn, garlic mustard, and Japanese bamboo. Emphasize the use of biological controls.

Rationale: Invasive plants continue to pose a major threat to native plant communities on the Refuge and beyond. Invasive plants displace native species and often have little or no food value for wildlife. The result is a decline in the carrying capacity of the Refuge for native fish, wildlife, and plants. This objective addresses this threat by first determining and mapping baseline information on invasive plants so that effective and efficient control can take place. Biological control includes release of insects which prey directly on purple loosestrife or leafy spurge plants or disrupt part of their life cycle, and is a more long-term and cost efficient solution compared to herbicide spraying. This objective is tempered by the realization that biological control methods are not yet readily available for a large number of invasive plant species.

Strategies

- Hire seasonal biological technicians to conduct an inventory and prepare baseline maps of invasive plant infestations.
- Write an invasive plant control and management plan (integrated pest management plan) that identifies priority areas and methods of control.
- Seek seasonal staff and funding to accelerate current control and applied research efforts through interagency partnerships, volunteer programs, and public education.
- Continue to work with the Department of Agriculture, other agencies, the states, and other refuge field stations in securing insects and beetles for release in high-infestation areas.
- Take advantage of periodic invasive grant, cost-sharing, or special funding opportunities offered through the Service or other agencies and foundations.
- Conduct public information effort including media, brochures, signage, and programs to increase awareness of the invasives threat and what visitors can do to minimize the introduction or spread of invasives.

Objective 2.4.

Invasive Animals: Increase efforts to control invasive animals through active partnerships with the states and other Service programs and federal agencies, and increase public awareness and prevention.

Rationale: Invasive animals such as zebra mussels and Asian carp species pose a current and looming threat to native fish and mussel species and have the potential to disrupt the aquatic ecosystem. This objective is not measurable, reflecting the reality that invasive animal species do not lend themselves to direct control in a large river system and that addressing invasive animals is dependent on political and management actions beyond the boundary of the Refuge. However, the objective does emphasize the importance of addressing invasive species and represents more active Refuge involvement.

Strategies

- Implement other objectives and strategies in this plan which have an influence on invasive species work. For example, better habitat conditions promote healthy native fish populations which can compete with invasive species, while adding a fishery biologist to the staff would increase and improve coordination with other programs and agencies dealing with invasives.

- Continue to work with other agencies in developing effective regulations, barriers, biological controls, or other means to reduce introduction and spread of invasives.
- Explore new and creative ways to expand the harvest of invasive fish by commercial fishing, such as a bonus payment to enhance market price.
- Conduct public information effort including media, brochures, signage, and programs to increase awareness of the invasives threat and what visitors can do to minimize the introduction or spread of invasives.

Goal 3: Wildlife and Habitat. Our habitat management will support diverse and abundant native fish, wildlife, and plants.

Objective 3.1.

Environmental Pool Plans: By 2020, implement at least 30 percent of the Refuge-priority Environmental Pool Plan actions and strategies in Pools 4-14 as summarized in Table 4 on page 148 at the end of this Chapter (see Appendix N for examples of Environmental Pool Plan maps).

Rationale: Environmental Pool Plans represent a desired future habitat condition developed by an interagency team of resource professionals, including Refuge staff. The Pool Plans represent what is necessary to reverse the negative trends in habitat quality and quantity on the Upper Mississippi River. Improved habitat is the key to healthy fish and wildlife populations, and thus, this objective represents an important part of the wildlife focus alternative. The Refuge represents a sizeable subset of the habitat vision presented in each Pool Plan. The Refuge also has different resource mandates and responsibilities than the Corps of Engineers and the states. Thus, the Refuge prioritized various actions to meet these needs as represented in Table 4. The objective of 30 percent represents a reasonable rate of implementing priority actions given current funding levels (mainly through the Environmental Management Program, Corps of Engineers) for habitat conservation work, and the 15 year horizon of this CCP versus the 50 year horizon of the Pool Plans. Some of the actions and strategies in the Table overlap with other objectives in this plan (e.g. forest management, land acquisition, watershed work, and water level drawdowns).

Strategies

- Continue to coordinate with the River Resources Forum's Fish and Wildlife Workgroup, and the River Resources Coordinating Team's Fish and Wildlife Interagency Committee, to implement pool plan priorities.
- Continue to work for full and expanded funding of the Environmental Management Program through public and Congressional information and outreach.
- Take advantage of any new funding sources that emerge, such as appropriations from Congress for implementing the Navigation Study ecosystem restoration recommendations.

Objective 3.2.

Guiding Principles for Habitat Management Programs: Upon approval of the CCP, adopt and use the following guiding principles when designing or providing input to design and construction of habitat enhancement projects:

- 1.) Management practices will restore or mimic natural ecosystem processes or functions to promote a diversity of habitat and minimize operations and maintenance costs.
- 2.) Maintenance and operation costs of projects will be weighed carefully since annual budgets for these items are not guaranteed.
- 3.) Terrestrial habitat on constructed islands and other areas needs to best fit the natural processes occurring on the river, which in many cases will allow for natural succession to occur.
- 4.) If project features in Refuge Waterfowl Hunting Closed Areas serve to attract public use during the waterfowl season, spatial and temporal restrictions of uses may be required to reduce human disturbance of wildlife.

Rationale: Guiding principles for habitat restoration or enhancement projects would provide consistency between the four Districts of the Refuge and help communicate to cooperating agencies and the public standards from which we will design projects. The principles will also help ensure compliance with Service policy on biological integrity and recognize the need to consider future operations and maintenance costs before doing projects. In addition, the principles help ensure that projects complement, rather than compete with, other goals and objectives in this plan.

Strategies

- Refuge staff will use these guidelines when proposing and designing habitat enhancement projects funded by the Service. They will also be used during coordination with the Corps of Engineers and the states in cooperative programs such as the Environmental Management Program or any new program authority that may arise from the Corps of Engineers' Navigation Study.

Objective 3.3.

Monitor and Investigate Fish and Wildlife Populations and Their Habitats: By January 2008, amend the 1993 Wildlife Inventory Plan to include more species groups such as fish, reptiles, mussels, and plants, and increase the amount of applied research being done on the Refuge.

Rationale: Monitoring is essential to understanding the status and trends of selected species groups and habitats. This in turn provides some indication of overall biological integrity, diversity, and environmental health of the Refuge, and is critical in planning habitat management and public use programs. This objective represents a more aggressive biological program on the Refuge in line with a true wildlife focus, and will help meet directives in the Refuge Improvement Act requiring monitoring the status of fish, wildlife, and plant species. Better biological information is also critical to making sound management decisions. The Refuge would continue to support and use monitoring done by the states, U.S. Geological Survey, the Corps of Engineers, and others to help fill the gaps in status and trends information for fish, mussels, reptiles, forests and other land cover, and environmental factors such as water chemistry and sedimentation.

Strategies

- Engage other experts and partners to develop and implement the Wildlife Inventory Plan.

- Establish a Refuge Research Team that designs short-term and long-term research projects to address management questions and concerns about wildlife populations and their habitat.
- Continue to work with the states, U.S. Geological Survey, and Corps of Engineers in the sharing of data on other species and habitats.
- Establish a schedule of formal coordination meetings with the U.S. Geological Survey to share biological monitoring methods and data.
- Ensure that each District has a biologist on staff and that Headquarters has a GIS biologist.
- Seek more cooperation with colleges and universities to foster more graduate research projects.
- Continue to use volunteers for certain monitoring efforts such as the breeding bird survey point counts.
- Complete a Habitat Management Plan which integrates species status and trends with the Environmental Pool Plans (Objective 3.1).

Objective 3.4.

Threatened and Endangered Species Management: By the end of 2008, begin monitoring of all federally listed threatened or endangered and candidate species on the Refuge, and by 2010, have in place management plans for each species to help ensure their recovery.

Rationale: As noted in an earlier section of this chapter, it is Service policy to give priority consideration to the protection, enhancement, and recovery of these species on national wildlife refuges. This objective represents a more aggressive approach to achieving this policy. Currently, the only species actively monitored by the Refuge are bald eagles, and efforts would be expanded to include the Higgins eye pearlymussel, eastern massasauga rattlesnake, and Sheepnose mussel.

Strategies

- Consider the needs of threatened, endangered and candidate species in all habitat and public use management decisions.
- Continue to consult with the Service's Ecological Services Offices on all actions which may affect listed species.
- In Wildlife Inventory Plan, address monitoring plan for all listed or candidate species, and other species of management concern to help preclude listing.
- Continue monitoring bald eagle nesting populations and success.
- In Habitat Management Plan, identify steps needed to ensure populations of listed or candidate species are sustained in support of delisting or to preclude listing in the future. Give priority to acquisition of lands within approved boundary that contain listed or candidate species.
- Continue assistance to other offices and agencies with Higgins eye pearlymussel recovery efforts.

Objective 3.5.

Furbearer Trapping: Update the Refuge trapping plan by June 2007, continuing the existing trapping program until the update is completed.

Rationale: Furbearer trapping has a long history on the Refuge and can be an important management tool in reducing furbearer disease and habitat impacts, and in safeguarding certain Refuge infrastructure such as dikes, islands, and water control structures. The current trapping plan is dated by time (1988), new furbearer ecology and population information, and by new policies governing compatibility of uses and commercial uses on national wildlife refuges.

Strategies

- The Refuge wildlife biologists, in consultation with Refuge District managers and state furbearer biologists will develop a revised trapping plan for approval by the Refuge manager.
- Afford the public an opportunity for review and comment on the plan.
- Complete a new compatibility determination for public review and comment.

Objective 3.6.

Fishery and Mussel Management: By the end of 2008, complete a Fishery and Mussel Management Plan for the Refuge which incorporates current monitoring and management by the states and other Service offices and agencies.

Rationale: One of the purposes of the Refuge is to provide a “refuge and breeding place for fish and other aquatic animal life.” Fish and mussels also have high intrinsic, recreational, and commercial values. For decades, the Refuge has not taken an active role in fishery or mussel management, deferring to the states or others on this management responsibility. Although the states will still play the lead role in fisheries and mussel management, the Refuge should have in place a plan which communicates to the states and the public the Refuge and Service perspective on fishery and mussel management issues and needs, and to help set common goals, objectives, and means of collecting and sharing information. The plan would also help guide conservation efforts for rare or declining interjurisdictional species such as paddlefish and sturgeon and federally listed and candidate aquatic species, and address the Refuge’s role in commercial harvest of species and control of aquatic invasive species.

Strategies

- Add a fishery biologist to the Headquarters staff to coordinate fishery and mussel management on the Refuge.
- Prepare plan in collaboration with the states, Service fishery offices, the Genoa National Fish Hatchery, and aquatic biologists of the U.S. Geological Survey.

Objective 3.7.

Commercial Fishing and Clamming: By the end of 2008, complete a Fishery and Mussel Management Plan, and by January 2009, begin issuing Refuge special use permits in addition to state-required permits for commercial fishing and clamming.

Rationale: The Refuge has provided little to no oversight of the commercial harvest of fish or mussels in the past. However, federal regulations governing the Refuge System state that “fishery resources of commercial importance on wildlife refuge areas may be taken under permit in accordance with federal

and state law and regulations” (50 Code of Federal Regulations, Part 31.13). Other regulations govern all commercial uses on refuges. Besides this compliance issue, the Refuge can play an important advisory and coordination role with the four states which administer commercial fish and mussel harvest on the Refuge.

Strategies

- In addition to the strategies in Objective 3.6, establish, with the states through the Upper Mississippi River Conservation Committee, a method of sharing permittee and catch information for the Refuge.
- Devise a Refuge permitting process that dovetails with state permits so that commercial users receive only one permit versus two.
- Enter into cooperative agreements as needed to implement this one-stop-shopping permit process.
- Ensure that commercial harvest of fish and mussels meets objectives in Refuge plans, and explore ways that commercial harvest can help address invasive species issues (Objective 2.4).

Objective 3.8.

Turtle Management: By spring, 2007, initiate a 3-5 year turtle ecology study on representative habitats of the entire Refuge. Continue to cooperate with the states and the Corps of Engineers in monitoring turtle populations on certain Refuge areas.

Rationale: Recent surveys in the Weaver Bottoms area of Pool 5 indicate that this area of the Refuge is an important, and perhaps critical, area for 8 species of turtles, some of which are listed by the states as threatened or endangered. Surveys on other Pools of the Refuge show that 11 species are present. There are numerous potential negative and positive impacts to turtles from public use and navigation channel maintenance activities on the Refuge. However, more rigorous monitoring and research is needed over a broad area to understand turtle populations and ecology to guide a coordinated approach to their conservation. A comprehensive study would provide this information.

Strategies

- In cooperation with the U.S. Geological Survey, seek special funding and grants to fund the turtle ecology study.
- Continue to coordinate with the Corps of Engineers and the states on ways to minimize turtle nesting disturbance on dredge material disposal sites located on the Refuge.
- Through the Upper Mississippi River Conservation Committee, devise a method of sharing more detailed commercial turtle harvest information for the Refuge.
- Upon completion of the turtle ecology study, complete a turtle management strategy and incorporate recommendations in habitat, commercial use, and public use management activities.
- Conduct public information effort including media, brochures, signage, and programs to increase awareness and appreciation of turtles and communicate what visitors can do to minimize impacts on beach areas used for nesting.

Objective 3.9.

Forest Management: Complete by the end of 2008, in cooperation with the Corps of Engineers, a forest inventory of the Refuge, and by 2010, complete a Forest Management Plan for the Refuge.

Rationale: A baseline forest inventory of the approximately 51,000 acres of floodplain forest on the Refuge is the first step in addressing concerns for the long-term health of this important resource. The Corps has been actively working on a forest inventory for several years on Corps-acquired lands, and it makes fiscal and efficiency sense to partner with the Corps on Service-acquired lands on this objective. A Forest Management Plan is needed to integrate forest and wildlife objectives, and to identify management prescriptions such as harvest, planting, fire, and invasives control. Collaboration with the Corps of Engineers is essential to meet the forest habitat needs of wildlife since the Corps retained forest management authority on Corps-acquired lands that are part of the Refuge.

Strategies

- As Refuge funding allows, continue to fund seasonal technicians to help with the Corps' inventory project on Service-acquired lands.
- Continue to work with the Corps and other partners on forest rejuvenation and research projects.
- Continue small scale reforestation, especially mast-producing hardwoods, on suitable Refuge lands.
- Add a Refuge Forester to the Headquarters staff to oversee Forest Management Plan preparation and implementation, and to coordinate with the Corps of Engineers and the states on forest management issues and opportunities.

Objective 3.10.

Grassland Management: Maintain 5,700 acres of grassland habitat on the Refuge through the use of various management tools including prescribed fire, haying, grazing, and control of invasive plants, and by 2008, address grassland conservation and enhancement in a step-down Habitat Management Plan.

Rationale: Many species of wildlife, particularly birds, are dependent on grassland habitat. In addition, some of these grasslands are remnant tallgrass native prairie, a diverse and rare ecosystem throughout the Midwest and home to rare or declining plant and animal species. Active management is needed to curb loss of grasslands to forest succession or invasive species, and to maintain species diversity and health.

Strategies

- Implement the Refuge's Fire Management Plan.
- Use haying, rotational grazing, and control of invasive plants as appropriate to maintain grasslands.
- Restore native prairie where feasible using a combination of rest, fire, farming, and reseeding as appropriate to the site.
- Increase monitoring to measure effectiveness of treatments.

Goal 4: Wildlife-Dependent Recreation. We will manage programs and facilities to ensure abundant and sustainable hunting, fishing, wildlife observation, wildlife photography, interpretation, and environmental education opportunities for a broad cross-section of the public.

Objective 4.1. General Hunting: Maintain a minimum of 175,485 acres (73.2 percent) of land and water of the Refuge open to all hunting in accordance with respective state seasons, and add two new administrative No Hunting Zones for a total of 3,731 acres. See related Objective 4.2 on Waterfowl Closed Areas (See tables, Appendix H and maps, Appendix N.)

Rationale: Maintaining a large percentage of the Refuge open to hunting is in keeping with guidance in the Refuge Improvement Act to facilitate wildlife-dependent use when compatible. This objective also represents a wildlife emphasis by increasing the number of Waterfowl Closed Areas in the related Objective 4.2. These Closed Areas reopen to some hunting after the duck season, adding to the open acreage above. The two new No Hunting Zones are for safety reasons or to minimize conflict between user groups. One is at Sturgeon Slough, Pool 10 (66 acres), which contains a fairly new hiking trail off a major highway, and the other is at Crooked Slough proper, Pool 13 (192 acres) to avoid conflicts and address safety concerns in a relatively narrow corridor popular with anglers.

Strategies

- Continue yearly review of Refuge Hunting Regulations to ensure clarity and to address any emerging issues or concerns, and give the public an opportunity to review and comment on any changes.
- Continue to publish the Refuge Hunting Regulations brochure to inform the public of hunting opportunities and Refuge-specific regulations.
- Continue to improve the hunting experience by ongoing improvements to habitat and enforcement of regulations.
- Review the 1989 Refuge Hunting Plan and modify as needed to comply with new regulations and policies.
- Clearly sign areas closed to hunting and ensure public notification through news releases and other means well before the hunting seasons.

Objective 4.2. Waterfowl Hunting Closed Areas: In fall 2006, implement the following changes to the current Waterfowl Closed Area system on the Refuge:

- 1.) Add 14 new Closed Areas to the current 15, for a total of 29 areas totaling 60,396 acres, or 15,901 acres more than current area (see Table 2 on page 145 and Table 5 on page 160, Table 8 in Appendix H, and maps in Appendix P).
- 2.) All areas, except on Lake Onalaska, would become true Waterfowl Sanctuaries by prohibiting entry and use from October 1 to the end of the respective state regular duck season.
- 3.) The current Lake Onalaska Closed Area and associated Voluntary Waterfowl Avoidance Area would not be affected, although boundary adjustments would be made.

Rationale: This objective represents a wildlife focus alternative to best meet the waterfowl-specific goals of the following overall Closed Area system goals:

- 1.) Provide migrating waterfowl a more balanced and effective network of feeding and resting areas.
- 2.) Minimize disturbance to feeding and resting waterfowl in closed areas.
- 3.) Provide waterfowl hunters with more equitable hunting opportunities over the length of the Refuge.
- 4.) Reduce hunter competition and waterfowl crippling loss along some closed area boundaries.
- 5.) Stabilize boundaries where island and/or shoreline loss or gain creates a fluctuating boundary.

This objective also helps address the issues surrounding Closed Areas as discussed in Chapter 1, Section 1.4.5.4, and analyzed in Chapter 3, Section 3.2.7. The 14 new Closed Areas were chosen to fill gaps between existing Closed Areas, to meet the needs of both dabbling and diving ducks which have different spatial and foraging needs, and to provide areas with the best food potential. An analysis of the potential carrying capacity of existing and proposed alternative Closed Areas was completed in 2004 and shows that this alternative objective would provide a 45 percent increase in total energy available to waterfowl in the Closed Area system (this report is available at Refuge headquarters or on the Refuge planning web site: <http://midwest.fws.gov/planning/uppermiss/index.html>).

The Closed Area locations and configurations in this alternative also took into account the needs for public access and travel routes, commercial navigation, adjacent business and community needs and practicalities, likelihood of near-term habitat improvements in existing Closed Areas, and the desire to continue to provide viable waterfowl hunting opportunities. No change was made in entry regulations for the Lake Onalaska closed area due to the unique circumstances presented by development on two sides of the area. By not changing, it also provides a useful control area to measure differences in effectiveness of a mandatory no entry provision versus voluntary compliance.

Strategies

- Improve habitat in all Closed Areas by ongoing programs such as pool drawdowns, Environmental Management Program projects, and other agency initiatives and regulations.
- Continue to monitor waterfowl use of Closed Areas through weekly aerial surveys in the fall.
- Monitor the frequency and effect of disturbance by commercial, public, and agency entry into Closed Areas.
- Conduct a comprehensive public information campaign to inform waterfowl hunters and the general public of impending changes. Use all methods available including personal contact, presentations at organizations, special meetings, leaflets, signing, news releases, websites, and media interviews.
- Post boundaries of new or modified closed areas well in advance of the waterfowl hunting season to help with public awareness.

- Increase law enforcement presence to help ensure understanding and compliance with changes, relying on verbal and/or written warnings, at an officer's discretion, the first year of implementation in 2006.

Objective 4.3.

Waterfowl Hunting Regulation Changes: In fall 2006, implement the following Refuge-specific waterfowl hunting regulation change (see Appendix I for current regulations):

- 1.) All hunters may possess no more than 25 shotshells during the respective state waterfowl season.
- 2.) Open-water hunting is prohibited on an area of Pool 9 near Ferryville and Cold Springs (river miles 652-658), and an area of Pool 11 (river miles 586-591), both in Wisconsin.

Rationale: The shotshell limit is designed to curb the excessive out-of-range shooting or "skybusting" that occurs throughout the Refuge to varying degrees. Skybusting can have a marked effect on the number of birds crippled and unretrieved, and disrupts the hunting for those who favor working birds with decoy sets. A shell limit will decrease skybusting by providing an incentive (longer hunting experience) for making judicious shooting decisions. The shell limit is reasonable and above limits imposed at other heavily-used public hunting areas and national wildlife refuges.

The prohibition of open-water hunting is to limit disturbance in areas of Pools 9 and 11 that have become important feeding and loafing sites for hundreds of thousands of canvasback and lesser scaup ducks, two species of management concern due to relatively small or declining populations. In Pool 9, the Refuge prohibition is additional insurance for safeguarding waterfowl use of the area into the future since Wisconsin regulations currently prohibit open water hunting. In Pool 11, open water hunting is allowed through a special exemption to the Wisconsin regulations. In the 1980s, the area was an important staging and feeding area for diving ducks, primarily scaup, which fed on abundant fingernail clam. When the fingernail clams collapsed, waterfowl use virtually ceased. In recent years, wild celery has become established and the area is attracting large numbers of canvasback and other diving ducks. This area provides the only major staging and feeding area for divers between Pool 9 and Pool 13, a distance of 125 river miles. The open water prohibition would be pre-emptive since virtually no open water hunting (skull boats) is happening at this time, but is likely as habitat improves and birds increase.

Strategies

- Conduct a comprehensive public information campaign to inform waterfowl hunters and the general public of impending changes.
- Use all methods available including personal contact, presentations at organizations, special meetings, leaflets, signing, news releases, websites, and media interviews.
- Increase law enforcement presence to help ensure understanding and compliance with changes, relying on verbal and/or written warnings, at an officer's discretion, the first year of implementation in 2006.

- Maintain or improve habitat in Pools 9 and 11 through ongoing programs such as pool drawdowns, habitat enhancement projects, and other agency initiatives and regulations.
- Continue to monitor waterfowl use of these areas through weekly aerial surveys in the fall.

Objective 4.4.

Firing Line – Pool 7, Lake Onalaska: In fall 2006, expand the Lake Onalaska Waterfowl Closed Area by approximately 530 acres by moving the north boundary northward (See Pool 7 Map, Alternative B, Appendix P). This expansion would close the so-called Barrel Blinds area to waterfowl hunting.

Rationale: This objective emphasizes a wildlife focus by closing an area notorious for skybusting, competition between hunters, and high crippling rates as noted in the issue discussion in Chapter 1, Section 1.4.5.4. This expansion represents a 7 percent increase in the existing Lake Onalaska Closed Area. Although there is some likelihood that this expansion would just move the firing line northward, difference in islands and emergent vegetation would tend to reduce firing line development.

Strategies

- Conduct a comprehensive public information campaign to inform waterfowl hunters and the general public of impending changes.
- Use all methods available including personal contact, presentations at organizations, special meetings, leaflets, signing, news releases, websites, and media interviews.
- Post and sign the new boundary well in advance of the hunting seasons.
- Increase law enforcement presence to help ensure understanding and compliance with boundary change, relying on verbal and/or written warnings, at an officer's discretion, the first year of implementation in 2006.

Objective 4.5.

Permanent Hunting Blinds on Savanna District: Eliminate the use of permanent hunting blinds within the Savanna District of the Refuge after the 2006-07 waterfowl hunting season. (See Table 16 in Appendix H and maps in Appendix P, Savanna District.)

Rationale: Eliminating permanent blinds would provide consistency on the Refuge since they are not allowed on the other three Districts. In addition to consistency, eliminating the blinds would address a host of issues involving debris, private exclusive use of public waters, limiting hunting opportunities, and confrontations and other incidents. These issues were discussed more fully in Chapter 1, Section 1.4.5.4. This objective would also reduce the staff time spent on law enforcement, complaints, and clean-up which permanent blinds entail, time which could be directed toward more wildlife-related needs, and in line with the wildlife emphasis of this alternative.

Strategies

- Conduct public information campaign to inform the public of the change and to give hunters who have become accustomed to the blinds a chance to adapt to alternative hunting methods or areas.

- Prepare and distribute a leaflet explaining the change and regulations for temporary blinds.
- Begin phase-in of regulations by requiring hunters to comply with the following requirements the year before a respective pool is scheduled for permanent blind phase out:
 1. Blinds must be marked with name and address of owner.
 2. All blind material must be removed by the hunter within 30 days of the end of the waterfowl hunting season.

Objective 4.6.

Potter's Marsh Managed Hunt on Savanna District: After the 2006-07 season, eliminate the managed waterfowl hunt at Potter's Marsh Managed Hunt, including the use of permanent blinds, and open the area to waterfowl hunting on a first-come, first-secured basis. (See Table 16 in Appendix H and maps in Appendix P, Pool 13.)

Rationale: This objective would reduce problems associated with permanent blinds as noted in Objective 4.5 (debris, private exclusive use, limiting hunting opportunities, and confrontations) and eliminate the substantial administrative costs associated with the drawings, permit administration, and oversight of the current program (see issue discussion, Chapter 1, Section 1.4.5.4). This objective reflects a wildlife emphasis since funding and staff currently devoted to this hunt could be focused on wildlife objectives throughout the Savanna District.

Strategies

- Conduct public information campaign beginning at least one year prior to implementation to inform the public of the change and to give hunters who have become accustomed to the managed hunt a chance to adapt to alternative hunting methods or areas.

Objective 4.7.

Blanding Landing Managed Hunt: After the 2006-07 season, eliminate the managed waterfowl hunt at Blanding Landing, Lost Mound Unit, Savanna District (former Savanna Army Depot), including the use of permanent blinds, and open the area to waterfowl hunting on a first-come, first-secured basis. (See Table 16 in Appendix H and maps in Appendix P, Pool 12).

Rationale: Illinois Department of Natural Resources administers this hunt on behalf of the Savanna Army Depot, but with transfer of jurisdiction to the Service, hunting on this area is now the responsibility of the Refuge. Similar to the Potter's Marsh Managed Hunt above, this objective would reduce problems associated with permanent blinds as noted in Objective 4.5 (debris, private exclusive use, limiting hunting opportunities, and confrontations) and eliminate the administrative costs associated with the drawings, permit administration, and oversight of the current program. This objective reflects a wildlife emphasis since funding and staff currently devoted to this hunt could be focused on wildlife objectives throughout the Savanna District, and especially the new Lost Mound Unit which has large start-up needs.

Strategies

- Conduct public information campaign prior to implementation to inform the public of the change and give hunters accustomed to the managed hunt a chance to adapt to alternative hunting methods or areas.

Objective 4.8.

General Fishing: Provide and enhance year-round fishing on 104,716 acres of surface water within the Refuge, and an additional 38,645 acres of Waterfowl Closed Areas open spring, summer, and winter. (Note: Iowa, Wisconsin, and Illinois regulations also maintain fish “refuges” below lock and dams 11, 12, and 13, December 1 through March 15). Maintain 15 accessible fishing piers or docks. (Table 8 and Table 13 in Appendix H and maps in Appendix P)

Rationale: This objective represents the current areas available and open to fishing, tempered by the proposed no entry regulation for Closed Areas in this alternative (Objective 4.2) which would prohibit fishing and all other uses on 38,645 acres during the respective state duck hunting season. Fishing is one of the priority uses of the Refuge System and is to be facilitated when compatible with the purposes of the Refuge and the mission of the Refuge System. Enhanced fishing opportunities are also a reflection of river and Refuge health. No increase in fishing piers or docks is proposed in-line with the wildlife versus public use emphasis of this alternative.

Strategies

- Enhance fishing opportunities on suitable areas of the Refuge through habitat, access, and facility improvements as outlined in other plan objectives.
- Continue to promote fishing through Fishing Days and other outreach and educational programming.
- Cooperate with the states in their ongoing fishery management programs. Schedule yearly inspection and maintenance of fishing piers.

Objective 4.9.

Fishing Tournaments: By January 2008, develop a plan for issuing Refuge Special Use Permits in addition to, or in conjunction with, state-issued permits for all fishing tournaments occurring on the Refuge.

Rationale: Fishing tournaments are a use, and at times a commercial use, of the Refuge and subject to regulations governing uses of national wildlife refuges. The Refuge has not provided any oversight to this use, deferring to the states’ regulatory and permitting processes. Refuge permitting would provide oversight to protect sensitive habitat and wildlife areas from the possible physical and disturbance impacts of fishing tournaments. Through permitting, the Refuge could also play a coordination role given the interstate nature of the Refuge and the river.

Strategies

- Meet with the states and Corps of Engineers to discuss the best strategies for implementing a Refuge permit process in concert with their permitting procedures.
- Develop with the states and Corps of Engineers as appropriate, time, space, and capacity parameters on each Pool within the Refuge, and definitions for what constitutes a fishing tournament.
- Develop outreach plan to involve and inform fishing tournament organizations or sponsors with changes in regulations and procedures.

Objective 4.10.

Wildlife Observation and Photography: Maintain the following existing facilities to foster wildlife observation and photography opportunities: 15 observation decks and areas, 8 hiking trails, 4 canoe trails, 3 biking trails, and 1 auto tour route. (See Table 3, Table 4, Table 5, Table 14 and Table 18 in Appendix H and maps in Appendix P)

Rationale: Wildlife observation and photography are two of the six priority public uses of the Refuge System and are to be facilitated when compatible. This objective represents only an increase in the number of hiking trails (+2). This modest expansion of facilities reflects the wildlife emphasis of this alternative, directing staff to wildlife-related objectives versus public-use related objectives.

Strategies

- Schedule annual inspection and maintenance of the facilities.
- Ensure adequate signing and information in brochures, websites, and maps so the public is aware of the facilities.
- Continue to promote the wildlife observation and photography opportunities of the Refuge through public education, outreach, special programs, and partnerships with the states, Corps of Engineers and private conservation groups.
- Enhance observation and photography opportunities on suitable areas of the Refuge through habitat, access, and facility improvements as outlined in other plan objectives.

Objective 4.11.

Interpretation and Environmental Education: Maintain and update 59 interpretive signs (See Table 15 in Appendix H and maps in Appendix P for details). Continue to print and distribute Refuge General Brochure, and update websites quarterly. Continue to sponsor at least one major annual interpretive event on each Refuge District, and continue environmental education efforts at Districts with public use staff (Savanna and La Crosse).

Rationale: Interpretation and environmental education are two of the six priority public uses of the Refuge System and are to be fostered if compatible with the Refuge purpose and Refuge System mission. Interpreting the resources and challenges of the Refuge to the general public and incorporating these topics into school curricula are important ways to influence the future well-being of the Refuge and the river. Only through understanding and appreciation will people be moved to personal and collective action to ensure a healthy Refuge for the future. Interpretation and environmental education are also key to changing attitudes and behavior which affect the Refuge through off-Refuge land use decisions and on-Refuge conduct and use.

This objective reflects a continuation of a priority toward wildlife-related management activities versus public use activities and programs. Thus, this objective is identical to the objective in the no action or current direction alternative. Environmental education is labor intensive since it is curriculum-based, so efforts are generally limited to the Savanna and La Crosse Districts which have visitor services staff.

Strategies

- Participate in national interpretive events such as National Wildlife Refuge Week or Migratory Bird Day for efficiency and effectiveness.
- Schedule quarterly review of kiosks and interpretive signs and conduct maintenance and sign replacement as needed.
- Cooperate with existing interpretive and environmental education programs offered by the states, Corps of Engineers, other agencies, and private conservation groups, and continue to seek grants to fund events and programs.
- Continue work to complete exhibits at Savanna and La Crosse offices, and seek funding to replace exhibits at McGregor District and Lost Mound Unit.

Objective 4.12.

Commercial Fish Floats: By the end of 2008, eliminate the 4 existing commercial fish floats or fishing piers below Locks and Dams 6, 7, 8, and 9. (See Table 11 in Appendix H, and maps in Appendix P)

Rationale: This objective would eliminate a substantial cost in terms of staff time needed to administer this commercial use, especially in light of continued permit compliance issues with a majority of the fish float operations. The staff time devoted to these commercial operations would be directed to wildlife management and thus represent the wildlife emphasis of this alternative. This objective would also solve several long standing management issues such as permit non-compliance, condition and safety issues with some operations, net economic loss to the government, and noncompliance with regulations governing concessions on national wildlife refuges.

Strategies

- Notify fish float owners/operators of intent to eliminate use and give them 3 years to phase out operations.
- Help owners and operators look at off-refuge options for providing this service, such as the use of commercial barges not moored to Refuge lands or not anchored in Refuge waters.
- Provide the public with information on the fish float phase out to give them time to seek alternate areas or means for this type of fishing.

Objective 4.13.

Guiding Services: Beginning in spring 2006, do not allow commercial guiding for fishing, hunting, wildlife observation or any other uses on the Refuge.

Rationale: As noted in the issues section of Chapter 1, guiding businesses are on the rise and promise to become an increasingly common activity on the Refuge. Without proper oversight, this activity could lead to disturbance to sensitive areas and wildlife, and increased conflict with the general public or other guides as volume and frequency increases. Providing proper administration and oversight of guiding in accordance with Service policy and regulations would be costly in terms of staff time and reduce resources available for higher priority fish, wildlife, and habitat objectives.

Strategies

- Work with the states to ensure that their guide licensing does not conflict with the Refuge prohibition.

- Conduct public information effort through news releases and media contacts to implement the objective.
- Provide proactive enforcement through Refuge law enforcement officers and information provided by others in the law enforcement community.

Goal 5: Other Recreational Use. We will provide opportunities for the public to use and enjoy the Refuge for traditional and appropriate non-wildlife-dependent recreation that is compatible with the purpose for which the Refuge was established and the mission of the Refuge System.

Objective 5.1.

Beach Use and Maintenance: Beginning in spring 2007, implement new “closed-unless-open” policies, and new regulations, outlined below relative to beach-related uses and beach maintenance.

A. Beach Use Policy. Refuge lands will generally be closed to the beach-related, non-wildlife-dependent uses of camping, overnight mooring, and picnicking, swimming, and social gatherings. However, remnant and active dredged material placement sites, natural sand shorelines, and all other shoreline areas within the Refuge that are adjacent to the main channel of the river, including the backside of islands, points or other lands adjacent to the main channel, may be open to beach-related uses by District Managers through signing and other means.

B. New regulations for camping and other beach-related uses. Current public use regulations as described in the Refuge Public Use Regulations brochure (see Appendix J) will remain in effect, except by April 1, 2007, the following regulation changes will be implemented:

- 1.) Camping is defined as erecting a tent or shelter of natural or synthetic material, preparing a sleeping bag or other bedding material for use, parking of a motor vehicle or mooring or anchoring of a vessel, for the apparent purpose of overnight occupancy, or, occupying or leaving personal property, including boats or other craft, at a site anytime between the hours of 11 p.m. and 3 a.m. on any given day.
- 2.) All campers must have access to either a portable or approved, marine onboard toilet facility, or have in their possession a commercial human waste disposal kit for each person. All human solid waste and associated material, along with any personal property, refuse, trash, and litter, shall be removed immediately upon vacating a site.
- 3.) Entering or remaining on the Refuge when under the influence of alcohol will remain prohibited, but under the influence will be defined as a blood alcohol content of .08 percent blood alcohol content. In addition, develop a public intoxication regulation to give officers a tool to deal with unruly behavior.
- 4.) Beach Maintenance Policy. Beach maintenance (topdressing, reshaping, leveling, and vegetation clearing) will not be allowed on Refuge lands.

Rationale: Non-wildlife-dependent recreation continues to increase on the Mississippi River and the Refuge. It is estimated that 1.3 million persons per year use the Refuge for camping, recreational boating, picnicking, swimming, social gatherings, and other uses not dependent on the presence of fish and wildlife. This objective, with its new policies and regulations, would address the many issues related to beach use described in the issue section of Chapter

1. These issues included the high incidence of disturbing violations, wildlife displacement, litter and human waste, intoxication, unlawful and unruly behavior, and officer and public safety. However, it would also address the unique circumstances and traditions of beach-related uses at this Refuge and allow these uses to continue at locations and in a manner that would give maximum consideration to the fish and wildlife purpose of the Refuge and the wildlife focus of this alternative. Curtailing any beach maintenance would free staff planning and administrative time for wildlife-related work.

Strategies

- Continue to work with the states and the Corps of Engineers through existing interagency workgroups to identify which areas in each Pool would be open in accordance with the new policies and regulations.
- Conduct public information and education campaign well before implementation of changes, to include news releases, general articles, fact sheets, and media interviews.
- Use the components and principles of the Leave No Trace program in the campaign (plan ahead and prepare, travel and camp on durable surfaces, dispose of waste properly, leave what you find, minimize campfire impacts, respect wildlife, and be considerate of others).
- Develop a brochure which clearly explains new policies and regulations and answers frequently asked questions.
- Develop new signs for use on areas that would be open to beach-related uses to ensure public recognition and compliance.
- Refuge officers will increase contacts with Refuge users once this plan is approved to explain pending regulation changes.
- Verbal or written warnings will be used at officer discretion during the first year of implementation to ease the transition.

Objective 5.2.

Electric Motor Areas: Beginning spring, 2006, establish a total of 10 electric motor areas on the Refuge encompassing 15,900 acres. A 5 mph speed limit would also apply in these areas given anticipated future changes in technology. Camping would also be prohibited in these areas. (See Table 12 in Appendix H, and maps in Appendix P)

Rationale: Technology in the form of jet skis, bass boats, shallow water motors such as Go-Devils™, airboats, and hovercraft has introduced more noise and user conflict to the backwater areas of the Refuge. This objective would help reduce disturbance to backwater fish nurseries and sensitive backwater wildlife such as raptors, colonial nesting birds, and furbearers in keeping with the wildlife focus of this alternative. It would also address the need to provide areas of quiet and solitude sought by many users of the Refuge. This objective only affects the means of navigation, and all current uses would be allowed (fishing, hunting, observation, etc.) in accordance with current regulations or those proposed elsewhere in this alternative. The 15,900 acres represents about 7 percent of the Refuge.

Strategies

- Conduct a public information campaign to inform and educate the public about pending electric motor designations.

- Clearly delineate electric motor areas on Refuge maps and by appropriate signing.

Objective 5.3.

Slow, No-Wake Zones: In 2006, add 10 new Refuge-administered slow, no-wake zones (brings total to 12) and assist local or other units of government in the enforcement of 43 other slow, no-wake zones within the Refuge. (See Table 17 in Appendix H, and maps in Appendix P)

Rationale: On a few areas of the Refuge, boat traffic levels and size of boats is leading to erosion of island and shoreline habitat which can impact fish and wildlife habitat directly, or indirectly through increasing sedimentation and water turbidity. On some of the areas identified, slower speeds would reduce safety hazards posed by heavy traffic and blind spots in narrow channels.

Strategies

- Work with local authorities to designate and mark slow, no-wake zones.
- Communicate the changes with the public well in advance of implementation using the media and other means, and clearly show slow, no-wake areas on maps available to the public.

Objective 5.4.

Dog Use Policy: Beginning in April, 2006, implement the following new regulation governing dogs and other domestic animals on the Refuge:

“Dogs and other domestic animals are not allowed to run free and must be restrained by leash no greater than 6 feet in length, or other means, at all times. Hunting and retrieving dogs are exempt from these conditions while engaged in authorized hunting activities during the hunting season. No field trials or training is allowed on the Refuge”

Rationale: This objective is in line with the current Refuge System regulation which prohibits unconfined domestic animals on national wildlife refuges. The new definition clarifies the meaning of “confined” and safeguards wildlife from domestic animals in keeping with the wildlife focus of this alternative. The new regulation also protects other visitors from the real or perceived threat that dogs and other animals can pose, but recognizes their traditional use and conservation benefit in hunting. The prohibition of field trials and commercial training is a continuation of a long standing Refuge policy.

Strategies

- Publish the new regulation in the Refuge public use regulation brochure, issue news releases, and conduct other outreach prior to implementation in 2006.
- Except in certain cases, law enforcement officers will generally give verbal and/or written warnings for violations of the new regulation the first year, then issue violation notices at their discretion beginning in 2007.

Objective 5.5.

General Public Use Regulations: Beginning in 2006, conduct annual review and update of the general public use regulations governing entry and use of the Refuge (current regulations are found in Appendix J).

Rationale: Public entry and use regulations serve to protect fish, wildlife, plants, and habitat and thus reflect the wildlife focus of this alternative. The current regulations were last reviewed and amended in 1999. However, the resources and public use of the Refuge is dynamic, and a yearly review would ensure that regulations are needed, clear, and effective. In addition, new regulations may be required to safeguard resources or to address new or emerging problems recognized by managers and law enforcement officers. An annual review would provide a more systematic process than in the past.

Strategies

- Conduct review during Refuge law enforcement meetings.
- Provide the public, states, and Corps of Engineers ample opportunity to review and comment on any new or substantially changed regulation.
- Use national guidance and Federal Register process for codifying any changes and make them a part of the Code of Federal Regulations governing national wildlife refuges.
- Update, print, and distribute the Public Use Regulations brochure.
- Post pertinent regulations at boat landings and other public use areas, such as trail heads and beach areas.
- Continue proactive law enforcement to inform and educate the public on Refuge regulations and to seek their compliance.

Goal 6: Administration and Operations. We will seek adequate funding, staffing, and facilities, and improve public awareness and support, to carry out the purposes, vision, goals, and objectives of the Refuge.

Objective 6.1. Office and Shop Facilities: Maintain existing offices (6) and shops (5), but replace the maintenance facilities at Winona, McGregor, and Savanna Districts by 2010.

Rationale: As the wildlife focus alternative, this objective de-emphasizes the need for office replacement and public orientation facilities, but favors replacement of needed maintenance facilities since they directly support field habitat work which benefits fish and wildlife. Maintenance facilities or shops are used for equipment maintenance used in habitat work, and for fabrication of materials (signing, gates, posts, water control structures, etc.) which protect habitat. The existing offices are needed due to the size and length of the Refuge and for effectiveness and efficiency of management, administration, and public service.

Strategies

- Ensure that Refuge shop needs are reflected in budget needs databases.
- Continue to maintain Service-owned facilities using annual maintenance budget allocations.

Objective 6.2. Public Access Facilities: Maintain and modernize as needed, 26 public boat accesses on the Refuge. (See Table 1 in Appendix H, and maps, Appendix P)

Rationale: This objective represents the current number of boat accesses on the Refuge that are maintained by Refuge staff. Maintaining the current number reflects the wildlife focus of this alternative. In addition to these

accesses, there are 222 other public and private boat accesses that provide access to the Mississippi River or its tributaries, and thus the Refuge.

Strategies

- Continue routine upkeep of boat accesses by Refuge staff, temporary employees and Youth Conservation Corps members when available, and volunteers.
- Continue to modernize accesses using Maintenance Management System funding or special funding which is provided periodically, and by implementing a self-service launch fee at Refuge-operated boat ramps.
- In cooperation with states and local governments, explore Transportation Enhancement Act projects and funding to upgrade Refuge accesses.

Objective 6.3.

Operations and Maintenance Needs: Complete annual review of Refuge Operating Needs System (RONS), Maintenance Management System (MMS), and Service Assessment and Maintenance Management System (SAMMS) databases to ensure these reflect the funding needs for carrying out the wildlife focus alternative.

Rationale: The RONS, MMS, and SAMMS databases are the chief mechanisms for documenting ongoing and special needs for operating and maintaining a national wildlife refuge. These databases are part of the information used in the formulation of budgets at the Washington and Regional levels, and for the allocation of funding to the field. It is important that the databases be updated periodically to reflect the needs of the Refuge, and in particular the objectives and strategies elsewhere in this alternative.

Strategies

- None warranted.

Objective 6.4.

Public Information and Awareness: By 2006, reduce by 50 percent the current annual average of 80 media interviews, 125 news releases, and 25 special events (special programs, presentations, and displays at others' events), and maintain the existing 63 information kiosks.

Rationale: This objective reflects an emphasis on the science aspect of Refuge management by freeing staff time from public information and awareness. It also represents the realities of resource management triage in the face of limited visitor services specialists, and a focus on the core fish and wildlife mission and purpose of the Refuge.

Strategies

- Be more strategic in selecting methods for public information and awareness, with focus on those efforts which reach the largest audience with the least amount of staff.
- Continue to look for creative ways to leverage efforts and funding for public information.
- Carry out related objectives dealing with trails, leaflets, and interpretive signs (see objectives 4.10 and 4.11).

- Cooperate with the states and the Corps of Engineers on visitor surveys to gauge public awareness of the Refuge and Mississippi River resources.

Objective 6.5.

Staffing Needs: By 2015, increase staffing from current permanent, full-time level of 37 people to 57 people (54.5 full-time equivalents or FTEs) with priorities being biologists, specialists, technicians, and maintenance personnel who do biology and habitat work (see Table 2 on page 145 and Table 19 in Appendix H).

Rationale: This objective reflects a wildlife focus and the minimum operations and maintenance-funded staffing deemed necessary to meet the goals and objectives of this alternative. Like all land management, refuge management is labor intensive and labor costs represent over 95 percent of the base operations funding received each year. These staffing needs are documented in the strategies for various objectives in this alternative.

Strategies

- Ensure that staffing needs are incorporated in budget needs databases.
- Maintain other sources of funding for staff who coordinate the Environmental Management Program and the Partners for Fish and Wildlife Program.

2.4.4 Alternative C: Public Use Focus

Increase level of effort on public use opportunities and programs. Continue current level of effort on many fish and wildlife and habitat management activities, and decrease effort on others in favor of public use.

Alternative C Summary

Boundary issues would be addressed and the entire Refuge boundary would be surveyed. The rate of land acquisition within the approved boundary would increase to complete 58 percent of the total, an average of 1,000 acres per year, with priority given to tracts that also further public use access and opportunities. All bluffland areas identified in the 1987 Master Plan would be protected through fee-title acquisition or easement, and low-key oversight and administration of Research Natural Areas would continue. Guiding principles for habitat projects would be established, but they would not restrict any public use opportunities.

There would be increased effort to achieve continuous improvement in the quality of water flowing through the Refuge, including decreasing sedimentation. Pool-scale drawdowns would continue at current, intermittent level. Control of invasive plant species would be modest, and control of invasive animals would be minimal, relying on the work of the states and other agencies.

Environmental Pool Plans would be implemented on a strategic and opportunistic basis using the Environmental Management Program or other programs and funding sources. Wildlife inventory and monitoring would decrease by reducing the number of species groups surveyed. Management of threatened and endangered species would focus on protection versus recovery. The furbearer trapping program would continue but be brought into compliance with policies by doing a new plan. There would continue to be limited emphasis on fishery and mussel management and commercial fishing oversight. Cooperation with the states and Corps of Engineers on turtle monitoring and research would continue, and a forest inventory on the Refuge completed in cooperation with the Corps of Engineers. The existing 5,700 acres of grassland habitat on the Refuge would be maintained and enhanced using fire and other tools.



*Photographer on Upper Mississippi River
NW&FR. Photograph by Cindy Samples*

Hunting and fishing opportunities would continue on a large percentage of the Refuge. The system of waterfowl hunting closed areas would remain the same except for minor boundary adjustments. Entry into closed areas for purposes other than hunting, trapping, or camping would continue to be allowed, and the voluntary avoidance area on Lake Onalaska would remain in place. The firing line issue north of the closed area in Lake Onalaska would be addressed by moving the north boundary southward. Current waterfowl hunting regulations would be changed to include a hunting party spacing requirement of 100 yards. No action would be taken in regards to open water hunting in Pools 9 and 11. Permanent blinds for waterfowl hunting would be eliminated Refuge-wide, including those used in the Potter's Marsh and Blanding Landing managed hunts in the Savanna District. The Potter's Marsh managed hunt would continue, but administrative changes would be made to promote

fairness and efficiency. The Blanding Landing managed hunt would be eliminated, but the area would remain open to hunting. General fishing would continue to be promoted, although the Refuge would begin oversight of fishing tournaments in cooperation with the states and other agencies.

There would be a major increase in facilities or programming for wildlife observation, photography, interpretation and environmental education. There would be some increase in Refuge access through new facilities and improvement of existing boat ramps, pull offs, and overlooks. A boat launch fee would be initiated at Refuge-operated boat ramps. Commercial fish floats or piers below locks and dams 6, 7, 8, and 9 would be retained if standards met, and a new fish float proposed in the Savanna District. Commercial guiding on the Refuge would be allowed, but with consistent policy and permit procedures. Areas open to beach-related public use (camping, swimming, picnicking, social gatherings) would remain virtually unchanged, although regulations would be changed to safeguard users, a policy on beach maintenance would be implemented, and an annual Refuge Recreation Use Permit and fee would be initiated to improve recreation management. A total of 15 electric motor areas and 9 new slow, no-wake zones would be established. Current regulations on use of dogs would be changed to allow dogs to be exercised and trained under certain conditions. General public use regulations would be reviewed annually and changed as needed.

New offices and maintenance facilities would be constructed at the Winona, La Crosse, McGregor, and Savanna Districts (shop only at Savanna), and eventually the office and shop facilities at Lost Mound Unit would be remodeled or replaced. A major new visitor center would be constructed in either Winona or La Crosse. Public information and awareness efforts would be increased 50 percent. Staffing levels for the Refuge would increase by 17.5 full-time equivalents with the priority being public use related positions.

Goal 1: Landscape. We will strive to maintain and improve the scenic qualities and wild character of the Upper Mississippi Refuge.

Objective 1.1. Maintain the integrity of the Refuge boundary. In coordination with the Corps of Engineers, re-survey and post the entire Refuge boundary by 2020.

Rationale: Maintaining and enforcing a boundary is one of the basic and critical components of refuge management to ensure the integrity of an area over time. Without attention to this basic task, there is a tendency for adjacent development and use to creep and take over Refuge lands and waters. This encroachment includes tree cutting, dumping, construction,

storing of equipment and materials, and mowing Refuge lands. In addition, there are a few boundaries between Refuge and Corps-managed lands that remain unclear, leading to mixed messages to the public using these lands via permits, leases, or out grants. The size, length, age, and floodplain setting of the Refuge, coupled with a mix of Corps-acquired and Service-acquired lands, creates boundary clarity problems that can only be addressed through modern re-surveying techniques.

Strategies

- Enter into a joint Service/Corps of Engineers project to complete a cadastral survey of the Refuge boundary.
- With the Corps of Engineers, complete a survey plan of action to prioritize and schedule the completion of the survey by 2020.
- Seek the funding necessary for the survey work.
- Also with the Corps of Engineers, review, update, and publish a new Land Use Allocation Plan for lands within the Refuge (see Chapter 1, section 1.4.3.1 for discussion of this plan).

Objective 1.2.

Land Acquisition: By 2020, acquire from willing sellers 58 percent of the lands identified for acquisition in the 1987 Master Plan and subsequent approvals, as identified on the maps in Appendix G (approximately 1,000 acres/year).

Rationale: Land acquisition is a critical component of fish and wildlife conservation since it permanently protects their basic need of habitat. Habitat, in turn, provides the public various recreational opportunities. On a narrow, linear refuge, land acquisition is a critical component of restoring the habitat connectivity needed for the health of many species. The Refuge currently ranks sixth nationally on the Service's Land Acquisition Priority System due to its resource importance. Land acquisition can also be cost effective in the long-term due to inflation of land costs and the costs of acquiring undeveloped land versus developed land that also needs restoration. This objective represents an aggressive land acquisition program of about 1,000 acres per year to achieve goals set in the 1987 Master Plan and other approved acquisition documents. Lands and waters most important to wildlife-dependent recreation would be given higher priority than lands which only protect fish and wildlife, in keeping with the public use focus of this alternative.

Strategies

- Seek consistent Land and Water Conservation Fund appropriations to meet the objective (approximately \$1.5 million per year at \$1,500 per acre).
- Explore land exchanges with the states to remove intermingled ownerships.
- Continue to work with the Department of the Army to transfer title of tracts as they are cleaned of contaminants at the Lost Mound Unit (former Savanna Army Depot).

Objective 1.3.

Bluffland protection: By 2020, acquire from willing sellers protective easements or fee-title interest in all undeveloped bluffland areas within the approved boundary of the Refuge as identified in the 1987 Master Plan. (See maps, Appendix G.)

Rationale: There have been no acquisitions of bluffland areas since first identified in the 1987 Master Plan, and this objective represents a more aggressive approach to safeguarding the wildlife and recreation values of these areas. In recent years, peregrines have once again started nesting on the rock faces of some bluffs. Peregrines, at one time an endangered species, were the main rationale for including the 13 areas in the acquisition boundary. Blufflands are also an important part of maintaining the scenic quality of the Refuge landscape, harbor unique and diverse plants and animals, and provide recreational opportunities that contrast and complement floodplain recreation. Since some areas identified have been developed for housing or other uses since 1987, the focus would be on the undeveloped areas. However, there may be an opportunity to protect remaining values of these developed areas through creative easements.

Strategies

- Seek consistent acquisition funding as noted in Objective 1.2 and favor fee-title acquisition over easements since public ownership would provide additional recreational opportunities in line with a public use focus.
- Work with the state, local governments, and private land trusts to protect bluffland habitat and scenic values.
- Work with local units of government to encourage zoning regulations which protect bluffland scenic qualities.
- Help educate the public on the values of blufflands for birds and unique plant communities.

Objective 1.4

Research Natural Areas and Special Designations: Conduct yearly visits to the Refuges' four federally-designated Research Natural Areas and document condition, check boundary signing, and conduct ongoing wildlife surveys. Increase efforts to make the public aware of values and public use opportunities of Research Natural Areas. Establish no new Research Natural Areas. (See maps, Appendix P and Table 7 in Appendix H.)

Rationale: This objective represents the current level of management which is expected to continue under this alternative. However, there is an increase in public awareness efforts in concert with the public use focus of this alternative. No other areas of the Refuge are deemed suitable for Natural Area designation.

Strategies:

- Ensure yearly visits remain a part of annual work plans in each Refuge District containing Research Natural Areas.
- Incorporate general and recreational opportunity information on Research Natural Areas in brochures, maps, and websites to increase public awareness.

Goal 2: Environmental Health. We will strive to improve the environmental health of the Refuge by working with others.

Objective 2.1.

Water Quality: Working with others, seek a continuous improvement in the quality of water flowing through and into the Refuge in terms of parameters measured by the Long Term Monitoring Program of the Environmental Management Program (dissolved oxygen, major plant nutrients, suspended material, turbidity, sedimentation, and contaminants).

Rationale: The quality of water on the Refuge is one of the most important factors influencing fish, wildlife, and aquatic plant populations and health, which in turn influence the opportunity for public use and enjoyment. Water quality is also beyond the Refuge's ability to influence alone given the immense size of the Refuge's watershed and multiple-agency responsibilities. This objective recognizes these limitations, but charts a more aggressive role for the Refuge through the strategies below. The objective also highlights the advocacy role the Refuge can play in educating the public and supporting the myriad of agencies which together can influence water quality.

Strategies

- Hire a Private Lands Biologist or Technician for each of the Refuge's four Districts to restore and enhance wetland, upland, and riparian habitat on private lands in and along sub-watersheds feeding into the Refuge, and to broker the myriad of private land and conservation opportunities available through the Department of Agriculture and others.
- Increase conservation assistance agreements with Soil and Water Conservation Districts and Resource Conservation and Development boards.
- Cooperate with local government land use planning efforts to ensure that water quality impacts to the Refuge are considered.
- Emphasize water quality aspects, especially sediment deposit in backwaters, in all habitat enhancement projects.
- Give enhanced consideration to sediment projects which improve public access.
- Link the planning and projects for tributary watersheds to Environmental Pool Plan implementation using the latest GIS-based mapping and modeling.
- Support cooperative water quality monitoring and improvement efforts through the Upper Mississippi River Conservation Committee and other groups and agencies.
- Continue to stress the importance of water quality in public information and interpretive and education programs.

Objective 2.2.

Water Level Management: By 2020, complete drawdowns of all Refuge pools during the summer growing season in cooperation with the Corps of Engineers and the states.

Rationale: Lowering the water levels in impoundments during the growing season is a proven management practice to dramatically increase emergent vegetation. Improved vegetation will result in more food and cover for a wide

range of fish and wildlife species, which in turn will provide increased opportunities for fish and wildlife-dependent recreation such as fishing, hunting, and observation. Much of the emergent vegetation on the Refuge has been lost due to stable water regimes created for navigation, and this objective seeks to restore productive marsh habitat to thousands of acres. All pools would benefit from drawdowns. However, Pool 14 does not appear to be feasible in the 15-year horizon of this plan.

Strategies

- Continue to work in partnership with the interagency water level management taskforce to plan and facilitate drawdowns. Inform and involve citizens through public meetings, workshops, and citizen advisory groups.
- Ensure public access during drawdowns is addressed.
- Seek all available funding sources to carry out needed recreational access dredging to lessen social and economic impacts during drawdowns (proposals in Corps of Engineers Navigation Study released in 2004 includes funding for drawdowns).

Objective 2.3.

Invasive Plants: Each year, conduct at least one biological control effort on purple loosestrife and/or leafy spurge on each District of the Refuge, and continue ongoing education and outreach efforts on the effects of invasive plants.

Rationale: This objective represents the current modest program of invasive plant control by the Refuge which would continue under an alternative which favors public use management and administration. Biological control consists of release of insects which prey directly on purple loosestrife or leafy spurge plants or disrupt part of their life cycle, and is a more long-term and cost efficient solution compared to herbicide spraying. Biological control methods are not yet readily available for other invasive plant species. Education and outreach is ongoing as a part of regular displays, programs, and media work.

Strategies

- Continue to work with the Department of Agriculture, other agencies, the states, and other refuge field stations in securing insects and beetles for release in high-infestation areas.
- Take advantage of periodic invasive grant, cost-sharing, or special funding opportunities offered through the Service or other agencies and foundations.
- Continue to provide information and education to the public through the media, brochures, signage, and programs.

Objective 2.4.

Invasive Animals: Continue ongoing information and education efforts on the issue of invasive animal species and their impact on the resources of the Refuge.

Rationale: Since the focus of this alternative is public use, this objective represents a continuation of the current direction of the Refuge in regard to invasive animals. It also represents basic limitations of resources, but perhaps just as important, the reality that invasive animal species do not lend

themselves to direct control in a large river system and that addressing invasive animals is dependent on political and management actions beyond the boundary of the Refuge.

Strategies

- Continue to support the efforts of other agencies and groups in the monitoring, research, and control of invasive animals.
- Continue to provide information and education to the public through the media, brochures, signage, and programs.

Goal 3: Wildlife and Habitat. Our habitat management will support diverse and abundant native fish, wildlife, and plants.

Objective 3.1.

Environmental Pool Plans: By 2020, implement at least 30 percent of the Refuge-priority Environmental Pool Plan actions and strategies in Pools 4-14 as summarized in Table 4 on page 148 (see Appendix N for examples of Environmental Pool Plan maps).

Rationale: Environmental Pool Plans represent a desired future habitat condition developed by an interagency team of resource professionals, including Refuge staff. The Pool Plans represent what is necessary to reverse the negative trends in habitat quality and quantity on the Upper Mississippi River. Improved habitat is the key to healthy fish and wildlife populations, which in turn provide enhanced opportunity for wildlife-dependent recreation, the focus of this alternative. The Refuge represents a sizeable subset of the habitat vision presented in each Pool Plan. The Refuge also has different resource mandates and responsibilities than the Corps of Engineers and the states. Thus, the Refuge prioritized various actions to meet these needs as represented in Table 4. The objective of 30 percent represents a reasonable rate of implementing priority actions given current funding levels (mainly through the Environmental Management Program, Corps of Engineers) for habitat conservation work, and the 15 year horizon of this CCP versus the 50 year horizon of the Pool Plans. Some of the actions and strategies in the Table overlap with other objectives in this plan (e.g. forest management, land acquisition, watershed work, and water level drawdowns).

Strategies

- Continue to coordinate with the River Resources Forum's Fish and Wildlife Workgroup, and the River Resources Coordinating Team's Fish and Wildlife Interagency Committee, to implement pool plan priorities.
- Ensure that priorities take into account public use needs and opportunities.
- Continue to work for full and expanded funding of the Environmental Management Program through public and Congressional information and outreach.
- Take advantage of any new funding sources that emerge, such as appropriations from Congress for implementing the Navigation Study ecosystem restoration recommendations.

Objective 3.2.

Guiding Principles for Habitat Management Programs: Upon approval of the CCP, adopt and use the following guiding principles when designing or providing input to design and construction of habitat enhancement projects:

- 1.) Management practices will restore or mimic natural ecosystem processes or functions to promote a diversity of habitat and minimize operations and maintenance costs.
- 2.) Maintenance and operation costs of projects will be weighed carefully since annual budgets for these items are not guaranteed.
- 3.) Terrestrial habitat on constructed islands and other areas needs to best fit the natural processes occurring on the river, which in many cases will allow for natural succession to occur.

Rationale: Guiding principles for habitat restoration or enhancement projects would provide consistency between the four Districts of the Refuge and help communicate to cooperating agencies and the public standards from which we will design projects. The principles will also help ensure compliance with Service policy on biological integrity and recognize the need to consider future operations and maintenance costs before doing projects. In addition, the principles under this alternative provide no guidance or restrictions on public use or aesthetics, reflecting a public use focus.

Strategies

- Refuge staff will use these guidelines when proposing and designing habitat enhancement projects funded by the Service. They will also be used during coordination with the Corps of Engineers and the states in cooperative programs such as the Environmental Management Program or any new program authority that may arise from the Corps of Engineers' Navigation Study.

Objective 3.3.

Monitor and Investigate Fish and Wildlife Populations and Their Habitats: By January 2008, amend the 1993 Wildlife Inventory Plan to eliminate yearly monitoring of aquatic invertebrates, submerged aquatic vegetation, breeding songbirds, and frogs and toads, and focus only on waterfowl, colonial nesting birds, bitterns and rails, and bald eagle nesting.

Rationale: Monitoring is essential to understanding the status and trends of selected species groups and habitats. This in turn provides some indication of overall biological integrity, diversity, and environmental health of the Refuge, and is critical in planning habitat management and public use programs. However, this objective represents a reduced inventory program in line with directing staff toward public use-related management activities. Monitoring would be skewed toward a select group of migratory birds in keeping with historic federal interest and responsibilities. The Refuge would continue to rely on monitoring done by others to help fill the gaps in status and trends information for breeding songbirds, fish, mussels, reptiles and amphibians, forests and other land cover, and environmental factors such as water chemistry and sedimentation.

Strategies

- Review and amend as needed the Wildlife Inventory Plan to ensure the latest protocols are being followed, but reduce the species being monitored.
- Continue to work with the states, U.S. Geological Survey, and Corps of Engineers in the sharing of data on other species and habitats.

- Continue to use volunteers for certain monitoring efforts such as the breeding bird survey point counts.
- Complete a Habitat Management Plan which integrates species status and trends with the Environmental Pool Plans (Objective 3.1).

Objective 3.4.

Threatened and Endangered Species Management: Continue ongoing protection of federally-listed threatened, endangered, and candidate species and conduct yearly survey of bald eagle nesting.

Rationale: As noted in an earlier section of this chapter, it is Service policy to give priority consideration to the protection, enhancement, and recovery of these species on national wildlife refuges. This objective represents the continuation of a minimum threatened and endangered species program, mainly through the protection of habitat and review and consultation of management actions in light of possible impacts to these species. The only species actively monitored by the Refuge are bald eagles due to public interest and their symbolic stature. This objective also reflects the public use versus wildlife focus of this alternative.

Strategies

- Consider the needs of threatened, endangered, and candidate species in all habitat and public use management decisions.
- Continue to consult with the Service's Ecological Services Offices on all actions which may affect listed species.
- Continue monitoring bald eagle nesting populations and success.
- Continue assistance to other offices and agencies with Higgins eye pearlymussel recovery efforts.

Objective 3.5.

Furbearer Trapping: Update the Refuge trapping plan by June 2007, continuing the existing trapping program until the update is completed.

Rationale: Furbearer trapping has a long history on the Refuge and can be an important management tool in reducing furbearer disease and habitat impacts, and in safeguarding certain Refuge infrastructure such as dikes, islands, and water control structures. Trapping is also a valued recreational pursuit and supports the public use emphasis of this alternative. However, the current trapping plan is dated by time (1988), new furbearer ecology and population information, and by new policies governing compatibility of uses and commercial uses on national wildlife refuges.

Strategies

- The Refuge wildlife biologists, in consultation with Refuge District managers and state furbearer biologists will develop a revised trapping plan for approval by the Refuge manager.
- Afford the public an opportunity for review and comment on the plan.
- Complete a new compatibility determination for public review and comment.

Objective 3.6.

Fishery and Mussel Management: Continue to defer fishery and mussel management on the Refuge to the states and the Service's Fishery Resource Office in La Crosse, Wisconsin.

Rationale: This objective reflects the current and projected Refuge involvement in fishery and mussel management given current funding and staffing levels and a focus on public use versus fish and wildlife.

Strategies

- Continue to gather information from state and other Service offices on the status of fish and mussels on the Refuge.
- Rely on fisheries status and trends provided by the Long Term Resource Monitoring Program of the Environmental Management Program administered by the Corps of Engineers.

Objective 3.7.

Commercial Fishing and Clamming: Continue to defer to state departments of natural resources to monitor, regulate, and permit commercial fishing and clamming.

Rationale: This objective reflects the current and projected Refuge involvement in commercial fishing and mussel harvest given current funding and staffing restraints, and the focus of existing resources on public use-related objectives In keeping with the emphasis of this alternative.

Strategies

- Continue to gather information from the states and the Upper Mississippi River Conservation Committee on harvest levels.
- Conduct license and permit compliance on an opportunistic basis during routine Refuge law enforcement efforts.

Objective 3.8.

Turtle Management: Continue to cooperate with state departments of natural resources and the Corps of Engineers in monitoring turtle populations on certain Refuge areas, but continue to defer to the states on commercial harvest management of certain turtle species.

Rationale: Under a public use focus, current and projected Refuge involvement in turtle management and harvest reflected in this objective is expected to continue. The Refuge has contributed funds and staff to monitoring and study efforts, but availability is unpredictable from year to year.

Strategies

- Work in partnership with the states and Corps of Engineers on monitoring and research efforts for turtles.
- Seek funding for research into turtle ecology and population status through grants.
- Increase public awareness of the importance of the Refuge and river to turtles.
- Consider the needs of turtles in habitat and public use planning and projects.

Objective 3.9.

Forest Management: Complete by 2006, in cooperation with the Corps of Engineers, a forest inventory of the Refuge.

Rationale: A baseline forest inventory of the approximately 51,000 acres of floodplain forest on the Refuge is the first step in addressing concerns for the long-term health of this important resource. Long-term forest health is important to wildlife-dependent public use since it will support wildlife species important to hunting and wildlife observation. The Corps has been actively working on a forest inventory for several years on Corps-acquired lands, and it makes fiscal and efficiency sense to partner with the Corps on this objective.

Strategies

- As Refuge funding allows, continue to fund seasonal technicians to help with the Corps' inventory project on Refuge-acquired lands.
- Continue to work with the Corps and other partners on forest rejuvenation and research projects.
- Continue small scale reforestation, especially mast-producing hardwoods, on suitable Refuge lands.

Objective 3.10.

Grassland Management: Maintain 5,700 acres of grassland habitat on the Refuge through the use of various management tools including prescribed fire, haying, grazing, and control of invasive plants.

Rationale: Many species of wildlife, particularly birds, are dependent on grassland habitat, which in turn supports recreation such as hunting and wildlife observation. Some of these grasslands are remnant tallgrass native prairie, a diverse and rare ecosystem throughout the Midwest and home to rare or declining plant and animal species. Active management is needed to curb loss of grasslands to forest succession or invasive species, and to maintain species diversity and health.

Strategies

- Implement the Refuge's Fire Management Plan.
- Use haying, rotational grazing, and control of invasive plants as appropriate to maintain grasslands.
- Restore native prairie where feasible using a combination of rest, fire, farming, and reseeding as appropriate to the site.

Goal 4: Wildlife-Dependent Recreation. We will manage programs and facilities to ensure abundant and sustainable hunting, fishing, wildlife observation, wildlife photography, interpretation, and environmental education opportunities for a broad cross-section of the public.

Objective 4.1.

General Hunting: Maintain a minimum of 189,121 acres (78.9 percent) of land and water of the Refuge open to all hunting in accordance with respective state seasons, and add 9 new administrative No Hunting Zones for a total of 5,877 acres. See related Objective 4.2 on Waterfowl Closed Areas. (See Table 2 and Table 9 in Appendix H and maps in Appendix P)

Rationale: Maintaining a large percentage of the Refuge open to hunting is in keeping with the public use focus of this alternative and guidance in the Refuge Improvement Act to facilitate wildlife-dependent use when compatible. This objective also represents a public use emphasis by keeping the existing number of Waterfowl Closed Areas in the related Objective 4.2.

These Closed Areas reopen to some hunting after the duck season, adding to the open acreage above. The one new No Hunting Zone is for safety reasons and to increase wildlife observation opportunities during hunting seasons. This area is at Sturgeon Slough, Pool 10 (66 acres), which contains a fairly new hiking trail off a major highway.

Strategies

- Continue yearly review of Refuge Hunting Regulations to ensure clarity and to address any emerging issues or concerns, and give the public an opportunity to review and comment on any changes.
- Continue to publish the Refuge Hunting Regulations brochure to inform the public of hunting opportunities and Refuge-specific regulations.
- Continue to improve the hunting experience by ongoing improvements to habitat and enforcement of regulations.
- Review the 1989 Refuge Hunting Plan and modify as needed to comply with new regulations and policies.
- Clearly sign areas closed to hunting and ensure public notification through news releases and other means well before the hunting seasons.

Objective 4.2.

Waterfowl Hunting Closed Areas: Continue current system of 14 Closed Areas and 1 Sanctuary Area, but in 2007, reduce the size of the Lake Onalaska Closed Area by about 245 acres. Closed Area and Sanctuary acreage would be 40,928 and 3,686 acres respectively. Make area adjustments to clarify boundary or address operation and maintenance needs. (See Table 2 on page 145 and Table 5 on page 160 and maps in Appendix P.)

Rationale: Closed Areas are designed to provide relatively undisturbed fall resting and feeding areas for the length of the Refuge, and to more evenly distribute waterfowl hunting opportunities. This objective represents a virtually unchanged Closed Area system, and keeps a large portion of the Refuge open to waterfowl hunting in line with the public use emphasis of this alternative. This alternative also reflects a reduction in the size of the Lake Onalaska Closed Area as described in Objective 4.4 below. Minor boundary adjustments have been made to some areas over the years and are needed periodically to address physical changes in the environment (such as island erosion) and to reduce confusion or yearly posting concerns.

Strategies

- Improve habitat in Closed Areas by ongoing programs such as pool drawdowns, Environmental Management Program projects, and other agency initiatives and regulations.
- Continue Voluntary Avoidance Area program for the Lake Onalaska (Pool 7) closed area, and seek to expand to other Closed Areas where feasible.
- Continue to monitor waterfowl use of closed areas through weekly aerial surveys in the fall.

Objective 4.3.

Waterfowl Hunting Regulation Changes. In fall 2006, implement the following Refuge-specific waterfowl hunting regulation changes: (See Appendix I for current regulations.)

- 1.) Waterfowl hunting parties shall maintain at least 100 yards spacing between each other. A party is defined as one or more persons hunting together from a boat or stationary location.

Rationale: This objective is designed to improve the waterfowl hunting experience by reducing the conflict and competition between hunting parties that can occur in favored areas of the Refuge. Refuge officers have observed, and received complaints about, crowding and its disruption to hunters favoring decoy hunting, and its contribution to skybusting and confrontations between hunters. The Refuge Manual (8 RM 5) encourages managers to space hunters appropriately to the situation. The 100 yard minimum is less than the standard 200 yards used on many public hunting areas, but is deemed appropriate for this Refuge.

Strategies

- Conduct a comprehensive public information effort to inform waterfowl hunters of impending changes. Use all methods available including personal contact, presentations at organizations, special meetings, leaflets, signing, news releases, websites, and media interviews.
- Increase law enforcement presence to help ensure understanding and compliance with changes, relying on verbal and/or written warnings, at an officer's discretion, the first year of implementation in 2006.

Objective 4.4.

Firing Line – Pool 7, Lake Onalaska. In fall 2006, reduce the Lake Onalaska Waterfowl Closed Area by approximately 245 acres by moving the north boundary southward. (See Pool 7 Map, Alternative C, Appendix P)

Rationale: This objective emphasizes a public use focus by increasing the area open to hunting while eliminating an area notorious for skybusting, competition between hunters, and high crippling rates as noted in the issue discussion in Chapter 1, Section 1.4.5.4. This reduction represents a 3 percent decrease in the existing Lake Onalaska Closed Area. Although there is some likelihood that this expansion would just move the firing line southward, difference in islands and open water along the new line should markedly reduce firing line development.

Strategies

- Conduct a comprehensive public information campaign to inform waterfowl hunters and the general public of impending changes. Use all methods available including personal contact, presentations at organizations, special meetings, leaflets, signing, news releases, websites, and media interviews.
- Post and sign the new boundary well in advance of the hunting seasons.
- Increase law enforcement presence to help ensure understanding and compliance with boundary change, relying on verbal and/or written warnings, at an officer's discretion, the first year of implementation in 2006.

Objective 4.5.

Permanent Hunting Blinds on Savanna District. Eliminate the use of permanent hunting blinds within the Savanna District of the Refuge after the 2006-07 waterfowl hunting season. (See Table 16, Appendix H and maps, Appendix P, Savanna District.)

Rationale: Eliminating permanent blinds would provide consistency on the Refuge since they are not allowed on the other three Districts. In addition to consistency, eliminating the blinds would address a host of issues involving debris, private exclusive use of public waters, limiting hunting opportunities, and confrontations and other incidents. These issues were discussed more fully in Chapter 1, Section 1.4.5.4. This objective would also reduce the staff time spent on law enforcement, complaints, and clean-up which permanent blinds entail, time which could be directed toward public use-related needs. This would also increase hunting opportunity for the broadest spectrum of hunters, and thus reflect the public use emphasis of this alternative.

Strategies

- Conduct public information campaign to inform the public of the change and to give hunters who have become accustomed to the blinds a chance to adapt to alternative hunting methods or areas.
- Prepare and distribute a leaflet explaining the change and regulations for temporary blinds.
- Begin phase in of regulations by requiring hunters to comply with the following requirements the year before a respective pool is scheduled for permanent blind phase out:
 1. Blinds must be marked with name and address of owner.
 2. All blind material must be removed by the hunter within 30 days of the end of the waterfowl hunting season.

Objective 4.6.

Potter's Marsh Managed Hunt on Savanna District. After the 2006-07 season, eliminate the managed waterfowl hunt at Potter's Marsh Managed Hunt, including the use of permanent blinds, and open the area to waterfowl hunting on a first-come, first-secured basis. (See Table 16 in Appendix H and maps in Appendix P, Pool 13.)

Rationale: This objective would reduce problems associated with permanent blinds as noted in Objective 4.5 (debris, private exclusive use, limiting hunting opportunities, and confrontations) and eliminate the substantial administrative costs associated with the drawings, permit administration, and oversight of the current program (see issue discussion, Chapter 1, Section 1.4.5.4). This objective reflects a public use emphasis since it would open the Potter's Marsh area to a broad spectrum of hunters. In addition, the funding and staff currently required for this hunt could be re-directed to public use objectives throughout the Savanna District.

Strategies

- Conduct public information campaign beginning at least one year prior to implementation to inform the public of the change and to give hunters who have become accustomed to the managed hunt a chance to adapt to alternative hunting methods or areas.

Objective 4.7.

Blanding Landing Managed Hunt. After the 2006-07 season, eliminate the managed waterfowl hunt at Blanding Landing, Lost Mound Unit, Savanna District (former Savanna Army Depot), including the use of permanent blinds, and open the area to waterfowl hunting on a first-come, first-secured basis. (See Table 16 Appendix H and maps in Appendix P, Pool 12.)

Rationale: Illinois Department of Natural Resources administers this hunt on behalf of the Savanna Army Depot, but with transfer of jurisdiction to the Service, hunting on this area is now the responsibility of the Refuge. Similar to the Potter's Marsh Managed Hunt above, this objective would reduce problems associated with permanent blinds as noted in Objective 4.5 (debris, private exclusive use, limiting hunting opportunities, and confrontations) and eliminate the administrative costs associated with the drawings, permit administration, and oversight of the current program. This objective reflects a public use emphasis since funding and staff currently devoted to this hunt could be focused on public use objectives throughout the Savanna District, and especially the new Lost Mound Unit which has large start-up needs.

Strategies

- Conduct public information campaign prior to implementation to inform the public of the change and give hunters accustomed to the managed hunt a chance to adapt to alternative hunting methods or areas.

Objective 4.8.

General Fishing. Provide and enhance year-round fishing on 140,545 acres of surface water within the Refuge, and an additional 2,736 acres in Waterfowl Closed Areas in spring, summer, and winter. (Note: Iowa, Wisconsin, and Illinois regulations maintain fish "refuges" below lock and dams 11,12, and 13, December 1 through March 15). Add 5 new accessible fishing piers or docks for a total of 20. (See Table 9 and Table 13 in Appendix H and maps in Appendix P.)

Rationale: This objective represents the current areas available and open to fishing and the area currently closed to fishing from October 1 to the end of the duck hunting season to limit disturbance to waterfowl (Spring Lake, Pool 13). Fishing is one of the priority uses of the Refuge System and is to be facilitated when compatible with the purposes of the Refuge and the mission of the Refuge System. Enhanced fishing opportunities are also a reflection of the public use emphasis of this alternative. The adding of 5 accessible fishing piers is in keeping with this emphasis.

Strategies

- Enhance fishing opportunities on suitable areas of the Refuge through habitat, access, and facility improvements as outlined in other plan objectives.
- Continue to promote fishing through Fishing Days and other outreach and educational programming.
- Cooperate with the states in their ongoing fishery management programs. Schedule yearly inspection and maintenance of fishing piers.

Objective 4.9.

Fishing Tournaments. Beginning in January 2007, begin review of all state-issued permits for all fishing tournaments occurring on the Refuge.

Rationale: Fishing tournaments are a use, and at times a commercial use, of the Refuge and subject to regulations governing uses of national wildlife refuges. The Refuge has not provided any oversight to this use, deferring to the states regulatory and permitting process. Refuge review would provide oversight to protect sensitive habitat and wildlife areas from the possible physical and disturbance impacts of fishing tournaments. Through permit

review, the Refuge could also play a coordination role given the interstate nature of the Refuge and the river. Limiting Refuge involvement to permit review would be the least time consuming and a fairly large number of tournaments would continue in line with the public use emphasis of this alternative.

Strategies

- Meet with the states to discuss the best strategies for implementing a permit review process.
- With the states and the Corps of Engineers, develop time, space, and capacity parameters on each Pool within the Refuge, and definitions for what constitutes a fishing tournament.
- Develop outreach plan to involve and inform fishing tournament organizations or sponsors with any changes in regulations and/or procedures.

Objective 4.10.

Wildlife Observation and Photography. Maintain the following existing and new facilities to foster wildlife observation and photography opportunities: 31 observation decks and areas, 3 observation towers, 3 photography blinds, 21 hiking trails, 26 canoe trails, 6 biking trails, and 3 auto tour routes. (See Table 3, Table 4, Table 5, Table 14 and Table 18 in Appendix H and maps in Appendix P.)

Rationale: Wildlife observation and photography are two of the six priority public uses of the Refuge System and are to be facilitated when compatible. This objective represents a marked increase in the number of observation decks (+16), observation towers (+3), photography blinds (+3), hiking trails (+15), canoe trails (+22), biking trails (+3), and auto tour routes (+2). This expansion of facilities reflects the public use emphasis of this alternative, directing staff and funding to public use-related objectives versus wildlife-related objectives.

Strategies

- Schedule annual inspection and maintenance of the facilities.
- Ensure adequate signing and information in brochures, websites, and maps so the public is aware of the facilities.
- Continue to promote the wildlife observation and photography opportunities of the Refuge through public education, outreach, special programs, and partnerships with the states, Corps of Engineers, and private conservation groups.
- Enhance observation and photography opportunities on suitable areas of the Refuge through habitat, access, and facility improvements as outlined in other plan objectives.
- Seek new funding and partnership opportunities, including volunteers, for construction and maintenance of facilities.

Objective 4.11.

Interpretation and Environmental Education. By the end of 2010, increase the number of stand-alone interpretive signs to 83 (+24) (see Table 15 in Appendix H for details). Build new district offices with visitor contact facilities at McGregor, Winona, La Crosse, and the Lost Mound Unit, and construct a major visitor center and headquarters at either Winona or La

Crosse. Continue to print and distribute Refuge General Brochure, and update websites quarterly. Continue to sponsor at least two major annual interpretive events on each Refuge District, and by January 2008 establish at least one major environmental education program at each District with visitor services staff.

Rationale: Interpretation and environmental education are two of the six priority public uses of the Refuge System and are to be fostered if compatible with the Refuge purpose and Refuge System mission. Interpreting the resources and challenges of the Refuge to the general public and incorporating these topics into school curricula are important ways to influence the future well-being of the Refuge and the river. Only through understanding and appreciation will people be moved to personal and collective action to ensure a healthy Refuge for the future. Interpretation and environmental education are also key to changing attitudes and behavior which affect the Refuge through off-Refuge land use decisions and on-Refuge conduct and use.

This objective reflects a marked increase in interpretation and environmental education capability and programs and reflects the public use focus of this alternative. It also reflects basic needs for a Refuge that is the most heavily visited in the U.S., and would provide the visitor facilities necessary to inform and educate visitors and help them make the most of their Refuge visit. Since environmental education is curriculum-based and labor intensive, initial efforts will be limited to Districts with public use staff.

Strategies

- Hire visitor services specialists at McGregor and Winona Districts (top priority), and hire a visitor services specialist to be stationed at the National Mississippi River Museum in Dubuque, Iowa to help present Refuge-specific programs.
- Continue work to complete exhibits at Savanna and La Crosse offices, and seek funding to replace exhibits at McGregor District and the Lost Mound Unit of the Savanna District.
- Participate in national interpretive events such as National Wildlife Refuge Week or Migratory Bird Day for efficiency and effectiveness.
- Schedule quarterly review of interpretive signs and conduct maintenance and sign replacement as needed.
- Cooperate with existing interpretive and environmental education programs offered by the states, Corps of Engineers, other agencies, and private conservation groups, and continue to seek grants to fund events and programs.
- Continue to locate interpretive signs at public access and overlook points in cooperation with various agencies and units of government.

Objective 4.12.

Commercial Fish Floats. By the end of 2006, develop new facility, operations, and concession fee standards for the 4 existing commercial fish floats or fishing piers below Locks and Dams 6, 7, 8, and 9, and solicit proposals for one new fish float, or other alternative, in the Savanna District. (See Table 11 in Appendix H and maps in Appendix P)

Rationale: This objective would continue to recognize the important role of fish floats in providing an alternative fishing experience for a diversity of Refuge visitors. However, new standards would address several long standing management issues such as permit non-compliance, condition and safety issues with some operations, net economic loss to the government, and noncompliance with regulations governing concessions on national wildlife refuges.

Strategies

- Draft new standards well in advance of implementation and give fish float owners/operators a chance to review and comment.
- Continue yearly coordination meeting with float owners and operators to address concerns and permit conditions.
- Continue enforcement of permit stipulations and suspend permits of those operations not meeting the stipulations.
- Inspect facilities for safety at least once yearly.
- Ensure open and fair solicitation of proposals for a possible new float below Lock and Dam 12. If any floats are phased out due to non-compliance with permit stipulations, ensure adequate public notice so clients can seek alternate opportunities.

Objective 4.13

Guiding Services. In spring 2007, begin implementing a consistent process for issuing permits for persons conducting for-hire guided hunting, fishing, and wildlife observation activities on the Refuge.

Rationale: As noted in the issues section of Chapter 1, guiding businesses are on the rise and promise to become an increasingly common activity on the Refuge. Without proper oversight, this activity could lead to disturbance to sensitive areas and wildlife, and increased conflict with the general public or other guides as volume and frequency increases. In addition, guiding and other commercial uses are prohibited on a national wildlife refuge unless specifically authorized via permit. The Refuge needs to bring this use into compliance with regulations and policy. Effectively managing this use would benefit the general public that uses the Refuge for hunting, fishing, and wildlife observation, and thus represents a public use focus.

Strategies

- Work with the states to ensure coordination and some degree of consistency with their guide licensing requirements and procedures.
- Conduct public information effort through news releases and media contacts to implement the objective.
- Provide proactive enforcement through Refuge law enforcement officers and information provided by others in the law enforcement community.

Goal 5: Other Recreational Use. We will provide opportunities for the public to use and enjoy the Refuge for traditional and appropriate non-wildlife-dependent recreation that is compatible with the purpose for which the Refuge was established and the mission of the Refuge System.

Objective 5.1.

Beach Use and Maintenance. Continue current “open” policy for beach-related uses such as camping, mooring, picnicking, and social gatherings in accordance with existing public use regulations (see Appendix J), but

beginning in spring 2007, implement policies and regulations outlined below relative to these uses and beach maintenance.

- 1.) *Beach Use Policy.* Refuge lands will generally be open to the beach-related, non-wildlife-dependent uses of camping, overnight mooring, picnicking, swimming, and social gatherings.
- 2.) *New regulations for camping and other beach-related uses.* Current public use regulations as described in the Refuge Public Use Regulations brochure (see Appendix J) will remain in effect, except by April 1, 2007, the following regulation changes will be implemented:
 - a) Camping is defined as erecting a tent or shelter of natural or synthetic material, preparing a sleeping bag or other bedding material for use, parking of a motor vehicle or mooring or anchoring of a vessel, for the apparent purpose of overnight occupancy, or, occupying or leaving personal property, including boats or other craft, at a site anytime between the hours of 11 p.m. and 3 a.m. on any given day.
 - b) All personal property, refuse, trash, and litter, including human solid waste and associated material, shall be removed immediately upon vacating a site.
 - c) Entering or remaining on the Refuge when under the influence of alcohol will remain prohibited, but under the influence will be defined as a blood alcohol content of .08 percent blood alcohol content. In addition, develop a public intoxication regulation that gives officers a tool to deal with unruly behavior.
 - d) All motorized watercraft which land, park, or moor on Refuge-managed lands, or use the 26 Refuge-operated boat landings, between May 1 and September 1, must have affixed to the outside, right side of the watercraft a current year Refuge Recreation Use Permit sticker. Recreation use permits will cost a minimum of \$15, will be valid for unlimited visits in the year issued, and be made available via the internet or in person, phone, or mail from any Refuge office or other designated locations.
- 3.) *Beach Maintenance Policy.* Beach maintenance (topdressing, reshaping, leveling, and vegetation clearing) will be allowed on all Refuge lands zoned as low-density recreation in the Service/Corps of Engineers Land Use Allocation Plans.

Rationale: Non-wildlife-dependent recreation continues to increase on the Mississippi River and the Refuge. It is estimated that 1.3 million persons per year use the Refuge for camping, recreational boating, picnicking, swimming, social gatherings, and other uses not dependent on the presence of fish and wildlife. This objective, with its new policies and regulations, would help address some of the issues related to beach use described in the issue section of Chapter 1, most notably litter and human waste, intoxication, unlawful and unruly behavior, officer and public safety, and preemptive use of preferred camping or hunting sites. This objective fosters a high amount of recreation in keeping with the public use focus of this alternative, and is a reasonable alternative given that most use occurs adjacent to the main channel of the

river; a corridor which harbors the least amount of wildlife during the peak visitor use season. Charging a recreation fee would provide funding for law enforcement, site maintenance and cleanup, and general beach maintenance to improve the quality of the experience for visitors.

Strategies

- Continue to work with the states and the Corps of Engineers through existing interagency workgroups to complete beach plans for each pool within the Refuge according to the policies and regulations above.
- Conduct public information and education campaign well before implementation of regulation changes, to include news releases, general articles, fact sheets, and media interviews. Use the components and principles of the Leave No Trace program in the campaign (plan ahead and prepare, travel and camp on durable surfaces, dispose of waste properly, leave what you find, minimize campfire impacts, respect wildlife, and be considerate of others).
- Develop a brochure which clearly explains new policies and regulations and answers frequently asked questions.
- Plan, test, and refine a user-friendly method of recreational permit sales. Refuge officers will increase contacts with Refuge users once this plan is approved to explain pending regulation changes. Verbal or written warnings will be used at officer discretion during the first year of implementation to ease the transition.

Objective 5.2.

Electric Motor Areas. Beginning spring 2006, establish a total of 15 electric motor areas on the Refuge that are within a mile of public accesses, encompassing 13,239 acres. A 5 mph speed limit would also apply in these areas given anticipated future changes in technology. (See Table 12 in Appendix H, and map in Appendix P)

Rationale: Technology in the form of jet skis, bass boats, shallow water motors such as Go-Devs, airboats, and hovercraft has introduced more noise and user conflict to the backwater areas of the Refuge. This objective would support the public use emphasis of this alternative by meeting the needs of visitors who desire areas of quiet and solitude, while helping to reduce disturbance to fish and wildlife in these areas. This objective only affects the means of navigation, and all current uses would be allowed (fishing, hunting, observation, etc.) in accordance with current regulations or those proposed elsewhere in this alternative. The 13,239 acres represents about 5 percent of the Refuge.

Strategies

- Conduct a public information campaign to inform and educate the public about pending electric motor designations.
- Clearly delineate electric motor areas on Refuge maps and by appropriate signing.

Objective 5.3.

Slow, No-Wake Zones. In 2006, add 9 new Refuge-administered slow, no-wake zones (brings total to 11) and assist local or other units of government in the enforcement of 43 other slow, no-wake zones within the Refuge. (See Table 17 in Appendix H, and maps in Appendix P)

Rationale: On a few areas of the Refuge, boat traffic levels and size of boats is leading to erosion of island and shoreline habitat which can impact fish and wildlife habitat directly, or indirectly through increasing sedimentation and water turbidity. On some of the areas identified, slower speeds would reduce safety hazards posed by heavy traffic and blind spots in narrow channels.

Strategies

- Continue to inform the public of the slow, no wake areas through seasonal buoy placement and signing as appropriate.
- Continue to conduct periodic enforcement of the slow, no-wake restriction.
- Continue to cooperate and coordinate with local units of government which establish most slow, no wake zones.

Objective 5.4.

Dog Use Policy. Beginning March 1, 2007, implement the following new regulation governing dogs on the Refuge:

“No pets are allowed to disturb or endanger the wildlife resource or people while on the Refuge. All dogs and other pets while on the Refuge must be under the control of their owners at all times. No dogs will be allowed to roam. All dogs and pets must be physically restrained when on posted designated areas such as hiking trails and sensitive areas, and when in close proximity of other people on recreational sandbars, except when engaged in authorized hunting activity. No field trials, or commercial or organized training.”

Rationale: This objective relaxes the current Refuge System regulation which prohibits unconfined domestic animals on national wildlife refuges. The new regulation provides stipulations for allowing dogs to be free and would allow owners to exercise and train their dogs in line with the public use emphasis alternative, while protecting Refuge wildlife. The new regulation also helps safeguard other visitors from the real or perceived threat that dogs and other animals can pose, but recognizes their traditional use and conservation benefit in hunting. The prohibition of field trials and commercial or organized dog training is a continuation of a long-standing Refuge policy. This regulation also does not affect the existing regulation that prohibits all other unconfined domestic animals on the Refuge.

Strategies

- Publish the new regulation in the Refuge public use regulation brochure, issue news releases, and conduct other outreach prior to implementation in 2007.
- Except in certain cases, law enforcement officers will generally give verbal and/or written warnings for violations of the new regulation the first year, then issue violation notices at their discretion beginning in 2008.

Objective 5.5.

General Public Use Regulations. Beginning in 2006, conduct annual review and update of the general public use regulations governing entry and use of the Refuge (current regulations are found in Appendix J).

Rationale: Public entry and use regulations not only protect wildlife, but enhance the quality of the visitor experience and thus reflect the public use focus of this alternative. The current regulations were last reviewed and amended in 1999. However, the resources and public use of the Refuge is dynamic, and a yearly review would ensure that regulations are needed, clear, and effective. In addition, new regulations may be required to safeguard resources or to address new or emerging problems recognized by managers and law enforcement officers. An annual review would provide a more systematic process than in the past.

Strategies

- Conduct review during Refuge law enforcement meetings.
- Provide the public, states, and Corps of Engineers ample opportunity to review and comment on any new or substantially changed regulation.
- Use national guidance and Federal Register process for codifying any changes and make them part of the Code of Federal Regulations governing national wildlife refuges.
- Update, print, and distribute the Public Use Regulations brochure.
- Post pertinent regulations at boat landings and other public use areas, such as trail heads and beach areas.
- Continue proactive law enforcement to inform and educate the public on Refuge regulations and to seek their compliance.

Goal 6: Administration and Operations. We will seek adequate funding, staffing, and facilities, and improve public awareness and support, to carry out the purposes, vision, goals, and objectives of the Refuge.

Objective 6.1.

Office and Shop Facilities. By 2010, construct new offices and maintenance shops at Winona, La Crosse, and McGregor Districts, and expand the office and construct a new maintenance shop at Savanna District. Each office would have expanded public orientation and interpretation and environmental education capability, but not a biological work area or lab. By 2020, build a new office and large visitor center for the Headquarters of the Refuge, and locate it either in Winona or La Crosse. Also by 2020, remodel or replace office and shop at the Lost Mound Unit.

Rationale: As the public use focus alternative, this objective emphasizes the need for office replacement and visitor contact facilities along with the maintenance capability to support recreation-related infrastructure. The expansion of the Savanna District office would be an additional meeting room/classroom for expanded interpretive programs and environmental education. A large visitor center associated with the Headquarters would provide a focal point for millions of Refuge visitors, and provide state-of-the-art information, displays, and interpretive and education programs.

Strategies

- Ensure that Refuge office, maintenance, and visitor center needs are reflected in budget needs databases.
- Work with the Refuge Friends Group to raise private funds for the Savanna expansion and the Headquarters visitor center.
- Continue to maintain Service-owned facilities using annual maintenance budget allocations.

Objective 6.2.

Public Access Facilities. By 2020, add 1 new boat landing (total of 27), 3 new walk-in accesses, and 3 new and 1 improved canoe landings. Improve 5 parking areas on the Refuge to support public use. (See Table 1 in Appendix H, and maps in Appendix P)

Rationale: This objective represents an increase in public access facilities in line with the public use emphasis of this alternative. Since the Refuge is mainly a floodplain Refuge bounded by major rail lines and highways, opportunities for increasing access points is limited. In addition to these accesses, there are 222 other public and private boat accesses that provide access to the Mississippi River or its tributaries, and thus the Refuge.

Strategies

- Continue routine upkeep of boat accesses by Refuge staff, temporary employees and Youth Conservation Corps members when available, and volunteers.
- Continue to modernize accesses using Maintenance Management System funding or special funding which is provided periodically, and by implementing a self-service boat launch fee at Refuge-operated boat ramps.
- In cooperation with states and local governments, explore Transportation Enhancement Act projects and funding for new accesses and to upgrade current Refuge accesses.

Objective 6.3.

Operations and Maintenance Needs. Complete annual review of Refuge Operating Needs System (RONS), Maintenance Management System (MMS), and Service Assessment and Maintenance Management System (SAMMS) databases to ensure these reflect the funding needs for carrying out the public use focus alternative.

Rationale: The RONS, MMS, and SAMMS databases are the chief mechanisms for documenting ongoing and special needs for operating and maintaining a national wildlife refuge. These databases are part of the information used in the formulation of budgets at the Washington and Regional levels, and for the allocation of funding to the field. It is important that the databases be updated periodically to reflect the needs of the Refuge, and in particular the objectives and strategies elsewhere in this alternative.

Strategies

- None warranted.

Objective 6.4.

Public Information and Awareness. By 2007, increase by 50 percent the current annual average of 80 media interviews, 125 news releases, and 25 special events (special programs, presentations, and displays at others' events), and by 2020 increase information kiosks to 108 (+45) as shown in Table 15 of Appendix H and maps in Appendix P.

Rationale: This objective reflects an emphasis on providing the public more information, especially in regards to public use opportunities to reflect the focus of this alternative.

Strategies

- Hire visitor services specialists for those Districts without, namely Winona and McGregor Districts.
- Hire a public information specialist at Headquarters to increase attention on interviews, news releases, and special events.
- Continue to look for creative ways to leverage efforts and funding for public information.
- Carry out related objectives dealing with trails, leaflets, and interpretive signs (see objectives 4.10 and 4.11).
- Cooperate with the states and the Corps of Engineers on visitor surveys to gauge public awareness of the Refuge and Mississippi River resources.

Objective 6.5.

Staffing Needs. By 2015, increase staffing from current permanent, full-time level of 37 people to 57 people (54.5 full-time equivalents or FTEs) with priorities being public use, maintenance, receptionists, and public information personnel who most directly support public use work on the Refuge (see Table 2 on page 145 and Table 19 in Appendix H).

Rationale: This objective reflects a public use focus and the minimum operations and maintenance-funded staffing deemed necessary to meet the goals and objectives of this alternative. Like all land management, refuge management is labor intensive and labor costs represent over 95 percent of the base operations funding received each year. These staffing needs are documented in, or related to, the strategies for various objectives in this alternative.

Strategies

- Ensure that staffing needs are incorporated in budget needs databases.
- Maintain other sources of funding for staff who coordinate the Environmental Management Program and the Partners for Fish and Wildlife Program.
- Strengthen existing volunteer program and recruit new volunteers to assist with visitor services.

2.4.5 Alternative D: Wildlife and Integrated Public Use Focus (Preferred Alternative)

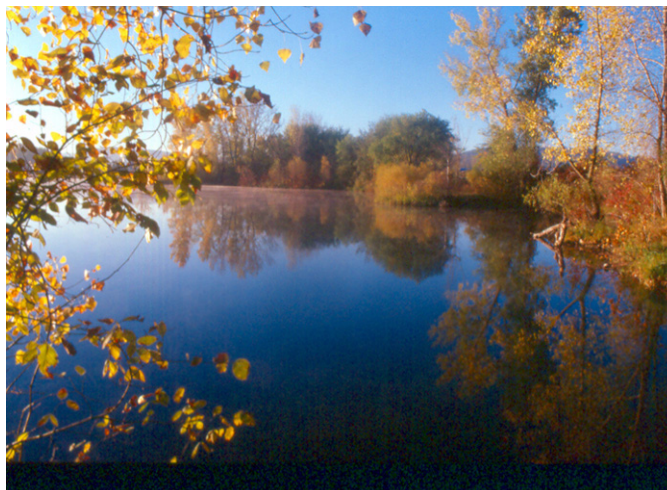
Increase level of effort on fish and wildlife and habitat management. Take a more proactive approach to public use management to ensure a diversity of opportunities for a broad spectrum of users, both for wildlife-dependent uses and traditional and appropriate non-wildlife-dependent uses.

Alternative D Summary

Boundary issues would be aggressively addressed and the entire Refuge boundary would be surveyed. The rate of land acquisition would increase within the approved boundary to complete 58 percent of the total, an average of 1,000 acres per year. There would be more effort to protect through easements or fee-title acquisition all bluffland areas identified in the 1987 Master Plan, and an increase in oversight and administration of Research Natural Areas. The Refuge would be nominated as a Wetland of International Importance (Ramsar). Guiding principles for habitat projects would be established and stress an integrated approach.

There would be an increase in effort to achieve continuous improvement in the quality of water flowing through the Refuge, including decreasing sedimentation. Pool-scale drawdowns would be accomplished by working with the Corps of Engineers and the states. The control of invasive plant species would increase, and there would be increased emphasis on the control of invasive animals. Environmental Pool Plans would be implemented on a strategic and opportunistic basis using the Environmental Management Program or other programs and funding sources. Wildlife inventory and monitoring would increase and include more species groups beyond the current focus of waterfowl, colonial nesting birds, eagles, and aquatic invertebrates/vegetation. The management of threatened and endangered species would focus on helping recovery, not just protection. The furbearer trapping program would continue but be brought into compliance with policies by doing a new plan. The Refuge would become much more active in fishery and mussel management, and provide commercial fishing oversight. Knowledge of turtle ecology through research would increase, as would turtle conservation efforts in cooperation with the states and Corps of Engineers. A forest inventory on the Refuge would be completed in cooperation with the Corps of Engineers, and a forest management plan prepared, leading to more active forest management. The 5,700 acres of grassland habitat on the Refuge would be maintained and enhanced using fire and other tools.

There would be a continuation of hunting and fishing opportunities on a large percentage of the Refuge. The system of waterfowl hunting closed areas would change with some eliminated, some reduced in size, and several new areas added for a total of 21 closed areas. Motorized watercraft and entry into closed areas for fishing, along with hunting, trapping, and camping would be prohibited during the respective state duck season, although the voluntary avoidance area on Lake Onalaska would remain in place. The firing line issue north of the closed area in Lake Onalaska would be addressed by initiating the Gibbs Lake Managed Hunting Program involving a limit to



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the number of hunters through drawing, assigning hunters to areas, and charging a fee. The current Refuge-wide hunting regulations would be changed to include a 25 shotshell limit during the waterfowl season and a 100-yard waterfowl hunting party spacing requirement, and a provision to address open water hunting in portions of Pools 9 and 11. Permanent blinds for waterfowl hunting would be eliminated Refuge wide, including those used in the Potter's Marsh and Blanding Landing managed hunts in the Savanna District. The Potter's Marsh managed hunt would continue with administrative changes to promote fairness and efficiency. The Blanding Landing managed hunt would be eliminated, but the area would remain open to hunting. General fishing would continue to be promoted, although the Refuge would begin issuing permits for fishing tournaments in cooperation with the states and other agencies.

There would be an increase in facilities and programming for wildlife observation, photography, interpretation and environmental education. There would be a modest increase in Refuge access through new facilities and improvement of existing boat ramps, pull offs, and overlooks. A boat launch fee would be initiated on Refuge-operated boat ramps. New standards for the commercial fish floats or piers below locks and dams 6, 7, 8, and 9 would be developed and implemented, with a phase out of floats which do not meet the standards. A consistent process for issuing permits for commercial guiding on the Refuge would be implemented. Areas open to beach-related public use (camping, swimming, picnicking, social gatherings) would be reduced to some degree under an

“open-unless-closed” policy, new regulations would be implemented, and a beach maintenance policy established. Initiating a Refuge Recreation Use Permit and fee would be explored to defray costs of managing beach-related uses. A total of 16 electric motor areas and 10 new slow, no-wake zones would be established. Current regulations on the use of dogs would be changed to allow dogs to be exercised and trained under certain conditions. General public use regulations would be reviewed annually and changed as needed.

New offices and maintenance shops would be constructed at the Winona, La Crosse, and McGregor districts, and at the Lost Mound Unit. The office would be expanded at the Savanna District and a new shop constructed. Public information and awareness efforts would be increased 50 percent. Staffing levels for the Refuge would increase by 19.5 full-time equivalents with a balance among biological, maintenance, visitor services, technical, and administrative staff.

Goal 1: Landscape. We will strive to maintain and improve the scenic qualities and wild character of the Upper Mississippi Refuge.

Objective 1.1. Maintain the integrity of the Refuge boundary. In coordination with the Corps of Engineers, re-survey and post the entire Refuge boundary by 2020.

Rationale: Maintaining and enforcing a boundary is one of the basic and critical components of refuge management to ensure the integrity of an area over time. Without attention to this basic task, there is a tendency for adjacent development and use to creep and take over Refuge lands and waters. This encroachment includes tree cutting, dumping, construction, storing of equipment and materials, and mowing Refuge lands. In addition, there are a few boundaries between Refuge and Corps-managed lands that remain unclear, leading to mixed messages to the public using these lands via permits, leases, or out grants. The size, length, age, and floodplain setting of the Refuge, coupled with a mix of Corps-acquired and Service-acquired lands, creates boundary clarity problems that can only be addressed through modern re-surveying techniques.

Strategies

- Enter into a joint Service/Corps of Engineers project to complete a cadastral survey of the Refuge boundary.
- With the Corps of Engineers, complete a survey plan of action to prioritize and schedule the completion of the survey by 2020.
- Seek the funding necessary for the survey work.
- Also with the Corps of Engineers, review, update, and publish a new Land Use Allocation Plan for lands within the Refuge (see Chapter 1, section 1.4.3.1 for discussion of this plan).

Objective 1.2. Land Acquisition. By 2020, acquire from willing sellers 58 percent of the lands identified for acquisition in the 1987 Master Plan and subsequent approvals, as identified on the maps in Appendix G (approximately 1,000 acres/year).

Rationale: Land acquisition is a critical component of fish and wildlife conservation since it permanently protects their basic need of habitat. It is also a cornerstone of promoting wildlife-dependent recreation by providing lands and waters open to all. On a narrow, linear refuge, land acquisition is a critical component of restoring the habitat connectivity needed for the health

of many species. The Refuge currently ranks 6th nationally on the Service's Land Acquisition Priority System due to its resource importance. Land acquisition can also be cost effective in the long-term due to inflation of land costs and the costs of acquiring undeveloped land versus developed land that also needs restoration. This objective represents an aggressive land acquisition program of about 1,000 acres per year to achieve goals set in the 1987 Master Plan and other approved acquisition documents. Lands with the highest fish and wildlife values were coded "A" in the 1987 Master Plan, and this ranking system remains a useful prioritization tool. However, public use values would also be considered when setting priorities between available tracts in keeping with the balanced approach of this alternative.

Strategies

- Seek consistent Land and Water Conservation Fund appropriations to meet the objective (approximately \$1.5 million per year at \$1,500 per acre).
- Explore land exchanges with the states to remove intermingled ownerships.
- Continue to work with the Department of the Army to transfer title of tracts as they are cleaned of contaminants at the Lost Mound Unit (former Savanna Army Depot).

Objective 1.3.

Bluff land protection. By 2020, acquire from willing sellers protective easements or fee-title interest in all undeveloped bluffland areas within the approved boundary of the Refuge as identified in the 1987 Master Plan. (See maps, Appendix G.)

Rationale: There have been no acquisitions of bluffland areas since first identified in the 1987 Master Plan, and this objective represents a more aggressive approach to safeguarding the wildlife values of these areas. In recent years, peregrines have once again started nesting on the rock faces of some bluffs. Peregrines, at one time an endangered species, were the main rationale for including the 13 areas in the acquisition boundary. Blufflands are also an important part of maintaining the scenic quality of the Refuge landscape and harbor unique and diverse plants and animals. Since some areas identified have been developed for housing or other uses since 1987, the focus would be on the undeveloped areas. However, there may be an opportunity to protect remaining values of these developed areas through creative easements.

Strategies

- Seek consistent acquisition funding as noted in Objective 1.2 and use a blend of easements and fee-title acquisition that best meets landowner's desire and balances wildlife and public use objectives.
- Work with the state, local governments, and private land trusts to protect bluffland habitat and scenic values.
- Work with local units of government to encourage zoning regulations which protect bluffland scenic qualities.
- Educate the public on the values of blufflands for birds and unique plant communities.

Objective 1.4.

Research Natural Areas and Special Designations. By 2010, complete a management plan for each of the Refuge's four federally-designated Research Natural Areas. No new Natural Areas would be established. (See maps in Appendix P and Table 7 on page 180.) Also by 2008, facilitate preparation of a nomination package for designating the Refuge a "Wetland of International Importance" in accordance with the Ramsar Convention.

Rationale: The Refuge has done little in the way of monitoring or research of the existing Research Natural Areas. Although the main goal of the area designation is the preservation of unique floodplain forest areas, preservation is a form of management. No management plans have been written to guide monitoring and research of current habitat conditions and changes since the areas were designated in the 1970s. Completing a management plan for each area would identify monitoring protocols, any habitat management needed to retain original biological values or address threats, address any special public use considerations, and identify ways to foster public awareness and appreciation of these unique areas. No areas of the Refuge are deemed suitable for new Natural Area designation.

Designating the Refuge a Wetland of International Importance would raise its stature in line with previously designated national wildlife refuges including Horicon National Wildlife Refuge in Wisconsin and Sand Lake National Wildlife Refuge in South Dakota. Designation would recognize the Refuge's international importance to migratory birds, as well as its uniqueness in balancing a variety of commercial, cultural, and recreational values, values supported in the treaty stemming from the Ramsar Convention and reflected in this integrated alternative. Designation would also foster the sharing of scientific information and elevate management attention when facing future needs and challenges.

Strategies

- The District Managers will be responsible for completion of management plans for natural areas in their respective Districts, using a consistent approach and format, and in cooperation with the states and other federal agencies as appropriate (e.g. Nelson-Trevino).
- Seek cooperative research and monitoring opportunities with other agencies and colleges and universities.
- Ensure yearly review of Research Natural Area boundaries to ensure integrity of the areas.
- Work collaboratively with the Corps of Engineers, the states, non-government organizations, and the public in preparing a nomination package for Wetland of International Importance designation.

Goal 2: Environmental Health. We will strive to improve the environmental health of the Refuge by working with others.

Objective 2.1.

Water Quality. Working with others and through a more aggressive Refuge program, seek a continuous improvement in the quality of water flowing through and into the Refuge in terms of parameters measured by the Long Term Monitoring Program of the Environmental Management Program (dissolved oxygen, major plant nutrients, suspended material, turbidity, sedimentation, and contaminants).

Rationale: The quality of water on the Refuge is one of the most important factors influencing fish, wildlife, and aquatic plant populations and health, which in turn influence the opportunity for public use and enjoyment. Water quality is also beyond the Refuge's ability to influence alone given the immense size of the Refuge's watershed and multiple-agency responsibilities. This objective recognizes these limitations, but charts a more aggressive role for the Refuge through the strategies below. The objective also highlights the advocacy role the Refuge can play in educating the public and supporting the myriad of agencies which together can influence water quality.

Strategies

- Hire a Private Lands Biologist or Technician for each of the Refuge's four Districts to restore and enhance wetland, upland, and riparian habitat on private lands in and along sub-watersheds feeding into the Refuge, and to broker the myriad of private land and conservation opportunities available through the Department of Agriculture and others.
- Increase conservation assistance agreements with Soil and Water Conservation Districts and Resource Conservation and Development boards.
- Cooperate with local government land use planning efforts to ensure that water quality impacts to the Refuge are considered.
- Emphasize water quality aspects, especially sediment deposit in backwaters, in all habitat enhancement projects.
- Link the planning and projects for tributary watersheds to Pool Plan implementation using the latest GIS-based mapping and modeling.
- Support cooperative water quality monitoring and improvement efforts through the Upper Mississippi River Conservation Committee and other groups and agencies.
- Continue to stress the importance of water quality in public information and interpretation, and environmental education programs.

Objective 2.2.

Water Level Management. By 2020, complete drawdowns of all Refuge pools during the summer growing season in coordination with the Corps of Engineers and states.

Rationale: Lowering the water levels in impoundments during the growing season is a proven management practice to dramatically increase emergent vegetation. Improved vegetation results in more food and cover for a wide range of fish and wildlife species, which in turn enhances opportunities for wildlife-dependent recreation. Much of the emergent vegetation on the Refuge has been lost due to stable water regimes created for navigation, and this objective seeks to restore productive marsh habitat to thousands of acres. All pools would benefit from drawdowns. However, Pool 14 does not appear to be feasible in the 15-year horizon of this plan.

Strategies

- Continue to work in partnership with the interagency water level management taskforce to plan, facilitate and prioritize drawdowns.
- Inform and involve citizens through public meetings, workshops, and citizen advisory groups.

- Seek all available funding sources to carry out needed recreational access dredging to lessen social and economic impacts during drawdowns (proposals in Corps of Engineers Navigation Study released in 2004 includes funding for drawdowns).
- Explore options for funding an Access Trust Fund to ensure adequate funding when needed to accomplish drawdowns.

Objective 2.3.

Invasive Plants. By 2008, complete an invasive plant inventory and by 2010, achieve a 10 percent reduction in acres affected by invasive plants such as purple loosestrife, reed canary grass, Eurasian milfoil, leafy spurge, crown vetch, Russian knapweed, knotweed, European buckthorn, garlic mustard, and Japanese bamboo. Emphasize the use of biological controls.

Rationale: Invasive plants continue to pose a major threat to native plant communities on the Refuge and beyond. Invasive plants displace native species and often have little or no food value for wildlife. The result is a decline in the carrying capacity of the Refuge for native fish, wildlife, and plants, and a resulting decline in the quality of wildlife-dependent recreation. This objective addresses invasive plants by first determining and mapping baseline information so that effective and efficient control can take place. Biological control includes release of insects which prey directly on purple loosestrife or leafy spurge plants or disrupt part of their life cycle, and is a more long-term and cost efficient solution compared to herbicide spraying. This objective is tempered by the realization that biological control methods are not yet readily available for a large number of invasive plant species.

Strategies

- Hire seasonal biological technicians to conduct an inventory and prepare baseline maps of invasive plant infestations.
- Write an invasive plant control and management plan (integrated pest management plan) that identifies priority areas and methods of control.
- Seek seasonal staff and funding to accelerate current control and applied research efforts through interagency partnerships, volunteer programs, and public education.
- Continue to work with the Department of Agriculture, other agencies, the states, and other refuge field stations in securing insects and beetles for release in high-infestation areas.
- Take advantage of periodic invasive grant, cost-sharing, or special funding opportunities offered through the Service or other agencies and foundations.
- Conduct public information effort including media, brochures, signage, and programs to increase awareness of the invasives threat and what visitors can do to minimize the introduction or spread of invasives.

Objective 2.4.

Invasive Animals. Increase efforts to control invasive animals through active partnerships with the states and other Service programs and federal agencies, and increase public awareness and prevention.

Rationale: Invasive animals such as zebra mussels and Asian carp species pose a current and looming threat to native fish and mussel species and have the potential to disrupt the aquatic ecosystem. They can also have a direct

link to the quality of fishing by displacing various game fish, or destroying important habitat for fish and wetland-dependent birds which people observe or hunt. This objective is not measurable, reflecting the reality that invasive animal species do not lend themselves to direct control in a large river system and that addressing invasive animals is dependent on political and management actions beyond the boundary of the Refuge. However, the objective does emphasize the importance of addressing invasive species and represents more active Refuge involvement.

Strategies

- Implement other objectives and strategies in this plan which have an influence on invasive species work. For example, better habitat conditions promote healthy native fish populations that can compete with invasive species, while adding a fishery biologist to the staff would increase and improve coordination with other programs and agencies dealing with invasives.
- Continue to work with other agencies in developing effective regulations, barriers, biological controls, or other means to reduce introduction and spread of invasives.
- Explore new and creative ways to expand the harvest of invasive fish by commercial fishing, such as a bonus payment to enhance market price.
- Conduct public information effort including media, brochures, signage, and programs to increase awareness of the invasives threat and what visitors can do to minimize the introduction or spread of invasives.

Goal 3: Wildlife and Habitat. Our habitat management will support diverse and abundant native fish, wildlife, and plants.

Objective 3.1.

Environmental Pool Plans. By 2020, implement at least 30 percent of the Refuge-priority Environmental Pool Plan actions and strategies in Pools 4-14 as summarized in Table 4 on page 148 (see Appendix N for examples of Environmental Pool Plan maps).

Rationale: Environmental Pool Plans represent a desired future habitat condition developed by an interagency team of resource professionals, including Refuge staff. The Pool Plans represent what is necessary to reverse the negative trends in habitat quality and quantity on the Upper Mississippi River. Improved habitat is the key to healthy fish and wildlife populations, which in turn impact the quality of wildlife-dependent recreation. Thus, this objective represents an important part of the wildlife and integrated public use focus alternative. The Refuge represents a sizeable subset of the habitat vision presented in each Pool Plan. The Refuge also has different resource mandates and responsibilities than the Corps of Engineers and the states. Thus, the Refuge prioritized various actions to meet these needs as represented in Table 4 on page 148. The objective of 30 percent represents a reasonable rate of implementing priority actions given current funding levels (mainly through the Environmental Management Program, Corps of Engineers) for habitat conservation work, and the 15 year horizon of this CCP versus the 50 year horizon of the Pool Plans. Some of the actions and strategies in the Table overlap with other objectives in this plan (e.g. forest management, land acquisition, watershed work, and water level drawdowns).

Strategies

- Continue to coordinate with the River Resources Forum’s Fish and Wildlife Workgroup, and the River Resources Coordinating Team’s Fish and Wildlife Interagency Committee, to implement pool plan priorities.
- Continue to work for full and expanded funding of the Environmental Management Program through public and Congressional information and outreach.
- Take advantage of any new funding sources that emerge, such as appropriations from Congress for implementing the Navigation Study ecosystem restoration recommendations.

Objective 3.2.

Guiding Principles for Habitat Management Programs. Upon approval of the CCP, adopt and use the following guiding principles when designing or providing input to design and construction of habitat enhancement projects:

- 1.) Management practices will restore or mimic natural ecosystem processes or functions to promote a diversity of habitat and minimize operations and maintenance costs.
- 2.) Maintenance and operation costs of projects will be weighed carefully since annual budgets for these items are not guaranteed.
- 3.) Terrestrial habitat on constructed islands and other areas needs to best fit the natural processes occurring on the river, which in many cases will allow for natural succession to occur.
- 4.) If project features in Refuge Waterfowl Hunting Closed Areas serve to attract public use during the waterfowl season, spatial and temporal restrictions of uses may be required to reduce human disturbance of wildlife.
- 5.) The esthetics of projects, in the context of visual impacts to the landscape, should be considered in project design in support of Refuge Goal 1, Landscape.

Rationale: Guiding principles for habitat restoration or enhancement projects would provide consistency between the four Districts of the Refuge and help communicate to cooperating agencies and the public standards from which we will design projects. The principles will also help ensure compliance with Service policy on biological integrity and recognize the need to consider future operations and maintenance costs before doing projects. In addition, the principles help ensure that projects complement, rather than compete with, other goals and objectives in this plan.

Strategies

- Refuge staff will use these guidelines when proposing and designing habitat enhancement projects funded by the Service. They will also be used during coordination with the Corps of Engineers and the states in cooperative programs such as the Environmental Management Program or any new program authority that may arise from the Corps of Engineers’ Navigation Study.

Objective 3.3.

Monitor and Investigate Fish and Wildlife Populations and Their Habitats. By January 2008, amend the 1993 Wildlife Inventory Plan to include more

species groups such as fish, reptiles, mussels, and plants, and increase the amount of applied research being done on the Refuge.

Rationale: Monitoring is essential to understanding the status and trends of selected species groups and habitats. This in turn provides some indication of overall biological integrity, diversity, and environmental health of the Refuge, and is critical in planning habitat management and public use programs. This objective represents a more aggressive biological program on the Refuge and will help meet directives in the Refuge Improvement Act requiring monitoring the status of fish, wildlife, and plant species. Better biological information is also critical to making sound and integrated resource and public use management decisions. The Refuge would continue to support and use monitoring done by the states, U.S. Geological Survey, the Corps of Engineers, and others to help fill the gaps in status and trends information for fish, mussels, reptiles, forests and other land cover, and environmental factors such as water chemistry and sedimentation.

Strategies

- Engage other experts and partners to develop and implement the Wildlife Inventory Plan.
- Establish a Refuge Research Team that designs short-term and long-term research projects to address management questions and concerns about wildlife populations and their habitat.
- Continue to work with the states, U.S. Geological Survey, and Corps of Engineers in the sharing of data on other species and habitats.
- Establish a schedule of formal coordination meetings with the U.S. Geological Survey to share biological monitoring methods and data.
- Ensure that each District has a biologist on staff and that Headquarters has a GIS biologist.
- Seek more cooperation with colleges and universities to foster more graduate research projects.
- Continue to use volunteers for certain monitoring efforts such as the breeding bird survey point counts.
- Complete a Habitat Management Plan which integrates species status and trends with the Environmental Pool Plans (Objective 3.1).

Objective 3.4.

Threatened and Endangered Species Management. By the end of 2008, begin monitoring of all federally listed threatened or endangered and candidate species on the Refuge, and by 2010, have in place management plans for each species to help ensure their recovery.

Rationale: As noted in an earlier section of this chapter, it is Service policy to give priority consideration to the protection, enhancement, and recovery of these species on national wildlife refuges. This objective represents a more aggressive approach to achieving this policy, and also reflects the high public interest in threatened and endangered species. Currently, the only species actively monitored by the Refuge are bald eagles, and efforts would be expanded to include the Higgins eye pearlymussel, eastern massasauga rattlesnake, and Sheepnose mussel.

Strategies

- Consider the needs of threatened, endangered and candidate species in all habitat and public use management decisions.
- Continue to consult with the Service's Ecological Services Offices on all actions which may affect listed species.
- In Wildlife Inventory Plan, address monitoring plan for all listed or candidate species, and other species of management concern to help preclude listing.
- Continue monitoring Bald Eagle nesting populations and success.
- In Habitat Management Plan, identify steps needed to ensure populations of listed or candidate species are sustained in support of delisting or to preclude listing in the future.
- Give priority to acquisition of lands within approved boundary that contain listed or candidate species.
- Continue assistance to other offices and agencies with Higgins eye pearlymussel recovery efforts.
- Increase education and outreach specifically targeting threatened and endangered species found on the Refuge.

Objective 3.5.

Furbearer Trapping. Update the Refuge trapping plan by June 2007, continuing the existing trapping program until the update is completed.

Rationale: Furbearer trapping has a long history on the Refuge and can be an important management tool in reducing furbearer disease and habitat impacts, and in safeguarding certain Refuge infrastructure such as dikes, islands, and water control structures. The current trapping plan is dated by time (1988), new furbearer ecology and population information, and by new policies governing compatibility of uses and commercial uses on national wildlife refuges.

Strategies

- The Refuge wildlife biologists, in consultation with Refuge District managers and state furbearer biologists will develop a revised trapping plan for approval by the Refuge manager.
- Afford the public an opportunity for review and comment on the plan.
- Complete a new compatibility determination for public review and comment.

Objective 3.6.

Fishery and Mussel Management. By the end of 2008, complete a Fishery and Mussel Management Plan for the Refuge which incorporates current monitoring and management by the states and other Service offices and agencies.

Rationale: One of the purposes of the Refuge is to provide a "refuge and breeding place for fish and other aquatic animal life." Fish and mussels also have high intrinsic, recreational, and commercial values. For decades, the Refuge has not taken an active role in fishery or mussel management, deferring to the states or others on this management responsibility. Although the states will still play the lead role in fisheries and mussel management, the Refuge should have in place a plan which communicates to the states and the

public the Refuge and Service perspective on fishery and mussel management issues and needs, and to help set common goals, objectives, and means of collecting and sharing information. The plan would also help guide conservation efforts for rare or declining interjurisdictional species such as paddlefish and sturgeon and federally listed and candidate aquatic species, and address the Refuge's role in commercial harvest of species and control of aquatic invasive species. Healthy fishery and mussel populations also benefit the public's use and enjoyment of these resources.

Strategies

- Add a fishery biologist to the Headquarters staff to coordinate fishery and mussel management on the Refuge.
- Prepare plan in collaboration with the states, Service fishery offices, the Genoa National Fish Hatchery, and aquatic biologists of the U.S. Geological Survey.

Objective 3.7.

Commercial Fishing and Clamming. By the end of 2008, complete a Fishery and Mussel Management Plan, and by January 2009, begin issuing Refuge special use permits in addition to state-required permits for commercial fishing and clamming.

Rationale: The Refuge has provided little to no oversight of the commercial harvest of fish or mussels in the past. However, federal regulations governing the Refuge System state that "fishery resources of commercial importance on wildlife refuge areas may be taken under permit in accordance with federal and state law and regulations" (50 Code of Federal Regulations, Part 31.13). Other regulations govern all commercial uses on refuges. Besides this compliance issue, the Refuge can play an important advisory and coordination role with the four states which administer commercial fish and mussel harvest on the Refuge.

Strategies

- In addition to the strategies in Objective 3.6, establish, with the states through the Upper Mississippi River Conservation Committee, a method of sharing permittee and catch information for the Refuge.
- Devise a Refuge permitting process that dovetails with state permits so that commercial users receive only one permit versus two.
- Enter into cooperative agreements as needed to implement this one-stop-shopping permit process.
- Ensure that commercial harvest of fish and mussels meets objectives in Refuge plans, and explore ways that commercial harvest can help address invasive species issues (Objective 2.4).

Objective 3.8.

Turtle Management. By spring 2007, initiate a 3-5 year turtle ecology study on representative habitats of the entire Refuge. Continue to cooperate with the states and the Corps of Engineers in monitoring turtle populations on certain Refuge areas.

Rationale: Recent surveys in the Weaver Bottoms area of Pool 5 indicate that this area of the Refuge is an important, and perhaps critical, area for 8 species of turtles, some of which are listed by the states as threatened or endangered. Surveys on other Pools of the Refuge show that 11 species are

present. There are numerous potential negative and positive impacts to turtles from public use and navigation channel maintenance activities on the Refuge. However, more rigorous monitoring and research is needed over a broad area to understand turtle populations and ecology to guide a coordinated approach to their conservation, and to guide management decisions concerning public uses in or on important turtle habitats. A comprehensive study would provide this information.

Strategies

- In cooperation with the U.S. Geological Survey, seek special funding and grants to fund the turtle ecology study.
- Continue to coordinate with the Corps of Engineers and the states on ways to minimize turtle nesting disturbance on dredge material disposal sites located on the Refuge.
- Through the Upper Mississippi River Conservation Committee, devise a method of sharing more detailed commercial turtle harvest information for the Refuge.
- Upon completion of the turtle ecology study, complete a turtle management strategy and incorporate recommendations in habitat, commercial use, and public use management activities.
- Conduct public information effort including media, brochures, signage, and programs to increase awareness and appreciation of turtles and communicate what visitors can do to minimize impacts on beach areas used for nesting.

Objective 3.9.

Forest Management. Complete by the end of 2008, in cooperation with the Corps of Engineers, a forest inventory of the Refuge, and by 2010, complete a Forest Management Plan for the Refuge.

Rationale: A baseline forest inventory of the approximately 51,000 acres of floodplain forest on the Refuge is the first step in addressing concerns for the long-term health of this important resource. The Corps has been actively working on a forest inventory for several years on Corps-acquired lands, and it makes fiscal and efficiency sense to partner with the Corps on Service-acquired lands on this objective. A Forest Management Plan is needed to integrate forest and wildlife objectives, and to identify management prescriptions such as harvest, planting, fire, and invasives control. Collaboration with the Corps of Engineers is essential to meet the forest habitat needs of wildlife since the Corps retained forest management authority on Corps-acquired lands that are part of the Refuge. Healthy forests also benefit the diversity and quality of public uses on the Refuge.

Strategies

- As Refuge funding allows, continue to fund seasonal technicians to help with the Corps' inventory project on Service-acquired lands.
- Continue to work with the Corps and other partners on forest rejuvenation and research projects.
- Continue small scale reforestation, especially mast-producing hardwoods, on suitable Refuge lands.

- Add a Refuge Forester to the Headquarters staff to oversee Forest Management Plan preparation and implementation, and to coordinate with the Corps of Engineers and the states on forest management issues and opportunities.

Objective 3.10.

Grassland Management. Maintain 5,700 acres of grassland habitat on the Refuge through the use of various management tools including prescribed fire, haying, grazing, and control of invasive plants, and by 2008, address grassland conservation and enhancement in a step-down Habitat Management Plan.

Rationale: Many species of wildlife, particularly birds, are dependent on grassland habitat. In addition, some of these grasslands are remnant tallgrass native prairie, a diverse and rare ecosystem throughout the Midwest and home to rare or declining plant and animal species. Active management is needed to curb loss of grasslands to forest succession or invasive species, and to maintain species diversity and health. Healthy grasslands benefit a variety of public uses including wildlife observation, plant study, photography, and hunting.

Strategies

- Implement the Refuge's Fire Management Plan.
- Use haying, rotational grazing, and control of invasive plants as appropriate to maintain grasslands. Restore aspects of native prairie where feasible using a combination of rest, fire, farming, and reseeding as appropriate to the site.
- Increase monitoring to measure effectiveness of treatments.

Goal 4: Wildlife-Dependent Recreation. We will manage programs and facilities to ensure abundant and sustainable hunting, fishing, wildlife observation, wildlife photography, interpretation, and environmental education opportunities for a broad cross-section of the public.

Objective 4.1.

General Hunting. Maintain a minimum of 190,586 acres (79.5%) of land and water of the Refuge open to all hunting in accordance with respective state seasons, and add 6 new administrative No Hunting Zones for a total of 5,322 acres. See related Objective 4.2 on Waterfowl Closed Areas. (See Table 2 and Table 10 in Appendix H and maps in Appendix P)

Rationale: Maintaining a large percentage of the Refuge open to hunting is in keeping with guidance in the Refuge Improvement Act to facilitate wildlife-dependent use when compatible. This objective also represents an integrated wildlife and public use emphasis by more strategic placement of Waterfowl Closed Areas in the related Objective 4.2, to both protect migrating waterfowl and offer a better distribution of waterfowl hunting opportunities. These Closed Areas reopen to some hunting after the duck season, adding to the open acreage above. The six new No Hunting Zones are for safety reasons or to minimize conflict between user groups. One is at Sturgeon Slough, Pool 10 (66 acres), which contains a fairly new hiking trail off a major highway, and the other is at Crooked Slough proper, Pool 13 (192 acres) to avoid conflicts and address safety concerns in a relatively narrow corridor popular with anglers.

Strategies

- Continue yearly review of Refuge Hunting Regulations to ensure clarity and to address any emerging issues or concerns, and give the public an opportunity to review and comment on any changes.
- To minimize potential conflicts between user groups, no hunting should occur on the Refuge prior to September 1 of each year and all hunting should end March 15, except for spring Wild Turkey hunting.
- Continue to publish the Refuge Hunting Regulations brochure to inform the public of hunting opportunities and Refuge-specific regulations.
- Continue to improve the hunting experience by ongoing improvements to habitat and enforcement of regulations.
- Review the 1989 Refuge Hunting Plan and modify as needed to comply with new regulations and policies.
- Clearly sign areas closed to hunting and ensure public notification through news releases and other means well before the hunting seasons.

Objective 4.2.

Waterfowl Hunting Closed Areas. In fall 2006, implement the following changes to the current Waterfowl Closed Area system on the Refuge:

- 1.) Add five new Closed Areas and delete or modify some of the current 15, for a total of 21 areas totaling 43,704 acres, or 791 acres more than current area (see Table 2 and Table 5 at the end of this chapter, Table 10 in Appendix H, and maps in Appendix P).
- 2.) The following areas would be closed to all entry and use from October 1 to the end of the respective state regular duck season:
 - a) Pool Slough Sanctuary (McGregor District, Pool 9, Iowa/Minnesota)
 - b) Guttenberg Ponds portion of the 12 Mile Slough Sanctuary (McGregor District, Pool 11, Iowa)
 - c) Spring Lake Sanctuary (Savanna District, Pool 13, Illinois)
- 3.) All other Waterfowl Closed Areas, except on Lake Onalaska, would be closed to all fishing, except bank fishing, and all motorized watercraft, from October 1 to the end of the respective state regular duck season.
- 4.) The current Lake Onalaska Closed Area and associated Voluntary Waterfowl Avoidance Area would not be affected, although boundary adjustments would be made.

Rationale: This objective represents a balanced approach between the needs of waterfowl and the public as reflected in the following overall Closed Area system goals:

- 1.) Provide migrating waterfowl a more balanced and effective network of feeding and resting areas.
- 2.) Minimize disturbance to feeding and resting waterfowl in closed areas.
- 3.) Provide waterfowl hunters with more equitable hunting opportunities over the length of the Refuge.
- 4.) Reduce hunter competition and waterfowl crippling loss along some closed area boundaries.
- 5.) Stabilize boundaries where island and/or shoreline loss or gain creates a fluctuating boundary.

This objective also helps address the issues surrounding Closed Areas as discussed in Chapter 1, Section 1.4.5.4 on page 23., and analyzed in Chapter 3, Section 3.2.7 on page 186. The five new Closed Areas were chosen to fill gaps between existing Closed Areas, to meet the needs of both dabbler and diver ducks which have different spatial and foraging needs, and to provide areas with the best food potential. An analysis of the potential carrying capacity of existing and proposed alternative Closed Areas was completed in 2004 and shows that this alternative objective would provide a 16 percent increase in total energy available to waterfowl in the Closed Area system (this report is available at Refuge headquarters or on the Refuge planning web site: <http://midwest.fws.gov/planning/uppermiss/index.html>).

The Closed Area locations and configurations in this alternative also took into account the need for public access and travel routes, commercial navigation, adjacent business and community needs and practicalities, likelihood of near-term habitat improvements in existing Closed Areas, and the desire to continue to provide viable waterfowl hunting opportunities. No change was made in entry regulations for the Lake Onalaska closed area to provide a useful control area to measure differences in effectiveness of mandatory no fishing and no motorized watercraft versus voluntary compliance as presented in the current Lake Onalaska Voluntary Avoidance Area. The exception also recognizes the unique location of the Lake Onalaska closed area amidst heavy shoreline development and the resulting heavy watercraft use needs and patterns by adjacent property owners and nearby population centers.

Strategies

- Improve habitat in all Closed Areas by ongoing programs such as pool drawdowns, Environmental Management Program projects, and other agency initiatives and regulations.
- Continue to monitor waterfowl use of Closed Areas through weekly aerial surveys in the fall.
- Monitor the frequency and effect of disturbance by commercial, public, and agency entry into Closed Areas.
- Conduct a comprehensive public information campaign to inform waterfowl hunters and the general public of impending changes. Use all methods available including personal contact, presentations at organizations, special meetings, leaflets, signing, news releases, websites, and media interviews.
- Post boundaries of new or modified closed areas well in advance of the waterfowl hunting season to help with public awareness.
- Increase law enforcement presence to help ensure understanding and compliance with changes, relying on verbal and/or written warnings, at an officer's discretion, the first year of implementation in 2006.

Objective 4.3

Waterfowl Hunting Regulation Changes. In fall 2006, implement the following Refuge-specific waterfowl hunting regulation changes: (See Appendix I for current regulations)

- 1.) All hunters may possess no more than 25 shotshells during the respective statewide waterfowl season.

- 2.) Waterfowl hunting parties shall maintain at least 100 yards spacing between each other. A party is defined as one or more persons hunting together from a boat or stationary location.
- 3.) Open-water hunting is prohibited on an area of Pool 9 near Ferryville and Cold Springs (river miles 652-658), and an area of Pool 11 (river miles 586-591), both in Wisconsin.

Rationale: The shotshell limit is designed to curb the excessive out-of-range shooting or “skybusting” that occurs throughout the Refuge to varying degrees. Skybusting can have a marked effect on the number of birds crippled and unretrieved, and disrupts the hunting for those who favor working birds with decoy sets. A shell limit will decrease skybusting by providing an incentive (longer hunting experience) for making judicious shooting decisions. The shell limit is reasonable and above limits imposed at other heavily-used public hunting areas and national wildlife refuges. The hunting party spacing regulation is designed to improve the waterfowl hunting experience by reducing the conflict and competition between hunting parties that can occur in favored areas of the Refuge. Refuge officers have observed, and received complaints about, crowding and its disruption to hunters favoring decoy hunting, and its contribution to skybusting and confrontations between hunters. The Refuge Manual (8 RM 5) encourages managers to space hunters appropriately to the situation. The 100 yard minimum is less than the standard 200 yards used on many public hunting areas, but is deemed appropriate for this Refuge. Collectively, these two regulations represent a balanced approach to the conservation of waterfowl through reducing crippling loss, and by improving the hunting experience through spacing of hunters.

The prohibition of open-water hunting is to limit disturbance in areas of Pools 9 and 11 that have become important feeding and loafing sites for hundreds of thousands of canvasback and lesser scaup ducks, two species of management concern due to relatively small or declining populations. In Pool 9, the Refuge prohibition is additional insurance for safeguarding waterfowl use of the area into the future since Wisconsin regulations currently prohibit open water hunting. In Pool 11, open water hunting is allowed through a special exemption to the Wisconsin regulations. In the 1980s, the area was an important staging and feeding area for diving ducks, primarily scaup, which fed on abundant fingernail clam. When the fingernail clams collapsed, waterfowl use virtually ceased. In recent years, wild celery has become established and the area is attracting large numbers of canvasback and other diving ducks. This area provides the only major staging and feeding area for divers between Pool 9 and Pool 13, a distance of 125 river miles. The open water prohibition would be pre-emptive since virtually no open water hunting (skull boats) is happening at this time, but is likely as habitat improves and birds increase.

Strategies

- Conduct a comprehensive public information campaign to inform waterfowl hunters and the general public of impending changes. Use all methods available including personal contact, presentations at organizations, special meetings, leaflets, signing, news releases, websites, and media interviews.

- Increase law enforcement presence to help ensure understanding and compliance with changes, relying on verbal and/or written warnings, at an officer's discretion, the first year of implementation in 2006.
- Maintain or improve habitat in Pools 9 and 11 through ongoing programs such as pool drawdowns, habitat enhancement projects, and other agency initiatives and regulations.
- Continue to monitor waterfowl use of these areas through weekly aerial surveys in the fall.

Objective 4.4.

Firing Line – Pool 7, Lake Onalaska. Implement a managed hunting program in a 230-acre area delineated at the north end of Lake Onalaska in 2006 to reduce and/or eliminate “skybusting” and associated crippling of waterfowl, competition between hunters for prime hunting sites, and other unsportsmanlike behavior in the Barrel Blinds area of Pool 7. This will be known as the Gibbs Lake Managed Hunting Program. (See map, Alternative D, Appendix P, La Crosse District)

Rationale: The Refuge's Closed Area System was designed to disperse waterfowl hunting opportunity. Hunters tend to congregate near concentrations of waterfowl. Some sections of the closed area boundary, particularly those that bisect emergent marsh, are popular and can attract large concentrations of hunters as they wait for waterfowl to leave closed areas. Pass shooting is the technique most often used along the Barrel Blinds firing line. Unfortunately, “skybusting,” or shooting at birds out of range, often results in increased crippling loss. For example, 63 of 141 (44.7 percent) hunting parties observed by law enforcement personnel during the 1991-93 seasons hunting along firing lines in Pool 7 skybusted at least once during the time they were observed. Skybusting was defined as shooting at waterfowl at distances of 50 yards or more. The number of shots required to retrieve one bird was 11. During the 1992 hunting season, these same observers working Pool 7 firing lines and other areas, found that hunters who did not skybust had a crippling loss rate of about 27 percent for the ducks or coots they downed. The crippling loss rate for ducks and coots downed through skybusting increased to nearly 57 percent.

Hunter behavior can also deteriorate in crowded, competitive situations. Behavior observed or reported along the Barrel Blinds area includes people claiming preferred sites by spending the night, handing-off sites to friends or co-workers after a party's hunt is over, verbal confrontations, late arriving hunters disrupting those set-up, flaring birds before they can work decoy sets, failure to retrieve birds, and increased littering.

Guidance in the Refuge Manual helps set the standard for hunting on refuges: “Refuge hunting programs should be planned, supervised, conducted, and evaluated to promote positive hunting values and hunter ethics such as fair chase and sportsmanship. In general, hunting on refuges should be superior to that available on other public or private lands and should provide participants with reasonable harvest opportunities, uncrowded conditions, fewer conflicts between hunters, relatively undisturbed wildlife, and limited interference from or dependence on mechanized aspects of the sport. This may require zoning the hunt unit and limiting the number of participants.”

The Refuge looked at several options for improving the hunting experience in this area. These options included limiting the number of hunters pool-wide, setting minimum distances between hunters, more education, limiting the number of shotshells, more intense enforcement, and modifying the closed area boundary. However, all had shortcomings in this particular area compared to a managed hunt program.

Strategies

- Conduct a comprehensive public information campaign to inform waterfowl hunters and the general public of impending changes. Use all methods available including personal contact, presentations at organizations, special meetings, leaflets, signing, news releases, websites, and media interviews to ensure that hunters accustomed to hunting in this area have ample opportunity to find new hunting sites, if desired. Conversely, hunters who have not had a chance to hunt in this area will also learn about this new opportunity.
- Prepare a hunt-specific leaflet or fact sheet explaining the change and new regulations.
- Post and sign the new hunt area boundary well in advance of the hunting seasons.
- Increase law enforcement presence to help ensure understanding and to monitor and refine the hunt as needed.
- Implement the Gibbs Lake Managed Hunting Program per the following details:
 1. Hunter selection through a pre-season drawing with each applicant limited to one opportunity through the drawing. Each applicant may apply for up to three dates with selection by order of preference. Only successful applicants will be notified. Hunting sites determined by a daily drawing. If successful applicants are not present on their scheduled day, remaining sites would be made available to stand-bys or walk-ins through a drawing.
 2. All hunting would be done next to the assigned stake. Hunters can use temporary blinds per Refuge regulation.
 3. The registered hunter can bring one guest for a total party size of two. A daily permit will be issued to each hunter.
 4. Two Saturdays during the month of October will be designated as “family days” to provide better opportunities for young hunters, ages 12-15, accompanied by a parent or guardian, to participate. The fee will be waived on “family days” for parents and young hunters, and the party size will be increased to three on these two dates for parties meeting the requirements. If sites are not filled by parents and young hunters, they will be filled by other hunters through a drawing. All area regulations apply on “family days.”
 5. Each hunting party has use of a site for the full day. Sites would not be refilled if a party leaves.
 6. Program-specific regulations include a shotshell possession limit of 25 per hunter. A 100-yard retrieval zone would be implemented within the adjoining Lake Onalaska Closed Area to limit disturbance to waterfowl.

7. The managed hunt would be operational through the first 45 days of a 60-day hunting season. Thereafter, sites would be available on a first-come basis with all Gibbs Lake Managed Hunting Program regulations remaining in effect. No other hunting would be allowed in the Gibbs Lake Managed Hunting Area while the duck hunting season is underway.
8. The exact size, location, and configuration of the Gibbs Lake Managed Hunting Area and the number of hunting sites have not been determined. That will be done later in the field. However, an estimated size as depicted on planning maps is 230 acres (Appendix P). Based on Service hunting program guidelines, past use patterns, and other criteria, it appears that 12-15 hunting parties can be accommodated per day within the managed hunting area and meet program goals.
9. The cost to operate the Gibbs Lake Managed Hunting Program is estimated at nearly \$25,000 for a 60-day duck hunting season. To pay for the program, participating hunters will be charged a fee. This fee ranges from \$18-23 per hunter per day depending on program costs and the final number of hunting sites. As the program is refined, a final fee will be determined.

Objective 4.5.

Permanent Hunting Blinds on Savanna District. Phase-out the use of permanent hunting blinds for waterfowl hunting within the Savanna District of the Refuge. Permanent blinds will no longer be allowed on the Refuge in Pool 12 after the 2006-07 season, Pool 13 after the 2007-08 season, and Pool 14 after the 2008-09 season. (See Table 16 in Appendix H and maps in Appendix P, Savanna District.)

Rationale: Eliminating permanent blinds would provide consistency on the Refuge since they are not allowed on the other three Districts. In addition to consistency, eliminating the blinds would address a host of issues involving debris, private exclusive use of public waters, limiting hunting opportunities, and confrontations and other incidents. These issues were discussed more fully in Chapter 1, Section 1.4.5.4. This objective would also reduce the staff time spent on law enforcement, complaints, and clean-up, which permanent blinds entail, time which could be directed toward more wildlife-related needs, and in line with the wildlife aspect of this alternative. By using a phased approach, the objective takes into consideration the long-standing tradition of permanent blind hunting and gives hunters more time to transition to alternative hunting methods and areas. The elimination of permanent blinds also opens the Refuge to a broader cross-section of hunters, and will help reduce conflict that has arisen between hunting parties, and limits the private, exclusive use of public waters and lands.

Strategies

- Conduct public information campaign to inform the public of the change and to give hunters who have become accustomed to the blinds a chance to adapt to alternative hunting methods or areas.
- Prepare and distribute a leaflet explaining the change and regulations for temporary blinds.
- Begin phase in of regulations by requiring hunters to comply with the following requirements the year before a respective pool is scheduled for permanent-blind phase-out:

1. Blinds must be marked with name and address of owner.
2. All blind material must be removed by the hunter within 30 days of the end of the waterfowl hunting season.

Objective 4.6.

Potter's Marsh Managed Hunt on Savanna District. Beginning with the 2006-07 season, implement a variety of administrative and regulation changes to reduce costs and provide an equitable hunting experience. Permanent blinds would be eliminated after the 2007-08 season, but boat-blind sites provided and managed. (See Table 16 in Appendix H and maps in Appendix P, Pool 13.)

Rationale: This objective reflects an integrated approach by reducing costs and staff time that can be devoted to wildlife objectives, while retaining the essence of the waterfowl hunt which provides a desired experience for hunters. The changes would reduce problems associated with permanent blinds as noted in Objective 4.5 (debris, private exclusive use, limiting hunting opportunities, and confrontations) and reduce the administrative costs associated with the drawings, permit administration, and oversight of the current program (see issue discussion, Chapter 1, Section 1.4.5.4).

Strategies

- Implement the following for the 2006 waterfowl hunting season:
 1. Refuge will mark with numbered stakes 49 hunting areas (same number as current); blinds must be set up within 25 feet of stake.
 2. Blind sites must be occupied one-half hour prior to shooting time or they will be open to the public first-come, first-served.
 3. A 400-yard closed area restriction on west boundary of Potter's Marsh will be maintained (491 acres) to prevent encroachment from other public hunting.
- Implement the following regulation changes for the 2008 season:
 1. Permanent blinds will not be allowed. Only boat blinds in accordance with Refuge temporary-blind regulations.
 2. Refuge will continue to mark 49 hunting areas and boat blinds must be set up within 25 feet of stake.
- Implement the following application and drawing procedure changes for the 2006 season:
 1. Accept applications and hold drawing for blind area on same day, generally on a Saturday in July coinciding with the northwest region of Illinois Department of Natural Resources managed hunt drawing .
 2. Applicant must be present at drawing.
 3. Applicant must have current Firearm Owners Identification if Illinois resident, and current year license and state and federal duck stamps.
 4. Applicants must be 16 years of age by date of drawing.
 5. Applications accepted 10 a.m. to 2 p.m. with drawing at 2 p.m.
 6. Successful applicant receives boat-blind site for entire season.
 7. Application fee \$10, plus \$100 fee for successful applicants.
- Conduct public information campaign beginning at least one year prior to implementation to inform the public of the change and to give hunters

who have become accustomed to the former managed hunt a chance to adapt to alternative hunting methods or areas.

Objective 4.7.

Blanding Landing Managed Hunt. After the 2006-07 season, eliminate the managed waterfowl hunt at Blanding Landing, Lost Mound Unit, Savanna District (former Savanna Army Depot), including the use of permanent blinds, and open the area to waterfowl hunting on a first-come, first-secured basis. (See Table 16 in Appendix H and maps in Appendix P, Pool 12)

Rationale: Illinois Department of Natural Resources administers this hunt on behalf of the Savanna Army Depot, but with transfer of jurisdiction to the Service, hunting on this area is now the responsibility of the Refuge. Similar to the Potter's Marsh Managed Hunt above, this objective would reduce problems associated with permanent blinds as noted in Objective 4.5 (debris, private exclusive use, limiting hunting opportunities, and confrontations) and eliminate the administrative costs associated with the drawings, permit administration, and oversight of the current program. This objective reflects a wildlife emphasis since funding and staff currently devoted to this hunt could be focused on wildlife objectives throughout the Savanna District, and especially the new Lost Mound Unit which has large start-up needs. This objective also reflects a public use emphasis by opening an area to a larger number of waterfowl hunters.

Strategies

- Conduct public information campaign prior to implementation to inform the public of the change and give hunters accustomed to the managed hunt a chance to adapt to alternative hunting methods or areas.

Objective 4.8

General Fishing. Provide and enhance year-round fishing on 110,611 acres of surface water within the Refuge, and an additional 32,750 acres of Waterfowl Closed Areas open spring, summer, and winter. (Note: Iowa, Wisconsin, and Illinois regulations also maintain fish "refuges" below lock and dams 11, 12, and 13, December 1 through March 15). Add 3 new fishing piers or docks for a total of 18. (See Table 10 and Table 13 in Appendix H and maps in Appendix P.)

Rationale: This objective represents the current areas available and open to fishing, tempered by the proposed no entry regulation for Closed Areas in this alternative (Objective 4.2) which would prohibit fishing on 32,750 acres during the respective state duck hunting season. Fishing is one of the priority uses of the Refuge System and is to be facilitated when compatible with the purposes of the Refuge and the mission of the Refuge System. Enhanced fishing opportunities are also a reflection of river and Refuge health. The increase in fishing piers or docks is proposed in-line with the integrated public use emphasis of this alternative. These facilities offer fishing opportunities for those without boats.

Strategies

- Enhance fishing opportunities on suitable areas of the Refuge through habitat, access, and facility improvements as outlined in other plan objectives.
- Continue to promote fishing through Fishing Days and other outreach and educational programming.

- Cooperate with the states in their ongoing fishery management programs.
- Seek new funding and partnership opportunities to construct the new fishing piers.
- Ensure yearly inspection and maintenance of all fishing piers to maintain quality and safety.

Objective 4.9.

Fishing Tournaments. By January 2008, develop a plan for issuing Refuge Special Use Permits in addition to, or in conjunction with, state-issued permits for all fishing tournaments occurring on the Refuge.

Rationale: Fishing tournaments are a use, and at times a commercial use, of the Refuge and subject to regulations governing uses of national wildlife refuges. The Refuge has not provided any oversight to this use, deferring to the states' regulatory and permitting processes. In an integrated approach, permitting would benefit both the resource and the public. Refuge permitting would provide oversight to protect sensitive habitat and wildlife areas from the possible physical and disturbance impacts of fishing tournaments, and help reduce disturbance and conflict with general public fishing. Through permitting, the Refuge could also play a coordination role given the interstate nature of the Refuge and the river.

Strategies

- Meet with the states and the Corps of Engineers to discuss the best strategies for implementing a Refuge permit process in concert with their permitting procedures.
- Develop with the states and the Corps of Engineers as appropriate time, space, and capacity parameters on each Pool within the Refuge, and definitions for what constitutes a fishing tournament.
- Develop outreach plan to involve and inform fishing tournament organizations or sponsors with changes in regulations and procedures.

Objective 4.10.

Wildlife Observation and Photography. Maintain the following existing and new facilities to foster wildlife observation and photography opportunities: 26 observation decks and areas, 3 observation tower, 3 photography blinds, 16 hiking trails, 21 canoe trails, 5 biking trails, and 3 auto tour routes. (See Table 3, Table 4, Table 5, Table 14 and Table 18 in Appendix H and maps in Appendix P)

Rationale: Wildlife observation and photography are two of the six priority public uses of the Refuge System and are to be facilitated when compatible. This objective represents a marked increase in the number of observation decks (+11), observation towers (+3), photography blinds (+3), hiking trails (+10), canoe trails (+17), biking trails (+2), and auto tour routes (+2). This expansion of facilities reflects a balanced and measured increase in facilities for wildlife observation and photography, while continuing to meet fish and wildlife protection and management responsibilities.

Strategies

- Schedule annual inspection and maintenance of the facilities.

- Ensure adequate signing and information in brochures, websites, and maps so the public is aware of the facilities.
- Continue to promote the wildlife observation and photography opportunities of the Refuge through public education, outreach, special programs, and partnerships with the states, Corps of Engineers and private conservation groups.
- Enhance observation and photography opportunities on suitable areas of the Refuge through habitat, access, and facility improvements as outlined in other plan objectives.
- Seek new funding and partnership opportunities, including volunteers, for construction and maintenance of facilities.

Objective 4.11.

Interpretation and Environmental Education. By the end of 2010, increase the number of stand-alone interpretive signs to 83 (+24) (see Table 15 in Appendix H and maps in Appendix P for details) and build new district offices with visitor contact facilities at McGregor, Winona, La Crosse, and the Lost Mound Unit. Continue to print and distribute Refuge General Brochure, and update websites quarterly. Continue to sponsor at least two major annual interpretive events on each Refuge District, and by January 2008 establish at least one major environmental education program at each District with visitor services staff.

Rationale: Interpretation and environmental education are two of the six priority public uses of the Refuge System and are to be fostered if compatible with the Refuge purpose and Refuge System mission. Interpreting the resources and challenges of the Refuge to the general public and incorporating these topics into school curricula are important ways to influence the future well-being of the Refuge and the river. Only through understanding and appreciation will people be moved to personal and collective action to ensure a healthy Refuge for the future. Interpretation and environmental education are also key to changing attitudes and behavior which affect the Refuge through off-Refuge land use decisions and on-Refuge conduct and use.

This objective reflects a marked increase in interpretation and environmental education capability and programs and reflects the importance of these programs in an integrated resource management alternative. It also reflects basic needs for a Refuge that is the most heavily visited in the U.S., and would provide the visitor facilities necessary to inform and educate visitors and help them make the most of their Refuge visit. Since environmental education is curriculum-based and labor intensive, initial efforts will be limited to Districts with public use staff, but will increase across all Districts as staff are added.

Strategies

- Hire visitor services specialists at McGregor and Winona Districts (top priority), and hire a visitor services specialist to be stationed at the National Mississippi River Museum in Dubuque, Iowa to help present Refuge-specific programs.
- Continue work to complete exhibits at Savanna and La Crosse offices, and seek funding to replace exhibits at McGregor District and the Lost Mound Unit of the Savanna District.

- Participate in national interpretive events such as National Wildlife Refuge Week or Migratory Bird Day for efficiency and effectiveness.
- Schedule quarterly review of interpretive signs and conduct maintenance and sign replacement as needed.
- Cooperate with existing interpretive and environmental education programs offered by the states, Corps of Engineers, other agencies and private conservation groups, and continue to seek grants to fund events and programs.
- Continue to locate interpretive signs at public access and overlook points in cooperation with various agencies and units of government.

Objective 4.12.

Commercial Fish Floats. By the end of 2006, develop new facility, operations, and concession fee standards for the 4 existing commercial fish floats or fishing piers below Locks and Dams 6, 7, 8, and 9. Phase out those operations which do not meet new standards, and do not replace. (See Table 11 in Appendix H and maps in Appendix P)

Rationale: This objective would continue to recognize the important role of fish floats in providing an alternative fishing experience for a diversity of Refuge visitors. However, new standards would address several long standing management issues such as permit non-compliance, condition and safety issues with some operations, net economic loss to the government, and noncompliance with regulations governing concessions on national wildlife refuges. Phasing out operations not in compliance would reduce Refuge administrative and staff costs, resources that could be directed back to fish-and-wildlife-related objectives.

Strategies

- Draft new standards well in advance of implementation and give fish float owners/operators a chance to review and comment.
- Continue yearly coordination meeting with float owners and operator to address concerns and permit conditions.
- Continue enforcement of permit stipulations and suspend permits of those operations not meeting the stipulations.
- Inspect facilities for safety at least once yearly.
- If any floats are phased out due to non-compliance with permit stipulations, ensure adequate public notice so clients can seek alternate opportunities.
- Although phased-out operations will not be replaced, explore other off-refuge alternatives, such as fishing barges, to provide similar fishing opportunities.

Objective 4.13

Guiding Services. In spring 2007, begin implementing a consistent process for issuing permits for persons conducting for-hire guided hunting, fishing, and wildlife observation activities on the Refuge.

Rationale: As noted in the issues section of Chapter 1, guiding businesses are on the rise and promise to become an increasingly common activity on the Refuge. Without proper oversight, this activity could lead to disturbance to sensitive areas and wildlife, and increased conflict with the general public or

other guides as volume and frequency increases. In addition, guiding and other commercial uses are prohibited on a national wildlife refuge unless specifically authorized via permit. The Refuge needs to bring this use into compliance with regulations and policy. Effectively managing this use would not only safeguard fish and wildlife resources, but also benefit the general public that uses the Refuge for hunting, fishing, and wildlife observation, and thus represents an integrated approach.

Strategies

- Work with the states to ensure coordination and some degree of consistency with their guide licensing requirements and procedures.
- Conduct public information effort through news releases and media contacts to implement the objective.
- Provide proactive enforcement through Refuge law enforcement officers and information provided by others in the law enforcement community.

Goal 5: Other Recreational Use. We will provide opportunities for the public to use and enjoy the Refuge for traditional and appropriate non-wildlife-dependent recreation that is compatible with the purpose for which the Refuge was established and the mission of the Refuge System.

Objective 5.1.

Beach Use and Maintenance. Beginning in spring 2007, implement a new “open-unless-closed” policy for beach-related uses such as camping, mooring, picnicking, and social gatherings as outlined below. Other existing public use regulations (see Appendix J) will remain in effect.

- 1.) *General Guidelines.* Beach-related uses will be governed by the following over-arching guidelines:
 - a) protect human health and safety
 - b) minimize dangerous situations for Refuge officers
 - c) minimize impacts to wildlife and the Refuge environment
 - d) minimize conflicts with wildlife-dependent uses
 - e) set policies and regulations that are reasonable and feasible to administer and enforce
 - f) minimize or offset current and future administrative, operating, and maintenance costs
 - g) make regulations easily understood by the general public
- 2.) *Beach Use Policy.* Remnant and active dredged material placement sites, natural sand shorelines, and all other shoreline areas within the Refuge will be open to public use and enjoyment in accordance with current and new Refuge Public Use Regulations, unless specifically restricted or closed by appropriate signing. Based on clearly articulated reasons approved by the Refuge Manager, District Managers may close or restrict use on certain beach and other shoreline areas to minimize or eliminate chronic problems or safeguard wildlife or habitat values. Examples of restrictions or closures include:
 - a) Day Use Only Beaches. Open to allowed uses during daylight hours only in accordance with Refuge Public Use Regulations.
 - b) No Alcohol Beaches. Open to day use and camping, but no alcoholic beverages allowed.

- c) Wildlife Beaches. Closed to entry and use from April 1 to September 15 to protect sensitive wildlife needs such as turtle nesting or migratory bird nesting, feeding and loafing.
 - d) Sensitive Habitat Area. Closed to all entry and use from April 1 to September 15, or if warranted, closed year around.
- 3.) *New regulations for camping and other beach-related uses.* Current public use regulations as described in the Refuge Public Use Regulations brochure (see Appendix J) will remain in effect, except by April 1, 2007, the following regulation changes will be implemented:
- a) Camping is limited to islands, peninsulas, or other lands that border the main river channel, including the backside of such areas, and in Electric Motor Areas. Camping is defined as erecting a tent or shelter of natural or synthetic material, preparing a sleeping bag or other bedding material for use, parking of a motor vehicle or mooring or anchoring of a vessel, for the apparent purpose of overnight occupancy, or, occupying or leaving personal property, including boats or other craft, at a site anytime between the hours of 11 p.m. and 3 a.m. on any given day.
 - b) All campers must have access to either a portable or approved, marine onboard toilet facility, or have in their possession a commercial human waste disposal kit for each person. All human solid waste and associated material, along with any personal property, refuse, trash, and litter, shall be removed immediately upon vacating a site.
 - c) Entering or remaining on the Refuge when under the influence of alcohol will remain prohibited, but under the influence will be defined as a blood alcohol content of .08 percent blood alcohol content. In addition, develop a public intoxication regulation that gives officers a tool to deal with unruly behavior.
- 4.) *Beach Maintenance Policy.* Maintenance of beaches will only be allowed on remnant spoil islands or existing dredge material disposal sites adjacent to the main channel of the river that are designated “low density recreation” in current Land Use Allocation Plans, those not otherwise restricted or closed to use, and those not located in a Waterfowl Hunting Closed Area. Maintenance will be limited to the minimum reshaping, leveling, and vegetation clearing needed to ensure safe access and to facilitate the camping experience. Top dressing with sand will only be done under special circumstances. The scope and extent of all maintenance will be on a site-by-site basis as determined by the respective District Manager.

Rationale: Non-wildlife-dependent recreation continues to increase on the Mississippi River and the Refuge. It is estimated that 1.3 million persons per year use the Refuge for camping, recreational boating, picnicking, swimming, social gatherings, and other uses not dependent on the presence of fish and wildlife. This objective, with its new policies and regulations, would help address some of the issues related to beach use described in the issue section of Chapter 1, most notably protection of sensitive wildlife and habitat, litter and human waste, intoxication, unlawful and unruly behavior, officer and

public safety, and preemptive use of preferred camping or hunting sites. This objective represents a truly integrated wildlife and public use approach, using time, space, and reasonable regulations and policy to ensure that beach-related uses are compatible with the fish, wildlife, and plant conservation purposes of the Refuge. Most current visitors will notice little difference in opportunity for beach-related uses. However, the regulations should improve the quality of visitors' experience by ensuring better control of disruptive behavior. This objective also looks to the future by ensuring that the growing numbers of campers remain in less sensitive areas of the Refuge.

Strategies

- Continue to work with the states and the Corps of Engineers through existing interagency workgroups to complete beach plans for each pool within the Refuge according to the policies and regulations above.
- Conduct public information and education campaign well before implementation of regulation changes, to include news releases, general articles, fact sheets, and media interviews.
- Use the components and principles of the Leave No Trace program in the campaign (plan ahead and prepare, travel and camp on durable surfaces, dispose of waste properly, leave what you find, minimize campfire impacts, respect wildlife, and be considerate of others).
- Develop a brochure which clearly explains new policies and regulations and answers frequently asked questions.
- Continue to explore a user fee system to off-set costs of beach-related recreation such as camping in line with new fee legislation passed by Congress in 2004.
- Refuge officers will increase contacts with Refuge users once this plan is approved to explain pending regulation changes. Verbal or written warnings will be used at officer discretion during the first year of implementation to ease the transition.

Objective 5.2.

Electric Motor Areas. Beginning spring, 2006, establish a total of 16 electric motor areas on the Refuge encompassing 14,498 acres. A 5 mph speed limit would also apply in these areas given anticipated future changes in technology. Primitive camping would be allowed in these areas. (See Table 12 in Appendix H, and maps in Appendix P)

Rationale: Technology in the form of jet skis, bass boats, shallow water motors such as Go-DevilsTM, airboats, and hovercraft has introduced more noise and user conflict to the backwater areas of the Refuge. This objective would help reduce disturbance to backwater fish nurseries and sensitive backwater wildlife such as raptors, colonial nesting birds, and furbearers in keeping with the wildlife mission of the Refuge. It would also address the need to provide areas of quiet and solitude sought by many users of the Refuge, and thus provide a balanced approach in line with the focus of this alternative. This objective only affects the means of navigation, and all current uses would be allowed (fishing, hunting, observation, etc.) in accordance with current regulations or those proposed elsewhere in this alternative. The 14,498 acres represents about 6 percent of the Refuge.

Strategies

- Conduct a public information campaign to inform and educate the public about pending electric motor area designations.
- Clearly delineate electric motor areas on Refuge maps and by appropriate signing.

Objective 5.3.

Slow, No-Wake Zones. In 2006, add 10 new Refuge-administered slow, no-wake zones (brings total to 12) and assist local or other units of government in the enforcement of 43 other slow, no-wake zones within the Refuge. (See Table 17 in Appendix H, and map in Appendix N.)

Rationale: On a few areas of the Refuge, boat traffic levels and size of boats is leading to erosion of island and shoreline habitat which can impact fish and wildlife habitat directly, or indirectly through increasing sedimentation and water turbidity. On some of the areas identified, slower speeds would reduce safety hazards posed by heavy traffic and blind spots in narrow channels.

Strategies

- Work with local authorities to designate and mark slow, no-wake zones.
- Communicate the changes with the public well in advance of implementation using the media and other means, and clearly show slow, no-wake areas on maps available to the public.

Objective 5.4.

Dog Use Policy. Beginning March 1, 2007, implement the following new regulation governing dogs on the Refuge:

“From March 1 to June 30, dogs are not allowed to run free and must be restrained by leash or other means. At other times, dogs are allowed to be free only under the following conditions: a) when at least 100 yards away from any designated Refuge public concentration area such as access roads, trail heads, trails, kiosks, rest areas, pull-offs, and boat landings, and, at least 100 yards away from another person not accompanying the owner/handler; and b) when within sight and voice control of the owner/handler. Hunting and retrieving dogs are exempt from these conditions while engaged in authorized hunting activities during the hunting season. Field trials or commercial/professional training is prohibited.”

Rationale: This objective relaxes the current Refuge System regulation which prohibits unconfined domestic animals on national wildlife refuges. The new regulation provides stipulations for allowing dogs to be free and would allow owners to exercise and train their dogs, but protect wildlife during the sensitive nesting or young rearing season. The new regulation also helps safeguard other visitors from the real or perceived threat that dogs and other animals can pose, but recognizes their traditional use and conservation benefit in hunting. The prohibition of field trials and commercial or organized dog training is a continuation of a long-standing Refuge policy. This regulation also does not affect the existing regulation that prohibits all other unconfined domestic animals on the Refuge.

Strategies

- Publish the new regulation in the Refuge public use regulation brochure, issue news releases, and conduct other outreach prior to implementation in 2007.
- Except in certain cases, law enforcement officers will generally give verbal and/or written warnings for violations of the new regulation the first year, then issue violation notices at their discretion beginning in 2008.

Objective 5.5.

General Public Use Regulations. Beginning in 2006, conduct annual review and update of the general public use regulations governing entry and use of the Refuge (current regulations are found in Appendix J).

Rationale: Public entry and use regulations not only protect wildlife, but enhance the quality of the visitor experience and thus reflect the integrated focus of this alternative. The current regulations were last reviewed and amended in 1999. However, the resources and public use of the Refuge is dynamic, and a yearly review would ensure that regulations are needed, clear, and effective. In addition, new regulations may be required to safeguard resources or to address new or emerging problems recognized by managers and law enforcement officers. An annual review would provide a more systematic process than in the past.

Strategies

- Conduct review during Refuge law enforcement meetings.
- Provide the public, states, and Corps of Engineers ample opportunity to review and comment on any new or substantially changed regulation.
- Use national guidance and Federal Register process for codifying any changes and make part of the Code of Federal Regulations governing national wildlife refuges.
- Update, print, and distribute the Public Use Regulations brochure.
- Post pertinent regulations at boat landings and other public use areas, such as trail heads and beach areas.
- Continue proactive law enforcement to inform and educate the public on Refuge regulations and to seek their compliance.

Goal 6: Administration and Operations. We will seek adequate funding, staffing, and facilities, and improve public awareness and support, to carry out the purposes, vision, goals, and objectives of the Refuge.

Objective 6.1.

Office and Shop Facilities. By 2010, construct new offices and maintenance shops at Winona, La Crosse, and McGregor Districts, and expand the office and construct a new maintenance shop at Savanna District. Each office would feature a biological work area or lab, and modest public orientation, interpretation and environmental education capability. Refuge Headquarters would be integrated with either the Winona or La Crosse offices. By 2020, remodel or replace office and shop at the Lost Mound Unit.

Rationale: This objective emphasizes a balanced approach to replacing current office facilities, with a focus on both the resource and public use responsibilities of the Refuge. The expansion of the Savanna District office would be an additional meeting room/classroom for expanded interpretive programs and environmental education.

Strategies

- Ensure that Refuge office and maintenance needs are reflected in budget needs databases.
- Work with the Refuge Friends Group to raise private funds for the Savanna expansion.
- Continue to maintain Service-owned facilities using annual maintenance budget allocations.

Objective 6.2.

Public Access Facilities. By 2020, add 1 new boat landing (total of 27), 3 new walk-in accesses, and 1 new and 1 improved canoe landings. Improve 5 parking areas on the Refuge to support public use. (See Table 1 in Appendix H, and maps in Appendix P)

Rationale: This objective represents a modest increase in public access facilities to help facilitate wildlife-dependent recreational uses. Since the Refuge is mainly a floodplain Refuge bounded by major rail lines and highways, opportunities for increasing access points is limited. In addition to these accesses, there are 222 other public and private boat accesses that provide access to the Mississippi River or its tributaries, and thus the Refuge.

Strategies

- Continue routine upkeep of boat accesses by Refuge staff, temporary employees and Youth Conservation Corps members when available, and volunteers.
- Continue to modernize accesses using Maintenance Management System funding or special funding which is provided periodically, and by implementing a self-service boat launch fee at Refuge-operated boat ramps.
- In cooperation with states and local governments, explore Transportation Enhancement Act projects and funding for new accesses and to upgrade current Refuge accesses.

Objective 6.3.

Operations and Maintenance Needs. Complete annual review of Refuge Operating Needs System (RONS), Maintenance Management System (MMS), and Service Assessment and Maintenance Management System (SAMMS) databases to ensure these reflect the balanced funding needs for carrying out the wildlife and integrated public use focus alternative.

Rationale: The RONS, MMS, and SAMMS databases are the chief mechanisms for documenting ongoing and special needs for operating and maintaining a national wildlife refuge. These databases are part of the information used in the formulation of budgets at the Washington and Regional levels, and for the allocation of funding to the field. It is important that the databases be updated periodically to reflect the needs of the Refuge, and in particular the objectives and strategies elsewhere in this alternative.

Strategies

- None warranted.

Objective 6.4.

Public Information and Awareness. By 2007, increase by 50 percent the current annual average of 80 media interviews, 125 news releases, and 25 special events (special programs, presentations, and displays at others' events), and by 2020 increase information kiosks to 108 (+45) as shown in Table 15 in Appendix H, and maps in Appendix P.

Rationale: This objective reflects an emphasis on providing the public more information on both resource-related and public use-related aspects of the Refuge in keeping with a balanced approach.

Strategies

- Hire visitor services specialists for those Districts without, namely Winona and McGregor Districts.
- Hire a public information specialist at Headquarters to increase attention on interviews, news releases, and special events.
- Tap other specialists identified in this alternative (e.g. forester, fishery biologist) for information and outreach on resource programs of the Refuge.
- Continue to look for creative ways to leverage efforts and funding for public information.
- Carry out related objectives dealing with trails, leaflets, websites and interpretive signs (see objectives 4.10 and 4.11).
- Cooperate with the states and the Corps of Engineers on visitor surveys to gauge public awareness of the Refuge and Mississippi River resources.

Objective 6.5.

Staffing Needs. By 2015, increase staffing from current permanent, full-time level of 37 people to 59 people (56.5 full-time equivalents or FTEs) in a full range of disciplines which benefit both resource and public use objectives in this alternative. (See Table 2 at the end of this chapter and Table 19, Appendix H.)

Rationale: This objective reflects a balance approach to refuge management by providing operations and maintenance-funded staffing deemed necessary to meet the goals and objectives of this alternative. Like all land management, refuge management is labor intensive and labor costs represent over 95 percent of the base operations funding received each year. These staffing needs are documented in the strategies for various objectives in this alternative.

Strategies

- Ensure that staffing needs are incorporated in budget needs databases.
- Maintain other sources of funding for staff who coordinate the Environmental Management Program and the Partners for Fish and Wildlife Program.
- Strengthen existing volunteer program and recruit new volunteers to assist with resource management and visitor services.

Table 1: Alternative Comparison by Issue/Objective, Upper Mississippi River NW&FR

Alternatives Issue/Objective	Alternative A. No Action	Alternative B. Wildlife Focus	Alternative C. Public Use Focus	Alternative D. Wildlife and Integrated Public Use Focus (Preferred Alternative)
Goal 1. Landscape. Improve scenic qualities and wild character of the Upper Mississippi River NW&FR.				
1.1 Refuge Boundary	Survey problem areas, post boundary as time permits	In coordination with the Corps of Engineers, survey and post entire boundary by 2020. Boundary issues would be addressed in coordination with the Corps of Engineers, as appropriate.	Same as B	Same as B
1.2 Acquisition within approved boundary	Acquire from willing sellers about 200 acres per year or 3,000 acres by 2020. Give highest priority to acquisition of lands and waters most important to fish and wildlife.	Acquire from willing sellers an average of 1,000 acres per year or 15,000 acres by 2020 (58% of goal). Give highest priority to acquisition of lands and waters most important to fish and wildlife.	Same as B except give highest priority to acquisition of lands and waters most important for public recreation values and opportunities.	Same as B except give highest priority to acquisition of lands and waters most important to fish and wildlife, but consider public recreation values.
1.3 Bluffland protection	Low-key current approach: support others and support opportunistic acquisition of some bluff areas in boundary	Acquire from willing sellers 13 bluffland areas within approved boundary (Winona District – 6, La Crosse District – 3, McGregor District – 4). Work with partners to leverage resources, and favor easements over fee-title acquisition.	Same as B, but favor fee-title acquisition over easements.	Same as B, but consider a blend of easements and fee-title acquisition.
1.4 Research Natural Areas and Special Designations	No change, continue low-key monitoring, administration, and public information. No new Natural Areas proposed and no Ramsar designation.	More actively administer Natural Areas; complete management plan for each by 2010 with focus on plant and wildlife conservation. No new Natural Areas proposed and no Ramsar designation.	Same as A except increase effort to make public aware of values and management of Natural Areas by incorporating information in brochures, maps, and websites.	Same as B except increase effort to make public aware of values and management of Natural Areas by incorporating information in brochures, maps, and websites. Also, nominate Refuge as Wetland of International Significance under Ramsar.

Table 1: Alternative Comparison by Issue/Objective, Upper Mississippi River NW&FR

Alternatives Issue/Objective	Alternative A. No Action	Alternative B. Wildlife Focus	Alternative C. Public Use Focus	Alternative D. Wildlife and Integrated Public Use Focus (Preferred Alternative)
Goal 2. Environmental Health. Improve environmental health of the refuge by working with others.				
2.1 Water Quality (chemistry and sediments)	Current program of seeking improvement in water quality and sediment problems through programs of other agencies, including EMP.	Proactive program to address water quality: - priv. lands biologists - watershed agreements - assessments - research/education - support UMRBA efforts to standardize water quality criteria Address sedimentation in backwaters through EMP and other programs, with emphasis on improving fish and wildlife habitat.	Same as B except put emphasis on improving access for recreation when addressing sediment reduction projects in backwaters.	Same as B except ensure that fish and wildlife objectives are met while integrating public use needs such as access.
2.2 Water level management	By 2020, complete drawdowns of Refuge pools.	Same as A except seek establishment of Access Trust Fund so drawdowns can be accomplished as needed based on habitat conditions.	Same as A	Same as B
2.3 Invasive Plants	Continue modest level of control as funding allows.	Complete invasive plant inventory by 2008; reduce acres affected by 10% by 2010.	Same as A	Same as B
2.4 Invasive Animals	Continue modest effort of information and education on invasives and their impact.	Increase efforts to control invasive animals through active partnerships with the states and other federal agencies, and increase public awareness and prevention.	Same as A	Same as B

Table 1: Alternative Comparison by Issue/Objective, Upper Mississippi River NW&FR

Alternatives Issue/Objective	Alternative A. No Action	Alternative B. Wildlife Focus	Alternative C. Public Use Focus	Alternative D. Wildlife and Integrated Public Use Focus (Preferred Alternative)
Goal 3. Wildlife and Habitat. Support diverse and abundant native fish, wildlife, and plants.				
3.1 Environmental Pool Plans	Aggressive implementation of Pool Plans using all tools available, with 30% of the portion of the priority projects/tools within the approved refuge boundary completed by 2020.	Same as A	Same as A	Same as A
3.2 Guiding Principles for all habitat management programs	Do not adopt and implement guiding principles.	Adopt and begin use of guiding principles when providing input to design and construction of projects. Principles will favor fish and wildlife over public use and aesthetic considerations	Adopt and begin use of guiding principles when providing input to design and construction of projects. Principles will favor public use of projects versus fish and wildlife needs or aesthetics.	Adopt and begin use of guiding principles when providing input to design and construction of projects. Principles will integrate public use and aesthetic considerations with fish and wildlife needs.
3.3 Monitoring fish and wildlife populations	Continue current monitoring efforts on some key species and habitat indicators, moderate applied research.	Increase monitoring efforts. Amend Wildlife Inventory plan to include more species and more emphasis on habitat monitoring and research.	Decrease monitoring by focusing on waterfowl and a few other migratory bird species or groups.	Same as B
3.4 Threatened and Endangered species management	Continue current monitoring of bald eagles, advisory involvement with other listed species.	By 2008, begin monitoring all federally listed threatened or endangered and candidate species and prepare management plans to help recovery.	Same as A	Same as B
3.5 Furbearer trapping	Continue basic trapping program until refuge trapping plan, with public involvement, is updated by 2007.	Same as A	Same as A	Same as A

Table 1: Alternative Comparison by Issue/Objective, Upper Mississippi River NW&FR

Alternatives Issue/Objective	Alternative A. No Action	Alternative B. Wildlife Focus	Alternative C. Public Use Focus	Alternative D. Wildlife and Integrated Public Use Focus (Preferred Alternative)
3.6 Fishery and Mussel Management	Continue current modest involvement in fishery and mussel management on the refuge, deferring to states and Service's Fishery Resource Office	Increase refuge involvement in fishery management by: 1. Completing by 2008 a Fishery and Mussel Management Plan which incorporates current monitoring and management by the states and other Service offices. 2. Hire a fishery biologist to facilitate state/Service/refuge coordination	Same as A	Same as B
3.7 Commercial fishing and clamming (see 3.8 for reference to turtle harvesting)	Continue to defer to the states to monitor, regulate, and permit commercial fishing and clamming.	Increase refuge involvement in commercial fishing and clamming by: 1. Completing a Fishery and Mussel Management Plan (see Objective 3.6) 2. Issuing refuge special use permits in addition to state-required permits 3. Increase coordination with the states for commercial fishing activity to meet fishery objectives, especially in regards to invasive fish species (see Objectives 2.4 and 3.6)	Same as A	Same as B
3.8 Turtle Management	Continue current limited involvement with turtle management; continue to cooperate with Corps of Engineers and the states studies and turtle management issues.	Increase refuge involvement in turtle management by: 1) completing a 3-5 year turtle ecology study of representative habitats of the entire refuge, and 2) coordinating with other agencies on turtle management actions including monitoring, harvest, and limiting disturbance to nests.	Same as A	Same as B

Table 1: Alternative Comparison by Issue/Objective, Upper Mississippi River NW&FR

Alternatives Issue/Objective	Alternative A. No Action	Alternative B. Wildlife Focus	Alternative C. Public Use Focus	Alternative D. Wildlife and Integrated Public Use Focus (Preferred Alternative)
3.9 Forest Management	Continue current limited involvement with forest management; continue to cooperate with Corps of Engineers' forest inventory work.	Increase refuge involvement in forest management by: 1. Completing, with Corps of Engineers, a forest inventory for the entire refuge. 2. Hire a refuge forester to complete a Forest Management Plan and lead an active forest management program.	Same as A	Same as B
3.10 Grassland Management	Maintain 5,700 acres of grassland through various management tools including prescribed fire, haying, and control of invasives.	Same as A except also complete a step-down Habitat Management Plan to address grassland conservation and enhancement.	Same as A	Same as B
Goal 4. Wildlife-Dependent Recreation. Ensure abundant and sustainable opportunities for a broad cross-section of the public.				
4.1. General Hunting	Maintain a minimum of 191,644 acres (80 %) of land and water open to all hunting. Make no changes to current 7 No Hunting Zones for a total of 3,473 acres.	Maintain a minimum of 175,485 acres (73.2%) of land and water open to all hunting. Add 2 new No Hunting Zones for a total of 3,731 acres (9 zones total).	Maintain a minimum of 189,121 acres (78.9%) of land and water open to all hunting. Add 9 new No Hunting Zones for a total of 5,877 acres (16 zones total).	Maintain a minimum of 190,586 acres (79.5%) of land and water open to all hunting. Add 6 new No Hunting Zones for a total of 5,322 acres (13 zones total).

Table 1: Alternative Comparison by Issue/Objective, Upper Mississippi River NW&FR

Alternatives Issue/ Objective	Alternative A. No Action	Alternative B. Wildlife Focus	Alternative C. Public Use Focus	Alternative D. Wildlife and Integrated Public Use Focus (Preferred Alternative)
<p>4.2 Waterfowl hunting closed areas and sanctuaries</p>	<p>Continue current system of 14 Closed Areas and one Sanctuary (no entry).</p> <p>No change in current entry or use regulations.</p> <p>Make only minor adjustments to some areas to clarify boundaries or address operation/maintenance needs.</p> <p>Total acres = 44,495 Closed Areas = 14 Sanctuaries = 1</p>	<p>In fall 2006:</p> <p>1. Add 14 new Closed Areas to the current 15, for a total of 29 areas.</p> <p>2. All areas, except on Lake Onalaska, would become true Waterfowl Sanctuaries by prohibiting entry and use from Oct. 1 to the end of the respective state duck season.</p> <p>3. Some boundary adjustments would be made to the Lake Onalaska Closed Area. The Voluntary Avoidance Area would continue.</p> <p>Total acres = 60,396 Closed Areas = 1 Sanctuaries = 28</p>	<p>Continue current system of 14 Closed Areas and one Sanctuary, but in 2007 reduce the Lake Onalaska Closed Area by 245 acres to address a firing line.</p> <p>No change in entry or use regulations from existing system.</p> <p>Make only minor adjustments to other areas to clarify boundaries or address operation/maintenance needs.</p> <p>Total acres = 44,614 Closed Areas = 14 Sanctuaries = 1</p>	<p>In fall 2006:</p> <p>1. Add 5 new Closed Areas and delete or modify the current 15 for a total of 21.</p> <p>2. Add 2 new Waterfowl Sanctuaries (no entry) for a total of 3:</p> <p>a. Pool Slough Sanctuary (McGregor District, Pool 9, Iowa/Minnesota)</p> <p>b. Guttenberg Ponds portion of the 12 Mile Sough Sanctuary (McGregor District, Pool 11, Iowa)</p> <p>c. Spring Lake Sanctuary (Savanna District, Pool 13, Illinois)</p> <p>3. All Closed Areas, except on Lake Onalaska, would be closed to fishing, except bank fishing, and all motorized watercraft, from Oct. 1 to the end of the respective state regular duck season.</p> <p>4. Some boundary adjustments would be made to the Lake Onalaska Closed Area. The Voluntary Avoidance Area would continue.</p> <p>Total acres = 43,704 Closed Areas = 18 Sanctuaries = 3</p>

Table 1: Alternative Comparison by Issue/Objective, Upper Mississippi River NW&FR

Alternatives Issue/Objective	Alternative A. No Action	Alternative B. Wildlife Focus	Alternative C. Public Use Focus	Alternative D. Wildlife and Integrated Public Use Focus (Preferred Alternative)
4.3 Waterfowl hunting regulation changes: 1. hunter spacing, 2. shotshell limits, and 3. open water hunting Pools 9 and 11	No major changes to current waterfowl hunting regulations.	In 2006, implement new refugewide regulation limiting each hunter on the refuge to 25 shotshells in possession while hunting during the waterfowl season. Establish regulations to prohibit open-water hunting on areas of Pools 9 and 11.	In 2006, implement new refugewide regulation requiring a minimum of 100 yards spacing between waterfowl hunting parties. No shotshell restriction. No change in open-water hunting regulations in Pools 9 or 11.	In 2006, implement new refuge-wide regulations limiting each hunter on the refuge to 25 shotshells during waterfowl season and a minimum of 100 yards spacing between waterfowl hunting parties. Establish regulations to prohibit open-water hunting on areas of Pools 9 and 11.
4.4 Firing Line -- Pool 7, Lake Onalaska, LaCrosse District	Status quo, do not address the firing line issue beyond existing laws and regulations.	Move the north boundary of Lake Onalaska Closed Area northward to include 530 more acres and thus reduce the firing line.	Move the north boundary of Lake Onalaska Closed Area southward to exclude 245 more acres and thus reduce the firing line.	Establish a managed waterfowl hunting area on the north end of the Lake Onalaska Closed Area. This hunt would establish posted hunting sites and limit the number of hunters to those sites via random drawing and for-fee permits.
4.5 Permanent hunting blinds on Savanna District	Continue current program.	Eliminate the use of permanent hunting blinds after with the 2006-07 waterfowl hunting season.	Same as B	Phase-out the use of permanent hunting blinds beginning with Pool 12 after the 2006-07 season, Pool 13 after the 2007-08 season, and Pool 14 after the 2008-09 season.
4.6 Potter's Marsh Managed Hunt - Savanna District	Continue current program but make some administrative changes.	For 2006-07 hunting season, eliminate the managed hunt program, including use of permanent blinds, and open to all on first come, first secured basis.	Same as B	For 2006-07 hunting season, implement a variety of administrative changes. Permanent blinds would be eliminated after the 2007-08 season, but boat blind sites provided and managed.
4.7 Blanding Landing Managed Hunt Program (Lost Mound Unit, Savanna District)	Continue current managed hunt as previously managed by the Illinois DNR: 15 permanent blind sites awarded by drawing.	After the 2006-07 season, eliminate the managed hunt program, including use of permanent blinds. Open to all on first come basis.	Same as B	Same as B

Table 1: Alternative Comparison by Issue/Objective, Upper Mississippi River NW&FR

Alternatives Issue/Objective	Alternative A. No Action	Alternative B. Wildlife Focus	Alternative C. Public Use Focus	Alternative D. Wildlife and Integrated Public Use Focus (Preferred Alternative)
4.8 Fishing	Provide 140,545 acres of surface water open to year-round fishing. An additional 2,736 acres open except October 1 to the end of the state duck hunting season. Maintain 15 fishing piers/docks.	Provide 104,716 acres of surface water open to year-round fishing. An additional 38,645 acres open except October 1 to the end of the state duck hunting season. Maintain 15 fishing piers/docks.	Same as A, except add 5 new fishing piers/docks for a total of 20.	Provide 110,611 acres of surface water open to year-round fishing. An additional 32,750 acres open except October 1 to the end of the state duck hunting season. Add 3 new fishing piers/docks for total of 18.
4.9 Fishing Tournaments	Continue current "hands off" approach to regulating fishing tournaments.	Issue refuge special use permits for tournaments in addition to state-required permit, to minimize impact to sensitive fish, wildlife, and habitat.	Review and comment on all tournament permits issued by the states to try and minimize conflicts with general public fishing, wildlife observation, and other uses.	Same as B
4.10 Wildlife Observation and Photography	Maintain the following existing facilities: 15 observation areas 6 hiking trails 4 canoe trails 3 biking trails 1 auto tour route	Maintain the following existing or new facilities: 15 observation areas 8 hiking trails 4 canoe trails 3 biking trails 1 auto tour route	Maintain the following existing or new facilities: 31 observation areas 21 hiking trails 26 canoe trails 6 biking trails 3 auto tour routes 3 observation towers 3 photography blinds	Maintain the following existing or new facilities: 26 observation areas 16 hiking trails 21 canoe trails 5 biking trails 3 auto tour routes 3 observation towers 3 photography blinds

Table 1: Alternative Comparison by Issue/Objective, Upper Mississippi River NW&FR

Alternatives Issue/Objective	Alternative A. No Action	Alternative B. Wildlife Focus	Alternative C. Public Use Focus	Alternative D. Wildlife and Integrated Public Use Focus (Preferred Alternative)
4.11 Interpretation and Environmental Education	Maintain 63 information kiosks and 59 interpretive signs. Continue refuge brochure and website. Sponsor 1 major annual interpretive event on each District. No change in current visitor services staffing.	Same as A, except long-term add visitor services staff to McGregor and Winona Districts (low priority compared to biological, technical and maintenance positions)	Maintain 83 existing and new interpretive signs. Build 3 new District Offices and new Lost Mound office, all with visitor contact facilities, and 1 major visitor center. Continue refuge brochure and website. Sponsor 2 major annual interpretive events and establish 1 environmental education program on each district. Add visitor services specialists to McGregor and Winona Districts, and one at the Nat'l Miss. River Museum in Dubuque.	Same as C, except no major visitor center.
4.12 Fish Floats	Continue to allow 4 existing fish floats under current annual permits, stipulations, and \$100 annual fee.	Phase out 4 existing fish floats and do not replace, letting private sector provide alternative off-refuge lands opportunities, such as commercial fishing barges not moored to refuge lands.	Develop new standards for fish float facilities and operations, including new concession fees, and phase out floats that can not meet those standards. Seek replacement operations to replace those phased out. Solicit proposals for one new fish float, or other alternative, in the Savanna District.	Develop new standards for fish float facilities and operations, including new concession fees, and phase out floats that can not meet those standards. Do not replace floats that are phased out, letting private sector provide alternative off-refuge lands opportunities, such as commercial fishing barges not moored to refuge lands.
4.13 Guiding services	Continue inconsistent, low-key approach to issuing permits for hunting, fishing, and wildlife observation guiding.	Do not allow guiding for hunting, fishing, and wildlife observation on the refuge.	Provide policy and consistent process for issuing permits for hunting, fishing and wildlife observation guide services. Coordinate with the states for consistency with their permitting requirements.	Same as C

Table 1: Alternative Comparison by Issue/Objective, Upper Mississippi River NW&FR

Alternatives Issue/ Objective	Alternative A. No Action	Alternative B. Wildlife Focus	Alternative C. Public Use Focus	Alternative D. Wildlife and Integrated Public Use Focus (Preferred Alternative)
Goal 5. Other Recreational Use. Provide opportunity for traditional and appropriate non-wildlife dependent use that is compatible with the Refuge.				
5.1. Beach use and maintenance policy and regulations	Open policy. No limits on areas open to camping, boat mooring, swimming, social gatherings, picnicking and other non-wildlife-dependent uses, subject to current regulations. No new regulations and use current guidance for beach maintenance.	Closed-unless-open policy. Limit camping, boat mooring, swimming, social gatherings, picnicking, and other non-wildlife-dependent uses to islands and shoreline that border the main channel, including the backside of such islands or points, that are posted open for such uses. Implement new regulations dealing with camping, human waste, and alcohol use. No beach maintenance would be conducted.	Open policy. No limits on areas open to camping, boat mooring, swimming, social gatherings, picnicking and other non-wildlife-dependent uses, subject to current regulations. Implement new regulations on camping, human waste, and alcohol use. Require that all persons using boats for beaching, mooring, or anchoring on refuge lands purchase a Recreation Use Permit. Beach maintenance would be allowed on most areas. Work with interagency teams to complete beach plans by pool.	Open-unless-closed policy. All areas currently open to camping, boat mooring, swimming, social gatherings, picnicking and other non-wildlife-dependent uses, would remain open, except: 1) areas closed or restricted by signing to protect wildlife, habitat or the public, and 2) camping and overnight mooring limited to islands and shoreline that border the main channel, including the backside of such islands or points. Implement new regulations dealing with camping, human waste, and alcohol use. Articulate clear beach maintenance policy, and work with interagency teams to complete beach plans by pool.
5.2. Electric Motor Areas	Current program with only 1 electric motor area of 222 acres (Mertes Slough, Winona District).	Designate 10 electric motor areas encompassing 15,900 acres. All current uses allowed, except camping.	Designate 15 electric motor areas encompassing 13,239 acres. All current uses allowed, including camping.	Designate 16 new electric motor areas encompassing 14,498 acres. All current uses allowed, and areas open to primitive camping.
5.3 Slow, No Wake Zones	Maintain 2 existing slow, no wake zones administered by the Refuge, and assist in enforcement of 43 others.	Add 10 new slow, no wake zones, bringing total to 12 administered by the Refuge, and assist in enforcement of 43 others.	Add 9 new slow, no wake zones, bringing total to 11 administered by the Refuge, and assist in enforcement of 43 others.	Add 10 new slow, no wake zones, bringing total to 12 administered by the Refuge, and assist in enforcement of 43 others (slight location difference compared to B).

Table 1: Alternative Comparison by Issue/Objective, Upper Mississippi River NW&FR

Alternatives Issue/Objective	Alternative A. No Action	Alternative B. Wildlife Focus	Alternative C. Public Use Focus	Alternative D. Wildlife and Integrated Public Use Focus (Preferred Alternative)
5.4. Dog use policy	Maintain current regulations: dogs and other animals must be confined, except dogs during hunting seasons. No field trials or commercial training will be permitted (current policy).	Adopt clearer regulation which defines confined: Dogs and other animals must be on 6 ft or less leash, or in closed kennel, at all times, except dogs during hunting seasons while engaged in hunting. No field trials or commercial training will be permitted (current policy).	Adopt regulation similar to one proposed by area conservation group: no wildlife or people disturbance, under control of owners at all times, and physically restrained at posted public use areas or when in proximity to people except while engaged in hunting. No field trials or commercial training will be permitted (current policy).	Adopt enforceable regulation which safeguards wildlife and visitors: From March 1 to June 30, dogs must be restrained by leash or other means. At all other times, dogs can be free if 100 yards away from designated public use areas and/or other persons, and if within sight and voice control of owner/handler. No field trials or commercial training will be permitted (current policy).
5.5. General Public Use Regulations	Make no changes to public entry and use regulations for the Refuge.	Conduct annual review, and update as needed, general public use regulations governing public entry and use of the Refuge.	Same as B	Same as B
Goal 6. Administration and Operation. Clarify boundary issues; seek adequate funding, staff, and facilities; improve public awareness of Refuge.				
6.1 Office and shop facilities	Maintain existing offices (6) and shops (5), but replace the maintenance facilities at Winona and Savanna Districts by 2006.	Maintain existing offices (6) and shops (5), but replace the maintenance facilities at Winona, McGregor, and Savanna Districts by 2010.	By 2010, construct new offices and maintenance shops at Winona, La Crosse, and McGregor Districts, and expand the office and construct a new maintenance shop at Savanna District. Each office would have expanded visitor facilities but not a biological work area or lab. By 2020, build a new office and large visitor center for the Headquarters of the Refuge, and locate it either in Winona or La Crosse. Also by 2020, remodel or replace office and shop at the Lost Mound Unit.	By 2010, construct new offices and maintenance shops at Winona, La Crosse, and McGregor Districts, and expand the office and construct a new maintenance shop at Savanna District. Each office would feature a biological work area or lab, and modest visitor facilities. Refuge Headquarters would be integrated with either the Winona or La Crosse offices. By 2020, remodel or replace office and shop at the Lost Mound Unit.

Table 1: Alternative Comparison by Issue/Objective, Upper Mississippi River NW&FR

Alternatives Issue/Objective	Alternative A. No Action	Alternative B. Wildlife Focus	Alternative C. Public Use Focus	Alternative D. Wildlife and Integrated Public Use Focus (Preferred Alternative)
6.2 Public access facilities	Maintain and modernize as needed, 26 existing public boat accesses.	Same as A, except implement launch fee for Refuge-operated boat ramps.	Add 1 new boat access, 3 new walk-in accesses, 3 new and 1 improved canoe landings, and improve 5 parking areas. Implement launch fee for Refuge-operated boat ramps.	Add 1 new boat access, 3 new walk-in accesses, 1 new and 1 improved canoe landings, and improve 5 parking areas. Implement launch fee for Refuge-operated boat ramps.
6.3. Operations and maintenance needs	Complete annual review of Refuge Operating Needs System (RONS), Maintenance Management System (MMS), and Service Assessment and Maintenance Management System (SAMMS) databases to ensure these reflect needs of current direction.	Same as A, but reflect needs of wildlife focus alternative.	Same as A, but reflect needs of public use focus alternative.	Same as A, but reflect balanced needs of wildlife and integrated public use focus alternative.
6.4. Public information and awareness	Continue current annual average of 80 media interviews, 125 news releases, and 25 special events (special programs, presentations, and displays at others' events). Maintain existing 63 kiosks.	Decrease by 50 percent the current annual average of 80 media interviews, 125 news releases, and 25 special events (special programs, presentations, and displays at others' events). Maintain existing 63 kiosks.	Increase by 50 percent the current annual average of 80 media interviews, 125 news releases, and 25 special events (special programs, presentations, and displays at others' events). Add 45 kiosks.	Same as C, but also take advantage of technical and specialist positions added in this alternative to increase outreach.
6.5 Staffing needs	No change in staffing level of 37 people (37 FTEs)	By 2015, increase staffing from current 37 to 57 people (54.5 FTEs) to bring all Districts to minimum staffing level, add specialists to Headquarters, and increase staff at Lost Mound Unit. Priority would be positions which support biological and habitat programs.	By 2015, increase staffing from current 37 to 57 people (54.5 FTEs) to bring all Districts to minimum staffing level, add specialists to Headquarters, and increase staff at Lost Mound Unit. Priority would be public use positions.	By 2015, increase staffing from current 37 to 59 people (56.5 FTEs) to bring all Districts to minimum staffing level, add specialists to Headquarters, and increase staff at Lost Mound Unit. Priority would be a blend of wildlife and public use related positions.

Table 2: Summary of Project Features by Alternative

Feature	Existing Features		Total Proposed Features						Comments
	Alternative A: No Action		Alternative B: Wildlife Focus		Alt. C: Public Use Focus		Alt. D: Wildlife & Integrated Public Use Focus (Preferred Alternative)		
	Units	Acres or Miles	Units	Acres or Miles	Units	Acres or Miles	Units	Acres or Miles	
Waterfowl Closed Areas and/or Sanctuaries	15	44,495	29	60,396	15	44,614	21	43,704	
No open water hunting areas	0	0	2	10,487	0	0	2	10,487	Pool 9 – 6,429 acres;
Managed Hunts	2	2,335	0	0	0	0	2	2,403	Alternative D: Potter’s Marsh, Pool 13 and Gibbs Lake, Pool 7
Administrative no hunting zones	7	3,473	9	3,731	16	5,877	13	5,322	All alternatives include Lost Mound No Entry Area
Fish catch and release area	1	700	1	700	1	700	1	700	
Heron sanctuary	0	0	1	64	0	0	1	64	Mertes Slough, Pool 6
No-wake zones	45	NA	55	NA	54	NA	55	NA	
Electric motor areas	1	222	10	15,900	15	13,239	16	14,498	
Research Natural Areas	4	6,946	4	6,946	4	6,946	4	6,946	
Trails									
Canoe trails	4	32.1	4	32.1	26	176.5	21	135.5	Alternatives C and D include the proposed Ambrough Slough Canoe Area (1,853 acres)
Hiking trails	6	20.5	8	24.8	21	50.7	16	40.9	
Auto tour routes	1	2.5	1	2.5	3	11.0	3	11.0	
Biking trails	3	10.0	3	10.0	6	17.0	5	14.1	
Fishing Piers									
Fishing Piers	15	NA	15	NA	20	NA	18	NA	
Commercial fishing floats / piers	4	NA	0	NA	5	NA	4	NA	

Table 2: Summary of Project Features by Alternative (Continued)

Feature	Existing Features		Total Proposed Features						Comments
	Alternative A: No Action		Alternative B: Wildlife Focus		Alt. C: Public Use Focus		Alt. D: Wildlife & Integrated Public Use Focus (Preferred Alternative)		
	Units	Acres or Miles	Units	Acres or Miles	Units	Acres or Miles	Units	Acres or Miles	
Access Facilities									
Boat access	26	NA	26	NA	27	NA	27	NA	
Walk-in access	0	NA	0	NA	3	NA	3	NA	
Canoe landing / launch	0	NA	0	NA	4**	NA	2**	NA	** Includes proposed improvement to Reno Canoe Launch (non-FWS)
Parking lot improvements	0	NA	0	NA	5	NA	5	NA	
Wildlife Observation Facilities									
Observation decks/areas	15	NA	15	NA	31	NA	26	NA	
Observation towers	0	NA	0	NA	3	NA	3	NA	
Photo blinds	0	NA	0	NA	3	NA	3	NA	
Signage									
Kiosks	63	NA	63	NA	108	NA	108	NA	
Interpretive signs	59	NA	59	NA	83	NA	83	NA	
Entrance signs	25	NA	25	NA	30	NA	30	NA	
Official Notice Boards	29	NA	29	NA	30	NA	30	NA	
Proposed Buildings									
Build new maintenance facilities	2	NA	3	NA	5	NA	5	NA	
Build new office facilities	0	NA	0	NA	3	NA	3	NA	HQ office combined with Winona or La Crosse office in Alternatives C & D.
Build major visitor center	0	NA	0	NA	1	NA	0	NA	HQ Visitor Center + Office combined in Alt. C, located in Winona or La Crosse
Refuge Staffing	37.0	NA	54.5	NA	54.5	NA	56.5	NA	Number of FTEs (Full Time Equivalent)

Table 3: Degree to Which Alternatives Meet Refuge Needs¹

Need	Alternative A No Action	Alternative B Wildlife Focus	Alternative C Public Use Focus	Alternative D Wildlife and Integrated Public Use Focus (Preferred Alternative)
Need 1: Contribute to the Mission				
Contribute to the mission of the National Wildlife Refuge System	4	5	3	5
Need 2: Help Fulfill the Refuge Purpose				
Refuge and breeding place for migratory birds	3	5	3	4
Refuge and breeding place for other wild birds, animals, plants	3	5	3	5
Refuge and breeding place for fish and other aquatic animal life	3	5	2	5
Need 3: Help Achieve Refuge Goals and Related Needs				
Landscape conservation – boundary acquisition, bluffs, research areas	4	5	3	5
Environmental health – water quality, drawdowns, invasives	3	5	2	5
Wildlife and habitat – monitoring, management, threatened and endangered species, forests, grasslands, Environmental Pool Plans	3	5	2	5
Wildlife-dependent recreation – hunting, fishing, observation, environmental education, interpretation	3	2	5	4
Other recreational use – beach use, electric motor areas, slow-no-wake, regulations	2	1	5	4
Administration and operations – offices, staffing, outreach, access	1	4	4	5

**1. Scale for summarizing the degree to which the alternatives meet Refuge Needs:
5= High contribution; 3=Neutral; 1=Low contribution.**

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Table 4: Refuge Priority Locations and And Actions that Contribute to Implementation of Environmental Pool Plans, 2005-2020* , Upper Mississippi River NWFR

Environmental Pool Plan Actions Need to Achieve Desired Future Habitat**															
Pool	Protect Islands	Construct Islands	Increase Depth, Dredge	Construct Mud/Sand Flats	Direct Water Flows	Fish Passage	Construct Moist Soil Units	Pool Draw-downs	Land Acquisition	Maintain Existing Habitat	Reduce Invasive Species	Forest Management	Prairie Management	Assist Private Land-owners	Water-shed Management
Pool 4	Stabilize Crats Island	Lower Big Lake	Big Lake	Robinson Lake (mud flats)	Restoration of Distributary Channels of Zumbro	L&D 4	Barton / Lofgren Tract	Pool-wide	Zumbro River bottoms	Peterson Lake HREP	Barton / Lofgren Tract	Chippewa River delta	Barton Lofgren	Hire Private Lands Biologist	Chippewa River
	Stabilize Islands Lower Pool (WI)	Peterson Lake	Robinson Lake	Rieck's Lake (mud flats)	Block break in Catfish Slough			Rieck's Lake	Remaining 1987 Master Plan tracts within floodplain	Nelson/ Trevino Research Natural Area	Indian Slough delta	Nelson-Trevino bottoms	Grand Encampment	Coop Agree. for buffers to reduce runoff	Buffalo River
	Stabilize Island Robinson Lake	Robinson Lake	Peterson Lake								Monitor Pool-wide	Main channel and barrier island	Crats Island		
	Monitor Drury and Hershey Islands	Beef Slough	Plan with new island construction									Complete Forest Inventory by 2006	Finger Lakes Disposal Site		

Table 4: Refuge Priority Locations and And Actions that Contribute to Implementation of Environmental Pool Plans, 2005-2020* , Upper Mississippi River NWFR (Continued)

Environmental Pool Plan Actions Need to Achieve Desired Future Habitat**															
Pool	Protect Islands	Construct Islands	Increase Depth, Dredge	Construct Mud/Sand Flats	Direct Water Flows	Fish Passage	Construct Moist Soil Units	Pool Draw-downs	Land Acquisition	Maintain Existing Habitat	Reduce Invasive Species	Forest Management	Prairie Management	Assist Private Land-owners	Water-shed Management
Pool 5	Protect Islands near Buffalo City	Lower Pool 5 Island cluster	Weaver bottoms	Spring Lake	Restoration of tributary channels of Zumbro River	L&D 5	Lizzy Paul's Pond	Pool-wide	Buffer around Lizzy Paul's Pond	Finger Lakes HREP	Lost Island/Weaver	Main channel and barrier islands	Wabasha Prairie	Hire Private Lands Biologist	Zumbro River
	Monitor Sommerfeld Islands	Weaver bottoms / Lost Island	Spring Lake	Whitewater delta	Evaluate flowing channels off Zumbro River to Weaver bottoms			Lizzy Paul's Pond	Zumbro River delta	Island 42 HREP	Wabasha Prairie	Complete forest inventory	Swan Island	Coop Agree. for buffers to reduce runoff	Whitewater River
		Lower Pool 5 Seed Islands Krueger Slough area	Lower Pool	Weaver Islands						Remaining 1987 Master Plan tracts within floodplain	Weaver Islands Spring Lake HREP	Monitor Pool-wide		Spring Lake HREP	

Table 4: Refuge Priority Locations and And Actions that Contribute to Implementation of Environmental Pool Plans, 2005-2020* , Upper Mississippi River NWFR (Continued)

Environmental Pool Plan Actions Need to Achieve Desired Future Habitat**																
Pool	Protect Islands	Construct Islands	Increase Depth, Dredge	Construct Mud/Sand Flats	Direct Water Flows	Fish Passage	Construct Moist Soil Units	Pool Draw-downs	Land Acquisition	Maintain Existing Habitat	Reduce Invasive Species	Forest Management	Prairie Management	Assist Private Land-owners	Water-shed Management	
Pool 5A	Protect Islands in Lower Pool	Polander Lake Seed Islands	Snyder Lake	Maintain mud flats Polander Islands	Evaluate side channel closures, wing dams and other structures	L&D 5A		Pool-wide	Remaining 1987 Master Plan tracts within floodplain	Polander Phase 1 and 2 HREP	Twin Lakes	Minnesota City bottoms	Prairie Island Natural Area	Hire Private Lands Biologist	Garvin Brook	
	Monitor existing islands	Additional islands in Polander	Betsy Slough								Prairie Island Natural Area		Main channel and barrier islands			McNally Landing
			Twin Lakes	Prairie Island Dike												Polander Channel Island
			Polander								McNally Landing		Polander Island			
		Plan with new island construction		Monitor Pool-wide												

Table 4: Refuge Priority Locations and And Actions that Contribute to Implementation of Environmental Pool Plans, 2005-2020* , Upper Mississippi River NWFR (Continued)

Environmental Pool Plan Actions Need to Achieve Desired Future Habitat**															
Pool	Protect Islands	Construct Islands	Increase Depth, Dredge	Construct Mud/Sand Flats	Direct Water Flows	Fish Passage	Construct Moist Soil Units	Pool Draw-downs	Land Acquisition	Maintain Existing Habitat	Reduce Invasive Species	Forest Management	Prairie Management	Assist Private Land-owners	Water-shed Management
Pool 6	Monitor existing islands	Lower Pool 6	Lower Pool (secondary and tertiary islands)	Pools A & E Trempealeau NWR	Modification of training structures	L&D 6	Pool C2 Trempealeau NWR	Pool-wide	Remaining 1987 master plan tracts within floodplain	Protect Refuge Islands	Pool 6 Islands	Refuge Islands	Trempealeau NWR	Hire Private Lands Biologist	Trempealeau River
		Pools A & B of Trempealeau NWR	Upper Pool (secondary and tertiary islands)								Modification of road and railroad embankments, levees				
				Pools A & B Trempealeau NWR in conjunction with island construction							Monitor Pool-wide				

Table 4: Refuge Priority Locations and And Actions that Contribute to Implementation of Environmental Pool Plans, 2005-2020* , Upper Mississippi River NWFR (Continued)

Environmental Pool Plan Actions Need to Achieve Desired Future Habitat**															
Pool	Protect Islands	Construct Islands	Increase Depth, Dredge	Construct Mud/Sand Flats	Direct Water Flows	Fish Passage	Construct Moist Soil Units	Pool Draw-downs	Land Acquisition	Maintain Existing Habitat	Reduce Invasive Species	Forest Management	Prairie Management	Assist Private Land-owners	Water-shed Management
Pool 7	Lake Onalaska	Lake Onalaska	Black River bottoms	Lake Onalaska	Black River bottoms	L&D 7	Lower Halfway Creek Marsh	Pool-wide	Black River bottoms	Completed EMP and other habitat projects	Lake Onalaska	Black River bottoms & delta	Midway Railroad Prairie	Hire Private Lands Biologist	Sand Lake Coulee / Halfway Creeks
	Main channel islands		Lake Onalaska		Lake Onalaska				Halfway Creek Addition	Black River bottoms	Black River bottoms	Lake Onalaska Islands	Mathy Prairie	Coop Agree. for buffers to reduce runoff	Black River
			Upper Pool 7		L&D 7				Office site	Halfway Creek Marsh	Halfway Creek Marsh	Barrier Island complex	Brice Prairie	La Crosse County (WI) and Winona County (MN)	
									Remaining 1987 master plan tracts			Main channel islands			

Table 4: Refuge Priority Locations and And Actions that Contribute to Implementation of Environmental Pool Plans, 2005-2020* , Upper Mississippi River NWFR (Continued)

Environmental Pool Plan Actions Need to Achieve Desired Future Habitat**															
Pool	Protect Islands	Construct Islands	Increase Depth, Dredge	Construct Mud/Sand Flats	Direct Water Flows	Fish Passage	Construct Moist Soil Units	Pool Draw-downs	Land Acquisition	Maintain Existing Habitat	Reduce Invasive Species	Forest Management	Prairie Management	Assist Private Land-owners	Water-shed Management
Pool 8	East Island	Phase III/ Pool 8 Islands	Phase III, Pool 8 Islands	Phase III/ Pool 8 Islands	Root River	L&D 8	Root River bottoms	Continue monitoring the 2001-02 drawdowns	1987 Master Plan tracts	Completed EMP and other habitat projects	Lower Pool 8	Root River delta	Root River bottoms	Hire private lands biol.	Root River
	Main channel islands	Shady Maple	Schnicks Bay	Shady Maple	L&D 7			Pool-wide	Root River Addition	Lawrence Lake	Main channel islands	Goose Island		Coop Agree. for buffers to reduce runoff	Gills Coulee Creek/ La Crosse River
	West Channel Island	Phase IV/ Pool 8 Islands	Shady Maple	Phase IV/ Pool 8 Islands	L&D 8					Blue Lake	Shore Acres Road	Main channel islands & barrier islands		Vernon & La Crosse Counties (WI) and Winona & Houston Counties (MN)	Pine Creek
	Running Slough		Running Slough		Shore Acres/ Sheperds Marsh Area					Target Lake	Bluff Slough				Mormon Coulee Creek
			Broken Arrow Slough		Continue Lower Pool 8 Channel Mgmt. Plan					Root River bottoms	Running Slough				Coon Creek
		Lawrence Lake													
		West Channel													
		Black River													

Table 4: Refuge Priority Locations and And Actions that Contribute to Implementation of Environmental Pool Plans, 2005-2020* , Upper Mississippi River NWFR (Continued)

Environmental Pool Plan Actions Need to Achieve Desired Future Habitat**															
Pool	Protect Islands	Construct Islands	Increase Depth, Dredge	Construct Mud/Sand Flats	Direct Water Flows	Fish Passage	Construct Moist Soil Units	Pool Draw-downs	Land Acquisition	Maintain Existing Habitat	Reduce Invasive Species	Forest Management	Prairie Management	Assist Private Land-owners	Water-shed Management
Pool 10	McGregor Lk.	McGregor Lk.	McGregor Lk.	McGregor Lk.	Jay's Lake/ State Line Slough	L&D 10		Pool-wide	1987 Master Plan Tracts	Pool 10 Islands (lower pool)	Inventory pool	Pool-wide		Hire Private Lands Biologist	Yellow River
	Pool 10 islands (lower pool)	Pool 10 islands (lower pool)	Pool 10 islands (lower pool)	Pool 10 islands (lower pool)						Existing EMP projects					
	East Channel Island (nav channel side)		Harpers Slough (upper pool complex)		Grimmel Lake									Coop Agree. for buffers to reduce runoff	Paint Creek
			Jay's Lake / State Line Slough												Sny McGill
			Frenchtown Lake												Bloody Run
															Wisconsin River

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Table 4: Refuge Priority Locations and And Actions that Contribute to Implementation of Environmental Pool Plans, 2005-2020* , Upper Mississippi River NWR (Continued)

Environmental Pool Plan Actions Need to Achieve Desired Future Habitat**															
Pool	Protect Islands	Construct Islands	Increase Depth, Dredge	Construct Mud/Sand Flats	Direct Water Flows	Fish Passage	Construct Moist Soil Units	Pool Draw-downs	Land Acquisition	Maintain Existing Habitat	Reduce Invasive Species	Forest Management	Prairie Management	Assist Private Land-owners	Water-shed Management
Pool 11	Patzner Island	Pool 11 Islands incl. Sinnipee Creek Islands	Ball's Island	Pool 11 Islands (lower pool)	Hay Meadow Lake	L&D 10 spillway	Turkey River bottoms	Pool-wide	Turkey River	Hay Meadow Lake bottoms	Inventory pool-wide	Turkey River delta		Hire Private Lands Biologist	Turkey River
	Snyder Island		Snyder Island				Restore Big Pond system			1987 Master Plan tracts					Existing EMP projects
	Coal Pit Slough	Jack Oak Island					Dago Slough	Grant River							
	Jack Oak Island	Spring-Dead Lake				Patzner Island	Platte River								
	Below L&D 10	Little Maquoketa River delta													

Table 4: Refuge Priority Locations and And Actions that Contribute to Implementation of Environmental Pool Plans, 2005-2020* , Upper Mississippi River NWFR (Continued)

Environmental Pool Plan Actions Need to Achieve Desired Future Habitat**															
Pool	Protect Islands	Construct Islands	Increase Depth, Dredge	Construct Mud/Sand Flats	Direct Water Flows	Fish Passage	Construct Moist Soil Units	Pool Draw-downs	Land Acquisition	Maintain Existing Habitat	Reduce Invasive Species	Forest Management	Prairie Management	Assist Private Land-owners	Water-shed Management
Pool 12	RM 572.2 Menominee Slough	Barrier islands in Lower Pool 12	Sunfish Lake, Fish Trap Lake, Stone Lake		Modify Dam 11 to introduce flows	Include in dam renov.		Pool-wide	1987 Master Plan tracts	EMP projects	Purple loose-strife, Reed canary grass, Cucumber vine, Multiflora rose, Garlic mustard	Nine Mile Island	Control invasives with fire, mechanical, chemical	Hire Private Lands Biologist	Galena River
	RM 559.8		No Name Lake, Kehough, Tippy	Kehough Slough				Mid-pool 12				Coop Agree. for buffers to reduce runoff			Menominee River
	RM 576.8 Island 228		Nine Mile Island	Fish Trap Lake				Bellevue Slough							
	Monitor existing islands along main channel		Wise Lake	Sunfish Lake				Lower Pool 12							
			Frentress Lake, East Dubuque complex												
			White City/ Stump Island												

Table 4: Refuge Priority Locations and And Actions that Contribute to Implementation of Environmental Pool Plans, 2005-2020* , Upper Mississippi River NWFR (Continued)

Environmental Pool Plan Actions Need to Achieve Desired Future Habitat**																
Pool	Protect Islands	Construct Islands	Increase Depth, Dredge	Construct Mud/Sand Flats	Direct Water Flows	Fish Passage	Construct Moist Soil Units	Pool Draw-downs	Land Acquisition	Maintain Existing Habitat	Reduce Invasive Species	Forest Management	Prairie Management	Assist Private Land-owners	Water-shed Management	
Pool 14	Monitor existing islands along main channel		Beaver Island		Increase flows with modification of Dam 13 to Jacobs Slough	Include in dam renov.			1987 Master Plan Tracts	EMP Projects	Purple loose-strife, Reed canary grass, Cucumber vine, Multiflora rose, Garlic mustard	Increase Island elevation with dredge material for trees: Meredosia Island, Swan Island, Steamboat Island, Wapsi bottoms	Control invasives with fire, mechanical, chemical	Hire Private Lands Biologist	Rock Creek	
			Steamboat Island		Restore side channel and braided sloughs: Meredosia Island and Swan Island								Restore native prairies	Coop Agree. for buffers to reduce runoff	Wapsipinicon River	
			Rock Creek Shriker's Lake													
			Wapsipinicon River bottoms													
Total Actions	37	28	60	18	28	13	7	11	20	27	32	32	21	12	39	
* Locations are in priority order within each pool, top to bottom.																
**Environmental Pool Plans (Pools 2-11) were endorsed by the River Resources Forum, St. Paul District, US Army Corps of Engineers. Pool Plans were developed by the Forum's Fish and Wildlife Workgroup and reviewed by the public. Pool Plans for Pools 12-14 were endorsed by the River Resources Coordinating Team, Rock Island District, US Army Corps of Engineers and developed by the Team's Fish and Wildlife Interagency Committee.																

Table 5: Closed Areas and Sanctuaries, Alternatives A-D, Upper Mississippi River NW&FR

Pool	Name	State	Alt. A No Action (Current Management)		Alt. B Wildlife Focus		Alt. C Public Use Focus		Alt. D Wildlife and Integrated Public Use Focus (Preferred Alternative)		Up- River Mile	Down- River Mile	Comments
			Acres	Status	Acres	Status	Acres	Status	Acres	Status			
4	Nelson-Trevino	WI	3,773	Closed Area	3,773	Sanctuary	3,773	Closed Area	None		763.5	760.0	
4	Big Lake- Buffalo Slough	WI	None		3,249	Sanctuary	None		3,249	Closed Area; no fishing, no motors"	759.4	754.6	Includes Travel Corridor
4	Peterson Lake	MN-WI	3,111	Closed Area	None		3,111	Closed Area	None		756.6	752.7	Alt. A and Alt. C: Includes Buffalo Slough and Rieck's Lake.
4	Rieck's Lake	WI	Part of Peterson Lake		496	Sanctuary	Part of Peterson Lake		496	Closed Area; no fishing, no motors	755.8	755.0	Includes Travel Corridor.
5	"Weaver Bottoms / Lost Island"	MN-WI	3,139	Closed Area	3,780	Sanctuary	3,139	Closed Area	3,508	Closed Area; no fishing, no motors	745.6	741.7	Alt. B-D: Includes Travel Corridor
5	Spring Lake	WI	None		243	Sanctuary	None		243	Closed Area; no fishing, no motors	741.8	740.7	
5A	Fountain City Bay	WI	None		24	Sanctuary	None		None		734.3	734.1	Alt. B: Proposed Ne Closed Area; Alt. D - site will be a closed are if land exhchange with Wisconsin DNR does not occur.
5A	Polander Lake	MN-WI	1,589	Closed Area	1,910	Sanctuary	1,589	Closed Area	1,910	Closed Area; no fishing, no motors	731.8	728.4	Alt. B-D: Includes Travel Corridor.

Table 5: Closed Areas and Sanctuaries, Alternatives A-D, Upper Mississippi River NW&FR

Pool	Name	State	Alt. A No Action (Current Management)		Alt. B Wildlife Focus		Alt. C Public Use Focus		Alt. D Wildlife and Integrated Public Use Focus (Preferred Alternative)		Up- River Mile	Down- River Mile	Comments
			Acres	Status	Acres	Status	Acres	Status	Acres	Status			
6	Trempealeau NWR	WI	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	724.2	718.0	Part of existing closed area system; special regulations; 5,520 acres.
7	Lake Onalaska	WI	7,348	Closed Area	7,880	Closed Area	7,103	Closed Area	7,400	Closed Area	708.0	702.8	All alternatives: traditional closed area; has Waterfowl Voluntary Avoidance Area.
8	Goose Is. No Hunt Zone	WI	876	No Hunt Zone / Closed Area	1,210	Sanctuary	1,210	No Hunt Zone / Closed Area	1,210	Closed Area; no fishing, no motors	691.2	689.8	No Hunting Zone part of existing closed area system.
8	Wisconsin Islands	MN-WI	6,461	Closed Area	6,513	Sanctuary	6,483	Closed Area	6,483	Closed Area; no fishing, no motors	687.6	680.1	Alt. C: Modified slightly from Alt. A.
9	Pool Slough	MN-IA	1,112	Closed Area	2,559	Sanctuary	1,112	Closed Area	1,112	Sanctuary	675.2	673.0	
9	Harpers Slough	IA-WI	5,209	Closed Area	5,209	Sanctuary	5,209	Closed Area	5,209	Closed Area; no fishing, no motors	654.8	648.0	
10	WI River Delta	WI	None		1,545	Sanctuary	None		1,545	Closed Area; no fishing, no motors	633.8	630.7	Includes Travel Corridor.
10	Bagley Bottoms	WI	None		627	Sanctuary	None		None		626.7	624.6	
10	12-Mile Island	IA	540	Closed Area	540	Sanctuary	540	Closed Area	540	Closed Area; no fishing, no motors	617.0	615.2	

Table 5: Closed Areas and Sanctuaries, Alternatives A-D, Upper Mississippi River NW&FR

Pool	Name	State	Alt. A No Action (Current Management)		Alt. B Wildlife Focus		Alt. C Public Use Focus		Alt. D Wildlife and Integrated Public Use Focus (Preferred Alternative)		Up- River Mile	Down- River Mile	Comments
			Acres	Status	Acres	Status	Acres	Status	Acres	Status			
11	Guttenberg Ponds	IA	None		None		None		502	Sanctuary	615.2	613.8	
11	12-Mile Island	IA	1,396	Closed Area	1,396	Sanctuary	1,396	Closed Area	894	Closed Area; no fishing, no motors	615.2	611.5	Includes Travel Corridors.
11	Hay Meadow Lake	WI	None		None		None		841	Closed Area; no fishing, no motors	604.0	601.8	
11	Bertom-McCartney	WI	2,415	Closed Area	2,385	Sanctuary	2,415	Closed Area	None		604.0	598.7	
11	John Deere Marsh	IA	None		512	Sanctuary	None		512	Closed Area; no fishing, no motors	587.0	584.8	Includes Travel Corridor.
12	Nine-Mile Island	IA	None		567	Sanctuary	None		None		574.4	571.6	
12	Kehough Slough	IL	None		343	Sanctuary	None		343	Closed Area; no fishing, no motors	569.0	567.1	
12	Wise Lake	IL	None		1,081	Sanctuary	None		None		563.9	560.9	
12	Lower Pool 12	IL	None		478	Sanctuary	None		None		557.5	556.8	
13	Pleasant Creek	IA	2,603	Closed Area	2,603	Sanctuary	2,603	Closed Area	2,067	Closed Area; no fishing, no motors	552.7	548.5	
13	Brown's Lake	IA	None		2,362	Sanctuary	None		None		546.2	541.7	
13	Spring Lake	IL	3,686	Sanctuary	3,686	Sanctuary	3,686	Sanctuary	3,686	Sanctuary	536.8	531.9	Only existing sanctuary in Refuge.

Table 5: Closed Areas and Sanctuaries, Alternatives A-D, Upper Mississippi River NW&FR

Pool	Name	State	Alt. A No Action (Current Management)		Alt. B Wildlife Focus		Alt. C Public Use Focus		Alt. D Wildlife and Integrated Public Use Focus (Preferred Alternative)		Up- River Mile	Down- River Mile	Comments
			Acres	Status	Acres	Status	Acres	Status	Acres	Status			
13	Elk River	IA	1,237	Closed Area	1,237	Sanctuary	1,237	Closed Area	1,237	Closed Area; no fishing, no motors	532.6	528.1	
13	Lower Pool 13	IA	None		2,004	Sanctuary	None		None		525.3	522.5	
14	Beaver Island	IA	None		717	Sanctuary	None		717	Closed Area; no fishing, no motors	516.6	514.0	
14	Wapsipinicon	IA	None		1,467	Sanctuary	None		None		508.2	506.0	
	Total Acres		44,495		60,396		44,614		43,704				
	Total UMR Refuge Units		15		29		15		21				

Chapter 3: Affected Environment

3.1 Physical Environment

The Upper Mississippi River National Wildlife and Fish Refuge (Refuge) encompasses one of the largest blocks of floodplain habitat in the lower 48 states. Bordered by steep wooded bluffs that rise 100 to 600 feet above the river valley, the Mississippi River corridor and Refuge offer scenic beauty, a wild character, and productive fish and wildlife habitat unmatched in mid-America. The Refuge covers 239,612 acres and extends 261 river miles from north to south at the confluence of the Chippewa River in Wisconsin to near Rock Island Illinois.

While extensive wetland habitat losses have occurred well beyond its boundaries in neighboring states, the Refuge has retained much of its biological integrity and is a stronghold of bottomland forests and wetlands vital to breeding and migrating fish and wildlife. Nonetheless, Refuge wetland habitat has degraded significantly over the past 40 years due to human influence and natural processes.



White Pelicans. Copyright by Sandra Lines

The Refuge is one of several management entities on the Mississippi River. The U.S. Army Corps of Engineers operates the 9-foot navigation project within the Upper Mississippi River System (Public Law 99-662), and overlays the entire Refuge. The navigation project provides a continuous channel for barge traffic through a series of reservoirs created by 29 locks and dams on the Mississippi River and eight on the Illinois River. These reservoirs (pools) create and maintain most of the Refuge's floodplain habitat. The Refuge occurs in Pools 4 through 14.

In addition to Corps and Refuge ownership, the adjoining states of Iowa, Illinois, Minnesota, and Wisconsin own wildlife management units within the floodplain. Many of the 70 counties, towns and other municipalities adjacent to the Refuge have property within the floodplain as well. With all these entities having divergent roles and interests in River management, Congress declared in the Upper Mississippi River Management Act of 1986 that the Upper Mississippi River is both a national significant ecosystem and nationally significant commercial navigation system.

Over the past 40 or more years, scientists, managers and other writers have produced an extensive amount of literature addressing the physical, biological, and cultural resources and challenges of the Mississippi River and the Refuge (GREAT I and II, UMRBC Master Plan, Navigation Project EIS,

Status and Trends Report, Refuge Master Plan and EIS, local studies, etc). This EIS will make brief summaries and references to these documents; refer to the literature cited in Chapter 8, References, for details.



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3.1.1 Geomorphology – Effects of Water, Wind and Ice

The Refuge lies within the Mississippi River floodplain, an ancient river valley filled with alluvial material (mud, sand, and gravel) carried and deposited by surface water. The river and its tributaries traverse sedimentary rock formations (dolomite, sandstone, and shale) that accumulated under inland seas during the early Paleozoic Era about 400 to 600 million years ago (Fremling and Claflin, 1984).

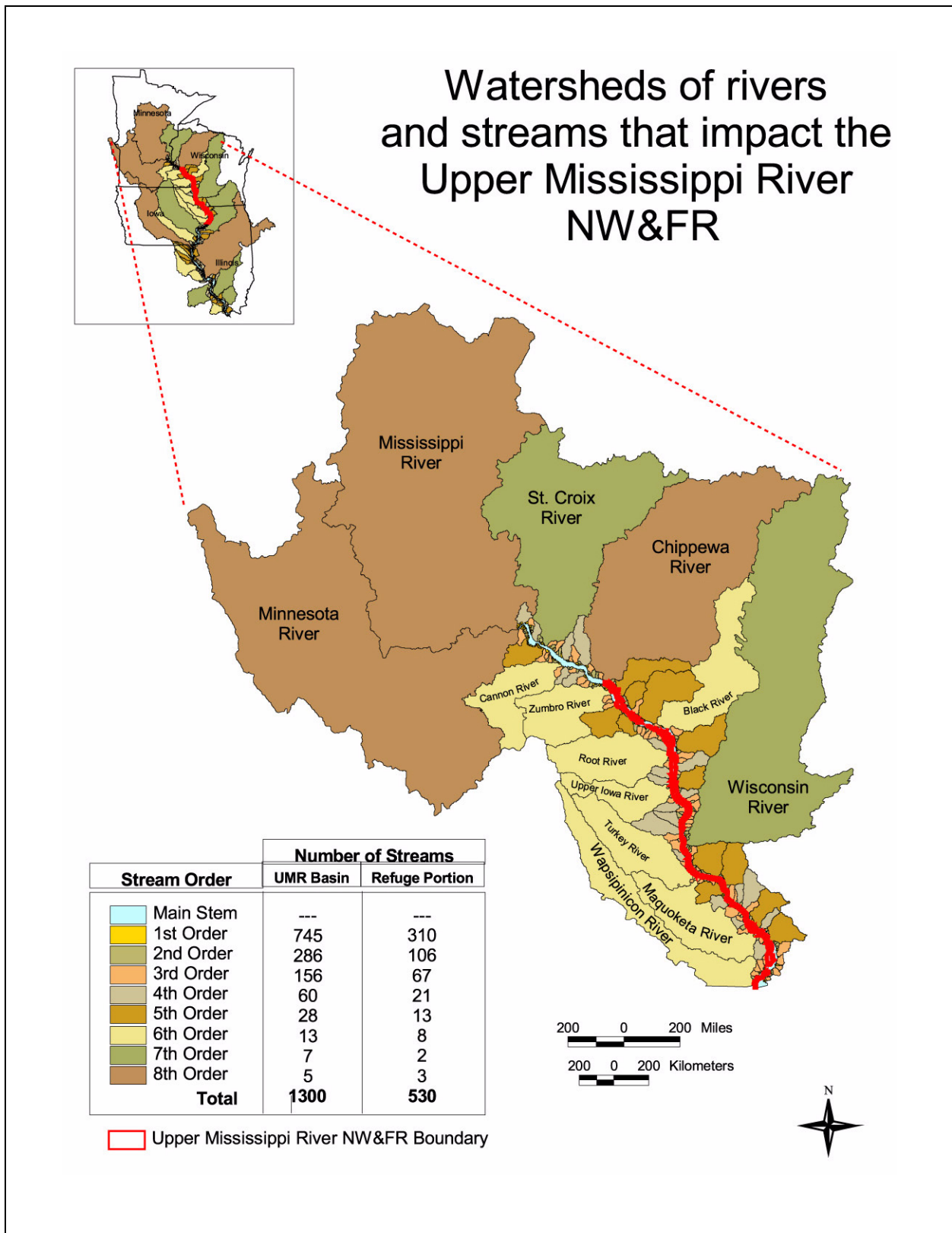
In more recent geologic times, the river valley has taken shape due to the presence (and absence) of glacial action. Global warming ended the last period of glaciation, about 12,000 years ago, and melted glaciers created huge clear-water lakes. Glacial Lake Agassiz covered much of northern Minnesota, the Dakotas, and central Canada. Most of that lake emptied to the south via the River Warren through which water ran in torrents for about 3000 years, trenching the Mississippi River valley by as much as 200 feet (Fremling and Claflin, 1984). Once the flow from glacial lakes subsided, the river lost much of its velocity and sediment transport capabilities. Sediment deposition ensued, and the valley partially refilled with sand and gravel. Several episodes of flushing and filling

of the river valley have followed. Sand terraces that presently flank the river valley are remnants of ancestral floodplains not scoured during the most recent postglacial floods.

Today, over 30,700 miles of streams course through the basin, merge, and eventually enter the Upper Mississippi River Basin (Figure 2). That number does not include many smaller streams not detected by large-scale mapping techniques (Gowda, 1999). The Refuge receives water from 530 of the estimated 1300 streams that occur within the Upper Mississippi River Basin. The illustration of sub-basins by stream order helps depict the relative size of drainage areas and channel lengths. The ordering system (Strahler, 1957) starts with the uppermost channels in a drainage network, they are the first-order streams downstream to their first confluence. A second-order stream is formed below the confluence of two first-order channels. Third-order streams are created when two second-order channels join, and so on. “Tributaries of the Mississippi have steeper gradients than the master stream and they now deliver sediments faster than the Mississippi can remove them; thus the valley floor is slowly aggrading once more” (Fremling and Claflin, 1984).

Much of the Refuge follows the Mississippi River as it flows through the carved Driftless Area, a non-glaciated “island” within a huge area of central North America shaped by a series of glaciers (Albert, 1995). This region has minimal amounts of glacial deposits known as “drift” and is therefore known as the Driftless Area. This landscape features a combination of steep, exposed bluffs and eroded ravines that bound the wide floodplain of the Upper Mississippi River, creating an unmatched wild and scenic character so prized by many viewers. The bluffs mark the edge of a plateau, extending many miles from the river, that is capped with loess soils that range in depth from

Figure 2: Watersheds of the Rivers and Streams that Impact Upper Mississippi River NW&FR



2 to 20 feet, the thinnest being along the valley walls. The Driftless Area includes parts of southwest Wisconsin, southeast Minnesota, northeast Iowa, and northwest Illinois. It also is called the Blufflands or Paleozoic Plateau.

3.1.2 Land Use Characteristics of the Upper Mississippi River Basin

The Upper Mississippi River Basin is a major sub-basin of the entire Mississippi River. It includes approximately 800 miles of river and covers 189,189 square miles, about 15 percent of the entire Mississippi River Basin. More than 60 percent of the land area in the Upper Mississippi River Basin is devoted to cropland or pasture. Between 1945 and 1985, the application rate of commercial fertilizers increased twenty-fold and contributed to nutrient enrichment of the river. The Upper Mississippi River Basin accounted for 31 percent of the total nitrogen delivered from the Mississippi River to the Gulf of Mexico between 1985 and 1988, despite being only 15 percent of the entire basin's land area (Gowda, 1999).

Sediments, nutrients, and pesticides that erode from urban and agricultural lands enter the Mississippi River by many streams. "Because of modern urban and rural drainage networks (tiles, ditches, culverts, etc.), water reaches the rivers [of the basin] more quickly, with greater velocity, and at higher stages than in the past (Bellrose et al, 1983)." Nitrogen and herbicides arrive in pulses that coincide with snow melt, spring rains, and planting and growing seasons. Average soil loss in the Upper Mississippi River Basin is 4.4 tons per acre per year. In 1993, a very wet year, Iowa annual losses approached 20 tons per acre per year (Bhomilk, 1996).

Agricultural practices of the recent past caused extensive erosion of sediments that reached the river and were transported downstream. However, some of these sediments remain in tributary channels and deltas, and thus "present a major problem because treatment to reduce soil erosion on land may not benefit the river until stored sediments are transported by high flows (Gowda, 1999)".

Researcher Prasanna Gowda states, "we do know that basin-level factors (sedimentation, nutrient enrichment, pollution) have degraded environmental quality in the river floodplain and beyond. Previous and ongoing studies have identified land-use practices that create high rates of erosion and runoff. Land management agencies could use this information to implement increasingly cost-effective measures to retain soil and contaminants in the uplands (Gowda, 1999)."

3.1.3 Locks and Dams and River Reaches

People began making structural changes to enhance navigation on the Mississippi River during the 1830s when a 5-foot channel was blasted through the Des Moines Rapids (Theiling, 1999). Snags were pulled, wing dams installed, and channels dredged to 4, 4.5, and 6 feet deep between 1866 and 1907. The current structure originated in 1930 when Congress authorized the 9-foot navigation channel project for the Upper Mississippi River System to be constructed, operated, and maintained by the U.S. Army Corps of Engineers. This navigation system, including 29 locks and dams on the Mississippi River and eight on the Illinois River, has brought the most significant change to the river ecosystem since European settlement (Figure 3). The Refuge occurs within Pools 4-14.

The navigation dams were installed by the late 1930s and created a stairway of reservoirs (navigation pools) from Minneapolis, Minnesota, to St. Louis, Missouri, allowing boats and barges to pass obstacles and readily traverse this 400-foot elevation gradient and 670 mile stretch of the Mississippi River. The navigation pools permanently raised water levels and inundated thousands of acres of floodplain habitat (Figure 4). The newly created backwater wetlands and shallow lakes immediately supported an abundance of fish and wildlife adapted to this new water regime. Some existing plant and animal species did not survive the change, including some migratory fish and associated mussels.

Figure 3: Upper Mississippi River Navigation System with Locks and Dams numbered; Navigation Pools Occur Above Each Lock (Source: Lubinski, 1999)

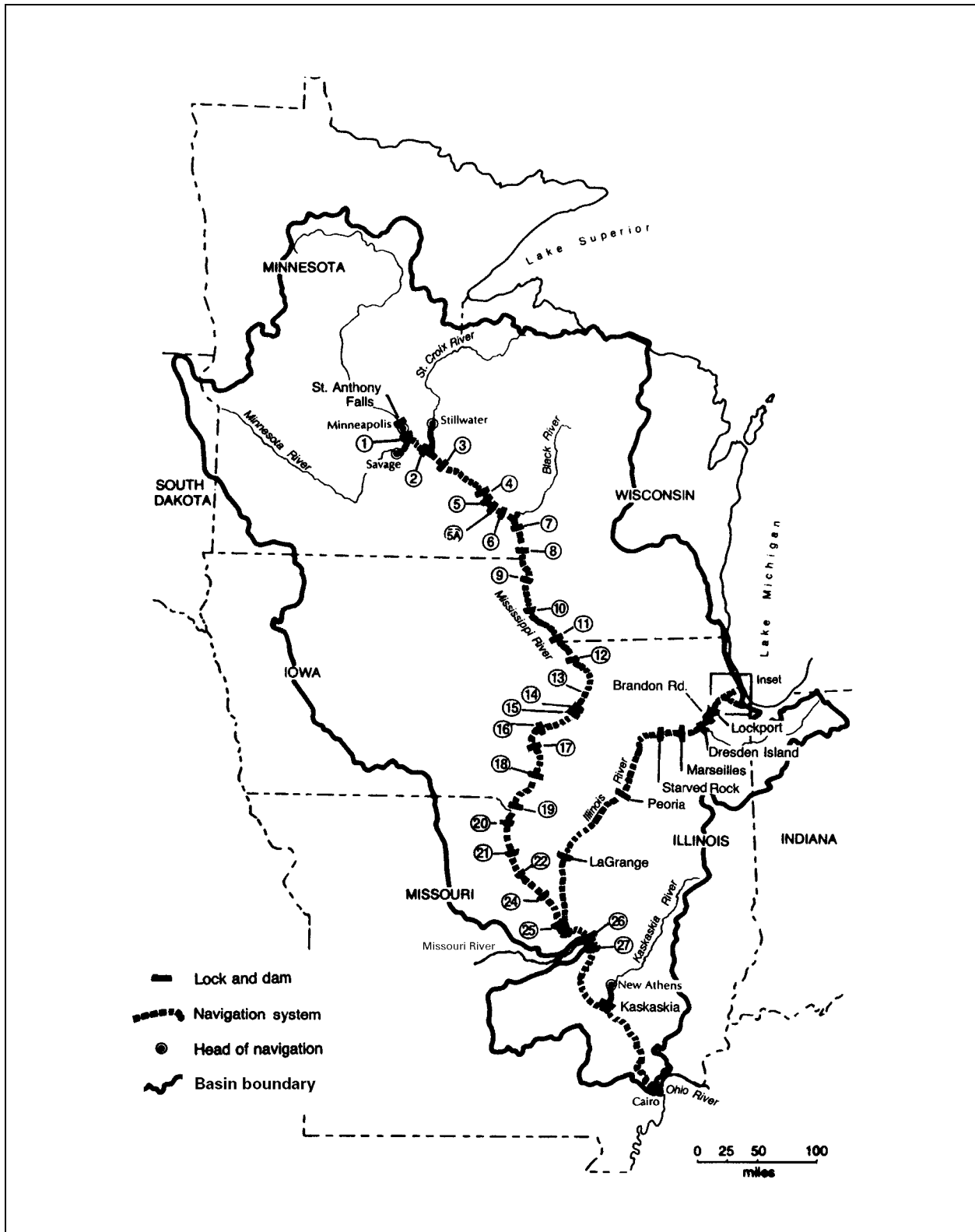
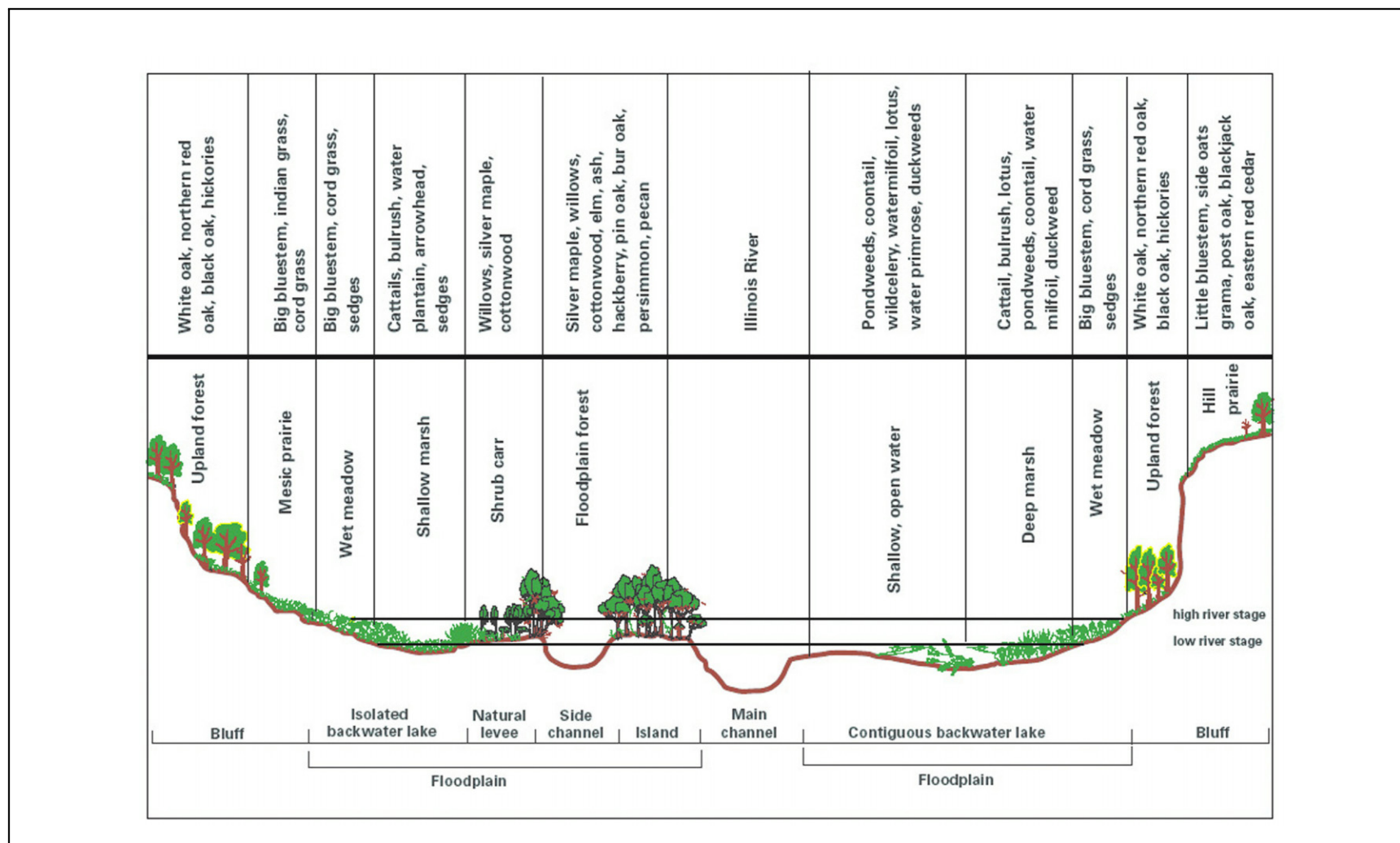


Figure 4: Typical Floodplain and Bluff Habitats of the Upper Mississippi River¹



1. Source: J.C. Nelson, Illinois Natural History Survey, Great Rivers Field Station, Alton, IL. In Theiling, 1999)

With time, floodplain productivity has declined because sediments from the uplands have filled backwaters, floods and river currents have eroded away plant beds and islands, and relatively stabilized water levels have eliminated natural processes of drying and flooding, key ingredients to maintaining highly productive wetlands.

In order to evaluate habitat needs, the Upper Mississippi River System is categorized into 12 dominant geomorphic areas, or river reaches. The Refuge occurs in Reaches 2-5, or Pools 4-14 (USACE, 2000). The first three reaches (2, 3, 4), Pools 4-13 of the Refuge, are characterized by many braided channels and a mix of open water, aquatic vegetation, floodplain forest, some agricultural and urban areas, numerous islands, and a narrow floodplain (about 1 to 3 miles) that terminates at steep bluffs. The fifth Reach (including Pool 14 of the Refuge) is dominated by agriculture, with occasional floodplain forest and wetland habitats.

3.1.4 Hydrology and Water Quality

Hydrology and water quality play a vital role in maintaining the ecological integrity of the Refuge, a national treasure. A rich assemblage of species requires an appropriate mix of physical, chemical and biological features, such as water flow and depth, adequate but not excessive nutrients in the substrate, appropriate temperature, oxygen and light levels, food sources and escape cover.

Water quantity and quality within the Upper Mississippi River Basin and the floodplain go to the very heart of the conservation conundrum of the Refuge. Besides trying to deal with an increasing array of environmental degradation symptoms, it is important to trace the problems to their sources for long-term solutions. Monitoring on the river has demonstrated that some forms of pollution have actually declined since the federal Water Pollution Control Act was passed in 1972, mandating the secondary treatment of sewage effluents.

However, the river and the Refuge are still being exposed to biotic risks and threats from a growing array of agricultural chemicals and their degradation products, excess nutrients from both point and non-point sources, dissolved heavy metals in water and sediment, and other toxic compounds or invasive organisms.

Water flow within the entire basin is influenced by agriculture, urban development and even the thousands of reservoirs installed throughout the basin. The Corps of Engineers has 76 reservoirs, holding 40 million-acre feet of water; this volume would take three months to flow past St. Louis at average discharges (Wlosinski 1999). An estimated 3,000 more reservoirs with unknown capacity also occur in the basin.

Wetland drainage has affected 26 million acres in the Mississippi River Basin. An estimated 34 to 85 percent of wetlands have been lost in Wisconsin and Minnesota and 85 to 95 percent in Iowa and Illinois (Dahl 1990). These losses are critical because wetlands help regulate hydrology (water movement to tributaries), they filter nutrients from the water, and sustain highly diverse plant and animal populations.

Flow on the mainstem of the Mississippi and Illinois Rivers has been altered by installation of 37 dams, thousands of wing dams, and 8,000 miles of levees. Since 1933, the long-term average hydrologic pattern on the Upper Mississippi River System shows an approximate 11-year cycle of low and high flow, an apparent long-term increase in flow, and an increase in the frequency and amplitude of multiyear fluctuations in flow. Flood heights have increased and the number of days water elevations are above flood stage is increasing; present day floods on the Mississippi River at St. Louis tend to be 9 feet higher than historic floods at the same discharge (780,000 cfs). Major floods at St. Louis now occur once every six years (Wlosinski 1999).

The lock and dam system has permanently inundated lands previously rejuvenated through annual drying and “flood pulse” cycles. While initially the pools supported flourishing, productive wetlands, within a few decades the vast marshes became decadent as they filled with fine sediments, and turbidity from rough fish and wave action suppressed growth of aquatic plants. To compensate for degradation, attempts are now being made to simulate natural cycles of drought with periodic drawdowns and to assist island or channel creation with specially designed habitat projects in cooperation with the Corps of Engineers and the states.

Improved agriculture and development practices can significantly reduce the rates of sediment, nutrient and chemical contaminant delivery and deposition within the Refuge. This translates to better quality habitat for a wider array of species. Progress has been made, but much more can be done. The link between fish and wildlife health, water quality, and inputs from the basin or watershed is well documented. The Refuge has a role in promoting the use of cost-effective measures in the watersheds to enhance its fish and wildlife resources.

3.1.5 Soils

Much of the Upper Mississippi River Basin is covered by loess, a silty soil deposited by postglacial winds. These soils form a mantle over half the Upper Mississippi and Illinois sub-basins and serve as a major source of silt to the Upper Mississippi River System (Nielsen et al, 1984). Floodplain bedrock is covered by up to 150 feet (Pool 10) of alluvial soils (clay, silt, sand and gravel). Soils within the pools vary from silty clay to sand. Sand terraces, occurring at slightly higher elevations bordering the floodplain of the Mississippi and its larger tributaries, consist of glacial outwash deposited during periods of higher average flow.

The soils of the Refuge floodplain from Pools 4 through 6 are alluvial in origin, and vary in texture from silty clay to sand. The composition of the soil at any particular location depends upon the manner in which it was deposited. These irregular strata are composed of clay, silt, sand and gravel. The sands and gravels border many sloughs, while heavy silt loams underlain by sand or gravel can be found on higher terrain between sloughs. Before impoundment and refuge creation, these elevated areas supported bottomland timber, or were cleared and managed for hay or pasture.

Soils of Pools 7 and 8 are derived from a wider variety of parent material, ranging from weathered bedrock to glacial till, alluvium and loess. The weathering of the predominant till has taken place under different vegetative influences, resulting in several soil types. Podzolic soils have formed under deciduous trees with grass cover. The bog soils are represented by muck and peat, formed by decomposition of sedges and grasses at the wet lower margins of sand terraces exposed by river meanders. Regisols consist of deep, soft mineral deposits. Alluvial soils consist of water-borne materials recently deposited on the floodplain. A loess cap of silty particles covers most of the parent material.

Pool 9 parent materials also include loess, alluvium and drift. Pockets and fans of glacial outwash were formed as ice melted at the end of the most recent glacial period, known as the Wisconsin epoch. The main soil associations are Fayette-Dubuque-Stonyland, or “FDS.” The FDS association is characterized by a high percentage of shallow limestone soils over steep slopes that are susceptible to erosion. Sediment subsequently delivered to Pool 9 by the Upper Iowa River causes extensive siltation in backwaters and channels. The primary soil type of islands and upland peninsulas in this area is Dorchester silt loam, which is a light-colored soil that lacks a B-horizon. It forms on relatively flat sites over black soils that are usually flooded annually after spring thaw or after heavy rains.

Some of the high terraces bordering Pool 10 have sandy loam soils developed under prairie or savanna vegetation. The bottomlands have diverse soils of alluvial origin that are composed of sand, silt and clay layers deposited by flood events. In areas of annual flooding, there is little soil

development, since humus is mostly removed or covered. Higher elevation terraces may have a thin layer of humus over sandy material. A grey layer of sticky, fine clay with blue-green mottling from reduced iron is present on bottomland soils, indicating poor internal drainage and anaerobic soil conditions. Soils information for navigation pools 4-10 was obtained from the Mississippi River Operational Management Plan (USACE, 1993).

In the lower portion of the Refuge (pools 11-14), three major zones are identified for the river ecosystem in the current Operational Management Plan of the Corps of Engineers, Rock Island District: the streamside buffer zone, a higher elevation natural levee zone, and a lower elevation floodplain zone.

The buffer zone is an area close to the stream bank that is distinguished by floodplain edges and point bars. This zone is subjected to a rapidly aggrading alluvium, harsh stream velocities, and heavy debris accumulation. Common soil textures include coarse loams or sandy loams which have poor moisture holding capacity and high infiltration rates causing rapid drainage after flooding cessation. This zone has the most dynamic land/water interfaces.

Natural levee areas are associated in or near buffer zones. The elevation is often higher than the surrounding floodplain due to high silt aggradation. Soil textures are often fairly coarse loams and are moderately drained to well drained sites. Even though levees are relatively close to the stream, they flood less frequently and soils have high infiltration rates and are often dissected with drainage channels which facilitate rapid removal of flood waters.

The lower elevational flood plains consist of more poorly drained silty loams and silty clay loams best suited for moderately flood tolerant to very tolerant bottomland hardwoods. These flood plains are often inundated for longer periods due to their low elevation and high soil moisture holding capacity. The Natural Resource Inventory System (NRIS), which provides basic soil information for soils on project lands between pools 11 and 14, can be found in Section 3.043 of the Army Corps of Engineers Mississippi River Operational Management Plan, Rock Island District, 1989 (<http://www.mvr.usace.army.mil/missriver/>).

Soil association maps and descriptions for the Refuge are available for review at the Refuge Headquarters.

3.1.6 Climate

The climate of the Mississippi River Basin is subhumid continental with cold dry winters and warm moist summers. Average annual precipitation varies from about 22 inches in the western part of the basin to 34 inches or more in the east. About 75 percent of the total annual precipitation falls between April and September. Basin-wide, the average monthly temperature ranges from about 11 degrees F in January to 74 degrees F in July. Most of the river within the refuge usually freezes solid each winter. Refer to Table 6 for Refuge climate data.

The global warming trend documented nationally and globally in recent years has affected precipitation patterns in the Midwest, resulting in unusual flooding intensity and duration.



Iced vegetation. Copyright Sandra Lines

Table 6: Climate Data, Upper Mississippi River National Wildlife and Fish Refuge, River Mile 764 to 503.

Location	Average Maximum Summer Temp (Jun, July, Aug) (degrees Fahrenheit)	Average Minimum Winter Temp (Dec, Jan, Feb) (degrees Fahrenheit)	Average Annual Precipitation (inches)	Average Annual Snow Fall (inches)
La Crosse, Wisconsin (River Mile 700)	83.0	10.9	32.36	44.3
Moline, Illinois (River Mile 485)	84.2	16.3	38.04	35.0

As noted above, unusually high floods of long duration have occurred on the Upper Mississippi River over the past decade. Professor James Knox at the University of Wisconsin-Madison has found that “model results and instrument records both support the idea that global warming magnifies hydrologic variability and enhances the hydrologic cycle of the Upper Mississippi River basin (Knox, 2002).” He continues, “analyses of sediment properties [in Wisconsin] indicate that large floods on the Upper Mississippi River have commonly accompanied the beginning of warm and dry climate episodes in the region, but long-term persistence of warming and drought eventually results in smaller floods of high short-term variability.

“Short-term occurrences of large floods were common about 4700, 2500-2200, 1800-1500, 1280, 1000-750, and 550-400 calendar years B.P. [before present], all times that approximate rapid warming and drought in the upper Midwest identified by others. The recent high frequency of large floods on the Upper Mississippi River since the early 1990s may be a modern analogue because these floods have accompanied major hemispheric warming during the same period.”

The research by Knox and others indicates that climate is less stable and predictable than people previously thought, and this means that resilience must be a primary consideration in making management decisions. Resilience requires a largely preventive or precautionary approach that leaves an adequate margin for error. The floodplain marshes and forested islands or bluffs of the Upper Mississippi River corridor could have important future roles to play in excess nutrient processing and carbon sequestration, as a means of mitigating effects of climate change.

3.1.7 Contaminants

3.1.7.1 Refuge and Vicinity on the Upper Mississippi River

Land use practices, floods, other natural events, spills, and other human caused incidents within the watershed affect contaminant levels in river water and sediments. These, in turn affect quality and quantity of fish and wildlife habitat. Dissolved oxygen (DO) is crucial to fish and invertebrate survival and DO levels are good indicators of pollution (Soballe and Wiener, 1999). For example, for decades, untreated sewage entering the river in metropolitan Twin Cities depleted DO level in Pools 2, 3, and 4 had an adverse impact on fish and invertebrates. Between 1978 and 1995, treatment plants were installed and storm water was separated from sewage lines; fish and wildlife has responded favorably. Current measurements by Long Term Resource Monitoring Program show that DO levels on 3 Pools of the Refuge (4, 8, and 13) are generally above 5 parts per million (the level considered marginal for aquatic biota). DO levels below that threshold usually occur in backwaters with low current velocities. This has direct bearing on distribution of backwater fish species.

Agricultural fields, animal feedlots, and urban areas are principle sources for plant nutrients that enter the river (Soballe and Wiener, 1999). Excessive inputs of nitrogen and phosphorus can cause algal blooms, contribute to excessive plant growth and subsequent decomposition that depletes DO (limiting fish and other aquatic life distribution and survival), and cause public health concerns. This same enrichment may contribute to degraded water quality (hypoxia) in the Gulf of Mexico. Plant decomposition in the sediment can also be a source of ammonia that adversely affects burrowing organisms such as fingernail clams and mayflies.

The Upper Mississippi River transports moderate to high quantities of sediments that enter the river from row crop farming, mining, and urban development. Turbidity levels, a measure of suspended sediments, at the Maquoketa River (Pool 13) in Iowa are more than double all up-river inputs combined. This reflects a substantial increase in inputs from erodible agricultural lands. Sediments fill backwaters and reduce the diversity of water depths, thereby reducing biological diversity of the system. Sediments also reduce light penetration necessary for plant growth, as well as absorb and transport contaminants.

In summary, water quality of the Upper Mississippi River has improved in recent decades in the area of gross sewage pollution, but the river still receives a wide array of agricultural, industrial, and urban contaminants. The risks and threats of certain herbicides, such as atrazine, on the aquatic biota are largely unknown. Excessive nutrients cause excessive plant growth, which upon decomposition, can impact benthic organisms such as fingernail clams.

Polychlorinated biphenyls (PCBs) have been linked to a contaminated Upper Mississippi River food web affecting fish, mink, and burrowing mayflies (Soballe and Wiener, 1999). For additional information see the book *Contaminants in the Upper Mississippi River* (Wiener, et. al., 1984).

Contaminant levels in great blue herons of the Upper Mississippi River have been studied since the mid-1970s (Custer et al, 1997). Levels of PCBs in great blue heron chicks were 29 times greater on the Upper Mississippi River below St. Paul, Minnesota than above St. Paul in the mid 1970s. In 1978 great blue heron eggs had average PCB levels ($14.1 \mu\text{g/g}$ = parts per million) that were possibly sufficient to induce adverse effects on embryos. In 1993, investigators collected great blue heron eggs from 10 colonies on the Upper Mississippi River (8 on the Refuge) to determine the effect of organochlorines, mercury, and selenium on heron nesting (Custer et al, 1997). The authors concluded that these contaminants do not seem to be a serious threat to nesting great blue herons on the Upper Mississippi River. Organochlorine concentrations (including DDE, the metabolite of the insecticide DDT or dichlorodiphenyltrichloroethane) were generally low (mean DDE = $1.3 \mu\text{g/g}$; PCB = $3.0 \mu\text{g/g}$; TCDD [dioxin] = $11.5 \mu\text{g/g}$). Eggshell thickness was negatively correlated with DDE concentrations but eggshell averaged only 2.3 percent thinner than eggs collected during the years prior to the use of DDT. Mercury and selenium concentrations (mean = 0.8 and $3.1 \mu\text{g/g}$, respectively) in eggs were within background levels.

Mercury, a heavy metal, and PCBs are present in fish of the Mississippi River. Sources of mercury are both natural and man-made.; PCBs do not occur naturally. Both contaminants build up through the food chain and the highest levels occur in predatory fish (walleyes, bass, and northern pike), scavengers (catfish) and bottom feeders (carp). Fish consumption advisories are issued by the Health Departments of the four states overlapping the Refuge. Iowa had an active advisory against consumption of fish by children in 1998-1999. This advisory addressed elevated PCB levels in fish along an 11-mile stretch of the Mississippi River in Pool 14 near Davenport, Iowa; it is no longer active.

Minnesota, Wisconsin, and Illinois all have advisories directed primarily toward reducing intake of mercury and PCBs by pregnant women and children under the age of 15. In Illinois, channel catfish, less than 18 inches should be consumed at the rate no greater than one meal per week; catfish over

18 inches, at the rate of one meal per month. Illinois also has carp recommendations, but does not have advisories on walleye, bass, or northern pike taken from the Mississippi River.

Minnesota and Wisconsin have detailed advisories for consumption of fish taken from various pools of the Refuge. However, the extent of consumption and the number of species included on the lists vary between states along the same pool. In order to address PCB concerns in Wisconsin waters of the Mississippi River, buffalo (>15 inches), carp (> 15 inches), catfish (> 20 inches), walleye (>25 inches), and white bass (all sizes) taken in Pool 4 are limited to one meal per month for pregnant women and for children under 15. In Pools further down river (Pools 5-12) channel catfish, rather than all catfish are on the list, and buffalo, white bass and walleye are removed at various intervals along the Refuge pools. In the case of mercury, Wisconsin advisories indicate that pregnant women and children should consume only one meal of any sport fish per month, state-wide. The Wisconsin advisory brochure defines sport fish as “any fish you catch or are given, such as bass, walleye, northern, perch, or crappie. Sport fish are not fish you purchase in a store or restaurant.”

Minnesota advisories limit consumption of 10 to 14 species of fish for mercury and/or PCB concerns in Minnesota waters of Pools 4-9. In general, targeted fish less than 20 inches (except pan fish) are limited to one meal per week, larger fish are limited to one meal per month, again for pregnant women and children under 15 years of age. Species included on the Minnesota list include: crappie, flathead catfish, channel catfish, freshwater drum, largemouth bass, smallmouth bass, northern pike, walleye, white bass, white sucker, bluegill sunfish, carp, sauger, smallmouth buffalo, and bigmouth buffalo. Snapping turtles are also on the list for Pool 4.

3.1.7.2 Lost Mound Unit

The Lost Mound Unit of the Refuge (formerly the Savanna Army Depot) was placed on the National Priorities List for Superfund cleanup in 1989. This addressed the Comprehensive Environmental Response Compensation and Liability Act requirements. Approximately \$198 million may be budgeted during the next 20 years for contaminants removal. Presently 69 environmental sites may require cleanup. Some of these contaminants include solvent, petroleum, lead, cadmium, and mercury. TNT contamination has been confirmed to have reached the groundwater and has spread three-fourths of a mile westward toward the Mississippi River. It is reported that 70 percent of the Depot has the potential to contain some unexploded ordnance to include 155 mm and 75 mm howitzers, mortars, grenades, and small arms ammunition.

These environmental contamination, health, and safety issues will be considered in identifying areas for public access to Lost Mound Unit. The 9,715 acres of the Lost Mound unit are to be used for conservation purposes, therefore the degree of clean-up will not be as strict as if housing or industry were proposed for the site. The U.S. Environmental Protection Agency (EPA), the Illinois Environmental Protection Agency (IEPA), Rock Island Ecological Services Office (FWS) and the Department of Army (DA) will ultimately determine when, and if, the contaminated sites are cleaned up to the extent that there are no environmental contamination, health, and safety concerns.

3.2 Fish, Wildlife and Habitat

3.2.1 Navigation Pools and Habitat Change

The area of river between two dams is called a “pool,” each numbered according to the dam that creates it. Pools are river-like in nature having various flow velocities extending laterally from the navigation channel to the backwaters. Upon impoundment, water levels were permanently raised and stabilized, profoundly changing the character of the river (Green, 1970).

Turn-of-the-century (1890s) and modern (1989) land-cover maps of Pool 8 demonstrate the effect of impoundment on the river in the vicinity of the Refuge (Figure 5). Water levels were increased permanently in the lower half of the pools to create open water areas close to the dam and marshy areas near the middle of the pools. The upstream reaches scoured deeper but were largely unchanged in shape (Theiling, 1999).

Three prominent ecologic zones developed within each pool, particularly in the upper reaches of the Upper Mississippi River System. The lower, impounded zone occurs in roughly the lower half of the pools and generally contains the deepest water of the pool where open water and heavy silts cover former marshes and the lower terrestrial areas. This zone is interspersed with islands that once were high ground and ridges in the pre-lock and dam floodplain. The middle zones of the pools contain extensive backwater marshes and shallow lakes interspersed with tree stump fields where former forests, wet meadows and marshes occurred within the floodplain. These backwaters are, or were at one time, extremely productive. The upper pool zones extend downstream of dams, and retain a system of braided channels and forested islands that occurred prior to installation of the locks and dams. Many of the wet meadows that existed prior to inundation in the upper and middle zones are now forested due to succession and elimination of fire.

The pools are now almost 70 years old and are changing due to sediment accumulation, long-term inundation, and erosional processes that typically occur as shallow reservoirs age. Many of the productive marshes of mid-pool backwaters have lost their vegetative habitats and converted to open water, wind-swept, riverine lakes (Fremling et al, 1976). Sediment continues to fill and degrade aquatic habitats. Other backwaters have attained equilibrium with riverine conditions and maintain aquatic habitat. Erosional action of river currents, wind-driven waves, and boat-generated waves have reduced shorelines and eliminated thousands of islands in the mid-pool to lower impounded areas of the pools (Theiling, 1999) (Figure 6). In many backwaters, heavy wind and wave action has resuspended bottom sediments, resulting in the erosion of shallow areas and the filling of deeper ones. This geomorphic action has eliminated much of the “bathymetric diversity” (e.g., high spots, pockets and channels) that once punctuated the wetland bottoms, making the area so productive for fish and wildlife. In addition, resuspended sediment has increased turbidity levels in the water, thus reducing the amount of sunlight that penetrates the water and is available for aquatic plant growth.

Island loss in the lower one half of UMR pools has occurred since the locks and dams were installed in the mid 1930s, resulting in decreases in habitat for plants and animals. Islands eroded away due to current and wind- and boat-generated waves (Theiling, 1999).

Since the mid 1980s, large-scale projects have been constructed to slow habitat loss in backwaters by combating geomorphic processes of sedimentation and erosion. These projects include installation of low levees to block sediment-laden water from entering the backwaters, dredging channels and pockets to provide bathymetric diversity, constructing islands to reduce wind fetch and direct flows, and protecting (armoring) existing islands from erosion. Experiments have also been done with pool-scale (Pool 8) water level management, drawdowns, to replicate natural low-water conditions and thereby, promote growth of marsh vegetation.

Various river entities recognize there is a critical need to stop the accelerated loss of habitat and general decline of the river. In 1993, the Upper Mississippi River Conservation Committee first sent out a call for action in “Facing the Threat: An Ecosystem Management Strategy for the Upper Mississippi River (UMRCC, 1993).” The same committee repeated the sounds of urgency and warning in its recent publication, “A River that Works and a Working River” (UMRCC 2000):

“If the UMRS is to continue to survive as a nationally and internationally significant ecological and economic resource we, who are its beneficiaries and stewards, will have to develop, very soon, more efficient and effective restoration and management strategies.”

Figure 5: Landcover Maps of Pool 8, 1890s and 1989; Upper Mississippi River NWFR

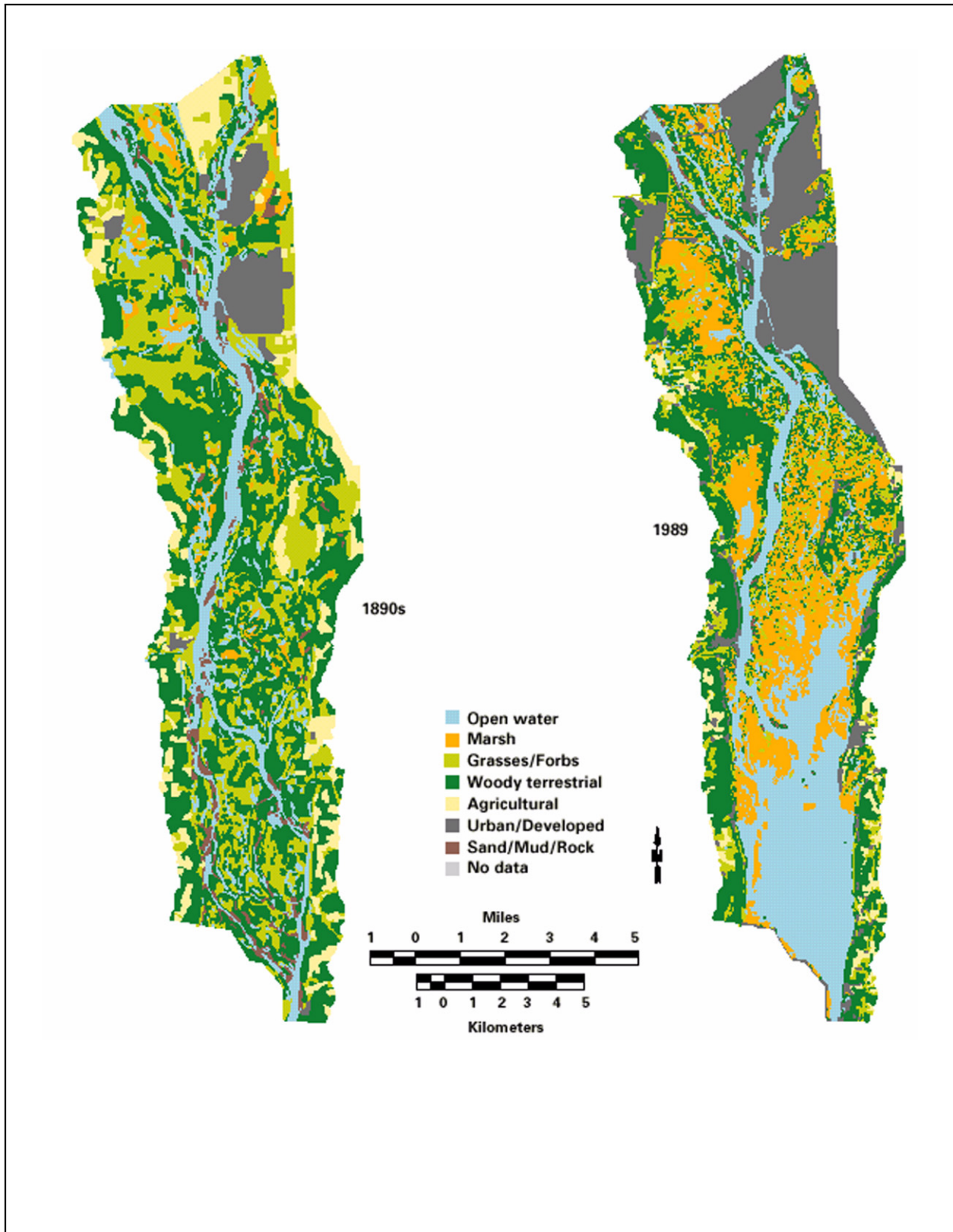
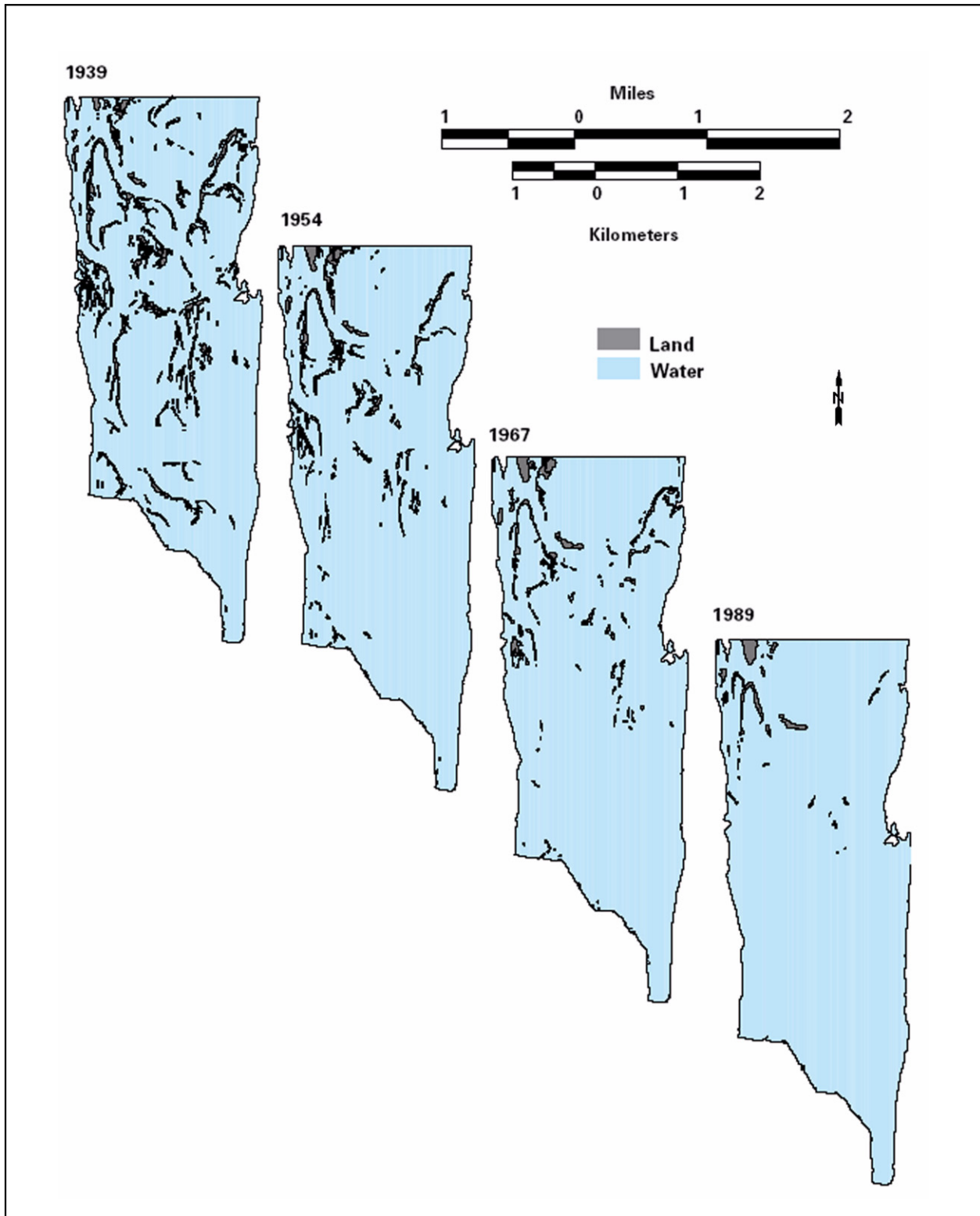


Figure 6: Island Loss in the Lower Half of the Upper Mississippi River Pools, Upper Mississippi River NW&FR



The publication identifies nine tools and measures to restore natural river processes, some of which include improving water quality, providing for seasonal low flow (drawdown) conditions, creating islands, severing pathways for exotic species and providing for fish passage. The actions proposed by this CCP match the Upper Mississippi River Conservation Committee tools for achieving restoration of the ecosystem.

In a more specific follow-up to the Upper Mississippi River Conservation Committee publication, the River Resources Forum, an interagency advisory group to the St. Paul District of the Corps of Engineers, has endorsed Environmental Pool Plans that include practices and plans to achieve desired future environmental conditions of Pools 1-10 (River Resources Forum, 2004). The Rock Island District counterpart to the River Resources Forum is the River Resource Action Team which has also endorsed Environmental Pool Plans for Pools 11-22. This CCP will promote the same strategies described in the Environmental Pool Plans documents to meet Refuge goals and objectives. Refer to Appendix N for examples of Environmental Pool Plan maps.

The Izaak Walton League of America recognizes an uncertain future for the Refuge in terms of development pressures, impacts of navigation, and ever-increasing recreational use (Izaak Walton League, 1999).

In addressing concerns about the future health and sustainability of the Upper Mississippi River Basin, The Nature Conservancy has identified areas of greatest freshwater biodiversity in the basin. Its purpose is to “galvanize conservation and restoration action by all stakeholders at the critical places within the UMRB” (Weitzell, et al., 2003).

3.2.2 Special Management Areas

3.2.2.1 Wilderness

Lands within the existing Refuge boundary and proposed expansions have been evaluated for wilderness suitability as part of this planning process. No lands were found to be suitable for designation as wilderness, defined in the Wilderness Act of 1964 and subsequent amendments. Roadless areas within the larger bottomlands associated with major river deltas are too small and too frequently accessed or impacted by human activities to meet Wilderness designation criteria. However, some of these areas do satisfy the criteria for other categories of special management designation, such as Research Natural Areas, which recognize wild qualities and fragility of habitats by restricting the nature or intensity of activities that disturb wildlife or damage habitat.

3.2.2.2 Special Designated Areas

Within the refuge, there are currently four designated Research Natural Areas (RNA), one National Natural Landmark (NNA) that partially overlaps a Research Natural Area, and one state-designated Scientific and Natural Area (SNA) (Table 7). These areas total 6,946 acres.

These areas assist in the preservation of examples of significant natural ecosystems for comparison with those that are more influenced by human activities. They provide educational and research areas where ecological observations and studies can be conducted with minimal disturbance, and natural processes can evolve without significant human intervention. Under certain circumstances, some manipulation of the environment through active management may be allowed to maintain special features. Hunting, fishing, bird watching, photography, wildlife observation, nature interpretation and environmental education may be allowed with adequate justification.

3.2.2.3 Conservation Easements

When the Farm Services Agency (FSA), formerly known as the Farmers Home Administration (FMHA), acquires property through default on loans, it is required to protect wetland and floodplain resources on the property prior to public resale. The U.S. Fish and Wildlife Service assists the Farm

Table 7: Special Designated Areas Within the Upper Mississippi River NWFR

Name of Area	Category ¹	State	Acres	Habitat Type	Pool	River Mile(s)
Winona District						
Nelson-Trevino Bottoms	RNA SNA NNA	Wisconsin	3,740	Silver Maple; American Elm	4	760-763
La Crosse District						
Midway Railroad Prairie	SNA	Wisconsin	5	Bluestem Grassland	7	706
McGregor District						
Reno Bottoms	RNA	Minnesota	1,980	Silver Maple; American Elm	9	679-681
Twelve-Mile Island	RNA	Iowa	900	Silver Maple; American Elm	11	610-614
Savanna District						
Thomson-Fulton Sand Prairie	RNA	Illinois	321	Bluestem Grassland	13	525-527
Total Acreage			6,946			

1. RNA = Research Natural Area; SNA = Scientific and Natural Area; NNA = National Natural Area.

Services Agency in identifying important floodplain and wetland resources for protection with perpetual conservation easements. Management responsibility for the easement may be transferred to a state or federal agency for administration. The Refuge has held a number of such easements since the late 1980s, and may, in the future, hold more of these or other types of conservation easements which are becoming popular tools for maintenance of water quality and wildlife diversity through habitat protection.

The authority for the Farm Services Agency easements comes from the Consolidated Farm and Rural Development Act (7 U.S.C. 1981 and 1985, as amended); Executive Order 11990 providing for the protection of wetlands; and Executive Order 11988 providing for the management of floodplain resources. The U.S. Fish and Wildlife Service administers the easements through the National Wildlife Refuge System. This Refuge maintains a total of 30 conservation easements totaling approximately 1,178 acres, located in 16 counties of three states, Minnesota, Wisconsin, and Iowa (Table 8). Widely dispersed easements have proven difficult to adequately manage with limited refuge private lands staff. Easements need regular inspection and management to prevent encroachment and resource degradation.

Table 8: Conservation Easements Maintained by Refuge

Name	Habitat	Acres	Year	State	County
Winona District					
Haney	Riparian	38	1989	Minnesota	Mower
Jeche	Wetland	1	1989	Minnesota	Fillmore
McCabe	Riparian	36	1989	Minnesota	Fillmore
Gardemann	Riparian	35	1990	Minnesota	Fillmore
Heggedahl	Riparian	8	1990	Minnesota	Dodge
Rediske	Riparian	6	1990	Minnesota	Fillmore
Yenter	Riparian	51	1990	Minnesota	Fillmore
La Crosse District					
Engh	Riparian	30	1988	Wisconsin	Vernon
Nerison	Riparian	18	1988	Wisconsin	Vernon
Barton	Riparian	16	1989	Wisconsin	La Crosse
Straight	Wetland	5	1995	Wisconsin	Richland
Schminiek	Wetland	25	1999	Wisconsin	Sauk
McGregor District					
Riley	Wetland	10	1989	Wisconsin	Grant
Rosonke	Wetland	157	1989	Iowa	Chickasaw
Engle	Wetland	87	1990	Iowa	Floyd
Quade	Wetland	47	1990	Iowa	Bremer
Beine	Wetland	20	1991	Iowa	Bremer
Gott	Wetland	18	1995	Iowa	Bremer
Rossol	Wetland	24	1995	Iowa	Bremer
Kleve	Wetland	29	2000	Iowa	Clayton
Hartwig	Wetland	20	2001	Iowa	LaFayette
Savanna District					
Reese	Grassland	42	1990	Iowa	Blackhawk
Atkinson	Timber	107	1990	Iowa	Delaware
Krogman	Timber	66	1991	Iowa	Delaware
Dickel	Timber	108	1990	Iowa	Iowa
Telandis	Wetland	235	1992	Iowa	Scott

3.2.3 Notable State Management Areas

The states manage some important and often magnificent wildlife management areas, parks, and forests adjacent to the Refuge, both in and outside the floodplain. Coordination of similar land management needs and programs is regular and ongoing since fish and wildlife, and at times the public, do not distinguish between administrative boundaries. Table 9 shows the notable state resource lands next to the Refuge.

Table 9: Notable State Management Areas

Location	Area (acres)
Minnesota	
Pool 4 Wildlife Management Area	146
McCarthy Lake Wildlife Management Area	2,873
Kellogg-Weaver Dunes Scientific and Natural Area	1,004
John A. Latsch State Park	1,654
Thorpe Wildlife Management Area	139
Great River Bluffs State Park	3,067
<i>Total for Minnesota</i>	8,883
Wisconsin	
Tiffany Bottoms Wildlife Area	12,740
Whitman Dam Wildlife Area	2,173
Merrick State Park	320
Perrot State Park	1,270
Van Loon Wildlife Area	3,981
Rush Creek State Natural Area	2,265
Wyalusing State Park	2,628
Wyalusing Unit Lower Wisconsin State Riverway	690
<i>Total For Wisconsin</i>	26,067
Great River State Trail	24 miles
Iowa	
Pool Slough Wildlife Management Area	555
Fish Farm Mounds Wildlife Management Area	576
Village Creek Area	52
Yellow River State Forest	8,503
Pike's Peak State Park	970
Mines of Spain State Recreation Area	1,387

Table 9: Notable State Management Areas (Continued)

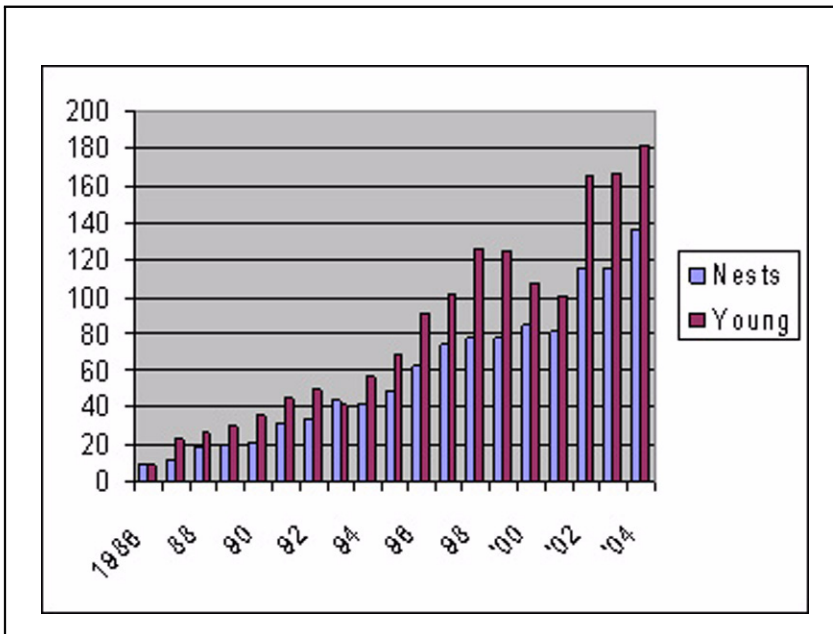
Location	Area (acres)
Bellevue State Park	770
Green Island Wildlife Management Area	3,722
Princeton Wildlife Management Area	1,208
<i>Total for Iowa</i>	17,743
Illinois	
Palisades State Park	2,500
<i>Total for Illinois</i>	2,500

3.2.4 Threatened and Endangered Species

3.2.4.1 Bald Eagle

The Bald Eagle (*Haliaeetus leucocephalus*) was declared an endangered species in 1973 due to low populations that existed following a century of persecution and habitat loss and several decades of poisoning from hard core pesticides (DDT, dieldrin, endrin, etc.). The species began to recover after these pesticides were banned in 1972 and public awareness and management provided protection for the bird. It continues to recover and its full recovery is possible. The success story of Bald Eagle recovery is reflected in the number of active nests found on the Refuge since 1972 when one nest was present. In 1986, nine nests produced nine young, and by 1996, 62 active territories produced an estimated 91 fledged young (Figure 7). In 2004, 136 active territories produced 181 young on the Refuge. Bald Eagle nesting territories occur over the length of the Refuge and are most numerous within the McGregor District which has over 70 nests. Annual Bald Eagle production on the Upper Mississippi River NWFR has shown a 15-fold increase the 18 years between 1986 and 2004.

Figure 7: Annual Bald Eagle Production on Upper Mississippi River NWFR, 1986-2004



3.2.4.2 Higgins Eye Pearlymussel

The Higgins eye pearlymussel (*Lampsilis higginsii*) was listed as endangered in 1976 due to declines in abundance and distribution. Causes include commercial harvest, creation of impoundments in the 9-foot navigation system, channel maintenance dredging and disposal activities, changes in water quality from municipal, industrial, and agricultural activities, unavailability of appropriate fish hosts for mussel larval stages, disease (USFWS, 1983), and exotic species (especially zebra mussels).

The biological assessment of the navigation system (USACE, 2004) indicates that *L. higginsii* occurs most frequently in medium to large rivers with current velocities of 0.49 to 1.51 feet per second and in depths of 2 to 19.7 feet. It appears to prefer water with dissolved oxygen greater than 5 parts per million and calcium carbonate levels greater than 50 parts per million. The species is significantly correlated with a firm, coarse sand substrate. *L. higginsii* is usually found in large, stable mussel beds with relatively high species and age diversity.

Nearly all remaining habitat on the Upper Mississippi River for *L. higginsii* is within the 9-foot navigation project. Higgins eye pearlymussel recovery teams have identified Essential Habitat Areas that are believed to contain viable reproducing *L. higginsii* populations. These teams indicate that recovery of the species could not be accomplished without maintaining the Essential Habitat Area populations. Five of the 10 identified Essential Habitat Areas are within or near the Refuge (USACE, 2004) as follows:

- Wisconsin (River Mile 0 - 0.2)
- Upper Mississippi River at Whiskey Rock, Ferryville, Wisconsin, Pool 9 (River Mile 655.8 - 658.4)
- Upper Mississippi River at Harpers Slough, Pool 10 (River Mile 639.0 - 641.4); Upper Mississippi River Main and East Channels at Prairie du Chien, Wisconsin, and Marquette, Iowa, Pool 10 (River Mile 633.4 - 637)
- Upper Mississippi River at McMillan Island, Pool 10 (River Mile 616.4 - 619.1)
- the Upper Mississippi River at Cordova, Illinois, Pool 14 (River Mile 503.0 - 505.5)

Recent Refuge activities involving Higgins eye pearlymussel include limited participation in recruitment projects, monitoring zebra mussels, reviewing permits for river projects, designing habitat projects, and environmental education.

3.2.5 Candidate Threatened and Endangered Species

3.2.5.1 Eastern Massasauga Rattlesnake

The Eastern massasauga rattlesnake (*Sistrurus catamites catenatus*) has declined throughout its range, an area that extends from New York and southern Ontario westward to Iowa and Missouri. The decline is from 33 percent in Michigan to 100 percent in Minnesota. The primary causes are habitat loss and persecution. Past anti-rattlesnake campaigns have reduced some populations beyond a recoverable threshold. Habitat (wet sedge meadow, emergent wetland, shrub-carr) has been lost to natural succession, conversion, changes in hydrology (prolonged saturation of soil), and fragmentation (USFWS, 2003).

Eastern massasaugas occur at only one known site (Nelson-Trevino Research Natural Area, Pool 4) within the Refuge, although potential habitat exists elsewhere within the system. The snake occurs within the Black River Bottoms (Pool 7) on private land, adjacent to the Refuge and within the approved acquisition boundary of the Refuge. Small populations of massasaugas are scattered along the length of the lower Wapsipincon River in Scott and Clinton Counties, Iowa (VanDeWalle and

Christiansen, 2002). The most recent records of live specimens found in that area were near Long Grove and Calamus, 13 and 30 miles west of the Upper Mississippi River floodplain. Searches in 2001 and 2002 found no live specimens in these counties.

The Refuge is participating in developing and implementing Candidate Conservation Agreements for massasaugas at Nelson-Trevino, the Black River Bottoms, and adjacent private and state land in Wisconsin.

3.2.5.2 Sheepnose

This summary is from the sheepnose (*Plethobasus cyphus*) status report (USFWS, 2002a). The sheepnose has been eliminated from two-thirds of the total number of streams from which it was historically known (26 streams versus 77, historically). It was uncommon in what are now Mississippi River Pools 13-23.

In the upper Mississippi River, the sheepnose is an example of a rare species becoming rarer. Despite the discovery of juvenile recruitment in Pool 7, the sheepnose population levels appear to be very small and of questionable long-term viability given the threats outlined below. Along with other mussels of the Upper Mississippi River, the sheepnose is seriously threatened by zebra mussels. Other threats include channel maintenance dredging and sedimentation from tributary systems. Sediment accumulations above lock and dams generally preclude the occurrence of sheepnose.

The majority of the remaining populations of the sheepnose are generally small and geographically isolated, which makes them much more susceptible to extirpation from single catastrophic events such as toxic chemical spills. Furthermore, this level of isolation makes natural repopulation impossible without human intervention. Isolation prohibits the natural interchange of genetic material between populations, which can lead to inbreeding depression.

Conservation activities that would benefit the species include funding programs, research and surveys, outreach, and habitat improvements and conservation.

3.2.5.3 Spectaclecase

The spectaclecase (*Cumberlandia monodonta*) was declared a candidate species May 4, 2004 (USFWS, 2004b). As reported in the Federal Register, the spectaclecase is apparently more of a habitat specialist than are most mussel species. Primarily a large-river species, it can occur on outside river bends below bluff lines. It often inhabits riverine microhabitats sheltered from the main force of current. It occurs in substrates from mud and sand to gravel, cobble, and boulders in relatively shallow riffles and shoals with slow to swift current.

The spectaclecase occurred historically in at least 45 streams in the Mississippi, Ohio, and Missouri Basins. Extant populations of the spectaclecase are known from 20 streams. Seven of those populations are represented by a single specimen each. Only three or four populations could be characterized as large or stable. Threats to the continued existence of the spectaclecase appear to include exotic species, especially zebra mussels; delivery and deposition of fine sediments; small population sizes; isolation of populations; livestock grazing; wastewater effluents; mine runoff; unstable and coldwater flows downstream of dams; gravel mining; and channel dredging. Although there are ongoing attempts to alleviate some of these threats at some locations, there appear to be no populations without significant threats and many threats are without obvious or readily available solutions. In addition, the fish host of the spectaclecase is unknown; thus, propagation to reestablish the species in restored habitats and to maintain nonreproducing populations and focused conservation of its fish host are not yet possible. Therefore, the threats to spectaclecase are considered to be of high magnitude. However, 10 populations are reproducing or supported via immigration from large populations, and three or four of these populations may be described as large.

The spectaclegoose disappeared from the Prairie du Chien, Wisconsin area in the 1920s. A 1981 survey failed to locate living spectaclegoose in the Wisconsin portion of the upper Mississippi River (between Pool 3-11) using brail and SCUBA, but reported dead shells in Pool 11. The only live specimens found recently on the Upper Mississippi River were in Pool 15 and further down river; none on the Refuge portion of the Upper Mississippi River, Pools 4-14.

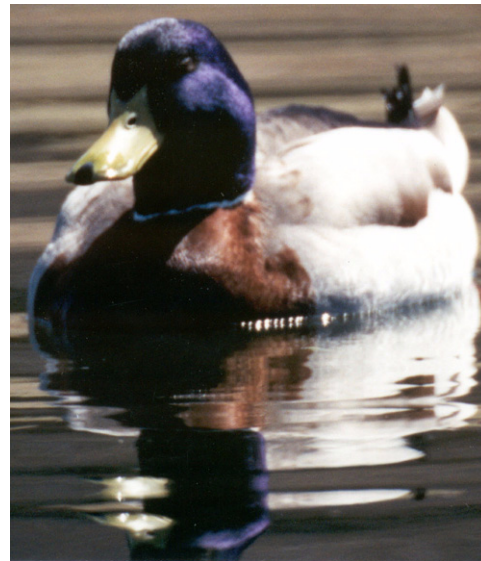
3.2.6 Wildlife Resource Conservation Priorities

The U.S. Fish and Wildlife Service's Region 3 list of Resource Conservation Priorities contains 243 species of fish and wildlife, of which, 65 birds, three mammals, six fish, two reptiles, 26 invertebrates, and 13 plants occur on the Refuge (Appendix K). These species are considered to be in the greatest need of attention under the Service's full span of authorities. The Resource Conservation Priorities identifies strategies that will contribute to the conservation, protection, and recovery of migratory birds, threatened and endangered species, and interjurisdictional fish, as well as the habitats on which they depend, thus assisting in fulfilling Service missions.

The fact that a species is not included on the Resource Conservation Priorities list does not mean it is unimportant; it means only that when faced with the choice of addressing the needs of several species, the Service should place emphasis on those identified as priority from a Regional perspective. Many species not listed will receive incidental benefits from Refuge management. The Resource Conservation Priorities list will assist in prioritizing workloads, focusing conservation actions, identifying research priorities and training needs, preparing of Refuge plans, and developing budgets.

3.2.7 Migratory Birds

The U.S. Fish and Wildlife Service is responsible for the conservation and management of more than 800 species of migratory birds that occur in the country. In 2004, the Service released the Migratory Bird Program's ten-year strategic plan, "A Blueprint for the Future of Migratory Birds". It calls for cooperation from all governments and partners to ensure the continued survival of migratory birds. The Blueprint identifies three priorities for the Service's Migratory Bird Program: 1) address the loss and degradation of migratory bird habitat, 2) improve scientific information on bird populations, and 3) increase partnerships to achieve bird conservation. Implementation of Refuge plans will compliment these priorities by addressing needs of some Birds of Management Concern listed in an appendix to the Blueprint.



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3.2.7.1 Waterfowl

National Wildlife Refuges play a crucial role in providing breeding, migrational, and wintering ground habitat for waterfowl. Over the past 75 years, the U.S. Fish and Wildlife Service has strategically established many of its refuges to help meet widely held waterfowl conservation goals. Features common to refuges is the inclusion of closed areas, which provide waterfowl the opportunity to feed and rest without disturbance during migration and at wintering locations. Without disturbance, waterfowl are provided opportunity for molting, preening, pair bonding and fat storage, all of which help build healthier populations. Closed areas also help keep regional populations in and around refuges, providing hunting opportunity on adjacent public and private lands. The value of closed areas to waterfowl would decline if they were frequently moved around or rotated.

Refuge Waterfowl

The Refuge lies within the Mississippi Flyway, through which an estimated 40 percent of the continent's waterfowl migrate. It is a critical migration corridor (Reid et al. 1989) for 10 species including Tundra Swans, Ring-necked Duck and Hooded Merganser. The other seven species are also on the U.S. Fish & Wildlife Service's Region 3 Resource Conservation Priority List and include: Lesser Snow Geese, Canada Geese, Wood Duck, Mallard, Blue-winged Teal, Canvasback, and Lesser Scaup. The corridor is also important for an additional eight species of waterfowl.

Waterfowl populations on the Refuge can fluctuate widely from year to year due to variations in flyway populations, water, and food conditions off-river, food availability in the backwaters, and weather (Korschgen et al. 1999). These factors, combined with survey variability over the years, are considered when analyzing waterfowl use data collected on the Refuge.

Biologists have conducted various types of ground counts and aerial waterfowl surveys of the Refuge since the 1920s. These surveys are not all-inclusive counts, but rather indices to the number of birds present on the Refuge. Changes in methods, observers, survey routes, and aircraft types preclude direct comparisons of one year or group of years to another. However, general trends and descriptions of changes in distribution of the birds can be made using the data. These variables need to be considered when interpreting data presented below.

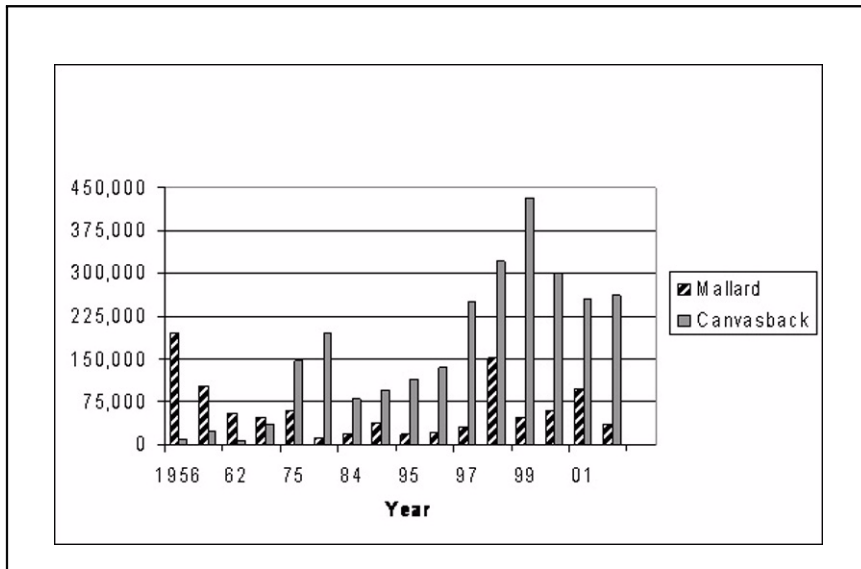
The following discussion addresses four main groups of waterfowl: diving ducks, puddle ducks (also called dabbling ducks), geese, and swans. Common diving duck species on the Refuge are the Canvasback, Lesser Scaup, Common Goldeneye, Ring-necked Duck, Bufflehead, Ruddy Duck, and mergansers (Hooded, Common and Red-breasted). Diving ducks are recognized by their generally white, black, and gray colors. Their wings are relatively small compared to their body size, so divers must use rapid wing beats when they fly, and when launching into flight, most of this group patter along the water before becoming airborne. Divers have large feet, placed well back on the body and are not agile on land. They frequent large deep marshes, lakes, rivers, and coastal bays. They dive, sometimes to great depths, to feed on aquatic plants, fish, clams, and snails. Favorite diver foods on the Upper Mississippi River are wild celery, sago pondweed, fingernail clams, and snails.

The most common puddle duck species on the Refuge are the Wood Duck, Mallard, Blue-winged Teal, Wigeon, Gadwall, Pintail, and Green-winged Teal. Puddle ducks often have brightly colored wing patches (speculum) and males are colorful throughout, while females are generally a camouflage brown. Puddle ducks are sure-footed, often seen feeding or roosting on land. They typically utilize freshwater, shallow marshes, rivers, and ponds where they feed by dabbling on the water surface or tipping, rather than diving. Puddlers feed on aquatic insects and plants, acorns, or grain. On the Upper Mississippi River, they frequent backwater marshes containing arrowhead, river bulrush, cattail, and other emergent and submergent vegetation. These plant communities are steadily declining on the Refuge.

In the early years of the Refuge (1924-1935), when no locks and dams were present, lesser and greater scaup were the most common migrants (Green 1970). They utilized riverine conditions of the main and secondary channels. In the pre-lock and dam era, most of the many sloughs and wetland pockets were dried out by the fall season and not suitable for migrating waterfowl. During spring, when the bottoms were flooded, there was a greater waterfowl use and diversity.

Installation of the locks and dams brought about instant change with stabilized water levels creating productive shallow marshes and aquatic areas. Increase in waterfowl use was "phenomenal", with both diving ducks and puddle ducks migrating and staging on the Refuge. After flooding and until the 1960s, puddle ducks (such as Mallards) were more abundant than divers (such as Canvasbacks) in the fall (Figure 8). In 1956, the peak count of Mallards reached 190,000 birds while canvasbacks reached only 10,000. By 1975, those numbers were almost reversed, with 147,000 canvasbacks counted on Pools 7 and 8 only and 12,000 Mallards counted.

Figure 8: Peak Number of Mallards and Canvasback Ducks on Upper Mississippi River NW&FR, 1956 to 2002¹



1. Canvasback numbers for the years 1962-1975 are for Pools 7 and 8 only. Years 1978 and 1987 are for Pools 7, 8 and 9 only.

Puddle ducks declined in response to losses of secure emergent habitat due to sedimentation, wind and wave action, and continuous flooding regimes. Divers responded to habitat changes on the river toward more open water conditions that support underwater plants. At the same time, crucial diving duck habitat was lost in adjacent states due to habitat degradation and drainage.

During the 1980s, numbers of Canvasbacks declined to about 80,000 birds and mallard numbers increased to about 40,000. These declines reflected reductions in continental populations and losses in Refuge habitat. Since 1997, canvasback peak numbers on the Refuge have exceeded 250,000 birds each year, with a peak of 431,000 observed October 25, 1999. The Refuge generally support 60 to 75 percent of the Canvasbacks counted in the eastern U.S during annual Coordinated Canvasback surveys (Figure 9).

Figure 9: Percent of the Eastern Population of Canvasbacks that Occurred on Upper Mississippi River NW&FR During the Coordinated Canvasback Survey, 1974-2002

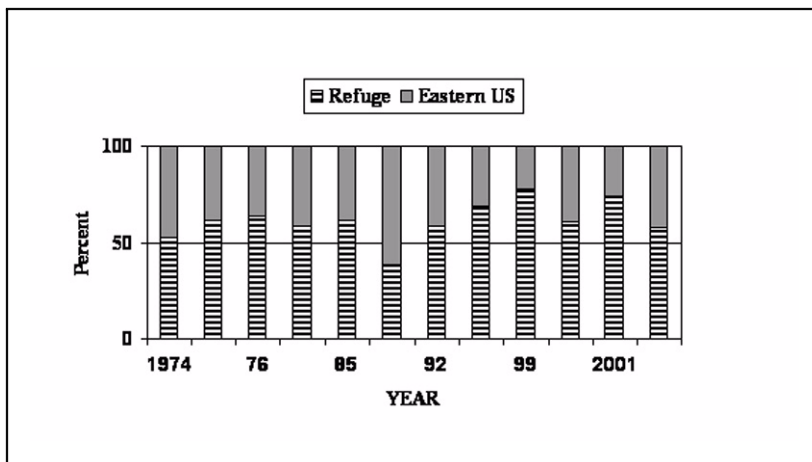
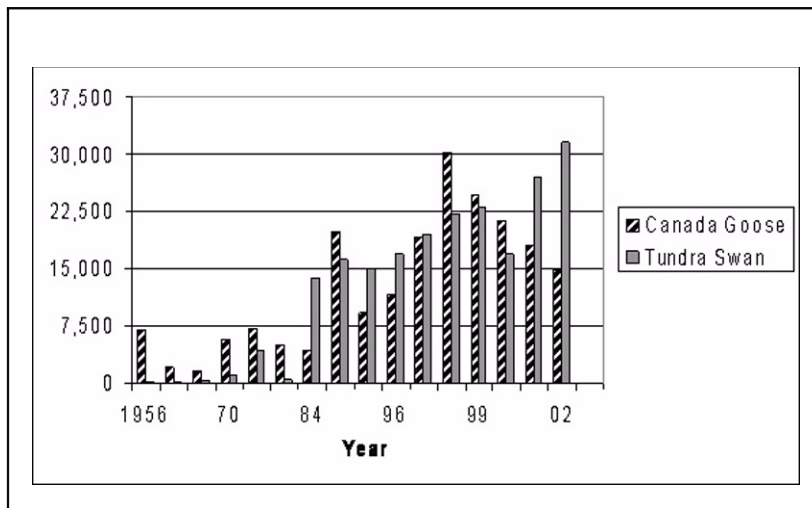


Figure 10: Peak Number of Canada Geese and Tundra Swans on Upper Mississippi River NW&FR, 1956-2002



Canada Goose and Tundra Swan numbers were much lower between 1924 to 1965 than they are today (Figure 10). Canada Goose peaks ranged from less than 1000 to about 7,500 during that period. Recent peaks range from 10,000 to 30,000 geese. The increase reflects higher populations of geese in the flyway and the availability of habitat on the river.

Tundra Swans did not begin to use the Mississippi River as a significant migration stop-over until the mid-1980s when peak numbers reached nearly 15,000 swans in 1984. Only about 100 were counted in the 1950s. Peak counts have exceeded 30,000 birds in recent years and it is estimated that 20 percent of the continental population migrates through the Refuge each fall. The Refuge is an important rest stop for family groups of swans during migration. Aerial surveys and video surveys in 1998-99 revealed that “at one point in late November, Pools 4-9 could have been used by 51.7 percent of all cygnets in the eastern population” of Tundra Swans (Thorson, 2002).

The Refuge supports breeding waterfowl populations of Mallards, Wood Ducks, Hooded Mergansers and Canada Geese. Mallard duckling production on islands in Pools 7 and 8 has been monitored most years since 1981 by Wisconsin Department of Natural Resources (Nelson and Andersen, 2003). Success rates range from 11 percent to 89 percent (average is 66 percent in Pool 7 and 52 percent in Pool 8). Nest success reflects the extent of predator-free conditions on islands. Annual production (duckling hatched) averages 785 on Pool 7 and 229 on Pool 8 islands. State biologists and managers are interested in promoting local mallard production on natural and man-made islands of the Refuge. Grassland nesting cover is difficult to maintain in floodplain habitat where natural processes are promoted.

Waterfowl Management Challenges

Waterfowl management challenges on the Refuge center around the need to provide secure resting and feeding habitat for birds in migration, as well as distribute hunting opportunities throughout the Refuge. Optimal bird distribution is achieved by providing adequate food resources (carrying capacity) where birds will not be disturbed. Managers consider various factors that influence waterfowl distribution on the Refuge including the affects of hunting and other forms of human disturbance on waterfowl, the amount of available food, the longitudinal distribution of food resources on the river; the distances ducks are known to fly from roosting to feeding sites, and other biological needs.

Current observations and survey data clearly show that ducks, swans and geese are not evenly distributed on the Refuge during fall migration (Figure 11, Figure 12, and Figure 13). This is verified with survey data converted to use-day calculations (use-days are the number days birds are on the Refuge, for example, 1,000 birds present for one week = 7,000 use-days). Between 1997 and 2002, most of the annual use-days occurred in four of 12 Pools on the Refuge (Pools 7, 8, 9, and 13). These pools total 91,143 acres, or 38 percent of the entire Refuge, but have over 80 percent of the total waterfowl use-days over the past 5 years. On average, 86 percent of the puddle duck use-days were in these four pools, as were 98 percent of the diving duck, 81 percent of the Canada Goose, and 87 percent of the Tundra Swan use-days .

This uneven distribution is attributed to the presence of abundant food resources that occur in areas with reduced levels of human disturbance (closed areas). These conditions occur best in Pools 7, 8, 9, and 13 and are nearly absent in other Pools. Management intends to achieve a more even distribution by enhancing habitat conditions and minimizing human disturbance factors for all waterfowl groups throughout the Refuge.

Figure 11: Average Dabbling Duck Use-days by Pool, 1997-2002, Upper Mississippi River NW&FR

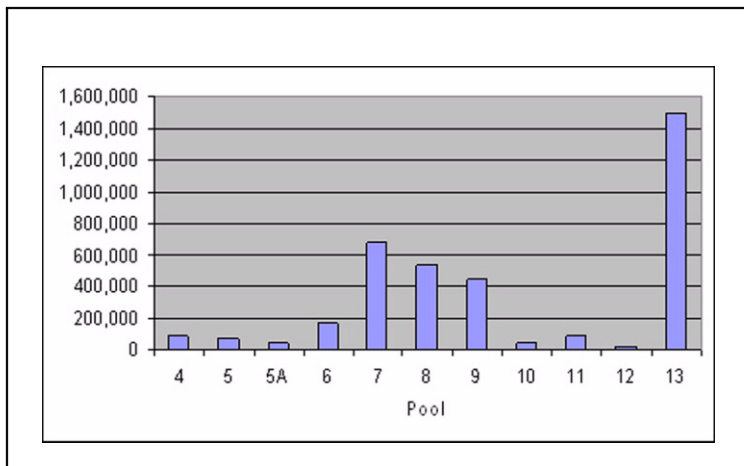


Figure 12: Average Diving Duck Use-days, 1997-2002, Upper Mississippi River NW&FR

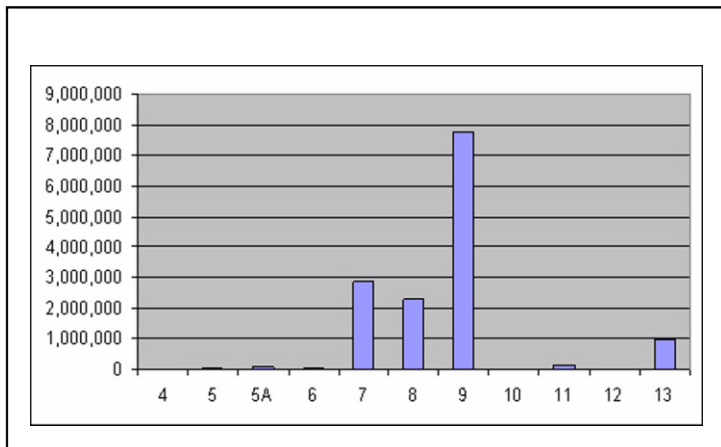
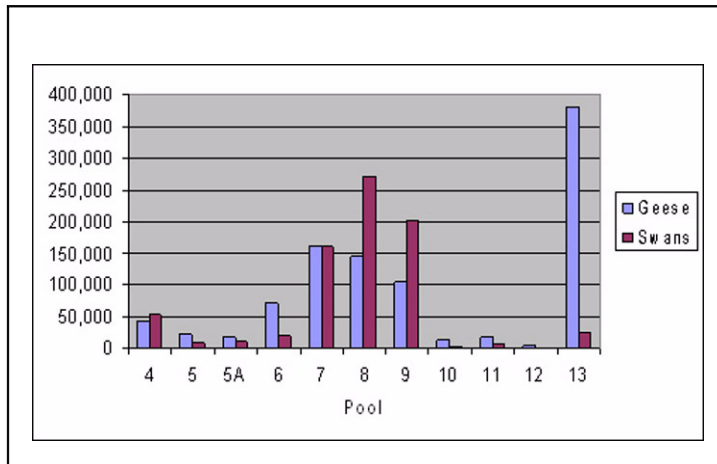


Figure 13: Average Tundra Swan and Canada Goose Use-days by Pool, 1997-2002, Upper Mississippi River NW&FR



If habitat quality and levels of protection were similar in all Refuge pools, waterfowl distribution would continue to be somewhat uneven along the Refuge because of inherent differences in size, geomorphology, and hydrology among the pools. However, a more optimal distribution is possible if carrying capacity and habitat security are improved in pools up and downstream of Pools 7, 8, and 9.

It is widely understood that human disturbance of waterfowl on the breeding grounds can be detrimental to production of young birds. Human disturbance of migrating waterfowl can “have dramatic effects on the bird’s energy balance” (Korschgen et al, 1985) and influence survival and production of young in subsequent years. The better the quality of habitat, with no disturbance, the quicker birds replenish fat reserves during migration.

Four major categories of human disturbance have varying impacts on waterfowl (Korschgen and Dahlgren, 1992). These factors, listed in order of decreasing disturbance, include “rapid over water movement with loud noise (power boats, airboats, low-flying airplanes, and helicopters), over water movement with little noise (sail boats, canoes, kayaks), little overwater movement or noise (wading or swimming), and shoreline activities (bank fishing, birdwatching, hiking, car traffic).” Raptors and mammals (Bald Eagles, raccoon) can also disturb waterfowl.

The “closed area” system on the Refuge attempts to provide reduced disturbance to waterfowl within an established area via the following closed area regulations:

“closed to all migratory bird hunting; other hunting and trapping is only allowed beginning the day after the close of the state duck hunting season, until season closure or March 15, whichever comes first, except turkey hunting is allowed during state seasons.”

Complete sanctuary conditions do not occur in Refuge closed areas with one exception, Spring Lake on Pool 13, because public entry is allowed for other purposes, including recreational boating, angling and commercial fishing.

Upon establishment of the Refuge in 1924, the entire Refuge was closed to entry. Soon, in the 1930s, the Refuge was open to hunting except for 20 closed areas, totaling 34,150 acres. Closed areas were on U.S. Fish and Wildlife Service fee-title lands only and did not have easily recognizable boundaries, nor did they protect the best habitats for migrating waterfowl. Actually, these early closed areas were put in place for reasons of management convenience more so than meeting needs of migrating waterfowl. Eventually, modifications were made in 1957-58 to include 14 units, covering 41,600 acres. At the time of establishment, these closed areas were all quite functional in harboring

birds because they had adequate habitat and successfully reduced impacts of hunting and other disturbance factors. These closed areas continue to provide core elements of the existing system of 15 areas (14 closed areas and one sanctuary) that total 44,495 acres.

Over the years, boundary adjustments have been made which have reduced the size of many closed areas. An exception is the Trempealeau National Wildlife Refuge which has increased from about 700 acres in 1957 to nearly 6,226 acres today. One new closed area, the Pool Slough Closed Area, became operational on Pool 9 in 2003. About 1,100 acres of this 1,350-acre closed area are located on the Refuge. The Iowa Department of Natural Resources owns the remaining acres and has designated the site a waterfowl refuge and closed to all trespass from September 15 through December 25, then open to hunting and trapping.

In the 45 year interval since 1957, changes have occurred within the closed area system so that not all closed areas are functioning as intended. Changes include habitat loss and associated amount of available food, waterfowl population changes, dominant species present, and extent and type of public use. This imbalance in closed area ecology has contributed to the uneven distribution of waterfowl on the Refuge as noted in the discussion above. For example, canvasback use has greatly increased in some closed areas and “open” areas of Pools 7, 8 and 9, but declined precipitously in others due to habitat losses and possible disturbance factors. The extensive loss of shallow- and deep-water marshes of the Refuge, both within and outside closed areas has resulted in declines in puddle duck use of the Refuge.

A key factor influencing waterfowl distribution and use of closed areas is carrying capacity, or the amount of available food for waterfowl, such as plant seeds and tubers and fingernail clams and mayflies. This carrying capacity component “is probably the most important variable for evaluating criteria for managing waterfowl closed areas” (Kenow, et al. 2003). The availability of plant food resources has been assessed for various aquatic, marsh, and wet meadow plant communities in Pools 7 and 8 (Kenow, et al. 2003). Kenow acquired seeds and tubers from 9 selected vegetation types within Pools 7 and 8 to generate production estimates for each type. These estimates were then extrapolated to the larger Upper Mississippi River landscape using a GIS application model. Plant food production is expressed in terms of gross energy value to waterfowl. The investigators note that plant food productivity estimates are inherently variable. Consequently, production variance estimates are large and need be considered when using extrapolated production estimates.



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Tuber production, primarily from arrowheads and wild celery, provided the most significant contribution to overall gross plant food energy available to waterfowl. Arrowheads are found primarily in deep marsh perennial vegetation types, while wild celery occurs in submerged vegetation types.

Slivinski (2004) conducted a GIS analysis (based on year 2000 photography) of the potential waterfowl carrying capacity for the entire Refuge, and for existing and proposed closed areas within the Refuge. Refuge-wide, total gross energy available in eight vegetative types was calculated to be 66.2 billion kilocalories. If all that energy were present in just wild rice, it would equal 33.2 million pounds of wild rice; if it were all arrowhead tubers it would equal 45.6 million pounds of tubers. The actual usable (metabolizable) energy for seed and tuber resources are about one half to three fourths

Table 10: Estimated Waterfowl Food Plant Production in Closed Areas on Pools 4-14 Under Four Alternatives, Upper Mississippi River NW&FR¹

Selected Land Cover Types	Refuge		Alternative A Closed Areas		Alternative B Closed Areas			Alternative C Closed Areas			Alternative D Closed Areas		
	Total Area (Acres)	Plant Food Energy (million Kcal)	Total Area (Acres)	Plant Food Energy (million Kcal)	Total Area (Acres)	Plant Food Energy (million Kcal)	Percent Change from Alt. A	Total Area (Acres)	Plant Food Energy (million Kcal)	Percent Change From Alt. A	Total Area (Acres)	Plant Food Energy (million Kcal)	Percent Change From Alt. A
Deep Marsh Annual	482	300	280	174	280	170	0%	280	174	0%	240	150	-14%
Deep Marsh Perennial	5,496	39,606	852	6,142	1,431	10,313	68 %	863	6,222	1%	1,119	8,064	31%
Open Water	95,734	1,110	18,771	218	22,819	265	22%	18,823	218	0%	18,777	218	0%
Rooted Floating Aquatic	19,091	4,051	3,957	840	5,743	1,219	45%	3,984	845	1%	4,428	940	12%
Shallow Marsh Perennial	11,354	5,112	1,202	541	2,579	1,161	115%	1,192	537	-1%	1,534	691	28%
Sub-merged Vegetation	20,978	14,801	7,659	5,404	9,009	6,356	18%	7,649	5,396	0%	7,937	5,600	4%
Wet Meadow	10,586	1,237	1,281	150	1,770	207	38%	1,292	151	1%	1,280	150	0%
Other Cover	70,112	0	9,968	0	16,846	0		10,008	0		8,506	0	
Total	234,327	66,127	43,970	13,625	60,476	19,694	45%	44,091	13,701	1%	43,821	15,811	16%

1. Acreage values were made at the time of the Slivinski study (2004); values shown in Table 5 are current and correct.

of the gross energy values, depending on the plant species. Variations in plant species, growing conditions, availability, human disturbance, and weather are important factors in determining the number of birds that might utilize this energy source on the Refuge.

A disproportionately high amount (63 percent) of this total energy source occurs in Pools 7, 8 and 9 and is an important factor in accounting for the uneven distribution of waterfowl using the Refuge during the fall migration (refer to discussion above). This GIS investigation shows that the presence (or addition) of deep marsh perennial and submerged vegetation types, along with the shallow marsh perennial type, is crucial to the improvement of the carrying capacity for waterfowl in the Refuge's closed area system.

Existing closed areas now encompass approximately 20 percent of the total energy present in eight vegetation types studied (Table 10). This analysis did not include forest cover types, to which future investigations should be directed. Results of comparisons made of proposed closed area configurations under each alternative are presented in Chapter 2. The entire report and appendices are posted on the Region 3 planning web site <http://midwest.fws.gov/planning/uppermiss/index.html>.

Table 10 shows estimates of waterfowl food plant production (gross energy) in closed areas on Pools 4-14 of the Upper Mississippi River under four alternative closed area configurations. The table is an energetics summary comparing alternatives to the existing Refuge closed area (Slivinski, 2004).

Waterfowl managers and biologists have identified the need for refuges to be placed along migration corridors at intervals that provide secure habitat in the form of “stepping stones” or “a string of pearls.” One factor used in selecting refuge or closed area locations along the corridor is the flight distance various waterfowl species will take in order to roost and/or find food free from disturbance. In general, puddle ducks fly shorter distances (Wood Ducks 1 mile; Black Ducks 4 miles; Mallards 4-25 miles; and Pintails 12-30 miles), while Canvasbacks, a diver, will fly up to 24 miles. We have a double management challenge in this regard because some of the existing Refuge closed areas are 37 to 46 miles apart, while others are 4-16 miles distant, but have minimal waterfowl use because food resources are inadequate and/or human disturbance factors are present.

In 1978, and again in the early 1980s, river biologists and managers made three assessments of the existing closed area system in regards to its functionality in holding birds for feeding and resting, as well as providing hunting opportunities. The Wildlife Technical Committee of the Upper Mississippi River Conservation Committee proposed changes in reports completed in 1978 and 1985. The committee recommended changes to closed areas in Pools 4, 5A, 8, 9, 10, 13, and 14, but none were implemented.

Further considerations were made to modify closed areas during early stages of preparing the Refuge’s 1987 Master Plan (USFWS, 1987). At that point, two new options were drafted to increase the number of acres of closed areas, but no closed area changes were included in the final Master Plan. Instead, the Plan recommended to delay any changes, pending completion of closed area studies about impacts of recreation on waterfowl concentrations and the effectiveness of voluntary waterfowl avoidance areas.

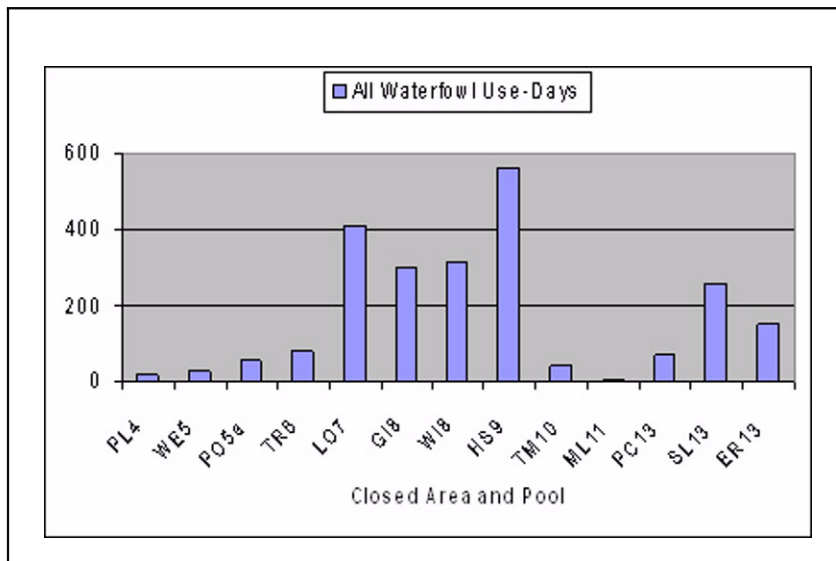
A voluntary waterfowl avoidance area (VWAA) was established, in cooperation with state and local governments and conservation organizations, on Lake Onalaska in Pool 7 in 1986 to reduce boating disturbance to waterfowl within the existing closed area. Studies on boater compliance were conducted in 1993 and 1997 (Kenow et al., 2003a). Despite a 60 percent increase in boating traffic from 1986 to 1997, lake-wide disturbance rates were comparable to 1981 levels. Investigators reported that about one third of the observed intrusions in the VWAA were by anglers and commercial fisherman. The avoidance areas contributed to the value of Lake Onalaska as a waterfowl refuge and demonstrated an effective collaboration among government agencies and non-government organizations.

In some areas, waterfowl hunters concentrate along sections of closed area boundaries. The quality of the hunting experience may be lessened in areas where this occurs as waterfowlers compete for prime locations. Other characteristics of these “firing line” conditions include crowding and excessive “skybusting”, which can result in an increase in the number of un-retrieved birds.

On a continental scale, the Refuge is a key component of the Upper Mississippi River and Great Lakes Region Joint Venture of the North American Waterfowl Management Plan. The continental plan seeks to restore waterfowl populations to levels observed in the 1970s. The goal of the Joint Venture is to increase populations by habitat enhancement in the area, which includes Wisconsin, Michigan, and parts of Minnesota, Iowa, Illinois, and Indiana. Population objectives are set at 1,542,000 breeding ducks and 773 million duck use-days during fall migration. The goals will contribute to the continental goals of 62 million breeding ducks and 100 million ducks in the fall flight.

Recent fall migration counts reveal a peak in 1998 of nearly 33 million use-days on surveyed areas of the Refuge; more recent years range between 12 and 16 million use days. Joint Venture goals for

Figure 14: Average Number of Duck-use-days per Acre of Closed Area, 2000-2003, Upper Mississippi River NW&FR¹



1. Abbreviations: PL=Peterson Lake, WE=Weaver Bottoms, PO=Polander Lake, TR=Trempealeau NWR, LO=Lake Onalaska, GI=Goose Island, WI=Wisconsin Islands, HS=Harpers Slough, TM=Twelve Mile Island, ML=McCartney Lake, PC=Pleasant Creek, SL=Spring Lake, EL=Elk River. Data based on aerial surveys, except ground surveys at TR.

carrying capacities of fall migration habitat are 500 duck use-day per acre in states with mid-migration habitat (in Illinois) and 200 duck use-days per acre in habitats within production focus areas (Iowa, Minnesota, and Wisconsin).

Refuge closed areas secured an average of 48 to 73 percent of the duck use-days for the period 2000-03. The closed areas of Pools 7, 8, 9 and 13 exceeded the 200 duck use-day per acre goal for divers, but puddle duck goals were met only in the Goose Island closed area of Pool 8 (Figure 14, Figure 15, and Figure 16). Harpers Slough closed area of Pool 9 was the only closed area of the Refuge to exceed the 500 duck use-day per acre goal for waterfowl, in this case it was met for diving ducks.

3.2.8 Other Migratory Birds

3.2.8.1 Songbirds

Songbirds include a wide array of landbirds such as hummingbirds and woodpeckers, as well as the large order of birds called passerines or “perching” birds. Passerines comprise more than half the world’s species of birds and all have a perching foot that includes three toes forward and one toe backward. They range in size from wrens to ravens. Many passerines eat insects as well as fruit, and include flycatchers, shrikes, vireos, crows, jays, chickadees, nuthatches, tanagers, cardinals, sparrows, and finches.

Prior to the 20th century, songbirds were abundant beyond our imaginations. However, in the last 75 years scientists have documented declines in many songbird species (Terborgh, 1989; Finch, 1991), particularly the “neotropical migrants”, those that breed in North America and overwinter in the neotropics of Mexico, Central and South America and the Caribbean. Habitat loss here and there is the main culprit. Nonetheless, the Refuge still provides a vital migration corridor for songbirds, many of which fly thousands of miles each year between Central and South America and the United States and Canada. We estimate that millions of birds migrate through the area each year.

Figure 15: Average Number of Waterfowl (Ducks, Geese, and Swans) Use-days per Acre of Closed Area, 2000-2003, Upper Mississippi River NW&FR

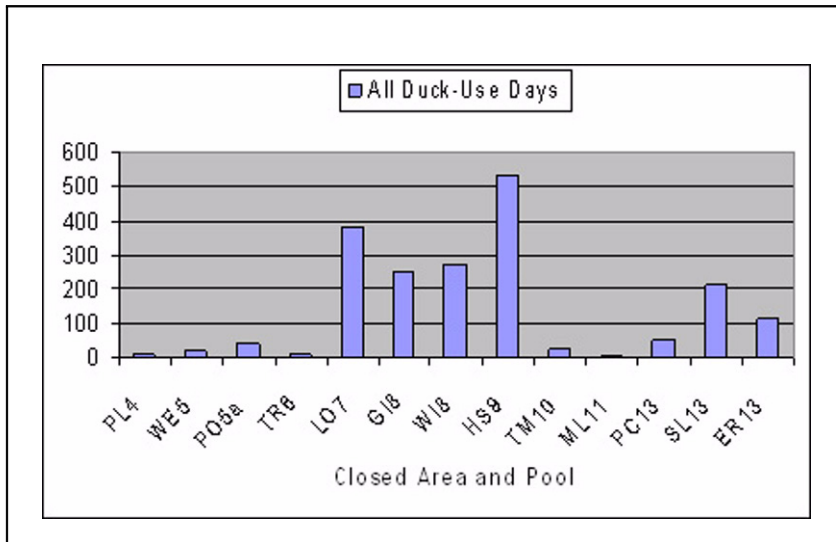
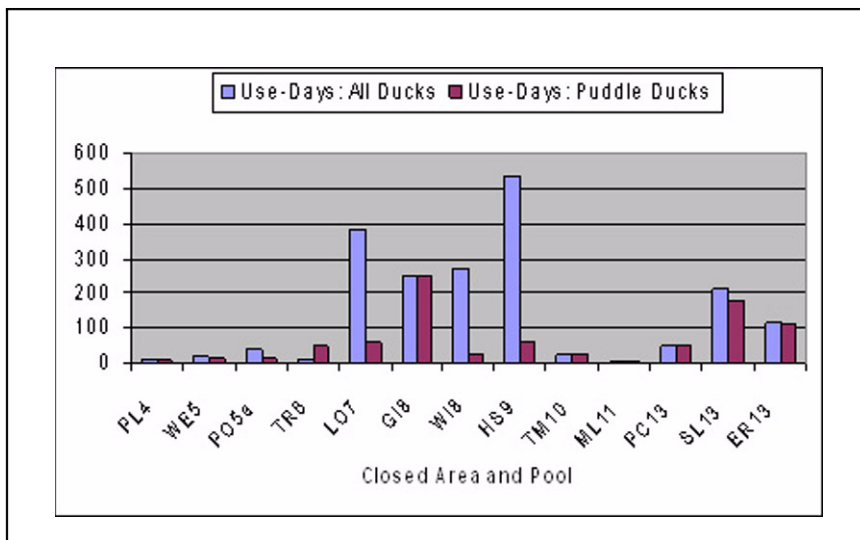
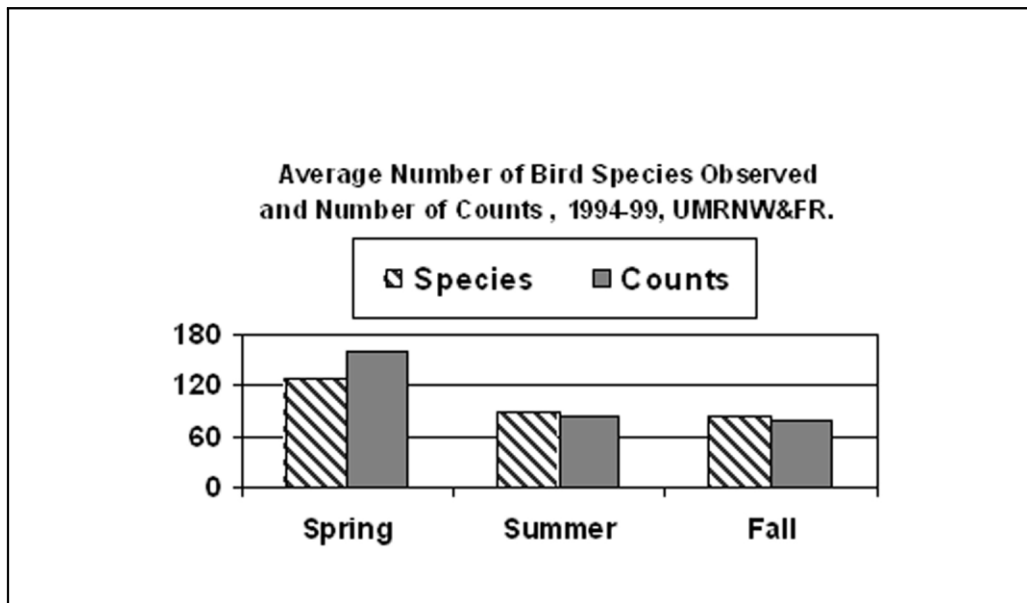


Figure 16: Puddle Duck Portion of the Average Number of Duck Use-days per Acre of Closed Area, 2000-2003, Upper Mississippi River NW&FR



Volunteer “birders” and researchers have documented over 160 species of songbirds, including 32 species of warblers, on the Refuge. “Point count” surveys (Ralph, et al., 1993) have detected a total of 199 species of birds on the Refuge. During the period 1994-2003, observers conducted an average of 323 counts per year. The surveys reveal an average of about 120 species during spring migration (the first two weeks of May are the Refuge’s peak spring migration dates), and about 80 species of summer nesting residents (Figure 17). Nesters include the American Robin, Downy Woodpecker, Great-crested Flycatcher, Prothonotary Warbler, Tree Swallow, Yellow-headed Blackbird, Belted Kingfisher, Northern Cardinal, Brown Creeper, and the rare Cerulean Warbler.

Figure 17: Average Number of Bird Species Observed and Number of Counts Conducted, 1994-99, Upper Mississippi River NW&FR



The Refuge is developing a cooperative project with U.S. Geological Survey, Upper Midwest Environmental Sciences Center, La Crosse, Wisconsin to analyze the songbird point count data in terms of bird habitat associations and seasonal abundance. Population trend analysis is pending.

The U.S. Fish and Wildlife Service and various conservation organizations have identified several bird species of management concern that occur on the Refuge (see Appendix K for a complete bird list.). Five of seven species singled out for priority work by Partners in Flight in its Bird Conservation Plan for Physiographic Region 16 (in which most of the Refuge occurs) are found on or adjacent to the Refuge (Knutson et al., 2001). Some use the Refuge only in migration, others nest there (Table 11).

The U.S. Fish and Wildlife Service's Region 3 identified 26 songbirds as Regional Conservation Priority (RCP) species that occur on the Refuge (Appendix K, bird list).

Table 11: Partners in Flight, Physiographic Region 16 Priority Bird Species Found on Upper Mississippi River NW&FR Including Seasonal Occurrence and Habitat Associations.

Species	Habitat Association ¹					
	Bottomland Forest	Emergent Wetland	Mixed Wetland - Upland	Prairie	Upland Forest / Bluff	Wet Meadow
Sedge Wren		1,2,3	2	1,2		1,2,3
Golden-wing Warbler	1,		1,	1, 2	1	
Cerulean Warbler	1, 2, 3		1		1, 2	
Black-billed Cuckoo	1, 2	2, 3	2	2	1, 2	
Red-headed Woodpecker	1, 2, 3	1,2, 3	1,2, 3	1, 2, 3	1, 2, 3	

1. 1= spring migrant; 2= summer (potential nesters), 3= autumn migrant

American Bird Conservancy (ABC), a not-for-profit organization, whose mission is to conserve wild birds and their habitats throughout the Americas, produces a “Green List” that contains all the highest priority birds for conservation in the continental United States and Canada (American Bird Conservancy, 2004). This list builds on the Partners in Flight assessments and expands the list to all taxa and divides it into three broad categories. The Highest Continental Concern birds suffer multiple problems and include federally listed threatened and endangered species. The only two species of this category on the Refuge are the Golden-winged Warbler, seen in migration, and the Whooping Crane, recently observed in Refuge floodplain wetlands. The cranes are part of an experimental flock released at Necedah National Wildlife Refuge in central Wisconsin, over the past three years.

The second American Bird Conservancy category, Moderately Abundant Species with Declines or High Threats lists birds with relatively high numbers but are declining at an alarming rate. Of this group (see Appendix K, bird list), the Refuge harbors 32 species of waterbirds, shorebirds, woodpeckers, warblers, and blackbirds.

The Blue-winged Warbler is the only bird that occurs on the Refuge that is included in American Bird Conservancy’s third category, Species with Restricted Distributions or Low Population Size, a group with populations stable and threats apparently limited, but are limited in number or range.

American Bird Conservancy also designates Important Bird Areas that are exceptionally important and essential for bird conservation (American Bird Conservancy, 2004). The goal of the Important Bird Areas program is not just to recognize the sites as important, but also to mobilize the resources needed to protect them. One-third of the areas are on national wildlife refuges.

American Bird Conservancy designated the Upper Mississippi River National Wildlife and Fish Refuge a Globally-Important Bird Area in 1997 because it had, at that time, over 70 breeding pairs of Bald Eagles, which was over 1 percent of the United States breeding population; greater than 16,900 Tundra Swans, over 20 percent of the eastern population; and greater than 136,000 Canvasbacks, also over 20 percent of the world’s population. Numbers of eagle pairs, swans and Canvasback have been significantly larger in the over the past 5 years. In addition, the Refuge had over 5,700 pairs of Great Blue Herons, concentrations of nesting neotropical migrants, and 78,500 hectares (200,000 acres) of wetlands.

3.2.8.2 Colonial Nesting Birds

Colonial nesters on the Refuge include species that nest on floating mats of aquatic vegetation, such as the Black Tern, and tree-nesting species, including Great Blue Herons, Double-crested Cormorants, Great Egrets, and Green Herons. The later species nest in small trees and shrubs throughout the Refuge, but little is known of their nesting status.

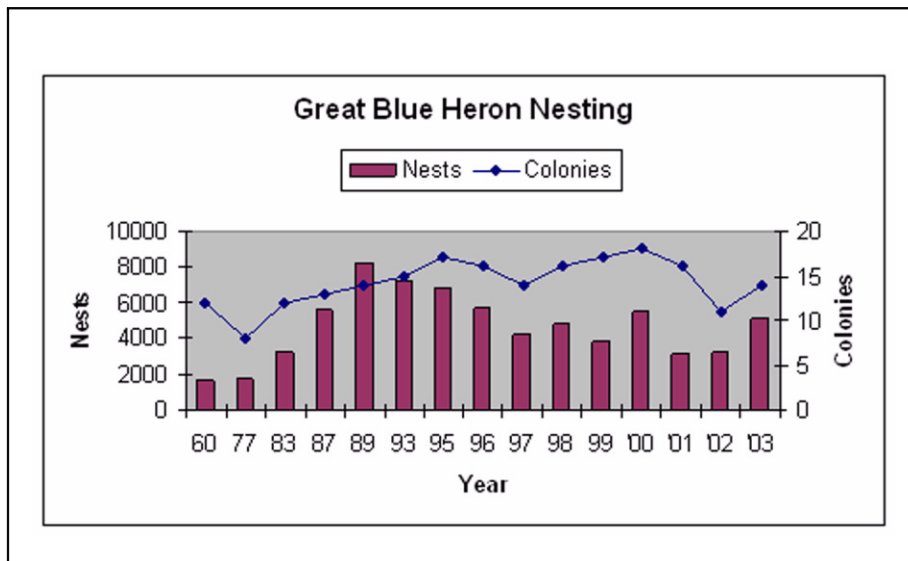
The herons, egrets and cormorants utilize floodplain forest trees (usually silver maple, cottonwood, or swamp white oak) in colonies (rookeries) containing 15 to 1,000 nests. Colonies are often on islands and/or located in the upper third of the pools where forests are most extensive. Maintenance of the floodplain forest is crucial to sustaining these tree-nesting birds.



Great Blue Heron. Copyright by Sandra Lines

A few colonies have been active for 15 or more years. Many colonies are abandoned within a few years and new ones show up taking their places. Great Blue Herons will generally feed near their colony within the floodplain and do not venture near other colonies (Dr. C. Custer, USGS, La Crosse,

Figure 18: Number of Colonies and Number of Nests of Great Blue Herons on the Upper Mississippi River National Wildlife and Fish Refuge, selected years 1960-2003.



Wisconsin, personal communication). There are between 12 and 16 Great Blue Heron colonies on the Refuge, supporting a total of about 5,000 nests (Figure 18). In the 1960s there were only about 2,000 nests, but expanded to peak numbers of over 8,000 nest in 1989. The average number of nests between 1999 and 2003 was about 4,100.

Double-crested Cormorants nest in single-species colonies or in colonies shared with Great Blue Herons and Great Egrets. The Refuge's largest concentration of nesting Cormorants occurs on two adjacent islands in lower Pool 13 where more than 1,000 nests have been counted. These islands had only 16 Great Blue Heron nests present in the last 2 years. In the remainder of the Refuge, Cormorant nests comprise less than 20 percent of all nests in three or four colonies dominated by Great Blue Herons. Double-crested Cormorants migrate and stage along the Upper Mississippi River where up to 90,000 were observed in the 1940s. Recent counts reveal about 5,000 Cormorants staging on the Refuge in the fall. This species is on the Regional Resources Conservation Priority list.

Great Egrets occur in three to five colonies dominated by Great Blue Herons on the Refuge, with a total of 90 to 400 nests present over the past 3 years. Great Egrets were rarely seen on the Refuge prior to the 1950s.

Black Terns prefer shallow-water marsh and backwater lake habitat with sparse emergent vegetation that consists of water lily, burreed, or bulrush. Dense cattail stands are avoided. Breeding habitat is variable within backwaters and the birds do not necessarily nest in the same area each year but utilize available sparsely vegetated sites. Water level is an important factor, with high water delaying or ending breeding seasons, low water facilitating access to tern colonies by predators. Terns are often in areas generally inaccessible to boaters, except airboats. Custer et al. (1998) indicated that a proposed pool-wide drawdown in Pool 8 could have a detrimental affect on nesting birds but could also enhance wetland habitat for Black Terns. Faber (1992) surveyed Black Terns Pools 4, 5, 6, 7 and 8 and found variable nest success at 7 colonies, influenced by high water and possible mammalian predators, ranging from 0 to 67 percent hatching success. The Black Tern is on the Regional Resource Conservation Priority list.

The American White Pelican is a relatively new, but common, visitor to the Refuge in spring, summer and fall. The bird does not nest on the Refuge. The closest nesting colonies are in western

Minnesota (Marsh Lake) and east-central Wisconsin (Horicon National Wildlife Refuge). Large numbers (less than 100) of pelicans first showed up on the Refuge in the early 1980s, with sudden build-ups of more than 1,000 in the mid-1980s. This increase in numbers coincides with a continental increase following the ban on DDT and other pesticides in 1972. The pelican joined other species that are high on the food chain (Bald Eagle, Peregrine Falcon, Great Blue Herons, and Double-crested Cormorants) in making a strong population recovery.

Seasonal aerial and ground surveys since 1994 reveal that flocks ranging from 2 to 600 birds occur at many locations throughout the Refuge (and adjacent Trempealeau National Wildlife Refuge) spring, summer and fall. Refuge-wide, total numbers in the summer have reached nearly 1,500 birds. Aerial survey fall counts peak in late September or early October and have ranged from 442 birds in 1994 to 3,222 in 2001. Prior to 2000, pelicans had departed the Refuge by November 11; since then birds have remained until late November.

While no nesting occurs on the Refuge it is anticipated that pelicans may nest there in the future. Breeders might originate from the western Minnesota colonies, therefore, Refuge staff have color-marked nearly 1,000 flightless young birds at Marsh Lake between 1999 and 2002. Four observations of these color-marked (pink, numbered patagial tags) pelicans have been made on the Refuge and Trempealeau National Wildlife Refuge since then.

The public has indicated a concern that pelicans (as well as Double-crested Cormorants) are consuming game fish or competing with game fish for food. Food habitat studies, which require the collection of birds for stomach analysis, have not been conducted. However, cursory fish sampling in Pools 5 and 7 in 1997 indicated that primarily gizzard shad and shiner minnows were present in areas where pelicans were actively feeding. A few individuals of game fish were also present.

3.2.8.3 Secretive Marsh Birds

Secretive marsh birds include bitterns and rails that utilize wet meadow and emergent wetland habitats, both of which are declining on the Refuge. Surveys (tape play-backs) conducted during the breeding season, 1994-1999, show that Virginia Rails comprise 70 percent the secretive marsh birds detected, followed by Sora (20 percent), Least Bittern (7 percent), and American Bittern (2 percent). More recent surveys show that Virginia Rails and Soras have about equal detectability, and the bitterns remain uncommon. The two bittern species are on the Regional Resource Conservation Priority list.

3.2.8.4 Raptors

Raptors are birds of prey that include vultures, hawks, and eagles. Several species nest on the Refuge and more migrate along the Mississippi River Corridor. The Refuge supports approximately 120 nesting pairs of Bald Eagles (see Endangered Species section), 30 Red-shouldered Hawk pairs, and fewer (probably less than 10) Osprey nest sites.

Red-shouldered Hawk breeding populations in the midwestern states have declined since the 1960s. The floodplain of the Upper Mississippi River provides habitat for nesting Red-shouldered Hawks. Nest territories on the Upper Mississippi River floodplain typically are in blocks of mature timber greater than 500 acres in size (nests may be found on the edges of the blocks), include both floodplain and upland slope forest types within the tract, are within 200 yards of ponds or small streams, and are greater than 500 yards from the main channel (Stravers and McKay, 1994). Investigators recommended to restrict logging in nesting areas, avoid fragmentation of large forest tracts, allow some thinning of younger forest stands to assist in development of overhead canopy cover, and combat invasion of reed canary grass that might inhibit growth of cottonwood and silver maple.

The fall raptor migration along the river corridor has been monitored along the bluffs adjacent to Pools 4, 5A, 8, 10 and 13. Migration data can be used to monitor raptor populations but surveys on

the Upper Mississippi River are inadequate to reflect population trends in the Midwest. In the mid-1990s, observers at Eagle Valley Nature Preserve, Glen Haven, Wisconsin, (on bluffs overlooking Lock & Dam 10), documented between 14,600 and 30,700 raptors, of 17 species, during standard observation periods (Mandernack, et al. 1997). Peak daily counts totaled over 1,000 individuals on three different occasions. Four species comprised 87 percent of the count in 1996: Bald Eagle, Broad-winged Hawk, Sharp-shinned Hawk and Red-tailed Hawk. The majority of the migration occurs from mid-September to mid-October.

The Bald Eagle, Northern Goshawk, Red-shouldered Hawk, and Peregrine Falcon occur on the Refuge and are on the Regional Resource Conservation Priority list.

3.2.9 Fish

The Refuge supports at least 134 species of fish, including sport fish (a \$250 million industry river-wide), commercial fish (a \$5 million industry), forage fish (gizzard shad, minnows and other small fish on which predatory fish feed), ancient fish (paddlefish and sturgeon), and many other unique species that make the river's fishery so diverse (Gutreuter and Theiling, 1999). Populations of at least 41 fish species are in such poor shape that they are listed as threatened or of concern by state or federal agencies along the Upper Mississippi River. Loss of habitat, the navigation system, over-exploitation, and impacts of exotic species (see discussion below) are the main causes. Pools 4, 8 and 13 each support 55 to 80 species of fish, as determined from recent surveys.

Unlike most Refuges, Congress established the Upper Mississippi River NW&FR (1924) for both fish and wildlife, not just wildlife as in most cases. Specific concern was noticed over fish being stranded due to low water conditions (see discussion below), the lack of habitat for black bass (largemouth bass), and prospects of converting the floodplain to agriculture. During this period prior to locks and dams, the river was free flowing and fish migrated north and south. The most prevalent fish were species adapted to river flow, such as walleye, skip-jack herring, paddlefish, sturgeon, and catfish. Buffalo fish and catfish were primary commercial fish at the time.

Species that required ponded, slack-water habitats, such as bass, northern pike and sunfish were present but not as common. Unfortunately, the northerns and bass would get stranded when floodplain ponds dried up in the summer. In fact, a major function of the Refuge in the 1920s was to "rescue" these fish, sometimes netting hundreds of thousands of pounds, some shipped by train across the country, others released in area lakes and rivers. With construction of the locks and dams, flooding solved the stranding problem and since then backwater fish have become abundant.

3.2.9.1 Sport Fish

Favorite sport fish on the Refuge include walleye, sauger, white bass, largemouth bass, smallmouth bass, channel catfish, northern pike, bluegill, and crappies. Fishing tournaments are ever-increasing and may put extra pressure on local fish populations. The following fish species accounts are largely based upon data supplied in the Upper Mississippi River Conservation Committee's Fisheries Compendium, Third Edition (UMRCC, 2004a).

Walleye populations flourish in the Upper Mississippi River due to high quality habitat meeting life requirements. Recent creel surveys show they rank third in harvest behind white bass and sauger in Pool 4. A 15-inch length limit, implemented in 1990, has increased harvest weights by 50 percent on Pools 11 and 13, as well as catch rates. Upper Mississippi River Conservation Committee biologists concluded in the 2004 report that a continuous open season on walleye should continue on the Upper Mississippi River while agencies continue to monitor population trends. Similar conclusions were made concerning sauger populations on the Upper Mississippi River.

Summer creel surveys of white bass in Pools 11 and 13 from 1993 to 2000 showed the species ranked from third to seventh in the annual numerical harvest. On the Upper Mississippi River, creel limits are liberal, as over-harvest does not appear to be a problem.

Prior to locks and dams, prime smallmouth bass fishing grounds were found between Wabasha and Minneapolis, Minnesota, and near Lansing, Iowa. Presently, smallmouth bass populations in Pools 1-14 are increasing and are a significant component of the fishery. This species is prominent in bass tournaments. For example, Minnesota's records of four tournaments held between 1996 and 2000, show that all the largest fish were smallies (20 to 21.5 inches long) and 66 to 85 percent of the bass caught were also smallmouths. The public is showing interest in managing this species separate from largemouth bass (UMRCC, 2004a).

Recent creel surveys show that largemouth bass ranked second to fifth in numeric harvest in backwater complexes of the Upper Mississippi River. This species is the number one preference of anglers fishing in backwater habitats. Catch and release has become a common practice; of 19,000 largemouths caught by interviewed anglers, 87 percent were released. Largemouth bass are intensively managed by state agencies. In 1991, a 14-inch minimum limit was established. "Under present conditions, it appears that largemouth bass are not being over-harvested, except possibly during winter where bass are concentrated in over-wintering areas and are subject to high angling pressure. Harvest regulations between adjoining states should attempt to be uniform if possible" (UMRCC, 2004a).

Bluegills are the number one harvested fish species of the Upper Mississippi River backwaters. Loss of suitable spawning and over-wintering backwaters due to sedimentation poses the most serious threat to bluegill survival. Overwinter survival is directly related to sufficient oxygen level and sufficient water depth to maintain ingress and egress under thick ice and snow cover. Preferred winter habitat for bluegill on the Upper Mississippi River contains depths in excess of 3 feet, temperatures above 34.7 degrees Fahrenheit, and no continuous flow (UMRCC, 2004a). Quality sized bluegill (> 7 inches) in Pool 5 and 5A backwaters experienced over 80 percent winter angling exploitation in 1997-98. Bluegills are very prolific and therefore have few harvest restrictions, although there is a 25 bag limit on the Minnesota-Wisconsin border waters. Minnesota has an experimental bag limit of 10 fish daily on the Minnesota side of Pools 5, 5A, and 8. The lack of uniform regulations between states has created recurrent controversy between anglers and biologists in areas where restrictive bag limits exist (UMRCC, 2004a). Bluegills are an important prey species for flathead catfish, largemouth bass, and bowfin. They are host to 14 species of mussels found in the Upper Mississippi River.

Recent creel surveys of various pools of the Upper Mississippi River show that crappies ranked as one of the top two most harvested sport fish. Data from 1990-1997 reveal abundance is variable and no observable trend in population. No new changes in regulations of crappie harvest are recommended at this time (UMRCC, 2004a).

3.2.9.2 Other Fish

Paddlefish

The paddlefish is one of the ancient fish of the Upper Mississippi River and is distinguished from all other fish by its broad, flat bill-like snout. It may weigh up to 90 pounds. They spawn in flowing water. People consume paddlefish meat and roe (caviar). The worldwide protection of sturgeon species in 1998 is expected to have a dramatic impact on commercial paddlefish harvest by creating a greater demand for paddlefish caviar as a surrogate to sturgeon roe. It has declined throughout its range due to habitat loss and over-harvest. Its northern-most range on the Upper Mississippi River is in the Minnesota – Wisconsin border area. They migrate along the Upper Mississippi River and will move between pools, usually over dams in high water. They feed on plankton in both fast flowing main channel areas and in the backwaters. Competition from invasive species such as silver and big

head carp, plankton eaters, is a potential serious threat to paddlefish if these species move up the Upper Mississippi River (UMRCC, 2004a). Paddlefish are a protected species in Minnesota and Wisconsin.

Sturgeon

Included in the list of “ancient species” three kinds of sturgeon inhabit the Upper Mississippi River: the lake, pallid and shovelnose. These species date back to 50 million years ago. The pallid sturgeon is endangered and occurs in waters well south of the Refuge. Lake and shovelnose are rare or uncommon in most Refuge waters, but the shovelnose can be an important commercial species in some areas.

The shovelnose feeds on aquatic insects and fish, and grows to about 24 inches. They spawn on gravel in fast flowing water. They are harvested for their meat and roe. Shovelnose populations are limited due to over-harvest, habitat degradation, and water pollution of the last century. Flow alteration and habitat fragmentation by dams has jeopardized the long term health of the species. However, present commercial harvest of sturgeon on the Upper Mississippi River does not appear to be affecting shovelnose. The shovelnose is the host to three species of mussels and is the only known host of the hickorynut mussel, which inhabits water of 3.9-5.9 feet deep over sand or gravel in good current. This coincides with shovelnose sturgeon habitat (UMRCC, 2004a).

A framework for the management of paddlefish and sturgeon in the United States was developed under the auspices of the U.S. Fish and Wildlife Service, National Paddlefish and Sturgeon Steering Committee. Eleven management recommendations were made but little funding is available to address these issues. Sturgeon management on the Upper Mississippi River should focus on: 1) structural habitat features, 2) alterations of flow variability necessary to maintain and enhance natural and manmade habitat, 3) harvest restrictions, and 4) supplementation of population numbers through aquaculture (UMRCC, 2004a).

Invasive Fish

See Section 3.2.12.1 on page 207 for a discussion of invasive fish species.

3.2.9.3 Fish Passage

Fish that migrate in rivers are classified as potamodromous. There are at least 34 species of fish that migrate on the Upper Mississippi River, some of which include: paddlefish, sturgeon, gar, skipjack herring, suckers, redhorse, channel catfish, flathead catfish, northern pike, white bass, largemouth bass, smallmouth bass, walleye, sauger and freshwater drum.

Locks and dams disrupt the ecological integrity of the river systems and have been implicated in the decline of numerous fish species (UMRCC, 2004a). These structures restrict upstream movement of fish, alter migration behavior, and impede access to foraging habitat and wintering areas. The Upper Mississippi River System dams create a head and current velocity that exceeds the swimming speed (about 1-4 feet per second.) of most fish known to migrate in the Upper Mississippi River. Current velocities are sufficiently low when the dam gates are out of the water during high discharge conditions to allow some fish to move upstream.

Fish passage can be enhanced with modifications to operation of the dam gates, locking fish through a dam similar to boat lockage, modifying water level management plans (to allow longer periods of open river conditions), and modifying the lock filling and emptying system. Structural alternatives include Denil fishways, fish elevators, and bypass channels. It is recommended that if fishways are selected they first be done on an experimental basis and selected on physical, biological, and economic factors, and in the interest of management partners (UMRCC, 2004a).

3.2.10 Freshwater Mussels

There are 297 species of freshwater mussels in North America. About 50 species have been recorded on the mainstem of the Upper Mississippi River. A recently completed Conservation Plan for Freshwater Mussels of the Upper Mississippi River System (UMRCC, 2004b) says that “no other group of animals in North America is in such grave danger” of population declines and extinctions. In North America, it is estimated that 55 percent of the freshwater mussel species are in danger of extinction and only 25 percent are considered stable. Over-exploitation, water pollution and habitat alteration are responsible.

Prior to the 1800s, an estimated 44 species occurred on the Refuge portion of the Upper Mississippi River. Since then, five species have been extirpated, and four are extremely rare (Appendix K, Freshwater Mussels) (Mike Davis, Minnesota Department of Natural Resources, personal communication). The remaining 39 species that occur in the Refuge (Pools 4-14) vary in distribution from localized populations (e.g. mucket in Pool 11) to Refuge-wide occurrences (e.g. pink papershell and giant floater).

The main mussel beds found on the Refuge occur in main channel areas, secondary channels, and adjacent backwater habitats. The East Channel area at Prairie du Chien Wisconsin (Pool 10) is historically the premier mussel bed of the Refuge. It suffered near-catastrophic losses due to zebra mussel infestations in the late 1990s and early 2000s (see Invasive Species section). General locations of crucial mussel beds for Higgins eye pearl mussel are described above in the section on Candidate, Threatened and Endangered Species. Some of the historically important mussel beds of the Upper Mississippi River that occur on the Refuge are:

- Winters, Wisconsin – Pool 7
- Harpers Slough, Iowa – Pool 9
- Whiskey, Iowa – Pool 9
- East Channel, Wisconsin – Pool 10
- McMillian, Iowa – Pool 10
- Cassville, Wisconsin – Pool 11
- Bellevue, Iowa – Pool 13
- Cordova, Illinois (near Refuge) – Pool 14.

An unexplained massive mussel die-off occurred in 1983-1985 between La Crosse, Wisconsin, and Hannibal, Missouri. This unknown aspect of mussel ecology stimulated further agency cooperation and mussel research that continues today (Tucker and Theiling, 1999).

The endangered species, Higgins eye pearl mussel, and the candidate species, spectaclecase and sheepnose, occur within, or near the Refuge. See Section 3.2.4 and Section 3.2.5 for a full description of their status.

3.2.11 Reptiles and Amphibians

There are 22 species of reptiles and 13 species of amphibians that occur on the Refuge (Appendix K). See the section on Candidate, Threatened and Endangered Species for a discussion of massasauga rattlesnake on the Refuge.

3.2.11.1 Turtles

Our most current reptile information concerns the 11 species of turtles found on the Upper Mississippi River. Some turtle species prefer the river's quiet backwater habitats (such as Blanding's, painted, snapping and common map turtles) while others occupy more riverine or faster flowing waters (smooth and spiny softshells, and Ouachita and false map turtles). The Blanding's turtle population is threatened in states bordering the Upper Mississippi River, but one of its largest populations in the world is located on the Minnesota side of Pool 5 and is found on Refuge, state and private lands. "Turtle crossing" caution signs are posted where Blanding's must cross county roads during their annual trek from shallow wetlands to nesting sites in local sand dunes.

Good turtle habitat along the river proper includes sandy shorelines (nesting habitat) that border the main navigation channel and are close to backwater marshes (hatchling nurseries). Potential human conflicts occur when people camp and picnic, or where channel maintenance dredge material is piled for storage on sandy beaches used by nesting turtles. An added threat comes from egg-eating predators, particularly raccoons, which are extremely efficient in finding nests concentrated in areas where prime sand and moisture conditions prevail.



To avoid turtle mortality by cars and trucks, caution signs are posted along roads that are crossed by rare Blanding's turtles near Kellogg, Minn., in June 2004. USFWS

Research and habitat modeling work is needed to determine baseline information on the distribution (current and historical), relative abundance, and reproductive success of turtles on the Refuge. Concerns about harvest rates and population levels of snapping turtles lead to radio-telemetry studies of snappers by Wisconsin Department of Natural Resources in 1997-2001 (Andersen, 2003). Investigators found survival rates to be high; average home ranges were between about 50 and 108 acres in size; hibernation sites were in various habitats but mostly in backwaters and secondary channels in depths of 0.1 to 5.6 feet; woody structure is important in winter and summer habitat; snappers utilized runs and lodges of muskrat and beaver; and the turtles have strong homing abilities. Public educational materials will be produced, emphasizing the need to protect adult females and inform harvesters how to distinguish males and females.

Investigations are also needed to determine human impacts of operation and maintenance of the 9-foot navigation channel project and of recreational use of sandy islands and shorelines. Results of studies will be used in developing science-based turtle management on the Refuge.

The conservation of riverine turtles is a world-wide problem in which this group of turtles is subject to over-exploitation, habitat alteration, run-off and siltation, changes in predator populations, and alteration of river flows through dams, wing dam and channelization (Moll and Moll, 2000). These authors recommended conservation measures to include establishment of sanctuaries, protection of nest areas and hatcheries, public education, and captive breeding.

3.2.11.2 Frogs and Toads

Nine species of frogs and one toad occur on the Upper Mississippi River. Current Refuge knowledge of frog and toad distribution on the Refuge is based upon call surveys conducted by staff and volunteers. An extensive long term monitoring study is being conducted by Dr. Walt Sadinski of the

Upper Midwest Environmental Sciences Center in La Crosse, Wisconsin, as part of the nation-wide Amphibian Research and Monitoring Initiative (ARMI).

Standardized frog and toad surveys were initiated on the Refuge in 1994 due to concern about the apparent rarity, decline and/or population die-offs of certain species in the surrounding states. Populations of these amphibians serve as an index to environmental quality. Survey routes consist of 10 wetland sites which are visited 3 times annually. Observers identify species present, based on their calls, and make simple estimates of abundance. The survey periods and corresponding minimum water temperatures (Wisconsin) are April 15-30, 50 degrees Fahrenheit; May 20-June 5, 60 degrees Fahrenheit; and July 1-15, 70 degrees Fahrenheit. Eight routes are surveyed most years (Table 12).

The bull frog occurs in all Districts but has not been detected on survey routes in the Winona District. Detection rates of wood and pickerel frogs are lower than other species on the Refuge. In addition, Blanchard’s cricket frog has not been detected on survey routes but three individuals were heard by herpetologists visiting the Refuge near Winona, Minnesota, during the summer of 2004.

Table 12: Occurrence of Frogs and Toads on Upper Mississippi River NW&FR, 1994 to 2004

District	No. of Routes	No. of Survey Years	Number of Years Species Detected										
			Wood Frog	Chorus Frog	Spring Peeper	Leopard Frog	Pickere l Frog	Am. Toad	East Gray Tree	Copes Gray Tree	Cricket Frog	Green Frog	Bull Frog
Winona	1	7	1	3	6	2	2	6	6			5	
La Crosse	3	11	7	11	11	11	6	11	11	4	3	11	1
McGregor	2	10	1	10	10	10	3	10	10	4	7	10	10
Savanna	2	11		10	10	10	1	9	11	11	11	11	11

3.2.12 Invasive Species

Invasive and exotic species are the “greatest threat to ecosystem integrity within the refuge system” (USFWS, 2004a). The Refuge and Upper Mississippi River System are inundated with invasive fish, plants, and invertebrates. Invasive species are those that dominate an ecosystem at the expense of other species, causing population crashes and ecological changes. These species invade or increase within the ecosystem as the result of a disturbance or degradation of the natural system. A healthy native system usually will not experience the invasions. Many invasive species are not indigenous (native) to North America, but are imported intentionally or by accident from another continent. Newly arrived species often exhibit population explosions due to lack of competition or natural control.

Examples of invasive species threatening wildlife populations and habitat are varied. Native mussels, particularly the Higgins eye pearl mussel, are threatened by zebra mussels imported from Europe via ship’s ballast water (USACE, 2004). Asian carp threaten native paddlefish via competition for plankton. These carp also can potentially eliminate vegetation beds, snail and mussel populations, and deplete the commercial fishing industry on the Upper Mississippi River System.

3.2.12.1 Invasive Fish

An ever-increasing list of uninvited fish to the Upper Mississippi River is cause for alarm by anglers, commercial fishermen, ecologists, biologists, and others who also admire the river. Exotic fish originate from other parts of the world and these fish eat other fish, out-compete native fish for food, can wipe out vegetation beds, and even cause bodily harm to boaters.

The common carp, a native of Europe and Asia, was first found in the Upper Mississippi River in 1883 and presently comprises most of the commercial harvest of fish in the Upper Mississippi River. It has increased in abundance in Pools 4, 8, 13, and 26 of the Upper Mississippi River from 1990-94 (Gutrueter and Theiling 1999). As the common carp increased, the native buffalo fish, the ecological equivalent, has declined in the harvest by about 50 percent.

Four species of asian carp (big head, black, silver, and grass) were imported to control weeds, snails, or plankton at fish farms. They escaped the farms and are moving from southern United States into the river basin (UMRCC, 2004a). They are large, voracious eaters that consume so much they could even affect aquatic life beyond just fish, including waterfowl, clams and mussels, and marshbirds. The bighead carp, a plankton eater in competition with paddlefish, buffalo fish and gizzard shad, and larval forms of native fish, can grow to 90 pounds. The silver carp, another planktivore grows up to 110 pounds. When bothered by sounds of a boat motor, silver carp often jump 4-6 feet or more out of the water, literally landing in boats or crashing into people, causing bodily harm.

Another invasive fish, the round goby, will likely be a species of concern in the near future. These small but voracious fish are already halfway down the Illinois River, having moved from Lake Michigan.

Control of these invasive fish is crucial to retention of the river's ecological integrity. The Corps of Engineers has recently installed an electrical aquatic nuisance species dispersal barrier in the Chicago Sanitary and Ship Canal to prevent interbasin movement between the Great Lakes and the Upper Mississippi River. However, exotic species have passed the barrier and a second barrier further downstream will be installed in the spring of 2005 (UMRCC, 2004a). Findings of a recent feasibility study funded by Minnesota Department of Natural Resources noted "that an acoustic deterrent such as a Sound Projector Array based acoustic bubble curtain downstream of a lock location perhaps in conjunction with attractants (i.e. pheromones, plankton, lights, etc.), and an integrated management/harvest plan may provide the most feasible opportunity to limit or slow the upstream invasion of Asian Carp" (FishPro, 2004).

Control of these species and prevention of additional invasions will be addressed in Refuge step-down plans for fish, wildlife, and habitat management. Control will only be achieved through cooperative efforts of all agencies and partners on the Upper Mississippi River System. A potential avenue of cooperation in control of invasive species is through the Mississippi River Basin Aquatic Nuisance Species Panel (UMRCC, 2004a).

3.2.12.2 Invasive Plants

Of the 591 plant species known to occur within the Upper Mississippi River, 36 are not indigenous to North America (Appendix K, plant list). Approximately 15 of these non-native species and aggressive native species adversely affect Refuge native plants and habitat (Table 13). Native species, such as reed canary grass, can take on invasive qualities when natural processes like fire, drought, and flooding are altered. Over the past five years, the Refuge has attempted to control several plant species using various techniques, including biological control, mowing, cutting, exchanges of ornamental plants, and the use of herbicides.

It is estimated that purple loosestrife has invaded thousands of acres of the Refuge, replacing large blocks of native vegetation, decreasing species diversity, and affecting local wildlife populations by

Table 13: Invasive Plants and Their Control on the Upper Mississippi River NW&FR

Plant Name (Native or non-native)	Scientific name	Control method	Comments
Purple loosestrife (non-native)	<i>Lythrum salicaria</i>	Beetles (<i>Galerucella</i> and <i>Hylobius</i>) pulling, herbicide (glyphosate)	Large-scale, Refuge-wide problem. Biological control is effective.
Eurasian milfoil (non-native)	<i>Myriophyllum spicatum</i>	Public education to prevent spread to other bodies of water	Wide-spread, but not considered a major threat to aquatic habitats
Spotted knapweed (non-native)	<i>Centaurea maculosa</i>	Mowing	Increasing problem in Sand prairies
Garlic mustard (non-native)	<i>Alliaria petiolata</i>	Pulling	Widespread in shady upland habitats
Reed canary grass (native and non-native ecotypes)	<i>Phalaris arundinacea</i>	Root Pruned Method (RPM) trees; mowing	Wide-spread problem; threat to forest regeneration
Crown vetch (non-native)	<i>Coronilla varia</i>		Widespread
Siberian or Chinese elm (non-native)	<i>Ulmus pumila</i>	Cutting; herbicide (Triclopyr)	Localized problem
Honey locust (native)	<i>Gleditsia tricanthos</i>	Cutting; herbicide (Triclopyr)	Localized problem
European (common) buckthorn (non-native)	<i>Rhamnus cathartica</i>	Cutting; herbicide	Widespread
Leafy spurge (non-native)	<i>Euphorbia esula</i>	Biological control	Localized problem
Black locust (native, imported from Appalachia and the Ozarks)	<i>Robinia pseudoacacia</i>	Cutting; herbicide	Localized problem
Japanese Bamboo (Japanese knotweed)	<i>Polygonum cuspidatum</i>	Pulling; grubbing roots; herbicides	Localized problem
Bush Honeysuckles (non-native)	<i>Lonicera tatarica and others</i>	Pulling; herbicides	Localized problem

reducing available wetland habitat. Control efforts include the release of beetles (*Galerucella* sp. and *Hylobius* sp.) that consume only this plant. Success in controlling loosestrife via biological methods, and restoring native plants has been documented throughout the Refuge. Each Refuge District has raised beetles in nurseries and conducted beetle “releases” to control loosestrife over the past decade. Releases have ranged from 500 to 20,000 beetles per site. The herbicide glyphosate was used in the 1990s throughout the Refuge and was used in 2002 on a limited basis in the Savanna District.

No control efforts are under way to combat Eurasian milfoil, other than through public education efforts that encourage people to remove all vegetation from their boats and boat trailers upon exiting the water. This combats spread of the plant between water bodies.

Reed canary grass ecotypes of both native and non-indigenous origins have invaded Refuge wetlands. It is virtually impossible to distinguish native from non-native plants. This species is preventing regeneration of native forest trees and other floodplain vegetation (UMRCC 2002). Mowing and the use of mats around planted trees controls competition and discourages voles that

may girdle newly planted trees. Experimental control using soil scarifying techniques, followed by herbicide treatments, have been attempted in cooperation with the U.S. Army Corps of Engineers at small timber harvest areas of the Refuge. The Refuge is supporting research to develop an effective means of stopping the spread of reed canary grass.

Illinois garlic mustard invades woodland habitats, smothering most of the native herbaceous vegetation. It occurs on higher sites of the floodplain forest (e.g. Goose Island in Pool 8 and Potosi River delta of Pool 11) in Pools 8-14. Control efforts have included the use of herbicides and pulling operations.

3.2.12.3 Invasive Invertebrates

The zebra mussel is a threat to native mussel populations. Based on North American studies, zebra mussels are believed to impact native mussels by interfering with siphoning, feeding, gamete release, reproductive displays, and respiration. This species presumably was brought to North America from Europe in ballast water of ocean-going vessels. In 1991 the zebra mussel was found first in the Upper Mississippi River and Refuge near La Crosse, Wisconsin (UMRCC 2004b). Since their appearance, zebra mussel populations have expanded exponentially, sometimes reaching population densities of 60,000 per square meter (on Pool 13).

The native mussel community of Pool 10 at Prairie du Chien, Wisconsin, (East and West Channels) was valuable and well known to biologists and commercial mussel fishermen. In particular, this area was considered to be the most valuable Essential Habitat Area for the federally endangered Higgins eye pearl mussel. In the late 1990s, the native mussel community at Prairie du Chien was devastated by zebra mussels. Zebra mussel densities in the East Channel rose dramatically from 2 per square meter in 1993 to 56,507 per square meter in 1999. Consequently, density of native mussels in the East Channel fell from 59.2 per square meter in 1996 to 1.7 per square meter in 1999; no juvenile native mussels were found between 1999 and 2001.

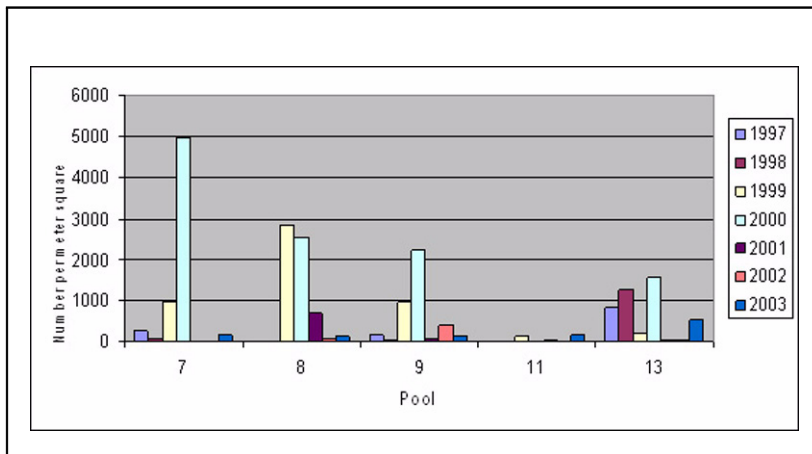
Like the rest of the mussel community there, the abundance of Higgins eye pearl mussel in the East Channel drastically declined with the expanding zebra mussel population. Zebra mussel population assessments are an important component of the Higgins eye pearl mussel recovery plan.

Zebra mussels have appeared in bottom samples collected by the Refuge and states during the fall to assess available food sources for migrating waterfowl in Pools 2-13. These samples come from both open water and backwater habitats. Peak numbers of zebra mussels in most Refuge pools appeared in 2000 (Figure 19). Maximum average densities ranged from 1,500 to 5,000 per meter square. Numbers declined throughout the Upper Mississippi River in 2001, probably due to warm water conditions and the stresses of flooding. Numbers have come up in 2003.

The faucet snail or mud bithynia (*Bithynia tentaculata*) is an invasive snail first introduced to the Great Lakes in about 1870 from Europe (Scandinavia to Greece), possibly with packing material. This snail is a first intermediate host for two intestinal trematodes (flukes), *Sphaeridiotrema globulus* and *Cyathocotyle buchiensis* that cause mortality in waterfowl and coots. The incidence of trematode-infected faucet snails collected in bottom samples has reached over 50 percent in some parts of Lake Onalaska (Pool 7).

Bird mortality caused by these trematodes was first detected in the spring of 2002 when one lesser scaup was found dead in upper Pool 8. In the fall of 2002, the trematodes killed an estimated 1,500 to 1,900 diving ducks and coots on Pool 7 and 8. In the same season, nearly 100 coots and diving ducks were collected in open water between Ferryville and Lynxville, Wisconsin, on Pool 9. Spring and fall die-offs also occurred on Pools 7 and 8 in 2003, killing an estimated 8,000 waterbirds. Species affected include lesser scaup, ring-necked ducks, canvasback, bufflehead, and coots. Raptors that scavenge these birds are not susceptible to the trematodes.

Figure 19: Average Number of Zebra Mussels per Meter Square Collected During Fall Sampling Periods in Selected Areas of Pools 7, 8, 9, 11, and 13, 1997-2003, Upper Mississippi River NW&FR



Researchers and managers are investigating potential actions to prevent major die-offs caused by the presence of this snail. Population monitoring and removal of bird carcasses is a continuing practice.

3.2.13 Other Aquatic Invertebrates

Aquatic invertebrates play an important role in fish and wildlife ecology on the Refuge and are a useful indicator of environmental quality. Fingernail clams and burrowing mayflies are often target organisms of studies and monitoring. They are important foods in the Upper Mississippi River System for diving ducks, sport fish and commercial fish. Declines in diving ducks using the Illinois River valley during the 1950s was attributed to the loss of the fingernail clam community (Sauer and Lubinski, 1999). Long-term monitoring on the Upper Mississippi River System shows that Pool 13 backwaters have held the highest densities of mayflies and fingernail clams, possibly because Pool 13 is outside the pollution gradient that extends downstream from Minneapolis, Minnesota, and that Pool 13 substrates are especially suitable for these critters.

The Refuge and the states sample invertebrates in the fall to assess available food sources for migrating waterfowl in Pools 4-13. Our most complete data are for pools 7, 8, 9 and 13. Mayfly numbers are generally highest in pools 8, 9 and 13 (Figure 20). Off-refuge data from pools 2 and 3 show even higher mayfly densities. Fingernail clam numbers are usually greatest in Pool 9 (Figure 21). Values for both fingernail clams and mayflies in pools 4, 5, 5A, 10, 11, and 12 are consistently much lower than the pools listed above. Differences in invertebrate densities between pools is often controlled by local conditions and not necessarily due to whole-river factors (Sauer and Lubinski, 1999).

Refuge data indicate that when fingernail clam densities exceed about 200 clams per meter square, diving duck use-days on that pool can exceed 500,000 use-days or peak numbers over 80,000 birds. Data also indicate that fingernail clams were abundant in years when submerged aquatics were lacking during the early 1990s and were crucial to migrating diving ducks during those years.

3.2.14 Mammals

The 51 species of mammals that occur on the Refuge play an important role in Upper Mississippi River System ecology and some are the object of furbearer management on the Refuge. Prior to

Figure 20: Average Number of Mayflies per Meter Square Collected During Fall Sampling Periods, 1994-2003, Upper Mississippi River NW&FR

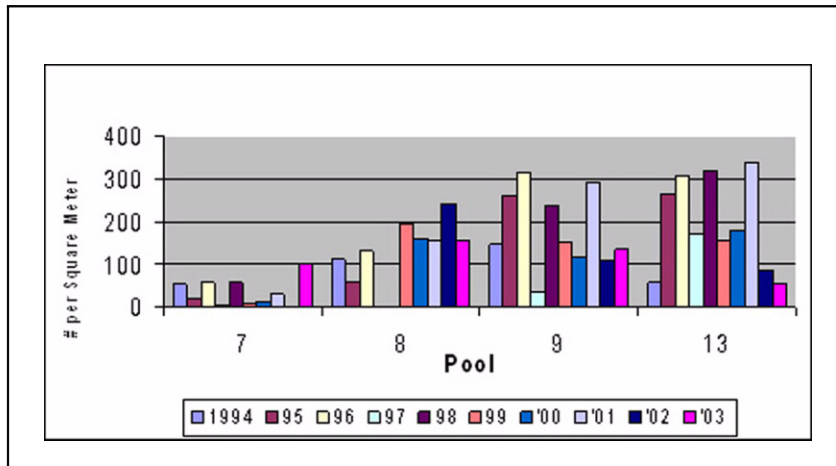
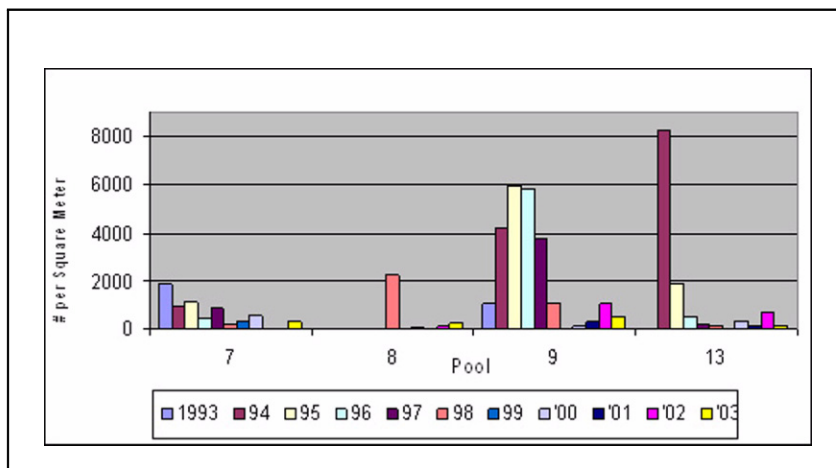


Figure 21: Average Number of Fingernail Clams per Meter Square Collected During Fall Sampling Periods, 1993-2003, Upper Mississippi River NW&FR



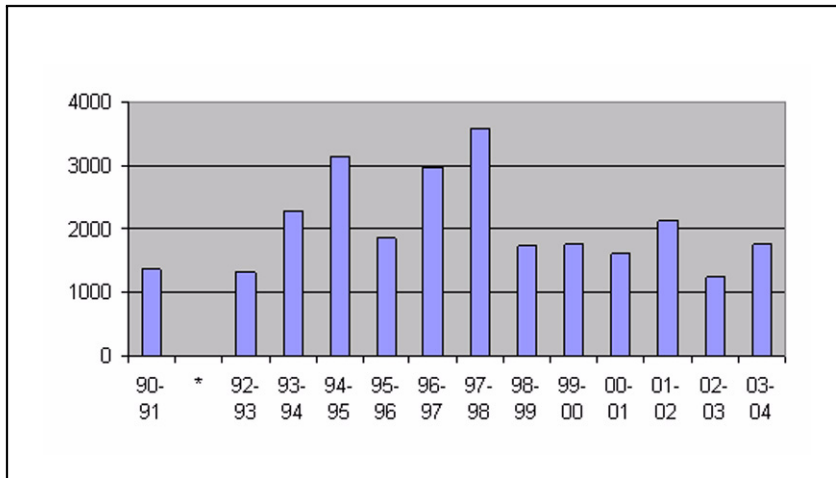
locks and dams, the high, semi-dry river bottoms held higher populations of skunk, badger, foxes, and rabbits than occur at present. The marsh conditions of today now support higher numbers of muskrat, mink, and especially raccoon than in the past.

Furbearing mammals (beaver and river otter) were key elements in the development and exploitation of the Mississippi River Basin. Early explorers and trappers established settlements (Prairie du Chien, Wisconsin, for example) to carry on the fur trade. Over-exploitation nearly extirpated beaver from the Upper Mississippi River by the mid-1800s. They made a comeback in the 20th century with reintroductions (1927 and 1928), control of the harvest, and new habitat created by the lock and dams in the 1930s. Beaver lodges and cuttings are now a moderately common sight on the Refuge. About 2,100 beaver are harvested each year (1990-2003) (Figure 22) .

Beaver lodge surveys conducted in Pools 12-14 from 1993 to 2002 revealed an average of 41 lodges per year along established survey routes. Numbers ranged from a high of 62 in 1993 to a low of 20 in 2002.

River otter were also trapped extensively at the time of early European settlement. These predators probably maintained small populations in tributaries of the Upper Mississippi River. Today they are

Figure 22: Number of Beaver Harvested, 1990-2003, Upper Mississippi River NW&FR¹



1. 1991 data are not included in this figure.

an uncommon sight, but occupy most areas of the Refuge, as evidenced by trapping records, local observations, and radio-tracking studies.

Currently, Wisconsin is the only state that allows the take of river otter on the Refuge; one per season. Minnesota is investigating home range characteristics, habitat selection and survival of river otters in southeast Minnesota, including portions of the Refuge (T. Gorman, student at Mankato State University, personal communication). Data from this study will be used in decisions whether to have a trapping season on these animals in southeast Minnesota. Preliminary reports indicate radio-tracked river otters established natal dens along fence rows and up to several miles away from streams. Investigators reported 4 of 24 radio-marked otters died of incidental take; one of 24 was a road-kill mortality.

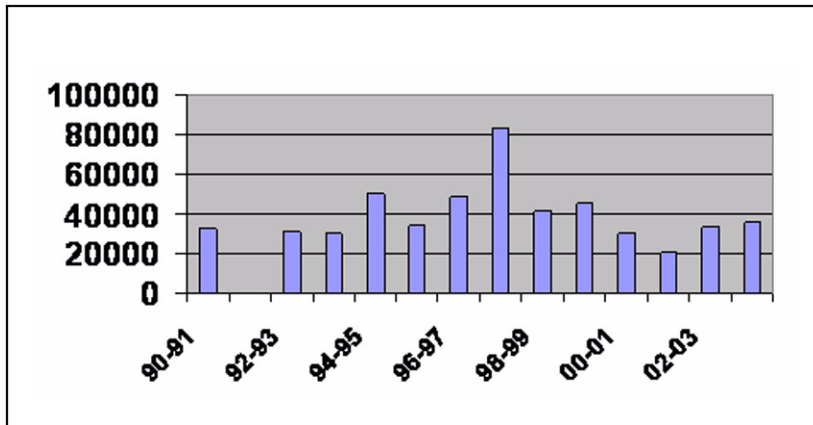
During the 2003-04 trapping season, 46 otter were harvested in the six Wisconsin counties bordering the Refuge. The 3-year average harvest on the Refuge in Wisconsin for 2001-2003 was 36 otter. In the past 8 years, the state-wide annual otter harvest in Wisconsin has been about 2,000 animals except in 1998-99 and 2003-04 when it was near 1,500 otter.

Prior to locks and dams, muskrats were wide-spread, but not abundant on the Upper Mississippi River System. At that time the shallow lakes and marshes often dried up each fall, forcing muskrats to dig bank dens, rather than build typical "rat houses". Muskrats flourished after the 1930s when permanent shallow wetlands were created by installation of the locks and dams. High muskrat numbers coincided with those of puddle ducks, bitterns and rails, sunfish and bass in the hey-day of shallow wetland productivity witnessed in the 1935-65 period. Since then, the decline of cattail, burreed, arrowhead, and bulrush has resulted in reductions in muskrat populations, although "rats" still utilize muddy banks along the many side channels now coursing through the bottomlands.

Trappers have harvested millions of muskrats from the Refuge since the 1940s. Between 1940 and 1970, over 2.25 million rats were harvested (average of 83,000 per year) by an average of 750 Refuge-permitted trappers per year. Recent annual harvest reports (1991-2003) show about 40,000 animals taken by 290 trappers per year (Figure 23 and Figure 24). Muskrats reproduce prolifically and changes in their populations generally reflect ebb and flow of habitat, rather than the extent of harvest.

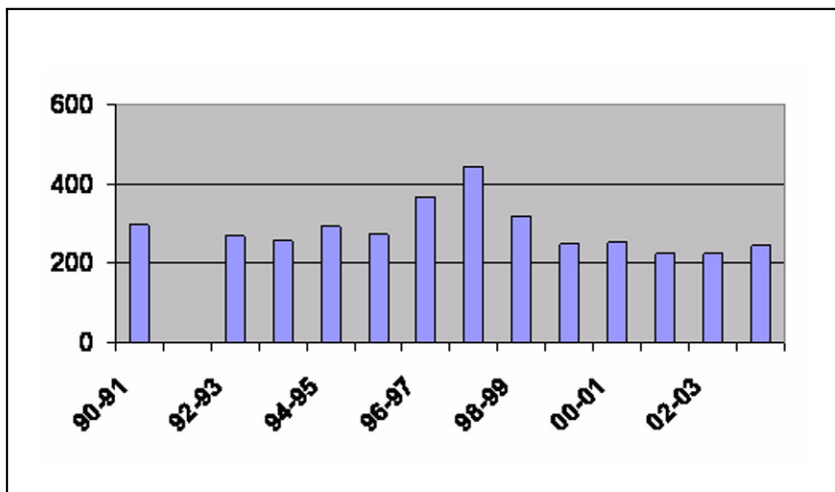
Recent population status and distribution data are available from studies, inventories, and fur catch reports submitted by trapping permittees. Muskrats were studied in the early 1980s in Pool 9 to

Figure 23: Number of Muskrats Harvested, 1990-2003, Upper Mississippi River NW&FR¹



1. Note that 1991 data are not included in this figure.

Figure 24: Number of Active Trappers, 1990-2003, Upper Mississippi River NW&FR¹



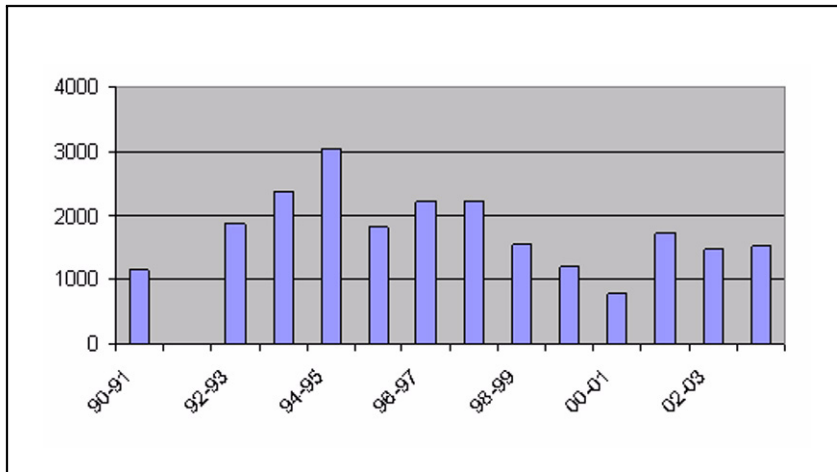
1. Note that 1991 data are not included in this figure.

determine density, survival and harvest rates (Clay and Clark, 1985). The authors reported that muskrat populations on Pool 9 “showed the characteristic resiliency for the species with great reproductive capability and consistent survival.” They also found that distribution and harvest was not uniform, which support the idea of management by zones to provide sustained harvest.

Are muskrat harvests affected by water level fluctuations? Regression analyses said “no” in tests of water levels (at tailwaters and headwaters) in Refuge Pools 4 through 14 compared to muskrat harvest for the period 1990 and 1992 to 1996 (Wlosinski and Wlosinski, 1998). The authors concluded that water levels did not affect muskrat harvest on the Refuge, but noted that numerous other studies showed that muskrat populations are affected by water levels. Other factors affecting harvest include length of trapping season, fur prices, weather conditions, habitat changes, and trapping effort. The authors concluded that “although sometimes used as a surrogate for population estimates, harvest may not be a good estimator for muskrat populations.” The same authors reported that the average number of muskrats trapped is positively correlated to differences in aquatic vegetation coverage estimates (1989 emergents and floating leaved aquatics).

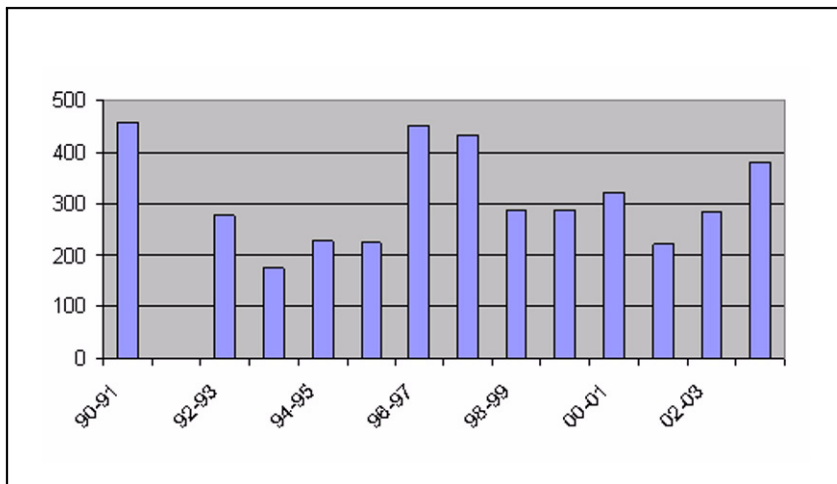
In 1988, the Wisconsin Department of Natural Resources began making annual muskrat house counts at specific locations within Pools 4-11 (WDNR, 2004). Fewer houses have been found in the

Figure 25: Number of Raccoon Harvested, 1991-2003, Upper Mississippi River NW&FR¹



1. Note that 1991 data are not included.

Figure 26: Number of Mink Harvested, 1990-2003, Upper Mississippi River NW&FR¹



1. Note that 1991 data are not included.

past four years compared to 1989-91. Counts are on the rise in the last 2 years, however. These data reflect variability observed in trapping data over the past 40 years.

The recent (1990-2003), average annual raccoon harvest on the Refuge has averaged 1,768 animals, ranging from 800 to over 3,000 per year (Figure 25). Raccoon numbers have increased dramatically since the early 1990s in each of the four states in which the Refuge occurs. Scientists estimate that there are more raccoons in Illinois today that when the first European settlers arrived there.

The annual mink harvest averaged 310 animals, ranging from about 175 to 450 per year (Figure 26). Minnesota, Wisconsin, and Illinois report that mink populations are stable in areas with adequate wetland resources.

3.2.15 Vegetation

A diversity of plant communities occurs on the Refuge, located in aquatic to upland bluff terrains. These communities have been classified for management and research purposes specific to the Mississippi River by the U.S. Geological Survey's Upper Midwest Environmental Sciences Center

(UMESC) (web site is www.umes.gov) and the U.S. Army Corps of Engineers, Habitat Needs Assessment program (USACE, 2000). The Refuge uses these mapping sources on a daily basis for developing Geographic Information System management and habitat maps.

On a national level, the Federal Geographic Data Committee has established the National Vegetation and Information Standard (NVCS) to produce uniform statistics in vegetation resources from data collected nation-wide. These three classification systems have three distinct descriptors of vegetation types which have been cross-referenced (“cross-walked”) by the Upper Midwest Environmental Sciences Center (Appendix O). An example of the NVCS maps for the Refuge (Pool 8) appears in Appendix O as well. Land cover maps, based on UMESC interpretation and digitization of 2000 photography, for the entire Refuge are available at Refuge headquarters.

3.2.15.1 Submergent Aquatic Vegetation

Submergent aquatic vegetation (submergents) includes plants that grow on or below the surface of the water and are usually anchored to the bottom by their roots. Examples are wild celery, water milfoil, and sago pondweed. This group of plants generate dissolved oxygen, filter suspended material, stabilize bottom sediments, and cycle nutrients (Rogers and Theiling, 1999). Submergents provide crucial fish habitat, provide substrate for invertebrate growth, and are important foods for mammals and migratory birds. They are most often found in backwater areas of low water velocity, adequate light penetration and relatively stable water levels.

Prior to locks and dams most species that are now present occurred in localized wetland pockets and channel border areas, but their group was not a major component of the floodplain vegetation community (Green, 1970). Many aquatic areas dried up by the end of the summer growing season. At that time, floodplain forests dominated the river bottoms with hundreds of lakes and ponds scattered through the wooded areas. Wet meadows and hay fields were also present. After inundation, the stabilized water levels created shallow and deep water wetlands that supported an abundance of submergent plants. The response by wetland fish and wildlife was phenomenal in its diversity and abundance. In the 1940s, refuge biologist, Bill “Doc” Green noted that he could find “two dozen species of submergent plants in a matter of minutes anywhere in the better marshes and aquatic beds.” Backwater sport fish (bluegill, bass, and crappies) and diving ducks (Canvasbacks, Scaup, and Ring-necked Ducks) utilize submergent plants extensively.

Beginning in the 1960s and 1970s, river scientists and users noted declines in submergent (and emergent) vegetation cover throughout the Refuge. Factors included wind and wave action, poor light penetration due to highly turbid water conditions, sedimentation and filling of backwaters, major flooding events, and long term inundation with few drying periods.

Due to these factors, there is an uneven distribution of submergent plants through the length of the Refuge. Recovery of lost submergent plant beds has occurred naturally or through habitat rehabilitation projects in Pools 4, 5A, 7, 8, 9, and 13. More work is necessary in other Refuge pools to gain a more even distribution of aquatic plant growth and associated fish and wildlife use.

3.2.15.2 Emergent Aquatic Vegetation

Emergent aquatic vegetation (emergents) are plants whose roots are anchored under water with much of the plant extending above the water surface. They include cattail, river bulrush, giant reed grass, burreed, arrowheads and wild rice. They are backwater plants adapted to low water velocities and shallow- to deep-water marsh conditions.

Prior to the lock and dams, river bulrush was the most abundant marsh species and continues to be prominent today. Cattail was uncommon, as it is today on the floodplain. Burreed was common before inundation, became abundant soon after, but has since declined. The arrowheads were present before, but after became widespread and abundant, until suffering declines since the 1970s. The arrowheads (rigid and duck potato) are important waterfowl and muskrat foods.

The lack of emergent vegetation on the Refuge is a key concern in management and restoration of puddle duck and tundra swan migration habitat. Studies of available kilocalories (bioenergetics) for waterfowl reveal that deep marsh perennial emergent vegetation (particularly arrowhead tubers), provides some of the highest valued resources on the Refuge (Kenow et al., 2003).

3.2.15.3 Floodplain Forest

Floodplain forests are important to the biological integrity of the Upper Mississippi River System (UMRCC, 2002). They provide rich habitat for wildlife (and fish during high-water events), reduce soil erosion, improve water quality and provide a scenic and recreational landscape. Among vegetation communities of the Upper Mississippi River, the highest number of birds species observed during spring migration in 1995 and 1996 were found in floodplain forest habitat (Yin, 1999).



Cardinal flower in the forest. Copyright by Sandra Lines

Floodplain forests are declining in the Upper Mississippi River System and the Refuge due to agricultural and urban developments, changes in natural riverine flood pulses, the rising water table, and island loss due to wind and wave action. The forests that remain are changing in composition from a diversity of species, including mast producing trees, to a more monotypic forest dominated by silver maple and herbaceous openings. In some pools, many forest stands are even aged mature trees with little or no understory or seedling regeneration (UMRCC, 2002).

River managers and biologists have identified what an “ideal” floodplain forest would look like (UMRCC, 2002). Basically, it would contain a diversity of tree species to include existing silver maple and potential codominant species such as eastern cottonwood, elm, green ash and river birch. The forest would also contain mast producing species such as oak, pecan and hickory whose seeds are food sources for wood duck, squirrels, deer and Blue Jays. Diversity would also be evident in size and age, with older mature woods available for nesting eagles and herons.

The driving forces of forest change or succession in the floodplain environment is ecological disturbance, such as flooding, tornados, severe winds, and occasional fire. The great flood of 1993 caused relatively minor tree mortality above Pool 13, but below that pool mortality escalated sharply. Mortality rates were positively correlated with flood duration and negatively correlated with the diameter of the trees (Yin et al., 1994).

Recommended forest management practices would replicate these natural processes (UMRCC, 2002). These practices include: forest regeneration, shelterwood harvest methods, seed tree methods, group selection methods, tree planting, the use of herbicides, water level management, and potential modification of site elevation (increase) to promote growth. Invasive species (particularly reed canary grass) present problems in forest regeneration within the upper pools of the Refuge. Research and experimental cuts will need to be conducted to achieve successful regeneration in these areas.

Reforestation projects may include increasing land elevations to avoid impacts of flooding. Those impacts may also be avoided by selecting appropriate tree species and locating tree plantings in areas less prone to flooding. Foresters have a tool to determine predicted flood potential throughout the pools in models available at the Upper Midwest Environmental Science Center's web site (Wlosinski and Wlosinski, 2001).

The Refuge is cooperating with Corps of Engineers foresters in completing a forest inventory of both the Corps-acquired land and U.S. Fish and Wildlife Service-acquired lands in the St. Paul and Rock Island Corps Districts. This is crucial to establishing objectives and meeting management goals in the Refuge's future forest management plan.



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3.2.15.4 Grasslands

Grassland and prairie habitats are generally uncommon in the floodplain, but there are several units that occur on islands or sand terraces adjacent to the floodplain. There are two prominent prairie systems within the Refuge adjoining Pool 13. One is the newly acquired Lost Mound Unit (the former U.S. Army Savanna Depot) that protects a seven-mile long sand dune along the river's edge and contains approximately 4,000 acres of sand prairie and oak-ash savanna associations. There are 488 buildings, left over from the Depot operations, scattered throughout the unit.

The Refuge's Thomson Prairie protects similar habitat 25 miles down river of Lost Mound. These units contain some of the last remaining habitats of their kind in the state of Illinois. Habitat management of these areas includes burning, limited grazing, and mechanical, biological and chemical treatments.

There are 39 other grassland units (ranging in size from 1.4 to 125 acres) distributed throughout the Refuge for which fire prescriptions have been developed. These units are managed primarily for migratory bird nesting cover, moist soil feeding sites, and to enhance biological diversity. Grassland habitats support state-listed plant and animal species of concern, such as crucial nesting habitat for the Blanding's turtle.

3.2.16 Natural and Current Role of Fire

The following discussion is from the Refuge Fire Plan, approved in 2002.

There is no recorded history of fire on the Refuge prior to its establishment in 1924. Our best estimate is that fire played a minor role within the river valley. That is not to say wildfires did not occur on lands now managed as part of the Refuge, as the river was certainly heavily used by Native Americans and fire surely occurred in the historic meadows and grasslands that were once part of the original river valley. However, since the placement of the locks and dams the areas that would have been influenced by fire are now mostly under water.

As wildfires have been limited in scope on the Refuge there is little documentation as to their impact on the areas burned with regard to the vegetation, wildlife and/or soils.

Prescribed fire has been mostly confined to the prairie areas of the Refuge for the purpose of restoring and/or maintaining the diverse native plant community. This is very important in areas which have remnant native prairie vegetation. To date fire has been used successfully to maintain the native plant species on these areas.

Fire has had no negative impact on threatened and/or endangered species on the Refuge.

3.2.16.1 Wild Fires and Prescribed Burns

Between 1989 and 2000, there were 29 reported wildfires on the Refuge. Of those, 23 were 10 acres or less in size and of these 14 burned 1 acre or less. Eighteen wildfires occurred in the March-May period and 4 in October. The remaining fires were scattered throughout the rest of the year with only January, August and September wildfire free. The main causes of wildfires were arson or escaped campfires. It should be noted that arson fires have accounted for all fires over 10 acres in size except for one escaped campfire which burned 60 acres. In looking at the past fire data most wildfires are contained almost immediately upon attack.

A total of 80 prescribed burns were completed on the Refuge between 1991 and 2000, covering 1,592 total acres. The Savanna District had the most active burning program due to the abundance of native prairie and grasslands; see District summary below.

Winona District	19 burns 170 acres
La Crosse District	10 burns 103 acres
McGregor District	10 burns 295 acres (1996-2000)
Savanna District	41 burns 1,100 acres

3.2.17 Environmental Management Program.

The Environmental Management Program (EMP) is a coordinated habitat restoration program for the Upper Mississippi River system administered by the U.S. Army Corps of Engineers in partnership with several federal, state, and non-governmental agencies. Partners include the federal agencies of the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, U.S. Geological Survey, and U.S. Environmental Protection Agency; the state natural resource agencies of Minnesota, Wisconsin, Iowa, Illinois, and Missouri; and non-governmental agencies. Through this coordinated, effective planning process based on sound science, a built-in evaluation process, and a strong partnership between the agencies, EMP has evolved into a premier river habitat restoration program.



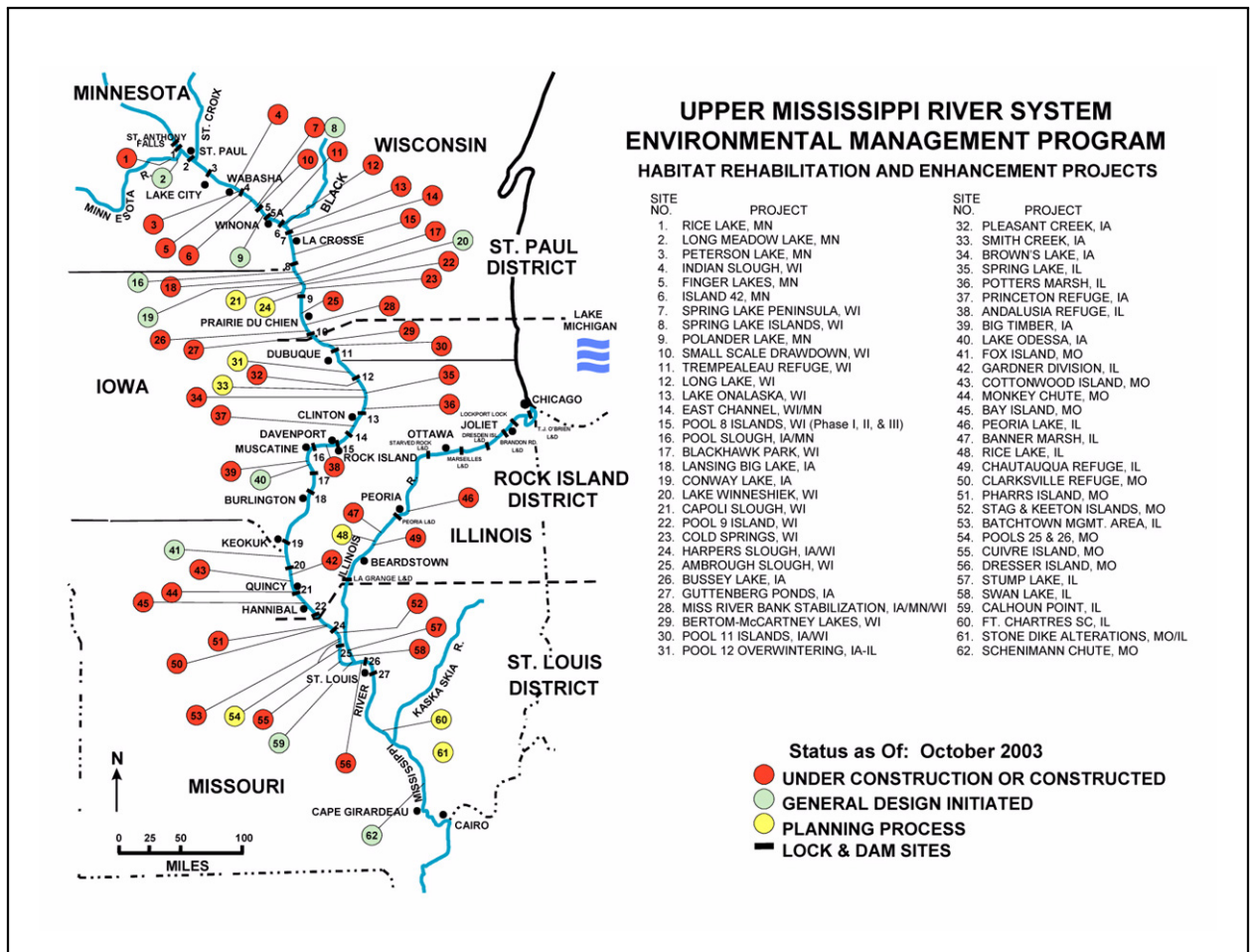
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Because the Refuge is located entirely within the Upper Mississippi River system, the Refuge is fully involved with planning, designing, constructing, evaluating, and operating and maintaining all EMP habitat rehabilitation and enhancement projects (HREPs) built on the Refuge. In addition, the Refuge is involved in the EMP Long Term Resource Monitoring Program (LTRMP).

The purpose of building HREPs on the Upper Mississippi River is to counteract the effects of an aging impounded river system by changing the river's floodplain structure and hydrology. This can involve altering sediment transport and disposition, water levels, connectivity between the river and its floodplain, and constructing structures in the floodplain.

This program has made it possible to improve tens of thousands of acres along the Upper Mississippi River system. Since the program began in 1987, 40 completed HREPs have affected over 66,600 acres of habitat. In addition, 24 projects which could affect over 74,000 acres are in the construction, design, or planning phases (Figure 27). Directly on or adjacent to the Refuge itself, there are 26 completed HREPs affecting over 40,500 acres of habitat, and the Refuge is solely responsible for operating and maintaining 25 of those projects (Table 14). The Refuge is currently involved in the planning, design and construction of 11 HREPs which will affect an additional 33,300 areas of habitat. When these 11 projects are completed, the 37 HREPs on or next to the Refuge will improve approximately 73,800 acres of habitat. Eventually, more projects will be added to the program through the selection process.

Figure 27: Upper Mississippi River System Environmental Management Program Habitat Rehabilitation and Enhancement Projects¹



1. Site Nos. 3 through 37 are on or adjacent to the Upper Mississippi River NW&FR (USACE, 2004a).

Table 14: Summary of Environmental Management Program Habitat Rehabilitation and Enhancement Projects On or Adjacent to the Upper Mississippi River NW&FR (Adapted from USACE, 2004a)

Environmental Management Program											
Pool	Project Name	Cost	Project Status ¹	Year Completed	Affected Acres	Project Features/Techniques					
						Back-water Dredging	Water Level Mgmt.	Island	Bank Stabilization	Side Channel Restoration	Aeration
	Bank Stabilization, Pools 6, 9 & 10	\$1,697,000	F	1999	1,500				X		
4	Indian Slough	\$988,000	F	1994	631	X				X	X
	Peterson Lake	\$1,179,000	F	1996	500			X	X	X	
5	Island 42	\$262,000	F	1987	95	X				X	X
	Finger Lakes	\$1,445,000	F	1994	113						X
	Spring Lake Peninsula (Pool 5)	\$448,000	F	1995	300	X		X	X	X	
	Small Scale Drawdown	\$97,000	F	1997	52		X				X
	Spring Lake Islands (Pool 5)	\$2,930,000	C	N/A	500	X		X	X	X	X
5A	Polander Lake	\$3,000,000	F	2002	1,000	X		X	X		
6	Trempealeau ²	\$5,723,000	F	1999	5,620		X		X		
7	Lake Onalaska	\$2,064,000	F	1989	7,000	X		X	X		X
	Long Lake	\$1,037,000	F	2002	15				X		X
8	Pool 8 Islands, Phase I	\$2,314,000	F	1993	1,000	X		X	X		
	East Channel	\$558,000	F	1997	19				X		
	Pool 8 Islands, Phase II	\$3,482,000	F	1999	500	X		X	X		X
	Pool 8 Islands, Phase III	\$15,120,000	D	N/A	3,000	X		X	X	X	X

Table 14: Summary of Environmental Management Program Habitat Rehabilitation and Enhancement Projects On or Adjacent to the Upper Mississippi River NW&FR (Adapted from USACE, 2004a) (Continued)

Environmental Management Program											
Pool	Project Name	Cost	Project Status ¹	Year Completed	Affected Acres	Project Features/Techniques					
						Back-water Dredging	Water Level Mgmt.	Island	Bank Stabilization	Side Channel Restoration	Aeration
9	Pool Slough ³	\$715,000	D	N/A	52		X				
	Blackhawk Park ⁴	\$309,000	F	1990	282		X		X	X	
	Lansing Big Lake	\$2,089,000	F	1994	9,755				X	X	X
	Conway Lake	\$2,460,000	P	N/A	560	X	X	X	X	X	X
	Lake Winneshiek	\$4,560,000	P	N/A	6,000	X		X	X	X	X
	Capoli Slough	\$1,995,000	P	N/A	600	X		X	X	X	X
	Pool 9 Islands	\$1,266,000	F	1995	320			X			
	Cold Springs	\$463,000	F	1994	35	X				X	
	Harpers Slough	\$9,000,000	P	N/A	2,200	X		X	X	X	
10	Ambrough Slough ⁴	\$2,142,000	C	2004	2,500	X		X		X	X
	Bussey Lake	\$3,594,000	F	1995	213	X	X	X		X	
11	Guttenberg Ponds	\$327,000	F	1989	35	X	X				
	Bertom McCartney Lakes	\$2,244,000	F	1992	2,000	X		X	X	X	X
	Pool 11 Islands	\$8,559,000	C	N/A	10,342	X		X	X	X	X
12	Pool 12 Overwintering	\$2,500,000	P	N/A	6,900	X					X
13	Pleasant Creek	\$1,404,000	F	2003	2,350	X					
	Brown's Lake	\$1,993,000	F	1990	453	X				X	X
	Smith Creek	\$850,000	P	N/A	650						X
	Spring Lake (Pool 13)	\$6,646,000	F	2002	3,300		X				
	Potters Marsh	\$2,975,000	F	1995	2,305	X	X				X

Table 14: Summary of Environmental Management Program Habitat Rehabilitation and Enhancement Projects On or Adjacent to the Upper Mississippi River NW&FR (Adapted from USACE, 2004a) (Continued)

Environmental Management Program												
Pool	Project Name	Cost	Project Status ¹	Year Completed	Affected Acres	Project Features/Techniques						
						Back-water Dredging	Water Level Mgmt.	Island	Bank Stabilization	Side Channel Restoration	Aeration	Other
14	Princeton Refuge ³	\$3,983,000	F	1999	1,129		X					X
	Completed (26 projects)	\$51,587,000			40,522							
	Under Construction (3 projects)	\$13,631,000			13,342							
	Design (2 projects)	\$15,835,000			3,052							
	Planning (6 projects)	\$21,365,000			16,910							
	Totals (37 Projects)	\$102,418,000			73,826							

1. Project status as of January 2004. F = Finished; C = Under Construction; D = Design; P = Planning and preliminary design.
2. Project located on Trempealeau NWR adjacent to the Upper Mississippi River NW&FR. Trempealeau NWR is responsible for operation and maintenance.
3. Project located adjacent to the Refuge. Iowa Department of Natural Resources is responsible for all or a portion of the operation and maintenance.
4. Project located adjacent to the Refuge. Wisconsin Department of Natural Resources is responsible for all or a portion of the operation and maintenance.

Table 15: Upper Mississippi River System Environmental Management Program Habitat Rehabilitation and Enhancement Project Techniques. (USACE, 2004a)

Technique	Objectives																
Dredge backwaters	Alter flow patterns and velocity Improve floodplain structural diversity Increase deep water fish habitat Provide access for fish movement Provide dredged material to support revegetation																
Manage water levels using dikes and water control systems	Restore natural hydrologic cycles Promote growth of aquatic plants as food for waterfowl Reduce backwater sediment loads Consolidate bottom sediments Control rough fish																
Build islands	Decrease wind and wave action Alter flow patterns and sediment transport Improve aquatic plant growth Improve floodplain structural diversity Provide nesting and loafing habitat for waterfowl and turtles																
Stabilize shorelines	Prevent shoreline erosion Maintain floodplain structural diversity Create fish habitat Reduce sediment loads to backwaters																
Modify secondary channels	Improve fish habitat and water quality by altering inflows Stabilize eroding channel Reduce sediment load to backwaters by reducing flow velocities Maintain water temperature and provide rock substrate																
Aerate	Improve fish habitat and water quality by introducing water																
<p>Miscellaneous Experimental and Complementary Techniques:</p> <table> <tbody> <tr> <td>Large scale water level management</td> <td>Seed islands</td> </tr> <tr> <td>Upland sediment control</td> <td>Isolated wetlands</td> </tr> <tr> <td>Land acquisition</td> <td>Weirs</td> </tr> <tr> <td>Riffle pools</td> <td>Rock sills</td> </tr> <tr> <td>Potholes</td> <td>Sediment traps</td> </tr> <tr> <td>Notched wing dams</td> <td>Mussel substrates</td> </tr> <tr> <td>Anchor tree clumps</td> <td>Bottomland Forest Restoration</td> </tr> <tr> <td>Vegetative plantings</td> <td></td> </tr> </tbody> </table>		Large scale water level management	Seed islands	Upland sediment control	Isolated wetlands	Land acquisition	Weirs	Riffle pools	Rock sills	Potholes	Sediment traps	Notched wing dams	Mussel substrates	Anchor tree clumps	Bottomland Forest Restoration	Vegetative plantings	
Large scale water level management	Seed islands																
Upland sediment control	Isolated wetlands																
Land acquisition	Weirs																
Riffle pools	Rock sills																
Potholes	Sediment traps																
Notched wing dams	Mussel substrates																
Anchor tree clumps	Bottomland Forest Restoration																
Vegetative plantings																	

Potential HREPs on the Refuge are identified, prioritized, and selected by a partnership which includes the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and the Departments of Natural Resources for the states of Minnesota, Wisconsin, Iowa, and Illinois. Once the projects are identified, the partners, along with the interested public, prioritize, select and plan each project. Considerations for prioritization, selection, and planning to meet overall program and individual project goals include ecological merits, Environmental Pool Plans, sequencing, geographic distribution, and available funds. In addition, the partners use the Habitat Needs Assessment, developed under EMP, as a tool for project identification and planning.

Refuge and other Fish and Wildlife Service personnel are completely involved with the entire HREP process including identifying, prioritizing, selecting, planning, designing, constructing, and evaluating all projects on the Refuge. The Refuge is also responsible for operating and maintaining all HREPs constructed on the Refuge. The Refuge employs an EMP Coordinator (engineer) to

oversee Refuge involvement in HREPs, to serve as a liaison between the Refuge and the other partners, and to ensure that projects are designed and built to serve their intended function with reasonable operation and maintenance costs. In addition, Refuge and other Fish and Wildlife Service personnel are involved with other interagency planning teams where EMP projects are identified, prioritized and selected such as the Fish and Wildlife Interagency Committee, Fish and Wildlife Work Group, River Resources Forum, River Resources Coordination Team, and the EMP Coordinating Committee.

To meet the habitat objectives of each project, several techniques are used, usually in combination: backwater dredging, water level management, island creation, shoreline stabilization, secondary channel modification, and aeration (USACE, 2004a). Table 15 describes the purposes of these techniques.

The Pool 8 Phase II HREP is an example of a project which combined several techniques to dramatically improve the habitat in Stoddard Bay, near Stoddard, Wisconsin. This project incorporated backwater dredging, island construction, and bank stabilization techniques to improve 500 acres of habitat (Figure 28). Wisconsin Department of Natural Resources monitoring of the area documented immediate vegetative response and among the highest abundance of bluegills in Pool 8 after the project was completed (USACE, 2004a). Duck and swan use in the area also increased significantly from the early 1990s pre-project conditions.

HREP design has evolved appreciably since the program began in 1986. As projects are completed and evaluated, design has improved and innovative new techniques have developed. Some examples:

- Island design has evolved from just being a wind and wave barrier to incorporating areas for specific habitat such as humps for turtles, mudflats for waterbirds, and dynamic shorelines for shorebirds. Islands are also designed with varied elevations above the average water level to provide additional vegetation habitat diversity.

Figure 28: Phase II Habitat Rehabilitation and Enhancement Project, Stoddard Islands, Upper Mississippi River NW&FR, Aerial Photo Sequence (Wisconsin Department of Natural Resources)

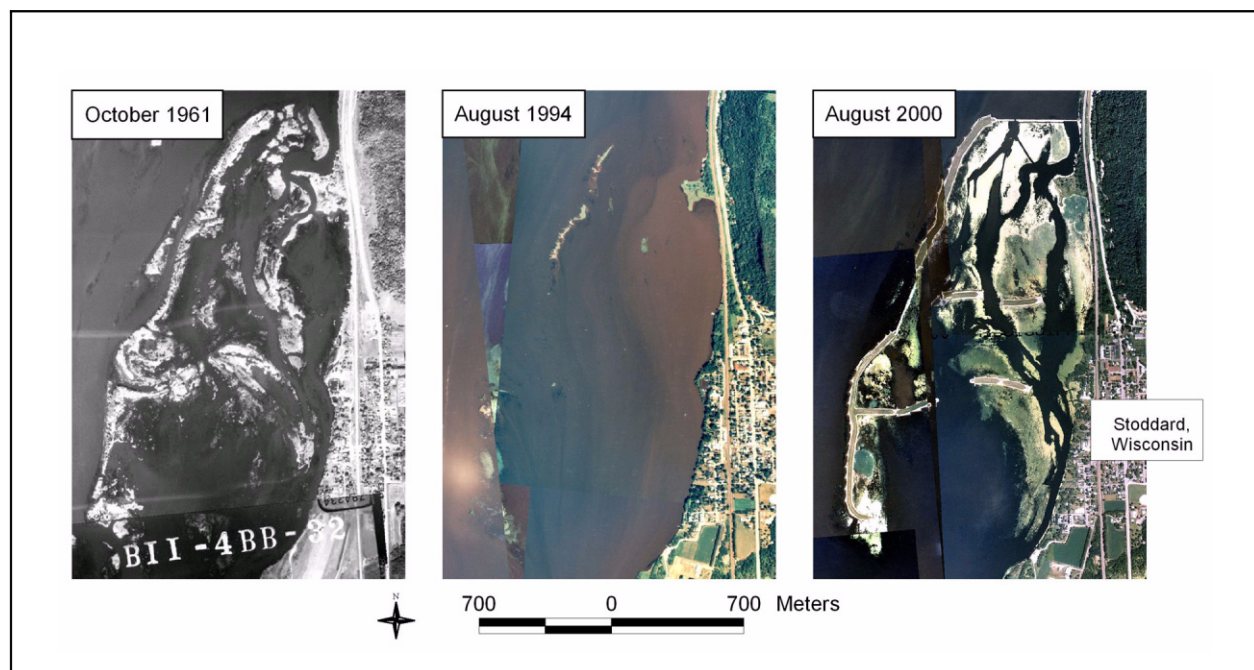


Figure 29: Constructed Islands with Sacrificial Berms, Rock Groins, and Native Vegetation, Upper Mississippi River NW&FR



- Island design has also evolved into providing more natural-looking layouts and features. Islands are now designed to replicate historical islands that have eroded away since the river was impounded. Use of rock for shoreline stability has decreased with the use of native vegetation such as willow plantings. Sacrificial berms with rock groins allow the river to shape and stabilize the islands which provides for a dynamic, more natural-looking shoreline (Figure 29).
- Seed islands are a new concept that developed as a direct result of the HREP program. Seed islands are designed for areas of flowing water where sediment transport is occurring. With the river's natural process, the sediment will deposit on these obstructions and form low islands which will protect areas from wave action and provide additional habitat diversity within the floodplain (Figure 30).
- HREPs now include designs for experimental features such as rock/log structures for offshore island protection which provide more diverse habitat than using only rock. Another experimental feature, wildlife loafing structures, consists of tree clumps extended into the river and anchored into island shorelines to provide loafing habitat for turtles and birds and to provide fish habitat (Figure 31).

3.2.18 Water Level Management

The purpose of water level management is to partially re-create the natural river hydrology that occurred before the locks and dams were constructed. The entire 261-mile length of the Refuge is impounded by the locks and dams, from Pool 4 through Pool 14. Temporarily lowering water levels behind dams during the summer months can stimulate the growth of aquatic plant beds in the lower portion of the pools. This process is called a drawdown.

Figure 30: Seed Islands Constructed and “Growing” on Upper Mississippi River NW&FR



Since the early 1990s the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, state natural resource agencies, navigation industry, and the public have been working together to perform drawdowns at various pools throughout the Upper Mississippi River. Refuge and other U.S. Fish and Wildlife Service personnel are completely involved with water level management and belong to two field-level multi-agency committees which work to recommend water level management practices in their respective navigation pools:

- Pools 1-10: Water Level Management Task Force, subcommittee of the River Resources Forum.
- Pools 11-22: Water Level Management Subcommittee, subcommittee of the Fish and Wildlife Interagency Committee of the River Resources Coordinating Team.

The Corps of Engineers operates the dams to provide a 9-foot channel for commercial navigation. (The dams do not provide flood control as many people believe.) Each dam has a specific operating plan and is regulated on the basis of discharge (i.e. flow) and maintaining certain water levels at its control point. During times of low flow, gates are lowered into the water backing up the river to maintain the 9-foot channel. As the flow increases, gates are raised allowing more water to pass through the dam while minimizing flooding on adjacent property. When the flow is great enough to provide a 9-foot channel without dams, gates are raised completely out of the water, resulting in the “open river” condition.

Figure 31: Wildlife Loafing Structures Placed on Constructed Islands Upper Mississippi River NW&FR



To perform a drawdown, water levels are temporarily reduced by half a foot to several feet behind specific dams during the summer months, mimicking natural water level fluctuations. The drawdown to the lower water level is performed gradually, usually over a two week period, in order to allow fish, mussels, and other wildlife to move and adjust to the water level rather than become stranded in an isolated area. The water level is held at the lowered level until the desired performance period is complete or discharges through the dam become too high or low to maintain the lowered level. Once the drawdown period is complete, the water level is gradually brought up to its normal level.

There are many factors that limit the use of drawdowns in specific river stretches. These include the amount of acres which can be economically exposed, how much dredging is required to maintain commercial navigation and recreational access to the river; affects to industry barge staging areas, locations of water intake pipes for industry or municipalities, and exposure of archeological sites. Drawdowns can only be performed under specific discharge ranges developed for each dam. Some dams have very narrow drawdown discharge ranges which makes them poor candidates for drawdowns. Within the Refuge, the Corps of Engineers has determined that pools 5, 7, 8, 9, 11, and 13 are best suited for drawdowns based on discharge conditions (USACE, 2004b) (Table 16).

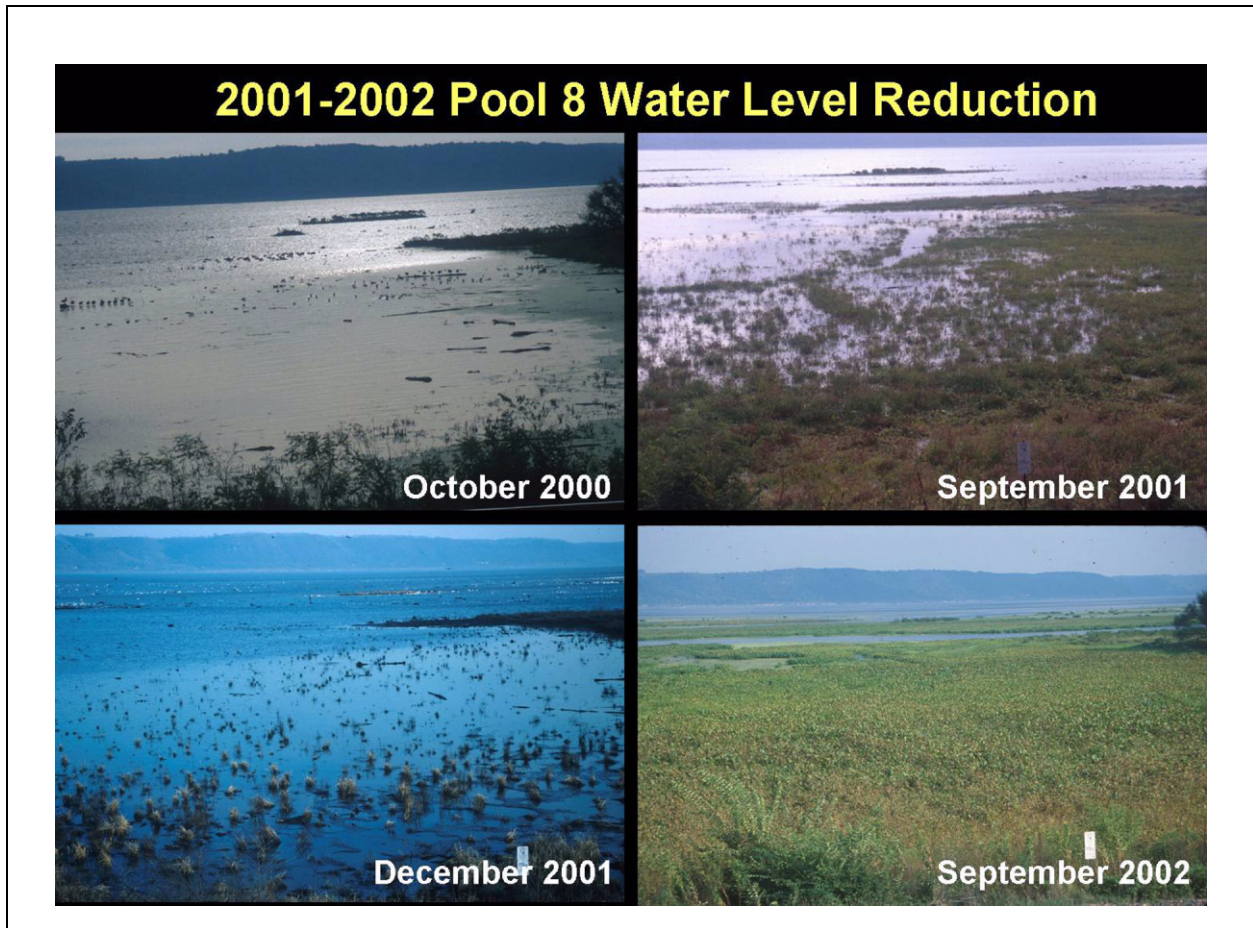
Table 16: Upper Mississippi River Pools on Refuge Most Suited for a Drawdown (Adapted from USACE, 2004b), Upper Mississippi River NW&FR

Pool	Drawdown ¹ Magnitude (ft)	Drawdown Success Rate	Acres Exposed	Dredging Required (yd ³)	Dredging Cost	Cost per Acre
5	1	95%	1,100	135,811	\$643,175	\$585
	2	81%	2,200	287,236	\$1,365,093	\$620
	3	55%	4,000	448,088	\$2,137,217	\$534
	4	38%	5,500	610,333	\$2,935,132	\$534
7	1	98%	1,206	0	\$0	\$0
	2	74%	2,331	215,000	\$1,280,000	\$549
	3	40%	3,385	475,000	\$2,800,000	\$827
8	1	74%	1,300	2,000	\$88,000	\$68
	2	50%	3,090	120,253	\$475,000	\$154
	3	33%	5,215	300,000	\$1,185,000	\$227
9	1	71%	4,751	0	\$0	\$0
	2	57%	6,932	75,000	\$375,000	\$54
	3	40%	9,497	165,000	\$825,000	\$87
11	1	91%	399	0	\$0	\$0
	2	86%	883	49,368	\$399,400	\$452
	3	86%	1,606	109,076	\$762,441	\$475
	4	64%	2,744	162,800	\$976,800	\$356
13	1	86%	1,560	35,200	\$316,800	\$203
	2	86%	2,822	131,032	\$1,021,093	\$362
	3	68%	4,519	229,768	\$1,581,487	\$350
	4	55%	6,821	325,600	\$1,953,600	\$286

¹ "Drawdown" refers to a reduction in the target operating level for the navigation pool, as measured at the dam.

Timing of the drawdown period is also important. The main purpose of a drawdown is to stimulate aquatic vegetation growth; therefore most drawdowns begin in mid-June and end in August or September. However other concerns are considered in the timing such as disturbance to nesting birds, disruption of fish spawning, exposure of mussel populations, and stranding of fish. Many of these concerns are mitigated by the gradual lowering and raising of the water levels.

Figure 32: Pool 8 Drawdown Sequence (USACE, St. Paul District)



To determine how successful a drawdown is, data such as land cover, vegetation surveys, and bathymetry is gathered prior to the drawdown. During a drawdown, the effects are carefully monitored; aerial photos are taken and vegetation surveys conducted to determine how much influence the drawdown had. In addition, the effects are monitored for several years after selected drawdowns to see how long the effects last. This information will help river managers determine when the next drawdown of that pool should occur to maximize the effects for that river reach.

Drawdowns have been successfully performed in several areas of the Upper Mississippi River. The U.S. Army Corps of Engineers, St. Louis District has been performing annual drawdowns of Pools 24, 25 and 26 (Melvin Price) since 1995 creating thousands of acres of critical vegetation in those pools. In the late 1990s, small, isolated drawdowns were performed successfully on the Refuge in Pools 5 and 9, demonstrating improved vegetation growth through a drawdown.

In Pool 8, large-scale drawdowns, 18-inches at the dam, were successfully performed in 2001 and 2002 (Figure 32). Over 1,950 acres of river bottom were exposed, growth of perennial emergent vegetation was robust, and arrowhead tuber production increased 16-fold in selected areas (RRF, 2004a). Drawdowns of Pool 13 have been attempted 3 times but were discontinued due to low flows. Planning is under way for several drawdowns on the Refuge. These plans include minor drawdowns (minimal costs and effects to main channel dredging) of Pools 6 and 9, and large-scale drawdowns of Pools 5, 8, and 13.

Drawdowns have proven to be a cost effective way to restore habitat in large reaches of the river. The resulting increased vegetation provides valuable food and cover for fish, migrating waterfowl, and other species along the river. In addition, the vegetation can absorb nutrients from upland runoff, helping reduce excess nitrogen and phosphorus input into the Mississippi River system. This could in turn contribute to the reduction of Gulf hypoxia.

3.3 General Public Use

3.3.1 Hunting

Hunting, one of the priority public uses of the Refuge System, has a deep history and tradition on the Refuge where several species of upland game, big game, and migratory waterfowl and birds are hunted. In fiscal year 2003, over 284,000 hunter visits were made to the Refuge, and approximately 87 percent of those visits were for waterfowl hunting (Table 17). Between 1999 and 2003, waterfowl hunting accounted for 74 to 90 percent of the estimated hunter visits. Portions of the Refuge are open to hunting in accordance with federal, state, and local regulations. Four states overlap with the Refuge, each with their own hunting regulations and seasons (Table 18), requiring hunters to be aware of which state they are hunting in on the Refuge.

Table 17: Estimated Annual Hunting Visits to the Upper Mississippi River NW&FR (Fiscal Years 1999-2003 Refuge Management Information System Reports)

Hunting	Estimated Total Number of Hunter Visits per Fiscal Year				
	1999	2000	2001	2002	2003
Waterfowl	160,936	176,313	189,453	339,430 ¹	248,640
Other Migratory Birds	1,645	3,386	4,000	4,591	4,899
Upland Game	19,414	11,872	10,542	10,046	10,084
Big Game	35,921	23,470	23,812	22,371	21,080
Total	217,916	215,041	227,807	376,438	284,703

1. This number is probably too high and reflects a reporting anomaly.

Table 18: Comparison of Hunting Seasons 2003 - 2004 on Upper Mississippi River NW&FR For Minnesota, Wisconsin, Iowa, Illinois

Event	Dates	Minnesota	Wisconsin	Iowa	Illinois
Deer Hunting					
Gun Season	Start	22-Nov-03	22-Nov-03	6-Dec-03	21-Nov-03
	End	30-Nov-03	30-Nov-03	10-Dec-03	23-Nov-03
	# of Days	9	9	5	3
Special Management Zones	Start		30-Oct-03	11-Dec-03	
	End		2-Nov-03	14-Dec-03	
	# of Days		4	4	
Wild Turkey Hunting					
Fall Season	Start	15-Oct-03	22-Oct-03	11-Oct-03	13-Oct-03
	End	19-Oct-03	26-Oct-03	9-Nov-03	5-Dec-03
	# of Days	5	5	30	54
Spring Season	Start	14-Apr-04	(Separated into 8 5-day seasons)	14-Apr-04	(Separated into 6 5-day seasons)
	End	27-May-04		23-May-04	12-Apr-04
	# of Days	44		40	35
Migratory Game Bird Hunting					
Dove	Start	1-Sep		1-Sep-03	N/A
	End	30-Oct		30-Oct-03	
	# of Days	60		60	
Sora and Virginia Rails	Start	1-Sep-03		4-Oct-03	18-Oct-03
	End	4-Nov-03		12-Oct-03	7-Dec-03
	# of Days	65		9	51
Common Snipe	Start	1-Sep-03		4-Oct-03	18-Oct-03
	End	4-Nov-03		12-Oct-03	7-Dec-03
	# of Days	65		9	51
Woodcock	Start	20-Sep-03		20-Sep-03	4-Oct-03
	End	3-Nov-03		3-Nov-03	17-Nov-03
	# of Days	45		45	45
Waterfowl Hunting					
Ducks	Start	27-Sep-03		4-Oct-03	18-Oct-03
	End	25-Nov-03		12-Oct-03	7-Dec-03
	# of Days	60		9	51

Table 18: Comparison of Hunting Seasons 2003 - 2004 on Upper Mississippi River NW&FR For Minnesota, Wisconsin, Iowa, Illinois (Continued)

Event	Dates	Minnesota		Wisconsin		Iowa		Illinois	
Canvas-backs	Start	11-Oct-03		18-Oct-03		18-Oct-03		16-Oct-03	
	End	9-Nov-03		16-Nov-03		16-Nov-03		14-Nov-03	
	# of Days	30		30		30		30	
Pintails	Start	27-Sep-03		4-Oct-03	18-Oct-03	20-Sep-03	11-Oct-03	16-Oct-03	
	End	26-Oct-03		12-Oct-03	7-Nov-03	24-Sep-03	4-Nov-03	14-Nov-03	
	# of Days	30		9	21	5	25	30	
Canada Geese	Start	27-Sep-03	12-Dec-03	4-Oct-03	18-Oct-03	27-Sep-03		1-Sep-03	16-Oct-03
	End	5-Dec-03	21-Dec-03	12-Oct-03	17-Dec-03	5-Dec-03		15-Sep-03	13-Jan-04
	# of Days	70	10	9	61	70		15	90
Furbearer Hunting									
Raccoon	Start	Continuous		18-Oct-03		1-Nov-03		5-Nov-03	
	End			31-Jan-04		31-Jan-04		10-Feb-04	
	# of Days	365		106		92		98	

Two managed hunts, Potter’s Marsh and Blanding Landing, are conducted on the Refuge (Appendix H). Since 1980, the Savanna District has conducted a lottery drawing for waterfowl hunting blind sites on 1,923 acres of Potter’s Marsh in Pool 13. Applicants pay a \$10 non-refundable application fee, and successful applicants pay an additional \$100 fee for the 49 blind sites. Successful applicants construct blinds for the season according to guidelines provided. Over 500 persons apply for a blind permit annually. In 2002, hunter bag checks showed that hunters using Potter’s Marsh blinds averaged 3.8 birds/day compared to 2.9 birds/day on other areas in Pool 13.

The other managed hunt for waterfowl hunting, Blanding Landing, is a 412-acre area within the former Savanna Army Depot that is now part of the Lost Mound Unit of the Refuge. The Illinois Department of Natural Resources conducts a managed hunt on the area.

3.3.2 Closed Areas

The Refuge currently includes 14 closed areas and one sanctuary encompassing 44,495 acres. The closed areas do not prohibit entry, but are closed to hunting and furbearer trapping during the duck hunting season and to migratory bird hunting at all times. The sanctuary, the Spring Lake Closed Area (Pool 13), is closed to all public entry from October 1 to the end of the duck hunting season. (See maps, Appendix P, and Table 6 in Appendix H.) For background information on the closed areas, refer to Chapter 1, Section 1.4.5.4 on page 23, Wildlife-Dependent Public Use Issues, Waterfowl Hunting Closed Areas and Section 3.2.7.1 on page 186 in Chapter 3.

In recent years, seven administrative “No Hunting Zones” totaling nearly 3,473 acres were established (6 on Pool 13 and 1 on Pool 7) for public safety, to reduce potential user group conflicts, and provide opportunities for wildlife observation. This includes part of the former Savanna Army Depot that is now part of the Lost Mound Unit. Due to contamination, 2,467 acres of the Lost Mound Unit Crooked Slough Backwater are closed to entry. These “No Hunting Zones” are not intended to augment the Refuge’s waterfowl closed area system. (see maps, Appendix P, and Table 2 in Appendix H.)

Table 19: Estimated Annual Fishing Visits to the Upper Mississippi River National Wildlife and Fish Refuge (Fiscal year 1999-2004 Refuge Management Information System reports.)

	Estimated Total Number of Fishing Visits per Fiscal Year					
	1999	2000	2001	2002	2003	2004
<i>Total</i>	824,983	1,150,477	1,057,978	1,141,173	943,916	1,303,130

3.3.3 Fishing

Fishing, another priority public use of the Refuge System, remains an important, traditional use of the Refuge. In fiscal year 2004, over 1 million visitors fished either from boat, shore or on the ice (Table 19). Fishing occurs year-round, with the possible exception of spring ice break-up. The most popular fishing spots are below the dams, near wing dams and spillway notches, and in backwaters. The Refuge provides many facilities to promote fishing including 26 boat ramps and 15 fishing piers and platforms (maps, Appendix P, and Table 1 in Appendix H).

According to a 2003 Minnesota Department of Natural Resources Mississippi River boating survey, half of all boaters indicated that their primary activity on the Mississippi River was fishing. In addition, 70 percent of boaters using public accesses indicated that fishing was their primary activity. This survey also concluded that the most common boat type on the Mississippi River in Pools 4-9 during the summer season is a fishing boat, followed by runabouts. A bass boat falls into the classification of a runabout because it has a windshield (MnDNR, 2004).

Fishing tournaments, particularly for bass and walleye, occur on the Refuge and are permitted by the states. Exact numbers of fishing tournaments are unknown since each state or other authority often has different permit and reporting requirements, or may not issue permits at all. In Illinois, only fishing tournaments initiating from an Illinois Department of Natural Resources launch site are required to have a permit. In Minnesota, permits are issued for tournaments with a 30 participant minimum. Permitted tournaments are limited to two weekends each month per pool. In Iowa, permits are issued to tournaments with 20 or more boats or 50 or more people. In addition, Iowa requires Illinois tournaments to have an Iowa permit if anglers are fishing in Iowa waters. Wisconsin issues permits for tournaments meeting a minimum participation threshold. Tournaments initiating from boat landings operated by the U.S. Army Corps of Engineers, Rock Island District are required to have permits if they meet the minimum threshold of 15 boats. Table 20 summarizes fishing tournaments held on the Refuge.

There are few restrictions to lessen the biological impacts from tournaments. Some of the states are requiring catch and release in the same pool that the fish were caught, and in Iowa, during June, July and August immediate release of walleyes is required.

3.3.4 Wildlife Observation and Photography

Two of the six priority public uses for the Refuge System are wildlife observation and photography. The Refuge provides outstanding wildlife viewing opportunities due to the abundance of eagles, swans, ducks, warblers, pelicans, herons and other birds. The National Scenic Byways that border the Refuge for hundreds of miles and the relatively open access to lands and waters of the Refuge, make the Refuge one of the premier wildlife viewing and photography areas in the nation. The Refuge provides many facilities to support wildlife observation and photography including 15 observation decks, six hiking trails, three biking trails, four canoe trails, and one auto tour route (maps, Appendix P, and Table 3, Table 4, Table 5, Table 14 and Table 18 in Appendix H). In fiscal year 2003, the Refuge recorded 220,000 wildlife observation and photography visits, and in fiscal year 2004, the visits increased to over 389,000 visits (Table 21).

Table 20: Summary of Upper Mississippi River Fishing Tournaments by State

Year	Tournament Fish Species					No. of Tournaments	No. of Boats	No. of Anglers (Estimated)
	All	Walleye	Bass	Panfish	Catfish			
Minnesota (Pools 4-7)								
1996	4	9	2	0	0	15	1,072	21,44
1997	2	13	4	0	0	19	1,125	2,250
1998	4	13	4	0	0	21	981	1,962
1999	4	12	6	0	0	22	1,116	2,232
2000	5	12	3	0	0	20	1,430	2,860
2001	4	12	6	1	0	23	1,366	2,732
2002	2	13	4	0	0	19	1,363	2,726
2003	5	15	6	0	0	26	1,992	3,984
<i>Totals for Minnesota</i>						165	10,445	20,890
Iowa (Pools 9-14)								
1996	6	14	38	6	3	67	1,573	3,146
1997	10	19	37		4	70	2,583	5,167
1998	11	16	32	1	5	65	1,401	2,803
1999	8	10	44		3	65	1,433	2,867
2000	13	16	72	1	2	104	2,666	5,333
2001	15	22	104		2	143	2,682	5,364
2002	3	17	102	1	2	125	4,997	9,994
<i>Totals for Iowa</i>						639	17,335	34,674
Wisconsin (Pools 4-11)								
2002		20	77	2		99	922	1,620
2003		12	24			36	686	810
<i>Totals for Wisconsin</i>						135	1,608	2,430
Illinois (Pool 13)								
2003			14			14	155	330
<i>Totals for Illinois</i>						14	155	330

Table 21: Estimated Annual Wildlife Observation and Photography Visits to the Upper Mississippi River NW&FR (Fiscal year 2002-2004 Refuge Management Information System reports)

Estimated Total Number of Wildlife Observation and Photography Visits per Fiscal Year		
2002	2003	2004
240,088	220,000	389,080

3.3.5 Interpretation and Environmental Education

For the Refuge System, interpretation and environmental education are two of the six priority public uses. Interpretive signs are the primary method of interpretation used by the Refuge. They are relatively inexpensive and convey messages at the visitor's convenience since they are available any time of the day or season. A total of 59 interpretive signs are used along the National Scenic Byways, bike trails, walking trails, overlooks and off-refuge sites overlooking the Refuge. In addition, 63 kiosks, 25 entrance signs and 29 official notice boards provide information about the Refuge (see maps, Appendix P, and Table 15 in Appendix H).

The Refuge has three full-time visitor services specialists, along with staff, volunteers and interns who conduct on- and off-site educational programs. The La Crosse and Savanna Districts have meeting rooms where educational activities are conducted. Lacking any classroom facilities, the McGregor and Winona Districts conduct all environmental education activities out on the Refuge or at off-site facilities.

Educational materials including books, posters, videos, equipment, and learning trunks are available for loan to area educators. In addition, Refuge staff, working with other agencies and organizations, coordinates special events including the Upper Mississippi River Festival, River Education Day, Birding Festivals, Eagle Days, and Refuge Week.

A yearly average of 6,000 students and teachers participate in on- and off-site environmental education activities. The number of students participating in on-site environmental education decreased 39 percent from 2000 to 2003 while off-site instruction increased 45 percent over the same period. This trend toward off-site instruction can be attributed to the lack of indoor and outdoor Refuge classroom facilities that accommodate students during inclement weather, as well as the lack of funding for school field trips. The Refuge has requested funding from the Friends Group to help defray bus transportation to Refuge sponsored activities such as the Upper Mississippi River Fest.



Cindy Samples, USFWS

3.3.6 Recreational Boating, Camping, and Other Beach-Related Uses

Although they are not wildlife-dependent priority uses of the Refuge System, an estimated 1.8 million visitors use the Refuge annually for recreational boating, camping, picnicking, swimming, social gatherings, and other beach-related uses. There is a long history of beach use on the Upper Mississippi River as the public took advantage of beach areas created by disposal of dredged sand during navigation channel maintenance operations. The public also takes advantage of natural sand shorelines and sand placement sites often called "bathtubs". For additional discussion of beach use refer to Chapter 1, section 1.4.5.5, Other Recreational Use Issues.

For 10 years, extensive data from aerial photo surveys has been collected to evaluate the extent of watercraft use along a 150-mile section of the main navigational channel during the Memorial Day to Labor Day summer season (Resource Studies Center, St. Mary's University of Minnesota, 2001). This study section starts at the lower end of Lake Pepin (Pool 4, River Mile 764.5) and ends at Guttenberg, Iowa (Pool 10, River Mile 614.2). Study data indicate that the highest percent of boating use occurs on Pools 10, 4 and 8. The areas that have the highest percentage of beached boats in the study area include:

- Pool 4: Wabasha Bridge to Teepeeota Point
- Pool 5: West Newton to Minneiska
- Pool 5A: Bass Camp to Fountain City boat yard
- Pool 8: Mouth of Root River to Deadman Slough Daymark
- Pool 10: Wisconsin River confluence to Lock and Dam 10

Boating activity decreases where there are fewer beaches. In 2003, the Minnesota Department of Natural Resources conducted a recreational boating study on the Mississippi River, Pools 4-9, from Memorial Day through Labor Day (MN DNR, 2004). This study involved direct interviews and the use of questionnaires. It revealed that there were 670,345 boater-occasions (number of people in a boat using the river). While previous aerial photo surveys were limited to the main navigation channel, the Minnesota study attempted to locate all boats, regardless of their location on the river. A comparison of the 2003 Minnesota study to previous aerial photo counts shows the photos measure approximately 60 percent of all boating use. Therefore, it was estimated that 60 percent of recreational boating takes place in the main navigation channel, and 40 percent takes place in side channels and backwater areas. The 2003 Minnesota study also noted several boating trip characteristics:

- The average boating party size is 2.9 people, most of whom are adults.
- Overnight boating trips account for 12 percent of all trips.
- Most boaters (87 percent) do not leave (lock out) the pool into which they launch.
- One-third of all trips (32 percent) involve beaching.
- Anglers spend most of their time in side channels and backwaters.
- Fishing is the primary activity for half of all boaters.

The Refuge has designated four canoe trails and one electric motor area for recreational boaters engaged in “silent sport” activities such as kayaking and canoeing. In these areas, the public can at times experience the quiet and solitude of the Refuge backwaters (maps, Appendix P, and Table 5 and Table 12 in Appendix H). Boats with motors are allowed in the canoe trail areas.

On several areas of the Refuge, boat traffic levels and size of boat wakes is leading to erosion of island and shoreline habitat. Some areas also present a safety hazard for boaters due to level of use and blind spots in the channel. To address these issues, there are 45 no-wake zones on the Refuge.

While not a wildlife-dependent use, camping is allowed on the Refuge. However, camping at any one site on the Refuge is restricted to no longer than 14 days during any 30-consecutive day period. In addition, tents, camping equipment, boats or other property cannot be left unattended at any site for over 24 hours. During waterfowl hunting seasons, camping is prohibited within areas posted Area Closed, No Hunting Zone, or on any sites not clearly visible from the main navigation channel.

3.3.7 Public Use Facilities

The Refuge has four visitor contact stations, one each located at the La Crosse, McGregor and Savanna District Offices and one located at the Lost Mound Unit (Table 22). These contact stations feature small displays areas adjacent to the office area. The La Crosse and Savanna visitor contact stations also feature a sales area with natural history books and other products.

The Refuge maintains 26 boat landings with 700 parking spaces (maps Appendix P, Table 1 in Appendix H). The landings can accommodate flat bottom boats, v-bottom fishing boats, runabouts, powerboats, pontoon boats, canoes, and kayaks. An additional 222 non-U.S. Fish and Wildlife Service landings also provide access to the Refuge. There are numerous walk-in sites and roadside

Table 22: Upper Mississippi River NW&FR Visitor Contact Stations

District	Exhibits	Classroom	Book Store	Year Opened
La Crosse	Yes	Yes	Yes	1995
McGregor	Yes	No	No	1986
Savanna	Yes	Yes	Yes	2000
Savanna, Lost Mound Unit	Yes	No	No	1999

pull-off areas where access management and control is varied and inconsistent. Providing access to the Refuge is challenging given the rail and highway systems in place, and the physical restrictions of floodplain and terrain.

3.3.8 Scenic Byways

The Refuge winds through beautiful bluff country in Minnesota, Wisconsin, Iowa and Illinois. The Great River Road National Scenic Byways border the Refuge on both sides (Figure 33), providing access to many of the Refuge’s visitor contact stations, boat ramps, trails, observation decks, kiosks, and interpretive signs. The Great River Road includes the following highways near the Refuge:

- Minnesota: State Highway 61
- Wisconsin: State Highway 35
- Iowa: State Route 26, Iowa 340, US Highway 52
- Illinois: US Highway 20, State Route 84

In addition to the Great River Road, the Lincoln Highway National Scenic Byway, US 30, intersects the Refuge at Fulton, Illinois. Refuge personnel work with state representatives of the scenic byways on projects that are beneficial to both the Refuge and the scenic byways.

3.4 Socioeconomic

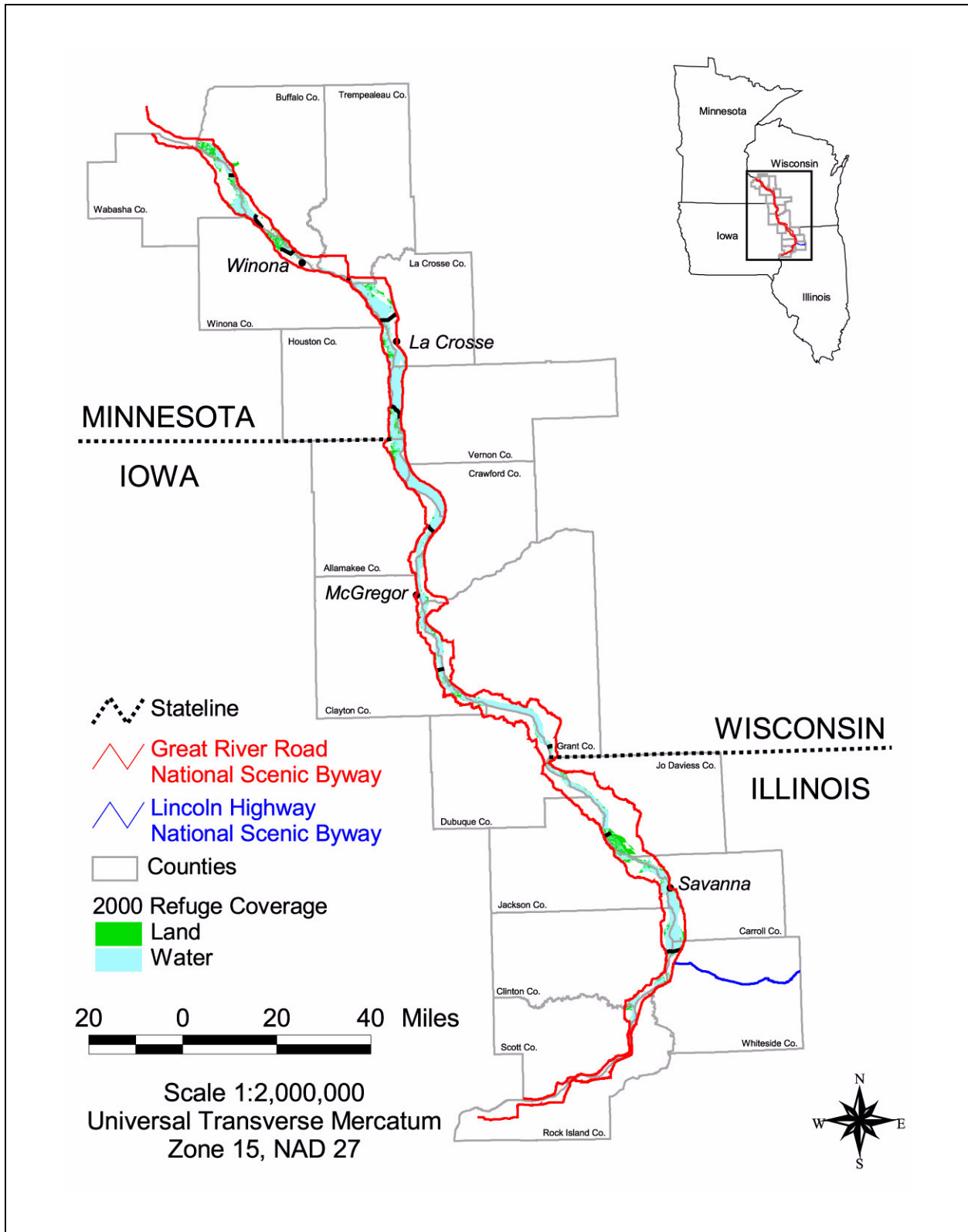
The Upper Mississippi River NW&FR comprises over 239,000 acres along the Mississippi River in the Upper Midwest. The Refuge covers 261 river miles beginning north of Wabasha, Minnesota, where the Chippewa River flows into the Mississippi River and ending just above Rock Island, Illinois. The Refuge has four management districts that encompass four states and 19 counties.

This section summarizes James Caudill’s socio-economic information about the Refuge. For further documentation refer to his two reports, “Affected Environment: Socio-Economics” and “The Economic Effects of the Upper Mississippi River National Wildlife and Fish Refuge Baseline and Effects of Alternatives.” Both documents can be found on the Refuge planning web site <http://midwest.fws.gov/planning/uppermiss/index.html> .

3.4.1 Population, Income, Employment and Demographics

For the Refuge area (19 counties) as a whole, the 2001 census population was over 933,000 which represented a 2.8 percent increase from 1991. This increase lagged behind population increases for the four states and for the U.S. Total employment in 2001 was over 589,000 for the Refuge area, representing a 12.7 increase from 1991. This increase, as with population, lagged behind state and U.S. employment increases. Per capita income (total area income [county, state or U.S.] divided by

Figure 33: National Scenic Byways Bordering the Upper Mississippi River NW&FR



area population, and adjusted for inflation to 2003 dollars) was \$25,514 for the Refuge area counties, increasing by 16.9 percent from 1991. While greater than the U.S. per capita increase, state increases in per capita income were greater than the Refuge area counties, ranging from a 24.4 percent increase for Minnesota to a 17.5 percent increase for Iowa.

While most of the counties are rural in nature, two of the districts have a fairly low level of farm-related employment. The Savanna District has only 4.2 percent of total employment in farming and the La Crosse District has only 6.0 percent of total employment in farming (Table 23). The other two districts, Winona and McGregor, show farm employment comprising 9.8 and 10.3 percent of total employment respectively. All four districts show a ten-year decline in farm-related employment, ranging from a 9.5 percent decline in the Savanna District to a 7.1 percent decline for both the Winona and McGregor Districts.

Manufacturing, retail trade and services comprise the major employment sectors for all four districts. These three sectors comprise 59 percent of total employment for the Winona District, 61.5 percent for the La Crosse District, 59.3 percent for the McGregor District and 62.9 percent for the Savanna District. The fastest growing sectors for the Winona District are manufacturing (23.2 percent), services (21.4 percent) and retail trade (14.4 percent). In the La Crosse District, the fastest growing sectors include finance, insurance, and real estate (FIRE) (39.0 percent), services (34.0 percent) and wholesale trade (28.4 percent). For McGregor District, services was the fastest growing sector (32.5 percent), with retail trade sector (16.9 percent) and manufacturing (15.1 percent) following. In the Savanna District, the service sector had the highest increase, 33.5 percent, followed by FIRE (11.1 percent) and the retail trade sector (6.9 percent).

Table 23: Employment Characteristics by Major Economic Sectors and Refuge District¹

Sector	Winona District		La Crosse District		McGregor District		Savanna District	
	Percent change 1990-2000	Sector as percent of total employment 2000	Percent change 1990-2000	Sector as percent of total employment 2000	Percent change 1990-2000	Sector as percent of total employment 2000	Percent change 1990-2000	Sector as percent of total employment 2000
Farm	- 7.1	9.8	- 9.0	6.0	- 7.1	10.3	- 9.5	4.2
Nonfarm	24.4	90.2	22.6	94.0	20.0	89.7	14.8	95.8
Manufacturing	23.2	23.2	8.3	16.9	1.5	15.1	2.0	15.8
Wholesale	4.5	4.5	28.4	5.4	31.0	4.4	6.9	4.9
Retail	14.4	14.4	17.6	16.9	21.1	16.9	9.8	17.6
FIRE	3.5	3.5	39.0	5.1	26.7	5.0	11.1	5.7
Services	21.4	21.4	34.0	27.7	32.5	27.3	33.5	29.5
Government	11.8	11.8	14.3	12.4	- 2.3	10.1	- 4.2	11.3
Other	NA	21.3	NA	15.8	NA	21.4	NA	15.2

1. Source: Caudill, 2004

Table 24: Total Economic Impacts of Recreational Use: Upper Mississippi River NW&FR, 2003¹

Activity	Expenditures	Output	Jobs	Job Income
<i>Wildlife Observation</i>	\$4,063,292	\$4,968,614	68	\$1,071,484
<i>Small game hunting</i>	\$160,431	\$196,291	3	\$42,497
<i>Big game hunting</i>	\$501,106	\$619,673	8	\$142,627
<i>Migratory bird hunting</i>	\$4,542,451	\$5,609,297	76	\$1,268,309
<i>Fishing</i>	\$29,576,333	\$36,223,053	483	\$8,119,297
<i>Boating</i>	\$34,673,216	\$42,266,199	535	\$9,044,582
<i>Refuge Totals</i>	\$73,516,829	\$89,883,127	1,173	\$19,688,796

1.Source: Caudill, 2004a)

Caudill’s “Affected Environment: Socio-Economics” (Caudill, 2004) report also details the demographics of the 19 counties in the Refuge area. The populations are more than 95 percent white. When compared to their respective states and the U.S. as a whole, the counties within the Refuge area have a:

- lower proportion of children under 5.
- higher proportion of people over 65.
- varying proportion of high school graduates from slightly lower to slightly higher.
- lower rate of college graduates.
- higher rate of home ownership.
- about the same rate of population below the poverty line.

3.4.2 Refuge Economics

Recreation visits to the Refuge and Refuge budget expenditures generate significant local and regional economic effects (Caudill, 2004a). In 2003, the Refuge accounted for over 3 million visitor days; boating, camping, and other beach-related uses accounted for 43 percent of total visitor days; fishing accounted for 38.3 percent; wildlife observation for 9.7 percent; migratory waterfowl hunting for 8 percent; big game hunting for 0.7 percent and small game hunting for 0.3 percent. These visits resulted in \$73.5 million in retail expenditures in the nineteen-county area surrounding the Refuge. Total economic output associated with these expenditures amounted to \$89.9 million (Table 24, Caudill, 2004a).

Recreational use of the Refuge generated 1,173 jobs in the nineteen county area with job income of \$19.7 million. Non-residents (living outside the 19-county area) spent \$27.8 million in the local area resulting in \$33.9 million in economic output and 431 jobs with labor income of \$7.4 million. Recreational use of the Refuge generated over \$9.6 million in federal, state and local taxes. The economic value of the recreational use of the Refuge is estimated to be between \$46 million and \$60 million annually.

Refuge budget expenditures average over \$5 million annually. These expenditures generate \$8.3 million in economic output, 93 jobs and over \$1.7 million in job income. Over \$731,000 in federal, state and local taxes are generated by Refuge budget expenditures.

Considering both Refuge visitor and budget expenditures, the Refuge generates over \$19 million annually in expenditures and economic value, \$98 million in economic output, 1,266 jobs with an income of \$21.4 million and federal, state and local taxes of \$10.4 million. Each dollar of Refuge budget expenditures generates \$23.90 of economic effects and \$2.08 of federal, state and local tax revenue.

3.4.3 Commercial Use of Refuge

Commercial use of the Refuge consists of hunting, wildlife observation and fishing guides, commercial trappers, recreational fish float operators and commercial fishing. Farming, grazing and timber harvesting have a minimal impact on the Refuge. Commercial navigation passes through the Refuge.

3.4.3.1 Hunting, Fishing and Other Guide Services

A number of guides operate on the Refuge, providing services for anglers, hunters and wildlife observers. In recent years, the Refuge has averaged about 15 guides operating on the Refuge per year. Specific information on the number of clients, party size and client expenditures for guide services is not available, but it is estimated that each guide is engaged for about 30 – 40 trips per year. Guides who obtain permits from the Refuge pay \$100 annually.

3.4.3.2 Commercial Trapping

Muskrat, beaver, raccoon, and mink are the primary furbearing species harvested on the Refuge. A relatively few number of red fox and otter are also trapped. Over 75 percent of the animals trapped are muskrats. The average age of trappers continues to increase as fewer young trappers replace the older trappers who either quit or pass away. Four states overlap the Refuge, each with their own trapping regulations and seasons (Table 25). This is a source of confusion for some trappers, who must be well aware of what state they are in when trapping on the Refuge.

Table 25: Comparison of Trapping Seasons, Upper Mississippi River NW&FR

Furbearer Trapping	Dates	Minnesota	Wisconsin	Iowa	Illinois
<i>Muskrat</i>	Start	1-Nov-03	10-Nov-03	1-Nov-03	5-Nov-03
	End	29-Feb-04	29-Feb-04	31-Jan-04	15-Jan-04
	# of Days	121	112	92	72
<i>Otter</i>	Start	Not Allowed	6-Dec-03	Continuously Closed	N/A
	End	N/A	7-Mar-04	N/A	N/A
	# of Days	0	93	0	0
<i>Beaver</i>	Start	1-Nov-03	8-Dec-03	1-Nov-03	5-Nov-03
	End	15-May-04 ¹	15-Mar-04	15-Apr-04 ¹	31-Mar-04 ¹
	# of Days	197	99	167	148

1. Refuge season closes March 16.

Table 26: Estimated Gross Revenue from Furbearers Harvested by 245 Trappers During the 2003-2004 Trapping Season, Upper Mississippi River NW&FR

Species	Fur Prices from Various Sources ¹				Average Price (Dollars)	Trapper-reported Harvest on Refuge	Gross Revenue (Dollars)
	Wisconsin Fur Prices	Fur Harvesters Auction, June 2004 (Dollars)	North American Fur Auctions, 2004 (Dollars)	Wiebke Fur Company, LaCross Wis., November 2004 (Dollars)			
Beaver	15	17	21	15	17	1,755	29,835
Raccoon	12	14	n/a	11	12	1,533	\$18,907
Otter	89	84	105	80	90	46	4,117
Muskrat	2.65	3	n/a	2.50	2.72	36,108	98,093
Red Fox	21	n/a	20	15	19	4	75
Mink	19	13	n/a	11	14	380	5,447

1. Fur prices rounded to the nearest dollar, except muskrat.

Trappers must have a Special Use Permit and pay an annual fee of \$20.00 (since 2000) to trap on the Refuge. Annual revenue from trapping fees has averaged \$4,740 since 2000. In the 2003-04 season, 245 active trappers spent an average of 24.1 days each trapping on the Refuge; they harvested 36,108 muskrats (Table 26). Based on an average price of \$2.72 per pelt (based on a Wisconsin Department of Natural Resources survey, one local buyer, and two national auctions), gross revenue for the muskrat harvest by these trappers amounted to \$98,214 (Table 26). Gross revenue for beaver was \$29,835, for otter it was \$4,117. Pelt prices vary considerably between years, for example, muskrat prices have ranged from \$6.50 per pelt in 1979, to \$4.00 in 1987, \$1.00 in 1990, and \$2-2.50 in 2004. Beaver sales at the North American Fur Auctions varied between \$16 and \$21 from 2000 to 2004. For further details on the Refuge's trapping program refer to section 3.2.1.4: Mammals.

3.4.3.3 Fish Float Operators

Fish floats are private businesses which provide fishing opportunities to the public for a fee. Operators pick up customers via boat and transport them to the fishing facility (float) below a lock and dam. There are currently four fish float operators within Refuge boundaries. About 15,000 anglers per year use the floats with the largest operator servicing about 6,000 anglers per year while the remaining operators average about 3,000 anglers each per year. For calendar year 2003 gross receipts ranged from \$10,000 to \$44,000 per float. Float operators are required to obtain an annual special use permit from the Refuge for a fee of \$100.

3.4.3.4 Commercial Fishing

About 17 species of fish plus turtles are caught commercially within Refuge boundaries. For Pools 4-14 from 1998 to 2001, annual commercial catch averaged 6.6 million pounds with a gross value based on ex vessel price (the price paid to the commercial fisher dockside; i.e., before any processing or distribution) per pound of \$1.7 million (2003 dollars). Commercial catch of turtles averaged 8,475 pounds annually with a gross value of \$4,553. The annual number of commercial fisherman averaged 527 for a gross revenue per fisherman of \$3,307 based on minimum dead weight value. Licenses are issued by the states with the Refuge issuing special use permits for Spring Lake in Pool 13. Table 27 provides a summary of commercial fishing catch on the Refuge.

Table 27: Summary of Commercial Fishing, Upper Mississippi River NW&FR

Year	Species	Pounds of Fish	Value (\$) ¹	Pounds of Turtles	Value (\$) ¹	No. of Fishermen
Pools 4-14						
1998	17	6.25 million	1.50 million	8,900	4,100	599
1999	17	5.98 million	1.53 million	8,000	3,600	397
2000	17	5.61 million	1.49 million	9,000	4,700	537
2001	17	8.46 million	1.81 million	8,000	4,400	576
Spring Lake Pool 13						
1998	3	35,595	5,339	N/A	N/A	14
1999	3	63,557	10,169	N/A	N/A	13
2000	3	73,544	11,031	N/A	N/A	12
2001	3	38,322	5,365	N/A	N/A	8
2002	3	63,463	9,519	N/A	N/A	14
2003	3	57,532	8,629	N/A	N/A	14

1. Minimum value (\$) based on dead weight.

3.4.3.5 Clamming

There is virtually no clamming industry on the Mississippi River at the present time. In the early 1990s clamming was a million dollar industry. The market for clams is primarily Japan where the shells are used to implant oysters for pearl production. In 1997, washboard mussel harvest was closed on the Mississippi River, stock pile of shells in Japan, and a disastrous Red Tide in Japan destroyed oyster beds creating the depressed market for clamming. Today the resource is intact; however, the price is what drives this industry and with the introduction of a synthetic bead into pearl production it is not likely this industry will be revived. The states still require permits for clamming. Clam populations have been declining (refer to the Freshwater Mussels section).

3.4.4 Administration and Facilities

The Refuge is divided into four districts to optimize management, administrative, and public service effectiveness and efficiency. District offices are located in Winona, Minnesota (Pools 4-6), La Crosse, Wisconsin (Pools 7-8), McGregor, Iowa (Pools 9-11), and Savanna, Illinois (Pools 12-14). The Refuge currently has 37 permanent employees and an annual base operations and maintenance budget of \$3.1 million.

The Refuge has its overall Headquarters in Winona, Minnesota, that provides administrative, biological, engineering, private lands, mapping, visitor services, planning, and policy support to the districts. District managers are supervised by the refuge manager located in Winona. Two other national wildlife refuges, Trempealeau and Driftless Area, are also part of the Refuge complex and are under the supervision of the Winona and McGregor district managers, respectively.

The Headquarters office is currently in the old historic Exchange Building in downtown Winona, a building shared with private enterprise. Customers to these businesses provide a considerable distraction in terms of traffic and non-refuge-related inquiries. The building has no physical connection to the Refuge. The building offers little to no Refuge or Fish and Wildlife Service identity

and very limited visitor parking. There are inadequacies in the heating and cooling system, disabled access, and staff parking. The building space is currently rented for \$70,000 per year. The current lease expires in 2006. Boats and other vehicles and equipment are stored in a garage a few blocks away.

The Winona District is currently located on the second floor of the Exchange Building in downtown Winona, Minnesota as noted above for Headquarters. The same inadequacies affect the operation of Winona District. The District shop is one stall of an old garage attached to the Sign Shop several blocks away. Other storage includes an open pole barn built about 10 years ago. Both of these facilities are Fish and Wildlife Service-owned. With the pending replacement of the Sign Shop, Winona will lose their current shop and storage facilities.

La Crosse District currently has a modern office and limited garage space that is rented through General Services Administration. The building is shared by Fisheries, Law Enforcement, and National Wetland Inventory staff. The building has a shared visitor contact component with exhibits, meeting rooms, and a cooperative sales area. The La Crosse District accounts for approximately \$100,000 of the annual rental cost paid by the Service, and soon, the Region. The current lease expires in December 2004 and will be extended for 5 years, with an option to vacate in 3 years, or the end of 2007. The District also has a modest maintenance and storage facility built in the 1960s near La Crescent, Minnesota. This building is owned by the Fish and Wildlife Service, and needs to be replaced in a different location since it is in the floodplain. The current office, although modern and adequate, presents a high, re-occurring annual rental cost, is several miles from the Refuge, and is located in a highly developed retail business area of Onalaska. The office is difficult to find and not frequented by most people who use the Refuge.

The McGregor District office is currently Service-owned but on a small site with severe physical limitations due to tract size and a sheer bluff in the back and a major highway and rail line in front. Staff is crammed into tiny offices or divided areas/hallways, and an excess Federal Emergency Management Agency trailer is wedged between the office and the cliff. The office and trailer were cited in 2004 for several structural/location-related safety violations which are beyond the staff's control. The office turn from the highway is unsafe, and there is not enough space for parking. Staff park across the highway on private land, although this arrangement is dependent on the continued good will of the owner. Staged trains sometimes block access to personal vehicles. A small maintenance building is also on the site. Roof problems were repaired and the storage area expanded upward during a 2004 renovation, but the building is still judged inadequate from both a size and location standpoint. Three equipment storage buildings are located in Cassville, Lansing, and Genoa for logistical reasons given the size and length of the District. The Cassville and Genoa buildings were built in the 1960s and are reaching the end of their useful life. The Lansing building is newer and deemed adequate.

The Savanna District has a new office and visitor contact station (Ingersoll Learning Center) on the Refuge adjacent to wildlife viewing areas and hiking/biking trails. However, the environmental education and interpretation program is limited by inadequate facility size. An equipment storage building was recently constructed, but the District has a tiny, outdated maintenance building.



Ingersoll Learning Center, Savanna District. USFWS

The existing Lost Mound Unit office is an old Savanna Army Depot administrative building shared with the Illinois Department of Natural Resources. There is an area dedicated to locally prepared displays. Although part of the Savanna District, the Lost Mound Unit has its own identity and visitor-base from the Savanna Depot era, and

promises to be a major attraction for visitors given its large size, location, unique wildlife and prairie, and history in the greater community. A new office and maintenance facility would enhance the Service's image and the quality of service and programs to the public.

3.5 Cultural Resources and Historic Preservation

Archeological records show evidence of human use along the Mississippi River from the earliest generally accepted cultural period, the Paleo-Indian tradition that commenced about 12,000 years before present. Archeologists hypothesize that small family-groups of hunters-gatherers roamed widely in search of mega-fauna and other resources. The presence of these people is usually recognized through surface finds of their fluted spear points; none of these points have been identified within the Refuge.

Numerous sites from the following Archaic tradition have been found on the Refuge. People of this 6,000-year long tradition adapted their subsistence practices to changing environmental, habitat, and resources based changes including the 2,000-year very warm and dry altithermal that ended about 5,000 years ago. Extensive trade routes brought in exotic materials. People buried their dead in natural knolls. Archaic tradition cultural practices gradually evolved into the subsequent Woodland tradition.

Commencing around 3,000 years ago was the Woodland tradition. Archeological sites are widespread in the Refuge and usually include pottery, arrowheads, and artificial mounds used for human burials and for other purposes. People exploited a wide range of habitats in an environment similar to that found in the early historic period. The people lived in larger, semi-permanent villages, practiced horticulture, and at some period participated in long distance trade. In some respects, Europeans coming into the Upper Mississippi River valley encountered people of the Woodland culture, some of whom may have been the ancestors of the Eastern Dakota Indians.

The Mississippian period started in the Saint Louis area about 1,000 years ago and moved up the Mississippi River. But few archeological sites of that period have been found in the Refuge area. A related cultural group known as the Oneota, which may have developed from the Late Woodland culture, is more evident in the archeological record. Late Oneota people probably were the ancestors of the Ioway, Oto, Missouri, and Winnebago Indian tribes.

The Upper Mississippi River was, of course, the major route of European-based exploration and subsequent Western culture population growth and development. Archeological sites associated with exploration, military activities, the fur trade, lead and zinc mining, lumbering, steamboats, bridges, railroads, and conservation are known or expected along most of the river.

The following listed Indian tribes have been recognized by the federal government or self-identified by the tribe as having a potential concern for traditional cultural resources, sacred sites, and cultural hunting and gathering areas in the counties in which the Refuge is located.

- Bad River Band, Chippewa
- Boise Forte Band, Chippewa
- Fond du Lac Band, Chippewa
- Grand Portage Band, Chippewa
- Lac Courte Oreilles Band, Chippewa
- Lac du Flambeau, Chippewa
- Leech Lake Band, Chippewa
- Mille Lacs Band, Chippewa

- Red Cliff Band, Chippewa
- Red Lake Band, Chippewa
- Sandy Lake Band, Chippewa
- Sokaogon Chippewa
- Devils Lake (Spirit Lake) Sioux
- Flandreau Santee Sioux
- Lower Brule Sioux
- Lower Sioux Mdewakanton
- Prairie Island Sioux
- Santee Sioux
- Shakopee Mdewakanton Sioux
- Sisseton-Whapeton Sioux
- Upper Sioux Community
- Iowa Tribe of Kansas
- Iowa tribe of Oklahoma
- Menominee Indian Tribe
- Miami Tribe
- Stockbridge-Munsee
- Peoria Indian Tribe
- Citizen Potawatomi
- Forest County Potawatomi
- Hannahville Indian Community, Potawatomi
- Prairie Band of Potawatomi
- Sac & Fox Nation of Missouri
- Sac & Fox Tribe of the Mississippi
- Ho-Chunk Nation
- Winnebago Tribe of Nebraska

Although Indian tribes are generally understood to have concerns about traditional cultural properties, other organizations such as church congregations, civic groups, and county historical societies could have similar concerns.

The Refuge archeological collections contain prehistoric artifacts currently not associated with any modern tribe. Furthermore, the collections contain human remains but no funerary objects, sacred objects or objects of cultural patrimony as defined in the Native American Graves Protection and Repatriation Act. Although not all sites of historic period Indian occupation have been identified on the Refuge, they could be located and could contain cultural items.

The Refuge has museum collections that are managed under a Refuge Scope of Collection Statement dated October 31, 1994. To date, 108 archeological and geomorphological and history and research investigations have produced a calculated 129,339 artifacts from Refuge lands; artifacts are or will be stored at several repositories under terms of cooperative agreements. Artifacts are owned by the federal government and can be recalled by the Service at any time. Some historic items and historic documents are housed at the Refuge headquarters. From 1999 through 2001 the Refuge contracted to have the documents and photographs scanned into a data base.

A cultural resources overview and management study was prepared in 2003 as part of the Comprehensive Conservation Plans for the Refuge and Trempealeau National Wildlife Refuge (Gregory, et al., 2003). The document is available at Refuge Headquarters, Winona, Minnesota. The

report presents a cultural history beginning 12,000 years ago through prehistoric and historic periods, ending in the 20th century. An inventory of cultural sites is not included. The document has a chapter about consultation processes identified in the National Historic Preservation Act of 1966 as amended, and a chapter that summarizes the methodology of, and responses to, a questionnaire sent to over 200 tribal communities, historical societies, and research groups who have potential interest in resources on the Refuge. The report concludes that a variety of cultural resources must be considered during any field projects associated with the Refuge. A comprehensive bibliography of cultural resources reports produced for studies performed within the Refuge is also included. Finally, a supplement to the report contains a manual for Native American Consultation documents that may be used or modified for Service purposes.

Cultural resources are an important part of the nation's heritage. The U.S. Fish and Wildlife Service is committed to protecting valuable evidence of human interactions with each other and the landscape. Protection is accomplished in conjunction with the U.S. Fish and Wildlife Service's mandate to protect fish, wildlife, and plant resources.

Chapter 4: Environmental Consequences

4.1 Introduction

This chapter evaluates the four alternatives on the basis of environmental consequences (effects or impacts) to the environment described in Chapter 3. This evaluation is conducted in three parts. First, there is a discussion of the effects common to all alternatives. Second, the effects of each alternative are analyzed for each of more than 25 physical, biological, and socioeconomic parameters or concerns. A table at the end of the chapter (Table 33 on page 286) helps compare and contrast these effects. Lastly, the cumulative impacts of the alternatives are discussed.

As described in Chapter 2, four alternatives are being considered. Alternative A, No Action, would maintain the current level of effort on fish and wildlife and habitat management. Public use programs and regulations would remain virtually unchanged. Alternative B, Wildlife Focus, would increase the level of effort on fish, wildlife, and habitat management. Some public use opportunities would remain the same and others reduced in favor of wildlife and habitat protection. Alternative C, Public Use Focus, would increase the level of effort on public use opportunities and programs. The current level of effort on many fish, wildlife, and habitat management activities would remain the same, but decrease on some activities in favor of public use. Alternative D, Wildlife and Integrated Public Use Focus, would increase the level of effort on fish, wildlife, and habitat management. It would take a more proactive approach to public use management to ensure a diversity of opportunities for a broad spectrum of users, both for wildlife-dependent uses and traditional and appropriate non-wildlife uses. This alternative is the preferred alternative.



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4.2 Effects Common to All Alternatives

4.2.1 Environmental Justice

Executive Order 12898 “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” was signed by President Bill Clinton on February 11, 1994, to focus federal attention on the environmental and human health conditions of minority and low-income populations with the goal of achieving environmental protection for all communities. The Order directed federal agencies to develop environmental justice strategies to aid in identifying and addressing disproportionately high and adverse human health or environmental effects of their

programs, policies, and activities on minority and low-income populations. The Order is also intended to promote nondiscrimination in federal programs substantially affecting human health and the environment, and to provide minority and low-income communities access to public information and participation in matters relating to human health or the environment.

Some of the alternative objectives in the Draft CCP and EIS have the potential for both positive and negative impacts on minority or low-income segments of the population. The elimination of permanent waterfowl hunting blinds in Alternatives B thru D would be a positive impact since it would open more areas to all persons interested in waterfowl hunting without regard to their means or ability to construct permanent blinds. Establishing a managed hunt with fee in the Barrel Blinds area of Lake Onalaska in Pool 7 (Alternative D) could exclude low-income waterfowl hunters. However, this alternative also includes a “free Saturdays” provision to ensure that people of all income levels would have the opportunity to participate in the drawings. The \$100 fee for the existing Potter’s March hunt could be limiting for low-income hunters across all Alternatives. However, the blinds or staked areas are available when not being used by the permit holder (90 percent of the hunters selected hunt less than 10 days per season), and there is ample no-fee hunting on adjacent areas of the Refuge.

The elimination of commercial fishing floats in Alternative B could have an adverse impact to low-income and minority persons who either regularly use the floats now or do not have the means for owning personal watercraft for fishing. These floats are retained under other alternatives, including the preferred alternative. Proposed boat launch fees at Service-administered boat ramps in Alternatives B thru D could create a burden for low-income users, but the fee is expected to be modest relative to the costs of boats and vehicles, and there are abundant free boat ramps provided by states and local units of government. Better oversight of fishing tournaments and commercial guiding services in Alternatives B thru D should benefit low-income anglers by keeping competition from higher-income anglers more in balance with the needs of the general public. Finally, the creation of electric motor areas in Alternatives B thru D will offer quality hunting, fishing, and wildlife observation opportunities for those who may not have the means for motorized watercraft.

Overall, none of the alternatives are expected to disproportionately place an adverse environmental, economic, social, or health effect on minority or low income persons, and in total, will likely have a positive effect.

4.2.2 Cultural and Historical Preservation

Activities outlined in each alternative have the potential to impact cultural resources, either by direct disturbance during construction of habitat projects and facilities related to public use or administration and operations, or indirectly by exposing cultural and historic artifacts during management actions such as water level drawdowns or prescribed burning. Although the presence of cultural resources including historic properties cannot stop a federal undertaking, the undertakings are subject to Section 106 of the National Historic Preservation Act, and at times, other laws.

Thus, the Refuge will, during early planning of actions, provide the Regional Historic Preservation Officer a description and location of all projects, activities, routine maintenance and operations that affect ground and structures, details on requests for allowable uses, and the range of alternatives being considered. The regional officer will analyze these undertakings for their potential to affect historic properties and enter into consultation with the State Historic Preservation Officer and other parties as appropriate. The Refuge will notify the public and local government officials to identify concerns about impacts by the undertaking. This notification will be at least equal to, but preferably with, the public notification accomplished for NEPA compliance and compatibility determinations.

4.2.3 Climate Change

The U.S. Department of the Interior issued an order in January 2001 requiring its land management agencies to consider potential climate change impacts as part of long-range planning endeavors.

The increase of carbon within the earth's atmosphere has been linked to the gradual rise in surface temperature commonly referred to as global warming. In relation to comprehensive conservation planning for national wildlife refuges, carbon sequestration constitutes the primary climate-related impact to be considered in planning. The U.S. Department of Energy's report "Carbon Sequestration Research and Development" (U.S. DOE, 1999) defines carbon sequestration as "...the capture and secure storage of carbon that would otherwise be emitted to or remain in the atmosphere."

Terrestrial biomes of all sorts – grasslands, forests, wetlands, tundra, perpetual ice and desert – are effective both in preventing carbon emission and acting as a biological "scrubber" of atmospheric carbon monoxide. The Department of Energy's report conclusions note that ecosystem protection is important to carbon sequestration and may reduce or prevent loss of carbon currently stored in the terrestrial biosphere.

The actions proposed in all alternatives would preserve or restore land and water, and thus would help mitigate human-induced global climate change through increased vegetation coverage which in turn enhances the removal and storage of carbon.

4.2.4 Prescribed Fire

As noted in Chapter 2, a comprehensive Fire Management Plan was approved for the Refuge in 2002 and provides detailed guidance for the suppression or use of fire. The plan outlines wildfire response and prescribed fire objectives, strategies, responsibilities, equipment and staffing, burn units, implementation, monitoring, and evaluation. The complete Fire Management Plan and Burn Unit Maps (USFWS, 2002c) are available at the Winona Headquarters Office, or on-line at <http://midwest.fws.gov/planning/uppermiss/index.html>.

4.2.4.1 Physical Fire Effects

Due to the relatively small size of the burn units on the Refuge and anticipated intensity and frequency of the prescribed fires, the effects on soil should be beneficial by hastening the recycling of nutrients and increasing soil fertility. There should also be no impacts to water quality due to location and slope of the burn units. Air quality should only be affected negatively in the immediate vicinity of the prescribed burn, and only for a limited time during the burn. This temporary impact to air quality will be mitigated by small burn unit size, direction of winds, and distance of units from population centers. It is expected that all burns will thus be well within air quality parameters. In the event of special air quality alerts by state or local agencies during a planned burn, burning will be deferred until conditions improve. No known archaeological sites are located on any of the burn units, and thus no impacts are anticipated. There is potential for archaeological artifacts to be present, but these are generally below the surface and would not be impacted since fire will move relatively quickly through the area and not generate high soil temperatures. Some artifacts could be exposed temporarily by the removal of vegetation, and detection and removal by the public could increase. However, all artifacts on the Refuge are protected by laws and regulations which should minimize such disturbance. The maintenance of firebreaks around certain burn units will create visual impacts for an indefinite period of time, and a local reduction of optimum habitat. However, the firebreaks are minor in terms of area compared to habitat in the burn unit, and a necessary trade-off to provide overall habitat and wildlife benefits and to minimize fire escape.

4.2.4.2 Biological Fire Effects

None of the federally listed threatened or endangered species found on the Refuge are known to inhabit or frequent the burn units that would be treated with fire, so there would be no effect. Burn units are also not in the vicinity of active bald eagle nests, so prescribed burns would pose no disturbance. Burning removes plant cover for 1-2 weeks and this would decrease the amount of habitat available for food and cover for a variety of grassland wildlife species. However, seasonal and long-term plant vigor and health would be enhanced by prescribed burns, which in turn will make the areas more productive for wildlife. In addition, since many of the burn units contain native tallgrass prairie, a fire-dependent plant community, it is expected that periodic burning will help ensure the continued existence of this rare ecosystem.

4.2.4.3 Socioeconomic Fire Effects

The use of fire often evokes an emotional response in local residents who have different experiences, fears, and values concerning wildland burning. This social impact can be mitigated to some degree by proactive information, education, and advance notification of a planned burn through media contacts and one-on-one visits with burn unit neighbors. Smoke from prescribed fires is also a concern since it can create a visibility hazard on nearby roads. In addition, smoke can enter private dwellings and businesses depending on wind direction. The fire management plan outlines precautions and specific actions to take to avoid and reduce any impacts from smoke, and contingency plans to be implemented should wind conditions change during a burn. Prescribed burning can have a benefit to the public by creating enhanced wildlife observation, photography, and hunting opportunities through the resulting increase in wildlife populations. Fire breaks put in place for prescribed burning can also help stop an unplanned wildfire and thus provide a measure of protection to any adjacent private habitat or dwellings. In the event that a prescribed fire does jump a firebreak and burn into unplanned areas, there is a high probability of rapid control by staff on-the-ground and thus minimal adverse impact. In addition, prescribed burn units on the Refuge average less than 125 acres, have light fuel loads (.025 to 3 tons per acre), and will be burned under low fuel moisture conditions and specific wind and weather conditions. These factors will help avoid and minimize fire escape.

4.2.5 Adjacent Land Owners

Land owners adjacent to the Refuge may benefit economically from owning property next to the Refuge. A recent report (Boyle et al. 2002) shows that land and property values are typically higher for properties next to a national wildlife refuge, when holding other factors constant. For example, a four-bedroom, two bath house on a quarter acre lot increases in value as the distance from the Refuge decreases. For the four refuges included in the report, property values increased from \$351 to \$7,469 per mile as the distance of each property to the refuge decreased. The report states on page 19:

The significant premium people pay to purchase properties near refuges clearly indicates that [refuges] provide desirable environmental amenities and permanent open space to local residents.

As property value increases, taxes would also be expected to increase. While this may result in increased revenue for the county, it also increases the tax burden for adjacent land owners. However, based on several townships included in the report, the annual tax increase of properties adjacent to refuges is fairly small, with annual tax increases averaging between \$88 and \$112 per home.

Since the alternatives would not radically change current management direction, it is not anticipated that any of the alternatives would have a significant effect on property values in general or on the desirability of owning or buying property adjacent to the Refuge.

4.2.6 Marinas and Other Water Related Business

Under all alternatives there are minimal economic effects to marinas and other water-related businesses since opportunities for water-related recreation are common to all alternatives. In addition, any pool drawdowns described in the alternatives would be designed, or offset by access dredging, to avoid or minimize impacts to private marinas and other businesses. Lower water levels may cause some inconvenience or require extra caution by boat operators, but they would not measurably disrupt marina use. Some alternatives would restrict access to some areas of the Refuge by large boats most frequently associated with marinas, but none of these proposed actions restrict access or use of the main river channel where most boating occurs. Habitat improvements and care of the scenic qualities of the Refuge will continue to make the Refuge a destination-of-choice for many boaters and provide a long-term benefit to marinas and other water-related recreation businesses adjacent to the Refuge.

4.2.7 Commercial Navigation

Under all alternatives there is no impact to commercial navigation. All proposed actions have been tempered by the requirement in establishment legislation that Refuge management not interfere with the navigation operations carried out by the Corps of Engineers.

4.2.8 Commercial Forest Harvest

There is currently little commercial tree harvesting done on the Refuge. Under all action alternatives, a Forest Management Plan would be completed subsequent to the completion of a Forest Inventory. Although some increase in commercial harvest may occur, it is unknown what the level of harvest will be. However, given the floodplain nature of the Refuge and current forest species composition, harvest will likely be modest, selective, and restrictive in nature. It is anticipated that resulting economic impact would be minimal. The Forest Management Plan will outline methods and means of harvest to avoid, minimize, or mitigate any short- or long-term impacts from tree harvest operations.

4.2.9 Threatened and Endangered Species

All alternatives in the Draft CCP and EIS have objectives to improve habitat conditions for native fish and wildlife including species listed as threatened or endangered under the Endangered Species Act. It is anticipated that nearly all habitat restoration/enhancement projects constructed on the Refuge during the next 15 years will be funded by other federal programs like the Environmental Management Program, operation and maintenance of the federal 9-Foot Channel Project, and potentially the Illinois Waterway System Navigation Feasibility Study. For activities implemented under these programs, the U.S. Army Corps of Engineers is responsible for compliance with the Endangered Species Act. In 2004, the U.S. Army Corps of Engineers evaluated potential impacts to the federally endangered Higgins eye pearl mussel (*Lampsilis higginsii*) and threatened Bald Eagle (*Haliaeetus leucocephalus*) from a variety of habitat activities in their Biological Assessment for the Illinois Waterway System Navigation Feasibility Study (Corps of Engineers 2004a). The Service concurred with the Corps' biological assessment findings that these habitat activities are not likely to adversely affect Bald Eagles (U.S. Fish and Wildlife Service 2004c). However, some habitat activities are likely to adversely affect Higgins eye pearl mussels (i.e. pool drawdowns, dredging, island restorations, etc.). Conservation measures and other mandatory conditions were provided to the Corps of Engineers to minimize take of Higgins eye from these activities.

Consequently, the required Endangered Species Act consultation has been completed for nearly all habitat activities proposed on the Refuge during the next 15 years. Other projects or activities in the Draft CCP during the next 15 years (new boat ramps, parking facilities, buildings or other

structures), are not likely to adversely affect Bald Eagles or Higgins eye pearl mussels. This opinion is based on construction of similar projects in the past; to date, none of these activities have adversely affected federally listed species.

There are currently three candidate species that occur on the Refuge or in the vicinity of the Refuge. The Eastern massasauga rattlesnake (*Sistrurus catenatus catenatus*) is known to occur at only two sites within the Refuge, although potential habitat exists elsewhere on the Refuge. Currently, the Draft CCP includes both targeted and non-targeted benefits for eastern massasauga. First, the objectives include restoring sedge meadow, bottomland forest, and reducing the pervasiveness of exotic species throughout the Refuge. All of these actions could have long-term benefits for eastern massasauga by providing or enhancing potential habitat. Second, the Refuge is in the process of developing Candidate Conservation Agreements for eastern massasauga at the two known localities. Although both agreements are still in the development phase, the commitment is to: (1) implement massasauga-compatible management, (2) restore or enhance habitat to support a viable population, and (3) provide long-term protection for such habitat. Although massasauga-compatible management will be conducted, unavoidable impacts may occur. These impacts should be rare and minimal in extent, however, as the Refuge is committed to using the best management practices developed specifically for eastern massasauga.

The spectaclecase (*Cumberlandia monodonta*) and sheepnose (*Plethobasus cyphus*) are also candidate species of freshwater mussels that historically occurred on the Upper Mississippi River within the states of Iowa, Minnesota and Wisconsin. The Service and other federal and state partners are actively involved in native mussel conservation programs on the Upper Mississippi River through the interagency Mussel Coordination Team (MCT). Since 2000, activities of the MCT include propagation and reintroduction of federally endangered Higgins eye pearl mussels (Mussel Coordination Team 2000). The team is now implementing conservation activities for the federally endangered winged mapleleaf. We anticipate that future activities will include the spectaclecase and sheepnose. For these reasons and given that the goals and objectives of the Draft CCP directly and indirectly benefit the continued survival of eastern massasauga, spectaclecase and sheepnose, the implementation of the CCP is not likely to appreciably reduce the survival and recovery of these species. On the contrary, the expectation is for implementation of a Final CCP to perpetuate viability of these species within the Refuge.

Section 4.4.1 of this chapter contains additional information, by alternative, on the potential impacts to currently listed species, namely the Bald Eagle and Higgins eye pearl mussel.”

4.2.10 Furbearer Trapping

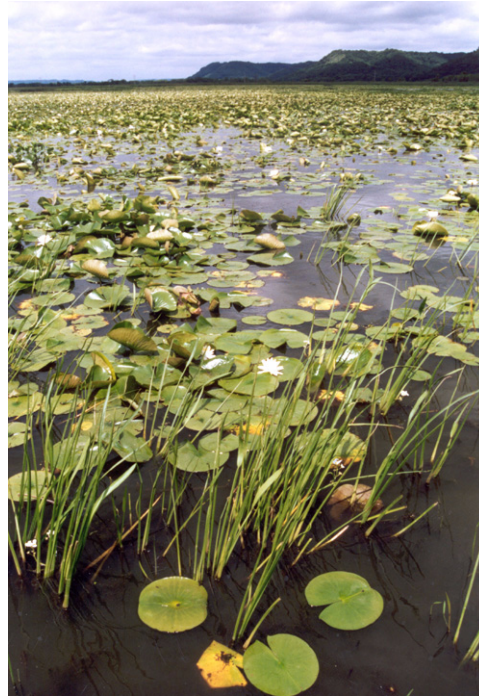
Under all alternatives, the currently approved furbearer trapping program would continue unchanged until a new furbearer trapping plan is completed by June 2007. A description of the current program can be found in Chapter 3, sections 3.2.14 and 3.4.3. Impacts from the current trapping program are summarized in the current compatibility determination, Appendix E. Until the new plan is completed, future biological and economic impacts are unknown. A separate environmental assessment will be done in conjunction with preparation of the new furbearer trapping plan and all impacts explored. Public involvement will be part of new plan preparation.

4.3 Effects of Alternatives on Physical Parameters/Concerns

4.3.1 Water Quality

Alternative A – No Action

This alternative is expected to have little positive or negative impact to overall water quality on the Refuge. Although Refuge staff efforts in tributary watersheds will be minimal, a continued improvement in nutrient loads is expected from actions taken in watersheds as a whole pursuant to various state and federal water quality regulations and agricultural conservation practices. Some habitat projects will increase water turbidity during construction, but this effect will be of relatively short duration and off set by long-term gains in local water quality associated with the project. Sediment sampling is undertaken prior to construction of habitat projects involving sediment disturbance to assess threats from contaminant release and appropriate measures are taken to avoid or minimize such release. Improvements in aquatic vegetation by ongoing habitat efforts such as pool drawdowns could help reduce nutrient loads and improve water quality downstream.



Lily field. Copyright Sandra Lines

Alternative B – Wildlife Focus

Same as A, except that water quality should be more positively affected by an increase emphasis in watershed conservation and restoration work. This would include private lands staffing to accelerate technical assistance to landowners and partners for watershed scale habitat assessment, mapping, modeling, and protection; and restoration through cooperative conservation partnerships. Support of the Upper Mississippi River Basin Association's efforts to develop more consistent standards for monitoring water quality will lead to better evaluation and improved project design and implementation in line with adaptive management practices. Improvements in water quality will positively effect plants and animals and improve a variety of public use opportunities related to these resources.

Alternative C – Public Use Focus

Same as Alternative B.

Alternative D – Wildlife and Integrated Public Use Focus

Same as Alternative B.

4.3.2 Sedimentation

Alternative A – No Action

Under this alternative, sediment deposits in certain backwaters would be reduced through ongoing habitat projects like those done under the Environmental Management Program. The rate of sediment deposition would also be positively affected by some of these same projects where closing or deflection structures are used. On a larger scale, this alternative would not lead to any marked changes in watershed conditions and the amount of sediment entering the Refuge would remain the same.

Alternative B – Wildlife Focus

Same as A, except that sedimentation on a broader scale should be reduced over time by an increase emphasis in watershed conservation and restoration work. This would include private lands staffing to accelerate technical assistance to landowners and partners for watershed scale habitat assessment, mapping, modeling, protection, and restoration through cooperative conservation partnerships.

Alternative C – Public Use Focus

Same as Alternative B.

Alternative D – Wildlife and Integrated Public Use Focus

Same as Alternative B.

4.3.3 Geomorphology¹

Alternative A – No Action

Under this alternative, there will be moderate, local changes in floodplain geomorphology as projects involving island construction, dredging for fishery habitat, and flow diversion are completed. However, overall geomorphology will continue to be driven by flood events, off-Refuge land use practices, and maintaining navigation capability through channel dredging and river impoundment.

Alternative B – Wildlife Focus

Same as alternative A, except that geomorphology on a broader scale could be influenced by an increased emphasis in watershed conservation and restoration work which could affect peak flow levels and amount of sediment deposition.

Alternative C – Public Use Focus

Same as Alternative B.

Alternative D – Wildlife and Integrated Public Use Focus

Same as Alternative B.

4.3.4 Hydrology and Water Level Management

Alternative A – No Action

Under this alternative, there would be no overall change in the hydrology of the river through the Refuge. Water level management, or pool drawdowns, would continue at the current rate and eventually be accomplished on several pools.

Alternative B – Wildlife Focus

The additional staffing and funding for watershed-scale technical assistance in this alternative could lead to a gradual moderation in peak tributary flows during spring runoff and storm events. Pool drawdowns could increase, especially if an Access Trust Fund is established to address supplemental dredging needs, and/or if drawdowns become part of the Corps of Engineers' Operating Plans for pools and move from experimental to operational.

Alternative C – Public Use Focus

Same as Alternative B, except that in regard to drawdowns, impacts would be the same as Alternative A.

1. "Geomorphology" refers to the physical structure of the floodplain.

Alternative D – Wildlife and Integrated Public Use Focus

Same as Alternative B.

4.3.5 Landscape Considerations

Alternative A – No Action

The scenic and wild qualities of the Refuge would remain virtually unchanged, although long-term, a decline is likely due to an inadequately surveyed and posted boundary, modest acquisition of floodplains and bluffland areas, decline in forest condition, and continued unregulated growth in public uses which can directly impact habitat. Some of this decline would be mitigated by ongoing habitat management. For example, prescribed fire enhances the diversity and structure of native prairie which also improves its scenic qualities.

Alternative B – Wildlife Focus

An increased rate of land acquisition of both floodplain habitats and identified bluffland areas would help protect the scenic and wild qualities of the Refuge. More proactive forest management would help ensure the long-term health of the floodplain forest which directly influences the landscape of the Refuge. Prescribed fire would enhance the diversity and structure of native prairie and improve its scenic qualities. A restriction on locations of certain public uses would help safeguard habitat and protect the wild nature of the Refuge backwaters. Management planning for Research Natural Areas would take into consideration landscape values.

Alternative C – Public Use Focus

Same as Alternative A, except the increased rate of land acquisition would help protect the scenic and wild qualities of the Refuge. This gain could, however, be negated to some degree by increases in public use.

Alternative D – Wildlife and Integrated Public Use Focus

Same as Alternative B, Wildlife Focus, except that guiding principles for habitat projects would include a principle on aesthetic considerations which would help protect the scenic and wild character values of the Refuge landscape. This alternative would also help protect these values above the other alternatives if the Refuge is designated as a Wetland of International Importance (Ramsar Convention).

4.4 Effects of Alternatives on Biological Parameters/ Concerns

4.4.1 Threatened and Endangered Species

Alternative A – No Action

Acquisition of lands at current rates would protect additional lands and further the expansion of bald eagle nesting populations. Loss of mature trees and conversion of the floodplain forest to other habitat such as reed canary grass would limit nesting opportunities for bald eagles. Disturbance from motorboats and other recreation at bald eagle nesting, roosting, and fall foraging sites would continue unchecked with presently unknown consequences to overall productivity or Refuge use. Water quality concerns such as high nutrient loads may result in a poor quality fishery, limiting the food base for bald eagles. Conversely, limited control of invasive fish may improve foraging opportunities for eagles. Higgins eye pearl mussel would continue to be negatively impacted by the uncontrolled spread of zebra mussels, invasion of Asian carp, and continued rates of sedimentation. Drawdowns may leave Higgins eye pearl mussels stranded above the water line, and this possible impact would be mitigated by modifying the daily rate of water lowering and physically moving the

mussels to deeper water. All potential impacts to threatened and endangered species from habitat projects or Environmental Pool Plan implementation will be evaluated and addressed through the section 7 consultation process.

Alternative B – Wildlife Focus

Acquisition and private land partnerships would protect additional lands and further the expansion of bald eagle nesting populations. The fishery prey-base for eagles would be enhanced through improved water quality, decreased sedimentation, expanded emergent and aquatic vegetation, and improved backwater spawning and rearing habitats. Improved forestry management would encourage uneven-aged stands, regeneration of hardwoods, and longevity of large, mature trees. Better management of invasive species (e.g. reed canary grass and Asian carp) would help maintain forests and native fisheries. Natural Area management plans would include special emphasis for nesting and roosting bald eagle habitats. Expanded habitat monitoring would improve management decisions affecting bald eagles and Higgins eye pearlymussels. Disturbance to nesting eagles by motorboats would decrease in new electric motor areas, in closed areas during fall foraging, and on certain islands and shorelines under new beach use guidance that limits recreational activities. Survival of Higgins eye pearlymussels may improve as more attention is given the control of invasive animals. Drawdowns may leave Higgins eye pearlymussels stranded above the water line, and this possible impact would be mitigated by modifying the daily rate of water lowering and physically moving the mussels to deeper water. All potential impacts to threatened and endangered species from habitat projects or Environmental Pool Plan implementation will be evaluated and addressed through the section 7 consultation process.

Alternative C - Public Use Focus

Same as Alternative A, except that accelerated land acquisition would provide more potential nesting and roosting sites for Bald Eagles, and improvements to the fishery prey-base could result from better water quality and productivity through increased private lands efforts and pool drawdowns. However, increasing and unmanaged public recreation may limit the attractiveness of new and existing areas to nesting bald eagles depending on the type and timing of recreation. This potential negative impact could be offset by the increased public awareness of issues affecting threatened and endangered species through the additional interpretive and environmental education programs in this alternative.

Alternative D – Wildlife and Integrated Public Use Focus

Same as Alternative B, except the additional interpretive and environmental education programs in this alternative could increase public awareness of issues affecting species and improve their overall conservation.

4.4.2 Waterfowl

Alternative A –No Action

Waterfowl, especially dabbling ducks and Canada geese, would benefit from additional wetland areas protected through a modest acquisition program. Pool drawdowns and other habitat projects would improve macroinvertebrate and aquatic plant food resources for waterfowl. Invasive plants and animals would continue to impact waterfowl habitats and food resources. Poor water quality and sedimentation would impact fingernail clams, a major food resource for canvasbacks, scaup, and other diving ducks. Closed areas would provide sub-optimum resting and feeding habitat due to lack of aquatic plants and macroinvertebrates, as well as disturbance from people in boats. Disturbance to ground nesting waterfowl would continue and perhaps affect nest success. Cavity nesting ducks, particularly wood ducks would find fewer nest trees as forests convert to other habitat such as reed canary dominated grasslands. Overall, waterfowl production and waterfowl numbers and use-days during migration would be expected to remain the same, or decline.

Alternative B – Wildlife Focus

Waterfowl, especially dabbling ducks and Canada geese, would benefit from additional wetlands protected through acquisition and partnerships with private landowners. Macroinvertebrate and aquatic plant food resources would be enhanced with the increased use of drawdowns and other management actions in the Environmental Pool Plans.



Canada Geese. Copyright Sandra Lines

Aquatic habitats would be further improved with the reduction of invasive plants and animals.

Migrating waterfowl would find more resting and feeding areas, including new areas with abundant food resources. Fingernail clams and other aquatic invertebrates which provide food for waterfowl may become more abundant with improvement in water quality and reduced sedimentation. Disturbance to resting and feeding birds would be reduced by no entry areas. Disturbance to ground nesting waterfowl would decrease by more control of beach-related and other public uses. Nest sites for cavity nesting ducks would become abundant with better forest management practices. The closed area on Lake Onalaska would be enhanced and less crippling would occur with the elimination of the firing line on the north end of the lake. Expanded habitat and wildlife monitoring would improve management decisions. Overall, waterfowl production and waterfowl numbers and use-days during migration would be expected to increase.

Alternative C – Public Use Focus

Same as Alternative A in terms of habitat effects on waterfowl. Additional wetlands for waterfowl would be protected through acquisition and easements. Drawdowns would improve aquatic plant and invertebrate resources. Invasive plants and animals would continue to degrade the river system impacting food and nesting resources for waterfowl. Cavity nesting ducks, particularly Wood Ducks, would find fewer nest trees as forests convert to reed canary dominated grasslands. Waterfowl would realize less benefit from habitat projects which also emphasize recreational fishing or boating access. Increased public education would help expose young people to the needs of wildlife, build a healthy outdoor ethic, and improve the overall attitude of the public towards wildlife conservation. However, waterfowl would suffer as funding would be diverted for recreation, interpretation, and environmental education rather than habitat management and monitoring. Food resources in many closed areas would continue to be limited and waterfowl would experience the same level of disturbance from boats. Additional disturbance to dabbling ducks would occur on Lake Onalaska by opening the north end of the closed area to hunting. Overall, waterfowl production and waterfowl numbers and use-days during migration would be expected to decline.

Alternative D – Wildlife and Integrated Public Use Focus

Waterfowl, especially dabbling ducks and Canada geese, would benefit from additional wetlands protected through acquisition and partnerships with private landowners. Macroinvertebrate and aquatic plant food resources would be enhanced with the increased use of drawdowns, and improvements in water quality and sedimentation. Aquatic habitats would be further improved with the reduction of invasive plants and animals. Migrating waterfowl would find more closed areas in areas of abundant food resources. Disturbance to resting and feeding birds during migration would be reduced by no fishing or motorized travel in no entry areas. Nesting waterfowl would be more productive by limiting disturbance from dogs and people. Nest sites for cavity nesting ducks would become abundant with better forest management practices. Expanded habitat and wildlife monitoring would improve management decisions. Use of funds to encourage environmental education and interpretation would be balanced with the needs for habitat management and monitoring. Some habitat projects would be designed specifically to enhance waterfowl habitat,

while most would include waterfowl benefits. Overall, waterfowl production and waterfowl numbers and use-days during migration would be expected to increase.



Sandhill Crane. Copyright Sandra Lines

4.4.3 Other Migratory Birds

Alternative A – No Action

Migratory birds would benefit from additional floodplain forest, wetland, and grassland areas protected through a modest acquisition program. Current trends in hydrology, plant succession, and invasive plants on the Refuge will result in significant changes in tree species composition, forest fragmentation, and the conversion of forests to grasslands over the next 50 to 75 years. Species like great blue herons, great egrets and cerulean warblers that favor

tall trees for roosting and nesting will decline. Both resident and long-distance migratory songbirds utilize closed canopy silver maple forest for nesting and migration. Silver maple will likely decline in coverage and vigor over time without management action, negatively impacting forest-dependent, large tract species such as red-shouldered hawk and prothonotary warbler. Fewer bluffslands would be conserved for migrating songbirds and raptors. Improvement of emergent marsh habitat through habitat projects such as island construction and pool drawdowns would positively impact a variety of birds such as bitterns, rails, black terns and pied-billed grebes. Shorebird habitat would improve through similar habitat projects, creating increased shallow water and exposed mud areas used for foraging during migration. Overall, migratory bird production and use would stay the same or improve for some species, and gradually decline for others under this alternative.

Alternative B- Wildlife Focus

Migratory birds would benefit from additional floodplain forest, wetland, and grassland areas protected through an accelerated land acquisition program. Some bluffland and lower tributary tracts, important for songbird and raptor migration and nesting, would be protected by fee-title or easement acquisition. Buffer land between development and key Refuge habitats would be acquired and reduce fragmentation. Habitat would be supplemented and connected through private landowner agreements, using Department of Agriculture program incentives. Better forestry practices would promote regeneration of hardwoods, mast producing trees, closed-canopy silver maple, and uneven age stands, resulting in more use by birds. Reduction of forest fragmentation and control of invasive plants would benefit forest interior bird species. More frequent use of drawdowns would improve emergent marshes for bitterns, rails, and other over-water nesting marsh birds. Shorebirds would benefit from shallow water and exposed mud flats during drawdowns. Electric motor areas would reduce disturbance to birds and likely increase productivity of marshbirds such as bitterns and rails, and colonial nesting birds such as herons and egrets. Better monitoring of habitat and birds would help managers make more timely and effective habitat and public use management decisions. Overall, migratory bird production and use would stay the same or improve for a host of migratory bird species under this alternative.

Alternative C – Public Use Focus

Same as Alternative A, except increases in interpretive and environmental educational programs would increase public awareness of migratory birds and result in more support for their conservation.

Alternative D – Wildlife and Integrated Public Use Focus

Same as Alternative B, except increases in interpretive and educational programs would increase public awareness of migratory birds and result in more support for their conservation.

4.4.4 Sport Fish

Alternative A – No Action

Refuge involvement in fishery management would remain limited under this alternative and have indirect sport fish impacts. Since there would be little fishery planning, no clear Refuge-specific fishery objectives, and no increase in monitoring, opportunities for integrating fishery management with Refuge management would remain limited and opportunities lost for improving sport fish habitat. Any negative impacts from fishing tournaments or commercial fishing could continue without Refuge involvement and oversight. Coordination and sharing of expertise with the Service's fisheries resource office and the states would also be limited and the impacts to sport fish unknown. Without private land and watershed work in the tributaries, silt, nitrates and other contaminants would continue to enter the river system at current rates and impact sport fish. Some habitat projects would be designed to help over-wintering habitat for centrarchid fish such as crappies, sunfish, and large-mouthed bass, and increase populations. In general, implementation of Environmental Pool Plans and habitat projects would improve water quality and habitat for most fish. However, future increases in exotic fish and plants may prove detrimental to some native sport fish. Overall, this alternative, on balance, would likely have a positive influence on sport fish on the Refuge due to continued habitat improvements through specific projects and pool drawdowns.

Alternative B – Wildlife Focus

Refuge involvement in fishery management would increase substantially under this alternative and have direct and indirect sport fish impacts. With a new fishery biologist, a fishery management plan, Refuge-specific fishery objectives, and an increase in monitoring, opportunities for integrating fishery and wildlife management with Refuge administration and operations would help increase sport fish populations. Any negative impacts from fishing tournaments or commercial fishing would be lessened by Refuge involvement and oversight. Coordination and sharing of expertise with the Service's fisheries resource office and the states would increase substantially to the benefit of sport fish initiatives and management. Private lands work in the tributaries would help reduce silt, nitrates, and other contaminants and help sport fish health and productivity. Some habitat projects would be designed to help over-wintering habitat for centrarchid fish such as crappies, sunfish, and large-mouthed bass, and could be done in all areas of the Refuge, including Waterfowl Hunting Closed Areas. In general, implementation of Environmental Pool Plans and habitat projects would improve water quality and habitat for most fish. Increased attention to invasive aquatic plants and animals could lead to improved sport fish carrying capacity on the Refuge. Overall, this alternative would have a positive influence on sport fish populations on the Refuge.

Alternative C – Public Use Focus

Same as Alternative A, except that private lands work in the watersheds could improve sport fish health and productivity by reducing the amount of sediment, nutrients, and contaminants entering the Refuge.

Alternative D – Wildlife and Integrated Public Use Focus

Same as Alternative B.

4.4.5 Other Fish

Alternative A – No Action

This alternative is unlikely to improve water quality or restore historic flows, and productivity of paddlefish and sturgeon will continue to be negatively impacted. Without private land and watershed work in the tributaries, silt, nitrates and other contaminants would continue to enter the river system to the detriment of fish. Limited coordination with the states and the Service's fisheries resource office, little oversight of potentially damaging commercial and recreational fishing, and lack of a fishery management plan will limit attention on priority fish species which could negatively impact their long-term health and productivity. Environmental Pool Plan projects include concepts

to improve fish passage through the locks and dams. Likewise, habitat projects could include provisions for deep water holes and travel lanes for paddlefish and sturgeon, features that would benefit all fish species. However, continued spread of invasive aquatic plants and animals could negate habitat gains, or as is the case with fish passage, limit the use of certain management tools. Overall, this alternative, on balance, would likely have a positive influence on some species of fish due to continued habitat improvements through specific fishery projects, and be neutral for other species. However, the populations of some species, such as paddlefish and sturgeon, would likely continue to decline.

Alternative B – Wildlife Focus

Work on private lands in tributary watersheds may improve water quality and reduce siltation, enhancing spawning areas for paddlefish, sturgeon, and other fish. With a new fishery biologist, a fishery management plan, Refuge-specific fishery objectives, and an increase in monitoring, opportunities for integrating fishery management with Refuge administration and operations would increase and help improve fish populations. Coordination with the states and Service's fisheries resource office would increase, leading to additional habitat projects which should benefit all fish species. Increased oversight of commercial fishing could help limit negative impacts to fish species of concern, and provide positive benefits by increased harvest of invasive fish species. Environmental Pool Plan projects include improved fish passage through the locks and dams which would benefit several species. Likewise, habitat projects could include provisions for deep water holes and travel lanes for paddlefish and sturgeon. Invasive plants and animals would continue to increase, but better monitoring and interagency cooperation may lead to more successful control efforts and reduced impacts to fish. Overall, this alternative would increase fish productivity, distribution, and health.

Alternative C – Public Use Focus

Same as Alternative A, except that private lands work in the watersheds could improve overall fish health and productivity by reducing the amount of sediment, nutrients, and contaminants entering the Refuge.

Alternative D – Wildlife and Integrated Public Use Focus

Same as Alternative B.

4.4.6 Freshwater Mussels

Alternative A – No Action

Poor water quality and continued rates of sedimentation would continue to diminish reproduction and growth rates of most mussels. Survival of juvenile mussels would continue to be compromised because of lack of oxygen and silt accumulation in the substrate. In general, the diversity of mussel species would decline and soft substrate adapted mussel species such as floaters, papershells, and heelsplitters would dominate. Invasive zebra mussels would continue to spread and cause mortality to native mussels. Impacts related to impoundment of the river and subsequent loss of habitat heterogeneity could be improved by implementation of habitat projects and Environmental Pool Plans. Impacts of specific habitat projects to mussel beds would need to be evaluated on a case-by-case basis. Distribution and survival of juvenile mussels would be enhanced by improved fish passage through the locks and dams as proposed in the Environmental Pool Plans. However, the lack of a fishery and mussel management plan, and oversight of recreational and commercial fishing and clamming, would hamper efforts to improve mussel populations and their host fish species. Future increases in invasive black carp that forage on mussels, could have severe impacts. Sporadic drawdowns could be damaging to mussel beds if the water is lowered too quickly or too far. Overall, mussel populations and productivity are expected to stay the same or decline under this alternative.

Alternative B – Wildlife Focus

Work on private land in the tributaries would benefit mussels by improving water quality and decreasing sediment entering the river. Less sediment in the river would provide a better diversity

of bottom substrates to accommodate a more historic assemblage of species. A fishery management plan and oversight of commercial fishing and clamming would improve conditions for host fish and decrease mortality of mussels. Better monitoring and control of invasive plants and animals, especially zebra mussels, would improve survival of native mussels. Impacts related to impoundment of the river and subsequent loss of habitat heterogeneity could be improved by implementation of habitat projects and Environmental Pool Plans. Specific impacts of projects to individual mussel beds would need to be evaluated on a case-by-case basis. Distribution and survival of juvenile mussels would be enhanced by improved fish passage through the locks and dams as proposed in the Environmental Pool Plans. Increased use of drawdowns would in general improve river vigor and health, habitats, and food resources for mussels. However, drawdowns could negatively impact mussels if the water is lowered too quickly or too far. Public education about relatively unknown species like mussels would not be emphasized and support for conservation efforts may suffer. Overall, this alternative would have a positive effect on mussel productivity and health on the Refuge through the combination of improved water quality, specific habitat projects benefiting mussels, public use oversight, and increased attention on invasive aquatic species.

Alternative C – Public Use Focus

Same as Alternative A, except that private lands work in the watersheds could improve overall mussel health and productivity by reducing the amount of sediment, nutrients, and contaminants entering the Refuge. Also, the emphasis on interpretation and environmental education would increase public awareness and support for mussel conservation.

Alternative D – Wildlife and Integrated Public Use Focus

Same as Alternative B except that an increased emphasis on interpretation and environmental education would increase public awareness and support for mussel conservation.

4.4.7 Reptiles and Amphibians

Alternative A – No Action

A modest land acquisition program under this alternative would provide additional habitat safeguards for most reptiles and amphibians. Contaminants, high nutrient loads, and siltation would continue to stress aquatic reptiles and amphibians. A lack of knowledge about the distribution and life history of turtles, frogs, and snakes on the Refuge would continue to hamper sound decisions regarding impacts of human activities. Limited drawdowns may improve emergent and submergent habitats important for amphibians and turtles. However, improvements would likely be short-lived without increased attention to invasive aquatic plants, particularly Eurasian milfoil, which can choke important foraging and travel areas for turtles and frogs. Reed canary grass would continue to invade bottom land forests, creating a more open forest canopy. Massasauga rattlesnakes would benefit from more openings, but only if openings have a strong sedge meadow component and nearby forests remain intact for over-wintering. Without intervention, bottom land forests would convert to reed canary grass openings and even age monocultures of silver maple negatively impacting reptile and amphibian breeding and over-wintering. Human disturbance could continue to impact turtle nesting on sandy islands and shorelines. Projects implemented through habitat projects and Environmental Pool Plans could be designed to provide nesting beaches, loafing sites, and calm backwaters for amphibians and turtles. Environmental Pool Plans also include concepts to improve connectivity between the main river channel and backwaters. Reptiles and amphibians would benefit from improvements in backwater habitats and ease of travel between them. Overall, this alternative, on balance, would likely have a positive influence on many species of reptiles and amphibians on the Refuge due to continued habitat improvements. However, some species' populations would likely continue to decline due to lack of attention on forest habitat, invasives, and human-caused impacts.

Alternative B – Wildlife Focus

Land acquisition could provide better buffers between development and key habitats for reptiles and amphibians, especially turtles that need to travel from wet to dry land to nest. Water quality would improve as more work is done with private landowners along the tributaries to curb contaminants, nutrients, and sediment entering the river. Increased use of drawdowns would improve the health and vigor of emergent and submergent habitats to the benefit of loafing and foraging turtles and frogs. Invasive plants would be monitored and controlled, improving both aquatic and terrestrial habitats that reptiles and amphibians use for foraging and reproducing. Forest resources would be monitored and actively managed to the benefit of frogs, toads and turtles. Forest practices could include efforts to improve sedge meadow openings for Massasauga rattlesnake habitat. Improved monitoring and research would facilitate more informed decisions regarding land use and impacts to turtles and frogs. The distribution and life history of turtles along the river would be investigated so that better decisions could be made with respect to dredging and other channel maintenance activities. Projects implemented through habitat projects and Environmental Pool Plans could be designed to provide nesting beaches, loafing sites, and calm backwaters for amphibians and turtles. Environmental Pool Plans also include concepts to improve connectivity between the main river channel and backwaters. Reptiles and amphibians would benefit from improvements in backwater habitats and ease of travel between them. Conflicts with human uses would be addressed. Some beaches could be closed to human use during key turtle nesting periods. Some backwaters would become electric motor areas, limiting disturbance to snakes, frogs, and turtles. Public education programs would be limited and support for conservation of more obscure species like frogs and turtles may suffer. Overall, reptile and amphibian populations and productivity would likely increase under this alternative.



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Alternative C – Public Use Focus

Same as Alternative A, except that private lands work in the watersheds could improve overall reptile and amphibian health and productivity by reducing the amount of sediment, nutrients, and contaminants entering the Refuge. In addition, an increased rate of land acquisition would safeguard important habitat, and a focus on public education would increase awareness of the conservation needs of reptiles and amphibians.

Alternative D – Wildlife and Integrated Public Use Focus

Same as Alternative B, except that a focus on public education would increase awareness of the conservation needs of reptiles and amphibians.

4.4.8 Invasive Species

Alternative A – No Action

Invasive plants and animals would continue to spread on the Refuge and have the negative effects described in previous sections.

Alternative B – Wildlife Focus

Under this alternative, managers would gain a better understanding of the location and extent of invasive plants and seek a 10 percent reduction in acreage infected. Cooperation with other agencies may begin to provide solutions for managing invasive animals such as Asian carp and zebra mussels. Public awareness of the impacts of invasive species and the public's role in their spread may reduce new invasions and promote support and funding for control efforts.

Alternative C – Public Use Focus

Same as Alternative A, except public awareness of the impacts of invasive species and the public's role in their spread may reduce new invasions and promote support and funding for control efforts.

Alternative D – Wildlife and Integrated Public Use Focus

Same as Alternative B.

4.4.9 Invertebrates

Alternative A – No Action

Water quality is a critical component of maintaining healthy aquatic invertebrate populations. Little work would occur on private land in the tributaries, and contaminants, nutrients, and sediment would continue to enter the river to the detriment of aquatic insects. Aquatic insects would see some short-term benefits from drawdowns. Large hatches of invertebrates would occur as the soils warm and plant growth is stimulated. Long-term benefits would be limited unless drawdowns occurred on a more frequent rotation. Fingernail clams would not see much change in population size, due to poor water quality and clarity. Crayfish are important for many other species. The health of crayfish populations may decline without improvement in water quality and better management of bottomland forests. Diversity and abundance of terrestrial invertebrates would not change. Little monitoring of invertebrates would occur and managers would miss an important opportunity to gauge water quality and river health.

Alternative B – Wildlife Focus

Work on private land within tributary watersheds would improve water quality and benefit aquatic insects. Drawdowns would promote plant growth and warm the surface of the mud stimulating hatching of aquatic insects, and this positive effect would likely continue for several reproductive cycles after a drawdown. Availability of detritus and decaying plants would provide abundant food and substrate resources for aquatic invertebrates. Fingernail clams would benefit from improved water quality and clarity. On the other hand, although the relationship is unclear, increased growth of submergent plants through drawdowns or other actions may suppress production of fingernail clams. Terrestrial insects would benefit from active grassland management, particularly burning which promotes reproduction by warming the soil and providing abundant plant growth. Crayfish provide resources for many other species in the system and they would benefit from better management of bottomland forests. Improved water quality and better connectivity of the main channel with backwaters would benefit all invertebrate species. Monitoring of invertebrates would provide an important indicator of water quality and river health.

Alternative C – Public Use Focus

Same as Alternative A.

Alternative D – Wildlife and Integrated Public Use Focus

Same as Alternative B.

4.4.10 Mammals

Note: The impacts of the current trapping program on furbearers is discussed in the compatibility determination for trapping, found in Appendix E. See also Section 4.2.10 in this chapter.

Alternative A – No Action

All mammal species on the Refuge would benefit from the modest acquisition program in this alternative. Muskrats, beaver, mink, raccoon, and otter populations would likely increase due to improved beds of emergent vegetation from drawdowns and habitat projects in Environmental Pool Plans. Habitat projects would also increase resting, foraging, and denning areas for these and other mammals. Invasion of bottomland forests by reed canary grass, conversion of forests to

monocultures of even-age silver maple, and loss of hardwoods would contribute to declining beaver populations, while mast-seeking species such as squirrels and deer would likely decline on the Refuge.

Alternative B – Wildlife Focus

All mammal species on the Refuge would benefit from the accelerated acquisition program in this alternative. In general, improved water quality, frequent drawdowns, and Environmental Pool Plan projects would improve habitats for most mammals, and especially furbearers. Increased monitoring would improve habitat project planning and management decisions on public uses involving mammals. Active management of grasslands and forests, including the control of invasive plants, would benefit all mammal populations. Overall, the increased attention to improving wetland, grassland, and forest habitat in this alternative would increase the productivity and health of most mammals.

Alternative C – Public Use Focus

Same as Alternative A.

Alternative D – Wildlife and Integrated Public Use Focus

Same as Alternative B.

4.4.11 Aquatic Vegetation/Wetlands

Alternative A – No Action

A modest acquisition program would protect additional wetland acres which would in turn provide for their long-term protection while safeguarding aquatic plants. Little work would occur on private land in the tributary watersheds and limit improvements to water clarity which has a marked effect on aquatic plant germination, growth, and sustainability. Pool drawdowns would occur periodically with dramatic but localized improvement in aquatic vegetation. Drawdown frequency, however, would continue to be limited by funding. Habitat projects through the Environmental Management Program and other programs will continue to improve aquatic vegetation composition, density, and reproduction by altering currents and providing areas sheltered from wind and wave action. Invasive aquatic plants would continue to increase and displace and exclude native plants. Asian carp such as grass carp will likely invade new areas and may negatively impact aquatic vegetation and wetland quality through direct feeding on plants and rooting of plant beds and lowering of water clarity. Overall, this alternative is likely to result in localized improvement to aquatic vegetation and a modest increase in wetland habitat afforded permanent protection.

Alternative B – Wildlife Focus

Work on private land within tributary watersheds would reduce the amount of sediment and nutrients entering the Refuge and improve aquatic plant germination, growth, and sustainability. Wetland acres permanently protected would increase markedly under a more aggressive acquisition program. Pool drawdowns would occur periodically with dramatic but localized improvement in aquatic vegetation. Drawdown frequency could increase under this alternative and improve and sustain more acres of aquatic vegetation. Habitat projects through the Environmental Management Program and other programs will continue to improve aquatic vegetation composition, density, and reproduction by altering currents and providing areas sheltered from wind and wave action. Invasive plants would be monitored and control efforts increased. Invasive fish have a profound impact on aquatic plants because they pull up plants while foraging and cause excessive turbidity. Better fisheries planning and interagency coordination may help check the spread of invasive fish. However, these gains would be off set to some degree since little effort would be made to increase public information and education regarding the impacts and control of invasives. Aquatic vegetation could improve in existing backwaters with a decrease in motorized traffic due to electric motor only areas and better oversight of fishing tournaments. Additional and more effective waterfowl hunting closed areas would likely lead to better distributed waterfowl which could affect the amount of

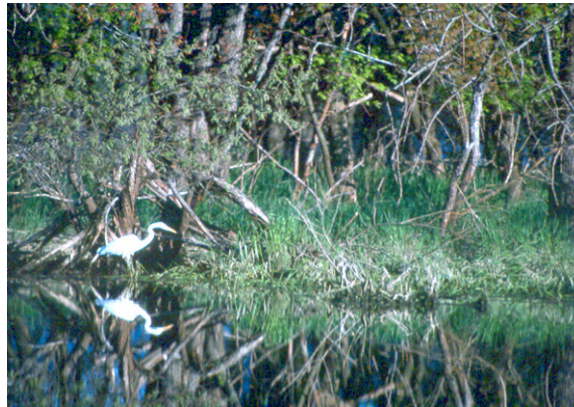
aquatic vegetation they consume in any one area. Overall, this alternative is likely to result in more widespread improvement to aquatic vegetation and a substantial increase in wetland habitat afforded permanent protection.

Alternative C – Public Use Focus

Same as Alternative A, except that an increase in public information and awareness could lead to changes in land use practices in tributary watersheds and reduced spread of invasive species, both of which could increase the positive effects to aquatic vegetation and wetland quality.

Alternative D – Wildlife and Integrated Public Use Focus

Save as Alternative B, except that an increase in public information and awareness could lead to changes in land use practices in tributary watersheds and reduce the spread of invasive species, both of which could increase the positive effects to aquatic vegetation and wetland quality.



Egret. Copyright by Sandra Lines

4.4.12 Floodplain Forest

Alternative A – No Action

Silver maple and ash will continue to dominate the floodplain forest because of poor regeneration of mast producing trees that are less tolerant of saturated soils, and the shading of pioneer species like cottonwood and willow. However, since even silver maple is not regenerating at self-sustaining rates, it is expected that openings in the forest cover will be invaded by herbaceous plants such as reed canary grass. The flood plain forest role as a contributor to carbon storage would be diminished as canopy densities decrease and conversions in vegetation type take place (UMRCC, 2002). Some increase in forest diversity and cover is expected from ongoing plantings on existing lands and on new habitat projects such as islands, as well as from the acquisition and forest management on acquired lands. In general, however, forest coverage, density, diversity, and structure is expected to continue to gradually decline under this alternative.

Alternative B – Wildlife Focus

Forest resources would be actively managed with the goal of maintaining a healthy, contiguous forest that spreads across wide stretches of the floodplain and contains sufficient diversity of tree species, sizes, and ages to provide a wide array of habitat structure and food (mast) resources. Completion of a forest inventory will enhance management planning and decisions. A Forest Management Plan will present goals and objectives for a proactive forest management program and lead to enhanced forest resources. Habitat projects and Environmental Pool Plan projects would restore and create islands that could eventually convert to mature forests. Invasive plant species would be monitored and actions would be taken to control the spread into forest openings. Overall, this alternative should result in a gradual increase in forest coverage, density, diversity, and structure.

Alternative C – Public Use Focus

Same as Alternative A, although an increase in public awareness of forest-related issues could lead to improved support and funding for forest management.

Alternative D – Wildlife and Integrated Public Use Focus

Same as Alternative B, except like C, an increase in public awareness of forest-related issues could lead to improved support and funding for forest management.

4.4.13 Terrestrial Habitat/Grasslands

Alternative A – No Action

Under this alternative, there would be a modest increase in upland habitat permanently protected through land acquisition. Existing grassland habitat would be maintained through fire management, haying, and other tools, although species diversity may decline without integrated habitat management planning.

Alternative B – Wildlife Focus

There would be a substantial increase in upland habitat permanently protected through land acquisition. Grassland and other upland habitats could increase off-Refuge through more emphasis on private landowner assistance in tributary watersheds. Active management of grasslands and forests would occur through the preparation and implementation of a habitat management step-down plan. Oak-savanna and prairie habitats would likely increase due to more active management. Invasive plants would be monitored and reduced, with positive impacts to the diversity, density, and reproduction of native plants.

Alternative C – Public Use Focus

Same as Alternative A.

Alternative D – Wildlife and Integrated Public Use Focus

Same as Alternative B.

4.5 Effects of Alternatives on Socioeconomic Parameters/Concerns

For complete economic data excerpted in this section, refer to James Caudill's November 2004 report entitled "The Economic Effects of the Upper Mississippi River National Wildlife and Fish Refuge: Baseline and Effects of Alternatives." The report is available at Refuge headquarters in Winona, or, is available on-line at <http://midwest.fws.gov/planning/uppermiss/index.html>.

4.5.1 Hunting

Alternative A – No Action

This alternative would have little effect on current hunting opportunities on the Refuge. A minimum of 191,644 acres (80.0 percent) of land and water would remain available to some form of hunting. This acreage will increase as new lands are acquired as part of the existing modest land acquisition program. These new lands, and the improvement of habitat quality from ongoing habitat projects, will likely result in an increase in some game populations and positively affect the hunting experience for many. Since this alternative involves little to no change in regulations and hunting methods and practices, hunters would find little disruption to their expectations and routines. For some waterfowl hunters, however, this alternative will not alleviate their concerns such as lack of a more equitable distribution of waterfowl, the feeling of exclusion in managed hunts and in areas where permanent blinds are allowed, and intense competition with other hunters in some areas. This alternative would continue to have a substantial positive economic impact as reflected in Table 28.

Table 28: Annual Economic Effects of CCP Alternatives: Hunting¹

Impacts	Change from Alternative A			
	Alternative A: No Action	Alternative B: Wildlife Focus	Alternative C: Public Use Focus	Alternative D: Wildlife and Integrated Public Use Focus
Visitors	263,623	+26,362	+39,544	+26,362
Expenditures	\$5,203,988	+\$520,399	+\$780,598	+\$520,399
Economic Output	\$6,425,261	+\$642,526	+\$963,789	+\$642,526
Jobs	87	+9	+13	+9
Job Income	\$1,453,433	+\$145,343	+\$218,015	+\$145,343
Federal and State Taxes	\$689,090	+\$68,909	+\$103,364	+\$68,909

1.Caudill, 2004a

Alternative B – Wildlife Focus

This alternative would have several effects on current hunting opportunities on the Refuge. A minimum of 175,485 acres (73.2 percent) of land and water would remain available to some form of hunting, a decrease of about 16,000 acres from existing conditions. This decrease would result from new no hunting zones, retention of existing waterfowl hunting closed areas, and new waterfowl hunting closed areas. Although the areas open to hunting would decrease, the quality of hunting could increase, especially for waterfowl, since the Refuge would likely hold more birds in more areas for longer periods of time in the fall. The rate of land acquisition would increase under this alternative. Although some of this acquisition will occur in closed areas, it should still result in several thousand additional acres open to all forms of public hunting. In addition, improvement of habitat quality from ongoing habitat projects will likely result in an increase in some game populations and positively affect the hunting experience for many.

This alternative also involves several regulatory changes including the elimination of the use of permanent blinds, no entry into waterfowl hunting closed areas, electric motor only areas, shotshell limits during the waterfowl season, and elimination of managed hunts at Potter’s Marsh and Blanding Landing in the Savanna District. These changes are likely to disrupt long-standing hunter expectations and hunting methods and practices and cause short-term confusion and frustration as hunters adjust to new closed areas and regulations. On some pools and pool locations, this could lead to less opportunity for some and reduced hunter visits. These impacts will be mitigated to some degree by information and education and lead time for implementation.

New regulations to prohibit open water hunting in portions of Pools 9 and 11 will have little impact to hunters since it is either prohibited by state regulation or not common practice. Some waterfowl hunters will view this alternative as helpful in alleviating their concerns about lack of a more equitable distribution of waterfowl, the feeling of exclusion in managed hunts and in areas where permanent blinds are allowed, and intense competition with other hunters in some areas. Electric motor only areas will allow a more primitive and less crowded hunting opportunity favored by some hunters.

The changes in the Lake Onalaska closed area boundary and the shotshell limit should have a positive impact for waterfowl by reducing crippling losses caused by firing line behavior that induces hunters to shoot at birds out of range. Some of this crippling loss reduction is negated by birds which land in closed areas and thus cannot be retrieved. The shotshell limit should also improve the hunting experience for many since it serves as an incentive to allow birds to work decoy sets.

Despite a reduction of area open to hunting, it is estimated that hunting visits overall will increase 10 percent under this alternative due to long-term trends in hunter visits, expected improvements to the hunting experience, and a better distribution of waterfowl and thus hunting opportunity. This alternative is predicted to have a corresponding increase in positive economic impact as reflected in Table 28.



Accessible observation deck. Cindy Samples, USFWS

Alternative C – Public Use Focus

This alternative would have several effects on current hunting opportunities on the Refuge. A minimum of 189,121 acres (78.9 percent) of land and water would remain available to some form of hunting, a decrease of about 2,500 acres from existing conditions. This decrease would result from new no hunting zones around new trails and other facilities for wildlife observation and other non-consumptive recreation. Since waterfowl hunting closed areas would not change substantially and entry still permitted, there would likely be little to no change in current waterfowl numbers and distribution.

This status quo in closed areas will be favored by some waterfowl hunters, but will not alleviate

the concerns of others over the unequal distribution of waterfowl on the Refuge. Like Alternative B, the rate of land acquisition would increase under this alternative, opening several thousand acres to all forms of public hunting. In addition, improvement of habitat quality from ongoing habitat projects will likely result in an increase in some game populations and positively affect the hunting experience for many.

This alternative also involves several regulatory changes including the elimination of the use of permanent blinds, establishment of electric motor only areas, implementing party spacing limits for waterfowl hunting, and eliminating managed hunts at Potter's Marsh and Blanding Landing in the Savanna District. These changes are likely to disrupt long-standing hunter expectations and hunting methods and practices and cause short-term confusion and frustration as hunters adjust to new regulations. This disruption will be mitigated to some degree by information and education and lead time for implementation. Some waterfowl hunters will view this alternative as helpful in alleviating their concerns such as the feeling of exclusion in managed hunts and in areas where permanent blinds are allowed, and intense competition with other hunters in some areas. Electric motor only areas will allow a more primitive and less crowded hunting opportunity favored by some hunters.

The changes in the Lake Onalaska closed area boundary and party spacing limit should have a positive impact for waterfowl by reducing crippling losses caused by firing line behavior which induces hunters to shoot at birds out of range. However, reducing the size of this closed area could also increase the number of hunters and negate some crippling loss reductions. The spacing limit should also improve the hunting experience for many by reducing crowding.

Despite a minor reduction of area open to hunting, it is estimated that hunting visits will increase 15 percent under this alternative due to overall long-term trends in hunter visits, no changes in waterfowl hunting closed areas, expected improvements to the hunting experience, and a better

distribution of waterfowl and thus hunting opportunity. This alternative is predicted to have a corresponding increase in positive economic impact as reflected in Table 28.

Alternative D – Wildlife and Integrated Public Use Focus

This alternative would have several effects on current hunting opportunities on the Refuge. A minimum of 190,586 acres (79.5 percent) of land and water would remain available to some form of hunting, a decrease of just over 1,000 acres from existing conditions. This decrease would result from changes in waterfowl hunting closed areas (modification, elimination, and new), and new no hunting zones. Although the areas open to hunting would decrease slightly, the quality of hunting could increase, especially for waterfowl, since the Refuge would likely hold more birds in more areas for longer periods of time in the fall. As with alternatives B and C, the rate of land acquisition would increase under this alternative, opening several thousand acres to all forms of public hunting. In addition, improvement of habitat quality from ongoing habitat projects will likely result in an increase in some game populations and positively affect the hunting experience for many.

This alternative also involves several regulatory changes including the elimination of the use of permanent blinds, no fishing or motorized watercraft in waterfowl hunting closed areas, electric motor only areas, shotshell and hunting party spacing limits for waterfowl hunting, and changing procedures for managed hunts at Potter's Marsh and Blanding Landing in the Savanna District. These changes are likely to disrupt long-standing hunter expectations and hunting methods and practices and cause short-term confusion and frustration as hunters adjust to new closed areas and regulations. As in other alternatives, these changes could lead to less opportunity and fewer hunter visits on some areas of some pools. These impacts will be mitigated to some degree by information and education and lead time for implementation, or, as the case with permanent blinds, a phase out over time. New regulations to prohibit open water hunting in portions of Pools 9 and 11 will have little impact to hunters since it is either prohibited by state regulation or not common practice.

Some waterfowl hunters will view this alternative as helpful in alleviating their concerns such as lack of a more equitable distribution of waterfowl, the feeling of exclusion in managed hunts and in areas where permanent blinds are allowed, and intense competition with other hunters in some areas. Electric motor only areas will allow a more primitive and less crowded hunting opportunity favored by some hunters.

The establishment of a managed hunt area (Gibb's Lake) on the north end of the Lake Onalaska closed area (Barrel Blinds area) will cause a localized disruption to long-standing hunting practices and use in this area. Many hunters who routinely hunt this area will be displaced, although they will still have equal opportunity to hunt the area through the drawing process. On the other hand, the managed hunt will attract hunters who have avoided the area due to competition and unsportsmanlike behavior. Overall, the number of hunters using the Barrel Blinds area will likely decrease, while the quality of the hunting experience for participants will increase. The fee for the hunt will discourage some hunters from participating, either due to cost or principle, although this will be mitigated to some degree by offering free, family-day Saturdays, and opening the area on a first-come, first-secured basis after the first 45 days of the season.

Throughout the Refuge, the shotshell limit should have a positive impact for waterfowl by reducing crippling losses caused by firing line behavior which induces hunters to shoot at birds out of range. Like all other alternatives, some of this crippling loss reduction is negated by birds which land in closed areas and thus cannot be retrieved. The shotshell and hunting party spacing limits should also improve the hunting experience for many since it serves as an incentive to allow birds to work decoy sets and reduces confrontations between hunters. It is estimated that hunting visits will increase 10 percent under this alternative due to overall long-term trends in hunter visits, expected improvements to the hunting experience, and a better distribution of waterfowl and thus hunting opportunity. This alternative is predicted to have a corresponding increase in positive economic impact as reflected in Table 28.

Table 29: Annual Economic Effects of CCP Alternatives: Fishing¹

Impacts	Change from Alternative A			
	Alternative A: No Action	Alternative B: Wildlife Focus	Alternative C: Public Use Focus	Alternative D: Wildlife and Integrated Public Use Focus
Visitors	1,213,916	- 60,696	+ 121,392	+ 60,696
Expenditures	\$29,576,333	- \$1,478,817	+\$2,957,633	+\$1,478,817
Economic Output	\$36,223,053	- \$1,811,153	+\$3,622,305	+\$1,811,153
Jobs	483	- 24	+ 48	+ 24
Job Income	\$8,119,297	- \$405,965	+\$811,930	+\$405,965
Federal and State Taxes	\$3,884,811	- \$194,241	+\$388,481	+\$194,241

1.Caudill, 2004a

4.5.2 Fishing

Alternative A – No Action

This alternative would have little effect on current fishing opportunities on the Refuge. A minimum of 140,545 acres of water would remain available to year-round fishing and facilities and operations which support fishing (docks and piers, commercial fish floats, accesses) would remain the same. The improvement of habitat quality from ongoing habitat projects will likely result in an increase in some sport fish populations and positively affect the fishing experience for many. These gains could, however, be negated to some degree by continued sport fish stresses such as sedimentation and the effects of invasive species. Since this alternative involves little to no change in regulations that affect fishing, anglers would find little to no disruption to their expectations and routines. For some anglers, however, this alternative will not alleviate their concerns such as conflicts with recreational watercraft while fishing, and disruption from fishing tournament participants. This alternative would continue to have a substantial positive economic impact as reflected in Table 29.

Alternative B – Wildlife Focus

This alternative would have several effects on current fishing opportunities on the Refuge. A minimum of 104,716 acres of water would remain open to year-round fishing, a decrease of over 35,000 acres from existing conditions. This decrease would be due to the fall no-entry regulation for waterfowl hunting closed areas in this alternative. However, overall fishing opportunities would remain abundant and fishing would be permitted in closed areas during the peak spring, summer, and winter period. In addition to this seasonal closure, the type of fishing experience for some anglers would be affected by the elimination of commercial fish floats and by establishing electric motor only areas. Electric motor areas would remain open to fishing and change the use patterns and densities in these areas. Some anglers would find this welcome, both from a noise and disturbance standpoint, while others may resent the change from long-standing modes of use. The possible implementation of a boat ramp fee on Refuge-operated landings would be an added cost to many boat anglers. The fee would be minor in terms of fishing expenses and would not likely

discourage angling, especially given the number of non-Refuge boat ramps serving the river. However, some anglers could resent the added requirement and cost.

The improvement of habitat quality from ongoing habitat projects will likely result in an increase in some sport fish populations and positively affect the fishing experience for many. Increased efforts to improve water quality through work with private landowners in tributary watersheds, and more emphasis on control of aquatic invasive species, could also result in increases in sport fish populations and thus fishing success.

With restrictions to fishing in waterfowl closed areas, electric motor areas, and the elimination of commercial fish floats, combined with no increase in fishing-related facilities, fishing visits are predicted to decrease 5 percent under this alternative. This alternative is predicted to have a corresponding negative economic impact as reflected in Table 29.

Alternative C – Public Use Focus

This alternative would have several effects on current fishing opportunities on the Refuge. Like alternative A, a minimum of 140,545 acres of water would remain open to year-round fishing. The type of fishing experience for some anglers would be affected by establishing electric motor only areas. Electric motor areas would remain open to fishing and change the use patterns and densities in these areas. Some anglers would find this welcome, both from a noise and disturbance standpoint, while others may resent the change from long-standing modes of use. Existing commercial floats would remain and proposals for a new float solicited, creating additional fishing opportunity for persons without boats or who prefer this type of fishing. A new fish float would have a positive, but local, economic effect. Five additional fishing docks or piers, an additional boat ramp, and other access points would provide or facilitate fishing opportunities. The implementation of a seasonal Refuge Recreation Use Permit system with fee and a boat launch fee at Refuge ramps would be an added cost to many boat anglers. The fee for the permit would be minor in terms of fishing expenses and would not likely discourage angling, especially given the number of non-Refuge boat ramps serving the river, or the number of anglers who would not need a Recreation Use Permit since they do not camp or otherwise use Refuge lands when fishing. However, some anglers could resent the added requirement and cost.

The improvement of habitat quality from ongoing habitat projects will likely result in an increase in some sport fish populations and positively affect the fishing experience for many. Increased efforts to improve water quality through work with private landowners in tributary watersheds, and more emphasis on control of aquatic invasive species, could also result in increases in sport fish populations and thus fishing success.

Fishing visits are expected to increase 10 percent under this alternative based on long-term trends of angling visits, improvements in habitat and sport fish populations, and additional fishing-related facilities. This alternative is predicted to have a corresponding increase in positive economic impact as reflected in Table 29.

Alternative D – Wildlife and Integrated Public Use Focus

This alternative would have several effects on current fishing opportunities on the Refuge. A minimum of 110,611 acres of water would remain open to year-round fishing, a decrease of about 30,000 acres. This decrease would be due to the fall no-fishing regulation for waterfowl hunting closed areas in this alternative. However, overall fishing opportunities would remain abundant and fishing would be permitted in closed areas during the peak spring, summer, and winter period. In addition to this seasonal closure, the type of fishing experience for some anglers would be affected by establishing electric motor only areas. Electric motor areas would remain open to fishing and change the use patterns and densities in these areas. Some anglers would find this welcome, both from a noise and disturbance standpoint, while others may resent the change from long-standing modes of use. Three additional fishing docks or piers, an additional boat ramp, and other access points would

provide or facilitate fishing opportunities. The possible implementation of a boat ramp fee on Refuge-operated landings would be an added cost to many boat anglers. The fee would be minor in terms of fishing expenses and would not likely discourage angling, especially given the number of non-Refuge boat ramps serving the river. However, some anglers could resent the added requirement and cost.

The improvement of habitat quality from ongoing habitat projects will likely result in an increase in some sport fish populations and positively affect the fishing experience for many. Increased efforts to improve water quality through work with private landowners in tributary watersheds, and more emphasis on control of aquatic invasive species, could also result in increases in sport fish populations and thus fishing success.

Despite restrictions to fishing in waterfowl closed areas and electric motor areas, fishing visits are expected to increase 5 percent under this alternative based on long-term trends in angling visits, improvements in fish habitat, and additional fishing-related facilities. This alternative is predicted to have a corresponding increase in positive economic impact as reflected in Table 29 (Caudill, 2004a).

4.5.3 Fishing Tournaments

Alternative A – No Action

This alternative would have little direct effect on fishing tournaments since the Refuge would continue to defer to the states for all permitting. Some increase in tournaments would be expected from improvement to fish habitat through ongoing habitat projects.

Alternative B – Wildlife Focus

The size, number, and location of fishing tournaments would likely change under this alternative since the Refuge would issue special use permits in addition to the state-required permits. Impacts to sensitive habitat and fish and wildlife areas would be lessened, and conflicts between fishing tournaments and between general anglers could be reduced by time and space management of tournaments. Tournament sponsors and organizers would face another regulatory requirement, but the effects of this would be mitigated by a process that meshes the state and Refuge permit process and stipulations.

No specific economic analysis was done for fishing tournaments since the parameters for management have yet to be determined. However, tournaments were accounted for in the economic analysis of fishing as a whole and a modest decline in economic activity attributed to fishing tournaments is predicted since fewer tournaments are likely to occur.

Alternative C – Public Use Focus

The impacts of this alternative are predicted to be similar to Alternative A. Although under this alternative the Refuge would review state-issued permits for tournaments on the Refuge, this review would likely modify only the timing and spacing of tournaments. The implementation of a Refuge Recreation Use Permit could affect some tournament anglers who also camp or otherwise use Refuge lands, but the added cost would be minor compared to expenditures for tournament fishing.

Alternative D – Wildlife and Integrated Public Use Focus

Same as Alternative B.

4.5.4 Commercial Fishing

Alternative A – No Action

This alternative would have little effect on current commercial fishing operations on the Refuge since management and oversight would continue to be done by the states. The improvement of

habitat quality from ongoing habitat projects will likely result in an increase in some fish populations and positively affect the commercial fishing harvest. Since this alternative involves no change in regulations that affect commercial fishing, operators would find little to no disruption to their expectations and routines. The current number of commercial fishermen (527 based on 4-year average) and gross value of catch (\$1.7 million) would remain the same, subject to the variability of fish populations and market.

Alternative B – Wildlife Focus

Under this alternative, an increase in fish habitat quality through increased habitat projects, and emphasis on invasive fish harvest could account for a 10 percent increase in catch. This would result in an estimated annual increase of \$170,000 in total ex vessel value (the price paid to the commercial angler dockside) for commercial fishing in pools 4-14. This assumes no change in ex vessel prices and catch success rate. Commercial fishermen would find additional restrictions to where and when they could fish due to the no-entry in waterfowl hunting closed areas under this alternative. This could disrupt some operations and displace commercial fishing operators to other areas of the Refuge from October 1 to the end of the respective state regular duck season.

Alternative C – Public Use Focus

Same as Alternative A.

Alternative D – Wildlife and Integrated Public Use Focus

Same as Alternative B since the no fishing restriction for waterfowl hunting closed areas is in effect a no-entry restriction for commercial fishing.

4.5.5 Fishing Floats

Alternative A – No Action

This alternative would have no impact to commercial fish float operations since the current program would continue. Collective gross revenue from the existing four fish floats is estimated at \$125,000 per year. Since some fish float operations have experienced difficulty meeting current permit requirements, such as Coast Guard licensing for transporting the public, their period of operation has fluctuated and gross revenues can change from year to year.

Alternative B – Wildlife Focus

This alternative would eliminate all four floats currently operating on the Refuge. Eliminating the floats would create a direct economic hardship on existing owners/operators by the loss of approximately \$125,000 in gross revenues, and have a negative local economic effect to food service, lodging, and fishing-related businesses near the floats. There could also be an emotional impact to owners and families from the closing of the floats, some of which have been family-operated businesses for decades. The effect of the economic losses would be minor compared to the overall positive economic impacts of fishing on the Refuge. Closing the fish floats could also reduce overall fishing visits to the Refuge, tempered somewhat by alternative fishing opportunities such as guide services, boat rental, dock, and shore fishing. Clients who have become accustomed to the fish float service would likely find this alternative disruptive and frustrating in the short-term as they adjusted to alternative fishing methods or areas. Boat anglers who fish in the vicinity of the floats may find their removal advantageous due to reduced competition for space and fish.

Alternative C – Public Use Focus

Same as Alternative A, except that a new fish float in the Savanna District would provide a proportionate increase in this type of angling visit and positive economic impact. New standards and permits would have a modest economic impact to current operations due to required infrastructure improvements and a higher annual fee to help offset Refuge administrative costs.

Alternative D – Wildlife and Integrated Public Use Focus

Same as Alternative A, although a portion of the impacts of Alternative B could be realized if current fish floats failed to meet new standards and were phased out. Also, in Alternative C, new standards and permits would have a modest economic impact to current operations due to required infrastructure improvements and a higher annual fee to help offset Refuge administrative costs.



Ice fishing program at Upper Mississippi River NW&FR. USFWS

4.5.6 Interpretation and Environmental Education

Alternative A – No Action Alternative

Under this alternative, the current trend of modest increases in interpretive and environmental education opportunities would likely continue. There would continue to be a disproportionate level of opportunity in those districts of the Refuge which have visitor services specialists and/or facilities, namely Savanna and La Crosse Districts. This alternative would not meet the demand for interpretation and environmental education as gauged by inquiries and growing tourism visits to the Refuge area. There is no analysis of

economic impacts related to interpretation and education for this or other alternatives since these uses are not drivers for visitation and expenditures.

Alternative B – Wildlife Focus Alternative

Under this alternative, there would be a continual decline in interpretive and environmental education opportunities as the emphasis of staff and programs is shifted to more wildlife-based work. Identified staff needs for interpretation and environmental education would be a lower priority and likely not filled for many years. Facilities related to interpretation and environmental education would remain the same as current. This and staffing priorities would increase the gap between public demand and Refuge capability, and visits for interpretation and environmental education would decline an estimated 25 percent. Decreased visitation would reduce some disturbance to wildlife and habitat, although this is expected to be negligible since existing facilities are not in or near sensitive areas. On the other hand, this alternative could have long-term consequences in terms of public and political support which could negatively impact projects and funding for improving the quality of fish and wildlife habitat.

Alternative C – Public Use Focus Alternative

Interpretive and environmental education visits could increase by 65 percent with this alternative due to increases in staff assigned to interpretation and environmental education and an increase in related facilities such as signing, visitor contact areas in offices, and a major visitor center in the Winona/La Crosse area. Increased facilities and visitation would cause some displacement of habitat and increase some disturbance to wildlife, although this is expected to be minor given the size of the Refuge and by avoiding sensitive wildlife locations and habitat. This alternative could have long-term positive consequences in terms of public and political support which could positively impact projects and funding for improving the quality of fish and wildlife habitat.

Alternative D – Wildlife and Integrated Public Use Alternative

Interpretive and environmental education opportunities could increase by 50 percent with this alternative (no major visitor center), and impacts would be similar, but proportionately less than, Alternative C.

Table 30: Annual Economic Effects of CCP Alternatives: Wildlife Observation¹

Impacts	Change from Alternative A			
	Alternative A: No Action	Alternative B: Wildlife Focus	Alternative C: Public Use Focus	Alternative D: Wildlife and Integrated Public Use Focus
Visitors	307,013	+0	+61,403	+61,403
Expenditures	\$4,063,292	+0	+\$812,658	+\$812,658
Economic Output	\$4,968,614	+0	+\$993,723	+\$993,723
Jobs	68	+0	+14	+14
Job Income	\$1,071,484	+0	+\$214,297	+\$214,297
Federal and State Taxes	\$522,657	+0	+\$104,531	+\$104,531

1.Caudill, 2004a

4.5.7 Wildlife Observation and Photography

Alternative A – No Action

Under this alternative, the current trend of increases in wildlife observation and photography visits would likely continue despite no change in facilities or programs. Ongoing habitat improvements and land acquisition would increase the quality of opportunities for these uses. However, this alternative would not meet the demand for facilities related to observation and photography (trails, tour routes, overlooks, blinds, etc.) as gauged by inquiries, past visitation trends, and growing tourism visits to the Refuge area. This alternative would continue to have a substantial positive economic impact as shown in Table 30.

Alternative B – Wildlife Focus

Impacts would be the same as Alternative A, although an increased emphasis on habitat improvements and land acquisition should improve the quality of wildlife observation and photography in certain areas. However, existing facilities could degrade more quickly as staff is directed to more important fish and wildlife related work. Economic impacts would likely be the same as the No Action or Current Direction Alternative.

Alternative C – Public Use Focus

Under this alternative, wildlife observation and photography visits are estimated to increase 20 percent due to habitat improvements, accelerated land acquisition, and a marked increase in related facilities (trails, tour routes, overlooks, blinds, etc.). Additional staff would be focused on public use programs and facilities which could enhance the quality and quantity of observation and photography opportunities. Increased facilities and visitation would cause some displacement of habitat and increase some disturbance to wildlife, although this is expected to be minor given the size of the Refuge and by avoiding or minimizing intrusion into important wildlife locations and habitat. This alternative could have long-term positive consequences in terms of public and political support which could positively impact projects and funding for improving the quality of fish and wildlife habitat. This alternative is predicted to have a corresponding increase in positive economic impact as reflected in Table 30.

Table 31: Annual Economic Effects of CCP Alternatives: Recreational Boating, Camping and other Beach-related Uses¹

Impacts	Change from Alternative A			
	Alternative A: No Action	Alternative B: Wildlife Focus	Alternative C: Public Use Focus	Alternative D: Wildlife and Integrated Public Use Focus
Visitors	1,362,851	- 203,065	+2,044	+2,044
Expenditures	\$34,673,216	- \$5,166,309	+\$52,010	+\$52,010
Economic Output	\$42,266,199	- \$6,297,664	+\$63,400	+\$63,400
Jobs	535	- 80	+1	+ 1
Job Income	\$9,044,582	- \$1,347,643	+\$213,567	+\$213,567
Federal and State Taxes	\$4,558,847	- \$679,268	+\$6,838	+\$6,838

1.Caudill, 2004a

Alternative D – Wildlife and Integrated Public Use Focus

Under this alternative, the impacts would be similar to Alternative C due to similar habitat improvements, accelerated land acquisition, and similar additions to facilities related to observation and photography. Table 30 (Caudill, 2004a).

4.5.8 Recreational Boating, Camping and Other Beach-Related Uses

Alternative A – No Action

Under this alternative, recreational boating, camping and other beach-related recreation would continue under current regulations and visits would continue to increase based on past use data and trends. These uses would continue to provide substantial economic impacts as displayed in Table 31. Overall, this alternative would have virtually no impact on the opportunities for recreational boating, camping, picnicking, swimming, and other beach-related uses. However, as visits continue to rise, the quality of the experience is likely to diminish due to crowding, unlawful and unruly visitor behavior, and litter and human waste.

Alternative B – Wildlife Focus

Under this alternative, visits for recreational boating, camping and other beach-related uses could decline by an estimated 15 percent as managers follow a “closed-unless-open” policy on Refuge shoreline and beach areas. Visitors would find fewer areas open to camping under this alternative as managers more assertively protect wildlife and habitat values of shorelines, beaches, islands, and backwaters. Space restrictions, and to a lesser degree the lack of beach maintenance (shaping and sand replenishment) would force visitors into less area and perhaps lead to more crowding. New regulations dealing with human waste would help improve the camping and beach use experience. Also, tighter regulations on the use of alcohol would help lessen the amount of unlawful and unruly behavior and improve the recreation experience for many users.

Recreation would be prohibited in waterfowl hunting closed areas and some visitors will find this change annoying and disruptive to long-standing boating routes or general fall boating, sailing, or canoeing and kayaking. However, this restriction would be in the fall when boating and other water and beach-related recreation is low. Visits for silent watercraft recreation (canoes and kayaks) would increase an estimated 10 percent with the creation of many electric motor only areas. Some users of power watercraft, on the other hand, will find these areas a nuisance and a reduction in area open to their traditional mode of sport and transportation. However, the electric motor only areas represent less than 15 percent of the surface water area of the Refuge so ample area would remain for the use of combustion engine-powered watercraft.

More frequent pool drawdowns to improve habitat would have a periodic and seasonal (summer) impact on recreational boating access and travel corridors, although the main channel of the river would remain deep enough for unrestricted travel. Drawdowns would also expose additional sandbar and beach areas for recreational use. The addition of slow, no-wake zones would slow travel times on a few access corridors, but this should have no impact on overall recreational boating.

Changes in areas open to certain uses and new regulations are likely to disrupt long-standing visitor expectations and practices and cause short-term confusion and frustration when visitors see area restrictions and new regulations. This disruption will be mitigated to some degree by information and education and lead time for implementation. Overall, this alternative will have a negative economic impact commensurate with the expected reduction in visitors engaged in recreational boating and beach-related recreation. This impact is summarized in Table 31.

Alternative C – Public Use Focus

Under this alternative, areas currently open to recreational boating, camping and other beach-related recreation would remain unchanged and visits would continue to increase based on past use data and trends. New boat access points would facilitate visits to some areas of the Refuge. New regulations dealing with human waste would help improve the camping and beach use experience. Also, tighter regulations on the use of alcohol would help lessen the amount of unlawful and unruly behavior and improve the recreation experience for many users. The requirement of a for-fee Recreation Use Permit for visitors who camp, anchor, moor, or beach watercraft on Refuge lands would help improve maintenance of areas and public safety through increased law enforcement patrols. This would in turn improve the quality of the experience for many users. However, many visitors, accustomed to free use of the Refuge, may resent the user fee. The fee is not expected to alter recreational use or visits to an appreciable degree.

Visits for silent watercraft recreation (canoes and kayaks) would increase an estimated 15 percent with the creation of 15 electric motor only areas. These areas would also be open to primitive camping and appeal to a certain segment of the public seeking an alternative river backwater experience. Like Alternative B, some users of power watercraft, on the other hand, will find these areas a nuisance and a reduction in area open to their traditional mode of sport and transportation. However, the electric motor only areas in this alternative represent less than 10 percent of the surface water of the Refuge, so ample area would remain for the use of engine-powered watercraft. Impacts from pool drawdowns and slow, no wake zones would be similar to Alternative B.

Like Alternative B, changes in areas open to certain uses and new regulations are likely to disrupt long-standing visitor expectations and practices and cause short-term confusion and frustration when visitors see area restrictions and new regulations. This disruption will be mitigated to some degree by information and education and lead time for implementation. This alternative would result in a modest increase in economic activity and impact as reflected in Table 31 (Caudill, 2004a).

Alternative D – Wildlife and Integrated Public Use Focus

Under this alternative, visits for recreational boating, camping and other beach-related uses would remain about the same even though managers may restrict use on certain beach areas under an

“open-unless-closed” policy. The number of restricted or closed shorelines or islands is expected to be small, and given the size of the Refuge, visitors should continue to have ample open areas. Visitors would find fewer areas open to camping under this alternative as backwaters, except in electric motor only areas, would be closed to camping. However, this should have little impact since a vast majority of camping occurs adjacent to the main river channel. New boat access points would facilitate visits to some areas of the Refuge. New regulations dealing with human waste and a clear beach maintenance policy would help improve the camping and beach use experience. Also, tighter regulations on the use of alcohol would help lessen the amount of unlawful and unruly behavior and improve the recreation experience for many users.

Visits for silent watercraft recreation (canoes and kayaks) would increase an estimated 15 percent with impacts similar to Alternative C. Impacts from pool drawdowns and slow, no wake zones would be similar to Alternatives C and B.

Like Alternatives C and B, changes in areas open to certain uses and new regulations are likely to disrupt long-standing visitor expectations and practices and cause short-term confusion and frustration when visitors see area restrictions and new regulations. This disruption will be mitigated to some degree by information and education and lead time for implementation. This alternative would result in a modest increase in economic activity and impact as reflected in Table 31.

4.5.9 Commercial Guiding and Tours

Alternative A – No Action

Guiding activities would continue and likely increase above the current estimated 15 guides operating on the Refuge. Since accurate information on guiding is not available due to inconsistent administration by the Refuge, the number of clients and economic impact is unknown. There would continue to be some conflict with the general public in some areas as guides and clients compete for the same space and resource.

Alternative B – Wildlife Focus

Under this alternative guiding would be eliminated on the Refuge. This would result in significant economic loss for guides and could result in a small decline in the number of visitors to the Refuge. The extent of these impacts is unknown due to incomplete data on guide activities. Any conflicts between guides, clients, and the general public would be eliminated under this alternative.

Alternative C – Public Use Focus

Same as Alternative A except that consistent Refuge policy and procedures for issuing permits, along with anticipated time and space restraints, would reduce conflicts with the general public and between guides. Some existing guides may not be able to meet permit requirements and lose the opportunity to guide on the Refuge.

Alternative D – Wildlife and Integrated Public Use Focus

Same as Alternative C.

4.5.10 Refuge Access

Alternative A – No Action

Under this alternative, access to the Refuge from Refuge-administered accesses would remain the same. Since there are 222 boat landings and various other canoe, walk-in, and informal accesses to the river in and around the Refuge, this alternative will have no impact on overall public access to the Refuge.

Alternative B – Wildlife Focus

Same as Alternative A except the implementation of a self-service boat launch fee at Refuge-administered boat landings would improve access maintenance. This fee could result in a modest decline in the use of Refuge boat landings.

Alternative C – Public Use Focus

Under this alternative, 7 new and 1 improved accesses would improve access to the Refuge in certain areas and foster a variety of wildlife-dependent public uses. A boat launch fee would have the same impacts as in Alternative B.

Alternative D – Wildlife and Integrated Public Use Focus

Same as C except there would be 1 fewer canoe landing with a commensurate impact to access opportunity.

4.5.11 Control of Dogs and Other Domestic Animals

Alternative A – No Action

Current, restrictive dog and other domestic animal regulations (must be confined except for dogs during hunting season) would continue to cause confusion and lack of compliance. The public would continue to allow dogs to run free on islands, beaches, and at public access points and owners would be at risk of citation at a Refuge Officer's discretion. Disturbance to wildlife and other visitors would continue at levels related to the effort given to enforcement of the regulation.

Alternative B – Wildlife Focus

This alternative would clarify the domestic animal regulation. The regulation change would likely be viewed negatively by many dog owners who have become accustomed to using the Refuge for training or letting their animals run free. There will also be some short-term confusion with a new regulation, but this will be mitigated by information, education, and lead time for implementation. Disturbance to wildlife and other visitors would decline.

Alternative C – Public Use Focus

Under this alternative, public acceptance may be greater due to a more liberal regulation which does not require dogs to be constrained, only controlled. This regulation change would likely be viewed positively by many dog owners, especially those who have become accustomed to using the Refuge for training or letting their animals run free. Disturbance to wildlife and the public would stay the same on most areas of the Refuge, but decrease at public access areas and trails. However, enforcement of the regulation would pose a difficulty for Refuge Officers due to different interpretations of control, proximity, and other terms, negating some of the decrease in disturbance.

Alternative D – Wildlife and Integrated Public Use Focus

Under this alternative, public acceptance will be mixed. Some will view the new regulation as more restrictive than current practice, while others will view it as more liberal. Disturbance to wildlife and the public would decrease throughout the Refuge, but particularly at public accesses and other facilities. Seasonal restrictions on allowing dogs to be free will provide protection to wildlife during the critical nesting and/or rearing season. Enforcement of the regulation and understanding by the public would improve due to clear and specific regulation language.

4.5.12 Property Taxes

For complete data excerpted in this section, refer to James Caudill's report "Impact of Management Alternatives on Local Tax Revenue, Upper Mississippi River National Wildlife and Fish Refuge" dated April, 2004. The report is available at Refuge headquarters in Winona, or is available on-line at <http://www.fws.gov/midwest/planning/uppermiss/index.html>.

Alternative A – No Action

Under this alternative the rate of land acquisition would remain the same. The Refuge would acquire around 200 acres a year, or 3,000 acres by 2020. Total revenue sharing payments made by the Service to the counties are estimated to increase from \$90,000 in 2003 to \$297,000 in 2020. The estimated annual tax revenue loss from acquired acres in 2020 is \$68,000. This loss in tax revenue will be mitigated to varying degrees by rate of acquisition over a number of years, acquisition over a broad landscape encompassing several states and many counties, increases in other tax revenues from Refuge operations and recreation expenditures, and predicted increase in property values, and thus assessed values, adjacent to Refuge lands (see section 4.2.5 of this chapter).

Alternative B – Wildlife Focus

Under this alternative the rate of land acquisition would increase to 1,000 acres a year, or 15,000 acres by 2020. Total revenue sharing payments are estimated to increase from \$90,000 in 2003 to \$320,000 in 2020. The estimated annual tax revenue loss from acquired acres in 2020 is \$340,000. Like Alternative A, this loss in tax revenue will be mitigated to varying degrees by rate of acquisition over a number of years, acquisition over a broad landscape encompassing several states and many counties, increases in other tax revenues from Refuge operations and recreation expenditures, and predicted increase in property values, and thus assessed values, adjacent to Refuge lands (see section 4.2.5 of this chapter).

Alternative C – Public Use Focus

Same as Alternative B, Wildlife Focus.

Alternative D – Wildlife and Integrated Public Use Focus

Same as Alternative B, Wildlife Focus.

4.5.13 Refuge Administration and Operations

Alternative A – No Action

Under this alternative, the overall annual Refuge budget is expected to increase in accordance with inflation adjustments, but Refuge staffing levels would remain the same as current, or 37 full-time employees. With levels of public use and interest continuing to rise, meeting the information needs of the public will likely fall short of public expectation in terms of personal contact, programs, leaflets, and media work. Coordination with the various state and federal agencies and non-government organizations will continue at the current level, resulting in gaps in Refuge presence on such issues as forestry, fisheries, and biological monitoring.

Refuge offices and maintenance facilities would remain the same, and inadequate in terms of public accessibility, information, and programs, and in terms of employee productivity and recruitment. Some offices will continue to have unresolved structural safety issues, while inadequate maintenance and storage will continue to negatively affect efficiency of field operations and condition of heavy equipment and vehicles.

Annual salary and operations expenditures will continue to have a positive economic impact, with current economic output estimated at \$8.3 million (see Caudill, 2004).

Alternative B – Wildlife Focus

Under this alternative, the overall annual Refuge budget would increase substantially, mainly due to increases in staffing to an eventual 54.5 full-time equivalents. This increase in staffing would dramatically increase biological monitoring, soundness of decisions, and direct habitat work. Personal service to the public and coordination with the various state and federal agencies and non-government organizations would increase markedly, especially in terms of habitat and biological programs which would be the priority under this alternative.

Refuge offices would remain the same, with most inadequate in terms of public accessibility, information, and programs, and in terms of employee productivity and recruitment. Maintenance and storage facilities would be replaced, improving the efficiency of field operations and maintaining heavy equipment and vehicles in better condition.

Annual salary and operations expenditures will result in an increased positive economic impact commensurate with increases. Staff salary expenditures alone could increase approximately 40 percent by the end of the planning period in 2015, resulting in a similar economic output increase.

Alternative C – Public Use Focus

Same as Alternative B, except that a priority on filling visitor services-related staff and the construction of new offices and a major new visitor center would dramatically increase public accessibility, information, and programs.

Alternative D – Wildlife and Integrated Public Use Focus

Same as Alternative B, except that construction of new offices (no major visitor center) would increase public accessibility, information, and programs, and improve employee productivity and recruitment. In addition, staffing would increase to an eventual 56.5 full-time equivalents.

4.6 Cumulative Impacts

4.6.1 Cumulative Impacts – Physical Environment

Alternatives B, C, and D, and to a lesser extent A, call for increased attention to habitat restoration and/or enhancement projects, floodplain and adjacent land acquisition, and improvement in water quality in terms of both chemistry and reduced sediment. Collectively and over time, these actions will improve the ability of the river environment to process nutrients and store carbon, and along with other basin-wide regulations and initiatives, contribute to the improvement of hypoxia in the Gulf of Mexico. Physical changes through projects will restore islands, deflect sediment from backwaters, and deepen sediment-filled channels, resulting in a more diverse and dynamic river geomorphology. These changes will help reverse a trend to more-or-less static geomorphology, a trend which started when the locks and dams went into operation in the 1930s. Work on the river within the Refuge also influences work on the river upstream and downstream of the Refuge, and thus can have a larger cumulative effect on the physical environment.

Although rates and amounts of sediment entering the Refuge may be reduced over time, none of the alternatives will adequately address the movement of sediments to the mouth of the Mississippi. Thus, the actions in the alternatives will not cumulatively improve the continued deficit of sediment on the Mississippi River delta.

All alternatives, to slightly varying degrees, emphasize maintaining the integrity of the Refuge boundary and conserving the scenic beauty. Given the size and length of the Refuge, actions taken in the alternatives to ensure long-term forest health, acquire floodplain and bulflands, and reduce encroachment, will serve as a model for land use planning and zoning adjacent to the Refuge. In addition, when actions on the Refuge are combined with actions of the states, non-profit organizations, and private landowners, there can be measurable progress in stemming the rate or type of development which detracts from the scenic beauty of the Upper Mississippi River Valley.

4.6.2 Cumulative Impacts – Biological Environment

Although the degree of habitat quantity and quality improvement is different under the alternatives, all should continue to improve fish and wildlife habitat, and thus populations. For some species or species-groups which have limited habitat options elsewhere (for example mussels and paddlefish), this improvement will be important to their overall populations and genetic diversity.

For migratory birds, the Refuge may likely grow in importance due to its size and scope. Reduced habitat for migrating waterfowl in the Midwest, for example, has made the Refuge a critically important stop for large portions of the continent's canvasback and tundra swans. In this regard, alternatives A and C, with virtually unchanged Waterfowl Hunting Closed Areas, may not meet the future needs of these birds should feeding habitat in existing closed areas decline. It is unknown whether these birds would find adequate mid-migration habitat elsewhere, and alternatives A and C could have very negative cumulative impacts on these continental populations. On the other hand, alternatives B and D create new and more attractive closed areas which would provide insurance for these birds in the event of feeding habitat collapses in any given pool.



Lily flowers. Copyright Sandra Lines

Habitat improvements under the alternatives should also benefit rare and declining species, and species listed as threatened or endangered. Along with conservation actions for these species on other public and private lands, the Refuge actions across all alternatives, but especially B and D, will have a positive cumulative impact. For example, the Refuge has 136 nesting pair of bald eagles, and provides winter habitat for a peak population of 1,000 eagles, with a trend that continues upward. Thus, the Refuge can positively contribute to the case for delisting the bald eagle. For some species, the Refuge may provide an important reservoir for population expansion on suitable habitat off-Refuge that may become available in the future. On the other

hand, maintaining habitat quality and quantity could prove important in expansion or recovery of species. An example would be the endangered whooping crane. Although population restoration efforts were started elsewhere, some birds are now using the Refuge and may in the future breed, thus adding to wild populations and eventual recovery.

Alternatives A and C provide no increase in the control of invasive plants and animals, and infestations are expected to continue to increase. This will not only affect habitat and other species on the Refuge, but could speed the spread of invasives to previously un-infested areas off-Refuge. On the other hand, Alternative B and D stress more aggressive action which could help keep invasives in check beyond the Refuge.

Alternatives B and D also have a strong, biological monitoring component, with increases in species and habitats surveyed, research, and coordination with others. This increased information will not only aid decision making that benefits fish and wildlife on the Refuge, but adds to the body of knowledge collected by other agencies which can affect resource decision-making over a broader landscape.

Table 32: Summary of Annual Economic Effects of CCP Alternatives on Recreational Use¹

Impacts	Alternative A: No Action	Change from Alternative A		
		Alternative B: Wildlife Focus	Alternative C: Public Use Focus	Alternative D: Wildlife and Integrated Public Use Focus
Visitors	3,168,483	- 237,399	+224,383	+150,505
Expenditures	\$73,516,829	- \$6,124,727	+\$4,602,899	+\$2,863,884
Economic Output	\$89,883,127	- \$7,466,291	+\$5,643,217	+\$3,510,802
Jobs	1,173	- 95	+76	+48
Job Income	\$19,688,796	- \$1,608,265	+\$1,457,809	+\$979,172
Federal and State Taxes	\$9,655,675	- \$804,600	\$603,214	\$374,519

1.Caudill, 2004a

4.6.3 Cumulative Impacts – Socioeconomic Environment

A variety of objectives in alternatives B, C, and D will have varying degrees of impact on recreational use of the Refuge. Earlier sections detailed specific impacts on individual uses such as hunting, fishing, wildlife observation, and general recreation. Cumulatively, each alternative has a different economic impact since it affects the level of public use. Table 32 summarizes this cumulative impact by alternative.

Each alternative takes a different approach to managing the variety of recreational uses that occur on the Refuge, ranging from status quo (Alternative A) to an integrated approach (Alternative D) which seeks to conserve wildlife and habitat while providing a diversity of recreational opportunities for a broad cross-section of visitors. These varying alternatives will have cumulative impacts given that demand for nearly all recreation is expected to grow while the amount of Refuge space and natural resources is relatively finite.

In Alternative A, current uses would continue without much change. Eventually, the level and means of use would change the nature of the experience for many visitors, and many would choose to either forgo certain recreation due to crowding or behavior issues, or go elsewhere. Given that the Refuge provides opportunity for 3.7 million visitors, this shift could put additional strains on other public lands and have a negative local and regional economic effect, or diminish the Refuge’s contribution to the Refuge System mission of providing fish and wildlife for the benefit of the American people as a whole. Alternative B might have the same effect by being perceived as too restrictive in terms of recreation, and Alternative C might have the same effect for reasons similar to Alternative A. Alternative D attempts to strike that reasonable balance to ensure that the Refuge remains a destination of choice for both wildlife and people. If successful, this integrated approach may prove more sustainable and have positive, long-term natural resource, social, and economic impacts both on the Refuge and beyond.

Alternatives B, C, and D also involve an approximate 50 percent increase in the Refuge's base operations and maintenance budget over the next 15 years, plus additional maintenance and construction funding for new facilities. Although budgets are impossible to predict, this increase could impact operations funding at other refuges and wetland management districts in the Region if it came from existing allocations. This would result in delaying or forgoing habitat and facility improvements and other work at these stations, although the change would be small at any particular station.

Working relationships with the states, Corps of Engineers and others should improve in terms of responsiveness to inquiries and speed of joint projects under alternatives B and D, and to a lesser extent under alternative C. This improvement would be mainly the result of increased staffing in key areas such as biology, fisheries, and forestry. Since the Mississippi River and the Refuge is multi-jurisdictional in many aspects, more effective coordination will have wide-ranging positive impacts on fish and wildlife and public use programs and opportunities. Many programs such as Environmental Management Program and pool-wide drawdowns involve new approaches and techniques which have application elsewhere, and can have a positive cumulative effect on how agencies work with large river systems.

Overall coordination and communication with the general public should improve under alternatives C and D due to new staff positions dealing with public use and public information. Since some may oppose changes in one or more of the alternatives, or likewise support them, the cumulative impact on public perception of the Refuge and the Fish and Wildlife Service could be negative or positive. More emphasis on public education and information in alternatives C and D should foster more understanding and appreciation of resource issues and needs, and could lead to increased political support and funding which could positively affect fish and wildlife resources on the Refuge and the Mississippi River as a whole. Increased outreach of these alternatives could also positively impact land use decisions outside of the Refuge by local governments and private landowners, and thus lead to increased fish and wildlife populations over a broader area.

Table 33: Summary of Alternative Impacts

Parameter¹	Alternative A: No Action	Alternative B: Wildlife Focus	Alternative C: Public Use Focus	Alternative D: Wildlife and Integrated Public Use (Preferred Alternative)
Physical				
Water Quality	3	4	3	4
Sedimentation	3	4	4	4
Geomorphology	3	4	3	4
Hydrology and Water Level Management	3	4	3	4
Landscape Considerations	2	4	3	5
Biological				
Threatened and Endangered Species	3	4	2	4
Waterfowl	2	4	2	4
Other Migratory Birds	2	4	2	4
Sport Fish	4	5	4	5
Other Fish	2	4	3	4
Freshwater Mussels	2	4	2	4
Reptiles and Amphibians	3	4	2	4
Control of Invasive Species	1	4	1	4
Invertebrates	3	4	3	4
Mammals	3	4	3	4
Aquatic Vegetation/ Wetlands	3	4	3	4
Floodplain Forest	2	4	2	4
Terrestrial Habitat/ Grasslands	3	4	3	4
Socioeconomic				
Hunting	3	3	4	4
Fishing	3	3	4	4
Fishing Tournaments	5	3	4	3
Commercial Fishing	4	2	4	2
Fishing Floats	3	1	4	3

Table 33: Summary of Alternative Impacts (Continued)

Parameter¹	Alternative A: No Action	Alternative B: Wildlife Focus	Alternative C: Public Use Focus	Alternative D: Wildlife and Integrated Public Use (Preferred Alternative)
Interpretation and Environmental Education	3	2	5	4
Wildlife Observation and Photography	3	2	5	4
Recreational Boating, Camping, and Other Beach-Related Uses	5	1	4	4
Commercial Guiding and Tours	3	1	2	2
Refuge Access	3	3	4	4
Control of Dogs and Other Domestic Animals	3	2	5	4
Property Taxes	3	2	2	2
Refuge Administration and Operations	1	4	4	5
Cumulative				
Cumulative Impacts	2	4	3	4

1. The scale for summarizing impacts by parameter is as follows: 1= Most negative; 3= Neutral or No Impact; and 5= Most Positive

Chapter 5: List of Preparers

Name	Title/Contribution	Degrees/Other Related Experience	Years With FWS
Upper Mississippi River NW&FR Staff, Region 3			
Donald Hultman	<i>Complex Manager. Writer; Direct Planning Effort, Public Meetings</i>	M.A., Univ. of Minnesota, Mpls./ St. Paul, Env. Educ.; B.S., Univ. of Minnesota, Communications/Wildlife. Other: Wyoming Game and Fish Dept., 1 yr.	25
Eric Nelson	<i>Refuge Biologist. Writer; Refuge Planner; Public Meetings</i>	M.S. and B.S., Univ. Wisconsin, Stevens Point, Natural Resources, Wildlife. Other: Bureau of Land Management, 2 yrs.	24
Cynthia Samples	<i>Refuge Ranger. Writer; Visitor Services</i>	B.S., Western Illinois University, Macomb, Recreation and Park Administration. Other: Corps of Engineers, 20 yrs.	5
Arthur "Tex" Hawkins	<i>Watershed Biologist. Writer; Private Lands</i>	B.S., Univ. of Minnesota, Mpls./ St. Paul, Wildlife; B.A. Mass Communications. Other: MN DNR, 6 yrs.; AID/Peace Corps (Costa Rica), 5 yrs.	28
Sharonne Baylor	<i>Environmental Engineer. Writer; Habitat Projects</i>	B.S., Univ. of Wisconsin, Platteville, Civil Engineering. Other: Corps of Engineers – St. Paul District, 12 yrs.	2
Brian Stemper	<i>Biological Technician. GIS Cartographer</i>	B.S., South Dakota State Univ., Wildlife & Fisheries Mgmt. Other: Corps of Engineers, 2 yrs.	6
Victoria Hirschboeck	<i>Refuge Biologist. Writer; Biology</i>	M.S., Univ. of Montana, Missoula, Wildlife Biology; B.S., Biology and B.F.A., Univ. of Michigan, Ann Arbor.	15

Ed Britton	<i>Savanna District Manager. Develop Alternatives, Public Meetings</i>	B.S., Southern Illinois Univ., Carbondale, Zoology.	26
Robert Drieslein	<i>Winona District Manager. Develop Alternatives, Public Meetings</i>	M.S., South Dakota State Univ., Brookings, Wildlife Mgmt. B.S., Univ. of IL, Ag. Science.	34
John Lindell	<i>McGregor District Manager. Develop Alternatives, Public Meetings</i>	B.A., Zoology and M.A., Vertebrate Ecology, Univ. of South Dakota, Vermillion.	34
James Nissen	<i>La Crosse District Manager. Develop Alternatives, Public Meetings</i>	B.S., Univ. of Nebraska, Lincoln, Wildlife Mgmt.	27
Victoria Drieslein	<i>Administrative Officer. Budget, Coordination</i>	NA	18
Nan Clausen	<i>Clerk. Data Collection, Document Formatting</i>	B.A., Univ. of Minnesota, Minneapolis, English. Other: Corporate Technical Communications, 26 yrs.	2
Division of Conservation Planning, Region 3			
Thomas Larson	<i>Chief of Conservation Planning. CCP Review</i>	M.S., University of Wisconsin, Madison Wildlife Ecology. Other: National Park Service; Peace Corps	27
John Schomaker	<i>Refuge Planning Specialist. CCP Coordination</i>	Ph.D., Colorado State Univ., Fort Collins. Other: USDA Forest Service, 8 yrs.	17
Jane Hodgins	<i>Technical Writer/Editor. Newsletter, EIS</i>	B.A., College of St. Thomas, St. Paul, Journalism. Other: Senior Editor, Editor and Reporter, 14 yrs.	6
Jane Lardy Nelson	<i>Editorial Assistant. Mailings</i>	NA	16
Gabriel DeAlessio	<i>GIS Specialist/Biologist. Cartography</i>	B.S., Univ. of Connecticut, Storrs, Natural Resource Engineering & Mgmt. Other: Contractor, DoD, 2.5 yrs.	5
Ecological Services, Region 3			
Jeffrey Gosse	<i>Regional Environmental Coordinator. NEPA Review</i>	Ph.D. and M.S., Utah State Univ., Logan; B.S., Univ. of Wisconsin, Madison. Other: Texas Parks and Wildlife, 8 mo.; Private Consulting, 6 yrs.	17

Thomas Magnuson	<i>Biologist. CCP Assistance</i>	M.B.A., Lake Superior State Univ.; B.A., Biology, Bemidji State Univ. Other: U.S. Peace Corps (Tunisia), 2 yrs.	17
Visitor Services & Communications, Region 3			
H. John Dobrovolny	<i>Regional Historic Preservation Officer: Historian</i>	B.A., History, Sacramento State College, Sacramento. Other: National Park Svc., 14 yrs.	24
Division of Economics, Arlington, Virginia			
James Caudill	<i>Senior Economist. Economic Assessments</i>	Ph.D., Michigan State Univ., Agricultural Economics; M.A., Agricultural Economics, B.A., Geography, Dominguez Hills. Other: U.S. Forest Service, 4 yrs.	10

Chapter 6: Consultation and Coordination With the Public and Others

6.1 Scoping and Public Involvement

Scoping and public involvement are vital components of federal planning and were given considerable attention during development of this Draft CCP/EIS for the Refuge. The public received our official notice of intent to prepare a CCP/EIS in the Federal Register, dated May 30, 2002 (Vol. 76, No. 104, page 37852). A Communication Plan and Congressional Outreach Plan were drafted in May, 2002.

Internal Scoping. Internal scoping was conducted between March and June, 2002, within each of the four Refuge districts and the Regional Office, with over 350 concern statements recorded. Many of these concerns were repeated at each setting which helped focus on the most important issues. An in-house, 1-day workshop was conducted at a refuge-wide meeting January 14, 2004 in Onalaska, Wisconsin. Refuge staff discussed issues and potential solutions for use in CCP/EIS preparation.

Public Scoping Meetings and Workshops. Ten public scoping meetings, professionally facilitated by Dr. Onnie Byers and Kathy Holzer of the Conservation Breeding Specialist Group, Apple Valley, Minnesota, were attended by 473 citizens during August and September 2002. Citizens expressed 495 comments in response to the question, “what concerns you most about the future of the Refuge?” Approximately 35 additional written comments were received as a result of those meetings.

Upon completion of these public meetings, refuge staff compiled a series of 12 “Issue Fact Sheets” summarizing major habitat and recreational issues identified by the public. These one-page documents were used as reference materials for public workshops held in Prairie du Chien, Wisconsin; Savanna, Illinois; Winona, Minnesota; and Onalaska, Wisconsin between January and March, 2003. Called “Manager for a Day” workshops, citizens were invited to offer potential solutions to the 12 issues referred to above and any other issue they wished to address. These workshops were again facilitated by Dr. Byers and yielded hundreds of ideas and potential solutions from 116 citizen participants.

In anticipation of public concerns about waterfowl hunting and areas closed to waterfowl hunting on the Refuge, we conducted two special “Closed Area Informational Meetings” for public involvement. The first was in Onalaska, Wisconsin on September 11, 2003, and the second was in Savanna, Illinois on June 14, 2003. Staff made presentations on the history of closed areas, human disturbance issues, and the bioenergetic or food needs of waterfowl. Citizens provided pros and cons of management options in and around closed areas.

State and Federal Interagency Meetings. Refuge managers and biologists have worked closely with the departments of natural resources for Illinois, Iowa, Minnesota and Wisconsin and the Corps of Engineers (St. Paul and Rock Island Districts). An official CCP Interagency Planning Team

consisting of state and Corps of Engineers representatives was first convened in December 2001, followed by meetings in May 2002, March 2003, and January 2004. Most representatives also participated in a Wildlife and Habitat Management Review of the refuge in August and October 2002.

Between January and April 2004, Refuge staff conducted briefings for state department of natural resource personnel from Illinois, Iowa, Minnesota, and Wisconsin, as well as managers of the Rock Island and St. Paul Districts, Corps of Engineers. These briefings involved discussions of issues and refinements of management alternatives the Refuge has considered in developing the draft CCP/EIS. Over 120 agency concerns and issues were received at those agency meetings.

Other Briefings. In late January, 2004 the Refuge conducted three briefings for Congressional and state legislature members and staff. Meetings were held in Savanna, Illinois, Prairie du Chien, Wisconsin, and La Crosse, Wisconsin. Attendees included one state senator from Minnesota and staffers for three U.S. Representatives and three U.S. Senators.

In 2003 and 2004, briefings and presentations were given to the Upper Mississippi River Conservation Committee, Upper Mississippi River Basin Association, Mississippi River Citizens Commission, Wisconsin Parkway Commission, and the La Crosse County (Wisconsin) Conservation Alliance. Topics included the planning process and framework, issues being addressed, and avenues for public involvement and comment.

Newsletters and News Releases. Three “CCP Update” newsletters dated August 2002, December 2002, and July 2003, were sent to approximately 2,600 citizens, non-governmental organizations, media, and legislators. They described who we are, the planning process, proposed completion schedules, potential issues to be addressed in the Draft CCP/EIS, draft Refuge vision and goals, and announced times and locations of upcoming public meetings.

Four news releases were sent to approximately 52 media outlets during the scoping process. The first two (April 30, 2002 and June 28, 2002), announced our intent to complete the CCP and gave background on the process. The third, December 20, 2002, announced the “Manager for a Day” workshops and invited citizen participation. The final release was January 22, 2004 to announce that the Interagency CCP Planning Team had met (states and Corps of Engineers) and discussed a preliminary, in-house working draft of the alternatives being considered.

General. Details of public and agency meetings are available at Refuge headquarters in Winona, Minnesota. To date, Refuge staff have made numerous CCP presentations to a variety of audiences, including numerous radio, television, and print media. The Refuge also received over 100 written comments, many via e-mail, from the public throughout the scoping and plan preparation period. Each comment was acknowledged with a letter of thanks and the people were added to the mailing list.



Participants in an open house in September 2002 were asked to prioritize issues for consideration in the CCP USFWS

6.2 Cultural Resources and Historic Preservation

Notification of preparation of the CCP and EIS is to be sent to the federally-recognized tribes and to the several county historical societies. In addition, the following listed organizations should be notified:

- State Historic Preservation Officer for Illinois, Iowa, Minnesota, and Wisconsin
- Office of the State Archeologist for Iowa, Minnesota, and Wisconsin
- Governor's Liaison for Indian Affairs in Iowa
- Indian Affairs Council for Minnesota
- Archaeological and historic preservation state-wide groups
- The Advisory Council on Historic Preservation
- The FWS Historic Preservation Officer

The final CCP with EIS is to be sent to each State Historic Preservation Officer and to others who request it.

6.3 List of Contacts

The Refuge has contacted the following agencies, organizations, and citizens regarding the CCP.

Elected Federal Officials

U.S. Senators & Representatives (16)
U.S. Senator Richard Durbin (Illinois)
U.S. Senator Peter Fitzgerald (Illinois)
U.S. Senator Charles Grassley (Iowa)
U.S. Senator Tom Harkin (Iowa)
U.S. Senator Norm Coleman (Minnesota)
U.S. Senator Mark Dayton (Minnesota)
U.S. Senator Russ Feingold (Wisconsin)
U.S. Senator Herb Kohl (Wisconsin)
U.S. Representative Philip Crane (Illinois)
U.S. Representative Lane Evans (Illinois)
U.S. Representative Dennis Hastert (Illinois)
U.S. Representative Donald Manzullo (Illinois)
U.S. Representative Tom Latham (Iowa)
U.S. Representative Jim Nussle (Iowa)
U.S. Representative Gil Gutknecht (Minnesota)
U.S. Representative Mark Kennedy (Minnesota)

U.S. Representative Ron Kind (Wisconsin)

Elected State Officials (33)

State Senator Denny Jacobs (Illinois)

State Senator Todd Sieben (Illinois)

State Senator Mike Connolly (Iowa)

State Senator E.T. Gaskill (Iowa)

State Senator Kitty Rehberg (Iowa)

State Senator Julie Hosch (Iowa)

State Senator Bryan Sievers (Iowa)

State Senator Roger Stewart (Iowa)

State Senator Mark Ziemann (Iowa)

State Senator Bob Kierlin (Minnesota)

State Senator Steve Murphy (Minnesota)

State Senator Ron Brown (Wisconsin)

State Senator Mark Meyer (Wisconsin)

State Senator Dale Schultz (Wisconsin)

State Representative Mike Boland (Illinois)

State Representative Jim Sacia (Illinois)

State Representative Patrick Verschoore (Illinois)

State Representative Polly Bukta (Iowa)

State Representative Chuck Gipp (Iowa)

State Representative Pam Jochum (Iowa)

State Representative Steven Lukan (Iowa)

State Representative Pat Murphy (Iowa)

State Representative Steven Olson (Iowa)

State Representative Bob Osterhaus (Iowa)

State Representative Roger Thomas (Iowa)

State Representative Gregory Davids (Minnesota)

State Representative Jerry Dempsey (Minnesota)

State Representative Gene Pelowski (Minnesota)

State Representative Steve Sviggum (Minnesota)

State Representative Barbara Gronemus (Wisconsin)

State Representative Mike Huebsch (Wisconsin)

State Representative DuWayne Johnsrud (Wisconsin)

State Representative Gabe Loeffelholz (Wisconsin)

State Representative Jennifer Shilling (Wisconsin)

Federal Agencies (8)

U.S. Army Corps of Engineers

U.S. Coast Guard

U.S. Department of Agriculture, Natural Resource Conservation Service

U.S. Department of Interior, U.S. Fish & Wildlife Service

U.S. Department of Interior, U.S. Geological Survey

U.S. Department of Transportation

U.S. Environmental Protection Agency

U.S. Forest Service

Native American Tribes (35)

Bad River Band, Chippewa

Boise Forte Band, Chippewa

Fond du Lac Band, Chippewa

Grand Portage Band, Chippewa

Lac Courte Oreilles Band, Chippewa

Lac du Flambeau, Chippewa

Leech Lake Band, Chippewa

Mille Lacs Band, Chippewa

Red Cliff Band, Chippewa

Red Lake Band, Chippewa

Sandy Lake Band, Chippewa

Sokaogon Chippewa

Devils Lake (Spirit Lake) Sioux

Flandreau Santee Sioux

Lower Brule Sioux

Lower Sioux Mdewakanton

Prairie Island Sioux

Santee Sioux

Shakopee Mdewakanton Sioux

Sisseton-Whapeton Sioux

Upper Sioux Community

Iowa Tribe of Kansas

Iowa tribe of Oklahoma

Menominee Indian Tribe
Miami Tribe
Stockbridge-Munsee
Peoria Indian Tribe
Citizen Potawatomi
Forest County Potawatomi
Hannahville Indian Community, Potawatomi
Prairie Band of Potawatomi
Sac & Fox Nation of Missouri
Sac & Fox Tribe of the Mississippi
Ho-Chunk Nation
Winnebago Tribe of Nebraska

State Agencies (15)

Iowa Department of Natural Resources
Iowa Historical Society
Iowa Department of Cultural Affairs
Illinois Department of Natural Resources
Illinois Historic Preservation Division
Minnesota Department of Agriculture
Minnesota Department of Natural Resources
Minnesota Department of Transportation
Minnesota Historical Society
Minnesota Pollution Control Agency
Minnesota Water & Soil Resource Board
Wisconsin Department of Natural Resources
Wisconsin Division of Tourism
Wisconsin Department of Transportation
Wisconsin Department of Agriculture, Trade

Cities (23)

Alma, Wisconsin
Brownsville, Minnesota
Cassville Village, Wisconsin
Dubuque, Iowa
Edgewood, Iowa

Elkader, Iowa
Fountain City, Wisconsin
Garnavillo, Iowa
Guttenberg, Iowa
Harper's Ferry, Iowa
Hokah, Minnesota
La Crescent, Minnesota
La Crosse, Wisconsin
Lansing, Iowa
McGregor, Iowa
Monona, Iowa
New Albin, Iowa
Onalaska, Wisconsin
Prairie du Chien, Wisconsin
Stoddard, Wisconsin
Trempealeau, Wisconsin
Waukon, Iowa
Winona, Minnesota

Counties (19)

Carroll, Illinois
Jackson, Illinois
JoDaviess, Illinois
Rock Island, Illinois
Whiteside, Illinois
Allamakee, Iowa
Clayton, Iowa
Clinton, Iowa
Dubuque, Iowa
Scott, Iowa
Houston, Minnesota
Wabasha, Minnesota
Winona County, Minnesota
Buffalo, Wisconsin
Crawford, Wisconsin
Grant, Wisconsin

La Crosse, Wisconsin
Trempealeau, Wisconsin
Vernon, Wisconsin

Organizations (263)

American Rivers
Audubon Society
Boy Scouts of America
Izaak Walton League of America
Sierra Club
The Nature Conservancy
The Wilderness Society
Friends of the Upper Mississippi Refuges
Sportsmen's Clubs (96)
Businesses (45)
Schools/Univ. (26)
Libraries (34)
Other Organizations (54)

River Associations and Committees (13)

Lower Mississippi River Conservation Committee
Midwest Area River Coalition 2000
Mississippi River Basin Alliance
Mississippi River Citizen Commission
Mississippi River Interstate Cooperative Research Association
Mississippi River Parkway Commission
Mississippi River Regional Planning Commission
Mississippi River Revival
River Resource Alliance
Upper Mississippi River Basin Association
Upper Mississippi River Congressional Task Force
Upper Mississippi River Conservation Committee
Upper Mississippi Waterway Association

Media (110)

Newspaper (74)

Radio (20)

TV (16)

Citizens (2,098)

Illinois (274)

Iowa (287)

Minnesota (574)

Wisconsin (928)

Citizens in Other States (35)

Chapter 7: Public Comment on Draft EIS and Response

This chapter is reserved for the Final EIS.

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Appendix A: Glossary

Appendix A: Glossary of Terms

Alternative	A set of objectives and strategies needed to achieve refuge goals and the desired future condition.
Biological Diversity	The variety of life forms and its processes, including the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur.
Closed Area	Defined in Alternatives A, B, and C as: an area closed to all migratory bird hunting. Other hunting and trapping is only allowed beginning the day after the close of the state duck hunting season, until season closure or March 15, whichever comes first, except turkey hunting is allowed during state seasons. Defined in Alternative D the same as above except no fishing and no motorized watercraft are allowed October 1 to the end of the respective state regular duck hunting season.
Compatible Use	A wildlife-dependent recreational use, or any other use on a refuge that will not materially interfere with or detract from the fulfillment of the mission of the Service or the purposes of the refuge.
Comprehensive Conservation Plan	A document that describes the desired future conditions of the refuge, and specifies management actions to achieve refuge goals and the mission of the National Wildlife Refuge System.
Drawdowns	The process of temporarily lowering water levels of Pools during the summer months to stimulate the growth of aquatic plants in the lower to middle portions of the pools.
Ecosystem	A dynamic and interrelated complex of plant and animal communities and their associated non-living environment.
Ecosystem Management	Management of an ecosystem that includes all ecological, social and economic components that make up the whole of the system.
Electric Motor Areas	These areas are closed year round to all motorized vehicles and watercraft except watercraft powered by electric motors or non-motorized means. A 5 mile per hour speed limit applies to electric powered craft.

Endangered Species	Any species of plant or animal defined through the Endangered Species Act as being in danger of extinction throughout all or a significant portion of its range, and published in the Federal Register.
Environmental Impact Statement	A systematic analysis to determine if proposed actions would result in a significant effect on the quality of the environment.
Environmental Management Program	This program is funded and administered by the U.S. Army Corps of Engineers to construct habitat rehabilitation and enhancement projects and to conduct long-term resource monitoring of biological and physical features of the Upper Mississippi River System
Environmental Pool Plans	These plans identify a desired future habitat condition within Pools 2-22 toward which agencies and other river interests can strive. They are endorsed by the River Resources Forum and River Resources Coordinating Committee, (U.S. Army Corp of Engineers, St. Paul and Rock Island District, respectively), whose members include public and private organizations, and whose charters are based on a balanced approach to river resource management.
Extirpation	The local extinction of a species that is no longer found in a locality or country, but exists elsewhere in the world.
Fiscal Year	Federal Government budget year beginning October 1 and ending September 31.
Goals	Descriptive statements of desired future conditions.
Interjurisdictional Fish	Fish that occur in waters under the jurisdiction of one or more states, for which there is an interstate fishery management plan or which migrates between the waters under the jurisdiction of two or more states.
Issue	Any unsettled matter that requires a management decision. For example, a resource management problem, concern, a threat to natural resources, a conflict in uses, or in the presence of an undesirable resource condition.
National Wildlife Refuge System	All lands, waters, and interests therein administered by the U.S. Fish and Wildlife Service as wildlife refuges, wildlife ranges, wildlife management areas, waterfowl production areas, and other areas for the protection and conservation of fish, wildlife and plant resources.
Objectives	Actions to be accomplished to achieve a desired outcome.
Open Water Hunting	Open water means any water beyond a natural growth of vegetation that offers whole or partial concealment to the hunter. In Wisconsin, open water hunting is allowed by state regulations only in the Grant County portion of the Refuge,

where hunters may use boats/blinds so long as they are securely anchored. Minnesota does not allow open water hunting on the Mississippi River. Iowa and Illinois permit open water hunting. A traditional hunting method uses low-profile scull, or lay-out boats in open water.

Pool	The area of water impounded behind (upstream) a dam.
Preferred Alternative	The Service's selected alternative identified in the Draft Comprehensive Conservation Plan.
Project Leader	Refuge manager or District Manager.
Sanctuary	This term applies to a Refuge area where no entry is allowed. In waterfowl sanctuaries, no entry is allowed between October 1 and the end of the regular state duck hunting season.
Scoping	A process for determining the scope of issues to be addressed by a comprehensive conservation plan and for identifying the significant issues. Involved in the scoping process are federal, state and local agencies; private organizations; and individuals.
Slow, No-wake Zones	These zones require boats to travel no more than five (5) miles per hour to reduce the size of wakes to protect shorelines from eroding and/or to minimize safety hazards posed by heavy traffic and blind spots in narrow channels.
Species	A distinctive kind of plant or animal having distinguishable characteristics, and that can interbreed and produce young. A category of biological classification.
Strategies	A general approach or specific actions to achieve objectives.
Threatened Species	Those plant or animal species likely to become endangered species throughout all of or a significant portion of their range within the foreseeable future. A plant or animal identified and defined in accordance with the 1973 Endangered Species Act and published in the Federal Register.
Vegetation	Plants in general, or the sum total of the plant life in an area.
Vegetation Type	A category of land based on potential or existing dominant plant species of a particular area.
Water Level Management	Management that involves a temporary increase or decrease in water levels for the benefit of fish and wildlife habitat.
Watershed	The entire land area that collects and drains water into a stream or stream system.

Wetland

Areas such as lakes, marshes, and streams that are inundated by surface or ground water for a long enough period of time each year to support, and that do support under natural conditions, plants and animals that require saturated or seasonally saturated soils.

**Wildlife-dependent
Recreational Use**

A use on a refuge that involves hunting, fishing, wildlife observation, wildlife photography, environmental education, or interpretation, as identified in the National Wildlife Refuge System Improvement Act of 1997.

Appendix B: Initialisms and Acronyms

Appendix B: Initialisms and Acronyms

ABC – American Bird Conservancy
ARMI – Amphibian Research and Monitoring Initiative
ARPA – Archeological Resource Protection Act
CAP – Contaminant Assessment Program
CCP – Comprehensive Conservation Plan
CFR – Code of Federal Regulations
COE – Corps of Engineers
CRP – Conservation Reserve Program
DNR – Department of Natural Resources
EIS – Environmental Impact Statement
EMP – Environmental Management Program
ESA – Endangered Species Act
FDS – Fayette-Dubuque-Stonyland
FSA – Farm Services Agency
FONSI – Finding Of No Significant Impact
FTE – Full Time Equivalent
FWCA – Fish and Wildlife Coordination Act
FWS – US Fish and Wildlife Service
GIS – Geographic Information System
GP – General Plan (lands)
GREAT – Great River Environmental Action Team
HNA – Habitat Needs Assessment
HQ – Headquarters
HREP – Habitat Rehabilitation and Enhancement Project
IADNR – Iowa Department of Natural Resources
ILDNR – Illinois Department of Natural Resources
L/D – Lock and Dam
LE – Law Enforcement
LTRMP – Long Term Resource Monitoring Program
MDNR – Minnesota Department of Natural Resources
MMS – Maintenance Management System
MRCC – Mississippi River Citizens Committee
NAWMP – North American Waterfowl Management Plan
NEPA – National Environmental Policy Act
NRCS – Natural Resources Conservation Service
NWR – National Wildlife Refuge
NWRS – National Wildlife Refuge System
PFW – Partners for Fish and Wildlife
PIF – Partners in Flight
RCP – Resource Conservation Priorities
RM – River Mile
RONS – Refuge Operating Needs System
ROS – Refuge Operations Specialist
RPM – Root-prune Method

SUP – Special Use Permit
UMR – Upper Mississippi River (mainstem river from the confluence with Ohio River at Cairo, IL, to St. Paul, MN)
UMRB – Upper Mississippi River Basin
UMRCC – Upper Mississippi River Conservation Committee
UMRS – Upper Mississippi River System (UMR and navigable tributaries, including the Illinois River, but excluding the Missouri River)
USACE – US Army Corps of Engineers
USC – United States Code
USDA – United States Department of Agriculture
USEPA – United States Environmental Protection Agency
USFWS – United States Fish and Wildlife Service
USGS – United States Geological Survey
VWAA – Voluntary Waterfowl Avoidance Area
WDNR – Wisconsin Department of Natural Resources
WMA – Wildlife Management Area
 $\mu\text{g/g}$ – parts per million

Appendix C: Legislation Establishing the Upper Mississippi River NW&FR

[PUBLIC—No. 268—68TH CONGRESS.]

[H. R. 4088.]

An Act To establish the Upper Mississippi River Wild Life and Fish Refuge.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as "The Upper Mississippi River Wild Life and Fish Refuge Act."

SEC. 2. The Secretary of Agriculture is authorized and directed to acquire by purchase, gift, or lease, such areas of land, or of land and water, situated between Rock Island, Illinois, and Wabasha, Minnesota, on either side of or upon islands in the Mississippi River which are subject to overflow by such river and which are not used for agricultural purposes, as he determines suitable for the purposes of this Act.

SEC. 3. Any such area, when acquired in accordance with the provisions of this Act, shall become a part of the Upper Mississippi River Wild Life and Fish Refuge (hereinafter in this Act referred to as the "refuge"). The refuge shall be established and maintained (a) as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and (b) to such extent as the Secretary of Agriculture may by regulations prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and (c) to such extent as the Secretary of Commerce may by regulations prescribe as a refuge and breeding place for fish and other aquatic animal life.

SEC. 4. (a) No such area shall be acquired by the Secretary of Agriculture until the legislature of each State in which is situated any part of the areas to be acquired under this Act has consented to the acquisition of such part by the United States for the purposes of this Act, and, except in the case of a lease, no payment shall be made by the United States for any such area until title thereto is satisfactory to the Attorney General and is vested in the United States.

(b) The existence of a right of way, easement, or other reservation or exception in respect of such area shall not be a bar to its acquisition (1) if the Secretary of Agriculture determines that any such reservation or exception will in no manner interfere with the use of the area for the purposes of this Act, or (2) if in the deed or other conveyance it is stipulated that any reservation or exception in respect of such area, in favor of the person from whom the United States receives title, shall be subject to regulations prescribed under authority of this Act.

SEC. 5. Except where it is specifically provided otherwise, the Secretary of Agriculture and the Secretary of Commerce shall jointly

prescribe such regulations, exercise such functions, and perform such duties as may be necessary to carry out the purposes of this Act.

SEC. 6. No person shall, except in accordance with regulations prescribed by the Secretary of Agriculture in respect of wild birds, game animals, fur-bearing animals, wild flowers, and aquatic plants, or by the Secretary of Commerce in respect of fish and other aquatic-animal life—

(a) Enter the refuge for any purpose; or

(b) Disturb, injure, kill, or remove, or attempt to disturb, injure, kill, or remove any wild bird, game animal, fur-bearing animal, fish or other aquatic-animal life on the refuge; or

(c) Remove from the refuge, or injure or destroy thereon any flower, plant, tree, or other natural growth, or the nest or egg of any wild bird; or

(d) Injure or destroy any notice, sign board, fence, building, or other property of the United States thereon.

SEC. 7. Commercial fishing may be conducted in the waters of this refuge under regulation by the Secretary of Commerce.

SEC. 8. (a) Any employee of the Department of Agriculture authorized by the Secretary of Agriculture to enforce the provisions of this Act, and any employee of the Department of Commerce so authorized by the Secretary of Commerce (1) shall have power, without warrant, to arrest any person committing in the presence of such employee a violation of this Act or of any regulation made pursuant to this Act, and to take such person immediately for examination or trial before an officer or court of competent jurisdiction, (2) shall have power to execute any warrant or other process issued by an officer or court of competent jurisdiction to enforce the provisions of this Act or regulations made pursuant thereto, and (3) shall have authority, with a search warrant issued by an officer or court of competent jurisdiction to make a search in accordance with the terms of such warrant. Any judge of a court established under the laws of the United States, or any United States commissioner may, within his respective jurisdiction, upon proper oath or affirmation showing probable cause, issue warrants in all such cases.

(b) All birds, animals, fish, or parts thereof captured, injured, or killed, and all flowers, plants, trees, and other natural growths, and nests and eggs of birds removed, and all implements or paraphernalia, including guns, fishing equipment, and boats used or attempted to be used contrary to the provisions of this Act or any regulations made pursuant thereto, shall, when found by such employee or by any marshal or deputy marshal, be summarily seized by him and placed in the custody of such persons as the Secretary of Agriculture and the Secretary of Commerce may jointly by regulation prescribe.

(c) A report of the seizure shall be made to the United States attorney for the judicial district in which the seizure is made, for forfeiture either (1) upon conviction of the offender under section 11, or (2) by proceedings by libel in rem. Such libel proceedings shall conform as near as may be to civil suits in admiralty, except that either party may demand trial by jury upon any issue of fact when the value in controversy exceeds \$20. In case of a jury trial the verdict of the jury shall have the same effect as the finding of the court upon the facts. Libel proceedings shall be at the suit and in the name of the United States. If such forfeiture proceedings

are not instituted within a reasonable time, the United States attorney shall give notice thereof, and the custodian shall thereupon release the articles seized.

SEC. 9. (a) The Secretary of Agriculture and the Secretary of Commerce are authorized to make such expenditures for construction, equipment, maintenance, repairs, and improvements, including expenditures for personal services at the seat of government and elsewhere, as may be necessary to execute the functions imposed upon them by this Act and as may be provided for by Congress from time to time.

(b) For such expenditures there is hereby authorized to be appropriated, out of any money in the Treasury not otherwise appropriated, the sum of \$50,000, to be available until expended, \$25,000 of such sum to be available for expenditure by the Secretary of Agriculture and \$25,000 by the Secretary of Commerce.

SEC. 10. There is hereby authorized to be appropriated, out of any money in the Treasury not otherwise appropriated, and to be available until expended, the sum of \$1,500,000, or so much thereof as may be necessary for the acquisition of any areas authorized by this Act to be acquired for such refuge and for all necessary expense incident to the acquisition of such areas; but no money shall be available for the acquisition of any area until the Secretary of Agriculture has ascertained that all of the areas to be acquired under this Act will be acquired within the amounts appropriated or authorized to be appropriated therefor and at an average price not in excess of \$5 per acre, and not in excess of the average selling price, during the years 1921, 1922, and 1923, of comparable lands within the vicinity of such areas.

SEC. 11. Any person who shall violate or fail to comply with any provision of or any regulation made pursuant to this Act shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined not more than \$500 or be imprisoned not more than six months, or both.

SEC. 12. As used in this Act the term "person" includes an individual, partnership, association, or corporation.

SEC. 13. Nothing in this Act shall be construed as exempting any portion of the Mississippi River from the provisions of Federal laws for the improvement, preservation, and protection of navigable waters, nor as authorizing any interference with the operations of the War Department in carrying out any project now or hereafter adopted for the improvement of said river.

Approved, June 7, 1924.

[PUBLIC RESOLUTION—No. 70—68TH CONGRESS]

[S. J. Res. 179]

Joint Resolution To amend section 10 of the Act entitled "An Act to establish the upper Mississippi River wild life and fish refuge."

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That section 10 of the Act entitled "An Act to establish the upper Mississippi River wild life and fish refuge," approved June 7, 1924 (Forty-third Statutes at Large, page 650), be, and the same hereby is, amended by striking out that part of said section which reads: "but no money shall be available for the acquisition of any area until the Secretary of Agriculture has ascertained that all of the areas to be acquired under this Act will be acquired within the amounts appropriated or authorized to be appropriated therefor and at an average price not in excess of \$5 per acre, and not in excess of the average selling price, during the years 1921, 1922, and 1923, of comparable lands within the vicinity of such areas," and by substituting in lieu thereof the following: "*Provided,* That the Secretary of Agriculture shall not pay for any land or land and water a price which when added to the price of land or land and water theretofore purchased, shall exceed an average cost of \$5 per acre."

Approved, March 4, 1925.

Appendix D: Applicable Laws and Executive Orders

Appendix D: Applicable Laws and Executive Orders

Rivers and Harbor Act (1899) (33 U.S.C. 403): Section 10 of this Act requires the authorization by the U.S. Army Corps of Engineers prior to any work in, on, over, or under a navigable water of the United States.

Antiquities Act (1906): Authorizes the scientific investigation of antiquities on federal land and provides penalties for unauthorized removal of objects taken or collected without a permit.

Migratory Bird Treaty Act (1918): Designates the protection of migratory birds as a federal responsibility. This Act enables the setting of seasons, and other regulations including the closing of areas, federal or non-federal, to the hunting of migratory birds.

Migratory Bird Conservation Act (1929): Establishes procedures for acquisition by purchase, rental, or gift of areas approved by the Migratory Bird Conservation Commission.

Fish and Wildlife Coordination Act (1934), as amended (1958): Requires that the Fish and Wildlife Service and State fish and wildlife agencies be consulted whenever water is to be impounded, diverted or modified under a federal permit or license. The Service and State agency recommend measures to prevent the loss of biological resources, or to mitigate or compensate for the damage. The project proponent must take biological resource values into account and adopt justifiable protection measures to obtain maximum overall project benefits. A 1958 amendment added provisions to recognize the vital contribution of wildlife resources to the Nation and to require equal consideration and coordination of wildlife conservation with other water resources development programs. It also authorized the Secretary of Interior to provide public fishing areas and accept donations of lands and funds.

Migratory Bird Hunting and Conservation Stamp Act (1934): Authorized the opening of part of a refuge to waterfowl hunting.

Historic Sites, Buildings and Antiquities Act (1935) as amended: Declares it a national policy to preserve historic sites and objects of national significance, including those located on refuges. Provides procedures for designation, acquisition, administration, and protection of such sites.

Refuge Revenue Sharing Act (1935) as amended: Requires revenue sharing provisions to all fee-title ownerships that are administered solely or primarily by the Secretary through the Service.

Transfer of Certain Real Property for Wildlife Conservation Purposes Act (1948): Provides that upon a determination by the Administrator of the General Services Administration, real property no longer needed by a federal agency can be transferred without reimbursement to the Secretary of Interior if the land has particular value for migratory birds, or to a State agency for other wildlife conservation purposes.

Federal Records Act (1950): Directs preservation of evidence of the government's organization, functions, policies, decisions, operations, and activities, as well as basic historical and other information.

Fish and Wildlife Act (1956): Established a comprehensive national fish and wildlife policy and broadened the authority for acquisition and development of refuges.

Refuge Recreation Act (1962): Allows the use of refuges for recreation when such uses are compatible with the refuge's primary purposes and when sufficient funds are available to manage the uses.

Wilderness Act (1964) as amended: Directed the Secretary of Interior, within 10 years, to review every roadless area of 5,000 or more acres and every roadless island (regardless of size) within National Wildlife Refuge and National Park Systems and to recommend to the President the suitability of each such area or island for inclusion in the National Wilderness Preservation System, with final decisions made by Congress. The Secretary of Agriculture was directed to study and recommend suitable areas in the National Forest System.

Land and Water Conservation Fund Act (1965): Uses the receipts from the sale of surplus federal land, outer continental shelf oil and gas sales, and other sources for land acquisition under several authorities.

National Wildlife Refuge System Administration Act (1966): (16 USC 668dd-668ee) Provides for administration, management, and planning for National Wildlife Refuges.

National Historic Preservation Act (1966) as amended: Establishes as policy that the federal government is to provide leadership in the preservation of the nation's prehistoric and historic resources.

Architectural Barriers Act (1968): Requires federally owned, leased, or funded buildings and facilities to be accessible to persons with disabilities.

National Environmental Policy Act (1969): Requires the disclosure of the environmental impacts of any major federal action significantly affecting the quality of the human environment.

Uniform Relocation and Assistance and Real Property Acquisition Policies Act (1970) as amended: Provides for uniform and equitable treatment of persons who sell their homes, businesses, or farms to the Service. The Act requires that any purchase offer be no less than the fair market value of the property.

Endangered Species Act (1973): Requires all federal agencies to carry out programs for the conservation of endangered and threatened species.

Rehabilitation Act (1973): Requires programmatic accessibility in addition to physical accessibility for all facilities and programs funded by the federal government to ensure that anybody can participate in any program.

Archaeological and Historic Preservation Act (1974): Directs the preservation of historic and archaeological data in federal construction projects.

Clean Water Act (1977): Requires consultation with the Corps of Engineers (404 permits) for major wetland modifications.

Surface Mining Control and Reclamation Act (1977) as amended (Public Law 95- 87) (SMCRA): Regulates surface mining activities and reclamation of coal-mined lands. Further regulates the coal industry by designating certain areas as unsuitable for coal mining operations.

Executive Order 11988, Floodplain Management (1977): Each federal agency shall provide leadership and take action to reduce the risk of flood loss and minimize the impact of floods on human safety, and preserve the natural and beneficial values served by the floodplains.

Executive Order 11990, Protection of Wetlands (1977): Order directs federal agencies to (1) minimize destruction, loss, or degradation of wetlands and (2) preserve and enhance the natural and beneficial values of wetlands when a practical alternative exists.

American Indian Religious Freedom Act (1978): Directs agencies to consult with native traditional religious leaders to determine appropriate policy changes necessary to protect and preserve Native American religious cultural rights and practices.

Fish and Wildlife Improvement Act (1978): Improves the administration of fish and wildlife programs and amends several earlier laws including the Refuge Recreation Act, the National Wildlife Refuge System Administration Act, and the Fish and Wildlife Act of 1956. It authorizes the Secretary to accept gifts and bequests of real and personal property on behalf of the United States. It also authorizes the use of volunteers on Service projects and appropriations to carry out a volunteer program.

Archaeological Resources Protection Act (1979) as amended: Protects materials of archaeological interest from unauthorized removal or destruction and requires federal managers to develop plans and schedules to locate archaeological resources.

Fish and Wildlife Conservation Act of 1980 (16 USC 661-667e) as amended: Requires the Fish and Wildlife Service to monitor non-game bird species, identify species of management concern, and implement conservation measures to preclude the need for listing under the Endangered Species Act.

Federal Farmland Protection Policy Act (1981) as amended: Minimizes the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses.

Consolidated Farm and Rural Development Act (1961) , amended January 23, 2004: provides loans for soil and water conservation and protection, water treatment and many other agricultural related activities.

U.S. Fish and Wildlife Service Region 3, Regional Director Bulletin (1983): Changes spelling from wild life to “wildlife” in Refuge name.

Emergency Wetlands Resources Act (1986): Promotes the conservation of migratory waterfowl and offsets or prevents the serious loss of wetlands by the acquisition of wetlands and other essential habitats.

Federal Noxious Weed Act (1990): Requires the use of integrated management systems to control or contain undesirable plant species, and an interdisciplinary approach with the cooperation of other federal and state agencies.

Native American Graves Protection and Repatriation Act (1990): Requires federal agencies and museums to inventory, determine ownership of, and repatriate cultural items under their control or possession.

Americans With Disabilities Act (1992): Prohibits discrimination in public accommodations and services.

Executive Order 12898, Environmental Justice for Minority Populations (1994): Establishes environmental justice as a federal government priority and directs all federal agencies to make environmental justice part of their mission. Environmental justice calls for fair distribution of environmental hazards.

Executive Order 12962, Recreational Fisheries (1995): Federal agencies shall, to the extent permitted by law and where practicable, and in cooperation with States and Tribes, improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities.

Executive Order 12996 Management and General Public Use of the National Wildlife Refuge System (1996): Defines the mission, purpose, and priority public uses of the National Wildlife Refuge System. It also presents four principles to guide management of the System.

Executive Order 13006, Locating Federal Facilities On Historic Properties In Our Nation's Central Cities (1996): strengthen our Nation's cities by encouraging the location of federal facilities in our central cities.

Executive Order 13007 Indian Sacred Sites (1996): Directs federal land management agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, avoid adversely affecting the physical integrity of such sacred sites, and where appropriate, maintain the confidentiality of sacred sites.

National Wildlife Refuge System Improvement Act (1997) PL 105-57: This Act amended portions of the Refuge Recreation Act and National Wildlife Refuge System Administration Act of 1966. Defines the National Wildlife Refuge System and authorizes the Secretary to permit any use of a refuge provided such use is compatible with the major purposes for which the refuge was established. The Refuge Improvement Act clearly defines a unifying mission for the Refuge System; establishes the legitimacy and appropriateness of the six priority public uses (hunting, fishing, wildlife observation and photography, or environmental education and interpretation); establishes a formal process for determining compatibility; established the responsibilities of the Secretary of Interior for managing and protecting the System; and requires a Comprehensive Conservation Plan for each refuge by the year 2012.

Migratory Bird Treaty Reform Act (1998): Public law 105-312 amends the first section and section 2 of the Upper Mississippi River Wild Life and Fish Refuge Act (16 U.S.C. 721,722) by striking ``Upper Mississippi River Wild Life and Fish Refuge" each place it appears and inserting ``Upper Mississippi River National Wildlife and Fish Refuge".

National Wildlife Refuge System Volunteer and Community Partnership Enhancement Act (1998): Amends the Fish and Wildlife Act of 1956 to promote volunteer programs and community partnerships for the benefit of national wildlife refuges, and for other purposes.

Executive Order 13112 Invasive Species (1999): directs federal agencies to prevent the introduction of invasive species, control populations of such species, monitor invasive species populations, provide for restoration of native species and habitat conditions in ecosystems that have been invaded, conduct research, promote public education on invasive species and the means to address them, and consult with the Invasive Species Council.

Secretarial Order 3226, Evaluating Climate Change Impacts in Management Planning, 2000: Directs each Department of Interior bureau to consider and analyze potential climate change impacts when undertaking long-range planning efforts or multi-year management plans.

Director's Order Number 132 (January 18, 2001): National Wildlife Refuge System Mission, Goals and Purposes. This reiterates the mission of the Refuge System and how it relates to the mission of the Fish and Wildlife Service. Order also provides guidance on the use of goals and purposes in the administration and management of the system.

Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, 2001: Instructs Federal agencies to conserve migratory birds by several means, including the incorporation of strategies and recommendation found in Partners in Flight Bird Conservation Plans, the North American Waterfowl Plan, the North American Waterbird Plan, and the United States Shorebird Conservation Plan, into agency management plan and guidance documents.

Appendix E: Draft Compatibility Determinations

In accordance with the Refuge Improvement Act of 1997, no uses for which the Service has authority to regulate may be allowed on a unit of Refuge System unless it is determined to be compatible. A compatible use is a use that, in the sound professional judgment of the refuge manager, will not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purposes of the national wildlife refuge. Managers must complete a written compatibility determination for each use, or collection of like-uses, that is signed by the manager and the Regional Chief of Refuges in the respective Service region. Draft compatibility determinations applicable to uses described in this draft CCP and EIS are included in this appendix. These determinations are based on the preferred alternative (Alternative D) and will be modified as needed to reflect the decision on which alternative will be selected for the Final CCP.

A list of future uses which will require a case-by-case compatibility determination, and a list of uses which are generally prohibited and therefore not subject to compatibility, are also listed below.

A draft determination is included for the following uses in the order they appear:

Archeological investigations and surveys	335
Beach-related uses (swimming, sunbathing, picnicking, and other)	338
Boating with motor-driven watercraft, snowmobiling	341
Camping.....	345
Canoeing, kayaking, and sailing	348
Commercial fishing (including mussel and turtle harvest).....	350
Dog exercising and training	353
Environmental education	353
Farming.....	358
Fishing, recreational	361
Fishing floats, commercial.....	363
Fishing tournaments	367
Fruits of the soil harvest.....	370
Grazing	373
Guided fishing	376
Guided hunting.....	382
Guided wildlife observation.....	388
Haying	394
Hunting, migratory bird.....	397

Hunting, big game, upland game, furbearer	401
Interpretation, wildlife observation, and photography.....	404
Research.....	408
Sediment removal	411
Special events, non-Refuge sponsored.....	414
Temporary work outside of existing rights-of-way.....	417
Trapping of furbearers	420
Tree harvest.....	427

Case-by-case compatibility determinations (not included in CCP and EIS)

- Commercial filming
- Military exercises
- New or expanded rights-of-way
- Mosquito and other pest control (e.g. gypsy moth)
- Predator control by others
- Research by 3rd parties, not related to refuge management information needs

Generally prohibited uses – no compatibility determination required

- Commercial boat moorage
- Houseboat moorage
- Business, commercial or industrial
- Civilian aircraft landing
- Tally ho fox hunting
- Sand and gravel extraction
- Off road vehicle use on uplands
- Snowmobiling on uplands
- Horseback riding
- Field trials
- Mountain biking
- Beekeeping
- Wild rice harvest
- Commercial harvest of plants, plant parts
- Rock hounding
- Geocaching

DRAFT Compatibility Determination

Use: Archeological Investigations and Surveys

Refuge Name: Upper Mississippi River National Wildlife and Fish Refuge (Refuge)

Establishing and Acquisition Authority(ies):

The Upper Mississippi River Wildlife and Fish Refuge was established by Public Law No. 268, 68th Congress on June 7, 1924. This act authorized acquisition of lands for Refuge purposes. Additional lands acquired in fee title by the U.S. Army Corps of Engineers are managed as part of the Refuge under a 1963 Cooperative Agreement between the Department of the Army and the Department of the Interior.

Refuge Purpose(s):

Per Public Law 268:

“The Refuge shall be established and maintained (a) as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and (b) to such extent as the Secretary of the Interior by regulations, prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and (c) to such extent as the Secretary of the Interior may, by regulations, prescribe a refuge and breeding place for fish and other aquatic animal life.”

National Wildlife Refuge System Mission:

“The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Description of Use:

Permitted archeological investigations on the Upper Mississippi River National Wildlife and Fish Refuge are those requested by archeologists who are not performing the investigation for Refuge management purposes (e.g., not for Section 106 of the National Historic Preservation Act). Rather, permitted archeologists are pursuing their own or institutional research or are working for other parties that will be conducting activities on Refuge land, or as requested by the state Governors, and similar third party activities on lands of the National Wildlife Refuge System. Permitted investigations can occur at any time of the year, but generally not during the winter. Investigations may be as short as a few hours or go on for months, depending on the research objective. These permitted investigations occur on the Refuge most often in response to a planned project where resources could be disrupted, but could occur because of the general archaeological richness of the Refuge.

Archeologists request Archaeological Resources Protection Act (ARPA) permits or Antiquities Act permits to conduct “Surveys and limited testing and limited collections on lands identified” and “Excavation, collection and intensive study of specific sites described” on Refuge managed lands. Permits are issued by the Regional Director to qualified archeologists. Permits can be for any place on Refuge managed lands, but each permit is for specific lands; i.e., no general archeological permits are authorized.

The Refuge Manager also issues a special use permit to archeologists prior to investigations on lands managed by the Refuge. The permit defines allowable dates and times for the investigation, and other stipulations designed to protect Refuge resources and minimize conflicts with other occurring uses.

Availability of Resources:

The Refuge has the resources available to administer this use. This activity will require the District Manager to develop and issue a Special Use Permit and random inspections of the project area. ARPA/Antiquities permits are received by the Regional Historic Preservation Officer and issued by the Regional Director as part of normal duties.

Anticipated Impacts of the Use:

Impacts from routine pedestrian surveys, soil coring, shovel tests, and land form analysis are limited to short term disturbance to wildlife using the immediate area and disruption of vegetative cover for the growing season on an extremely small area affected by shovel tests.

Impacts from a large scale excavation are potentially longer term (several growing seasons) with associated disturbance impacts affecting animals in the immediate area. Vegetative cover disruption may be severe enough to require site re-grading and reseeding to desired native species.

Public Review and Comment:

This Compatibility Determination will be submitted as a portion of the Refuge Draft Comprehensive Conservation Plan and Environmental Impact Statement. Public notification and review includes a notice of availability, 120-day comment period, media announcements, and a series of public meetings in selected communities adjacent to the Refuge.

Determination:

Use is Not Compatible

Use is Compatible With Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. Applicant must obtain a special use permit issued by the Refuge Manager which will list any special conditions required to safeguard Refuge resources and minimize impacts. All permits will include the following special condition:

“Permittee will shore up walls of test pits and trenches in accordance with OSHA standards; will flag, barricade, and sign testing areas as necessary to prevent injury to the public; will refill shovel tests as soon as excavated and data recorded, including replacing the vegetative plug to restore original conditions; will backfill excavations as soon as data recording is completed; and will seed or replant the surface with a vegetative mix approved by the respective Refuge District Manager.”

2. Predetermined stipulations on ARPA/Antiquities permits and the requirements in 43 CFR Part 7, “Protection of Archaeological Resources: Uniform Regulations,” contain protective measures to be accomplished by archeologists.
3. A report of findings will be provided to the Refuge and will include recommendations on management of the study site, as applicable.

Justification:

Although temporary disruption of habitat and wildlife routine could occur, this disruption is limited in scope and duration. Due to stipulations and the issuance of a permit, managers will have control on when and where the activity will occur to avoid or minimize disruption to sensitive species and fragile habitats, and disturbance during seasonally critical times (such as nesting for birds). Habitat restoration will be required as needed and there should be no long-term impacts. With stipulations in place, the use would not materially interfere with or detract from the purpose of the Refuge and the mission of the Refuge System.

In addition, the archeological investigations would be conducted in the public interest for which federal agencies protect archeological sites and the results may be included in public interpretive exhibits and other public dissemination. The results of the study could also increase Refuge understanding of prior human activities on the Refuge and could be part of Refuge interpretive and public information programs.

Signature: Refuge Manager: _____
(signature and date)

Concurrence: Regional Chief: _____
(signature and date)

Mandatory 10- or 15 year Re-evaluations Date: _____

DRAFT Compatibility Determination

Use: Beach-related Uses (swimming, sunbathing, picnicking, and other)

Refuge Name: Upper Mississippi River National Wildlife and Fish Refuge (Refuge)

Establishing and Acquisition Authority(ies):

The Upper Mississippi River Wildlife and Fish Refuge was established by Public Law No. 268, 68th Congress on June 7, 1924. This act authorized acquisition of lands for Refuge purposes. Additional lands acquired in fee title by the U.S. Army Corps of Engineers are managed as part of the Refuge under a 1963 Cooperative Agreement between the Department of the Army and the Department of the Interior.

Refuge Purpose(s):

Per Public Law 268:

“The Refuge shall be established and maintained (a) as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and (b) to such extent as the Secretary of the Interior by regulations, prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and (c) to such extent as the Secretary of the Interior may, by regulations, prescribe a refuge and breeding place for fish and other aquatic animal life.”

National Wildlife Refuge System Mission:

“The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Description of Use:

These uses include swimming, snorkeling, scuba diving, picnicking, sunbathing, and social gatherings on beach areas. It is estimated that over 1 million visitors per year engage in these activities, often in conjunction with fishing, power boating, or other water-based recreation. According to a 2003 Minnesota Department of Natural Resources study, 32 percent of all boating trips involve using a beach, with 40 percent of all boaters using a beach area on weekends. Perhaps 95 percent of these activities occur on islands or peninsulas adjacent to the main navigation channel of the Mississippi River running through the Refuge. The main season of use is June through August.

The areas of choice for beach-related activities are manmade or natural beach areas on the Refuge. These beach areas are either remnant channel maintenance islands or shore areas formed by the side-casting of dredged material, permanent dredged sand disposal sites, or natural sandbars and shorelines. Family-sized groups are most common, although several boats may moor or anchor adjacent to each other. Large gatherings of friends and/or relatives may occupy an area, and at times, large groups gather for parties involving alcohol consumption. Toilets, fire rings, or other facilities are not provided.

Refuge regulations published in a Public Use Regulations brochure place restrictions on aspects of these activities including campfires, sanitation, vegetation removal, and intoxication. Fireworks and firearms are prohibited. No fee is charged for use of the Refuge for beach-related activities.

Availability of Resources:

The main costs of these uses are law enforcement and litter clean-up. Resources to adequately manage these uses are marginal at best given the number of refuge officers, the sheer size of the

Refuge, and the number of users. Other personnel from the state, county, and local law enforcement community assist with oversight of many of these uses. Funding for law enforcement staff time and printing of the Refuge Public Use Regulations brochure is lacking some years, calling for a redirection of existing Refuge funding. This redirection is often at the expense of other Refuge programs such as monitoring, maintenance, and other public use programs. Proposals in the Refuge Comprehensive Conservation Plan (CCP) as reflected in the stipulations section of this determination, should help reduce problems and lessen workloads.

Anticipated Impacts of the Use:

Beach-related uses, due to the high number of people involved and high densities on some sites, can have a direct physical impact to islands and shore areas from trampling, cutting of vegetation, and campfires. Refuge regulation violations can be high: dogs running loose, intoxication, illegal drugs, firearm use, fireworks, noise, human waste, littering, and interference with other users, private structures, large parties, and loud boats. Although littering can be high, there has been a marked improvement through self-regulation and voluntary clean-ups. High densities of visitors on certain sites, such as active dredge disposal areas or so-called “bathtubs,” can lead to water quality concerns due to human waste.

Wildlife which may use beach and shoreline areas is generally displaced to the more remote areas of the Refuge during these activities. Some species, or individuals of species, have become more accustomed to the disturbance and are not affected. For example, some eagle pairs maintain active nests near areas frequented by persons engaged in beach-related activities. Turtles, which nest on the same sand areas frequented by visitors, may be impacted by direct disturbance during nesting or through the destruction of nests by human traffic. The direct relationship between human use of turtle nesting areas and nest success is not understood. Some biologists believe that human use of the areas attracts predators like raccoons searching for food scraps left by groups, while others believe that human presence and scent may keep predators at bay. Turtle nest success is generally quite low even without human impact, but it is unknown whether human disturbance further negates nest success.

Public use of beaches requires a very high law enforcement effort and takes away from resource-related enforcement. There is concern for officer safety in large crowds, especially when alcohol use is involved.

Public Review and Comment:

This Compatibility Determination will be submitted as a portion of the Refuge Draft Comprehensive Conservation Plan and Environmental Impact Statement. Public notification and review includes a notice of availability, 120-day comment period, media announcements, and a series of public meetings in selected communities adjacent to the Refuge.

Determination:

___ Use is Not Compatible

xx Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. Continue to enforce general public use regulations which protect habitat and limit disturbance to other Refuge visitors.
2. The Refuge Manager may close or restrict use on certain beach and other shoreline areas to minimize or eliminate chronic problems or safeguard wildlife or habitat values (See Objective 5.1 in the Comprehensive Conservation Plan for details).

3. Adopt an intoxication standard of .08 percent of blood alcohol content to make enforcement of disturbing violations more effective.
4. Actively promote the Leave no Trace program and provide information to beach-related users.
5. Adopt a beach maintenance policy that does not conflict with other resource objectives (See Objective 5.1 in Comprehensive Conservation Plan).

Justification:

Although beach-related uses are at very high levels on the Refuge, much of the use occurs adjacent to the main channel of the river which is a small percentage of the Refuge land and water base. These areas are generally not heavily used by wildlife so disturbance is limited. The timing of beach-related uses also serves to limit disturbance, with summer months and mid-morning to evening being peak use times. These times generally do not correspond to peak nesting (an exception is turtle nesting, which peaks in June) and migration seasons, and morning feeding hours. The size of the Refuge and extensive backwaters with difficult public access provide sizeable alternative areas for disturbed wildlife. Impacts to nesting turtles are as yet unknown and further study is needed. Manager discretion in restricting or closing beach areas will help ensure that important wildlife areas and habitats are protected, and provide a useful control for further study.

Bank and shoreline erosion and loss of aquatic or upland vegetation is variable, and perhaps not generally greater than that caused by commercial navigation, recreational fishing, and other river traffic. Also, the beach areas most heavily used are generally manmade as a result of past or current navigation channel dredging operations. These areas do not generally harbor unique plant communities or archaeological resources.

Although regulation violations and disturbance to other visitors can be locally a problem, stipulations will help address hot spots and give refuge officers a clearer intoxication standard for addressing large social gatherings. Cooperation with state and local law enforcement also helps with workload concerns.

Given the above, beach-related uses do not materially interfere with the purposes of the Refuge or the mission of the Refuge System.

Signature: Refuge Manager: _____
(signature and date)

Concurrence: Regional Chief: _____
(signature and date)

Mandatory 10- or 15 year Re-evaluations Date: _____

DRAFT Compatibility Determination

Use: Boating with motor-driven watercraft, snowmobiling, and ATV use

Refuge Name: Upper Mississippi River National Wildlife and Fish Refuge (Refuge)

Establishing and Acquisition Authority(ies):

The Upper Mississippi River Wildlife and Fish Refuge was established by Public Law No. 268, 68th Congress on June 7, 1924. This act authorized acquisition of lands for Refuge purposes. Additional lands acquired in fee title by the U.S. Army Corps of Engineers are managed as part of the Refuge under a 1963 Cooperative Agreement between the Department of the Army and the Department of the Interior.

Refuge Purpose(s):

Per Public Law 268:

“The Refuge shall be established and maintained (a) as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and (b) to such extent as the Secretary of the Interior by regulations, prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and (c) to such extent as the Secretary of the Interior may, by regulations, prescribe a refuge and breeding place for fish and other aquatic animal life.”

National Wildlife Refuge System Mission:

“The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Description of Use:

This use involves the use of combustion engine watercraft such as powerboats, airboats, hovercraft, GoDevils™ personal watercraft (e.g. jet skis) for general recreational boating on the Refuge. Waterskiing is also included in this use due to its close association with powerboats. This use occurs most frequently during the summer from May to September. People who take part in this use often engage in other water-related recreation as well, including fishing, camping, hunting, picnicking and swimming. Estimates for recreational boating visits are not tallied separate, but in 2003, the Refuge estimated that 1.3 million people took part in recreational boating, camping and beach-related activities.

Trend data from 10 years of aerial surveys on 150 miles of the Refuge during the Memorial Day to Labor Day peak use season show that just over 30 percent of boating use occurs on Pools 4, 8, and 10, or 3 of the 12 pools on the Refuge. Corps of Engineers data on the number of recreational boat lockages through the system of locks on the Mississippi River continue to increase. At Lock and Dam 5A, for example, recreational boat lockages were 1,195 in 1952, 7,768 in 1972, 9,704 in 1992, and 11,300 in 1999. Many recreational boating visits, especially for those who stay mainly on the main navigation channel due to boat size, originate their trips off-Refuge from marinas or other public and private boat launches.

A 2003 recreational boating study by the Minnesota Department of Natural Resources, in cooperation with the Wisconsin Department of Natural Resources, Corps of Engineers, and the Refuge, helped characterize the nature and extent of boating use on Pools 4 through 9 of the Mississippi River and the Refuge. The study estimated that 60 percent of recreational boating takes place in the main navigation channel of the river, with 40 percent in side channels and backwater areas. The Minnesota study also noted several boating trip characteristics:

The average boating party size is 2.9 people, most of whom are adults.
Overnight boating trips account for 12% of all trips.
Most boaters (87%) do not leave (or lock out of) the pool into which they launch.
One-third of all trips (32%) involve beaching.
Fishing is the primary activity for half of all boaters.

The Refuge maintains 26 boat landings with 700 parking spaces. These landings generally accommodate 18 foot or less watercraft due to ramp size and water depths. An additional 222 non-Refuge boat landings are scattered throughout the length of the Refuge and offer ample access options for recreational boaters.

Recreational boating is subject to respective state boating laws and regulations, and applicable U.S. Coast Guard and Refuge recreation regulations. There are 45 slow, no-wake zones within the Refuge, most of which are administered by local units of government. Enforcement of recreational boating is a cooperative effort between Refuge officers, state conservation officers, and local sheriff and/or city police departments.

Snowmobile and ATV use occurs during winter months and is allowed only on the ice over navigable waters accessed from boat landings. No snowmobiles or ATVs are allowed on or across Refuge uplands. In 2004, an estimated 7,500 snowmobile visits occurred on the Refuge. Snowmobiles and ATVs are generally used in support of ice fishing, a priority public use, and by trappers.

Availability of Resources:

Resources and facilities are available to manage existing recreational boating at the current level of participation, especially given the multiple enforcement services provided by the states and local governments. However, funding for Refuge law enforcement staff time and printing of the Refuge Public Use Regulations brochure is lacking some years, calling for a redirection of existing Refuge funding. This redirection is often at the expense of other Refuge programs such as monitoring, maintenance, and other public use programs. Proposals in the Refuge Comprehensive Conservation Plan (CCP) should help address these funding concerns. Facilities to support recreational boating are deemed adequate given the number and variety of public accesses and private marinas. No special facilities are needed in support of snowmobiling since existing accesses or access points are used.

Anticipated Impacts of the Use:

Recreational boating has the potential to cause temporary disturbance to bald eagles, water birds, waterfowl, and other wildlife. Disturbance is limited for boating occurring in the main river channel and adjacent areas since wildlife is more prevalent in the backwater areas of the Refuge. However, certain watercraft such as jet skis and airboats can easily access backwater areas with a corresponding increase in disturbance to resting and feeding birds and other wildlife. This disturbance usually displaces wildlife to adjacent areas of the Refuge. In some cases, however, repeated disturbance can have impacts, such as disturbance of nesting colonies of herons and egrets. However, this disturbance has not been proven to cause nest or colony abandonment. Some shoreline erosion is caused by the wakes of all boats, and is most serious with very large craft. Loss of vegetation and increase in turbidity occurs from boats running through shallow backwater areas.

There is potential for conflicts between recreational boating and anglers, canoers, and kayakers due to speed, wake, and noise.

Snowmobiling and ATV use have little to no resource impact given the season of use and regulation confining snowmobiles and ATVs to ice-covered navigable waters. Snowmobiles and ATVs do generate noise which may, in certain areas, be viewed negatively by other visitors engaged in silent sports such as cross-country skiing, snowshoeing, or general winter hiking and wildlife observation.

Public Review and Comment:

This Compatibility Determination will be submitted as a portion of the Refuge Draft Comprehensive Conservation Plan and Environmental Impact Statement. Public notification and review includes a notice of availability, 120-day comment period, media announcements, and a series of public meetings in selected communities adjacent to the Refuge.

Determination:

___ Use is Not Compatible

xx Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. All appropriate state and federal boating regulations apply.
2. Electric motor areas prohibit combustion engine driven watercraft in sensitive backwater areas.
3. A series of slow, no-wake zones are in place.
4. Maintain a network of Waterfowl Hunting Closed Areas which provide resting and feeding areas for waterfowl during fall migration and prohibit motorized watercraft.
5. Snowmobiles and ATVs are not allowed to travel on or across uplands and must stay on ice covered navigable waters.

Justification:

Although recreational boating levels are high on the Refuge, much of the use occurs on the main channel of the river and adjacent deeper waters. These areas are generally not heavily used by wildlife so disturbance is limited. The timing of recreational boating also serves to limit disturbance, with summer months and mid-morning to evening being peak use times. These times generally do not correspond to peak nesting and migration seasons, and morning feeding hours. The size of the Refuge and extensive backwaters with difficult public access provide sizeable alternative areas for disturbed wildlife. Bank and shoreline erosion, loss of aquatic vegetation, and increase in water turbidity is variable, and perhaps not generally greater than that caused by commercial navigation, recreational fishing, and other river traffic. Snowmobiling and ATV use have little impact to no impact to wildlife and habitat due to winter use when most migratory birds have left, the season of use, and ice-only restriction.

Some wildlife, such as bald eagles, have become increasingly tolerant of watercraft, and often nest successfully adjacent to major boating areas. Other wildlife is less tolerant, but electric motor areas, Waterfowl Hunting Closed Areas, and slow, no-wake zones help limit disturbance. Fish and other aquatic species generally have ample habitat to move away from boating disturbance. Conflicts between user groups occur, but groups are often able to separate themselves based on water depth which precludes some craft types and allows others. Snowmobiles and ATVs, given the ice-only restriction, are generally restricted to certain parts of the Refuge, leaving ample space for silent sport visitors.

Also, closing or severely restricting the Refuge to recreational boating, snowmobiling and ATV use would be nearly impossible given the mix of navigable waters, various jurisdictions and authorities, enforcement practicalities, and commercial and social considerations.

With stipulations in place, recreational boating, snowmobiling and ATV use, given the location and season of most use and the physical nature and size of the Refuge, does not materially interfere with or detract from the conservation purposes of the Refuge.

Signature: Refuge Manager: _____
(signature and date)

Concurrence: Regional Chief: _____
(signature and date)

Mandatory 10- or 15 year Re-evaluations Date: _____

DRAFT Compatibility Determination

Use: Camping

Refuge Name: Upper Mississippi River National Wildlife and Fish Refuge (Refuge)

Establishing and Acquisition Authority(ies):

The Upper Mississippi River Wildlife and Fish Refuge was established by Public Law No. 268, 68th Congress on June 7, 1924. This act authorized acquisition of lands for Refuge purposes. Additional lands acquired in fee title by the U.S. Army Corps of Engineers are managed as part of the Refuge under a 1963 Cooperative Agreement between the Department of the Army and the Department of the Interior.

Refuge Purpose(s):

Per Public Law 268:

“The Refuge shall be established and maintained (a) as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and (b) to such extent as the Secretary of the Interior by regulations, prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and (c) to such extent as the Secretary of the Interior may, by regulations, prescribe a refuge and breeding place for fish and other aquatic animal life.”

National Wildlife Refuge System Mission:

“The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Description of Use:

Camping is defined as erecting a tent or shelter of natural or synthetic material, preparing a sleeping bag or other bedding material for use, parking of a motor vehicle or mooring or anchoring of a vessel, for the apparent purpose of overnight occupancy, or, occupying or leaving personal property, including boats or other craft, at any site anytime between the hours of 11 p.m. and 3 a.m. on any given day.

In 2004, it was estimated that 101,500 camping visits occurred on the Refuge, most of which occurred on islands or peninsulas adjacent to the main navigation channel of the Mississippi River running through the Refuge. According to a 2003 Minnesota Department of Natural Resources study, 12 percent of all boating trips involve overnight stays, which could involve camping on the Refuge or stays in marinas, boat houses, or private lands.

The areas of choice for campers are manmade or natural beach areas on the Refuge. These beach areas are either remnant channel maintenance islands or shore areas formed by the side-casting of dredged material, permanent dredged sand disposal sites, or natural sandbars and shorelines. Camping equipment most often includes tents erected on sandy sites, or houseboats or large pleasure craft moored on beaches or anchored adjacent to shore. Family-sized groups are most common, although several boats may moor or anchor adjacent to each other. Large gatherings of friends and/or relatives may occupy one site or two or more adjacent sites.

Refuge regulations published in a Public Use Regulations brochure place restrictions on campfires, length of stay (no more than 14 days in one location), sanitation, vegetation removal, and private structures. No fee is charged for camping on the Refuge. Camping is considered “primitive” and no facilities are provided.

Availability of Resources:

The main costs of camping to the Refuge are law enforcement and litter clean-up. Resources to adequately manage these uses are marginal at best given the number of refuge officers, the sheer size of the Refuge, and the number of campers. Other personnel from the state, county, and local law enforcement community may assist with oversight of camping, but they generally stay clear of enforcing Refuge regulations. Funding for law enforcement staff time and printing of the Refuge Public Use Regulations brochure is lacking some years, calling for a redirection of existing Refuge funding. This redirection is often at the expense of other Refuge programs such as monitoring, maintenance, and other public use programs. Proposals in the Refuge Comprehensive Conservation Plan (CCP) as reflected in the stipulations section of this determination, should help reduce problems and lessen workloads.

Anticipated Impacts of the Use:

Camping, due to the high number of people involved and high densities on some sites, can have a direct physical impact to islands and shore areas from trampling, cutting of vegetation, campfires, and general camp set-up. Like other beach-related uses, Refuge regulation violations can be high: dogs running loose, intoxication, illegal drugs, firearm use, fireworks, noise, human waste, littering, and interference with other users, private structures, large parties, and loud boats. Although littering can be high, there has been a marked improvement through self-regulation and voluntary clean-ups. High densities of visitors on certain sites, such as active dredge disposal areas or so-called “bathtubs,” can lead to water quality concerns due to human waste.

Wildlife which may use beach and shoreline areas is generally displaced to the more remote areas of the Refuge during these activities. Some species, or individuals of species, have become more accustomed to the disturbance and are not affected. For example, some eagle pairs maintain active nests near areas frequented by persons engaged in beach-related activities. Turtles, which nest on the same sandy areas frequented by visitors, may be impacted by direct disturbance during nesting or through the destruction of nests by human traffic. The direct relationship between human use of turtle nesting areas and nest success is not understood. Some biologists believe that human use of the areas attracts predators like raccoons searching for food scraps left by groups, while others believe that human presence and scent may keep predators at bay. Turtle nest success is generally quite low even without human impact, but it is unknown whether human disturbance further negates nest success.

Maintenance of beach areas with heavy equipment causes changes in topography, addition of more sand, and grubbing of some vegetation. These impacts are short term in nature and designed to mimic the natural contours of islands on the river.

Public use of beaches requires a very high law enforcement effort and takes away from resource-related enforcement. There is concern for officer safety in large groups of campers, especially when alcohol use is involved.

Public Review and Comment:

This Compatibility Determination will be submitted as a portion of the Refuge Draft Comprehensive Conservation Plan and Environmental Impact Statement. Public notification and review includes a notice of availability, 120-day comment period, media announcements, and a series of public meetings in selected communities adjacent to the Refuge.

Determination:

Use is Not Compatible

Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. Continue to enforce general public use regulations which protect habitat and limit disturbance to other Refuge visitors.
2. Camping is limited to islands, peninsulas, or other lands that are adjacent to the main river channel, or, on the backside of such areas, and in Electric Motor Areas.
3. The Refuge Manager may close or restrict use on certain beach and other shoreline areas to minimize or eliminate chronic problems or safeguard wildlife or habitat values (See Objective 5.1 in the Comprehensive Conservation Plan for details).
4. All campers must have access to either a portable or approved, marine onboard toilet facility, or have in possession a commercial human waste disposal kit for each person.
5. Adopt an intoxication standard of .08 percent of blood alcohol content to make enforcement of disturbing violations more effective.
6. Actively promote the Leave no Trace program and provide information to campers.
7. Adopt a beach maintenance policy that does not conflict with other resource objectives (See Objective 5.1 in Comprehensive Conservation Plan).

Justification:

Although camping levels and densities are high on the Refuge, much of the use occurs adjacent to the main channel of the river which is a small percentage of the Refuge land and water base. These areas are generally not heavily used by wildlife so disturbance is limited. The timing of camping also serves to limit disturbance, with summer months being peak use times. These times generally do not correspond to peak nesting and migration seasons. An exception is turtle nesting, which peaks in June. The size of the Refuge and extensive backwaters with difficult public access provide sizeable alternative areas for disturbed wildlife. Like beach-related uses, impacts to nesting turtles from camping are as yet unknown and further study is needed. Manager discretion in restricting or closing beach areas to camping and other uses will help ensure that important wildlife areas and habitats are protected, and provide a useful control for further study.

Bank and shoreline erosion and loss of aquatic or upland vegetation is variable, and perhaps not generally greater than that caused by commercial navigation, recreational fishing, and other river traffic. Also, the beach areas most used for camping are generally manmade as a result of past or current navigation channel dredging operations. These areas do not generally harbor unique plant communities or archaeological resources.

Although regulation violations and disturbance to other visitors can locally be a problem, stipulations will help address hot spots and give refuge officers a clearer intoxication standard for addressing larger camping gatherings. Cooperation with state and local law enforcement also helps with workload concerns. Since camping is primitive in nature with no facilities, infrastructure and maintenance needs are minimized.

Given the above, camping does not materially interfere with the purposes of the Refuge or the mission of the Refuge System.

Signature: Refuge Manager: _____
(signature and date)

Concurrence: Regional Chief: _____
(signature and date)

Mandatory 10- or 15 year Re-evaluations Date: _____

DRAFT Compatibility Determination

Use: Canoeing, kayaking, and sailing

Refuge Name: Upper Mississippi River National Wildlife and Fish Refuge (Refuge)

Establishing and Acquisition Authority(ies):

The Upper Mississippi River Wildlife and Fish Refuge was established by Public Law No. 268, 68th Congress on June 7, 1924. This act authorized acquisition of lands for Refuge purposes. Additional lands acquired in fee title by the U.S. Army Corps of Engineers are managed as part of the Refuge under a 1963 Cooperative Agreement between the Department of the Army and the Department of the Interior.

Refuge Purpose(s):

Per Public Law 268:

“The Refuge shall be established and maintained (a) as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and (b) to such extent as the Secretary of the Interior by regulations, prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and (c) to such extent as the Secretary of the Interior may, by regulations, prescribe a refuge and breeding place for fish and other aquatic animal life.”

National Wildlife Refuge System Mission:

“The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Description of Use:

This use involves the silent water sports such as canoeing, kayaking, and sailing. These uses are at times and end in and of themselves, or means to enjoy wildlife observation, fishing, hunting, and other recreational activities. The 2003 boating study on Pools 4-9 by the Minnesota Department of Natural Resources found that 2 percent of boats were non-motorized. This percentage may be low since surveys were conducted at main access points and canoers and kayakers have a wide range of access options. In 2004, the Refuge estimated nearly 13,000 non-motorized boating visits.

Canoeing and kayaking occur mainly in the side channels and backwaters of the Refuge. Sailing occurs mainly on Lake Onalaska, Pool 7, La Crosse District. The main season for canoeing, kayaking, and sailing is April through October, with peak use occurring June through August.

Availability of Resources:

Little oversight of this use is needed, and staffing and funding is adequate. The Refuge maintains 4 marked canoe/kayak trails and plans 17 more. New trails take some investment for signs, installation, and periodic inspection. Existing resources should be adequate for this work, and volunteers will likely be available. Existing boat landings, both Refuge and other, are available to support these silent sports.

Anticipated Impacts of the Use:

Disturbance to wildlife, such as the flushing of feeding or resting birds, is inherent to these activities. Disturbances are generally less than motorized activities due to the silent nature of canoeing, kayaking, and sailing, and generally low volume of use in any given area. This disturbance is temporary and generally localized. Fisheries, emergent and submergent vegetation, and other aquatic species will not generally be impacted. Designated canoe and kayak trails, and electric motor

areas, may increase the volume of visits locally, but this increase should not markedly change impacts overall given the size of the Refuge and care in trail and electric motor area selection. Sailing on Lake Onalaska has the potential to disturb waterfowl in the Waterfowl Hunting Closed Area and Voluntary Avoidance Area.

Public Review and Comment:

This Compatibility Determination will be submitted as a portion of the Refuge Draft Comprehensive Conservation Plan and Environmental Impact Statement. Public notification and review includes a notice of availability, 120-day comment period, media announcements, and a series of public meetings in selected communities adjacent to the Refuge.

Determination:

___ Use is Not Compatible

xx Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

Canoe and kayak trail layout and design will continue to ensure adequate adjacent cover for wildlife and avoid sensitive wildlife areas or habitat.

Justification:

Disturbance to wildlife is limited by the silent nature of this use, modest numbers of visits, and the size and remote nature of large parts of the Refuge. Wildlife temporarily displaced has ample alternative habitat given the size of the Refuge. Also, many species have grown more tolerant of human presence due to railroads, highways, and river traffic adjacent to or through the Refuge. Although sailing in Lake Onalaska has the potential to disturb waterfowl using the Waterfowl Hunting Closed Area, a Voluntary Avoidance Area helps protect the core of the closed area and most sailing occurs before peak bird use. This use is not expected to materially interfere or detract from the purposes of the Refuge for fish, wildlife, and plant conservation.

Signature: Refuge Manager: _____
(signature and date)

Concurrence: Regional Chief: _____
(signature and date)

Mandatory 10- or 15 year Re-evaluations Date: _____

DRAFT Compatibility Determination

Use: Commercial Fishing (including mussel and turtle harvest)

Refuge Name: Upper Mississippi River National Wildlife and Fish Refuge (Refuge)

Establishing and Acquisition Authority(ies):

The Upper Mississippi River Wildlife and Fish Refuge was established by Public Law No. 268, 68th Congress on June 7, 1924. This act authorized acquisition of lands for Refuge purposes. Additional lands acquired in fee title by the U.S. Army Corps of Engineers are managed as part of the Refuge under a 1963 Cooperative Agreement between the Department of the Army and the Department of the Interior.

Refuge Purpose(s):

Per Public Law 268:

“The Refuge shall be established and maintained (a) as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and (b) to such extent as the Secretary of the Interior by regulations, prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and (c) to such extent as the Secretary of the Interior may, by regulations, prescribe a refuge and breeding place for fish and other aquatic animal life.”

National Wildlife Refuge System Mission:

“The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Description of Use:

About 17 species of fish plus turtles are caught commercially within the Refuge boundary. For Pools 4-14 from 1998 to 2001, annual commercial catch averaged 6.6 million pounds with a gross value based on ex vessel price (the price paid to the commercial fisher dockside; i.e., before any processing or distribution) per pound of \$1.7 million (2003 dollars). Commercial catch of turtles averaged 8,475 pounds annually with a gross value of \$4,553. The average annual number of commercial fishermen is 527 with a total catch per year ranging from 5.5 to 8.5 million pounds. Data on mussel harvest is not available. Once lucrative, mussel harvest in the last decade or so has become sporadic and minimal. Regulation setting, issuing licenses, and maintaining harvest reports are done by the states, with the exception of Spring Lake in Pool 13, Savanna District. For Spring Lake, the Refuge issues a special use permit for commercial fishing. A total of 57,532 pounds were reported harvested in Spring Lake in 2003, with an estimated value of \$8,629.

Commercial fishing is conducted in accordance with State seasons and regulations and any applicable Refuge regulations. Means of harvest include hoop nets, gill nets, trammel nets, and baskets. Commercial fishing is conducted year round, but primarily from March to October. Primary fish harvested are common carp, buffalo, freshwater drum, and catfish. In recent years, Asian carp species such as silver carp have comprised a larger part of the harvest. The main turtle harvested is the snapping turtle.

Availability of Resources:

Commercial anglers use the existing network of roads to access the Mississippi River and its tributaries. The Refuge provides numerous parking lots, boat ramps, platforms, signs and other facilities for use by commercial anglers. The Refuge provides staff to maintain these facilities, disseminate information, and enforce regulations. Fisheries management is conducted in

cooperation with the four states' Departments of Natural Resources (Illinois, Iowa, Wisconsin, and Minnesota), La Crosse Fisheries Office, and the Corps of Engineers. Funding for this activity comes from annual operations and maintenance funding for the Refuge and is deemed adequate given the current Refuge involvement.

Anticipated Impacts of the Use:

Commercial harvest levels for fish, mussels, and turtles are currently set by the states which cooperate through the auspices of the Upper Mississippi River Conservation Committee. Regular fishing surveys by the states, and reporting requirements, monitor fishery populations and harvest. Thus, commercial fishing and turtle harvest results in removal and use of a certain percentage of the population each year, but harvest is deemed sustainable and does not represent a threat to overall populations of any species. As noted earlier, mussel harvest is inconsequential.

Commercial fishing activities may cause temporary disturbance to bald eagles, water birds, waterfowl, and other wildlife. To minimize disturbance some areas are closed to fishing during fall and winter when waterfowl and eagles concentrate. In order to avoid conflicts between commercial fishing and recreational fishing, some backwater areas are restricted to week days only during summer months. In order to avoid the harvest of waterfowl, such as diving ducks being caught in nets, specific backwater areas require that commercial fishing gear must be regularly tended to and cannot be dead set. Undoubtedly some shoreline erosion is caused by boat wakes, but is minor compared to that caused by barges, annual high water events, floods, recreational boating, and wind-driven wave action. With reasonable use restrictions in effect, commercial harvest of fish, turtles, and mussels should not result in short- or long-term impacts that adversely affect the purposes of the Refuge or the mission of the National Wildlife Refuge System.

Public Review and Comment:

This Compatibility Determination will be submitted as a portion of the Refuge Draft Comprehensive Conservation Plan and Environmental Impact Statement. Public notification and review includes a notice of availability, 120-day comment period, media announcements, and a series of public meetings in selected communities adjacent to the Refuge.

Determination:

___ Use is Not Compatible

xx Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. All applicable state and federal regulations apply. Regulations and monitoring help ensure that harvest levels of commercial fishing do not have harmful long-term impact on fish populations.
2. In the Savanna District, no mussel harvest is allowed in Spring Lake and the Blanding Landing area.
3. A Special Use Permit is issued to all commercial anglers. An annual harvest report is required to identify the total number of pounds of fish caught by species and by navigation pool.
4. Commercial fishing is not allowed in Waterfowl Hunting Closed Areas during the respective state duck hunting season to limit disturbance to resting and feeding waterfowl. In the Lake Onalaska Closed Area, the LaCrosse District Manager will have the latitude to restrict commercial fishing to limit bird disturbance.

Justification:

Commercial fishing is primarily limited to the harvest of what are generally considered rough fish. The removal of rough fish improves habitat for many other species of native fish, including a host of sport fish important to recreational fishing. The recent spread of non-native Asian carp such as silver and bighead carp into the Upper Mississippi River has brought many concerns about impacts to the habitat and forage base, and direct impacts to certain species (e.g. black carp feed on mussels). Commercial fishing is a primary method of control for invasive and exotic common carp and Asian carp species, and as such, directly contributes to the purposes of the Refuge for the conservation of fish, wildlife, and plants. Commercial fishing and its impacts on fishery resources are continually monitored by the four states involved. Together with Refuge-specific regulations and stipulations, this oversight ensures that commercial fishing is sound biologically and has limited adverse impacts on Refuge fish, wildlife, and habitat.

By 2008, a Refuge Fishery and Mussel Management Plan will be prepared which will set specific goals and objectives which will be used in review and updating of the commercial fishing program on the Refuge. Likewise, ongoing monitoring and research of turtle populations will provide new information to guide turtle harvest on the Refuge.

Signature: Refuge Manager: _____
(signature and date)

Concurrence: Regional Chief: _____
(signature and date)

Mandatory 10- or 15 year Re-evaluations Date: _____

DRAFT Compatibility Determination

Use: Dog Exercising and Training

Refuge Name: Upper Mississippi River National Wildlife and Fish Refuge (Refuge)

Establishing and Acquisition Authority(ies):

The Upper Mississippi River Wildlife and Fish Refuge was established by Public Law No. 268, 68th Congress on June 7, 1924. This act authorized acquisition of lands for Refuge purposes. Additional lands acquired in fee title by the U.S. Army Corps of Engineers are managed as part of the Refuge under a 1963 Cooperative Agreement between the Department of the Army and the Department of the Interior.

Refuge Purpose(s):

Per Public Law 268:

“The Refuge shall be established and maintained (a) as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and (b) to such extent as the Secretary of the Interior by regulations, prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and (c) to such extent as the Secretary of the Interior may, by regulations, prescribe a refuge and breeding place for fish and other aquatic animal life.”

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Description of Use:

This use involves the exercising or training of dogs on the Refuge under a specifically designed regulation that protects wildlife and the public. This use occurs sporadically throughout the Refuge but is most common near cities and communities with higher densities of dog owners. This use will occur year-around, with the highest frequency during the summer months. Perhaps half of this use would involve people camping on islands with dogs, and half would be persons working or training hunting retrievers from shoreline areas. This use does not include field trials or commercial/professional dog training, which remain prohibited.

Availability of Resources:

This use does not require additional facilities or added maintenance of existing facilities. Enforcement of regulations governing this use is part of normal law enforcement operations. Thus, no additional resources are needed to administer this use.

Anticipated Impacts of the Use:

Domestic animals can harass and kill wildlife and be particularly harmful to ground nesting birds during the nesting season. Some animals, particularly dogs, can at times become a direct or perceived threat to other persons engaged in recreation on the Refuge. Young children especially can be easily frightened by dogs, and even knocked down and injured by overly friendly dogs. Domestic animals often leave waste at public use sites which many visitors find objectionable.

Public Review and Comment:

This Compatibility Determination will be submitted as a portion of the Refuge Draft Comprehensive Conservation Plan and Environmental Impact Statement. Public notification and review includes a

notice of availability, 120-day comment period, media announcements, and a series of public meetings in selected communities adjacent to the Refuge.

Determination:

___ Use is Not Compatible

xx Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

Adopt the following regulation for dog use on the Refuge: “From March 1 to June 30, dogs are not allowed to run free and must be restrained by leash or other means. At other times, dogs are allowed to be free only under the following conditions: a) when at least 100 yards away from any designated public concentration area such as access roads, trail heads, trails, kiosks, rest areas, pull-offs, and boat landings, and, at least 100 yards away from another person not accompanying the owner/handler, and b) when within sight and voice control of the owner/handler. Hunting and retrieving dogs are exempt from these conditions while engaged in authorized hunting activities during the hunting season. Field trials or commercial/professional training is prohibited.”

Justification:

This objective relaxes the current Refuge System regulation which prohibits unconfined domestic animals on national wildlife refuges, making an exception for dogs. The new regulation provides stipulations for allowing dogs to be free and would allow owners to exercise and train their dogs, but protect wildlife during the sensitive nesting or young rearing season. Disturbance to wildlife should thus not be greater than the multitude of other uses occurring during the same time period. The new regulation also helps safeguard other visitors from the real or perceived threat that dogs and other animals can pose by keeping the use away from public facilities and access points. The prohibition of field trials and commercial or organized dog training would remain in effect and is long-standing Refuge policy.

Signature: Refuge Manager: _____
(signature and date)

Concurrence: Regional Chief: _____
(signature and date)

Mandatory 10- or 15 year Re-evaluations Date: _____

DRAFT Compatibility Determination

Use: Environmental Education

Refuge Name: Upper Mississippi River National Wildlife and Fish Refuge (Refuge)

Establishing and Acquisition Authority(ies):

The Upper Mississippi River Wildlife and Fish Refuge was established by Public Law No. 268, 68th Congress on June 7, 1924. This act authorized acquisition of lands for Refuge purposes. Additional lands acquired in fee title by the U.S. Army Corps of Engineers are managed as part of the Refuge under a 1963 Cooperative Agreement between the Department of the Army and the Department of the Interior.

Refuge Purpose(s):

Per Public Law 268:

“The Refuge shall be established and maintained (a) as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and (b) to such extent as the Secretary of the Interior by regulations, prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and (c) to such extent as the Secretary of the Interior may, by regulations, prescribe a refuge and breeding place for fish and other aquatic animal life.”

National Wildlife Refuge System Mission:

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Description of Use:

Currently, environmental education activities contribute nearly 6,000 visits each year to the Refuge. Environmental education is a priority public use. Typically, use occurs between September and June by individual school classes and large groups during educational field days. Environmental education programs focus on river issues including wildlife, history, archaeology, culture, and habitats. Wildlife ecology programs address a number of wildlife conservation issues including wetland and prairie conservation, migratory bird management, and endangered species conservation. Programs also involve development of outdoor skills which enhance appreciation of wildlife and the habitats they live in. The Refuge has become increasingly popular as an outdoor classroom for several universities. These non-staffed activities include seining fish, bird-watching, and collecting plants and animals.

The Refuge provides public facilities which support environmental education including 4 visitor contact stations, 15 observation decks, 6 hiking trails, 3 biking trails, 4 canoe trails, and an auto tour route.

The Comprehensive Conservation Plan recommends additional staffing and facilities and an expanded environmental education program. With additional full-time visitor services specialists, more students will be given an opportunity for environmental education on the Refuge. Additional staff will be able to provide more teacher workshops and orientations, and help develop site-specific curricula, materials, and activities. Additional field trip assistance would be available to enhance learning in an outdoor setting. Students and teachers would also be able to participate in coordinated restoration, and monitoring programs through long-term monitoring studies.

Availability of Resources:

Currently, there are three full-time visitor services staff members for the entire refuge. The staff for coordinating the current level of environmental education is available but limits the number and depth of programs and amount of assistance to educators. Maintaining the public use facilities which support environmental education is part of routine management duties and staff and funding is available. Additional facilities and visitors services specialists as outlined in the Refuge Comprehensive Conservation Plan will enhance opportunities for environmental education and improve the quality and quantity of programs.

Anticipated Impacts of the Use:

There is some temporary disturbance to wildlife due to environmental education activities. However, the disturbance is local, temporary and generally not detrimental to individual animals or populations. Some habitat is disturbed during activities, but of little long term consequence. Future increases in facilities and participants would cause some displacement of habitat and increase in disturbance, but this is negligible given the controlled nature of environmental education and the size of the Refuge. Control of areas used by groups would avoid or minimize intrusion into sensitive habitats or wildlife areas.

Public Review and Comment:

This Compatibility Determination will be submitted as a portion of the Refuge Draft Comprehensive Conservation Plan and Environmental Impact Statement. Public notification and review includes a notice of availability, 120-day comment period, media announcements, and a series of public meetings in selected communities adjacent to the Refuge.

Determination:

___ Use is Not Compatible

xx Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. Environmental education activities not led by Refuge staff will require, at a minimum, verbal approval by the respective District Manager or visitor services specialist to minimize conflicts with other groups, safeguard students and resources, and to allow tracking of use levels. District Managers may require Special Use Permits at their discretion.
2. Environmental education (including Refuge-conducted) will not be allowed in Waterfowl Hunting Closed Areas October 1 to the end of the state regular duck hunting season.
3. Students and teachers will continue to be instructed on the best ways to view wildlife with minimal disturbance.
4. Educational groups are required to have a sufficient number of adults to supervise their groups, a minimum of 1 adult per 12 students.
5. Increased communication with teachers conducting their own activities on the Refuge will help educate participants about the importance of minimizing wildlife disturbance.

Justification:

Most environmental education will occur, or be directed to, existing and future facilities in strategic locations providing quality opportunities while limiting wildlife and habitat disturbance. Many species have also grown more tolerant of human presence due to railroads, highways, and river traffic adjacent to or through the Refuge. Disturbance is also generally short-term, only temporarily displaces wildlife, and does not adversely impact overall populations. Also, adequate adjacent habitat is usually available for temporarily displaced wildlife. The approval process for groups will limit

disturbance to wildlife and ensure avoidance of sensitive areas. Numerous other stipulations will be in place to facilitate these uses while reducing direct and indirect impacts.

As one of the six priority public uses of the Refuge system, this use is to be encouraged when compatible with the purposes of the Refuge. The Refuge provides outstanding environmental education opportunities due to the diversity of wildlife and habitat on the Refuge, and the range of environmental issues faced. For example, increasing concerns with invasive species provides a subject for environmental education exploration. The extensive education community bordering the Refuge desires more opportunities for hands-on experiential learning. Educating students of all ages about the resources and challenges of the Refuge is an important way to influence the future well-being of the Refuge and the river. Only through understanding and appreciation will people be moved to personal and collective action to ensure a healthy Refuge for the future.

Signature: Refuge Manager: _____
(signature and date)

Concurrence: Regional Chief: _____
(signature and date)

Mandatory 10- or 15 year Re-evaluations Date: _____

DRAFT Compatibility Determination

Use: Cooperative Farming for Habitat Management

Refuge Name: Upper Mississippi River National Wildlife and Fish Refuge (Refuge)

Establishing and Acquisition Authority(ies):

The Upper Mississippi River Wildlife and Fish Refuge was established by Public Law No. 268, 68th Congress on June 7, 1924. This act authorized acquisition of lands for Refuge purposes. Additional lands acquired in fee title by the U.S. Army Corps of Engineers are managed as part of the Refuge under a 1963 Cooperative Agreement between the Department of the Army and the Department of the Interior.

Refuge Purpose(s):

Per Public Law 268:

“The Refuge shall be established and maintained (a) as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and (b) to such extent as the Secretary of the Interior by regulations, prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and (c) to such extent as the Secretary of the Interior may, by regulations, prescribe a refuge and breeding place for fish and other aquatic animal life.”

National Wildlife Refuge System Mission:

“The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Description of Use:

The Refuge will allow farming by private individuals for the purpose of habitat management.

Cooperative farming is the term used for cropping activities (growing agricultural products) conducted by a third party on land that is owned by or managed as part of the Refuge by jurisdictional agreement. Farming of any single field or area is usually done on a short-term basis (5 years or less) to: remove undesirable vegetation; reduce unacceptable chemical concentrations in the soil; prepare optimum site conditions for establishment of native vegetation, including forest, prairie or wetland communities. In some circumstances, cooperative farming may occur for longer time periods to maintain suitable conditions for future habitat management actions that require completion of complex planning and coordination. For example, maintaining an area free of woody vegetation for future development of moist soil units is typically less harmful and more efficient and cost effective compared to removing such vegetation at a later time. In most circumstances where farming is permitted, the use agreement will require a portion of the crop be left unharvested in the field (typically 25-33%) for the benefit of wildlife. Cash rent, in lieu of crop share, may be considered by the District Manager, and implemented with justification.

Very little of the Refuge’s approximately 240,000 acres is suitable for farming. Most areas are wetlands, or within the frequently inundated river flood plain. Most relatively higher land within the Refuge suitable for farming has been converted to permanent native habitat. Many of the relatively higher elevation areas of the Refuge are sandy soil benches not suitable for long term tillage. Areas that are currently farmed, or may be farmed in the future, are lands recently acquired, or areas being prepared for habitat restoration/enhancement projects. Approximately 200 acres, involving four permittees, are currently farmed on the Refuge. We estimate that up to 250 acres Refuge-wide may be cooperatively farmed at any one period during the next decade. The total area farmed may

exceed this amount for short periods if parcels containing currently farmed land are purchased as additions to the Refuge. However, over the long term we expect the amount of farmed Refuge lands will decrease as permanent native habitat is established on these areas.

Cooperative farming is conducted under the terms and conditions of a Cooperative Farming Agreement or Special Use Permit issued by the Refuge Manager. The terms of the Agreement or Permit ensure compliance with Service policy and area-specific stipulations to meet management objectives and safeguard resources.

Availability of Resources:

The needed staff time for development and administration of a cooperative farming program is available. Most of the needed work to prepare for this use would be done as part of routine management duties. The decision to use cooperative farming as a management tool would occur as part of strategies developed under specific program or unit habitat management planning. The additional time needed to coordinate issuance and oversight of the needed Special Use Permit or Agreements is relatively minor and within existing Refuge resources.

Anticipated Impacts of the Use:

Cooperative farming to prepare suitable site conditions for habitat management purposes will result in short-term disturbances and long-term benefits to both resident and migratory wildlife using the Refuge. Short-term impacts will include disturbance and displacement typical of any noisy heavy equipment operation. Farming activities will also result in short-term loss of habitat for any species using those areas for nesting, feeding, or resting. Long-term benefits are positive due to establishment of diverse native habitat. The resulting habitat will improve conditions for most of the same species adversely affected by the short-term negative impacts. The relative small size of the areas being farmed, and the control of timing and duration of farming practices will limit anticipated impacts.

Public Review and Comment:

This Compatibility Determination will be submitted as a portion of the Refuge Draft Comprehensive Conservation Plan and Environmental Impact Statement. Public notification and review includes a notice of availability, 120-day comment period, media announcements, and a series of public meetings in selected communities adjacent to the Refuge.

Determination:

___ Use is Not Compatible

xx Use is Compatible With Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. Cooperative Farming Agreements will be limited to five years or less, unless otherwise approved by the Refuge Manager.
2. Cooperating farmers will be subject to Service policy and regulation regarding use of chemicals.
3. Special conditions of Cooperative Farming Agreements will address unique local conditions as applicable.
4. Farming must meet specific habitat and related wildlife objectives and contribute to the purposes of the Refuge.

Justification:

Farming on the Refuge to prepare lands for restoration or enhancement will not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purposes of the Refuge because:

1. Cooperative farming activities will be conducted where it provides the fastest, most cost effective way to establish native prairie, forest, or managed wetlands on areas that have unacceptable chemical residue, noxious weeds, or other undesirable plant species or ecotypes.
2. The total area on which farming will be permitted is a small portion of Refuge, and thus cause insignificant adverse effects on habitat overall.
3. Farming will be conducted in accordance with a Habitat Management Plan which will identify management units, desired habitat goals/objectives, and management strategies.
4. Short term adverse effects on habitat caused by farming activities are offset by long term habitat improvement

Signature: Refuge Manager: _____
(signature and date)

Concurrence: Regional Chief: _____
(signature and date)

Mandatory 10- or 15 year Re-evaluations Date: _____

DRAFT Compatibility Determination

Use: Recreational Fishing

Refuge Name: Upper Mississippi River National Wildlife and Fish Refuge (Refuge)

Establishing and Acquisition Authority(ies):

The Upper Mississippi River Wildlife and Fish Refuge was established by Public Law No. 268, 68th Congress on June 7, 1924. This act authorized acquisition of lands for Refuge purposes. Additional lands acquired in fee title by the U.S. Army Corps of Engineers are managed as part of the Refuge under a 1963 Cooperative Agreement between the Department of the Army and the Department of the Interior.

Refuge Purpose(s):

Per Public Law 268:

“The Refuge shall be established and maintained (a) as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and (b) to such extent as the Secretary of the Interior by regulations, prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and (c) to such extent as the Secretary of the Interior may, by regulations, prescribe a refuge and breeding place for fish and other aquatic animal life.”

National Wildlife Refuge System Mission:

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Description of Use:

The Refuge allows public recreational fishing in accordance with state regulations and seasons and applicable Refuge regulations. Recreational fishing is a priority public use. A minimum of 110,611 acres of water on the Refuge will be open to fishing year around, with approximately 30,000 thousand additional acres in Waterfowl Hunting Closed Areas open spring, summer, and winter as outlined in the preferred alternative of the Refuge Comprehensive Conservation Plan. Fishing is one of the most popular activities on the Refuge, with 1.3 million fishing visits reported in 2004.

State fishing regulations allow the traditional taking of game fish species with rod and reel from shore or boat, through the ice, and by using trotlines and jugs. Removal of rough fish by spear, archery and dip net is allowed, as well as the taking of limited quantities of mussels, crayfish, frogs, minnows and turtles for personal use. Recreational fishing is allowed throughout the year but access into certain areas is subject to seasonal or special case restrictions, such as closed areas, voluntary avoidance areas, and catch-and-release only areas below some locks and dams.

Availability of Resources:

Anglers use the existing network of roads to access the various areas of the Refuge for fishing. The Refuge provides numerous parking lots, boat ramps, platforms, signs and other facilities to assist anglers. In addition, winter anglers may use all-terrain vehicles, snowmobiles, and other motorized craft on water (ice) areas of the Refuge to reach fishing spots. However, no overland travel is permitted. The Refuge provides staff to maintain facilities, disseminate information to visitors, and enforce regulations. Fisheries management is conducted in cooperation with the four states' departments of natural resources (Illinois, Iowa, Wisconsin, and Minnesota), La Crosse Fisheries Resource Office, and the Corps of Engineers.

Adequate resources are available to manage the existing fishing program at the current level of participation. However, funding for law enforcement staff time and printing of the Refuge Public Use Regulations brochure is lacking some years, calling for a redirection of existing Refuge funding. This redirection is often at the expense of other Refuge programs such as monitoring, maintenance, and other public use programs. Proposals in the Refuge Comprehensive Conservation Plan (CCP) should help address these funding concerns.

Anticipated Impacts of the Use:

Accommodating this wildlife-dependant use is expected to result in minimal impacts. Although fishing causes mortality to fish, season dates and limits are set with the long-term health of populations in mind. Populations of most species are regularly monitored by state agencies. Survey information indicates that a controlled sport fishing harvest will not adversely affect overall fish population levels. This is also true for the limited harvest of bait fish, mussels, and turtles for personal use.

Disturbance to wildlife may also result from fishing activity. This disturbance is expected to be limited in scope and duration. Because it is proposed that fishing not be permitted in Waterfowl Hunting Closed Areas during the duck hunting season, this use will not be a source of disturbance to waterbirds concentrated in these areas. All motor vehicle use associated with fishing is restricted to designated roads, trails, and parking areas which reduces disturbance to wildlife. Disturbance to habitat is minimal, although in shallow backwater areas motorized watercraft can damage aquatic plants and increase turbidity. These impacts are generally localized and have little overall negative impact. Undoubtedly some shoreline erosion is caused by boat wakes, but is relatively minor compared to that caused by barge traffic, annual high water events, floods, and wind-driven wave action. There are several no-wake areas to minimize shoreline erosion and to maximize safety to boaters.

Anglers occasionally violate regulations, such as exceeding the daily limit. However, because limited in number, these incidents usually have only minor impacts to fish populations or Refuge resources.

Public Review and Comment:

This Compatibility Determination will be submitted as a portion of the Refuge Draft Comprehensive Conservation Plan and Environmental Impact Statement. Public notification and review includes a notice of availability, 120-day comment period, media announcements, and a series of public meetings in selected communities adjacent to the Refuge.

Determination:

Use is Not Compatible

Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

To ensure compatibility with Refuge purposes and the mission of the National Wildlife Refuge System, recreational fishing can occur on the Refuge if the following stipulations are met:

1. This use must be conducted in accordance with state and federal regulations, and applicable special Refuge regulations published in the Public Use Regulations brochure.
2. Waterfowl Hunting Closed Areas are proposed to be closed to fishing during the respective state duck hunting season to limit disturbance to large numbers of resting and feeding waterfowl.

DRAFT Compatibility Determination

Use: Continued Presence and Operation of Commercial Fishing Floats

Refuge Name: Upper Mississippi River National Wildlife and Fish Refuge (Refuge)

Establishing and Acquisition Authority(ies):

The Upper Mississippi River Wildlife and Fish Refuge was established by Public Law No. 268, 68th Congress on June 7, 1924. This act authorized acquisition of lands for Refuge purposes. Additional lands acquired in fee title by the U.S. Army Corps of Engineers are managed as part of the Refuge under a 1963 Cooperative Agreement between the Department of the Army and the Department of the Interior.

Refuge Purpose(s):

Per Public Law 268:

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Description of Use:

Four independently-owned/operated fishing floats are permitted to occupy U.S. Fish and Wildlife Service-acquired land below Lock and Dams 6, 7, 8, and 9. Fishing floats are private businesses which provide fishing opportunities to the public for a fee; the fee varies per fishing float. Floats vary in construction and configuration, but generally include a large, floating platform with railing from which visitors fish; a small, enclosed concessions area where food, beverages, and bait can be purchased; and portable rest rooms. The floats are attached to shore via a dock or walkway, and there is generally an equipment storage shed on shore. This activity helps support fishing, one of the priority public uses.

Operators pick-up customers via boat and transport them to the facility. The fishing floats generally are used by anglers, who travel some distance to fish the main channel of the Mississippi River; but do not own or have access to boats. An estimated 15,000 anglers per year use the fishing floats with the largest operator servicing about 6,000 anglers per year, while the remaining operators average about 3,000 anglers each per year. Due to the location of floats below locks and dams, fishing can be excellent for walleye, sauger, and other species which tend to congregate in these areas. Operators are required to obtain an annual Special Use Permit from the Refuge for an administrative fee of \$100, a fee unchanged since at least 1971.

Availability of Resources:

These structures are privately-owned and operated. Depending on the location of the fishing float, boat landings and parking lots, which are used for customer parking or to support transporting customers to the facility, may be public or privately-owned.

Costs to the Service incur from personnel administering the annual Special Use Permit and to law enforcement staff charged with enforcing the conditions of the annual permit. The \$100 received per fishing float is not sufficient to recover Refuge costs to administer each of the four fishing floats. The Refuge's Comprehensive Conservation Plan addresses this need and proposes that new guidelines and permit fees be established soon after plan approval.

Anticipated Impacts of the Use:

Fishing activities associated with floats, particularly in spring, may cause temporary disturbance to bald eagles, migratory birds, and other wildlife using the area immediately below the lock and dams. General fishing in boats is also concentrated in these areas. This disturbance may displace individual animals to other sections of the main channel or surrounding backwaters. Disturbance is limited in scope and duration because the activity is concentrated in a relatively small area.

As a result of the fishing floats, more harvest of fish occurs. Season dates, daily bag limits, and any specific regulations are set by the states with the long-term health of populations in mind. Creel surveys, population assessments, and water quality monitoring are among the tools used to determine how well populations are being maintained. Consequently, the harvest from anglers on fishing floats should not be excessive for any species taken. The fishing float may also provide additional structure for a variety of fish species. Fishing floats are anchored by cabling off to large trees growing on the shoreline, or onshore pilings, along with poles driven into the river bottom. Damage to trees has been documented. This damage can be avoided by using onshore pilings. Finally, conflicts between anglers in boats and those fishing from fishing floats occur when boaters move in too close. Avoiding or minimizing these conflicts has been stressed by Refuge personnel; recommendations for handling potential conflicts have also been passed onto fishing float owners/operators.

Public Review and Comment:

This Compatibility Determination will be submitted as a portion of the Refuge Draft Comprehensive Conservation Plan and Environmental Impact Statement. Public notification and review includes a notice of availability, 120-day comment period, media announcements, and a series of public meetings in selected communities adjacent to the Refuge.

Determination:

Use is Not Compatible

Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

To ensure compatibility with Refuge purposes and the mission of the National Wildlife Refuge System, an individual fishing float would remain in operation on the Refuge if the following stipulations are met:

1. Operations and maintenance are conducted in accordance with local, state and federal regulations unless the Refuge places additional restrictions on the activities to ensure compliance with all applicable laws, regulations, and policies.
2. The fishing float meets the new standards being developed for facilities and operations. This includes implementing new concession fees. If a fishing float does not meet the new standards, a phase-out would occur with no provisions for replacing the phased-out fishing float.
3. Fishing float presence and operation will be subject to modification if on-site monitoring by Refuge personnel uncovers unanticipated negative impacts to natural communities, wildlife species, or their habitats.

Justification:

The National Wildlife Refuge System Improvement Act of 1997 specifies that there are six priority uses of the National Wildlife Refuge System. Fishing is one of these six priority uses. Historically, fishing floats filled an important void for those wishing to fish the main channel, but lacking the necessary equipment. With the increased availability and affordability of fishing boats and guiding services, the need for fishing floats has lessened. However, their services are still desired as documented by the use they receive annually and the public's interest in seeing them continue. As noted in the description of use and anticipated impact sections, the continued presence and operation of fishing floats on the Refuge will have minimal impact to fish and wildlife populations and associated habitat. Stipulations above will ensure proper control of the means of use and provide management flexibility should detrimental impacts develop. New standards for facilities and operations, in addition to more realistic concession fees, should lessen Refuge administrative costs while providing a fair return to the government. Allowing this use also furthers the mission of the National Wildlife Refuge System by providing renewable resources and recreation for the benefit of the American public while conserving fish, wildlife, and plant resources.

Signature: Refuge Manager: _____
(signature and date)

Concurrence: Regional Chief: _____
(signature and date)

Mandatory 10- or 15 year Re-evaluations Date: _____

DRAFT Compatibility Determination

Use: Fishing tournaments and other competitive fishing events

Refuge Name: Upper Mississippi River National Wildlife and Fish Refuge (Refuge)

Establishing and Acquisition Authority(ies):

The Upper Mississippi River Wildlife and Fish Refuge was established by Public Law No. 268, 68th Congress on June 7, 1924. This act authorized acquisition of lands for Refuge purposes. Additional lands acquired in fee title by the U.S. Army Corps of Engineers are managed as part of the Refuge under a 1963 Cooperative Agreement between the Department of the Army and the Department of the Interior.

Refuge Purpose(s):

Per Public Law 268:

“The Refuge shall be established and maintained (a) as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and (b) to such extent as the Secretary of the Interior by regulations, prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and (c) to such extent as the Secretary of the Interior may, by regulations, prescribe a refuge and breeding place for fish and other aquatic animal life.”

National Wildlife Refuge System Mission:

“The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Description of Use:

Competitive fishing events, including professional tournaments and charity events, are common and growing on the Refuge and other parts of the Mississippi River and tributaries. Fishing tournaments are related to one of the priority public uses of the Refuge System. The states have been regulating and issuing permits for this use in varying ways, and the Refuge, by choice, has not played an active role. The exact number of fishing tournaments on the Refuge is unknown due to differences on record keeping by the states. Records give some indication of use levels, however. In Minnesota, Pools 4-7, which includes the Refuge, there were 26 fishing tournaments permitted in 2003 involving 1,992 boats and 3,984 anglers. In Iowa, Pools 9-14, there were 125 fishing tournaments in 2002 involving 4,997 boats and nearly 10,000 anglers.

The tournaments are conducted by a wide variety of groups including sport fishing businesses and corporations, national competitive fishing organizations, non-profit groups, local governments, and sporting goods stores. Participant fees vary and prizes may be cash, merchandise, or none with proceeds going to charity. Competitive fishing is allowed throughout the year, but primarily occurs from spring through the fall of the year. Tournaments vary, but are typically two-day events held on weekends in one or more pools, involving an average of 50 boats. Usually, one tournament is held every weekend in each of the 12 pools within the Refuge from April through September. As many as three tournaments may be held on the same weekend within a single pool with a possible 300 boats participating.

All boats are required to be equipped with aerated live wells and all fish caught must be returned to the water following weigh-in. Access into certain areas is subject to seasonal or special case restrictions, such as closed areas, voluntary avoidance areas, or catch-and-release only areas.

The Refuge Comprehensive Conservation Plan (CCP) outlines more active involvement by the Refuge in competitive fishing events in accordance with existing Refuge System policy and regulations. This involvement would include meeting with the states to discuss the best strategies for implementing a Refuge permit system in concert with varying states' permitting procedures, and developing time, space, and capacity parameters on each pool to minimize impacts and conflicts.

Availability of Resources:

Tournament anglers use the existing network of roads to access the various areas of the Refuge for fishing. The Refuge provides numerous parking lots, boat ramps, platforms, signs and other facilities to assist anglers. However, most anglers access the river and the Refuge by boat ramps operated by others. The Refuge provides staff to maintain facilities, disseminate information, and enforce regulations. Fisheries management and tournament oversight is conducted by the four states' departments of natural resources (Illinois, Iowa, Wisconsin, and Minnesota).

Increased Refuge involvement as outlined in the CCP will increase overall costs of Refuge operations, including but not limited to, development and review of policy and procedure, yearly administration of permits in coordination with the states, and enforcement of permit conditions. In the short-term, existing staff is adequate if shifts in priorities and assignments are made to accommodate modest oversight of competitive fishing events. In the long-term, a comprehensive competitive fishing program, when combined with other new initiatives requiring permits, will require additional administrative and/or other personnel as identified in the Comprehensive Conservation Plan. Existing facilities (launch ramps) and other infrastructure are currently sufficient to accommodate this use.

Anticipated Impacts of the Use:

Competitive fishing activities may cause temporary disturbance to bald eagles, water birds, waterfowl, and other wildlife. To minimize disturbance some areas are closed to fishing during fall and winter when waterfowl and eagles concentrate. There is some concern that catch-and-release tournament fishing stresses and kills certain species of fish (such as bass and walleye), especially during summer, but the magnitude is unknown at this time and continues to be studied by the states and others. Fish are also released often long distances from where caught, and the effects of this relocation on overall survival and local or overall populations is unknown. Given continued monitoring of fishery populations by the states, it does not appear that tournaments have an impact on overall fish populations or health. Some shoreline erosion is caused by the wakes of larger and faster tournament boat wakes, but is minor compared to that caused by barges, annual high water events, floods and wind-driven wave action. Loss of vegetation and increase in turbidity occurs from boats running through shallow backwater areas.

There is potential for conflicts between competitive anglers and recreational anglers, especially for coveted fishing spots. In addition, there is potential for conflicts between competitive anglers and waterfowl hunters, especially during early seasons which may start September 1, and silent sport enthusiasts such as canoeists and kayakers.

Public Review and Comment:

This Compatibility Determination will be submitted as a portion of the Refuge Draft Comprehensive Conservation Plan and Environmental Impact Statement. Public notification and review includes a notice of availability, 120-day comment period, media announcements, and a series of public meetings in selected communities adjacent to the Refuge.

Determination:

Use is Not Compatible

Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. Tournaments will require a Special Use Permit with conditions as needed and appropriate.
2. All applicable state, federal, and Refuge regulations apply. Regulations and monitoring help ensure that harvest levels of competitive fishing do not have harmful long-term impact on fish populations.
3. Competitive fishing events will be regulated to have a minimal impact on other Refuge users. Time, space, and capacity parameters for each pool will be set in coordination with the states, and take into account electric motor areas, waterfowl hunting closed areas, and slow, no-wake areas.
4. All sponsors of competitive fishing events that use the Refuge must notify the Refuge in advance.
5. Event elements, such as collection of fees, fish weigh-in, and award programs, will not be held on Refuge lands or facilities.
6. No more than 25% of any Refuge parking lot or boat landing shall be occupied by competitive anglers to ensure that the public has adequate use of this same area.

Justification:

Accommodating this wildlife-dependant use is expected to result in minimal impacts. Although competitive events causes mortality to fish, catch and release practices, state regulations and permit stipulations, and Refuge stipulations and oversight, will be set with the long-term health of fish populations in mind. Populations of most species are regularly monitored by state agencies. Survey information indicates that controlled and monitored competitive fishing events will not adversely affect overall fish population levels.

Disturbance to wildlife may also result from fishing activity. This disturbance is expected to be limited in scope and duration. Because it is proposed that fishing not be permitted in Waterfowl Hunting Closed Areas during the duck hunting season, this use will not be a source of disturbance to waterbirds concentrated in these areas. All motor vehicle use associated with fishing is restricted to designated roads, trails, and parking areas which reduces disturbance to wildlife. Disturbance to habitat is minimal, although in shallow backwater areas motorized watercraft can damage aquatic plants and increase turbidity. These impacts are generally localized and have little overall negative impact. Undoubtedly some shoreline erosion is caused by boat wakes, but is relatively minor compared to that caused by barge traffic, annual high water events, floods, and wind-driven wave action. There are several no-wake areas to minimize shoreline erosion and to maximize safety to boaters.

Disturbance to other Refuge anglers and visitors should be reduced by Refuge oversight and a cooperative program with the states. This oversight will likely include time, space, and capacity parameters for each pool to minimize competition between events and with the general public. Stipulations above should also minimize disturbance impacts.

Tournament anglers occasionally violate regulations. However, these incidents usually have only minor impacts to fish populations or Refuge resources, and will be addressed through law enforcement, outreach, and education.

Signature: Refuge Manager: _____
(signature and date)

Concurrence: Regional Chief: _____
(signature and date)

Mandatory 10- or 15 year Re-evaluations Date: _____

DRAFT Compatibility Determination

Use: Fruits of the Soil Harvest (e.g. berry and mushroom picking)

Refuge Name: Upper Mississippi River National Wildlife and Fish Refuge (Refuge)

Establishing and Acquisition Authority(ies):

The Upper Mississippi River Wildlife and Fish Refuge was established by Public Law No. 268, 68th Congress on June 7, 1924. This act authorized acquisition of lands for Refuge purposes. Additional lands acquired in fee title by the U.S. Army Corps of Engineers are managed as part of the Refuge under a 1963 Cooperative Agreement between the Department of the Army and the Department of the Interior.

Refuge Purpose(s):

Per Public Law 268:

“The Refuge shall be established and maintained (a) as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and (b) to such extent as the Secretary of the Interior by regulations, prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and (c) to such extent as the Secretary of the Interior may, by regulations, prescribe a refuge and breeding place for fish and other aquatic animal life.”

National Wildlife Refuge System Mission:

“The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Description of Use:

Allow the public to collect fruits of the soil from the Refuge for personal use.

Some plants growing on the Refuge produce edible products such as fruits and nuts. Examples of these products include blackberries, raspberries, grapes, plums, choke cherries, hazelnuts, walnuts, pecans, and hickory nuts. Harvest is typically during a stretch of several days in summer and fall as particular fruits or nuts ripen. These foods are hand harvested by picking the products from the plant or gathering what has fallen to the ground. Mushrooms and asparagus are examples of plant parts that are collected and consumed. These are picked or cut by hand in the spring. Harvest is during daylight hours and generally involves individuals or small groups.

Nearly all of the Refuge has been open to collecting of fruits of the soil since it was acquired. Recent exceptions include the following areas which are closed to all entry from October 1 through the close of the respective state duck hunting season:

- Spring Lake Closed Area in Pool 13
- Guttenburg Pond portion of the twelve-mile Island Closed Area in Pool 11
- Pool Slough Closed Area in Pool 9

Access to harvest sites is typically accomplished by walking from a parking area, boat landing, or public roadway. Access may also be by boat.

For some people, this is a traditional, family-oriented activity which provides an opportunity for those participating to collect wholesome foods while enjoying the natural environment. It may also

take place in conjunction with other activities that are wildlife-dependent such as wildlife observation while hiking, and photography.

Availability of Resources:

Access trails, parking lots, boat landings, signs, and other facilities are in place to support this use. Staff is also available to maintain these facilities, enforce Refuge regulations, and provide information to the public. Administering this use can thus be done with existing resources for ongoing operations, maintenance and public information.

Anticipated Impacts of the Use:

Historically, public participation in the collection of plant food products on the Refuge has been low, and future participation is also expected to be low. The quantity and frequency of plant food products removal is not expected to significantly diminish wildlife food sources or jeopardize wildlife survival.

Disturbance to wildlife may occur from people engaged in these activities, but the disturbance will be local, short-term, and not affect overall feeding, resting, and reproduction activities of wildlife. Wildlife is expected to move to ample adjacent habitat during the activity, and return shortly thereafter. Thus, this activity should not result in long-term impacts that adversely affect fish, wildlife, and plant resources of the Refuge.

Public Review and Comment:

This Compatibility Determination will be submitted as a portion of the Refuge Draft Comprehensive Conservation Plan and Environmental Impact Statement. Public notification and review includes a notice of availability, 120-day comment period, media announcements, and a series of public meetings in selected communities adjacent to the Refuge.

Determination:

___ Use is Not Compatible

xx Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. No threatened or endangered species may be harvested or cut.
2. Digging of plants on their roots is prohibited.
3. Plant products are for personal use only and cannot be sold or traded.
4. Damaging trees, shrubs or any other vegetation is prohibited.
5. Cutting or removing plants or their parts such as vines or blossoms for ornamental use is prohibited unless specifically authorized by Special Use Permit.

Justification:

The use has little impact to wildlife or habitat since it is non-motorized, involves few visitors, and disturbance is local and short-duration. Little harvest occurs in late fall which is the peak of the waterfowl migration. Due to the relatively small number of visitors for this activity and the personal use only stipulation, the amount of plants or parts harvested will not create any shortage of wild foods for any particular wildlife species. Refuge infrastructure (parking areas, boat landings, etc.) and law enforcement staff already in place will be sufficient to facilitate and administer this use into the future.

In view of the above, fruits of the soil picking, with the stipulations previously described, will not materially interfere with or detract from the purposes of the Refuge or the missions of the Refuge System.

Signature: Refuge Manager: _____
(signature and date)

Concurrence: Regional Chief: _____
(signature and date)

Mandatory 10- or 15 year Re-evaluations Date: _____

DRAFT Compatibility Determination

Use: Grazing, controlled

Refuge Name: Upper Mississippi River National Wildlife and Fish Refuge (Refuge)

Establishing and Acquisition Authority(ies):

The Upper Mississippi River Wildlife and Fish Refuge was established by Public Law No. 268, 68th Congress on June 7, 1924. This act authorized acquisition of lands for Refuge purposes. Additional lands acquired in fee title by the U.S. Army Corps of Engineers are managed as part of the Refuge under a 1963 Cooperative Agreement between the Department of the Army and the Department of the Interior.

Refuge Purpose(s):

Per Public Law 268:

“The Refuge shall be established and maintained (a) as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and (b) to such extent as the Secretary of the Interior by regulations, prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and (c) to such extent as the Secretary of the Interior may, by regulations, prescribe a refuge and breeding place for fish and other aquatic animal life.”

National Wildlife Refuge System Mission:

“The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Description of Use:

The Refuge will allow limited grazing by privately owned domestic livestock for the purpose of habitat management. Livestock will be chiefly cattle, but may include other domestic livestock. Grazing will occur on specified areas to improve or maintain grassland and wet meadow habitat. For example, grazing may be used to stimulate growth of desirable grass species, reduce woody vegetation or other undesirable invasive plant species.

We anticipate that up to approximately 2000 acres of the Refuge may be subject to grazing. The largest area on which grazing may be used as a management tool is the Lost Mound Unit (Savanna District) of the Refuge.

Grazing may take place anytime from April through November. Most commonly, we will use short duration grazing periods, lasting four to eight weeks. The time period and frequency of grazing will depend on desired outcome as established in unit grazing management plans.

Grazing unit fencing and other measures required to manage livestock will be the responsibility of the cooperating private party. Grazing fees will be charged based on annual review of local market rates conducted by the Refuge Manager, in consultation with area U.S. Department of Agriculture (USDA) specialists or reports; or as determined by permittee selection using a best bid basis. Grazing fees will typically be assessed using the Animal Unit Month (AUM) method. Grazing fees may include market rate deductions for special circumstances; such as, atypical fencing or water requirements, required cattle movement, or other factors limiting economic return for permittees. Frequency of grazing on any unit will be based on site-specific evaluation of the grassland unit being managed.

Some areas of the Refuge may be subject to grazing by domestic livestock when adjacent land owners graze their land and local conditions preclude construction, or effectiveness of boundary fences. Every possible means will be used to eliminate these circumstances, but frequent floods and dense vegetation provide conditions where control of livestock using adjacent areas is not feasible. Where this condition exists, livestock owners will be charged proportionate fees for such use based on land area, Service policy, and applicable state law.

Administration of grazing programs will be conducted in accordance with a Habitat Management Plan. Grazing activities will be subject to the terms and conditions of a Special Use Permit issued by the District Manager. The terms of the Permit ensure compliance with Service policy and achieving habitat objectives while safeguarding Refuge resources.

Availability of Resources:

The needed staff time for development and administration of grazing programs is available. Most of the needed work to prepare for this use would be done as part of routine management duties. The decision to use grazing as a management tool would occur as part of strategies developed under specific habitat management plans. The additional time needed to coordinate issuance and oversight of the needed Special Use Permit or Agreements is relatively minor and within existing Refuge resources. Most grazing costs (fencing, monitoring herd health, etc.) are assumed by the permittee.

Anticipated Impacts of the Use:

Grazing by domestic livestock has severe short-term effects on grassland communities. Many of these effects are desirable and are designed to maintain and improve healthy grassland/wet meadow communities. Some of these effects include removing standing vegetation, trampling of other vegetation, and reducing populations of pioneering woody plants. Other effects, such as areas where livestock may frequently concentrate, are more harmful but generally short-lived. Grazing in the spring can cause direct loss of grassland bird nests due to trampling and loss of standing vegetation. Grazing at any time of year creates an aesthetic issue of concern for some people who enjoy using the Refuge; seeing public land being grazed by domestic livestock reduces the appeal of the visit for many people.

Grazing livestock can create minor direct disturbance of wildlife, such as causing nearby birds to take flight. There is a slight potential for conflict between members of the public and livestock or the permittee.

Public Review and Comment:

This Compatibility Determination will be submitted as a portion of the Refuge Draft Comprehensive Conservation Plan and Environmental Impact Statement. Public notification and review includes a notice of availability, 120-day comment period, media announcements, and a series of public meetings in selected communities adjacent to the Refuge.

Determination:

Use is Not Compatible

Use is Compatible With Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. Grazing will not occur more frequently than three out of every five years on any tract without the preparation of a site-specific compatibility determination.
2. All fencing, water supply, and other livestock management costs will be borne by the permittee.
3. No insecticides will be used.

4. No supplemental feeding will be allowed.
5. Grazing must meet specific habitat and related wildlife objectives and contribute to the purposes of the Refuge.

Justification:

Grazing can be an effective technique for providing long-term habitat improvements to grassland, and a useful alternative to haying or prescribed fire in certain circumstances. Permitting grazing on the Refuge will not materially interfere or detract from fulfilling the mission of the Refuge System or the purposes of the Refuge because:

1. The total area on which grazing will be permitted is a small portion of Refuge grasslands and total Refuge habitat, thus cause insignificant adverse effects on habitat overall.
2. Grazing will be conducted in accordance with a Habitat Management Plan which will identify management units, desired habitat goals/objectives, and management strategies.
3. Short term adverse effects on habitat caused by properly applied grazing are typically offset by long term habitat improvement.
4. Constraints regarding location, duration, and timing of grazing will reduce adverse impacts and maximize benefits.

Signature: Refuge Manager: _____
(signature and date)

Concurrence: Regional Chief: _____
(signature and date)

Mandatory 10- or 15 year Re-evaluations Date: _____

DRAFT Compatibility Determination

Use: Guided sport fishing

Refuge Name: Upper Mississippi River National Wildlife and Fish Refuge (Refuge)

Establishing and Acquisition Authority(ies):

The Upper Mississippi River Wildlife and Fish Refuge was established by Public Law No. 268, 68th Congress on June 7, 1924. This act authorized acquisition of lands for Refuge purposes. Additional lands acquired in fee title by the U.S. Army Corps of Engineers are managed as part of the Refuge under a 1963 Cooperative Agreement between the Department of the Army and the Department of the Interior.

Refuge Purpose(s):

Per Public Law 268:

“The Refuge shall be established and maintained (a) as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and (b) to such extent as the Secretary of the Interior by regulations, prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and (c) to such extent as the Secretary of the Interior may, by regulations, prescribe a refuge and breeding place for fish and other aquatic animal life.”

National Wildlife Refuge System Mission:

“The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Description of Use:

This use supports fishing, a priority public use of the Refuge System. The Refuge will authorize commercial fishing guide operations within the Refuge, and regulate such use through the implementation of a fishing guide management program, including issuance of Special Use Permits with conditions, beginning in 2006. This activity provides recreational opportunity for anglers who desire a successful, quality experience, but who may lack the necessary equipment, skills or knowledge to fish within the expansive river and backwater environment of the Refuge. Commercial guiding of anglers is an existing activity on the Refuge, but it has not been consistently administered.

Guiding operations will generally be allowed on the approximately 141,000 acres of surface water in the Refuge throughout the year in accordance with the respective state fishing seasons. Specific habitat types will depend on targeted fish species and seasonal changes associated with water depths, water temperatures, and flow. Habitat types include a mixture of large river associated wetlands, primary and secondary river channels, back water ponds and marshes, and relatively open, deeper water areas of the down river portion of each navigation pool.

Target fish species for guided anglers include most game fish found on the Refuge; such as largemouth and smallmouth bass, channel and flathead catfish, walleye, sauger, northern pike, crappie, yellow perch, and bluegill. Walleye and bass are the most frequently pursued species. However, given the nature of fishing methods often employed, the potential exists to catch any of the 119 fish species found on the Refuge.

Other species that may be affected by guided fishing activities include many of the species that use aquatic and flood plain habitat on the Refuge. Hundreds of bald eagles, listed as threatened under

the Endangered Species Act (though recently proposed for delisting), nest, roost and feed throughout the Refuge. Large concentrations of canvasback ducks and tundra swans rest and feed on the Refuge each fall. Other waterfowl species include Canada geese, mallard, ring-necked duck, and scaup. Additional species of interest include: American white pelicans, various raptors, great blue heron, great egret, white-tailed deer, river otter, and beaver.

Guided fishing operations typically involve transport of clients by power boats from public boat landings to various fishing locations on the Refuge. Depending on the target fish species guides/clients will then anchor, drift, troll, or fish areas with the aid of electric motors while seeking the intended fish species. Fishing gear varies greatly depending on species, but typically involves the use of artificial lures or bait. Depending on species, clients generally keep a portion of their catch (e.g. walleye and sauger) or may practice catch-and-release (e.g. largemouth bass). In addition to the fishing activity, guides and clients may use Refuge shoreline areas for breaks, lunch, or other activities during the outing.

The total number of fishing guides/clients on the Refuge is not known. Currently the states of Minnesota, Iowa, and Illinois do not issue permits for fishing guides within their state, and therefore do not maintain any records in respect to the number of fishing guides on the Mississippi River within the Refuge. Wisconsin does require fishing guides to obtain a Guiding License, but no information is available on specific locations of their guiding. An estimate based on known fishing guides residing in the six Wisconsin counties along the Refuge is that 37 guides may be operating on the Refuge. A first step in establishing a commercial fishing guiding program on the Refuge will be to identify existing guides through a review of public records and outreach through news releases and special meetings.

Based on apparent existing client demand for guide services, a significant number of the fishing public is willing to pay for the expertise and local knowledge provided by guides. The Refuge provides one of the largest public fishing areas with good populations of catchable fish in the upper Midwest. Currently fishing activities account for over 1.3 million visits on the Refuge. It is expected that the number of fishing guides and the public's use of this service will continue to increase.

Administration of commercial fishing guide activities will be conducted in accordance with commercial guide use stipulations (attached) developed to ensure consistency throughout the Refuge; provide a safe, quality experience; protect resources; and to ensure compliance with pertinent Refuge System regulations and policies. The guide use stipulations will address all aspects of the guided fishing program including the number of permits to be issued, guide qualifications, permit cost, and selection methods. Commercial Fishing Guide Use Areas will be established for each navigation pool within the Refuge to ensure distribution of guides and public opportunity, and address sensitive wildlife areas or other considerations.

Availability of Resources:

This program will increase overall costs of Refuge operations, including but not limited to, development and review of policy and procedure, yearly administration of permits (inquiries, screening and selecting applicants, issuing permits), and enforcement of permit conditions. In the short-term, existing staff is adequate if shifts in priorities and assignments are made to accommodate a modest guiding program. However, the size and scope of the guiding program, and the number of permits that will be available, will have to be limited in balance with permit fees received. In the long-term, a comprehensive guiding program, when combined with other new initiatives requiring permits, will require additional administrative and/or other personnel as identified in the Comprehensive Conservation Plan. Existing facilities (launch ramps) and other infrastructure are currently sufficient to accommodate this use.

Anticipated Impacts of the Use:

Because of the oversight of this activity by the Refuge, the comprehensive state and federal regulations already in place, and combined law-enforcement efforts of state and Refuge personnel, existing and projected levels of guide services should have minimal impacts on fish and wildlife populations or habitat. Some disturbance of fish and wildlife will occur, but should not affect populations on the Refuge overall. It is anticipated that this disturbance would not be measurably greater than disturbance from general fishing.

The primary concern regarding commercial guided fishing activities is the potential for conflict between guided activities and other Refuge users, particularly unguided anglers. Based on experiences on this Refuge and on other national wildlife refuges, a continuation of unregulated or inadequately regulated commercial guiding operations can increase user conflicts. An important part of this issue is public perception that fishing guides and clients have an advantage of equipment and technique and are taking fish that would otherwise be caught by regular anglers. Guides, since they are running a business, may also be viewed as more aggressive compared to unguided anglers. Refuge oversight of fishing guides should actually help ease any tension between guides and other users since it will help ensure properly licensed and qualified guides and entail time and space restrictions as needed. Oversight will also provide more data on fishing pressure and harvest levels related to guided fishing which can be shared with the public and help lessen some negative perceptions.

Guide operations may increase use of some Refuge facilities, such as boat launch ramps, but, if regulated, this increase would not be significant compared to overall use.

Public Review and Comment:

This Compatibility Determination will be submitted as a portion of the Refuge Draft Comprehensive Conservation Plan and Environmental Impact Statement. Public notification and review includes a notice of availability, 120-day comment period, media announcements, and a series of public meetings in selected communities adjacent to the Refuge.

Determination:

Use is Not Compatible

Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

See attached stipulations.

Justification:

Allowing guided fishing on the Refuge will not materially interfere with the purposes of the Refuge or the mission of the Refuge System because:

1. Existing federal and state agency oversight and regulation of affected species and habitat is sufficient to ensure healthy populations. Disturbance to fish and wildlife will be local, short-term, and not adversely impact overall populations.
2. There are adequate state and federal enforcement officials to enforce state and federal regulations.
3. Qualifying standards for fishing guides will help ensure that anglers are guided by competent individuals.
4. Restricting the number of guides and managing how guided activities are conducted will reduce adverse habitat effects, conflicts between competing guide services, and conflicts between guided operations and other Refuge users.

5. Designated areas of operation (Guide Use Areas), operating requirements, and other regulation of guided fishing will minimize conflicts with other Refuge users.
6. Administrative (application) and Special Use Permit fees will help off-set costs to administer and provide oversight to this use.

Regulating and limiting the number of sport fishing guides as stated in the Refuge commercial guide program stipulations will provide a safe, quality experience to individuals who fish on the Refuge. It will also increase opportunities for those who wish to fish on the Refuge, but may lack the required equipment, knowledge or expertise.

By regulating commercial guides, the Refuge will also better manage fish resources and reduce conflict between Refuge visitors. This determination will be considered interim until final program stipulations are completed. A new compatibility determination will be completed at that time.

Signature: Refuge Manager: _____
(signature and date)

Concurrence: Regional Chief: _____
(signature and date)

Mandatory 10- or 15 year Re-evaluations Date: _____

Attachment to Guided Fishing Compatibility Determination

Preliminary Draft Commercial Fishing Guide Program Stipulations on Upper Mississippi River National Wildlife and Fish Refuge.

The respective District Manager will designate “Commercial Fishing Guide Use Areas” within each navigation pool on the Refuge, based on factors such as Refuge ownership, available suitable habitat, other Refuge resources and users, and other pertinent issues. In most cases this will include all water acres within the Refuge except those areas closed to fishing seasonally for the protection of migratory birds. The District Manager will also establish the maximum number of guides that will operate in each Use Area.

Qualified individuals may apply for available Guide Areas. If the maximum number of guides exceeds the recommended allowance for that Use Area, guides will be selected by random drawing for a Special Use Permit valid for up to one year.

Administrative fee will be \$100, non refundable.

The permit fee, if selected, will be \$100/year for part time guides; \$300/year for full time guides. These fees will be established as the initial program fees until the number of participants and earned revenues can be determined.

Qualified is defined as:

1. Licensed as a commercial guide by the state in which they operate, as applicable.
2. Possess a current vessel operator license issued by the U.S. Coast Guard. Minimum license shall be Operator Uninspected Passenger Vessel (OUPV). The license shall be valid for the area of operations and type(s) of vessel operated.
3. Possess a current CPR and First Aid training certificate issued by a recognized national organization
4. Provide proof of insurance as established by the Refuge, including minimum coverage for general liability and comprehensive for all operations.
5. Otherwise required by state law.

Permittees may be assisted by any number of individuals. Assistants must be named/authorized on the permit issued and possess the applicable state and Coast Guard licenses for duties conducted.

The permittee is responsible for accurate record keeping and shall provide the issuing District Office the following information by February 15 of each year:

- Fee schedule for the year (charge per angler)
- Number of guided fishing trips performed on the Refuge
- Number of individuals guided,
- Date of each guided trip
- Location of each trip, or general area of fishing activity
- Number of each species harvested
- Individual names and description of duties for all additional staff who assist with a fishing trip on the Refuge

All vessels and vehicles used in guide operations shall be marked with a guide identifier as required by the Refuge.

This Special Use Permit and the privileges granted herein may be revoked by the issuing District Manager at any time for failure to comply with the permit conditions or other federal or state law.

Permittee must comply with all other Conditions of the Special Use Permit

DRAFT Compatibility Determination

Use: Guided hunting

Refuge Name: Upper Mississippi River National Wildlife and Fish Refuge (Refuge)

Establishing and Acquisition Authority(ies):

The Upper Mississippi River Wildlife and Fish Refuge was established by Public Law No. 268, 68th Congress on June 7, 1924. This act authorized acquisition of lands for Refuge purposes. Additional lands acquired in fee title by the U.S. Army Corps of Engineers are managed as part of the Refuge under a 1963 Cooperative Agreement between the Department of the Army and the Department of the Interior.

Refuge Purpose(s):

Per Public Law 268:

“The Refuge shall be established and maintained (a) as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and (b) to such extent as the Secretary of the Interior by regulations, prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and (c) to such extent as the Secretary of the Interior may, by regulations, prescribe a refuge and breeding place for fish and other aquatic animal life.”

National Wildlife Refuge System Mission:

“The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Description of Use:

This use supports hunting, a priority public use of the Refuge System. The Refuge will authorize commercial hunting guide operations within the Refuge, and regulate such use through the implementation of a hunting guide management program, including issuance of Special Use Permits with conditions, beginning in 2006. This activity provides recreational opportunity for hunters who desire a successful, quality experience, but who may lack the necessary equipment, skills or knowledge to hunt within the expansive river, backwater, marsh, and island environment of the Refuge. Commercial guiding of hunters is an existing activity on the Refuge, but it has not been consistently administered.

Guiding operations will generally be allowed on the approximately 190,000 acres of the Refuge open to hunting in accordance with the respective state hunting seasons. Waterfowl hunting seasons in the four states in which the Refuge is located (Minnesota, Wisconsin, Iowa, and Illinois) typically occur from mid-September through December each year. State deer hunting (gun) seasons typically occur during portions of October, November, and December. Specific habitat types will depend on targeted species and seasonal changes associated with water depths and other habitat conditions. Habitat types include a mixture of forest and grassland, islands, large river associated wetlands, secondary river channels, and back water ponds and marshes.

It is expected that hunting guides will serve mainly waterfowl hunters, though some guiding for white-tailed deer (gun season) hunters may occur on portions of the Refuge. Waterfowl hunting guides and their clients often focus on taking mallard and canvasback. Other waterfowl commonly sought by hunters include: Canada geese, wood duck, green- and blue-winged teal, wigeon, shoveler, ring-necked duck, and greater and lesser scaup.

Other species that may be affected by guided hunting activities include many of the species that use aquatic and flood plain habitat on the Refuge. Hundreds of bald eagles, listed as threatened under the Endangered Species Act (though recently proposed for delisting), nest, roost and feed throughout the Refuge. Large concentrations of canvasback ducks and tundra swans rest and feed on the Refuge each fall. Additional species of interest include: American white pelicans, various raptors, great blue heron, great egret, white-tailed deer, river otter, and beaver.

Guided operations typically involve transport of clients by small power boats from public boat landings to selected hunting sites. Often the guides/clients return to the same site or one of several sites selected by the guide. Some hunters may walk to hunting sites from parking lots or road sides. Waterfowl hunters typically hunt from blinds (either camouflaged boats or constructed from natural vegetation), or concealed by existing vegetation. Waterfowl hunting guides typically construct one or more blinds in their operating area(s) that they use throughout a hunting season.

The total number of hunting guides currently operating on Refuge is unknown. The Refuge currently issues Special Use Permits to two commercial hunting guides. Based on guide licenses issued by the respective states, observed advertisements, and information from hunters, it is certain that other individuals are conducting commercial hunting guide activities on the Refuge. A first step in establishing a commercial hunting guide program on the Refuge will be to identify existing guides through a review of public records and outreach through news releases and special meetings.

Information reported by permitted waterfowl hunting guides indicates that a full time guide could serve approximately 200 hunters per hunting season. The number of deer hunting guides and clients would be substantially fewer, with an estimated one or two clients per season day.

Based on apparent existing client demand for guide services, a significant number of the hunting public is willing to pay for the expertise and local knowledge provided by guides. The Refuge provides one of the largest public hunting areas with good populations of waterfowl and other game in the upper Midwest. Currently hunting activities account for over 280,000 visits on the Refuge. It is expected that the number of hunting guides and the public's use of this service will continue to increase.

Administration of commercial hunting guide activities will be conducted in accordance with commercial guide use stipulations (attached) developed to ensure consistency throughout the Refuge; provide a safe, quality experience; protect resources; and to ensure compliance with pertinent Refuge System regulations and policies. The guide use stipulations will address all aspects of the guided hunting program including the number of permits to be issued, guide qualifications, permit cost, and selection methods. Commercial Hunting Guide Use Areas will be established for each navigation pool within the Refuge to ensure distribution of guides and public opportunity, and address sensitive wildlife areas or other considerations.

Availability of Resources:

This program will increase overall costs of Refuge operations, including but not limited to, development and review of policy and procedure, yearly administration of permits (inquiries, screening and selecting applicants, issuing permits), and enforcement of permit conditions. In the short-term, existing staff is adequate if shifts in priorities and assignments are made to accommodate a modest guiding program. However, the size and scope of the guiding program, and the number of permits that will be available, will have to be limited in balance with permit fees received. In the long-term, a comprehensive guiding program, when combined with other new initiatives requiring permits, will require additional administrative and/or other personnel as identified in the Comprehensive Conservation Plan. Existing facilities (launch ramps, parking, walk-in sites) and other infrastructure are currently sufficient to accommodate this use.

Anticipated Impacts of the Use:

Because of the oversight of this activity by the Refuge, the comprehensive state and federal regulations already in place, and combined law-enforcement efforts of state and Refuge personnel, existing and projected levels of guide services should have minimal impacts on wildlife populations or habitat. Some disturbance of non-targeted fish and wildlife will occur, but should not affect populations on the Refuge overall. It is anticipated that this disturbance would not be measurably greater than disturbance from general hunting.

The primary concern regarding commercial guided hunting activities is the potential for conflict between guided activities and other Refuge users, particularly unguided hunters. Based on experiences on this Refuge and on other national wildlife refuges, a continuation of unregulated or inadequately regulated commercial guiding operations can increase user conflicts. An important part of this issue is public perception that hunting guides and clients have an advantage of equipment and technique and are taking game that would otherwise be available to regular hunters. Guides, since they are running a business, may also be viewed as more aggressive compared to unguided hunters. Refuge oversight of hunting guides should actually help ease any tension between guides and other users since it will help ensure properly licensed and qualified guides and entail time and space restrictions as needed. Oversight will also provide more data on hunting pressure and harvest levels related to guided hunting which can be shared with the public and help lessen some negative perceptions.

Another concern is the impact of guide operations on other Refuge uses. Because of the trend toward earlier waterfowl hunting seasons (mid-September versus early October), hunters, including guided hunters, are increasingly likely to use areas also used by anglers, small boat operators (canoes/kayaks), campers or recreational beach users. Hunting guides and clients will compete with other hunters for the best available locations. Hunters and trappers typically utilize and compete for use of the same habitat types. However, this competition will be present with or without guides, and as above, managing the number of guides and areas of operations should lessen conflicts.

Guide operations may increase use of some Refuge facilities, such as boat launch ramps, but, if regulated, this increase would not be significant compared to overall use.

Public Review and Comment:

This Compatibility Determination will be submitted as a portion of the Refuge Draft Comprehensive Conservation Plan and Environmental Impact Statement. Public notification and review includes a notice of availability, 120-day comment period, media announcements, and a series of public meetings in selected communities adjacent to the Refuge.

Determination:

Use is Not Compatible

Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

See attached stipulations.

Justification:

1. Allowing guided hunting on the Refuge will not materially interfere with the purposes of the Refuge or the mission of the Refuge System because:
2. Existing federal and state agency oversight and regulation of affected species and habitat is sufficient to ensure healthy populations. Disturbance to non-game wildlife will be local, short-term, and not adversely impact overall populations.

3. There are adequate state and federal enforcement officials to enforce state and federal regulations.
4. Qualifying standards for hunting guides will help ensure that hunters are guided by competent individuals.
5. Restricting the number of guides and managing how guided activities are conducted will reduce adverse habitat effects, conflicts between competing guide services, and conflicts between guided operations and other Refuge users.
6. Designated areas of operation (Guide Use Areas), operating requirements, and other regulation of guided hunting will minimize conflicts with other Refuge users.
7. Administrative (application) and Special Use Permit fees will help off-set costs to administer and provide oversight to this use.

Regulating and limiting the number of hunting guides as stated in the Refuge commercial guide program stipulations will provide a safe, quality experience to individuals who hunt on the Refuge. It will also increase opportunities for those who wish to hunt on the Refuge, but may lack the required equipment, knowledge or expertise.

This determination will be considered interim until final program stipulations are completed. A new compatibility determination will be completed at that time.

Signature: Refuge Manager: _____
(signature and date)

Concurrence: Regional Chief: _____
(signature and date)

Mandatory 10- or 15 year Re-evaluations Date: _____

Attachment to Guided Hunting Compatibility Determination

Preliminary Draft Commercial Hunting Guide Program Stipulations on Upper Mississippi River National Wildlife and Fish Refuge.

The respective District Manager will designate “Commercial Hunting Guide Use Areas” within each navigation pool on the Refuge, based on factors such as Refuge ownership, available suitable habitat, other Refuge resources and users, and other pertinent issues. In most cases this will include all land and water acres within the Refuge except those areas closed to hunting in Waterfowl Hunting Closed Areas or Administrative No Hunting Zones. The District Manager will also establish the maximum number of guides that will operate in each Use Area. In general, one guide will be selected per area or zone, though circumstances such as large, naturally divided zones may allow more than one.

Qualified individuals may apply for available Guide Areas. If the maximum number of guides exceeds the recommended allowance for that Use Area, guides will be selected by random drawing for a Special Use Permit valid for up to three years.

Administrative fee will be \$100, non-refundable.

The permit fee for selectees will be \$500/year for part time guides; \$900/year for full time guides. These fees are based on the 1993 Service standard of 3% of expected gross revenue, using revenue data from a currently permitted waterfowl hunting guide. For comparison, waterfowl hunting guides at White River National Wildlife Refuge in Arkansas pay \$1,540 per year.

Qualified is defined as:

1. Licensed as a commercial guide by the state in which they operate, as applicable.
2. Possess a current vessel operator license issued by the U.S. Coast Guard. Minimum license shall be Operator Uninspected Passenger Vessel (OUPV). The license shall be valid for the area of operations and type(s) of vessel operated.
3. Possess a current CPR and First Aid training certificate issued by a recognized national organization
4. Provide proof of insurance as established by the Refuge, including minimum coverage for general liability and comprehensive for all operations.
5. Otherwise required by state law.

Permittees may be assisted by up to 3 individuals. Assistants must be named/authorized on the permit issued and possess the applicable state and Coast Guard licenses for duties conducted.

Guided parties are limited to 4 hunters. The guide, assistants, and clients must remain within ¼ mile of each other when hunting. Guides shall construct no more than 5 temporary blinds in their assigned area, and as with all blinds, they may be used by the general public when vacant. District Managers may invoke more restrictive stipulations to address needs or concerns.

The permittee is responsible for accurate record keeping and shall provide the issuing District Office the following information by February 15 of each year:

- Fee schedule for the year (charge per hunter)
- Number of guided hunts performed on the Refuge
- Number of individuals guided,
- Date of each guided trip
- Location of each trip, or general area of hunting activity

- Number of each species harvested
- Individual names and description of duties for all additional staff who assist with a hunting trip on the Refuge

All vessels and vehicles used in guide operations shall be marked with a guide identifier as required by the Refuge.

This Special Use Permit and the privileges granted herein may be revoked by the issuing District Manager at any time for failure to comply with the permit conditions or other federal or state law.

Permittee must comply with all other Conditions of the Special Use Permit

DRAFT Compatibility Determination

Use: Commercially guided wildlife/wildlands observation

Refuge Name: Upper Mississippi River National Wildlife and Fish Refuge (Refuge)

Establishing and Acquisition Authority(ies):

The Upper Mississippi River Wildlife and Fish Refuge was established by Public Law No. 268, 68th Congress on June 7, 1924. This act authorized acquisition of lands for Refuge purposes. Additional lands acquired in fee title by the U.S. Army Corps of Engineers are managed as part of the Refuge under a 1963 Cooperative Agreement between the Department of the Army and the Department of the Interior.

Refuge Purpose(s):

Per Public Law 268:

“The Refuge shall be established and maintained (a) as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and (b) to such extent as the Secretary of the Interior by regulations, prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and (c) to such extent as the Secretary of the Interior may, by regulations, prescribe a refuge and breeding place for fish and other aquatic animal life.”

National Wildlife Refuge System Mission:

“The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Description of Use:

This use supports wildlife observation, a priority public use of the Refuge System. The Refuge will authorize commercially guided wildlife and wildlands observation within the Refuge, and regulate such use through the implementation of a commercial wildlife guide management program, including issuance of Special Use Permits with conditions, beginning in 2006. Commercial means that clients pay a fee for the program and the intent of the permittee is to generate profit. Guiding also includes outfitting operations which may not provide an accompanying guide. Guiding does not include no-fee or not-for-profit guided tours conducted by non-profit groups, schools and colleges, or other agencies. This use is covered under the general wildlife observation compatibility determination.

This use also does not include commercial tours, sightseeing, or dinner cruise boats which confine their commercial guiding of visitors to the main commercial navigation channel of the Mississippi River running through the Refuge. It also does not include tour bus or other road-based commercial tours which may stop at Refuge-administered overlooks or landings.

This activity provides recreational, and often educational, opportunities for the paying public who desire a successful, quality experience, but who may lack the necessary equipment, skills, or knowledge to observe wildlife or otherwise experience the expansive river, marsh, and backwater environment of the Refuge. Commercial guiding for wildlife or other observation is an existing activity on the Refuge, but it has not been consistently administered.

Guiding operations will generally be allowed throughout the approximately 240,000 acres of the Refuge throughout the year, subject to seasonal closures in Waterfowl Hunting Closed Areas, Administrative No Hunting Zones, and in the vicinity of sensitive bird areas such as heron rookeries. Tours tend to travel to and through backwater areas of the Refuge including smaller side channels of

the river, marshes, and shallow ponds. These areas are preferred by many wildlife species, and thus present better opportunities for wildlife observation. Also, the quiet, secluded, and scenic bottomland forest of the backwaters is a setting preferred by many clients.

Species that may be affected by guided tours include many of the species that use aquatic and flood plain habitat on the Refuge. Hundreds of bald eagles, listed as threatened under the Endangered Species Act (though recently proposed for delisting), nest, roost and feed throughout the Refuge. Large concentrations of canvasback ducks and tundra swans rest and feed on the Refuge each fall. Additional species of interest include: American white pelicans, various raptors, great blue heron, great egret, white-tailed deer, river otter, and beaver.

Guided wildlife observation typically involves transport of clients by power boats from public or private boat landings to selected sites or routes. Often guides and clients use the same site or route or one of several locations selected by the guide. Some guided programs may walk to sites/routes from parking lots or road sides. Guided wildlife viewing operations have typically used existing Refuge or other public observation sites, though some seasonal observation or photography blinds may be constructed by guides as demand increases. In addition to the observation activities, guides and clients may use Refuge shoreline areas for camping, breaks, lunch, or other activities during the outing, and in accordance with Refuge regulations.

The total number of wildlife observation guides and clients on the Refuge is not known. A first step in establishing a commercial guiding program on the Refuge will be to identify existing guides and outfitting businesses through a review of public records and outreach through news releases and special meetings.

Based on apparent existing client demand, a significant number of the public is willing to pay for the expertise and local knowledge provided by commercial businesses and guides. The Refuge provides excellent populations of watchable wildlife in a wild and scenic setting, and the expanse of backwater areas and bottomland forest is perhaps the largest in the Midwest, providing a unique opportunity. It is expected that demand for guided wildlife/wildland observation will continue to increase, and with it, the number of interested commercial operators.

Administration of commercially guided wildlife/wildland activities will be conducted in accordance with commercial guide use stipulations (attached) developed to ensure consistency throughout the Refuge; provide a safe, quality experience; protect resources; and to ensure compliance with pertinent Refuge System regulations and policies. The guide use stipulations will address all aspects of the guided wildlife/wildlands observation program including the number of permits to be issued, guide qualifications, permit cost, and selection methods. Commercial Guide Use Areas will be established for each navigation pool within the Refuge to ensure distribution of guides and public opportunity, and address sensitive wildlife areas or other considerations.

Availability of Resources:

This program will increase overall costs of Refuge operations, including but not limited to, development and review of policy and procedure, yearly administration of permits (inquiries, screening and selecting applicants, issuing permits), and enforcement of permit conditions. In the short-term, existing staff is adequate if shifts in priorities and assignments are made to accommodate a modest guiding program. However, the size and scope of the guiding program, and the number of permits that will be available, will have to be limited in balance with permit fees received. In the long-term, a comprehensive guiding program, when combined with other new initiatives requiring permits, will require additional administrative and/or other personnel as identified in the Comprehensive Conservation Plan. Existing facilities (launch ramps) and other infrastructure are currently sufficient to accommodate this use.

Anticipated Impacts of the Use:

Disturbance of wildlife is the primary concern regarding this use. The presence of visitors could cause disturbance to waterfowl, waterbirds, bald eagles, and other wildlife. While field trip routes and observation sites are usually located in areas open to the general public, disturbance caused by group tours could be more intense because the number of people, and desire to get close to wildlife, may be greater than normally occurs during general public activities. This disturbance will displace individual animals to adjacent areas of the Refuge. However, the level of disturbance, through control of areas used and seasons of use, should limit the disturbance during critical feeding, resting, and breeding periods and not measurably affect overall Refuge populations.

Guided tour activities may also conflict with other Refuge users. For example, commercial tours will most likely use the same areas as the independent wildlife viewer, kayakers and canoeists, and hunters and anglers during open seasons. Unregulated or inadequately regulated commercial guiding operations may adversely affect the safety of other Refuge users, the quality of their experience, and the equity of opportunity. Stipulations proposed should mitigate these concerns by volume and space restraints for commercial operators.

Guide operations may increase use of some Refuge facilities, such as boat launch ramps, but, if regulated, this increase would not be significant compared to overall use.

Public Review and Comment:

This Compatibility Determination will be submitted as a portion of the Refuge Draft Comprehensive Conservation Plan and Environmental Impact Statement. Public notification and review includes a notice of availability, 120-day comment period, media announcements, and a series of public meetings in selected communities adjacent to the Refuge.

Determination:

Use is Not Compatible

Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

See attached stipulations.

Justification:

1. Allowing commercially guided wildlife and wildlands observation on the Refuge will not materially interfere with the purposes of the Refuge or the mission of the Refuge System because:
2. Existing federal and state agency oversight and regulation of affected species and habitat is sufficient to ensure healthy populations. Disturbance to fish and wildlife will be local, short-term, and not adversely impact overall populations.
3. There are adequate state and federal enforcement officials to enforce state and federal regulations.
4. Qualifying standards for commercial operators will help ensure that the public is guided by competent individuals.
5. Restricting the number of guides and managing how guided activities are conducted will reduce adverse habitat effects, conflicts between competing guide services, and conflicts between guided operations and other Refuge users.
6. Designated areas of operation (Guide Use Areas), operating requirements, and other regulation of guided activities will minimize conflicts with other Refuge users.

7. Administrative (application) and Special Use Permit fees will help off-set costs to administer and provide oversight to this use.

Regulating and limiting the number of commercial operators as stated in the Refuge commercial guide program stipulations will provide a safe, quality experience to individuals who want to enjoy the resources of the Refuge. It will also increase opportunities for those who wish to observe wildlife and experience the scenic and wild nature of the Refuge, but may lack the required equipment, knowledge, or expertise.

This determination will be considered interim until final program stipulations are completed. A new compatibility determination will be completed at that time.

Signature: Refuge Manager: _____
(signature and date)

Concurrence: Regional Chief: _____
(signature and date)

Mandatory 10- or 15 year Re-evaluations Date: _____

Attachment to Commercially Guided Wildlife and Wildlands Observation Compatibility Determination

Preliminary Draft Commercial Wildlife Observation Guide Program Stipulations on Upper Mississippi River National Wildlife and Fish Refuge.

The respective District Manager will designate “Commercial Wildlife Observation Guide Use Areas” within each navigation pool on the Refuge, based on factors such as Refuge ownership, available suitable habitat, other Refuge resources and users, and other pertinent issues. In most cases this will include all land and water acres within the Refuge except those areas subject to seasonal closures such as Waterfowl Hunting Closed Areas, Administrative No Hunting Zones, and sensitive bird areas such as heron rookeries and bald eagle nests. The District Manager will also establish the maximum number of guides that will operate in each Use Area. In general, one guide will be selected per area or zone, though circumstances such as large, naturally divided zones may allow more than one.

Qualified individuals may apply for available Guide Areas. If the maximum number of guides exceeds the recommended allowance for that Use Area, guides will be selected by random drawing for a Special Use Permit valid for up to one year.

Administrative fee will be \$100, non refundable.

The permit fee, if selected, will be \$200/year for part time guides (less than 50 clients per year); \$300/year for full time guides. These fees will be established as the initial program fees until the number of participants and earned revenues can be determined.

Qualified is defined as:

1. Licensed as a commercial guide by the state in which they operate, as applicable.
2. Possess a current vessel operator license issued by the U.S. Coast Guard. Minimum license shall be Operator Uninspected Passenger Vessel (OUPV). The license shall be valid for the area of operations and type(s) of vessel operated.
3. Possess a current CPR and First Aid training certificate issued by a recognized national organization
4. Provide proof of insurance as established by the Refuge, including minimum coverage for general liability and comprehensive for all operations.
5. Otherwise required by state law.

Permittees may be assisted by any number of individuals. Assistants must be named/authorized on the permit issued and possess the applicable state and Coast Guard licenses for duties conducted.

The permittee is responsible for accurate record keeping and shall provide the issuing District Office the following information by February 15 of each year:

- Fee schedule for the year (charge per client)
- Number of guided or outfitted trips performed on the Refuge
- Number of individuals guided or outfitted
- Date of each trip
- Location of each trip, or general area of activity
- Individual names and description of duties for all additional staff who assist with a trip on the Refuge

All vessels and vehicles used in guide operations shall be marked with a guide identifier as required by the Refuge.

This Special Use Permit and the privileges granted herein may be revoked by the issuing District Manager at any time for failure to comply with the permit conditions or other federal or state law.

Permittee must comply with all other Conditions of the Special Use Permit.

(Note: Some stipulations may not apply to outfitters who do not accompany clients. Deviations will be noted in individual permits.)

DRAFT Compatibility Determination

Use: Haying for habitat management

Refuge Name: Upper Mississippi River National Wildlife and Fish Refuge (Refuge)

Establishing and Acquisition Authority(ies):

The Upper Mississippi River Wildlife and Fish Refuge was established by Public Law No. 268, 68th Congress on June 7, 1924. This act authorized acquisition of lands for Refuge purposes. Additional lands acquired in fee title by the U.S. Army Corps of Engineers are managed as part of the Refuge under a 1963 Cooperative Agreement between the Department of the Army and the Department of the Interior.

Refuge Purpose(s):

Per Public Law 268:

“The Refuge shall be established and maintained (a) as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and (b) to such extent as the Secretary of the Interior by regulations, prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and (c) to such extent as the Secretary of the Interior may, by regulations, prescribe a refuge and breeding place for fish and other aquatic animal life.”

National Wildlife Refuge System Mission:

“The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Description of Use:

The Refuge will allow haying by private individuals for the purpose of habitat management.

Haying is the cutting and processing (typically baling) of grass and forbs, with subsequent removal to an off-Refuge location. Haying will be conducted by third parties on grasslands owned by or managed as part of the Refuge by jurisdictional agreement. Haying of any area is usually conducted as a single event during any one year; but may be repeated periodically to: remove undesirable grasses and forbs; remove accumulated plant biomass; remove or reduce woody vegetation; provide a desired vegetative condition (such as short grass goose browse); reduce vegetation fuel levels where wildfires are a concern, such as near urban areas; or prepare sites for establishment of desired vegetation, including forest, prairie or wetland communities.

In recent years, little haying has been conducted on the approximately 5700 acres of grassland distributed throughout the Refuge. Typically less than 100 acres total has been cut each year, involving two or three permittees. Some relatively higher areas of the Refuge, such as sand benches and some lands along tributaries, will continue to be managed using haying. The total area on which haying will be permitted during any one year will likely be less than 500 acres.

Administration of haying programs will be conducted in accordance with a Habitat Management Plan. Haying activities will be subject to the terms and conditions of a Cooperative Farming Agreement or Special Use Permit issued by the Refuge Manager. The terms of the Agreement or Permit ensure compatibility through implementation of Service policy and Refuge specific stipulations.

Availability of Resources:

The needed staff time for development and administration of a cooperative haying program is available. Most of the needed work to prepare for this use would be done as part of routine management duties. The decision to use cooperative haying as a management tool will occur as part of strategies developed under specific unit or program habitat management planning. The additional time needed to administer and monitor the needed Special Use Permit or Agreements is relatively minor and within existing Refuge resources.

Anticipated Impacts of the Use:

Cooperative haying will result in short-term disturbances and long-term benefits to both resident and migratory wildlife using the Refuge. Short-term impacts will include disturbance and displacement by equipment operation. Haying activities will also result in short-term loss of habitat for species using those areas for nesting, feeding, or resting. Long-term benefits are positive due to establishment of desired habitat. The resulting habitat will improve conditions for most of the species adversely affected by the short-term negative impacts. Control of the timing of haying will limit anticipated impacts.

Public Review and Comment:

This Compatibility Determination will be submitted as a portion of the Refuge Draft Comprehensive Conservation Plan and Environmental Impact Statement. Public notification and review includes a notice of availability, 120-day comment period, media announcements, and a series of public meetings in selected communities adjacent the Refuge.

Determination:

Use is Not Compatible

Use is Compatible With Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. Haying will only be allowed after July 1 to minimize disturbance to nesting migratory birds. In normal years, most birds are off the nest by this date.
2. Bales must be removed from the Refuge within 5 days of baling.
3. Windrowed grass left lying to dry should remain on the ground no more than 6 days prior to baling.
4. Haying must meet specific habitat and related wildlife objectives and contribute to the purposes of the Refuge.

Justification:

Haying can be an effective technique for providing long-term habitat improvements to grassland. Haying may be a preferred method of vegetation management (removal) where prescribed fire is not practical or wildfire is a concern.

Permitting haying on the Refuge will not materially interfere with the mission of the Refuge System or the purposes for which the Refuge was established because:

1. The total area on which haying will be permitted is a small portion of Refuge grasslands, and total Refuge habitat, thus cause insignificant adverse effects on habitat overall.
2. Haying will be conducted in accordance with a Habitat Management Plan which will identify management units, desired habitat goals/objectives, and management strategies

3. Short term adverse effects on habitat caused by properly applied haying are typically offset by long term habitat improvement.
4. Constraints regarding location and timing of haying will reduce adverse impacts of haying on affected species and habitat.

Signature: Refuge Manager: _____
(signature and date)

Concurrence: Regional Chief: _____
(signature and date)

Mandatory 10- or 15 year Re-evaluations Date: _____

DRAFT Compatibility Determination

Use: Hunting migratory birds

Refuge Name: Upper Mississippi River National Wildlife and Fish Refuge (Refuge)

Establishing and Acquisition Authority(ies):

The Upper Mississippi River Wildlife and Fish Refuge was established by Public Law No. 268, 68th Congress on June 7, 1924. This act authorized acquisition of lands for Refuge purposes. Additional lands acquired in fee title by the U.S. Army Corps of Engineers are managed as part of the Refuge under a 1963 Cooperative Agreement between the Department of the Army and the Department of the Interior.

Refuge Purpose(s):

Per Public Law 268:

“The Refuge shall be established and maintained (a) as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and (b) to such extent as the Secretary of the Interior by regulations, prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and (c) to such extent as the Secretary of the Interior may, by regulations, prescribe a refuge and breeding place for fish and other aquatic animal life.”

National Wildlife Refuge System Mission:

“The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Description of Use:

The Refuge allows public hunting of migratory birds on nearly 176,000 acres of land and water in accordance with local, state, federal, and Refuge regulations. Hunting is a priority public use of the Refuge System. Migratory birds currently hunted on the Refuge include ducks and geese, coots and gallinules, sora and Virginia rails, snipe, woodcock, mourning doves, and crows. The majority (98%) of the estimated 253,500 visits in 2003 to hunt migratory birds on the Refuge were made to hunt ducks and geese. Except for two managed waterfowl hunts in Pool 13, at Potter’s Marsh and Blanding Landing, the remainder of the Refuge is open to migratory bird hunting on a first-come, first-secured basis.

Fifteen Waterfowl Hunting Closed Areas, totaling about 44,500 acres, are currently located along the entire length of the Refuge. These closed areas are closed to migratory bird hunting at all times and to hunting and furbearer trapping during the regular state duck hunting season. Given the dominant role of the Refuge in the Mississippi Flyway migration corridor, this closed area system was established to provide waterfowl with a network of resting and feeding areas and to disperse waterfowl hunting opportunities on the Refuge. After nearly 45 years, changes have occurred in the closed area system, including the amount and quality of habitat available, the number and species of waterfowl using the system, and the size and number of closed areas. Further, with the habitat decline in many closed areas, waterfowl are being concentrated in fewer closed areas, resulting in gaps in hunting opportunity. Closed areas located in Pools 7, 8, 9, and 13 are supporting the majority of fall waterfowl use on the Refuge. At times, crowded conditions exist in each of these pools reducing the quality of the hunting experience.

Some sections of closed area boundaries also attract concentrations of waterfowl hunters. These areas, known as “firing lines,” can be crowded, resulting in competition and confrontations between

hunters, and skybusting, which often leads to an increase in the number of unretrieved waterfowl. In high quality waterfowl habitat located in open hunting areas, the demand for the best hunting sites can be just as competitive with the same results.

Migratory bird hunters access the Refuge by foot or by using a wide variety of watercraft. Among the type of watercraft used include airboats, hovercraft, flat-bottom boats powered by outboards or “go-devils,” scull boats, and skiffs. Among the techniques employed to hunt migratory birds include decoying, jump shooting, and pass shooting. Scull boating and open water hunting from boat blinds is also permitted in some pools.

Permanent waterfowl hunting blinds are allowed in the Savanna District (Pools 12-14, except the Lost Mound Unit), but are prohibited elsewhere on the Refuge. Among the issues associated with the use of permanent blinds on the Refuge include private exclusive use of public waters, limiting hunting opportunities on public land to just a select few, and confrontations between hunters.

A Refuge Hunting Regulations brochure is available to inform the public of hunting opportunities and Refuge regulations. Maps are also available which show the location of closed areas.

Availability of Resources:

The designated areas open to public hunting are open in accordance with state and Refuge regulations, and except for the Potter’s Marsh and Blanding Landing managed waterfowl hunts, do not require preparation and administration of special hunts. The Potter’s Marsh managed hunt is administered by Service staff utilizing the Illinois Department of Natural Resources’ drawing and permit system. The Illinois Department of Natural Resources operated the Blanding Landing managed hunt on behalf of the Savanna Army Depot, but with transfer of jurisdiction to the Service, hunting on this area is now the responsibility of the Refuge. However, Illinois will continue to administer this hunt until phased out. Administrative costs to operate these hunts are considerable and are not being fully recovered through recreational fees.

Migratory bird hunters use the existing network of roads to access areas open to hunting. Parking lots, boat ramps, docks, leaflets, information kiosks, and signs are provided by the Refuge for use by migratory bird hunters. The Refuge also provides staff and volunteers to maintain these facilities and disseminate information to visitors. Additional parking lots and boat ramps are provided by other agencies, local units of government, or private interests. Hunters residing next to the Refuge boundary are often able to access open hunting areas from their property.

Refuge law enforcement officers, Service special agents, and State conservation officers/wardens enforce Refuge and migratory bird hunting regulations. Bag checks to determine hunter success are conducted by Service staff and volunteers. Pilots and biologists from the Service and Wisconsin Department of Natural Resources conduct weekly aerial surveys during fall migration to document migratory bird use in selected areas of the Refuge. This information is used by managers and also provided to migratory bird hunters and others through the Service’s website.

Staff at the Savanna District spend additional time on law enforcement and handling complaints connected with the use of permanent blinds by waterfowl hunters. Additional time is also expended on removing debris left from permanent blinds.

Under the current migratory bird hunting program, administering the two special hunts in the Savanna District, the printing costs for maps and the Refuge Hunting Regulations brochure, and additional law enforcement staff time require more resources than the Refuge currently has available. Changing the closed area system, addressing firing lines at several locations, reducing skybusting and crowded conditions elsewhere in the open hunting area, and enforcing revised regulations would result in the need for more resources to adequately manage the migratory bird hunting program.

In summary, existing staff resources are available to manage migratory bird hunting, since it has been deemed a high priority activity. However, other activities such as fish and wildlife monitoring and other public use programming are reduced, delayed, or forgone. Changes proposed in the Refuge Comprehensive Conservation Plan (CCP) should help reduce or cover some costs, especially in regard to managed hunts and permanent blinds. Facilities are deemed adequate when considered in combination with the network of state, local, and private access facilities.

Anticipated Impacts of the Use:

Although hunting causes mortality and disturbance to those species hunted, bag limits, season dates, and other regulations are set to protect the long-term health of populations.

Considerable effort is made to educate migratory bird hunters on species identification to better prepare them for the challenges of hunting on the Refuge. Hunters occasionally commit unlawful acts, such as exceeding the daily bag limit, taking non-target species, or hunting in a closed area. These incidents, while locally significant, usually have minor impacts on the migratory bird resource.

Repeated use of an area by boats equipped with “go-devils,” and airboats, can damage emergent and submergent vegetation beds. The construction of hunting blinds using natural vegetation results in localized damage to plants.

Migratory bird hunters may also disturb migratory birds and other wildlife as they travel to and from their hunting sites or when retrieving downed birds. Depending on the location and the number/species of migratory birds in the area, a disturbance can be temporary with displaced birds moving to nearby backwaters, or major in the case of motoring through a large raft of canvasbacks. For some species like bald eagles and other predators, migratory bird hunting creates a readily available food source due to birds lost or wounded.

Conflicts between hunters competing for prime hunting spots and harvest opportunities can be serious in areas where birds frequent or use as flight lanes. Conflicts have also occurred in conjunction with permanent blinds in the Savanna District. Proposals in the Refuge CCP are designed to reduce these conflicts.

Under current regulations, conflicts between other Refuge user groups have been few, largely because migratory bird hunting seasons occur in the fall or late winter (crows) when fewer people use the Refuge. Hunting or possession of firearms is prohibited on the Refuge between March 15 and the opening of the State fall hunting seasons, usually in early September, except that wild turkeys can be hunted during the State spring turkey season. This regulation reduces the potential for conflicts between the various Refuge user groups.

Public Review and Comment:

This Compatibility Determination will be submitted as a portion of the Refuge Draft Comprehensive Conservation Plan and Environmental Impact Statement. Public notification and review includes a notice of availability, 120-day comment period, media announcements, and a series of public meetings in selected communities adjacent to the Refuge.

Determination:

Use is Not Compatible

Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

To ensure compatibility with Refuge purposes and the mission of the National Wildlife Refuge System, migratory bird hunting can occur on the Refuge if the following stipulations are met:

1. This use must be conducted in accordance with state and federal regulations, and special Refuge regulations published in the Refuge Hunting Regulations and Public Use Regulations brochures.
2. A system of Waterfowl Hunting Closed Areas must be maintained to ensure that migratory birds have adequate resting and feeding areas while hunting seasons are occurring.
3. This use is subject to modification if on-site monitoring by Refuge personnel or other authorized personnel results in unanticipated negative impacts to natural communities, wildlife species, or their habitats.
4. Changes outlined in the CCP dealing with closed areas, permanent blinds, managed hunts, and hunting regulations, when approved, will be incorporated in a new Refuge Hunt Plan. A new compatibility determination will be prepared at that time.

Justification:

Migratory bird hunting seasons and bag limits are established by the states within a framework set nationally by the U.S. Fish and Wildlife Service. These restrictions ensure the continued well-being of overall populations of migratory birds. Hunting does result in the taking of many individuals within the overall population, but restrictions are designed to safeguard an adequate breeding population from year to year. The system of Waterfowl Hunting Closed Areas on the Refuge provides feeding and resting areas for migratory birds during the hunting season. Specific Refuge regulations address equity and quality of opportunity for hunters. Proposed changes to both closed areas and Refuge regulations will make these aspects of the migratory bird hunting program even more effective. Disturbance to other fish and wildlife does occur, but this disturbance is generally short-term and adequate habitat occurs in adjacent areas. Loss of plants through boat traffic or blind construction is minor, or temporary since hunting occurs mainly after the growing season.

Conflicts between hunters are localized and are addressed through law enforcement, public education, and proposed changes to hunting regulations. Conflicts between other various user groups are minor given the season of the year for hunting, and the location of most hunting in marsh habitat and more remote shorelines.

Stipulations above will ensure proper control of the means of use and provide management flexibility should detrimental impacts develop. Allowing this use also furthers the mission of the National Wildlife Refuge System by providing renewable resources for the benefit of the American public while conserving fish, wildlife, and plant resources on the Refuge.

Signature: Refuge Manager: _____
(signature and date)

Concurrence: Regional Chief: _____
(signature and date)

Mandatory 10- or 15 year Re-evaluations Date: _____

DRAFT Compatibility Determination

Use: Hunting, big game, upland game and furbearer game animals

Refuge Name: Upper Mississippi River National Wildlife and Fish Refuge (Refuge)

Establishing and Acquisition Authority(ies):

The Upper Mississippi River Wildlife and Fish Refuge was established by Public Law No. 268, 68th Congress on June 7, 1924. This act authorized acquisition of lands for Refuge purposes. Additional lands acquired in fee title by the U.S. Army Corps of Engineers are managed as part of the Refuge under a 1963 Cooperative Agreement between the Department of the Army and the Department of the Interior.

Refuge Purpose(s):

Per Public Law 268:

“The Refuge shall be established and maintained (a) as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and (b) to such extent as the Secretary of the Interior by regulations, prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and (c) to such extent as the Secretary of the Interior may, by regulations, prescribe a refuge and breeding place for fish and other aquatic animal life.”

National Wildlife Refuge System Mission:

“The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Description of Use:

Allow public hunting for big-game (white-tailed deer and wild turkey), upland game (ring-necked pheasant, ruffed grouse, bobwhite quail, grey and fox squirrel, and cottontail rabbit), and furbearing game animal hunting (coyote, fox, and raccoon). Hunting is a priority public use of the Refuge System. Approximately 80% of the Refuge is open to hunting for these species. Season dates, bag limits, and harvest methods are consistent with state regulations, except when more restrictive Refuge regulations apply. To increase wildlife observation opportunities during the hunting season or for safety reasons, nine administrative No Hunting Zones, comprising nearly 3,730 acres, have been designated for safety reasons. A Refuge Hunting Regulations brochure is available to inform the public of hunting opportunities and Refuge regulations.

Availability of Resources:

The designated areas open to public hunting are open in accordance with state and Refuge regulations and do not require preparation and administration of special hunts. An estimated 31,200 visits were made to the Refuge in 2003 to hunt big game, upland game, and furbearing game animals. Except for localized areas on the opening day of firearms deer season, crowding has not been an issue as sufficient resources appear to exist to accommodate the current level of participation and provide a quality hunting experience.

Hunters use the existing network of roads to access areas open to hunting. Parking lots, boat ramps, restrooms, docks, leaflets, information kiosks, and signs are provided by the Refuge for use by hunters. The Refuge also provides staff and volunteers to maintain these facilities and disseminate information to visitors. Additional parking lots and boat ramps are provided by other agencies, local units of government, or private interests. Hunters residing next to the Refuge boundary are often

able to access open hunting areas from their property. Refuge law enforcement officers, Service special agents, and state conservation officers/wardens enforce state and Refuge hunting regulations.

Adequate resources are available to manage the existing hunting program at the current level of participation. However, funding for law enforcement staff time and printing of the Refuge Hunting Regulations brochure is lacking some years, calling for a redirection of existing Refuge funding. This redirection is often at the expense of other Refuge programs such as monitoring, maintenance, and other public use programs. Proposals in the Refuge Comprehensive Conservation Plan (CCP) should help address these funding concerns.

Anticipated Impacts of the Use:

Accommodating this wildlife-dependant use is expected to result in minimal impacts. Although hunting causes mortality to wildlife, season dates and bag limits are set with the long-term health of populations in mind. Populations of certain species, for example white-tailed deer, are monitored by state agencies. Survey information indicates that a limited harvest will not adversely affect the overall deer population level. Without harvest, deer will quickly overpopulate an area causing degradation to the quality and quantity of vegetation. Therefore, deer hunting promotes a healthier, more robust, and diverse Refuge plant community. Deer hunting may also reduce the number of deer/car collisions on adjacent highways.

Disturbance to wildlife may also result from hunting activity. This disturbance is expected to be limited in scope and duration. Because hunting is not permitted in Refuge closed areas during the duck hunting season, this use is not a source of disturbance to waterbirds concentrated in these areas. All motor vehicle use is restricted to designated roads, trails, and parking areas which reduces disturbance to wildlife. Disturbance to habitat is minimal given the nature of this hunting and restriction of vehicle use.

Hunting or possession of firearms is prohibited on the Refuge between March 15 and the opening of the state fall hunting seasons, usually in early September, except that wild turkeys can be hunted during the state spring turkey season. This regulation reduces the potential for conflicts between the various Refuge user groups.

Hunters occasionally violate regulations, such as exceeding the daily bag limit, using permanent tree stands, or hunting in the wrong area. However, these incidents usually have only minor impacts to wildlife populations or Refuge resources.

Public Review and Comment:

This Compatibility Determination will be submitted as a portion of the Refuge Draft Comprehensive Conservation Plan and Environmental Impact Statement. Public notification and review includes a notice of availability, 120-day comment period, media announcements, and a series of public meetings in selected communities adjacent to the Refuge.

Determination:

___ Use is Not Compatible

xx Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

To ensure compatibility with Refuge purposes and the mission of the National Wildlife Refuge System, migratory bird hunting can occur on the Refuge if the following stipulations are met:

1. This use must be conducted in accordance with state and federal regulations, and special Refuge regulations published in the Refuge Hunting Regulations and Public Use Regulations brochures.
2. Administrative Closed Areas are closed to all hunting and reduce conflicts between hunting and non-hunting users groups. Waterfowl Hunting Closed Areas, by default also reduce conflicts since they are closed to hunting during waterfowl seasons but open to most other public uses.
3. This use is subject to modification if on-site monitoring by Refuge personnel or other authorized personnel results in unanticipated negative impacts to natural communities, wildlife species, or their habitats.
4. Changes outlined in the CCP dealing with closed areas, permanent blinds, managed hunts, and hunting regulations, when approved, could have some effect on hunting covered in this determination. Changes will be incorporated in a new Refuge Hunt Plan. A new compatibility determination will be prepared at that time.

Justification:

Hunting seasons and bag limits are established by the states and generally adopted by the Refuge. These restrictions ensure the continued well-being of overall populations of game animals. Hunting does result in the taking of many individuals within the overall population, but restrictions are designed to safeguard an adequate breeding population from year to year. Specific Refuge regulations address equity and quality of opportunity for hunters, and help safeguard Refuge habitat. Disturbance to other fish and wildlife does occur, but this disturbance is generally short-term and adequate habitat occurs in adjacent areas. Loss of plants from boat or foot traffic is minor, or temporary, since hunting occurs mainly after the growing season.

Conflicts between hunters are localized and are addressed through law enforcement, public education, and continuous review and updating to state and Refuge hunting regulations. Conflicts between other various user groups are minor given the season of the year for hunting, the location of most hunting away from public use facilities, and the system of Administrative Closed Areas.

Stipulations above will ensure proper control of the means of use and provide management flexibility should detrimental impacts develop. Allowing this use also furthers the mission of the National Wildlife Refuge System by providing renewable resources for the benefit of the American public while conserving fish, wildlife, and plant resources on the Refuge.

Signature: Refuge Manager: _____
(signature and date)

Concurrence: Regional Chief: _____
(signature and date)

Mandatory 10- or 15 year Re-evaluations Date: _____

DRAFT Compatibility Determination

Use: Interpretation, wildlife observation and photography

Refuge Name: Upper Mississippi River National Wildlife and Fish Refuge (Refuge)

Establishing and Acquisition Authority(ies):

The Upper Mississippi River Wildlife and Fish Refuge was established by Public Law No. 268, 68th Congress on June 7, 1924. This act authorized acquisition of lands for Refuge purposes. Additional lands acquired in fee title by the U.S. Army Corps of Engineers are managed as part of the Refuge under a 1963 Cooperative Agreement between the Department of the Army and the Department of the Interior.

Refuge Purpose(s):

Per Public Law 268:

“The Refuge shall be established and maintained (a) as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and (b) to such extent as the Secretary of the Interior by regulations, prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and (c) to such extent as the Secretary of the Interior may, by regulations, prescribe a refuge and breeding place for fish and other aquatic animal life.”

National Wildlife Refuge System Mission:

“The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Description of Use:

These uses are priority public uses of the Refuge System. Currently, interpretation, wildlife observation and photography account for nearly 640,000 visits annually to the Refuge. Typical use is by individuals, family groups, school groups, and large groups during Refuge-sponsored special events. Interpretation, wildlife observation, and photography are becoming increasingly popular activities for visitors, and a source of economic growth for many communities.

As three of the six priority public uses of the Refuge system, these uses are to be encouraged when compatible with the purposes of the Refuge. The Refuge provides outstanding wildlife viewing opportunities due to the abundance of eagles, swans, ducks, warblers, pelicans, herons and other birds people find enjoyable and interesting. The National Scenic Byways that border the Refuge for hundreds of miles, and the relatively open access to lands and waters of the Refuge make the Refuge one of the premier wildlife viewing and photography areas in the nation. The public and communities desire more opportunities for these uses. Interpreting the resources and challenges of the Refuge to both the public and students of all ages is an important way to influence the future well-being of the Refuge and the river.

Interpretation: An estimated 250,000 interpretive visits occur each year on the Refuge. This use occurs throughout the year at the kiosks, trails, visitor contact stations, observation decks and boat landings. The Refuge will continue to provide public facilities, including four Visitor Contact Stations with interpretive exhibits. Interpretive signs are the most used method of interpretation on the Refuge. These signs convey site-specific messages at visitors' convenience since they are available any season or time of day. A total of 59 interpretive signs are used along the National Scenic

Byways, bike trails, hiking trails, overlook areas and at off-refuge sites overlooking the Refuge. In addition, 63 kiosks, 25 entrance signs and 29 official notice boards provide information about the Refuge.

Wildlife Observation and Photography: In fiscal year 2004, wildlife observation and photography visits had increased to over 389,000. The Refuge allows general public access during any time of the year to areas designated as open for observing and photographing scenery and associated flora and fauna. The Refuge provides some facilities to support wildlife observation and photography including observation decks, hiking trails, biking trails, canoe trails, and an auto tour route. These facilities offer outstanding wildlife viewing opportunities due to the abundance of eagles, swans, ducks, warblers, pelicans, herons, and other birds. The Comprehensive Conservation Plan recommends adding 2 full-time visitor services specialists and additional facilities including 3 new visitor contact stations, 6 boat launches/accesses, 17 canoe trails, 3 bike trails, 12 hiking trails, 10 observation decks/overlooks, 3 observation towers, 3 photo blinds, 35 information/interpretive kiosks and 24 interpretive signs to enhance observation and photography and bring them to Service standards.

Guided Interpretation and Observation: Commercially guided observation is discussed in the compatibility determination for this economic use. However, various no-fee or not-for-profit tours are conducted by non-profit groups, schools and colleges, or other agencies. Unlike general public wildlife observation, this use does require a Special Use Permit from the respective District Manager due to the impacts that concentrated groups of people may have. Impacts can also be greater since these tours target backwater areas of the Refuge which often contain sensitive wildlife populations such as nesting colonies of herons and egrets. As an example, a non-profit permittee in 2003 reported 29 tour events attended by 453 clients. At the present time, many of these tours are likely occurring without Refuge knowledge.

Availability of Resources:

Currently, there are three full-time visitor services staff members for the entire refuge. The needed staff for coordinating the interpretive, wildlife observation and photography programs is available but limits the number of guided or facilitated programs. Maintaining the public use facilities is part of routine management duties and staff and funding is available. Additional facilities and visitor services specialists will enhance public opportunities for these uses and improve the quality and quantity of programs.

Administering Special Use Permits for non-profit guided observation increases overall costs of Refuge operations, including but not limited to, development and review of policy and procedure, yearly administration of permits (inquiries, screening applicants, issuing permits), and enforcement of permit conditions. In the short-term, existing staff is adequate. However, the number of permits issued will have to be limited in balance with staff resources. In the long-term, additional administrative and/or other personnel as identified in the Comprehensive Conservation Plan will be needed.

Anticipated Impacts of the Use:

Disturbance of wildlife is the primary concern regarding these uses. Disturbance to wildlife, such as the flushing of feeding, resting, or nesting birds, is inherent to these activities. There is some temporary disturbance to wildlife due to boating and human activities on trails (canoe, hiking, and biking) however, the disturbance is generally localized and will not adversely impact overall populations. Increased facilities and visitation would cause some displacement of habitat and increase some disturbance to wildlife, although this is expected to be minor given the size of the Refuge and by avoiding or minimizing intrusion into important wildlife habitat.

Guided observation tours generally have impacts similar to the above, but have the potential for significant impacts to nesting colonies of herons and egrets, nesting bald eagles, or other species or

sensitive habitats without proper restrictions and oversight. These impacts can include nest abandonment and/or separation of young from parents. Larger boats used in guided tours can also uproot plants and increase turbidity in shallow backwater areas, negatively affecting habitat quality or displacing fish and other aquatic species. Guided tours also introduce more people into backwater areas than would generally occur, with an overall increase in noise and visual disturbance to wildlife.

Public Review and Comment:

This Compatibility Determination will be submitted as a portion of the Refuge Draft Comprehensive Conservation Plan and Environmental Impact Statement. Public notification and review includes a notice of availability, 120-day comment period, media announcements, and a series of public meetings in selected communities adjacent to the Refuge.

Determination:

Use is Not Compatible

Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. Managers will monitor use patterns and densities and make adjustments in timing, location, and duration as needed to limit disturbance.
2. Use will be directed to public use facilities (both existing and in the future), which are not in or near sensitive areas.
3. Personal portable photo or viewing blinds must be removed each day.
4. Observation areas will continue to provide wildlife viewing scopes to enhance viewing from a distance which reduces disturbance.
5. Commercial and not-for-profit guiding operations will be regulated by permit with timing and spacing constraints to protect sensitive wildlife or habitat (see Commercially Guided Wildlife and Wildlands Observation determination).
6. Not-for-profit guiding requests will be considered without fee but under the applicable stipulations governing commercial guides (areas, licensing, insurance, record keeping and reporting, etc.)
7. Interpretive, wildlife observation and photography activities (including Refuge-conducted) will not be allowed in Waterfowl Hunting Closed Areas when closed to hunting.
8. Trail layout and design will continue to ensure adequate adjacent cover for wildlife and avoid sensitive wildlife areas or habitat.
9. Interpretive presentations and products will continue to include messages on minimizing disturbance to wildlife.

Justification:

Most uses will occur, or be directed to, existing and future facilities in strategic locations providing quality wildlife interpretation, observation, and photography opportunities while limiting wildlife and habitat disturbance. Disturbance to wildlife is also limited by the size and remote nature of large parts of the Refuge. Many species have also grown more tolerant of human presence due to railroads, highways, and river traffic adjacent to or through the Refuge. Disturbance is also generally short-term, temporarily displaces wildlife to adjacent habitat and will not adversely impact overall populations. The permitting process for guided tours will limit disturbance to wildlife from larger groups and ensure avoidance of sensitive areas. Numerous other stipulations will be in place to facilitate these uses while reducing direct and indirect impacts.

Signature: Refuge Manager: _____
(signature and date)

Concurrence: Regional Chief: _____
(signature and date)

Mandatory 10- or 15 year Re-evaluations Date: _____

DRAFT Compatibility Determination

Use: Research projects by third parties

Refuge Name: Upper Mississippi River National Wildlife and Fish Refuge (Refuge)

Establishing and Acquisition Authority(ies):

The Upper Mississippi River Wildlife and Fish Refuge was established by Public Law No. 268, 68th Congress on June 7, 1924. This act authorized acquisition of lands for Refuge purposes. Additional lands acquired in fee title by the U.S. Army Corps of Engineers are managed as part of the Refuge under a 1963 Cooperative Agreement between the Department of the Army and the Department of the Interior.

Refuge Purpose(s):

Per Public Law 268:

“The Refuge shall be established and maintained (a) as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and (b) to such extent as the Secretary of the Interior by regulations, prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and (c) to such extent as the Secretary of the Interior may, by regulations, prescribe a refuge and breeding place for fish and other aquatic animal life.”

National Wildlife Refuge System Mission:

“The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Description of Use:

The Refuge allows research on a variety of biological, physical, and social issues and concerns to address refuge management information needs or other issues not related to refuge management. Studies are conducted by federal, state, and private entities, including the U.S. Geological Survey, state departments of natural resources, state and private universities, and independent researchers and contractors.

Each year, the Refuge issues Special Use Permits for three to six biological and physical research studies.

Examples of recent biological research include: determination of the causal factors affecting habitat distribution patterns; nesting, feeding and resting activities of waterfowl; songbird use of the floodplain; paddlefish habitat use; turtle distribution in relation to channel maintenance; long-term frog population and habitat studies; mussel distribution; river otter ecology; impacts of management on fish and wildlife habitat; contaminants in fish and wildlife; and scientific collections.

Research concerning changes in water quality, sedimentation rates and distribution, occurrence of contaminants, and hydrologic conditions assess physical characteristics of the Refuge in relation to construction and management of habitat projects.

Research is also applied to determine population demographics of Refuge visitors and the types of recreational activities people are doing while on the Refuge.

Studies that involve collection of plants have been made to determine available energy (food) sources, to combat invasive species, or for use in making reference collections. Fish and wildlife

(including invertebrates) are collected for contaminant and/or disease analyses, mark and recapture studies, other population analyses, and radio telemetry (distribution) studies.

Research study sites, sampling locations, and transects are temporarily marked by highly visible wooden or metal posts that must be removed when research ceases.

Access to study sites is by foot, truck, all-terrain vehicle, boat, airboat, canoe, other watercraft, and aircraft. Vehicle use is allowed on Refuge roads, trails, and parking lots normally open to the public. Nearly all the Refuge is open for allowed research activities throughout the year with the exception that researchers may not enter, unless specifically authorized, Waterfowl Hunting Closed Areas during the regular state duck hunting seasons and may not enter the following three waterfowl areas that are closed to all entry October 1 through the end of the state duck hunting season:

- Pool Slough Closed Area in Pool 9
- Guttenberg Pond portion of the Twelve-Mile Island Closed Area in Pool 11
- Spring Lake Closed Area in Pool 13

Availability of Resources:

Each Refuge District currently uses existing staff to issue Special Use Permits for research projects that occur solely within the respective District. Refuge Headquarters staff issue Special Use Permits for research activities that occur across more than one District. Staff resources are deemed adequate to manage this use at anticipated use levels.

Access points, boats, other vehicles, miscellaneous equipment, and limited logistical support are available on the Refuge. Temporary housing located at the Savanna and Winona Districts is available for use by researchers while studying Refuge resources.

Anticipated Impacts of the Use:

Research activities may disturb fish and wildlife and their habitats. For example, the presence of researchers can cause waterfowl to flush from resting and feeding areas, cause disruption of birds and turtles on nests or breeding territories, or increase predation on nests and individual animals as predators follow human scent or trails. Efforts to capture animals can cause disturbance, injury, or death to groups of wildlife or to individuals. To wildlife, the energy cost of disturbance may be appreciable in terms of disruption of feeding, displacement from preferred habitat, and the added energy expended to avoid disturbance.

Sampling activities can cause compaction of soils and the trampling of vegetation, the establishment of temporary foot trails and boat trails through vegetation beds, disruption of bottom sediments, and minor tree damage when temporary observation platforms are built or when tree climbers access bird nests such as in great blue heron colonies.

The removal of vegetation or sediments by core sampling methods can cause increased localized turbidity and disrupt non-target plants and animals. The use of water-injection dredges to collect vegetation has similar impacts but on a wider scale than core samplers.

Installation of posts, equipment platforms, collection devices and other research equipment in open water may present a hazard to boaters if said items are not adequately marked and/or removed at appropriate times or upon completion of the project.

Research efforts may also discover methods that result in a reduction in impacts described above.

Public Review and Comment:

This Compatibility Determination will be submitted as a portion of the Refuge Draft Comprehensive Conservation Plan and Environmental Impact Statement. Public notification and review includes a

notice of availability, 120-day comment period, media announcements, and a series of public meetings in selected communities adjacent to the Refuge.

Determination:

___ Use is Not Compatible

xx Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. Prior to conducting investigations, researchers will obtain Special Use Permits from the Refuge that make specific stipulations related to when, where, and how the research will be conducted. Managers retain the option to prohibit research on the Refuge which does contribute to the purposes of the Refuge or the mission of the Refuge System, or causes undo resource disturbance or harm.
2. Researchers must possess all applicable state and federal permits for the capture and possession of protected species, for conducting regulated activities in wetlands, and for other regulated activities.
3. Researchers will not be allowed access into the three no entry areas of the Refuge listed above, October 1 to the end of the regular state duck hunting season.
4. Researchers are not allowed in Refuge Waterfowl Hunting Closed Areas during the regular state duck hunting season, except at pre-arranged, specific times and locations (if any) allowed by the local District Manager.
5. Researchers must clearly mark posts, equipment platforms, fencing material, and other equipment left unattended in open water so as to not pose a navigation hazard to boaters. Such items shall be removed from the river as soon as practicable upon completion of the research.
6. Researchers will submit annual status reports and a final report concerning Refuge research to the Refuge Manager and/or appropriate District Manager.

Justification:

Research by third parties plays an integral role in Refuge management by providing information needed to manage the Refuge on a sound scientific basis. Investigations into the biological, physical, archeological, and social components of the Refuge provide a means to analyze management actions, impacts from internal and outside forces, and ongoing natural processes on the Refuge environment. Research provides scientific evidence as to whether the Refuge is functioning as intended when established by Congress.

Adverse impacts of research that cause localized vegetation trampling or disruption of wetland bottom sediments are often short-term and will be minimized through stipulations above. Vehicular access is allowed only on roads and trails normally open to the public, thus resulting in no net increase in vehicular impacts. Researches are also restricted from Waterfowl Hunting Closed Areas and sanctuaries to avoid and minimize human disturbance to feeding and resting waterfowl. Any research equipment that remains in the field for the duration of the project will be clearly marked to avoid potential hazards presented to other Refuge users.

Signature: Refuge Manager: _____
(signature and date)

Concurrence: Regional Chief: _____
(signature and date)

Mandatory 10- or 15 year Re-evaluations Date: _____

DRAFT Compatibility Determination

Use: Sediment removal

Refuge Name: Upper Mississippi River National Wildlife and Fish Refuge (Refuge)

Establishing and Acquisition Authority(ies):

The Upper Mississippi River Wildlife and Fish Refuge was established by Public Law No. 268, 68th Congress on June 7, 1924. This act authorized acquisition of lands for Refuge purposes. Additional lands acquired in fee title by the U.S. Army Corps of Engineers are managed as part of the Refuge under a 1963 Cooperative Agreement between the Department of the Army and the Department of the Interior.

Refuge Purpose(s):

Per Public Law 268:

“The Refuge shall be established and maintained (a) as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and (b) to such extent as the Secretary of the Interior by regulations, prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and (c) to such extent as the Secretary of the Interior may, by regulations, prescribe a refuge and breeding place for fish and other aquatic animal life.”

National Wildlife Refuge System Mission:

“The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Description of Use:

The natural processes of erosion, transport, and deposition of sediments have occurred throughout geologic times and have shaped the landscape of the Upper Mississippi River and its tributaries. Eroded soil is the largest pollutant of surface waters in the United States. Sediment transport affects water quality and its suitability for wildlife sustainability and recreation, among other uses. Problems associated with deposition of sediments vary. Filling of backwaters, smothering of vegetation and mussel beds, loss of capacity for floodwater storage, and reduced navigation are examples.

A variety of Best Management Practices (BMPs), aimed at reducing the amount of sediment reaching the Upper Mississippi River, are now being implemented in a number of tributaries. These BMPs can be categorized as either structural or non-structural. Among the structural best management controls include wet detention-sediment detention basins, constructed wetlands, dry detention basins, and construction of grassed channels and drainageways. Non-structural controls include street sweeping, public education, construction site erosion control regulations and enforcement, and stormwater management and land use planning.

One structural BMP has been constructed on the Refuge, with others in the planning stage. The 21-acre Pool A of the Upper Halfway Creek Marsh Project, completed in 1999, is a constructed wetland managed as a moist soil unit and sediment detention basin. Much of the sediment entering the project area is removed in this pool, resulting in less sediment reaching Halfway Creek Marsh. The periodic removal of sediment from this pool is an ongoing maintenance requirement. At several sites, sediment is also removed from collection points along tributaries. Although not engineered, these

function as sediment detention basins. There is also the occasional need to remove flood-deposited sediment from selected locations or to remove spoil left in wetland basins from past ditching operations.

Availability of Resources:

For most projects, the cost to the Service for removing sediment should be minimal. Local landscapers have a need for small amounts of fill for beneficial uses and are willing to remove the sediment at no cost to the Service. Before a structural BMP is constructed on the Refuge as part of watershed initiative, a maintenance agreement would be completed that identifies the partners responsible for long-term maintenance and how sediment removal will be addressed. When the Service initiates a project to remove flood-deposited sediment or spoil left from past ditching operations, every effort will be made to minimize costs by finding beneficial uses for the material.

Anticipated Impacts of the Use:

The impacts to the Refuge in removing sediment should be minimal and temporary. There may be the occasional need to construct temporary roads and staging areas to access sites with heavy equipment and transport fill or to store equipment or fill. These would be located to minimize the impacts on vegetation or other resources. Site restoration would also be part of any operation.

Most of any sediment removal operation would likely occur during the drier times of year in late summer and fall, or when the ground is frozen in winter for better access. Disturbance to nesting wildlife would be avoided by conducting operations at this time of year. If the project dictates sediment removal during the nesting season or other sensitive time periods, reducing disturbance to wildlife and avoiding other sensitive areas would be planned into the project.

Sediments, particularly fine-grained sediment, have the potential to carry and store pollutants such as metals, PCBs, and semivolatile and volatile organic compounds. Removing these sediments may result in the re-suspension of any pollutants present. Depending on the situation and type of sediment present, sampling may be required prior to the removal of any sediment.

Public Review and Comment:

This Compatibility Determination will be submitted as a portion of the Refuge Draft Comprehensive Conservation Plan and Environmental Impact Statement. Public notification and review includes a notice of availability, 120-day comment period, media announcements, and a series of public meetings in selected communities adjacent to the Refuge.

Determination:

Use is Not Compatible

Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

To ensure compatibility with Refuge purposes and the mission of the National Wildlife Refuge System, any sediment removal project on the Refuge must meet the following stipulations:

1. The project is conducted in accordance with local, state and federal regulations unless the U.S. Fish and Wildlife Service places additional restrictions on the activities to ensure compliance with all applicable laws, regulations, and policies. The latter may be outlined in a letter of authorization from the Project Leader or a Special Use Permit depending on the complexity of the project.
2. Sediment removed from the Refuge would not be used to fill wetlands or other sensitive areas.

3. Sediment detention basins would only be constructed on the Refuge following evaluation of alternative erosion control and stormwater management practices in the watershed.
4. Any sediment removal project will be subject to modification if on-site monitoring by Refuge personnel uncovers unanticipated negative impacts to natural communities, wildlife species, or their habitats.

Justification:

Sedimentation is one of the most critical resource problems affecting impounded areas within the Upper Mississippi River System (Report to Congress: An Evaluation of the Upper Mississippi River System—Environmental Management Program). As the navigation pools continue to age, the quality and quantity of habitat available will diminish. Likely responses to pool aging include poorer water quality, poorer substrata quality, reductions of submerged aquatic plants and benthic invertebrates, shifts in fish populations to less describable species, and fewer areas available to support the needs of migratory birds. In order to maintain habitat quality, active management is necessary. Watershed initiatives and sediment removal are among the tools available to manage sediment. The above-mentioned stipulations should provide management flexibility if detrimental impacts develop. Disturbance to wildlife during removal operations will be short-term and minimized by timing and duration. Allowing this use also furthers the mission of the National Wildlife Refuge System by providing renewable resources for the benefit of the American public while conserving fish, wildlife, and plant resources, while contributing to the purposes of the Refuge through the improvement of habitat.

Signature: Refuge Manager: _____
(signature and date)

Concurrence: Regional Chief: _____
(signature and date)

Mandatory 10- or 15 year Re-evaluations Date: _____

DRAFT Compatibility Determination

Use: Special events, non-Refuge sponsored

Refuge Name: Upper Mississippi River National Wildlife and Fish Refuge (Refuge)

Establishing and Acquisition Authority(ies):

The Upper Mississippi River Wildlife and Fish Refuge was established by Public Law No. 268, 68th Congress on June 7, 1924. This act authorized acquisition of lands for Refuge purposes. Additional lands acquired in fee title by the U.S. Army Corps of Engineers are managed as part of the Refuge under a 1963 Cooperative Agreement between the Department of the Army and the Department of the Interior.

Refuge Purpose(s):

Per Public Law 268:

“The Refuge shall be established and maintained (a) as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and (b) to such extent as the Secretary of the Interior by regulations, prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and (c) to such extent as the Secretary of the Interior may, by regulations, prescribe a refuge and breeding place for fish and other aquatic animal life.”

National Wildlife Refuge System Mission:

“The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Description of Use:

This use is for special events sponsored by charitable and other non-profit clubs or groups. These events primarily include walks, such as the Crop Walk and the American Volkssport Association, but may include bicycle rides or runs. Other regularly occurring events include river clean-up days. Events are held one to five times, annually, and occur at different times throughout the year. Events may have up to 300 participants, although generally less than 100. Participants use established roads, trails, and boat landings that are already open to the public. Clean-up events may include all portions of the Refuge generally accessible by boat. Participants in clean-ups generally work on shoreline areas or seasonally flooded bottomlands where debris is deposited.

Availability of Resources:

These events generally involve staff time for meeting with sponsors, explaining Refuge regulations, issuing a Special Use Permit, and providing some level of oversight during some or all of the event. Existing staff are adequate to administer this use depending on number of requests received and the size and scope of the event. Since events are held or based on existing roads, trails, or landings, facilities are deemed adequate. Sponsors are required to furnish any additional facilities needed, such as portable toilets.

Anticipated Impacts of the Use:

The short term impact associated with these events is human disturbance to wildlife occupying habitat on the Refuge. Most events occur on established trails or areas that already support a moderate level of human activity. Wildlife that occupy habitat in these areas are accustomed to a higher degree of human disturbance. Any alteration of behavior or bird flight would be temporary and localized with wildlife quickly resuming normal activities.

There will be some short term impact to other visitors engaged in wildlife-dependent recreation during the event. Visitors, not engaged in the event, will be permitted to continue their activity. With an increase of public use during walks or runs, an increase of litter is expected. Event coordinators will be required to clean the area when the event is complete. Clean-up events actually reduce litter and debris and thus have a positive impact on the visual character of the Refuge.

Other than the potential for some increase in future visitation to the Refuge, no long-term impacts associated with these events are anticipated.

Public Review and Comment:

This Compatibility Determination will be submitted as a portion of the Refuge Draft Comprehensive Conservation Plan and Environmental Impact Statement. Public notification and review includes a notice of availability, 120-day comment period, media announcements, and a series of public meetings in selected communities adjacent to the Refuge.

Determination:

Use is Not Compatible

Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. Events must include an educational message that helps further the understanding of the purposes of the Refuge and the mission of the Refuge System.
2. Event sponsors will furnish complete information on event description, date, time, preferred location, number of participants, and logistics for health and safety, so that the manager can make a determination of best area and timing of events when issuing a Special Use Permit. Management reserves the right to deny any proposal that will cause an undue demand on staff or resources, is not related to a charitable or non-profit organization, or does not promote the goals of the Healthier US initiative designed to get Americans outdoors and active on their public lands.
3. Except for clean-ups, events will be scheduled only in areas open to public use and at appropriate times of the year to avoid significant wildlife and visitor disturbance. Events will be scheduled on a first-come, first-served basis, with no more than one event in the same area and time. All activities will be limited to the designated routes on established trails. Collection of money for the fund raising aspect of the event will be conducted off site.
4. Water or rest stations will be approved by Refuge staff in advance of the event and will be located to avoid any sensitive sites (e.g. areas with high densities of foraging shorebirds, areas where waterbirds, waterfowl, raptors or passerines are nesting, etc.) and to minimize disturbance to wildlife foraging/ perching/loafing in adjacent wetlands and woodlands.
5. Event sponsors will be required to set up and remove all materials necessary for the event. This requirement applies to any tables, chairs, displays, signs, traffic aids, litter receptacles, portable toilets, etc. needed.

Justification:

Disturbance to wildlife and habitat will be minimal since this use will occur on existing roads and trails, be periodic, and relatively short duration. Wildlife disturbed will be displaced during the event, but should return to the areas affected quickly. Adjacent habitat is abundant for wildlife to use when disturbed. Stipulations in place will minimize disturbance, ensure control of the events, and contribute to the mission of the Refuge System by requiring an interpretive or environmental education component. This use will also expose large numbers of people to the Refuge and help them gain a better understanding and appreciation of the Refuge. These events are also consistent with

the Healthier US initiative to promote increased physical fitness in America through the use of public lands. The number of events, and their size and scope, remains under the control of District Managers through the requirement of a Special Use Permit.

Signature: Refuge Manager: _____
(signature and date)

Concurrence: Regional Chief: _____
(signature and date)

Mandatory 10- or 15 year Re-evaluations Date: _____

DRAFT Compatibility Determination

Use: Temporary work outside existing rights-of-way

Refuge Name: Upper Mississippi River National Wildlife and Fish Refuge (Refuge)

Establishing and Acquisition Authority(ies):

The Upper Mississippi River Wildlife and Fish Refuge was established by Public Law No. 268, 68th Congress on June 7, 1924. This act authorized acquisition of lands for Refuge purposes. Additional lands acquired in fee title by the U.S. Army Corps of Engineers are managed as part of the Refuge under a 1963 Cooperative Agreement between the Department of the Army and the Department of the Interior.

Refuge Purpose(s):

Per Public Law 268:

“The Refuge shall be established and maintained (a) as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and (b) to such extent as the Secretary of the Interior by regulations, prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and (c) to such extent as the Secretary of the Interior may, by regulations, prescribe a refuge and breeding place for fish and other aquatic animal life.”

National Wildlife Refuge System Mission:

“The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Description of Use:

Allow short-term disturbance to Refuge lands for highway or other public interest projects with no right-of-way expansion and full restoration. Requests are made by state and local governmental agencies, railroads, and utility companies to do repairs and improvements to existing road ways and utility facilities associated with existing rights-of-way on, and adjacent to, the Refuge. Many of these requests require temporary work outside existing right-of-way boundaries, generally resulting in temporary disturbance to the associated vegetation. Frequently, the temporary work requested is required to reshape a slope immediately adjacent to a road right-of-way to improve transportation safety. In the case of utility lines, the request may involve access across Refuge lands to a portion of the right-of-way for repairs or structure replacement. Most often, the temporary work outside of the right-of-way is conducted during the summer and fall, when construction conditions are optimal. The work typically involves temporary disturbance to uplands that can be re-planted with native vegetation to restore it to its original planted character. This determination will allow approved work and temporary habitat disturbance outside the right-of-way boundary when long-term impacts are either beneficial or not significantly harmful.

Availability of Resources:

In most cases, minimal expense is required of the Service for these projects. However, on occasion, the scope of a project may be such that a major commitment in staff and/or resources is required. In these cases the Service may opt to require the permittee to reimburse the agency for administrative costs. Authorization of the projects will require the requesting organization to cover habitat restoration costs. There may be a modest administrative cost for issuing and monitoring the work.

Anticipated Impacts of the Use:

The impacts to the associated uplands with this use will be minimal and temporary. When the request includes unavoidable destruction of vegetation, approval will be limited to sites previously tilled or otherwise disrupted. No native prairie remnants or wetlands may be destroyed. Any areas with disturbed vegetation will be seeded by the requesting organization to a diverse mix of native species that will lead to better long-term habitat than the vegetation originally disturbed.

Most of this work occurs in summer and fall, after the waterfowl nesting season. The duration of any single project is usually 1 to 8 weeks. Occasionally, work may occur during the nesting season but the size of the disturbance zone will be minimal. The quality of the habitat in the disturbed zone may be diminished for up to 3 years following the project but the disturbed zone will provide some migratory bird value by the year following the project. The long-term productivity of the disturbed zone will frequently increase due to the replacement of exotic, less desirable cover with native vegetation.

Most impacts will be along existing roads in areas already subject to significant habitat and aesthetic deterioration due to existing transportation right-of-way. In some cases, a utility right-of-way can split an otherwise contiguous block of quality habitat. In these settings, the disturbance from machinery and construction activity will still be temporary but the impact to waterfowl and other migratory birds is likely greater. The existing right-of-way already results in some disturbance but the decision to authorize temporary work outside the right-of-way will slightly increase the magnitude of the disturbance.

Public Review and Comment:

This Compatibility Determination will be submitted as a portion of the Refuge Draft Comprehensive Conservation Plan and Environmental Impact Statement. Public notification and review includes a notice of availability, 120-day comment period, media announcements, and a series of public meetings in selected communities adjacent to the Refuge.

Determination:

___ Use is Not Compatible

xx Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. All work done outside of existing rights-of-way must be approved by the appropriate District Manager in the form of a letter of authorization or a Special Use Permit depending upon the scope of the project.
2. Conditions stipulated in a letter of authorization such as seeding mixes, weed control, etc. must be followed to remain a compatible use.
3. No work that leads to permanent loss of wetlands or native prairie remnants will be allowed without a site-specific compatibility determination. All state and federal laws must be complied with where impacts to wetlands are involved.
4. Wherever possible, work should be performed during the winter months when the ground is frozen to minimize damage to the soil surface. Where ground disturbance will occur on Service lands outside a right-of-way, appropriate steps must be taken to ensure that there are no negative impacts to cultural resources.

Justification:

This use will not materially interfere with or detract from the purposes for which the Refuge was established with the above stipulations in place. Temporary disturbances to the lands adjacent to rights-of-way will usually have only short-term effects on wildlife and their habitat. Work within the

rights-of-way is beyond the authority of the Fish and Wildlife Service to regulate other than influencing the timing and scope of work to minimize wildlife harm. Restricting off-right-of-way work to winter months will help prevent soil damage and minimize potential erosion and impacts to cultural resources. Ensuring that all state and federal laws pertaining to wetland impacts are complied with will ensure that any damage to wetlands is temporary and fully restored or mitigated. Allowing temporary work outside existing right-of-ways ensures that the holder can continue to provide essential human services to communities in the vicinity of the Refuge. In some cases, the repairs and maintenance performed may also ensure safety of visitors and the public. Finally, restoration of disturbed sites may, in some cases, increase productivity by providing more robust vegetation than what was originally present.

Signature: Refuge Manager: _____
(signature and date)

Concurrence: Regional Chief: _____
(signature and date)

Mandatory 10- or 15 year Re-evaluations Date: _____

DRAFT Compatibility Determination

Use: Trapping of furbearers

Refuge Name: Upper Mississippi River National Wildlife and Fish Refuge (Refuge)

Establishing and Acquisition Authority(ies):

The Upper Mississippi River Wildlife and Fish Refuge was established by Public Law No. 268, 68th Congress on June 7, 1924. This act authorized acquisition of lands for Refuge purposes. Additional lands acquired in fee title by the U.S. Army Corps of Engineers are managed as part of the Refuge under a 1963 Cooperative Agreement between the Department of the Army and the Department of the Interior.

Refuge Purpose(s):

Per Public Law 268:

“The Refuge shall be established and maintained (a) as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and (b) to such extent as the Secretary of the Interior by regulations, prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and (c) to such extent as the Secretary of the Interior may, by regulations, prescribe a refuge and breeding place for fish and other aquatic animal life.”

National Wildlife Refuge System Mission:

“The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Description of Use:

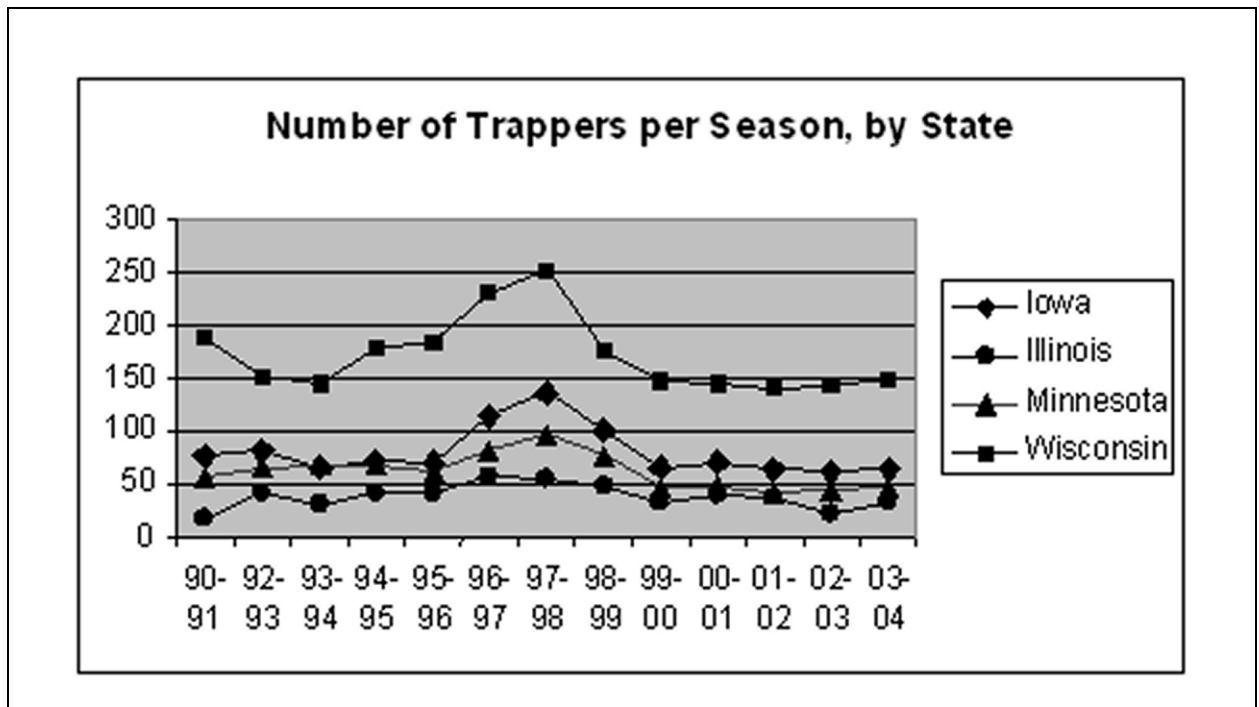
This use is the trapping of resident furbearer animals (muskrat, beaver, raccoon, etc.) on the Refuge in accordance with state and Refuge regulations. The Refuge Fur Management Plan (1988) provides policy, strategies, and regulations on furbearer trapping. An objective of the Refuge’s draft Comprehensive Conservation Plan is to update the Fur Management Plan by the year 2007, and to continue the existing trapping program until the update is completed.

Between the 1990-01 and 2003-04 trapping seasons, the average annual number of permitted trappers on the Refuge was 290, ranging from a low of 225 in 2002 to a high 443 in 1997 (Table 1). The average number of permitted trappers per State, 1990-01 to 2003-04 was: Iowa = 80; Illinois = 38; Minnesota = 61; and Wisconsin = 171 (Figure 1).

A Summary of Thirteen Years of Trapper and Harvest Data for the 1990-91 to 2003-04 Seasons (data are missing for 1991-92), Upper Mississippi River NW&FR

Trappers		Muskrats		Beaver		Raccoon		Mink	
Average	Range	Average	Range	Average	Range	Average	Range	Average	Range
290	225 to 443	39,923	20,520 to 83,035	2,085	1,245 to 3,077	1,768	791 to 3046	310	176 to 458

Number of Trapping Permits Issued per State, Upper Mississippi River NW&FR, 1990-91 through 2003-04 Trapping Seasons



These trappers reported an average annual muskrat harvest of 39,630, ranging from 20,520 in 2001 to 83,035 muskrats in 1997. Beaver harvest averaged 2059 animals, ranging from 1254 in 2002 to 3077 in 1997. The trends in number of trappers and number of animals harvested are similar, showing a gradual increase from 1990 to 1997 and gradual decline from 1997 to 2003. For further detail on trapping harvest on the Refuge refer to the Refuge’s Draft Comprehensive Conservation Plan and Environmental Impact Statement.

On a Refuge District basis, most of the trappers and most of the furbearer harvest occurs in the Mc Gregor District (Pools 9-11), followed by La Crosse (Pools 7 and 8), Winona (Pools 4-6) and Savanna (Pools 12-14).

The trapping efficiency (catch per unit effort) for muskrats, estimated as the average number of muskrats caught per trap deployed each night by trappers who targeted muskrats, was derived from fur catch reports for the years 1998 to 2003. Efficiency was close to 0.28 muskrats per trap between 1998 and 2000, but since then, efficiency has ranged from 0.22 to 0.26 muskrats per trap night. The 0.22 rate occurred in 2001, matching the lowest muskrat harvest during the 1998-2003 period.

Most furbearer trapping targets the following species: muskrat, mink, beaver, raccoon, and red fox. Other species taken include river otter, coyote, skunk, and opossum. The vast majority of trapping occurs within wetland habitats.

Furbearer trapping on the Refuge has a long-standing tradition and has been a useful tool in maintaining balance between furbearers and habitat, and safeguarding Refuge infrastructure. The opening of trapping seasons, trapping methods, and other regulations on the Refuge generally follow those established by each of the four States in which the Refuge occurs: Iowa, Illinois, Minnesota and Wisconsin. The final day of trapping on the Refuge is no later than March 15. Trapping seasons generally run from late October or early November until late January to March 15. There is

variability among states in regards to season length (trapping for some species are continuously open, others have established dates), trapping zones, and species open to trapping.

Furbearer trapping is allowed throughout the Refuge, except in 21 Waterfowl Hunting Closed Areas (43,704 acres or 18% of the Refuge; EIS Alt. D.,) and one Administrative No Hunting Zone (66 acres of Upper Halfway Creek adjacent to Pool 7) beginning the first day of the regular state duck hunting season until 9:00 am the day after the last day of the regular state duck hunting season. The closed area restriction reduces the extent of disturbance to waterfowl by human activities during the hunting season, thus enhancing the ability of the Refuge to provide secure resting and feeding areas for migrating waterfowl. An additional 2467 acres (Crooked Slough Backwater in Pool 13) are closed to all trapping and other forms of entry year round because this area of the former Savanna Army Depot is closed for public health and safety reasons.

The Refuge has regulated trapping within its boundaries since 1929 and is currently more restrictive than the States in regulating some aspects of trapping. The existing trapping program is regulated by issuing Special Use Permits to state-licensed individuals who may use a maximum of 40 traps (all marked with Refuge tags) per day. The use of snares and multiple-catch traps is prohibited on the Refuge.

Trappers may use leghold traps and body-gripping (“conibear” type) traps for the purpose of trapping various furbearers and unprotected species of wildlife. Each method is qualified under State regulations as to trap size and types of allowable sets in order to protect non-target species, and to provide for the safe use of the Refuge by others. The use of exposed flesh or carcass baits, including fish, is prohibited on the Refuge.

All trappers must submit a Fur Catch Report following the season or not be eligible for a permit to trap on the Refuge the subsequent season. These reports provide data on the number and distribution of animals harvested, distribution of trappers, and rudimentary catch per unit effort (efficiency) estimates on the Refuge.

Factors affecting furbearer harvest on the Refuge include length of the trapping season, fur prices, weather conditions, habitat changes, extent of aquatic vegetation coverage, and trapping effort.

Access for trapping on the Refuge is by foot, boats, tracked vehicles and snowmachines. Use of the later two vehicles on, over, or across Refuge lands at any time is prohibited, including while trapping. Off-road vehicles are allowed only on the ice over navigable waters, accessed from boat landings. In addition, these vehicles may not enter “electric motor areas” proposed in Alternative D of the Environmental Impact Statement for Comprehensive Conservation Plan. The Refuge has other restrictions regarding tending traps, set types, use of vegetation, disturbance, etc.

Availability of Resources:

There are administrative costs to implementing the trapping program on the Refuge. Each Refuge District issues permits to trappers who intend to trap in their respective States and pools. Trappers must apply in person at the District Office where staff are available to issue the permits. Trappers pay a fee that recovers the government’s cost of administering the trapping program. Permits were first issued for a fee of 10 cents per tag, with a 50 tag limit in 1941 and continued as such through 1978. In 1979, a standard number of 40 tags was issued for a fee of \$5.00 per permit. This reduction in the number of trap tags permitted was designed to decrease intense competition among trappers when muskrat pelts were selling at high prices (\$4-6.00). The fee was increased to \$10.00 in 1990, \$15.00 in 1991, and to \$20.00 in 2000 to the present. The standard of 40 tags per permit has remained the same throughout the period. Trapping permits were replaced by a Refuge Special Use Permit in 2000.

Access trails, parking lots, boat landings, signs, and other facilities as well as staff to enforce regulations and maintain these facilities have been provided by the Refuge. These facilities have

been maintained for many years primarily to meet needs of the public engaged in fishing, hunting, trapping and boating-related activities.

Anticipated Impacts of the Use:

Wisconsin, Illinois, and Minnesota publish various types of wildlife population status reports that include furbearers. The 2002-2003 Wisconsin Furbearer Status Report indicates that statewide populations of muskrat, mink, raccoon, and beaver are doing well. However, there has been a recent decline in beaver populations along the Mississippi River management zone, but no change in beaver trapping regulations have been made by the State. River otter are increasing in the southern portion of Wisconsin. The Wisconsin portion of the Refuge has an open season on otter. (The Illinois, Iowa, and Minnesota portions of the Refuge do not have otter seasons.) Southern Wisconsin populations of red fox have recently been impacted by mange (a density dependent disease that becomes prevalent in high populations) and competition from coyotes.

The Illinois Department of Natural Resources web site indicates that beaver, muskrat, raccoon, red fox and mink are common and occur in every county in Illinois. Mink “are most abundant in the glacial lakes area of northeastern Illinois, counties bordering the lower Mississippi River, and the southern third of the state.” Some of the highest muskrat numbers are found in the northeastern and northwestern [includes the Refuge] parts of the state. Raccoons are abundant and have increased dramatically since the early 1900s. Scientists believe there are more raccoons in Illinois today than when the first European settlers arrived there. Red fox are most common in the northern two thirds of Illinois.

Although still uncommon, river otters are widely distributed in Illinois. They were listed as a state threatened species in 1977. Their status was changed to state endangered in 1989 when fewer than 100 otters existed in Illinois. Many of them lived along the Mississippi River and its backwaters. Today, otter numbers are still fairly low but Illinois upgraded their status from state endangered to state threatened. Otter trapping is closed in Illinois.

Minnesota Department of Natural Resources reports that muskrats are a valuable wetland animal. Minnesota trappers sometimes harvest 100,000 muskrats in a single autumn season without harming the population. The thick fur is used for warm coats and hats.

Minnesota also reports that the red fox population has shown a slight decline in the western and southern portions of the state between 1992 and 2000. Concurrently, the red fox estimated trapping harvest has declined from over 20,000 annually in the mid-1990s, to less than 10,000 from 1998 to 2003. Minnesota DNR still considers the red fox population healthy, and views slowly declining populations in the south and west as an effect of a slowly increasing coyote population in this same area (as indicated by predator scent post surveys) and not a result of trapping.

There are 0.6 beaver colonies per river mile in beaver range of Minnesota. During the winter, a beaver colony will include the two adults, their spring youngsters, and often year-old beavers. While Minnesota has a regulated beaver trapping season, the State indicates that there are not enough trappers to keep some beaver populations small enough to prevent problems.

The Minnesota DNR estimates that 800,000 to one million raccoons live throughout the state. Each year Minnesota hunters harvest 100,000 to 150,000 raccoons and trappers take another 40,000 to 75,000. In Minnesota, mink have been one of the most valued furbearers for two centuries, and while thousands are trapped throughout the State each autumn mink populations remain healthy. Early in the twentieth century, otter range was greatly reduced in Minnesota as a result of wetland drainage and pollution which destroyed habitat. Today, otters are common in all of northern Minnesota, and due to wetland restoration, are becoming more common again in southern parts of the state. Because the river otter has valuable fur and is relatively easy to trap, it is classed as a registered furbearer in Minnesota. where its trapping season is carefully controlled. About 2,000

otters are trapped each year out of a total population of 12,000. There is no open season on otter in the southern part of Minnesota, which includes the Refuge.

Impacts of public trapping on the purposes of the Refuge and mission of the refuge system can be either direct or indirect and may have negative, neutral, or positive impacts on Refuge resources.

Direct impacts may include displacing migratory birds during the pair bonding/nesting season, or destruction of nests by trampling. Indirect impacts may include catch of target and non-target species that are predators on migratory birds and/or nests, or removal of species that induce habitat change (i.e. beaver).

Because of the temporal separation of trapping activities and breeding wildlife using the Refuge, direct impacts to these resources by trappers is negligible. Trappers using the Refuge in early March, may disturb individual early nesting waterfowl on occasion, and cause temporary displacement from specific and limited areas. These impacts are occasional, temporary, and isolated to small geographic areas. Bald eagles initiate nesting activities on the Refuge in February, but there is no evidence that trapping has impacted bald eagle nest success. Between 1986 and 2004, the number of active bald eagle nests jumped from 9 to 136 active nests on the Refuge, a 15-fold increase.

There are potential impacts on habitat by trappers using Go-devil and similar shallow water propulsion since props can tear up rooted plants as boats make their way through aquatic vegetation beds. The significance of these cuttings has not been determined. Where aquatic vegetation cover has decreased in the Refuge due to sedimentation, wind and wave action, herbivores (fish and mammals), and continual inundation, additional vegetative losses due to trapping activities would have a negative impact on Refuge habitat. Any habitat change as a result of trappers walking through vegetation or using willow cuttings to mark their traps is undetectable and insignificant. The creation of openings in heavy stands of aquatic vegetation can enhance habitat use by fish and wildlife.

Indirect impacts to wildlife nesting and breeding success can result from the removal of animals under a trapping program. In many instances, these impacts are positive. Reductions in populations of nest predators such as raccoon, fox, skunk, and mink have a limited positive impact on nesting birds. The degree to which predator management, through a public trapping program, benefits migratory bird production can vary widely depending on the timing of the removal of predators, size of the habitat block, habitat isolation (for example islands) and adjacent land use.

The removal of plant-eating species such as beaver and muskrat can have both positive and negative impacts on Refuge resources. Muskrats will dig bank dens into dikes of water management facilities causing considerable damage and add costs to operations of the Refuge. Beaver will sometimes plug water control structures causing damage, limiting access and compromising Refuge habitat management capabilities. Managing beaver and muskrat populations at reasonable levels through a public trapping program can reduce costs to the Refuge in wildlife management activities.

Habitat management can be enhanced, however, by these same animals. Muskrats build houses and dens using aquatic vegetation, thus creating openings available for fish, waterfowl, and other migratory birds. Beaver dams create ponded habitat, and their lodges are also associated with openings in aquatic vegetation beds. These benefits minimize the need to commit Refuge resources to achieve these habitat conditions.

When considering impacts to Refuge purposes, impacts of the trapping program obviously include those to the furbearer populations themselves. Individual animals are harvested and removed, yet State Departments of Natural Resources indicate furbearer populations, with exceptions, are stable to increasing (see above). Harvest data derived from trapper Fur Catch Reports indicate that

trapper efficiency has remained fairly constant despite fewer total animals trapped. Harvest data best reflect the number of trappers, trapping conditions, and fur prices.

Other public use of the Refuge during the trapping season is predominantly by waterfowl hunters. Conflicts between users vary throughout the Refuge. Encounters between trappers and hunters competing for the best sites most often occur early in the trapping season, prior to extensive ice cover, after which trappers are the predominant user group.

There has been a history of hunter/trapper conflict occurring in the Wisconsin portion of the Refuge; it was intense enough that between 1977 and 1998, the State had not opened trapping along the Mississippi River until after the close of the state duck hunting season. Change occurred following input from citizens, especially hunters and trappers, when the Refuge and Wisconsin Department of Natural Resources agreed to implement an earlier opening for trapping in the "Mississippi River Zone." Regulations in this area now allow mink and muskrat trapping to begin the day after the duck season closes or the second Monday in November, whichever occurs first, and goes through the last day of February. However, beaver trapping in that zone continues to begin the day after the final closure of the duck season and goes through March 15.

The success of this new trapping program rests with the hunter and trapper community. User conflicts can be avoided by trappers setting and checking traps on weekdays and during mid-day, checking with hunters before setting trap lines, and approaching hunters when ducks are not flying.

Public Review and Comment:

This Compatibility Determination will be submitted as a portion of the Refuge Draft Comprehensive Conservation Plan and Environmental Impact Statement. Public notification and review includes a notice of availability, 120-day comment period, media announcements, and a series of public meetings in selected communities adjacent to the Refuge.

Determination:

___ Use is Not Compatible

xx Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. Trapping activity must be conducted in compliance with existing State regulations.
2. Trappers must obtain a Special Use Permit to trap on the Refuge and comply with existing Refuge trapping, access, and public use regulations.
3. The Furbearer Trapping Plan must be revised by 2007, as called for the in the Refuge Comprehensive Conservation Plan.

Justification:

Furbearer trapping on the Refuge is a useful tool in maintaining balance between furbearers and habitat, and safeguarding Refuge infrastructure. High predator (raccoon and red fox) populations can decrease nest success of ground-nesting migratory birds, thus compromising a purpose of the Refuge. Other furbearers damage Refuge infrastructure, especially muskrats that excavate their dens in earthen dikes, and beaver that plug water control structures. Costs of repair require the Refuge to divert resources away from other management activities that otherwise meet the purposes of the Refuge.

Furbearer populations, with local exceptions, are stable or increasing in the four States in which the Refuge occurs. The Refuge's Fur Management Plan (1988) concludes that the trapping program does not have any appreciable negative impacts on furbearer populations. A study of muskrat

populations of Pool 9 Reno, Minnesota to 2 miles above Harpers Ferry, Iowa) in the early 1980s,“ showed the characteristic resiliency for the species with great reproductive capability and consistent survival.” The authors also found that muskrat distribution and harvest was not uniform, a conclusion since matched by mandatory trapper fur catch reports.

In view of the above, trapping of furbearers, with the stipulations previously described, will not materially interfere with or detract from the purposes of the Refuge and the mission of the Refuge System. Overall, managed furbearer trapping contributes to the purposes of the Refuge by maintaining vigor and health of furbearer populations and by safeguarding Refuge infrastructure critical to habitat for scores of fish and wildlife species.

This Compatibility Determination will be considered an interim document until the Refuge updates its existing Fur Management Plan of 1988, as called for in the draft Comprehensive Conservation Plan. The update process will invite public and agency comment on draft plans and will be accompanied by a new Compatibility Determination.

Signature: Refuge Manager: _____
(signature and date)

Concurrence: Regional Chief: _____
(signature and date)

Mandatory 10- or 15 year Re-evaluations Date: _____

DRAFT Compatibility Determination

Use: Tree harvest by third parties for habitat management purposes

Refuge Name: Upper Mississippi River National Wildlife and Fish Refuge (Refuge)

Establishing and Acquisition Authority(ies):

The Upper Mississippi River Wildlife and Fish Refuge was established by Public Law No. 268, 68th Congress on June 7, 1924. This act authorized acquisition of lands for Refuge purposes. Additional lands acquired in fee title by the U.S. Army Corps of Engineers are managed as part of the Refuge under a 1963 Cooperative Agreement between the Department of the Army and the Department of the Interior.

Refuge Purpose(s):

Per Public Law 268:

“The Refuge shall be established and maintained (a) as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and (b) to such extent as the Secretary of the Interior by regulations, prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and (c) to such extent as the Secretary of the Interior may, by regulations, prescribe a refuge and breeding place for fish and other aquatic animal life.”

National Wildlife Refuge System Mission:

“The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Description of Use:

The Refuge includes one of the largest contiguous areas of floodplain forest in the central United States. Forest inventories completed in recent years show a forest community dominated (> 80%) by silver maple. Other common tree species include: cottonwood, green ash, black willow, river birch, American elm, swamp white oak, bitternut hickory, and black walnut. The average tree age is between 50 and 70 years (UMRCC, 2002).

The Refuge will allow cutting and removal of trees (tree harvest) from the Refuge by third parties for the purpose of improving forest diversity and health through thinning, creating openings, or removal of invasive tree species. Harvest may include standing and fallen trees for personal-use firewood, and commercial timber harvest. Removal of trees that are a hazard to property and human safety will be permitted in specific circumstances. Tree harvest will be considered and may be permitted within most forested areas (51,000 acres) of the Refuge. The areas open to tree harvest and management strategies will be specified in a Forest Management Plan, or, handled on a case-by-case basis if needed pending plan completion. Any large-scale commercial harvest will be delayed until the Forest Management Plan is completed, or only after consultation and planning with professional foresters. Coordination with the Corps of Engineers will be an important part of harvest planning since Service-acquired and Corps-acquired lands are intermingled on the Refuge and the Corps retained forest management on lands they acquired.

The number of permittees during any one time period will vary, depending on planning and funding constraints, and resultant number of active management units, and to some extent, market interest. We estimate that up to five commercial permits (sales) may be active at one time. Interest in personal-use firewood is expected to increase in general, but interest in harvesting on the Refuge will be tempered by permit requirements, species available, and often difficult access.

Because much of the Refuge is river floodplain, access and working conditions are generally limited by river channels and hydric soils. Tree harvest will typically occur during winter or early spring, when frozen river channels and ground surface allow equipment access and wildlife and cultural resource disturbance will be minimized. Some small scale personal use tree harvest may be permitted during other periods depending on circumstances.

Availability of Resources:

Periodic and small-scale harvest operations can be adequately administered with existing staff resources. Large-scale operations affecting many acres will have to be deferred until staff and funding is available due to the additional planning and permit administration and oversight required (bid process, bonding, permittee selection, inspection of field work, etc.). In some cases, resource partners like the Corps of Engineers, with their staff of foresters and technicians, will be able to assist with this extra workload. Any permit fees or timber sale receipts will not off-set costs since these funds are deposited in general accounts and not returned to the Refuge.

Anticipated Impacts of the Use:

Because of the large area of the Refuge on which this activity will occur, most wildlife species may be affected by tree harvest activities. Key waterfowl using tree cavities for nesting include wood duck and hooded merganser. Many other bird species use forested habitat for nesting, roosting, protective cover, or feeding. Examples of important species include: bald eagle, great blue heron, great egret, red-shouldered hawk, barred owl, prothonotary warbler, several woodpecker species, and many passerine bird species. The Upper Mississippi River corridor, 261 miles of which is encompassed by the Refuge, provides habitat critical to the successful migration of many bird species. The forests are also important to a variety of mammals, reptiles and amphibians, insects, and flowering plants. Carefully managed harvest will provide long-term benefits to wildlife and plants by improving overall forest diversity and health. During harvest activities, wildlife will be displaced to adjacent areas, although this disturbance is not likely to have a measurable impact and will be mitigated by timing and duration of harvest.

Potential adverse impacts include: short-term loss of site-specific habitats; short-term fragmentation of the landscape with resulting impact to bird use and productivity; loss of dead whole trees on the ground; soil disturbance that may increase exotic plant invasion and erosion; damage to roads and wetlands from equipment; damage to cultural resources; reduced visual esthetics; and disturbance to wildlife and visitors from cutting operations. These impacts are generally short-term in nature and on relatively small areas, and can be controlled to a large extent by permit conditions and management oversight. Required cultural resource surveys and actions will be conducted as determined in consultation with the Service's Regional Historic Preservation Officer.

Potential positive impacts include: restoration, maintenance and enhancement of forest habitats; and increased or maintained forest habitat diversity (age, species, and structure).

Public Review and Comment:

This Compatibility Determination will be submitted as a portion of the Refuge Draft Comprehensive Conservation Plan and Environmental Impact Statement. Public notification and review includes a notice of availability, 120-day comment period, media announcements, and a series of public meetings in selected communities adjacent to the Refuge.

Determination:

Use is Not Compatible

Use is Compatible With Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. Any tree cutting must meet specific habitat and related wildlife objectives and contribute to the purposes of the Refuge.
2. Special use permits will be issued by District Managers and list special conditions that must be met to avoid or minimize adverse impacts to habitat, fish and wildlife resources, cultural resources, and the visiting public.
3. In most cases, large-scale tree harvest will be deferred until completion of a Forest Management Plan which will identify management units, desired habitat goals/objectives, and management strategies, thus ensuring best management practices and predicted outcome. If opportunity or need warrants action prior to plan completion, the Refuge will consult professional foresters from other refuges, Corps of Engineers, or other agencies before proceeding.

Justification:

The series of dams and resultant impoundments created to accomplish the 9 foot navigation project within the Refuge has significantly changed the floodplain forest. The diverse forest community that existed when the Refuge was established has been adversely affected by increased surface and ground water levels, and frequent flooding. The pre-lock and dam forest has given way to a more monotypic forest, dominated by silver maple. The current forest is even aged, growing old, and in many cases not regenerating itself. Reed canary grass is replacing formerly forested areas. If current trends continue, there could be marked loss of forest within the Refuge and throughout the floodplain, and a marked decline in the diversity and abundance of species which depend on floodplain forest for all or part of their life-cycle requirements.

Prescribed forest management practices, including harvest, are key to reversing this downward trend. Using third parties to accomplish harvest is efficient, and perhaps the only realistic way to accomplish prescriptions given the labor-intensive nature of tree harvest. Harvest will only be done to meet specific forest health and wildlife objectives, and thus will only be allowed when it meets the threshold of contributing to Refuge purposes.

Adverse impacts from harvest will be short-term in nature and more than off set by the long-term gains in wildlife and plant benefits. Taken in this long-term context, harvest of trees will not materially interfere with the purposes of the Refuge or the mission of the Refuge System.

Signature: Refuge Manager: _____
(signature and date)

Concurrence: Regional Chief: _____
(signature and date)

Mandatory 10- or 15 year Re-evaluations Date: _____

Appendix F: Cooperative Agreement with Corps of Engineers

AMENDED
COOPERATIVE AGREEMENT
Between the
Department of the Army, Corps of Engineers
and the
Department of the Interior, U.S. Fish and Wildlife Service

This amendment made and entered into this _____ day of _____, 2001, between the Department of the Army through the Corps of Engineers, hereinafter referred to as the Corps, and the Department of the Interior through the U.S. Fish and Wildlife Service, hereinafter referred to as the Service, amends the Cooperative Agreement between the parties dated February 14, 1963;

WHEREAS the United States through the Corps, has acquired certain lands in fee for the improvement of navigation in the Upper Mississippi River to provide a 9-foot channel from the Missouri River to Minneapolis, and portions of the Illinois River, hereinafter referred to as the Navigation Project, and

WHEREAS, pursuant to Section 3 of the Fish and Wildlife Coordination Act (48 Stat. 401 as amended by 60 Stat. 1080 and 72 Stat. 563; 16 U.S.C. 661 et seq.), lands shall be made available to the Service, consistent with navigation as the primary purpose of the Project, for the conservation, maintenance, and management of fish and wildlife and its habitat. There have been General Plans formulated for the use of lands and waters of the Navigation Project for fish/wildlife conservation and management and the same have been approved by the Secretary of the Army, the Secretary of the Interior, and the heads of the State agencies exercising administration over fish and wildlife resources within the States of Illinois, Iowa, Minnesota, Missouri, and Wisconsin. Certain segments of the land subject to this Amended Agreement, as indicated in the General Plan, may be allocated to the States of Illinois, Iowa, Missouri, Minnesota, and Wisconsin for conservation management through subsequent agreements between the Service and those states, and

WHEREAS the Corps cannot abrogate its stewardship role for the conservation, maintenance, and management of fish and wildlife and its associated habitats as required by subsequent legislation such as, but not limited to the National Environmental Policy Act, Comprehensive Environmental Response, Compensation and Liability Act, the Forest Cover Act, the Historic Preservation Act, and as directed by Agency policy, guidance and regulations for the Corps' stewardship role for the conservation, maintenance, and management of these natural resources, and

WHEREAS the Corps and the Service shall continue to foster and maintain partnerships through specific regional working groups for addressing Navigation project issues that impact the conservation, maintenance and management of fish/wildlife resources specific to the lands addressed by the Amended Agreement.

Now therefore, in accordance with the aforesaid Section 3 of the Fish and Wildlife Coordination Act and the aforesaid General Plans, the Corps and Service hereby amend the Cooperative Agreement of February 14, 1963.

The Corps pursuant to the language of the third paragraph of the first page of this amendment hereby makes available to the Service the land and water areas of the Navigation Project substantially as identified on the exhibits attached to the General Plans referred to above, and by reference made a part hereof, for the conservation, maintenance, and management of fish/wildlife resources thereof, and its habitat thereon, in connection with the national migratory bird management and other fish/wildlife species programs in accordance with said General Plans. The Service shall manage these lands consistent with the National Wildlife Refuge System. This Amendment to the Cooperative Agreement of February 14, 1963 shall be subject to the provisions and conditions of the said General Plans and to the following additional conditions:

Paragraph 1 of the Cooperative Agreement is amended to read:

1. The Corps reserves all rights in and to the lands above described, which are not herein specifically granted, including, but not limited to, the operation and maintenance of the Navigation Project for its primary purpose of navigation. The Corps agrees that in fulfilling this primary purpose and other stewardship roles, as required by law and defined within Corps policies and regulations, that operation and maintenance activities will be carried out in accordance with current approved documents such as Master Plans, Operational Management Plans and Channel Maintenance Plans, and any future agency directive or legal requirement specific to the continued operation and maintenance of the Navigation Project.

Paragraph 2 of the Cooperative Agreement is amended to read:

2. The use and occupation of the said premises shall be without cost or expense to the Corps, under the general supervision of the Division Engineer, U.S. Army Division, Mississippi Valley Division, Vicksburg, Mississippi, herein after referred to as the "Division Engineer," and subject also to such rules and regulations in the interest of navigation and flood control as the Corps may from time to time prescribe.

Paragraph 3 of the Cooperative Agreement is amended to read:

3. Any damage to the property above described which results as an incident to the exercise of the privileges herein granted, shall be promptly corrected by the Service to the satisfaction of the Division Engineer. The Service will post appropriate project boundary lines, while the Corps will provide survey data, to the extent that it is available, for this purpose. The Service shall also take appropriate action to prevent and resolve minor trespass or unauthorized use of said property. The Service shall immediately report instances of unauthorized land use or serious trespass to the appropriate Corps Project Office. The Corps and Service shall coordinate enforcement efforts or legal actions taken against those responsible.

Paragraph 4 of the Cooperative Agreement is amended to read:

4. The exercise of the privileges granted shall in no way interfere with navigation and shall be subject at all times, without approval of the Service, to the occupation and use by the public for specific and related Navigation Project purposes and by the Corps for navigation, flood control, and all other Navigation Project related purposes, including, but not limited to, change in water surface elevations, dredging and placement of dredged material there from, and construction of training works, bank protection, and navigation aids.

Paragraph 5 of the Cooperative Agreement is deleted.

Paragraph 6 of the Cooperative Agreement is deleted.

Paragraph 7 of the Cooperative Agreement is amended to read:

7. It is understood that the privileges hereby granted do not preclude the necessity of obtaining from the Corps permits for work and structures in, under or over navigable waters as may be required under the provisions of Section 404 of the Clean Water Act of 1977, or Section 10 of the Rivers and Harbors Act of 1899, as amended,

Paragraph 8 of the Cooperative Agreement is amended to read:

8. No significant additions to or alterations of the premises, such as buildings, bridges, pump stations, roads, etc., shall be made by the Service without prior written consent of the appropriate District Engineer unless included in the Refuge Comprehensive Conservation Plan approved by the agencies.

Paragraph 9 of the Cooperative Agreement is amended to read:

9. In accordance with the aforesaid General Plans, authority to administer the lands and waters covered by this agreement may be delegated to the heads of the State agencies exercising administration over the wildlife resources of the aforesaid

States by cooperative agreements entered into pursuant to the provisions of Sections 1 and 4 of the said Fish and Wildlife Coordination Act. Copies of each such agreement, revisions, or amendments shall be furnished to the Division and District Engineers, respectively, promptly upon execution.

Paragraph 10 of the Cooperative Agreement is amended to read:

10. In development of lands described for public and agency use, as identified on the exhibits attached to the general plans referenced above, the Corps may in accordance with approved management plans and other appropriate agency documents, develop public use facilities or issue leases, licenses, and easements for the same purpose, issue special use licenses authorizing non-exclusive private uses which do not interfere with public use of areas involved, maintain and construct access roads, and issue outgrants. As appropriate, these actions will be coordinated with the Service and appropriate States to insure agency involvement and input into the Corps processes for implementation of these actions. During the development and implementation of these actions, the Service and States will be given the opportunity to provide recommendations regarding perceived impacts of the actions on the lands and waters defined by this amended agreement. The instruments provided for in this condition shall be issued only by the Corps and shall contain appropriate provisions prescribed by the Service regarding fish/wildlife management, including the continuing rights of the Service to post and patrol to enforce hunting regulations; however, the Service shall not have the right to deny access to or use of planned and developed, Corps-managed public use areas. Any planned developments for public and agency use shall address appropriate provisions prescribed by the Service regarding fish/wildlife management

Paragraph 11 of the Cooperative Agreement is deleted.

Paragraph 12 of the Cooperative Agreement is deleted.

Paragraph 13 of the Cooperative Agreement is amended to read:

13. The use of all agricultural treatments on lands covered hereunder shall be in compliance with laws, rules, and regulations administered by the Department of Agriculture and applicable to this type of land; provided that no part of the foregoing shall be construed as prohibiting the use of sharecrop agreements. All agricultural crops accruing to the Service or the pertinent States shall be used exclusively for wildlife, or wildlife habitat management purposes on the described lands, and for no other purpose. In the event that all the yield thus made available for wildlife or habitat management is not used for that purpose, the Service or the States shall, in order to avoid waste, sell for cash the remainder thereof in such a manner as to protect the public interest. Pursuant to Section 4 of the Act of Congress approved 22 December 1944, as amended (76 Stat. 1195; 16 U.S.C. 460d), all proceeds from the disposal of surplus production may be used by the Service or States in the development, conservation, management, and utilization of such lands; provided, that any balance of proceeds, not so utilized shall be paid to the Division Engineer at five-year intervals. In connection therewith, the Service shall establish and maintain adequate accounts and render statement of receipts and expenditures to the Division and District Engineers in an annual report that will be furnished not later than 30 calendar days prior to the scheduled annual meeting.

Paragraph 14 of the Cooperative Agreement is amended to read:

14. The Service shall administer and maintain the premises made available for wildlife conservation and management in accordance with current approved management plans for both agencies. An annual coordination meeting shall be organized by the Service each year on or before April 1 with each of the three Corps Districts (St. Louis, Rock Island, and St. Paul) and the states managing General Plan lands subject to this Agreement (Illinois, Iowa, and Missouri). The contents of the meeting shall include information specific to any changes and activities during the previous calendar year and information concerning proposed future projects. Issues covered shall include, but not be limited to, those management issues listed below:

(a) Boundary Management problems, including actions to address trespass or unauthorized uses;

(b) Report of completed construction and improvements, including project costs;

(c) Report of planned future construction, as approved in existing management plans;

(d) Report of conceived changes in management strategy;

(e) Cropland acreage utilized; amount of crop that was deemed excess to wildlife management needs including amount of receipts for sale of such crops; and amount and nature of expenditures derived from surplus crop funds;

(f) The Service liaison for the Agreement will consolidate a concise written annual report from the material presented at the meeting for submission to the Corps;

Paragraph 15 of the Cooperative Agreement is amended to read:

15. This agreement may be suspended or revoked at the discretion of the Department of the Army in case of national emergency or disaster declared by the President of the United States. In the event that problems are identified in compliance with any of the terms and conditions of this agreement, the following dispute resolution procedures will be followed:

(a) Service Refuge Managers and Corps District Operations Managers will meet to discuss the pertinent issue and seek resolution;

(b) In the event that informal efforts to resolve the issue at the field level are not successful, the appropriate Service Assistant Regional Director will meet with the appropriate District Engineer to seek written resolution; and

(c) Finally, if the matter remains unresolved, it will be referred to the Division Engineer whose decision will be final.

Paragraph 16 of the Cooperative Agreement is amended to read:

16. This agreement may be relinquished by the Service at any time by giving to the Division Engineer at least one-year's notice in writing.

Paragraph 17 of the Cooperative Agreement is amended to read:

17. If this agreement is relinquished or revoked as provided above, the Service shall vacate the premises, remove all property of the Service there from, and subject to the availability of funds, restore the premises to a condition satisfactory to the Division Engineer, ordinary wear and tear and damages beyond the control of the Service excepted, within such time as the Secretary of the Army may designate.

Paragraph 18 of the Cooperative Agreement is deleted.

The following paragraph is added to the Cooperative Agreement :


19. The Corps retains responsibility to provide protection of forest or other vegetative cover on reservoir areas, including navigation projects, in compliance with P.L. 86-717, the Forest Cover Act, and to establish and maintain other conservation measures on these areas. Corps management programs are to promote future resources and to increase the value of such areas for conservation, recreation, and other beneficial uses, provided that management is compatible with other uses of the project. The development of plans or other natural resource management activities will be coordinated with the Service for input and review of impacts of proposed actions on wildlife management use of the project. The Service will identify forest habitat goals and objectives in Refuge Comprehensive Conservation Plans to provide guidance to the Corps in this partnership effort. Revenue from sale of any timber in conjunction with the Forest Cover Act Program shall be credited to the Corps.


The following paragraph is added to the Cooperative Agreement :

20. The Corps retains the right to use and/or improve existing roads as a means of ingress and egress to and from the Mississippi River and to any areas that the Corps administers.

5 Jul 01
(Date)

7/31/01
(Date)


By EDWIN J. ARNOLD, JR.
Brigadier General, U. S. Army
Division Engineer
Mississippi Valley Division


By WILLIAM F. HARTWIG
Regional Director, Region 3
U.S. Fish And Wildlife Service
Department of the Interior

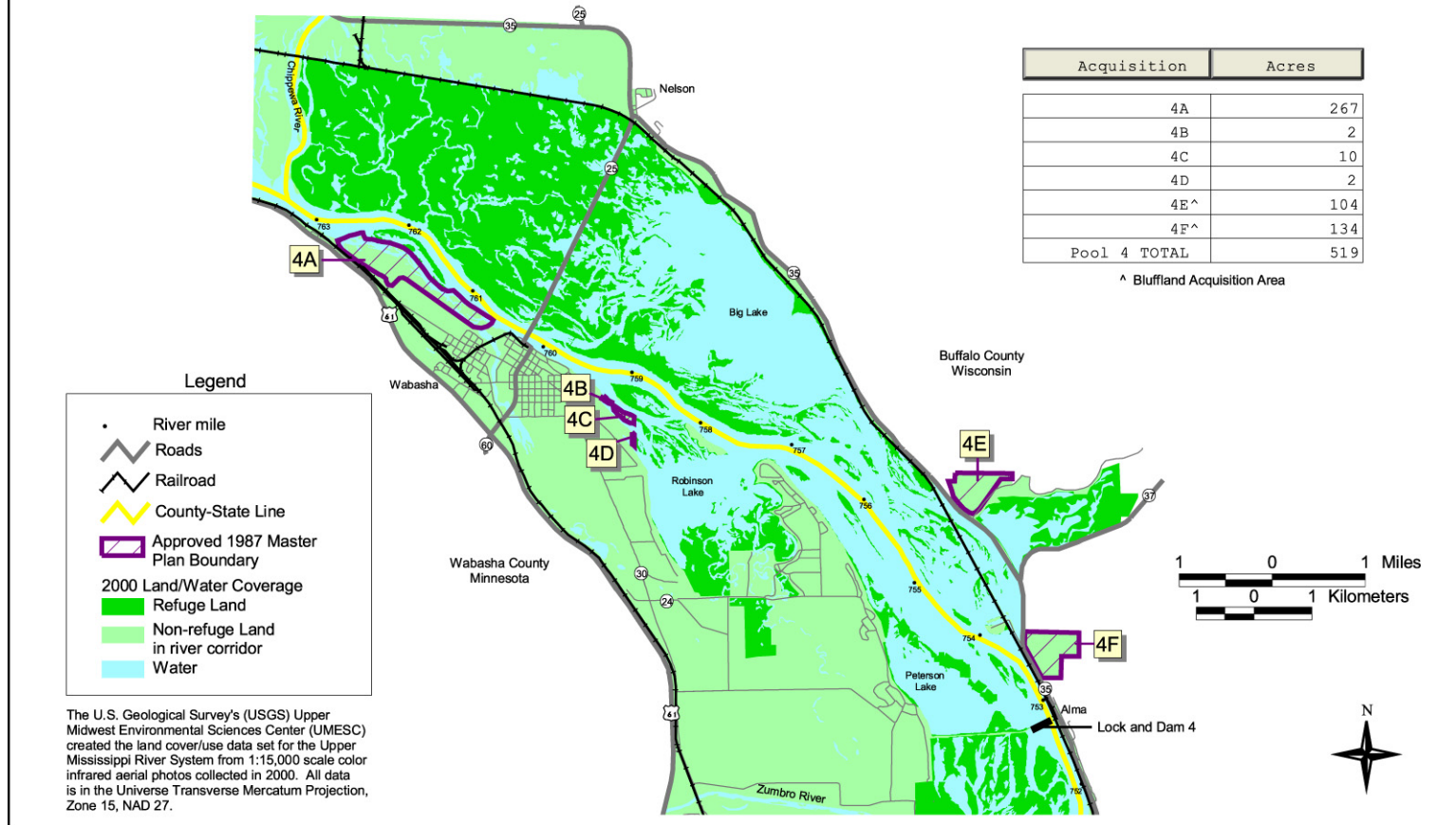
Marvin E. Moriarty
Acting Regional Director *for*

Appendix G: Land Acquisition Maps

The following maps show potential land protection areas by pool. All tracts depicted are within the authorized Refuge boundary as approved in the 1987 Master Plan, the Halfway Creek Preliminary Project Proposal, and the Lost Mound Unit Memorandum of Agreement (Savanna Army Depot).

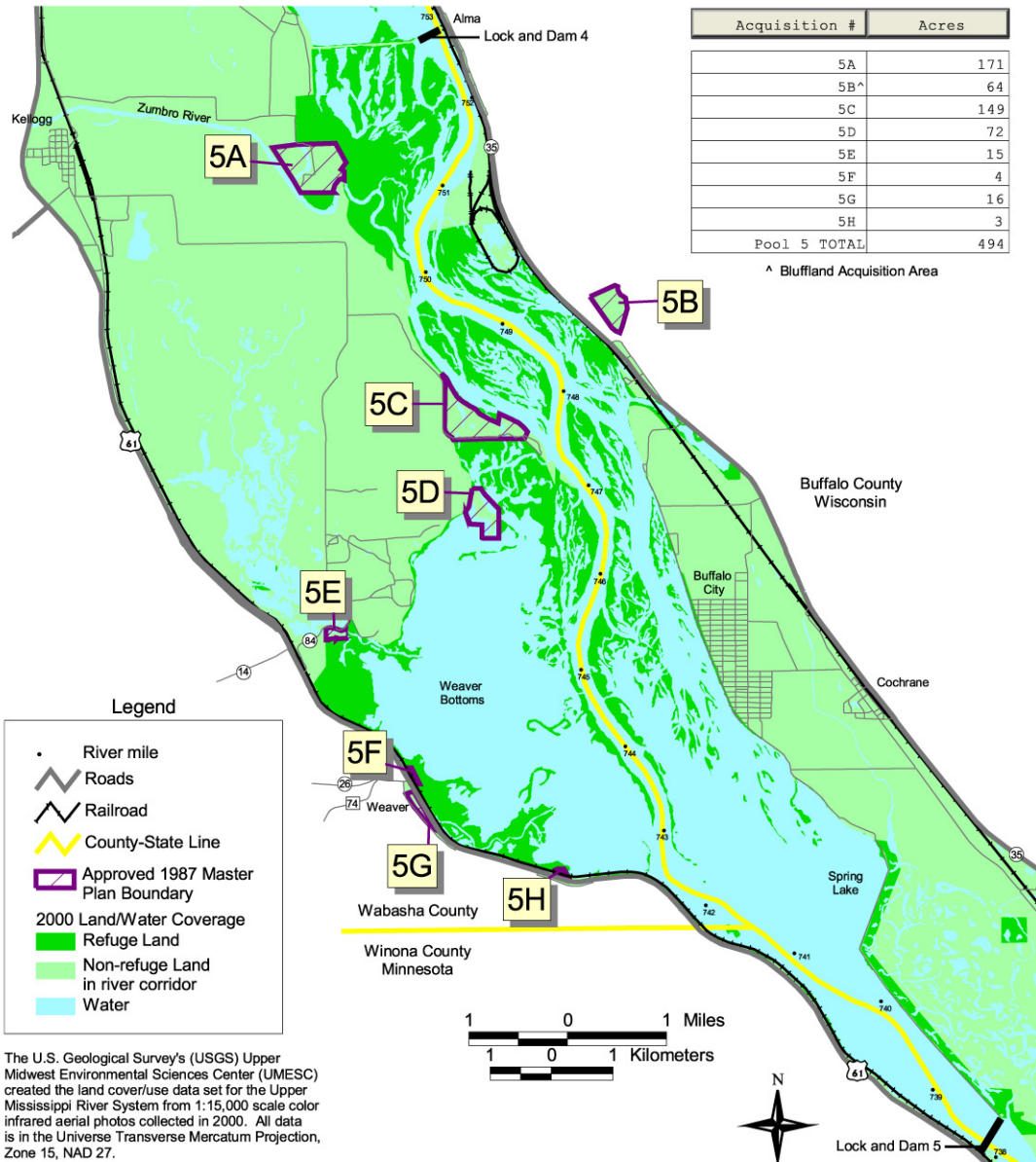
Potential Land Protection* Areas, Pool 4, within the Authorized Refuge Boundary, Upper Mississippi River National Wildlife and Fish Refuge.

* Protection options may include: fee title and conservation easement acquisitions (willing sellers only), and cooperative efforts with state and non-governmental organizations.



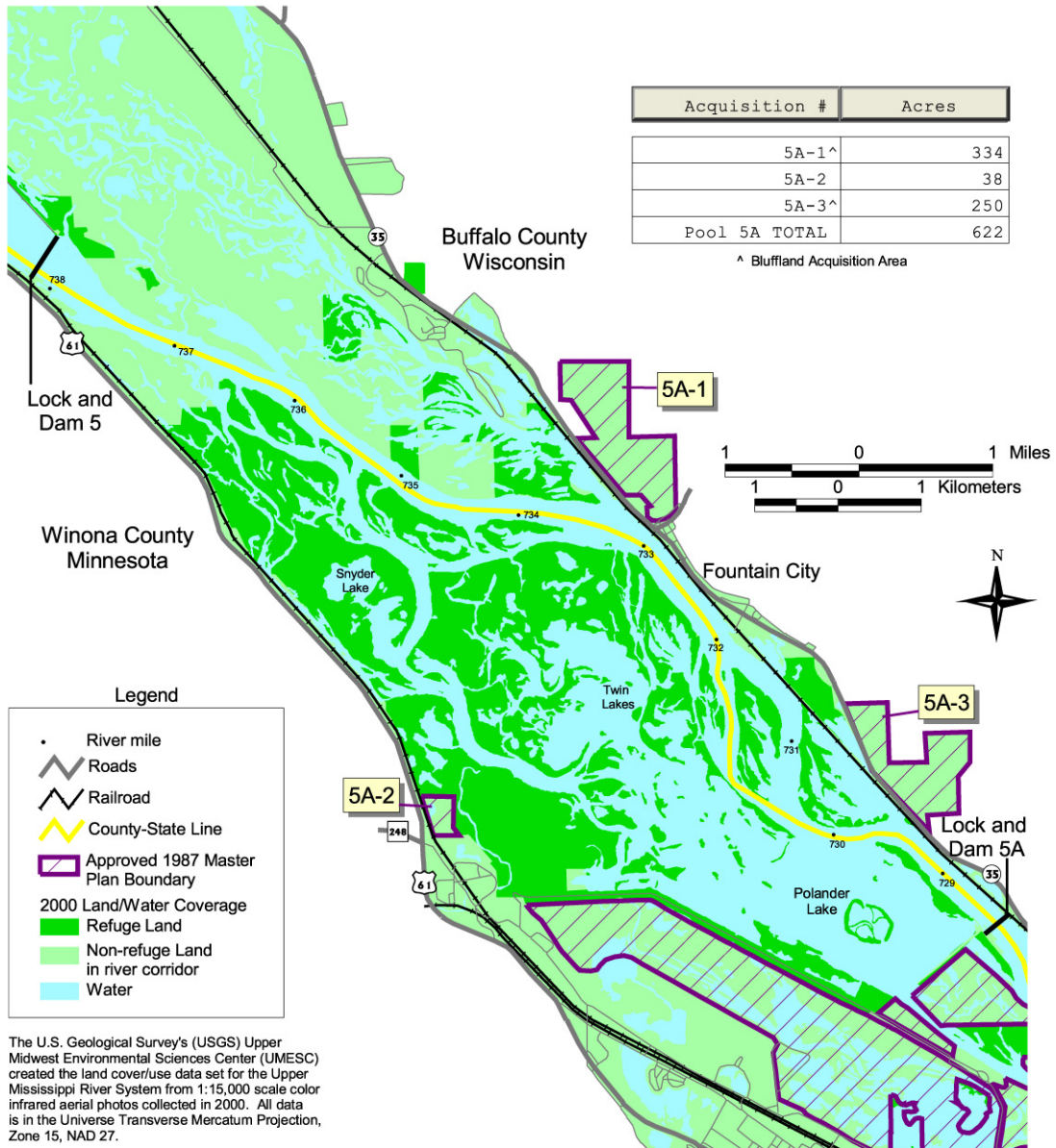
Potential Land Protection* Areas, Pool 5, within the Authorized Refuge Boundary, Upper Mississippi River National Wildlife and Fish Refuge.

* Protection options may include: fee title and conservation easement acquisitions (willing sellers only), and cooperative efforts with state and non-governmental organizations.



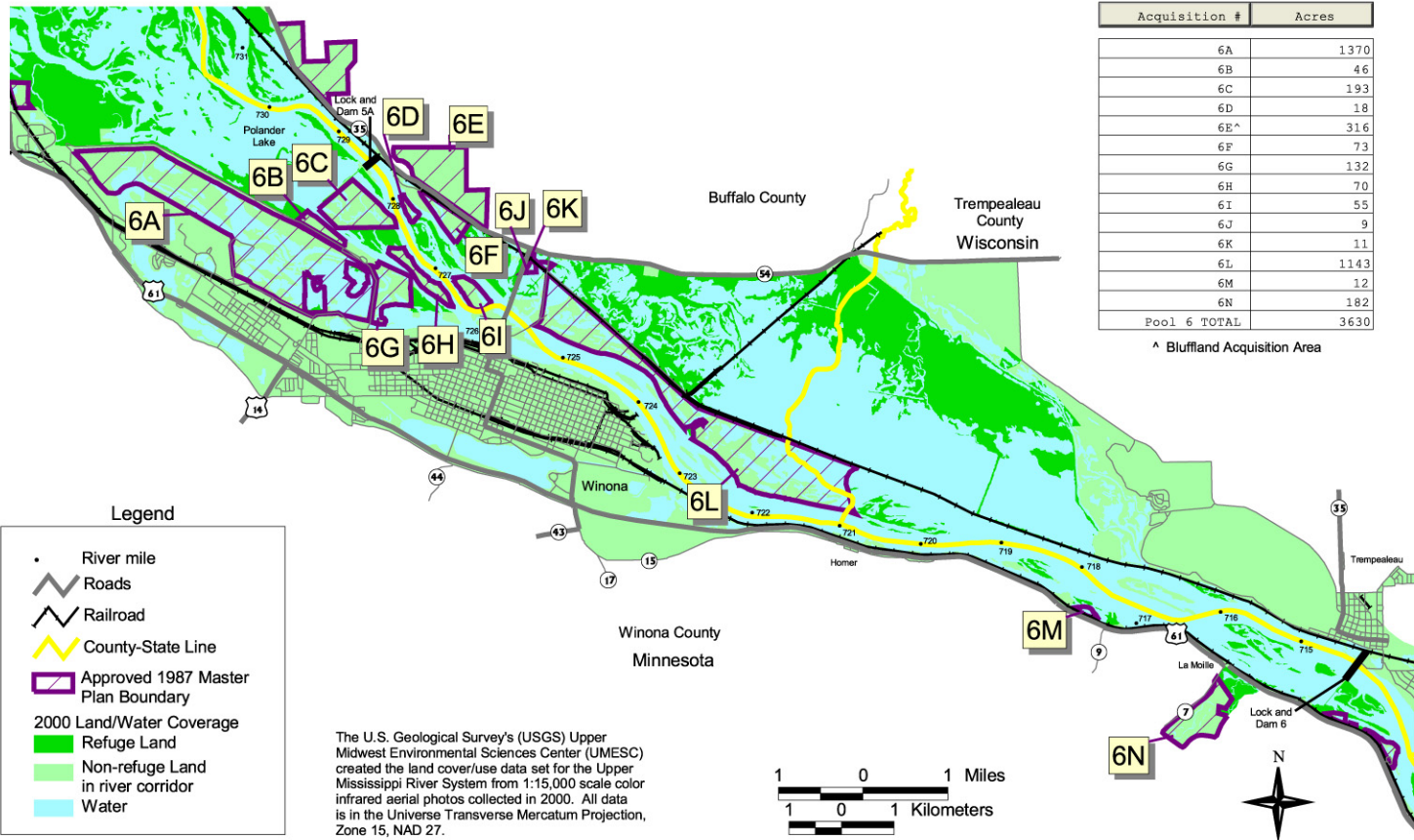
Potential Land Protection* Areas, Pool 5A, within the Authorized Refuge Boundary, Upper Mississippi River National Wildlife and Fish Refuge.

* Protection options may include: fee title and conservation easement acquisitions (willing sellers only), and cooperative efforts with state and non-governmental organizations.

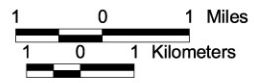


Potential Land Protection* Areas, Pool 6, within the Authorized Refuge Boundary, Upper Mississippi River National Wildlife and Fish Refuge.

* Protection options may include: fee title and conservation easement acquisitions (willing sellers only), and cooperative efforts with state and non-governmental organizations.



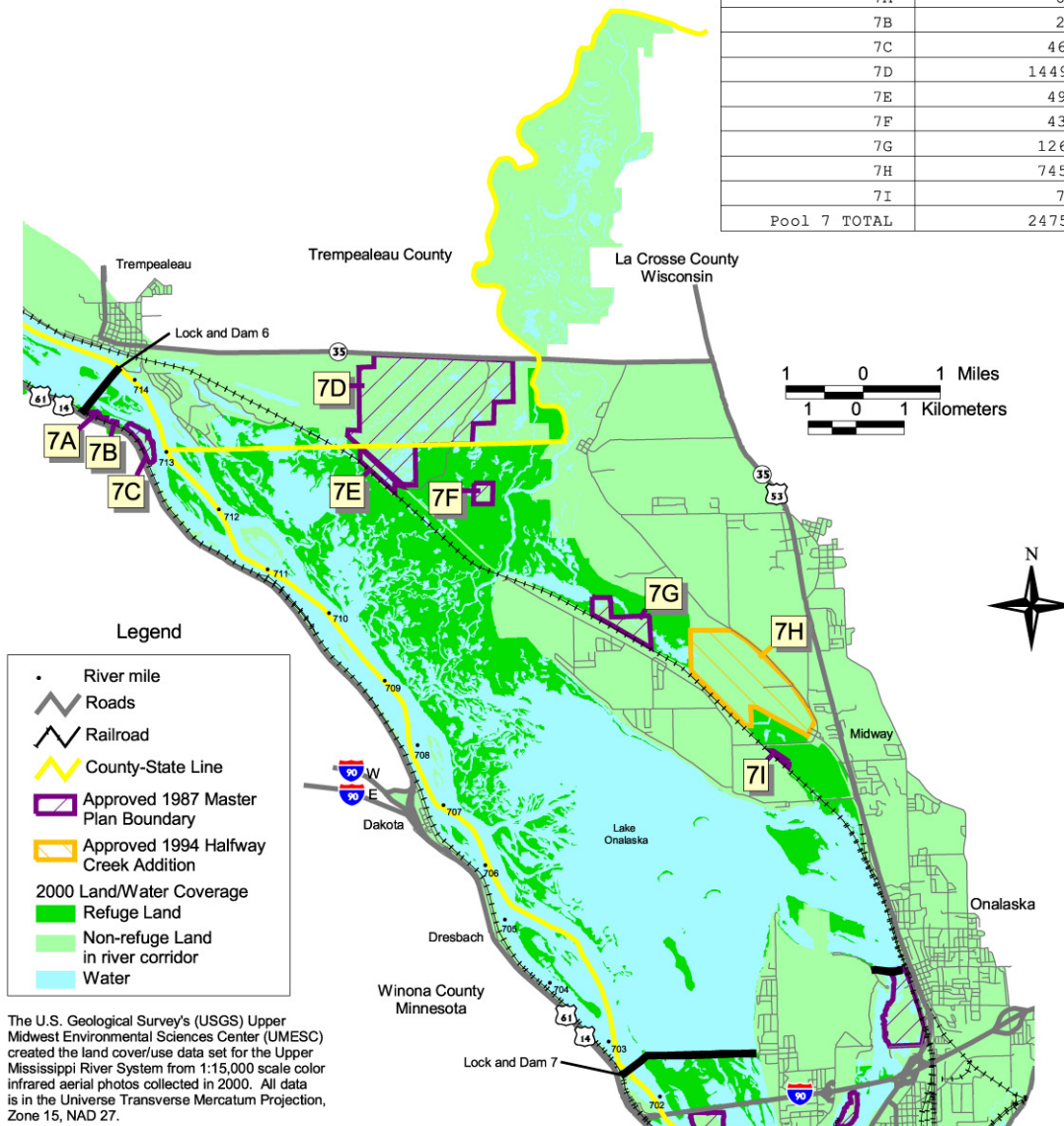
The U.S. Geological Survey's (USGS) Upper Midwest Environmental Sciences Center (UMESC) created the land cover/use data set for the Upper Mississippi River System from 1:15,000 scale color infrared aerial photos collected in 2000. All data is in the Universe Transverse Mercatum Projection, Zone 15, NAD 27.



Potential Land Protection* Areas, Pool 7, within the Authorized Refuge Boundary, Upper Mississippi River National Wildlife and Fish Refuge.

* Protection options may include: fee title and conservation easement acquisitions (willing sellers only), and cooperative efforts with state and non-governmental organizations.

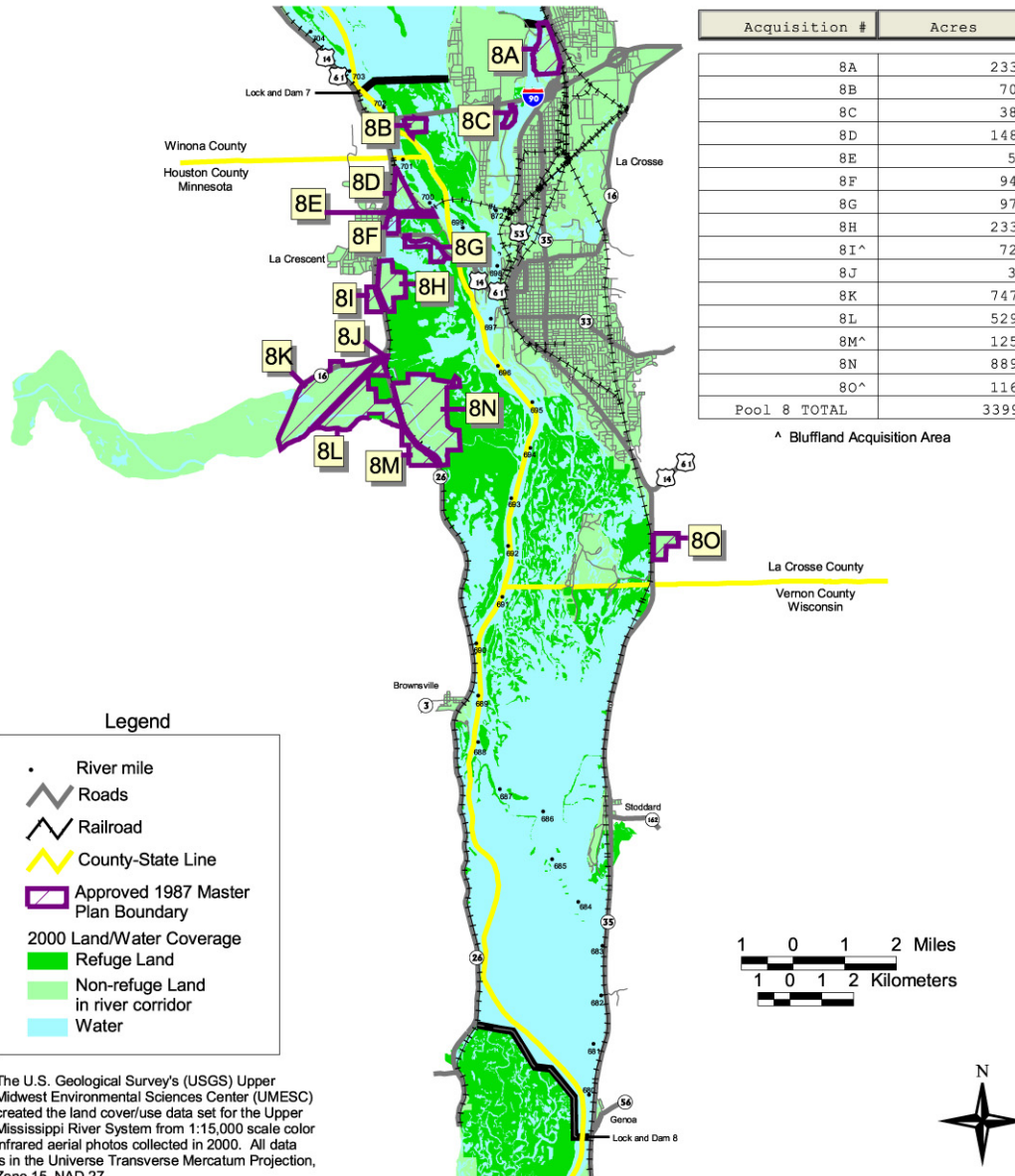
Acquisition #	Acres
7A	8
7B	2
7C	46
7D	1449
7E	49
7F	43
7G	126
7H	745
7I	7
Pool 7 TOTAL	2475



The U.S. Geological Survey's (USGS) Upper Midwest Environmental Sciences Center (UMESC) created the land cover/use data set for the Upper Mississippi River System from 1:15,000 scale color infrared aerial photos collected in 2000. All data is in the Universal Transverse Mercator Projection, Zone 15, NAD 27.

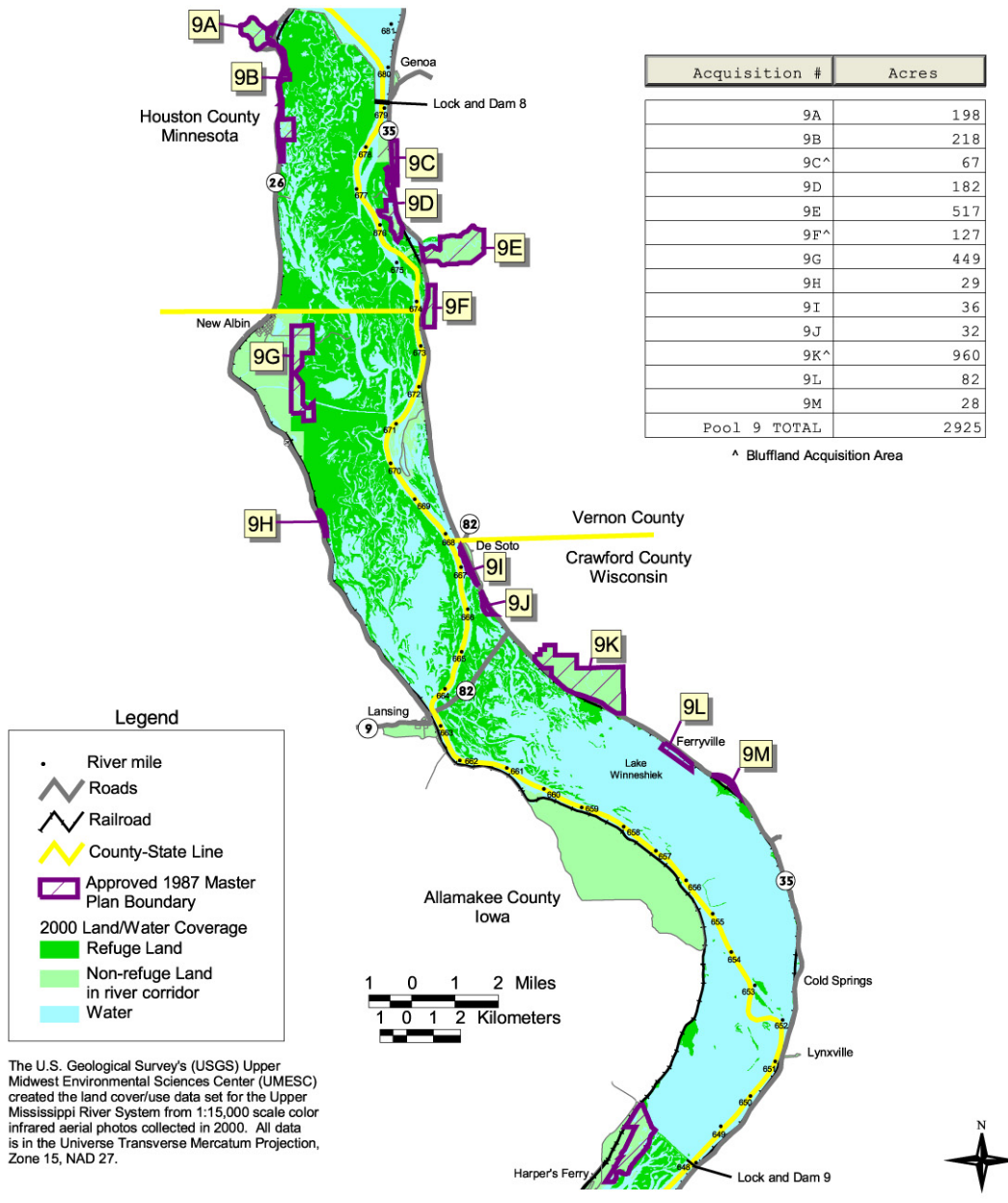
Potential Land Protection* Areas, Pool 8, within the Authorized Refuge Boundary, Upper Mississippi River National Wildlife and Fish Refuge.

* Protection options may include: fee title and conservation easement acquisitions (willing sellers only), and cooperative efforts with state and non-governmental organizations.



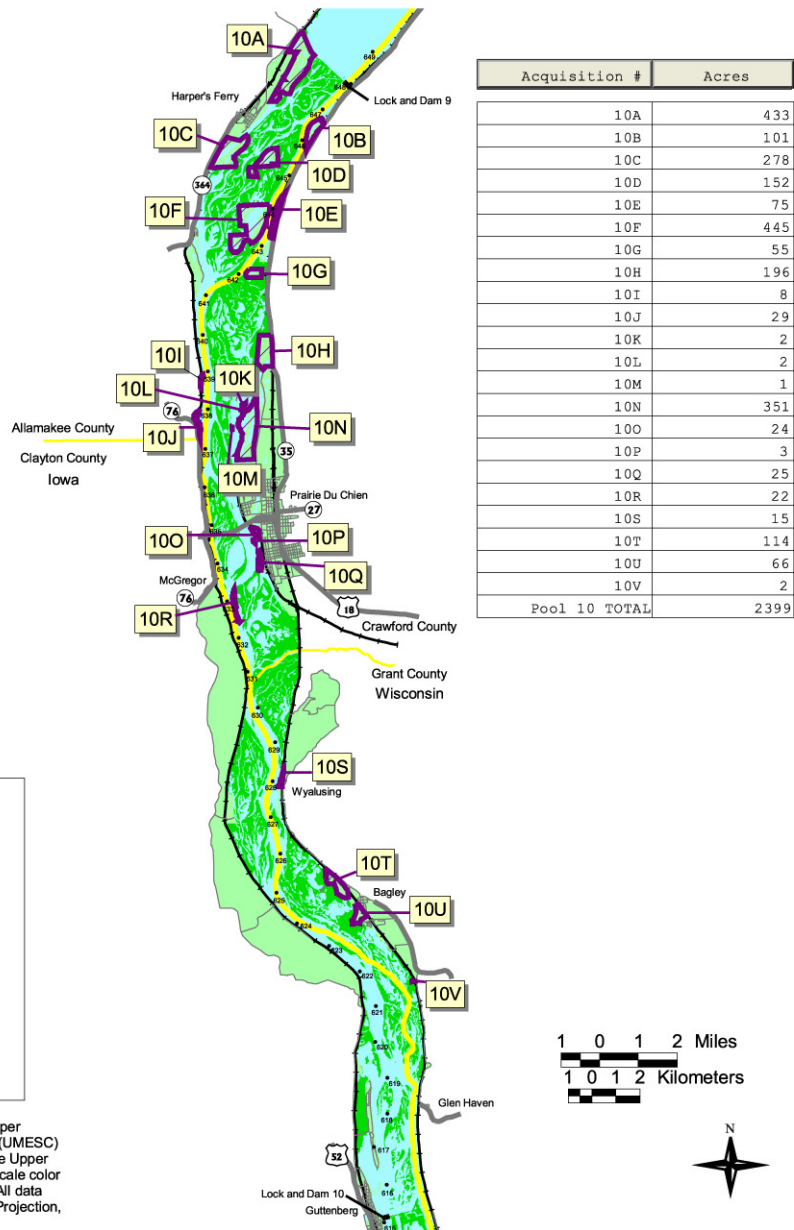
Potential Land Protection* Areas, Pool 9, within the Authorized Refuge Boundary, Upper Mississippi River National Wildlife and Fish Refuge.

* Protection options may include: fee title and conservation easement acquisitions (willing sellers only), and cooperative efforts with state and non-governmental organizations.



Potential Land Protection* Areas, Pool 10, within the Authorized Refuge Boundary, Upper Mississippi River National Wildlife and Fish Refuge.

* Protection options may include: fee title and conservation easement acquisitions (willing sellers only), and cooperative efforts with state and non-governmental organizations.



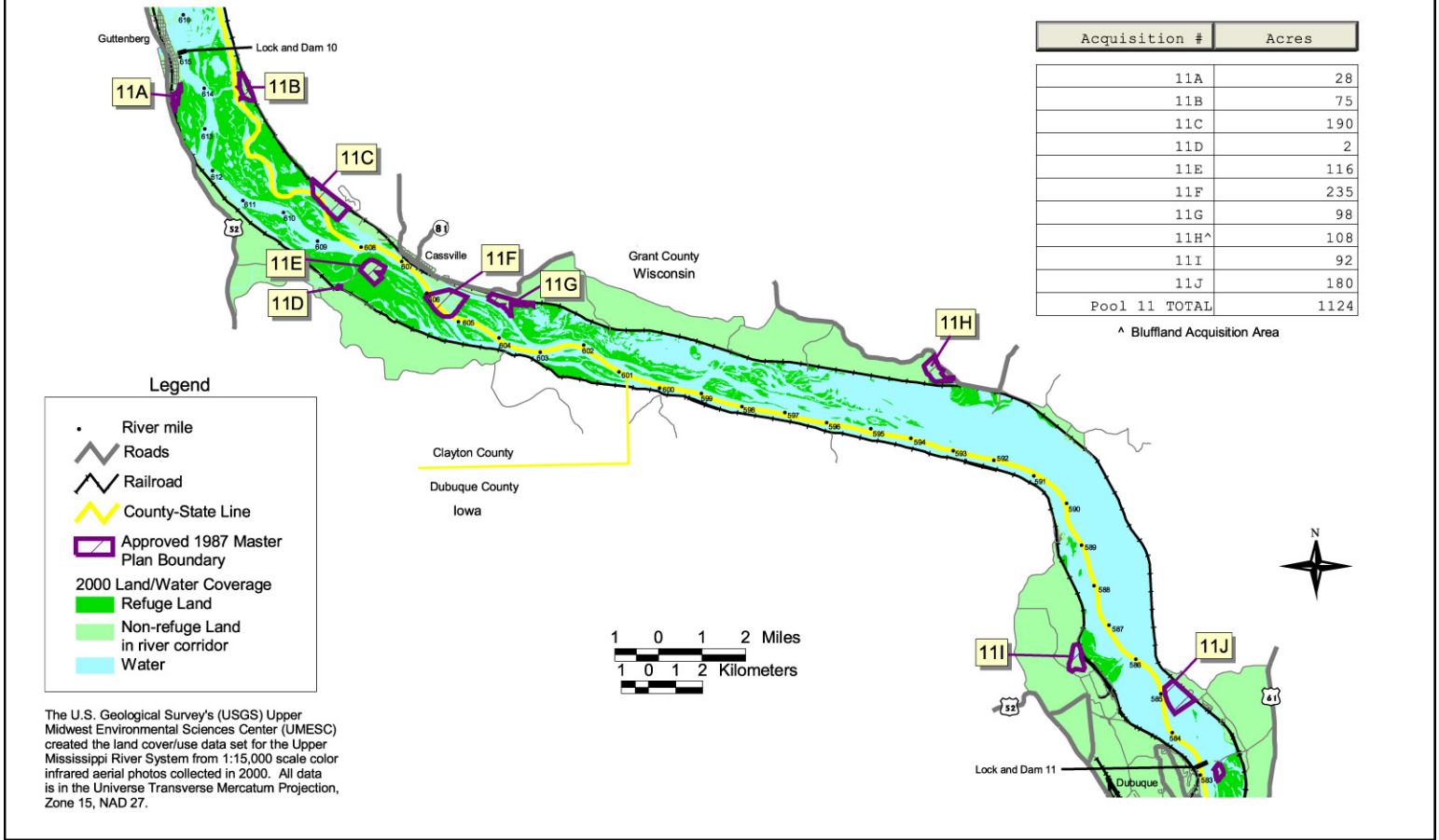
Legend

- River mile
- Roads
- Railroad
- County-State Line
- Approved 1987 Master Plan Boundary
- 2000 Land/Water Coverage
- Refuge Land
- Non-refuge Land in river corridor
- Water

The U.S. Geological Survey's (USGS) Upper Midwest Environmental Sciences Center (UMESC) created the land cover/use data set for the Upper Mississippi River System from 1:15,000 scale color infrared aerial photos collected in 2000. All data is in the Universe Transverse Mercatum Projection, Zone 15, NAD 27.

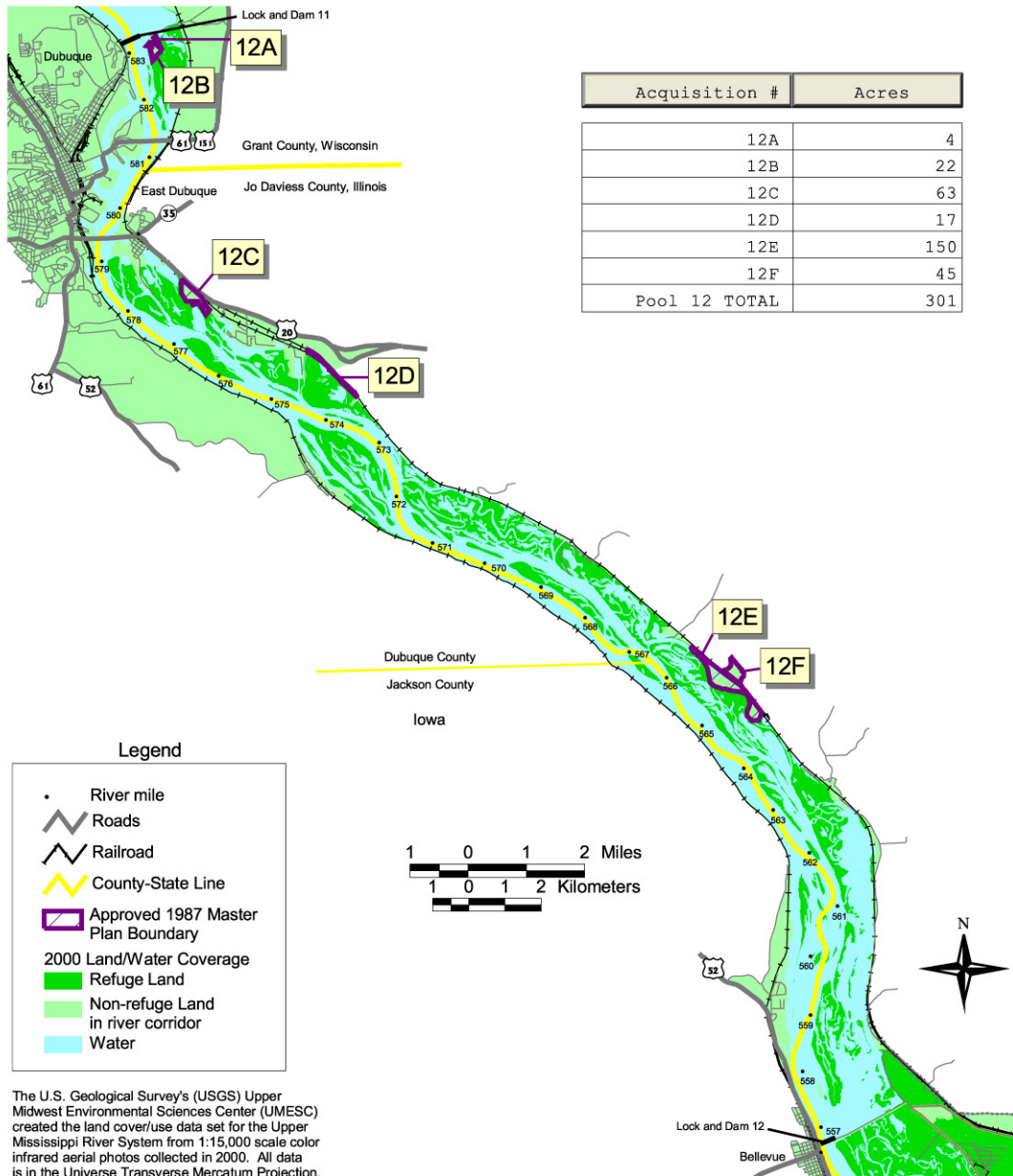
Potential Land Protection* Areas, Pool 11, within the Authorized Refuge Boundary, Upper Mississippi River National Wildlife and Fish Refuge.

* Protection options may include: fee title and conservation easement acquisitions (willing sellers only), and cooperative efforts with state and non-governmental organizations.



Potential Land Protection* Areas, Pool 12, within the Authorized Refuge Boundary, Upper Mississippi River National Wildlife and Fish Refuge.

* Protection options may include: fee title and conservation easement acquisitions (willing sellers only), and cooperative efforts with state and non-governmental organizations.



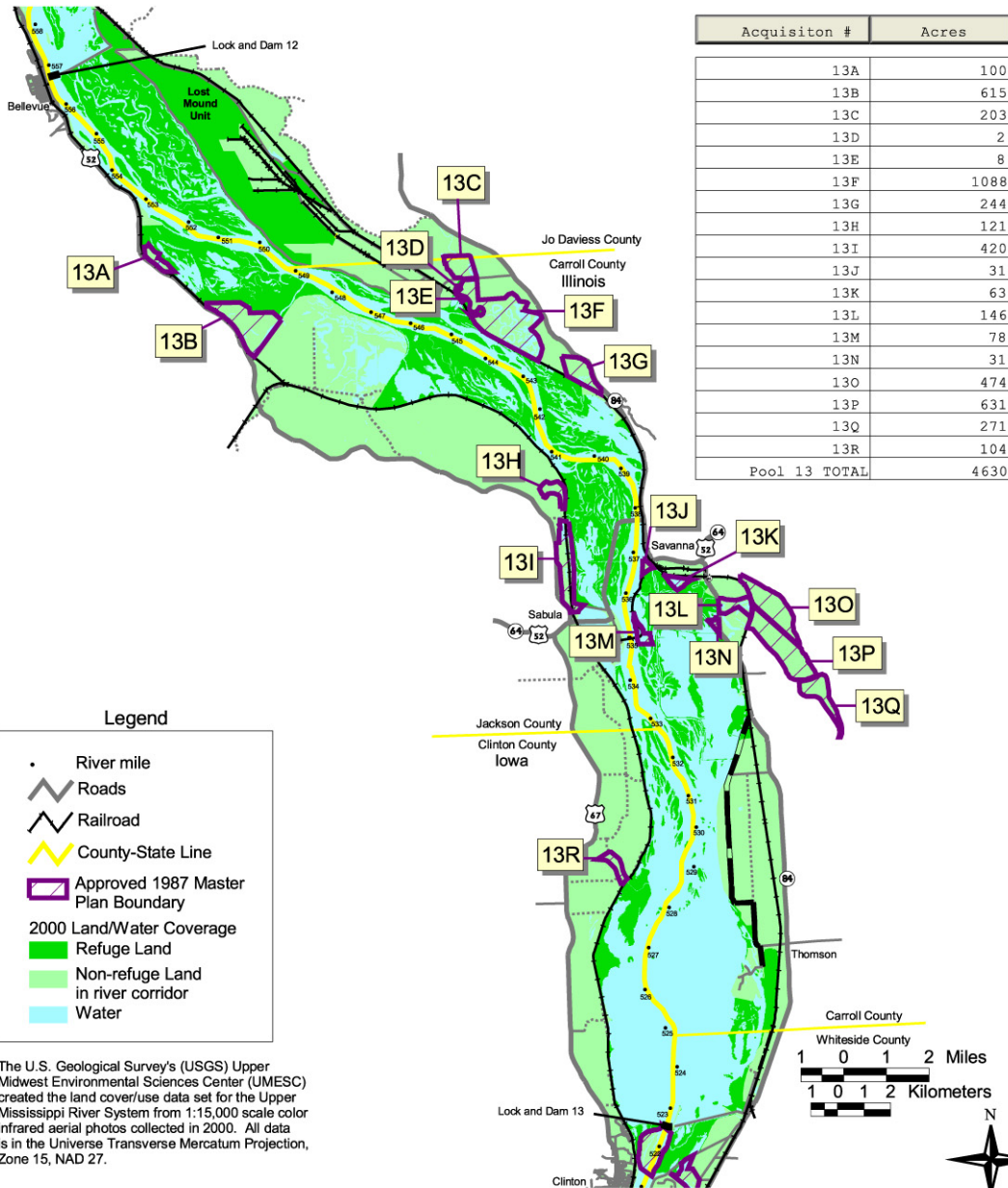
Legend

- River mile
- Roads
- Railroad
- County-State Line
- Approved 1987 Master Plan Boundary
- 2000 Land/Water Coverage**
- Refuge Land
- Non-refuge Land in river corridor
- Water

The U.S. Geological Survey's (USGS) Upper Midwest Environmental Sciences Center (UMESC) created the land cover/use data set for the Upper Mississippi River System from 1:15,000 scale color infrared aerial photos collected in 2000. All data is in the Universe Transverse Mercatum Projection, Zone 15, NAD 27.

Potential Land Protection* Areas, Pool 13, within the Authorized Refuge Boundary, Upper Mississippi River National Wildlife and Fish Refuge.

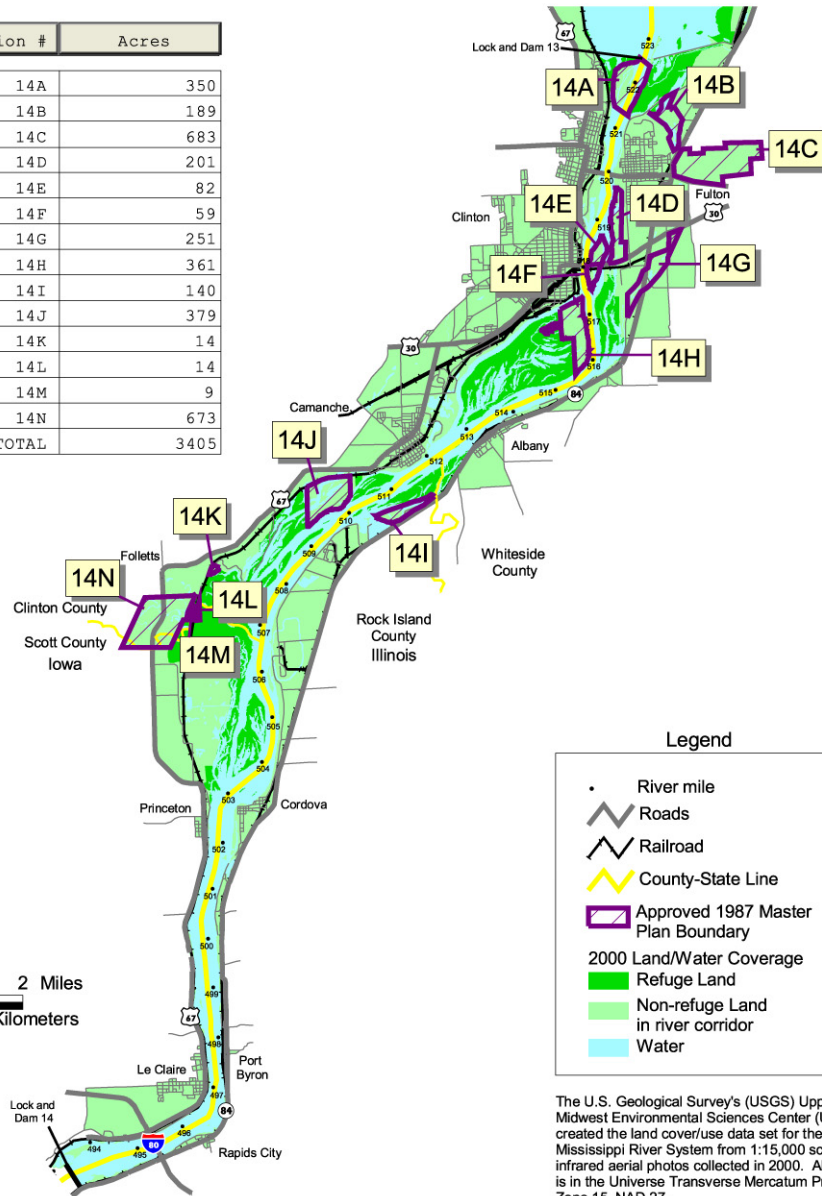
* Protection options may include: fee title and conservation easement acquisitions (willing sellers only), and cooperative efforts with state and non-governmental organizations.



Potential Land Protection* Areas, Pool 14, within the Authorized Refuge Boundary, Upper Mississippi River National Wildlife and Fish Refuge.

* Protection options may include: fee title and conservation easement acquisitions (willing sellers only), and cooperative efforts with state and non-governmental organizations.

Acquisition #	Acres
14A	350
14B	189
14C	683
14D	201
14E	82
14F	59
14G	251
14H	361
14I	140
14J	379
14K	14
14L	14
14M	9
14N	673
Pool 14 TOTAL	3405



Legend

- River mile
- ⚡ Roads
- ⚡ Railroad
- ⚡ County-State Line
- ⬜ Approved 1987 Master Plan Boundary
- 2000 Land/Water Coverage
- Refuge Land
- Non-refuge Land in river corridor
- Water

The U.S. Geological Survey's (USGS) Upper Midwest Environmental Sciences Center (UMESC) created the land cover/use data set for the Upper Mississippi River System from 1:15,000 scale color infrared aerial photos collected in 2000. All data is in the Universal Transverse Mercator Projection, Zone 15, NAD 27.

Appendix H: Project Features Tables

This appendix includes the following Project Features tables:

- Table 1: Access Locations / page 459
- Table 2: Administrative No Hunting Zones / page 462
- Table 3: Auto Tour Routes / page 464
- Table 4: Biking Trails (Paved) / page 465
- Table 5: Canoe Trails / page 466
- Table 6: Closed Areas and Sanctuaries, Alternatives A-D / page 468
- Table 7: Closed Areas and Sanctuaries, Alternative A / page 472
- Table 8: Closed Areas and Sanctuaries, Alternative B / page 474
- Table 9: Closed Areas and Sanctuaries, Alternative C / page 477
- Table 10: Closed Areas and Sanctuaries, Alternative D / page 479
- Table 11: Commercial Fishing Floats / Piers / page 482
- Table 12: Electric Motor Areas / page 483
- Table 13: Fishing Piers and Platforms / page 485
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- Table 15: Kiosks, Interpretive Signs, Entrance Signs, and Official Notice Boards / page 488
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- Table 18: Observation Decks, Towers, and Photo Blinds / page 502
- Table 19: Refuge Staffing / page 504
- Table 20: Summary by Alternatives / page 506

Table 1: Access Locations

Pool	Feature	State	Existing FWS Landing	Existing Non-FWS Landings	Proposed Alternatives			River Mile	Comments
			Alt. A		Alt.B	Alt. C	Alt. D		
4	Beef Slough	WI	x		x	x	x	761.0	
4	Pontoon Slough	WI	x		x	x	x	760.5	
4	Indian Slough	WI	x		x	x	x	760.3	
4	Buffalo River	WI	x		x	x	x	755.5	
4	Peterson Lake	MN	x		x	x	x	754.0	
4	Other Access Points			9					From Chippewa R. to L & D 4
5	Halfmoon	MN	x		x	x	x	747.5	
5	Halfmoon Canoe Access	MN	x		x	x	x	747.5	
5	Weaver	MN	x		x	x	x	744.0	
5	Other Access Points			10					
5A	Verchota	MN	x		x	x	x	730.5	
5A	McNally	MN	x		x	x	x	729.0	
5A	Other Access Points			9					
6	Mertes Slough	WI	x		x	x	x	727.0	
6	Other Access Points			13					
6	Trout Creek	MN				x		715.0	Non-motorized Access
7	Round Lake	WI	x		x	x	x	713.3	
7	Long Lake	WI	x		x	x	x	713.1	
7	Other Access Points			21					
8	Lower I-90	MN	x		x	x	x	701.7	
8	Lawrence Lake Walk-down	MN				x	x	692.0	Walk-down Access
8	Stoddard Walk-in Overpass	WI				x	x	687.9	Walk-in Overpass

Table 1: Access Locations (Continued)

Pool	Feature	State	Existing FWS Landing	Existing Non-FWS Landings	Proposed Alternatives			River Mile	Comments
			Alt. A		Alt.B	Alt. C	Alt. D		
8	Stoddard Walk-down	WI				x	x	687.3	Walk-down Access
8	Other Access Points			35					
9	Reno Canoe Launch	MN				x	x	681.0	Canoe Launch Improvement
9	Visgers Landing	MN	x		x	x	x	675.8	
9	New Albin	IA	x		x	x	x	673.2	
9	Upper Iowa River Canoe Launch	IA				x		671.5	
9	Conway Lake Canoe Launch	IA				x	x	666.0	
9	Winneshiek Slough	WI	x		x	x	x	665.5	
9	Big Slough	WI	x		x	x	x	663.4	
9	Cold Springs	WI	x		x	x	x	653.5	
9	Other Access Points			18					
10	Ambrough Slough	WI	x		x	x	x	639.3	
10	Wyalusing Park	WI	x		x	x	x	629.8	
10	Bagley Bottoms	WI	x		x	x	x	624.8	
10	Other Access Points			37					
11	Bertom Lake	WI	x		x	x	x	601.7	
11	Lynn Hollow	WI	x		x	x	x	596.7	
11	Other Access Points			17					
12	No FWS Access Points								
12	Other Access Points			10					
13	Lost Mound Boat Ramp	IL				x	x	552.0	

Table 1: Access Locations (Continued)

Pool	Feature	State	Existing FWS Landing	Existing Non-FWS Landings	Proposed Alternatives			River Mile	Comments
			Alt. A		Alt.B	Alt. C	Alt. D		
13	Pleasant Creek Parking Lot & Access Road	IA				x	x	549.0	Blacktop Only
13	Esmay Slough	IA	x		x	x	x	536.0	Blacktop Only
13	Frog Pond	IL				x	x	535.4	Blacktop Only
13	Sloane Marsh Parking Lot	IL				x	x	532.0	Parking Lot Improvement
13	Michelson's Landing Parking	IL				x	x	524.0	Parking Lot Improvement
13	Michelson's Landing	IL	x					524.0	
13	Other Access Points			17					
14	No FWS Access Points								
14	Other Access Points			26					
	Canoe Landing / Launch		0	1	0	4*	2*		
	Total Walk-in		0	0	0	3	3		
	Total Boat Ramp		26	221	26	27	27		
	Total Parking Lot Improvements		0	0	0	5	5		

Table 2: Administrative No Hunting Zones*

Pool	Feature	State	Existing or Proposed	Existing	Proposed			Up-River Mile	Down-River Mile	Comments
				Alt. A Acres	Alt. B Acres	Alt. C Acres	Alt. D Acres			
4-6	None									0 "Admin. No Hunting" zones on Pools 4-6
7	Upper Halfway Creek Marsh	WI	E	141	141	141	141	708.0	707.5	No hunting for public safety/wildlife observ.
9	Reno Bottoms Trail	MN	P			263		681.4	680.4	No hunting for public safety/wildlife observ.
9	Dairyland Trail	WI	P			233	233	677.8	676.8	No hunting for public safety/wildlife observ.
9	Kain Switch Trail	IA	P			809	809	670.8	668.8	No hunting for public safety/wildlife observ.
9	Blackhawk Trail	WI	P			150		669.8	668.8	No hunting for public safety/wildlife observ.
9	Rush Creek Delta Trail	WI	P			193		661.0	659.8	No hunting for public safety/wildlife observ.
10	Sturgeon Slough	WI	P		66	66	66	635.2	634.8	No hunting/trapping for public safety/wildlife observ.
11	Goetz Island Trail	IA	P			242	242	614.4	613.2	No hunting for public safety/wildlife observ.
11	Turkey River Delta Trail	IA	P			307	307	607.9	606.8	No hunting for public safety/wildlife observ.
11	John Deere Marsh Trail	IA	P			141		586.3	585.8	No hunting for public safety/wildlife observ.
13	Crooked Slough Backwater	IL	E	2467	2467	2467	2467	557.0	552.8	Was Sav. Army depot; contaminated; no entry
13	Crooked Slough Proper	IL	P		192		192	557.0	552.8	No hunting to avoid potential user conflicts
13	Mesquaki Lake/Great River Trail	IL	E	193	193	193	193	536.8	535.8	No hunting 3/1-9/30, and also no hunting year round within 150 yds. of Great River Tr. for public safety and to eliminate potential conflicts w/ hunters/bikers

Table 2: Administrative No Hunting Zones* (Continued)

Pool	Feature	State	Existing or Proposed	Existing	Proposed				Up-River Mile	Down-River Mile	Comments
				Alt. A Acres	Alt. B Acres	Alt. C Acres	Alt. D Acres				
13	Frog Pond	IL	E	64	64	64	64	535.8	535.3	No hunting for public safety/wildlife observ.	
13	Ingersoll Learning Center	IL	E	41	41	41	41	533.0	532.5	No hunting for public safety/wildlife observ.	
13	Thomson Prairie/Great River Trail	IL	E	76	76	76	76	527.5	525.0	No hunting for public safety/wildlife observ.	
13	Buffer - Potter's Marsh blind mgmt. zone	IL	E	491	491	491	491	526.0	522.5	Extends 400 yds. W. of Potter's Marsh blind mgmt. zone to eliminate potential conflicts between duck blind hunters/other hunters	
Total			Units	7	9	16	13				
			Acres	3,473	3,731	5,877	5,322				

* Administrative No Hunting Zones are closed to hunting for reasons of public safety, and to reduce user group conflicts. They are not intended to augment the waterfowl closed area system on the Refuge.

Table 3: Auto Tour Routes

Pool	Feature	State	Existing	Proposed			Up-River Mile	Down-river Mile	Mile of Trail	Comments
			Alt. A	Alt. B	Alt. C	Alt. D				
9	Red Oak Road	IA			x	x	653.0	649.0	7.0	Wildlife Drive and Bike Trail in Cooperation with County
11	Turkey River Delta	IA			x	x	607.5	607.0	1.5	Hiking & Auto Route
13	Lost Mound	IL	x	x	x	x	549.0	546.5	2.5	Auto Tour Route
	Total Miles		2.5	2.5	11.0	11.0				
	Total Units		1	1	3	3				

Table 4: Biking Trails (Paved)

			Existing	Proposed						
Pool	Feature	State	Alt. A Current Managem ent (No Action)	Alt. B Wildlife Focus	Alt. C Public Use Focus	Alt.D Integrated Wildlife and Public Use Focus (Preferred Alt.)	Up- River Mile	Down- River Mile	Miles of Trail	Comments
5A	Prairie Island Bike/ Hike Lane	MN			x		732.0	728.5	2.9	Bike and Hike Trail
7	Great River Bike Trail/ Black River / Halfway Creek	WI	x	x	x	x	712.0	706.0	6.0	Bike Trail
8	Wagon Wheel	MN			x	x	699.6	698.3	2.1	Bike Trail
13	Spring Lake	IL			x	x	534.5	532.5	2.0	Proposed additions to hiking/ biking trail
13	Great River Bike Trail/ Spring Lake	IL	x	x	x	x	534.5	532.5	2.0	Bike Trail
13	Great River Bike Trail/ Thomson Prairie	IL	x	x	x	x	527.0	525.0	2.0	Bike Trail
	Total Miles		10.0	10.0	17.0	14.1				
	Total Units		3	3	6	5				

Table 5: Canoe Trails

			Existing	Proposed						
Pool	Feature	State	Alt. A Current Management (No Action)	Alt. B Wildlife Focus	Alt. C Public Use Focus	Alt. D Integrated Wildlife and Public Use Focus (Preferred Alt.)	Up- River Mile	Dow River Mile	Mile of Trail	Comments
4	Nelson Dike	WI			x	x	760.6	759.5	4.6	
5	Finger Lakes	MN			x	x	752.2	751.3	4.7	
5	Halfmoon Lake	MN			x	x	747.4	745.3	5.3	
5A	Straight Slough	MN	x	x	x	x	736.0	730.5	11.2	
7	Long Lake	WI	x	x	x	x	713.0	711.0	4.4	
8	Goose Island	WI	x	x	x	x	692.8	690.0	7.1	
9	Reno Bottoms	MN			x	x	681.0	673.0	11.0	
9	Upper Iowa River	IA			x		672.0	663.7	12.2	
9	Big Slough	IA			x		670.9	668.7	6.0	Canoe & Motorboat
10	Harper's Slough	IA			x		647.9	642.6	13.7	
10	Ambroug h Slough Canoe Area	WI			x	x	642.0	638.7		1,853 acres
10	Wyalusin g Park	WI/IA	x	x	x	x	631.0	627.0	9.4	
10	Johnson Slough	IA			x	x	629.9	625.1	9.7	Canoe & Motorboat
11	Turkey River	IA			x		608.8	607.7	5.0	
11	Mud Lake	IA			x	x	589.2	587.8	3.2	
12	Hire's Lake	IL			x	x	572.2	569.3	7.1	

Table 5: Canoe Trails (Continued)

			Existing	Proposed						
Pool	Feature	State	Alt. A Current Management (No Action)	Alt. B Wildlife Focus	Alt. C Public Use Focus	Alt. D Integrated Wildlife and Public Use Focus (Preferred Alt.)	Up- River Mile	Dow River Mile	Mile of Trail	Comments
12	Ferry Landing	IL			x	x	567.0	564.4	5.5	
12	Blanding Landing	IL			x	x	559.6	558.2	3.8	
13	Brown's Lake	IA			x	x	545.9	541.7	7.4	
13	Miller's Hollow	IL			x	x	542.6	540.0	5.4	
13	Keller's Island	IA			x	x	538.5	535.8	6.7	
13	Gomer's Lake	IA			x	x	528.0	526.8	3.5	
13	Potter's Marsh	IL			x	x	524.9	523.0	7.5	
14	Cattail Slough	IL			x		517.7	516.0	4.1	
14	Rock Creek	IA			x	x	508.0	506.8	4.1	
14	Cordova Slough	IA			x	x	506.0	503.2	5.3	
	Total Miles		32.1	32.1	176.5	135.5				
	Total Units		4	4	26*	21*				
*	Includes the proposed Ambrough Slough Canoe Area (1,853 acres)									

Table 6: Closed Areas and Sanctuaries* / All Alternatives

Pool	Name	State	Alt. A Acres / Status Existing Features		Alt. B Acres / Status		Alt. C Acres / Status		Alt. D Acres / Status		Up- River Mile	Down- River Mile	Comments
4	Nelson-Trevino	WI	3,773	Closed Area	3,773	Sanctuary	3,773	Closed Area	None		763.5	760.0	
4	Big Lake-Buffalo Slough	WI	None		3,249	Sanctuary	None		3,249	Closed Area; no fishing, no motors	759.4	754.6	Includes Travel Corridor
4	Peterson Lake	MN-WI	3,111	Closed Area	None		3,111	Closed Area	None		756.6	752.7	Alt. A & C: Includes Buffalo Slough and Rieck's Lake
4	Rieck's Lake	WI	Part of Peterson Lake		496	Sanctuary	Part of Peterson Lake		496	Closed Area; no fishing, no motors	755.8	755.0	Includes Travel Corridor
5	Weaver Bottoms / Lost Island	MN-WI	3,139	Closed Area	3,780	Sanctuary	3,139	Closed Area	3,508	Closed Area; no fishing, no motors	745.6	741.7	Alt. B-D: Includes Travel Corridor
5	Spring Lake	WI	None		243	Sanctuary	None		243	Closed Area; no fishing, no motors	741.8	740.7	
5A	Fountain City Bay **	WI	None		24	Sanctuary	None		None		734.3	734.1	Alt. B: Proposed New Closed Area; Alt D.- site will be a closed area if land exchange with WDNR does not occur
5A	Polander Lake	MN-WI	1,589	Closed Area	1,910	Sanctuary	1,589	Closed Area	1,910	Closed Area; no fishing, no motors	731.8	728.4	Alt. B-D: Includes Travel Corridor

Table 6: Closed Areas and Sanctuaries* / All Alternatives (Continued)

Pool	Name	State	Alt. A Acres / Status Existing Features		Alt. B Acres / Status		Alt. C Acres / Status		Alt. D Acres / Status		Up- River Mile	Down- River Mile	Comments
6	Trempealeau NWR	WI	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	724.2	718.0	Part of existing closed area system; special regulations; 5520 acres
7	Lake Onalaska	WI	7,348	Closed Area	7,880	Closed Area	7,103	Closed Area	7,400	Closed Area	708.0	702.8	All alternatives: traditional closed area; has Waterfowl Voluntary Avoidance Area
8	Goose Is. No Hunt Zone	WI	876	No Hunt Zone / Closed Area	1,210	Sanctuary	1,210	No Hunt Zone / Closed Area	1,210	Closed Area; no fishing, no motors	691.2	689.8	No Hunting Zone part of existing closed area system
8	Wisconsin Islands	MN-WI	6,461	Closed Area	6,513	Sanctuary	6,483	Closed Area	6,483	Closed Area; no fishing, no motors	687.6	680.1	Alt. C: Modified slightly from Alt. A
9	Pool Slough	MN-IA	1,112	Closed Area	2,559	Sanctuary	1,112	Closed Area	1,112	Sanctuary	675.2	673.0	
9	Harpers Slough	IA-WI	5,209	Closed Area	5,209	Sanctuary	5,209	Closed Area	5,209	Closed Area; no fishing, no motors	654.8	648.0	
10	WI River Delta	WI	None		1,545	Sanctuary	None		1,545	Closed Area; no fishing, no motors	633.8	630.7	Includes Travel Corridor
10	Bagley Bottoms	WI	None		627	Sanctuary	None		None		626.7	624.6	
10	12-Mile Island	IA	540	Closed Area	540	Sanctuary	540	Closed Area	540	Closed Area; no fishing, no motors	617.0	615.2	

Table 6: Closed Areas and Sanctuaries* / All Alternatives (Continued)

Pool	Name	State	Alt. A Acres / Status Existing Features		Alt. B Acres / Status		Alt. C Acres / Status		Alt. D Acres / Status		Up- River Mile	Down- River Mile	Comments
11	Guttenberg Ponds	IA	None		None		None		502	Sanctuary	615.2	613.8	
11	12-Mile Island	IA	1,396	Closed Area	1,396	Sanctuary	1,396	Closed Area	894	Closed Area; no fishing, no motors	615.2	611.5	Includes Travel Corridors
11	Hay Meadow Lake	WI	None		None		None		841	Closed Area; no fishing, no motors	604.0	601.8	
11	Bertom-McCartney	WI	2,415	Closed Area	2,385	Sanctuary	2,415	Closed Area	None		604.0	598.7	
11	John Deere Marsh	IA	None		512	Sanctuary	None		512	Closed Area; no fishing, no motors	587.0	584.8	Includes Travel Corridor
12	Nine-Mile Island	IA	None		567	Sanctuary	None		None		574.4	571.6	
12	Kehough Slough	IL	None		343	Sanctuary	None		343	Closed Area; no fishing, no motors	569.0	567.1	
12	Wise Lake	IL	None		1,081	Sanctuary	None		None		563.9	560.9	
12	Lower Pool 12	IL	None		478	Sanctuary	None		None		557.5	556.8	
13	Pleasant Creek	IA	2,603	Closed Area	2,603	Sanctuary	2,603	Closed Area	2,067	Closed Area; no fishing, no motors	552.7	548.5	
13	Brown's Lake	IA	None		2,362	Sanctuary	None		None		546.2	541.7	

Table 6: Closed Areas and Sanctuaries* / All Alternatives (Continued)

Pool	Name	State	Alt. A Acres / Status Existing Features		Alt. B Acres / Status		Alt. C Acres / Status		Alt. D Acres / Status		Up- River Mile	Down- River Mile	Comments
13	Spring Lake	IL	3,686	Sanctuary	3,686	Sanctuary	3,686	Sanctuary	3,686	Sanctuary	536.8	531.9	Only Existing Sanctuary in Refuge
13	Elk River	IA	1,237	Closed Area	1,237	Sanctuary	1,237	Closed Area	1,237	Closed Area; no fishing, no motors	532.6	528.1	
13	Lower Pool 13	IA	None		2,004	Sanctuary	None		None		525.3	522.5	
14	Beaver Island	IA	None		717	Sanctuary	None		717	Closed Area; no fishing, no motors	516.6	514.0	
14	Wapsipinicon	IA	None		1,467	Sanctuary	None		None		508.2	506.0	
Total Acres			44,495		60,396		44,614		43,704				
Total UMR Refuge Units			15		29		15		21				

* **Closed Area, Alternatives A and C** = closed to all migratory bird hunting. Other hunting and trapping is only allowed beginning the day after the close of the regular state duck hunting season, until season closure or March 15, whichever comes first, except turkey hunting is allowed during state seasons.

* **Sanctuary** = No entry October 1 to the end of the regular state duck hunting season.

* **Closed Area, Alternative D** = closed to all migratory bird hunting. Other hunting and trapping is only allowed beginning the day after the close of the regular state duck hunting season, until season closure or March 15, whichever comes first, except turkey hunting is allowed during state seasons. **No fishing and no motorized watercraft** allowed October 1 to the end of the respective state regular duck hunting season.

Table 7: Closed Areas and Sanctuaries* / Alternative A (No Action)

Pool	Name	State	Alt. A Acres	Status	Distance Between Areas (miles)	Up-River Mile	Down-River Mile	Comments
4	Nelson-Trevino	WI	3,773	Closed Area		763.5	760.0	
4	Peterson Lake	MN-WI	3,111	Closed Area	3.4	756.6	752.7	Includes Buffalo Slough and Rieck's Lake
5	Weaver Bottoms/Lost Is.	MN-WI	3,139	Closed Area	7.1	745.6	741.7	
5A	Fountain City Bay**	WI	None		7.4	734.3	734.1	
5A	Polander Lake	MN-WI	1,589	Closed Area	2.3	731.8	728.4	
6	Trempealeau NWR	WI	n/a	n/a	4.2	724.2	718.0	Part of existing closed area system; special regulations; 5520 acres
7	Lake Onalaska	WI	7,348	Closed Area	10.0	708.0	702.8	Includes Waterfowl Voluntary Avoidance Area (3,356 acres)
8	Goose Is. No Hunt Zone	WI	876	No Hunt Zone / Closed Area	11.6	691.2	689.8	No Hunting Zone; part of the existing closed area system
8	Wisconsin Islands	MN-WI	6,461	Closed Area	2.2	687.6	680.1	
9	Pool Slough	MN-IA	1,112	Closed Area	4.9	675.2	673.0	
9	Harpers Slough	IA-WI	5,209	Closed Area	18.2	654.8	648.0	
10	12-Mile Island	IA	540	Closed Area	37.0	617.0	615.2	Pool 10 Portion of Closed Area
11	12-Mile Island	IA	1,396	Closed Area	0.1	615.2	611.5	Pool 11 Portion of Closed Area
11	Bertom-McCartney	WI	2,415	Closed Area	7.5	604.0	598.7	

Table 7: Closed Areas and Sanctuaries* / Alternative A (No Action) (Continued)

Pool	Name	State	Alt. A Acres	Status	Distance Between Areas (miles)	Up-River Mile	Down-River Mile	Comments
13	Pleasant Creek	IA	2,603	Closed Area	46.0	552.7	548.5	
13	Spring Lake	IL	3,686	Sanctuary	11.7	536.8	531.9	Only Existing Sanctuary in Refuge
13	Elk River	IA	1,237	Closed Area	0.1	532.6	528.1	
	Total Acres		44,495		Ave. Distance Between Areas			
	Total UMR Refuge Units		15		10.2			
	<p>* Closed Area, Alternative A = closed to all migratory bird hunting. Other hunting and trapping is only allowed beginning the day after the close of the regular state duck hunting season, until season closure or March 15, whichever comes first, except turkey hunting is allowed during state seasons.</p>							<p>* Sanctuary = No entry October 1 to the end of the regular state duck hunting season.</p>
	<p>** Fountain City Bay Closed Area, Pool 5A, is new closed area proposed under Alternative A. It is 24 acres in size and adjacent to Merrick State Park, WI.</p>							

Table 8: Closed Areas and Sanctuaries* / Alternative B (Wildlife Focus)

Pool	Name	State	Alt. B		Distance Between Areas (miles)	Up-River Mile	Down-River Mile	Comments
			Acres	Status				
4	Nelson-Trevino	WI	3,773	Sanctuary		763.5	760.0	
4	Big Lake-Buffalo Slough	WI	3,249	Sanctuary	0.6	759.4	754.6	Includes Travel Corridor
4	Rieck's Lake	WI	496	Sanctuary	0.1	755.8	755.0	Includes Travel Corridor
5	Weaver Bottoms/Lost Is.	MN-WI	3,780	Sanctuary	9.4	745.6	741.7	Includes Travel Corridor
5	Spring Lake	WI	243	Sanctuary	0.1	741.8	740.7	
5A	Fountain City Bay	WI	24	Sanctuary	6.4	734.3	734.1	
5A	Polander Lake	MN-WI	1,910	Sanctuary	8.9	731.8	728.4	Includes Travel Corridor
6	Trempealeau NWR	WI	n/a	n/a	4.2	724.2	718.0	Part of existing closed area system; special regulations; 5520 acres
7	Lake Onalaska	WI	7,880	Closed Area	10.0	708.0	702.8	Includes Waterfowl Voluntary Avoidance Area (3,356 acres)
8	Goose Is. No Hunt Zone	WI	1,210	Sanctuary	11.6	691.2	689.8	No Hunting Zone part of existing closed area
8	Wisconsin Islands	MN-WI	6,513	Sanctuary	2.2	687.6	680.1	
9	Pool Slough	MN-IA	2,559	Sanctuary	4.6	675.2	673.0	
9	Harpers Slough	IA-WI	5,209	Sanctuary	18.2	654.8	648.0	
10	WI River Delta	WI	1,545	Sanctuary	14.2	633.8	630.7	Includes Travel Corridor

Table 8: Closed Areas and Sanctuaries* / Alternative B (Wildlife Focus) (Continued)

Pool	Name	State	Alt. B		Distance Between Areas (miles)	Up-River Mile	Down- River Mile	Comments
			Acres	Status				
10	Bagley Bottoms	WI	627	Sanctuary	4.0	626.7	624.6	
10	12-Mile Island	IA	540	Sanctuary	7.6	617.0	615.2	Pool 10 Portion of Sanctuary
11	12-Mile Island	IA	1,396	Sanctuary	0.1	615.2	611.5	Pool 11 Portion of Sanctuary; includes travel corridors
11	Bertom-McCartney	WI	2,385	Sanctuary	7.5	604.0	598.7	
11	John Deere Marsh	IA	512	Sanctuary	11.7	587.0	584.8	Includes Travel Corridor
12	Nine-Mile Island	IA	567	Sanctuary	10.4	574.4	571.6	
12	Kehough Slough	IL	343	Sanctuary	2.6	569.0	567.1	
12	Wise Lake	IL	1,081	Sanctuary	3.2	563.9	560.9	
12	Lower Pool 12	IL	478	Sanctuary	3.4	557.5	556.8	
13	Pleasant Creek	IA	2,603	Sanctuary	4.1	552.7	548.5	
13	Brown's Lake	IA	2,362	Sanctuary	2.3	546.2	541.7	
13	Spring Lake	IL	3,686	Sanctuary	4.9	536.8	531.9	Only Existing Sanctuary in Refuge
13	Elk River	IA	1,237	Sanctuary	0.1	532.6	528.1	
13	Lower Pool 13	IA	2,004	Sanctuary	2.8	525.3	522.5	
14	Beaver Island	IA	717	Sanctuary	5.9	516.6	514.0	
14	Wapsipinicon	IA	1,467	Sanctuary	5.8	508.2	506.0	

Table 8: Closed Areas and Sanctuaries* / Alternative B (Wildlife Focus) (Continued)

Pool	Name	State	Alt. B Acres / Status	Distance Between Areas (miles)	Up-River Mile	Down-River Mile	Comments
	Total Acres		60,396	Ave. Distance Between Areas			
	Total UMR Refuge Units		29	5.6			
	<p>* Closed Area, Alternative B = closed to all migratory bird hunting. Other hunting and trapping is only allowed beginning the day after the close of the regular state duck hunting season, until season closure or March 15, whichever comes first, except turkey hunting is allowed during state seasons.</p>						<p>* Sanctuary = No entry October 1 to the end of the regular state duck hunting season.</p>

Table 9: Closed Areas and Sanctuaries* / Alternative C (Public Use Focus)

Pool	Name	State	Alt. C		Distance Between Areas (miles)	Up-River Mile	Down-River Mile	Comments
			Acres	Status				
4	Nelson-Trevino	WI	3,773	Closed Area		763.5	760.0	
4	Peterson Lake	MN-WI	3,111	Closed Area	3.4	756.6	752.7	Includes Buffalo Slough and Rieck's Lake
5	Weaver Bottoms/Lost Is.	MN-WI	3,139	Closed Area	7.1	745.6	741.7	
5A	Fountain City Bay	WI	None		7.4	734.3	734.1	
5A	Polander Lake	MN-WI	1,589	Closed Area	2.3	731.8	728.4	
6	Trempealeau NWR	WI	n/a	n/a	4.2	724.2	718.0	Part of existing closed area system; special regulations; 5520 acres
7	Lake Onalaska	WI	7,103	Closed Area	10.0	708.0	702.8	Includes Waterfowl Voluntary Avoidance Area (3,356 acres)
8	Goose Is. No Hunt Zone	WI	1,210	No Hunt Zone / Closed Area	11.6	691.2	689.8	No Hunting Zone; part of existing closed area
8	Wisconsin Islands	MN-WI	6,483	Closed Area	2.2	687.6	680.1	
9	Pool Slough	MN-IA	1,112	Closed Area	4.9	675.2	673.0	
9	Harpers Slough	IA-WI	5,209	Closed Area	18.2	654.8	648.0	
10	12-Mile Island	IA	540	Closed Area	37.0	617.0	615.2	Pool 10 Portion of Closed Area
11	12-Mile Island	IA	1,396	Closed Area	0.1	615.2	611.5	Pool 11 Portion of Closed Area

Table 9: Closed Areas and Sanctuaries* / Alternative C (Public Use Focus) (Continued)

Pool	Name	State	Alt. C Acres / Status		Distance Between Areas (miles)	Up-River Mile	Down-River Mile	Comments
11	Bertom-McCartney	WI	2,415	Closed Area	7.5	604.0	598.7	
13	Pleasant Creek	IA	2,603	Closed Area	46.0	552.7	548.5	
13	Spring Lake	IL	3,686	Sanctuary	11.7	536.8	531.9	Only Existing Sanctuary in Refuge
13	Elk River	IA	1,237	Closed Area	0.1	532.6	528.1	
Total Acres			44,614		Ave. Distance Between Areas			
Total UMR Refuge Units			15		10.2			
<p>* Closed Area, Alternative C = closed to all migratory bird hunting. Other hunting and trapping is only allowed beginning the day after the close of the state duck hunting season, until season closure or March 15, whichever comes first, except turkey hunting is allowed during state seasons.</p>							<p>* Sanctuary = No entry October 1 to the end of the regular state duck hunting season.</p>	

Table 10: Closed Areas and Sanctuaries* / Alternative D (Wildlife and Integrated Public Use Focus)

Pool	Name	State	Alt. D Acres / Status		Distance Between Areas (miles)	Up-River Mile	Down-River Mile	Comments
4	Big Lake-Buffalo Slough	WI	3,249	Closed Area; no fishing, no motors		759.4	754.6	Includes Travel Corridor
4	Rieck's Lake	WI	496	Closed Area; no fishing, no motors	0.1	755.8	755.0	Includes Travel Corridor
5	Weaver Bottoms/Lost Is.	MN-WI	3,508	Closed Area; no fishing, no motors	9.4	745.6	741.7	Includes Travel Corridor
5	Spring Lake	WI	243	Closed Area; no fishing, no motors	0.1	741.8	740.7	
5A	Fountain City Bay	WI	24	Closed Area; no fishing, no motors	6.4	734.3	734.1	Will be a closed area if land exchange with WDNR does not occur.
5A	Polander Lake	MN-WI	1,910	Closed Area; no fishing, no motors	8.9	731.8	728.4	Includes Travel Corridor
6	Trempealeau NWR	WI	n/a	n/a	4.2	724.2	718.0	Part of existing closed area system; special regulations; 5520 acres
7	Lake Onalaska	WI	7,400	Traditional Closed Area	10.0	708.0	702.8	Includes Waterfowl Voluntary Avoidance Area (3,356 acres)
8	Goose Is. No Hunt Zone	WI	1,210	No Hunt Zone / Closed Area; no fishing, no motors	11.6	691.2	689.8	No Hunting Zone; part of the existing closed area system

Table 10: Closed Areas and Sanctuaries* / Alternative D (Wildlife and Integrated Public Use Focus) (Continued)

Pool	Name	State	Alt. D Acres / Status		Distance Between Areas (miles)	Up-River Mile	Down-River Mile	Comments
8	Wisconsin Islands	MN-WI	6,483	Closed Area; no fishing, no motors	2.2	687.6	680.1	
9	Pool Slough	MN-IA	1,112	Sanctuary	4.9	675.2	673.0	Adjacent to state (IA) sanctuary
9	Harpers Slough	IA-WI	5,209	Closed Area; no fishing, no motors	18.2	654.8	648.0	Closed Area
10	WI River Delta	WI	1,545	Closed Area; no fishing, no motors	14.2	633.8	630.7	Includes Travel Corridor
10	12-Mile Island	IA	540	Closed Area; no fishing, no motors	13.7	617.0	615.2	Pool 10 Portion
11	Guttenberg Ponds	IA	502	Sanctuary	0.1	615.2	613.8	Within 12-Mile Island Closed Area
11	12-Mile Island	IA	894	Closed Area; no fishing, no motors	0.1	615.2	611.5	Pool 11 Portion, Includes Travel Corridors
11	Hay Meadow Lake	WI	841	Closed Area; no fishing, no motors	7.5	604.0	601.8	
11	John Deere Marsh	IA	512	Closed Area; no fishing, no motors	14.8	587.0	584.8	Includes Travel Corridor

Table 10: Closed Areas and Sanctuaries* / Alternative D (Wildlife and Integrated Public Use Focus) (Continued)

Pool	Name	State	Alt. D Acres / Status		Distance Between Areas (miles)	Up-River Mile	Down- River Mile	Comments
12	Kehough Slough	IL	343	Closed Area; no fishing, no motors	15.8	569.0	567.1	
13	Pleasant Creek	IA	2,067	Closed Area; no fishing, no motors	14.4	552.7	548.5	
13	Spring Lake	IL	3,686	Sanctuary	11.7	536.8	531.9	Only Existing Sanctuary in Refuge
13	Elk River	IA	1,237	Closed Area; no fishing, no motors	0.1	532.6	528.1	
14	Beaver Island	IA	717	Closed Area; no fishing, no motors	11.5	516.6	514.0	
	Total Acres		43,704		Ave. Distance Between Areas			
	Total UMR Refuge Units		21		7.8			
	<p>* Closed Area, Alternative D = closed to all migratory bird hunting. Other hunting and trapping is only allowed beginning the day after the close of the regular state duck hunting season, until season closure or March 15, whichever comes first, except turkey hunting is allowed during state seasons. No fishing and no motorized watercraft allowed October 1 to the end of the respective state regular duck hunting season.</p>							<p>* Sanctuary = No entry October 1 to the end of the regular state duck hunting season.</p>

Table 11: Commerical Fishing Floats / Piers

Pool	Feature	State	Existing	Proposed			River Mile
			Alt. A	Alt. B	Alt. C	Alt. D	
7	Tremplo Fishing Float	MN	x		x	x	714.0
8	Best Float by Dam Site Fishing Float	WI	x		x	x	702.5
9	Clements Fishing Float	MN	x		x	x	679.0
10	Hubbard Fishing Float	IA	x		x	x	647.9
12-14	Potential Fishing Float for Savanna District				x		
	Total Commercial Fishing Floats / Piers		4	0	5	4	

Table 12: Electric Motor Areas

Pool	Feature	State	Existing	Proposed			Up-River Mile	Down-River Mile	Distance to Landing	Comments
			Alt. A Acres	Alt. B Acres	Alt. C Acres	Alt. D Acres				
4	Nelson-Trevino	WI			2,626	2,626	762.5	760.0	0.1	
5	Finger Lakes	MN			497	497	752.7	751.5	0.2	
5	Island 42	MN				459	749.8	747.6	1.5	
5A	Snyder Lake	MN			182	182	735.0	734.0	2.5	Adjacent to Canoe Trail
5A	Denzers Slough	MN			83	83	733.0	732.0	1.5	Adjacent to Canoe Trail
6	Mertes Slough	WI	222	222	222	222	727.0	726.0	0.1	
7	Black River Bottoms	WI		1,146	1,146	1,146	711.0	708.8	0.1	C: Priority #4; B: #4
7	Browns Marsh	WI		966	966	966	711.0	708.0	0.1	C: Priority #2; B: #3
8	Blue/Target Lake	MN		1,849	1,849	1,849	699.0	696.0	0.1	C: Priority #1; B: #1
8	Root River	MN		695	695	695	696.0	694.0	0.5	C: Priority #3; B: #2
9	Reno Bottoms	MN		4,670	2,212	3,402	681.0	679.2	0.1	
9	Big Slough/Winneshiek	WI		4,541			665.5	660.0	0.1	
10	Sturgeon Slough/McGregor Lake	WI		929			636.4	633.3	0.1	
10	Bagley Bottoms	WI		789	789	789	626.5	623.5	0.1	
11	Guttenberg Ponds	IA		93	93	93	614.8	614.0	0.8	
12	Nine Mile Island	IA			567	567	574.4	571.6	0.3	
13	Kellers Island	IA			595	595	540.0	537.2	0.3	

Table 12: Electric Motor Areas (Continued)

Pool	Feature	State	Existing	Proposed			Up-River Mile	Down-River Mile	Distance to Landing	Comments
			Alt. A Acres	Alt. B Acres	Alt. C Acres	Alt. D Acres				
14	Beaver Island	IA			717		516.3	513.6	0.5	
14	Rock Creek	IA				327	506.7	506.0	1.3	
	Total Acres		222	15,900	13,239	14,498				
	Total Units		1	10	15	16				

Table 13: Fishing Piers and Platforms

Pool	Feature	State	Existing	Proposed				River Mile	Agency
			Alt. A	Alt. B	Alt. C	Alt. D			
4	None								
5	Halfmoon Landing	MN	x	x	x	x	747.5	FWS	
5	Halfmoon Landing	MN	x	x	x	x	747.5	FWS	
5	Halfmoon Landing	MN	x	x	x	x	747.5	FWS	
5	Upper Spring Lake	WI			x	x	743.5	FWS	
5A	McNally Landing	MN	x	x	x	x	729.0	FWS	
6	None								
7	Long Lake	WI	x	x	x	x	713.0	FWS	
8	Stoddard Boat Landing	WI	x	x	x	x	702.5	FWS/ Partner	
9	Visgers Landing	MN	x	x	x	x	675.2	FWS	
9	New Albin Landing	IA	x	x	x	x	673.0	FWS	
9	Winneshiek Slough Landing	WI			x	x	665.5	FWS	
9	Big Slough Landing	WI	x	x	x	x	663.5	FWS	
9	Cold Springs	WI	x	x	x	x	653.2	FWS	
10	Sturgeon Slough	WI			x	x	635.0	FWS	
11	Goetz Island	IA			x		613.3	FWS	
11	Turkey River	IA			x		608.0	FWS	
12	None								
13	Spring Lake	IL	x	x	x	x	534.0	FWS	
13	Spring Lake	IL	x	x	x	x	534.0	FWS	
13	Frog Pond	IL	x	x	x	x	535.5	FWS	
13	Michelson's Landing	IL	x	x	x	x	524.0	FWS	
13	Michelson's Landing	IL	x	x	x	x	524.0	FWS	
14	None								
	Total Fishing Piers		15	15	20	18			

Table 14: Hiking Trails

Pool	Feature	State	Existing	Proposed				Up-River Mile	Down-River Mile	Miles of Trail	Comments
			Alt. A	Alt. B	Alt. C	Alt. D					
4	Tiffany-Nelson Bottoms	WI			x	x		762.8	762.6	1.6	Hiking Trail
4	Barton-Lofgren Prairie	MN		x	x	x		755.0	753.8	1.6	Hiking Trail
5	Wabasha Prairie	MN		x	x	x		752.0	750.8	2.7	Hiking Trail
5A	Thorpe WMA	MN			x	x		736.9	735.8	2.1	Hiking Trail
5A	Minnesota City Bottoms	MN			x	x		732.0	731.0	2.3	Hiking Trail
7	Lone Tree Access Road	WI			x	x		713.0	712.1	0.7	Hiking Trail
8	Goose Island	WI	x	x	x	x		691.5	691.0	0.8	Hiking Trail
9	Reno Bottoms	MN			x			681.2	680.5	2.0	Hiking Trail
9	Dairyland Power	WI			x	x		677.7	678.8	1.8	Hiking Trail
9	Kain's Switch	IA			x	x		670.8	669.0	4.2	Hiking Trail
9	Black Hawk Park	WI			x			669.5	668.8	1.8	In cooperation w/US Army COE
9	Rush Creek Delta	WI			x			661.0	660.0	2.2	In cooperation w/ railroad
10	Sturgeon Slough	WI	x	x	x	x		635.2	634.8	0.8	Hiking Trail

Table 14: Hiking Trails (Continued)

Pool	Feature	State	Existing	Proposed			Up-River Mile	Down-River Mile	Miles of Trail	Comments
			Alt. A	Alt. B	Alt. C	Alt. D				
10	Wisconsin River Delta	WI			x		632.8	632.0	1.8	Hiking Trail
11	Goetz Island	IA			x	x	614.3	613.4	2.2	Hiking Trail
11	Dago Slough	WI			x		604.0	603.1	2.0	Hiking Trail
11	John Deere Marsh	IA			x	x	586.3	586.0	1.2	Hiking Trail
13	Pleasant Creek	IA	x	x	x	x	551.0	549.0	4.7	Hiking Trail; also bike trail on Great River Map
13	Spring Lake	IL	x	x	x	x	536.0	531.9	11.0	Hiking Trail; also bike trail on Great River Map
13	Sloane Marsh	IL	x	x	x	x	533.0	532.5	1.3	Hiking Trail; also bike trail on Great River Map
13	Potter's Marsh	IL	x	x	x	x	526.0	524.8	1.9	Hiking Trail; also bike trail on Great River Map
	Total Miles		20.5	24.8	50.7	40.9				
	Total Units		6	8	21	16				

Table 15: Kiosks, Interpretive Signs, Entrance Signs and Official Notice Boards

Pool	Feature	State	Existing	Proposed				River Mile	Comments
			Alt. A	Alt. B	Alt. C	Alt. D			
4	Beef Slough Landing	WI			x	x	760.4	Kiosk	
4	Pontoon Slough Landing	WI			x	x	760.3	Kiosk	
4	Indian Slough Landing	WI			x	x	760.2	Kiosk	
4	Wabasha Marina	MN			x	x	759.4	Kiosk	
4	Wabasha Eagle Deck	MN	x	x	x	x	759.4	Interpretive Sign (eagle sign)	
4	Wabasha Eagle Deck	MN	x	x	x	x	759.4	Interpretive Sign (eagle sign)	
4	Wabasha Eagle Deck	MN	x	x	x	x	759.4	Interpretive Sign (eagle sign)	
4	Wilcox Landing	MN			x	x	756.0	Kiosk	
4	Rieck's Lake Observation Deck	WI	x	x	x	x	755.3	Interpretive sign	
4	Rieck's Lake Observation Deck	WI	x	x	x	x	755.3	Interpretive sign	
4	Rieck's Lake Observation Deck	WI	x	x	x	x	755.3	Interpretive sign	
4	Lofgren Prairie	MN			x	x	755.0	Kiosk	
4	Peterson Lake Landing	MN	x	x	x	x	754.0	Kiosk (1 panel)	
4	Peterson Lake Landing	MN	x	x	x	x	754.0	Official Notice Board	
4	Alma Marina	WI			x	x	753.9	Kiosk	
4	Buena Vista	WI	x	x	x	x	753.0	Interpretive Sign	
5	MN DNR Carry-in Access	MN			x	x	752.5	Official Notice Board	
5	Pioneer Landing	MN			x	x	752.3	Official Notice Board	
5	Alma Landing	WI	x	x	x	x	751.9	Kiosk (1 panel)	
5	Wabasha Prairie	MN			x	x	751.7	Kiosk	
5	Great River Harbor	WI			x	x	748.0	Kiosk	
5	Halfmoon Landing	MN	x	x	x	x	747.5	Kiosk (2 panel)	
5	Halfmoon Landing	MN	x	x	x	x	747.5	Official Notice Board	
5	Lizzy Pauls Pond	WI			x	x	747.4	Kiosk	
5	Belvidere Slough Landing	WI			x	x	747.0	Kiosk	
5	Weaver Landing	MN	x	x	x	x	744.0	Kiosk (1 panel)	
5	Weaver Landing	MN	x	x	x	x	744.0	Kiosk (3 panel)	
5	Weaver Landing	MN	x	x	x	x	744.0	Official Notice Board	

**Table 15: Kiosks, Interpretive Signs, Entrance Signs and Official Notice Boards
(Continued)**

Pool	Feature	State	Existing	Proposed				River Mile	Comments
			Alt. A	Alt. B	Alt. C	Alt. D			
5	Weaver Observation Deck	MN	x	x	x	x	744.0	Interpretive sign	
5	Upper Spring Lake Landing	WI			x	x	743.5	Kiosk	
5	Lower Spring Lake Landing	WI			x	x	742.9	Kiosk	
5	Minneiska Landing	MN			x	x	741.9	Kiosk	
5A	Thorpe Hiking Trail	MN			x	x	736.0	Kiosk	
5A	Merrick State Park South Landing	WI			x	x	735.5	Kiosk	
5A	Lower Fountain City Landing	WI			x	x	732.0	Kiosk	
5A	Hwy. 61 at Denzers	MN			x	x	732.0	Entrance Sign	
5A	Verchota Landing	MN	x	x	x	x	730.5	Kiosk (2 panel)	
5A	Verchota Landing	MN	x	x	x	x	730.5	Official Notice Board	
5A	McNally Landing	MN	x	x	x	x	729.0	Kiosk (2 panel)	
5A	McNally Landing	MN	x	x	x	x	729.0	Official Notice Board	
6	Prairie Island Boat Ramp	MN			x	x	728.0	Kiosk	
6	Dick's Marine	MN			x	x	726.0	Kiosk	
6	Mertes Slough Landing	WI	x	x	x	x	726.0	Kiosk (2 panel)	
6	Mertes Slough Landing	WI	x	x	x	x	726.0	Official Notice Board	
6	Hwy 61	MN	x	x	x	x	716.6	Interpretive Sign	
7	Trempealeau Landing	WI			x	x	714.0	Kiosk	
7	Round Lake Landing	WI	x	x	x	x	713.2	Kiosk (2 panel)	
7	Round Lake Landing	WI	x	x	x	x	713.2	Official Notice Board	
7	Round Lake Landing	WI	x	x	x	x	713.2	Entrance Sign	
7	Long Lake Landing	WI	x	x	x	x	713.0	Kiosk (2 panel)	
7	Long Lake Landing	WI	x	x	x	x	713.0	Official Notice Board	
7	Long Lake Landing	WI	x	x	x	x	713.0	Entrance Sign	
7	Great River State Trail	WI			x	x	710.5	Interpretive Sign	
7	Lytle's Canoe Access	WI			x	x	709.5	Interpretive Sign	
7	Mathy Prairie	WI	x	x	x	x	709.1	Interpretive Sign	
7	Mathy Prairie	WI	x	x	x	x	709.1	Interpretive Sign	

**Table 15: Kiosks, Interpretive Signs, Entrance Signs and Official Notice Boards
(Continued)**

Pool	Feature	State	Existing	Proposed				River Mile	Comments
			Alt. A	Alt. B	Alt. C	Alt. D			
7	Upper Brice Prairie Landing	WI	x	x	x	x	708.0	Kiosk (2 panel)	
7	Upper Brice Prairie Landing	WI	x	x	x	x	708.0	Official Notice Board	
7	Upper Halfway Creek	WI	x	x	x	x	708.0	Interpretive Sign	
7	Upper Halfway Creek	WI	x	x	x	x	708.0	Interpretive Sign	
7	Upper Halfway Creek	WI	x	x	x	x	708.0	Interpretive Sign	
7	Upper Halfway Creek	WI	x	x	x	x	708.0	Entrance Sign (Greenwing sponsor)	
7	Upper Halfway Creek	WI	x	x	x	x	708.0	Official Notice Board	
7	Midway Railroad Prairie SNA	WI	x	x	x	x	706.4	Entrance Sign	
7	Midway Railroad Prairie SNA	WI	x	x	x	x	706.4	Interpretive Sign	
7	Mosey's Landing	WI	x	x	x	x	706.0	Kiosk (1 panel)	
7	Mosey's Landing	WI	x	x	x	x	706.0	Official Notice Board	
7	Nelson Park	WI	x	x	x	x	704.8	Interpretive Sign (Dabbling Ducks)	
7	Nelson Park	WI	x	x	x	x	704.8	Interpretive Sign (Protecting Waterfowl)	
7	Nelson Park	WI	x	x	x	x	704.8	Interpretive Sign (Diving Ducks)	
7	Nelson Park	WI	x	x	x	x	704.8	Kiosk (2 panel)	
7	Nelson Park	WI	x	x	x	x	704.8	Official Notice Board	
7	Highway 35 Pull Off	WI			x	x	704.8	Interpretive Sign	
7	Great River State Bike Trail	WI			x	x	704.3	Kiosk	
7	Fishermen's Road	WI	x	x	x	x	703.0	Official Notice Board	
8	Highway 35 Pull Off	WI	x	x	x	x	702.5	Interpretive Sign	
8	Lower Spillway Landing	WI			x	x	702.6	Kiosk	
8	Apple Blossom Drive	MN	x	x	x	x	702.0	Interpretive Sign	
8	Upper I-90 (Boat Landing)	MN	x	x	x	x	702.0	Official Notice Board	
8	Minnesota Rest Area	MN	x	x	x	x	701.9	Kiosk (2 panel)	
8	Minnesota Rest Area	MN	x	x	x	x	701.9	Interpretive Sign (eagle sign)	

**Table 15: Kiosks, Interpretive Signs, Entrance Signs and Official Notice Boards
(Continued)**

Pool	Feature	State	Existing	Proposed				River Mile	Comments
			Alt. A	Alt. B	Alt. C	Alt. D			
8	Minnesota Rest Area	MN	x	x	x	x	701.9	Interpretive Sign (eagle sign)	
8	Minnesota Rest Area	MN	x	x	x	x	701.9	Interpretive Sign (eagle sign)	
8	Minnesota Rest Area	MN	x	x	x	x	701.9	Entrance Sign	
8	I-90	MN			x	x	701.8	Entrance Sign	
8	WI Rest Area	WI			x	x	701.8	Kiosk (3 panel)	
8	WI Rest Area	WI	x	x	x	x	701.8	Interpretive Sign	
8	Lower I-90 (Boat Landing)	MN	x	x	x	x	701.6	Kiosk (2 panel)	
8	Lower I-90 (Boat Landing)	MN	x	x	x	x	701.6	Official Notice Board	
8	Lower I-90 (Boat Landing)	MN	x	x	x	x	701.6	Kiosk (2 panel)	
8	Lower I-90 (Boat Landing)	MN	x	x	x	x	701.6	Entrance Sign	
8	Clinton Street Landing	WI			x	x	700.4	Kiosk	
8	Wagon Wheel	MN			x	x	699.6	Interpretive Sign	
8	Hwy. 61	MN			x	x	699.0	Entrance Sign	
8	La Crescent	MN			x	x	698.5	Interpretive Sign	
8	Grandad's Bluff	WI			x	x	697.8	Interpretive Sign	
8	Houska Park	WI			x	x	697.0	Kiosk	
8	La Crosse Municipal Harbor	WI			x	x	696.8	Kiosk	
8	Green Island Landing	WI			x	x	696.0	Kiosk	
8	Goose Island Upper North Boat Landing	WI	x	x	x	x	692.6	Interpretive Sign	
8	Goose Island Upper North Boat Landing	WI	x	x	x	x	692.6	Official Notice Board	
8	Goose Island Middle Landing	WI	x	x	x	x	692.0	Official Notice Board	
8	Goose Island Middle Landing	WI	x	x	x	x	692.0	Interpretive Sign	
8	Goose Island Campground	WI			x	x	692.0	Kiosk	
8	Goose Island Hiking Trail	WI	x	x	x	x	691.0	Official Notice Board	
8	Goose Island Hiking Trail	WI	x	x	x	x	691.0	Kiosk (2 panel)	
8	Goose Island Hiking Trail	WI	x	x	x	x	691.0	Interpretive Sign (Dabbling Ducks)	

**Table 15: Kiosks, Interpretive Signs, Entrance Signs and Official Notice Boards
(Continued)**

Pool	Feature	State	Existing	Proposed				River Mile	Comments
			Alt. A	Alt. B	Alt. C	Alt. D			
8	Goose Island Hiking Trail	WI	x	x	x	x	691.0	Interpretive Sign (seasonal travelers)	
8	Goose Island Hiking Trail	WI	x	x	x	x	691.0	Interpretive Sign (Protecting Waterfowl)	
8	Goose Island Hunter's Point	WI	x	x	x	x	690.5	Kiosk (2 panel)	
8	Goose Island Hunter's Point	WI	x	x	x	x	690.5	Official Notice Board	
8	Hwy 35, South of Goose Island	WI	x	x	x	x	690.5	Interpretive Sign	
8	Goose Island	WI			x	x	690.0	Interpretive Sign	
8	Hwy 35, South of Goose Island	WI	x	x	x	x	690.0	Interpretive Sign	
8	Hwy. 35, Goose Island	WI			x	x	689.0	Interpretive Sign	
8	Hwy 35, south of Goose Island	WI	x	x	x	x	689.0	Interpretive Sign	
8	Wildcat Park	MN	x	x	x	x	688.4	Kiosk (2 panel)	
8	Wildcat Park	MN	x	x	x	x	688.4	Official Notice Board	
8	Stoddard Park Landing	WI	x	x	x	x	685.5	Kiosk (2 panel)	
8	Stoddard Park Landing	WI	x	x	x	x	685.5	Official Notice Board	
8	Hwy. 35, Stoddard	WI			x	x	684.3	Kiosk	
8	Brownsville Overlook	MN	x	x	x	x	683.2	Interpretive Sign (diving ducks)	
8	Brownsville Overlook	MN	x	x	x	x	683.2	Interpretive Sign (seasonal travelers)	
8	Brownsville Overlook	MN	x	x	x	x	683.2	Interpretive Sign (protecting waterfowl)	
8	Brownsville Overlook	MN	x	x	x	x	683.2	Kiosk (1 panel)	
8	Old Settler's Park	WI			x	x	682.3	Interpretive Sign	
8	Reno Canoe Launch	WI			x	x	681.1	Kiosk	
9	Dairyland Power	WI	x	x	x	x	677.9	Kiosk (2 panel)	
9	Millstone Landing	MN	x	x	x	x	676.8	Kiosk (2 panel)	
9	Visgers Landing	MN	x	x	x	x	675.5	Kiosk (2 panel)	
9	Visgers Landing	MN	x	x	x	x	675.5	Official Notice Board	
9	Bad Ax Landing	WI	x	x	x	x	675.0	Kiosk (2 panel)	

**Table 15: Kiosks, Interpretive Signs, Entrance Signs and Official Notice Boards
(Continued)**

Pool	Feature	State	Existing	Proposed				River Mile	Comments
			Alt. A	Alt. B	Alt. C	Alt. D			
9	New Albin Overlook	MN	x	x	x	x	674.0	Entrance Sign	
9	New Albin Overlook	MN	x	x	x	x	674.0	Kiosk (2 panel)	
9	New Albin Overlook	MN	x	x	x	x	674.0	Interpretive Sign	
9	Three State Point	MN	x	x	x	x	673.9	Interpretive Sign (3 states)	
9	New Albin Landing	IA	x	x	x	x	673.0	Kiosk (2 panel)	
9	New Albin Landing	IA	x	x	x	x	673.0	Entrance Sign	
9	New Albin Landing	IA	x	x	x	x	673.0	Official Notice Board	
9	Blackhawk Park	WI	x	x	x	x	671.0	Kiosk (2 panel)	
9	Winneshiek Slough Landing	WI	x	x	x	x	665.5	Kiosk (2 panel)	
9	Winneshiek Slough Landing	WI	x	x	x	x	665.5	Entrance Sign	
9	Hwy. 82	WI	x	x	x	x	664.5	Entrance Sign	
9	Big Slough Landing	WI	x	x	x	x	663.5	Kiosk (2 panel)	
9	Big Slough Landing	WI	x	x	x	x	663.5	Official Notice Board	
9	Lansing Field Station	WI	x	x	x	x	663.0	Entrance Sign	
9	Mt. Hosmer-Lansing City Park	IA	x	x	x	x	663.0	Interpretive Sign	
9	Village Creek Landing	IA	x	x	x	x	662.0	Kiosk (2 panel)	
9	Ferryville Landing	WI	x	x	x	x	659.0	Kiosk (2 panel)	
9	Cold Springs Landing	WI	x	x	x	x	653.5	Kiosk (2 panel)	
9	Cold Springs Landing	WI	x	x	x	x	653.5	Entrance Sign	
9	Cold Springs Landing	WI	x	x	x	x	653.5	Official Notice Board	
9	Ferryville Observation Deck	WI	x	x	x	x	659.0	Interpretive Sign	
9	Ferryville Observation Deck	WI	x	x	x	x	659.0	Interpretive Sign	
9	Ferryville Observation Deck	WI	x	x	x	x	659.0	Interpretive Sign	
10	Gordons Bay Landing	WI	x	x	x	x	647.0	Kiosk (2 panel)	
10	Harpers Ferry Landing	IA	x	x	x	x	646.5	Kiosk (2 panel)	
10	Nobles Landing	IA	x	x	x	x	643.2	Kiosk (2 panel)	
10	Nobles Landing	IA	x	x	x	x	643.2	Official Notice Board	

**Table 15: Kiosks, Interpretive Signs, Entrance Signs and Official Notice Boards
(Continued)**

Pool	Feature	State	Existing	Proposed				River Mile	Comments
			Alt. A	Alt. B	Alt. C	Alt. D			
10	Ambrough Slough Landing	WI	x	x	x	x	639.4	Kiosk (1 panel)	
10	Ambrough Slough Landing	WI	x	x	x	x	639.4	Entrance Sign	
10	Effigy Mounds NP	IA	x	x	x	x	638.0	Interpretive Sign	
10	North Water St. Landing	WI			x	x	635.8	Kiosk (2 panel)	
10	Sturgeon Slough	WI	x	x	x	x	634.9	Entrance Sign	
10	Marquette City Landing	IA	x	x	x	x	634.8	Kiosk (2 panel)	
10	Sturgeon Slough	WI	x	x	x	x	634.8	Kiosk (2 panel)	
10	Sturgeon Slough	WI	x	x	x	x	634.8	Interpretive sign (prairie plants)	
10	McGregor District Office	IA	x	x	x	x	634.0	Interpretive sign (bat cave)	
10	McGregor District Office	IA	x	x	x	x	634.0	Entrance Sign	
10	McGregor District Office	IA	x	x	x	x	634.0	Kiosk (3 panel)	
10	Pikes Peak State Park	IA	x	x	x	x	633.5	Interpretive sign	
10	Wyalusing State Park Landing	WI	x	x	x	x	630.0	Official Notice Board	
10	Wyalusing State Park Landing	WI	x	x	x	x	630.0	Kiosk (2 panel)	
10	Wyalusing Public Boat Landing	WI	x	x	x	x	627.8	Kiosk (2 panel)	
10	Sny Magill Landing	IA	x	x	x	x	627.0	Kiosk (2 panel)	
10	Bagley Bottoms Landing	WI	x	x	x	x	625.0	Entrance Sign	
10	Bagley Bottoms Landing	WI	x	x	x	x	625.0	Kiosk (1 panel)	
10	Bagley Bottoms Landing	WI	x	x	x	x	625.0	Official Notice Board	
10	Jays Lake Landing	WI	x	x	x	x	622.0	Kiosk (2 panel)	
10	Bussey Lake	IA	x	x	x	x	616.7	Kiosk (2 panel)	
11	Guttenberg Landing	IA	x	x	x	x	614.5	Kiosk (2 panel)	
11	Goetz Island Trail Head	IA			x	x	614.0	Entrance Sign	
11	Nelson Dewey State park	WI	x	x	x	x	609.0	Interpretive Sign	
11	Turkey River Landing	IA	x	x	x	x	607.8	Entrance Sign	
11	Turkey River Landing	IA	x	x	x	x	607.7	Kiosk (2 panel)	
11	Turkey River Landing	IA	x	x	x	x	607.7	Official Notice Board	

**Table 15: Kiosks, Interpretive Signs, Entrance Signs and Official Notice Boards
(Continued)**

Pool	Feature	State	Existing	Proposed				River Mile	Comments
			Alt. A	Alt. B	Alt. C	Alt. D			
11	Eagle Roost Resort	WI	x	x	x	x	607.0	Interpretive Sign	
11	Cassville Overlook	WI	x	x	x	x	607.0	Interpretive Signs (refuge journal)	
11	Cassville Overlook	WI	x	x	x	x	607.0	Interpretive Sign (migration sensation)	
11	Cassville Overlook	WI	x	x	x	x	607.0	Interpretive Sign (heron rookery)	
11	Cassville Overlook	WI	x	x	x	x	607.0	Entrance Sign	
11	Cassville Field Station	WI	x	x	x	x	607.0	Entrance Sign	
11	Cassville Public Access	WI	x	x	x	x	606.4	Kiosk (2 panel)	
11	Bertom Lake Landing	WI	x	x	x	x	601.7	Kiosk	
11	Bertom Lake Landing	WI	x	x	x	x	601.7	Entrance Sign	
11	Bertom Lake Landing	WI	x	x	x	x	601.7	Official Notice Board	
11	Lynn Hollow Landing	WI	x	x	x	x	597.0	Entrance Sign	
11	Lynn Hollow Landing	WI	x	x	x	x	597.0	Kiosk (1 panel)	
11	Potosi Public Access	WI			x	x	592.5	Kiosk	
11	Potosi Public Access	WI			x	x	592.5	Entrance Sign	
11	Finley's Landing	IA			x	x	595.8	Kiosk	
11	Mud Lake Recreation Area	IA	x	x	x	x	589.3	Kiosk (2 panel)	
11	John Deere Marsh	IA			x	x	585.8	Kiosk	
11	Grant River Rec. Area	WI	x	x	x	x	591.0	Kiosk (2 panel)	
11	Sunfish Lake Landing	IA	x	x	x	x	583.3	Kiosk (2 panel)	
12	Hawthorne St. Boat Ramp	IA			x	x	582.0	Interpretive Sign	
12	Schmitt Harbor	IA			x	x	581.0	Interpretive Sign	
12	East Dubuque Public Ramp	IL			x	x	579.5	Interpretive Sign	
12	Midtown Marina	IL			x	x	579.0	Interpretive Sign	
12	Bent Prop Marina	IL			x	x	578.4	Interpretive Sign	
12	Massey Station	IA			x	x	573.8	Kiosk	
12	Ferry Landing	IL			x	x	566.6	Kiosk	
12	Spruce Creek	IA	x	x	x	x	559.5	Kiosk (1 panel)	
12	Blanding Landing	IL			x	x	558.7	Kiosk	

**Table 15: Kiosks, Interpretive Signs, Entrance Signs and Official Notice Boards
(Continued)**

Pool	Feature	State	Existing	Proposed				River Mile	Comments
			Alt. A	Alt. B	Alt. C	Alt. D			
13	Bellevue Municipal Landing	IA			x	x	556.6	Kiosk	
13	Mill Creek	IA			x	x	555.5	Kiosk	
13	Pleasant Creek	IA			x	x	550.0	Kiosk	
13	Lost Mound Observation Deck	IL			x	x	548.3	Interpretive Sign	
13	Lost Mound Unit	IL	x	x	x	x	546.0	Kiosk (3 panel)	
13	Lost Mound Unit	IL	x	x	x	x	546.0	Entrance Sign	
13	Palisades State Park # 1	IL	x	x	x	x	540.8	Interpretive Sign	
13	Miller's Hollow Landing	IL	x	x	x	x	540.2	Kiosk (2 panel)	
13	Palisades State Park # 2	IL	x	x	x	x	540.0	Interpretive Sign	
13	Palisades State Park # 3	IL			x	x	540.0	Interpretive Sign	
13	Palisades State Park # 4	IL			x	x	540.0	Interpretive Sign	
13	Palisades Park # 5	IL			x	x	540.0	Interpretive Sign	
13	Marquette Park	IL			x	x	537.5	Interpretive Sign	
13	Frog Pond	IL	x	x	x	x	535.5	Kiosk (1 panel)	
13	Spring Lake	IL	x	x	x	x	535.0	Kiosk (3 panel)	
13	Spring Lake Tower	IL	x	x	x	x	535.0	Interpretive sign (puddle duck)	
13	Spring Lake Tower	IL	x	x	x	x	535.0	Interpretive sign (diving duck)	
13	Spring Lake Observation Area	IL	x	x	x	x	535.0	Interpretive sign (diving duck)	
13	Spring Lake Observation Area	IL	x	x	x	x	535.0	Interpretive sign (puddle duck)	
13	Savanna District Maintenance	IL	x	x	x	x	535.0	Entrance Sign	
13	Ingersoll Wetlands Learning Center	IL	x	x	x	x	535.0	Kiosk (2 panel)	
13	Sloane Marsh	IL	x	x	x	x	533.0	Kiosk (2 panel)	
13	Sloane Marsh	IL	x	x	x	x	533.0	Interpretive sign (puddle duck)	
13	Sloane Marsh	IL	x	x	x	x	533.0	Interpretive sign (diving duck)	
13	Thomson Prairie	IL	x	x	x	x	527.0	Kiosk (3 panel)	

**Table 15: Kiosks, Interpretive Signs, Entrance Signs and Official Notice Boards
(Continued)**

Pool	Feature	State	Existing	Proposed				River Mile	Comments
			Alt. A	Alt. B	Alt. C	Alt. D			
13	Savanna District	IL	x	x	x	x	528.0	Entrance Sign	
13	Esmay Slough Landing	IA			x	x	536.0	Kiosk	
13	Bulgers Hollow	IA			x	x	525.0	Kiosk	
13	Potters Marsh Hunter's Park. Lot	IL	x	x	x	x	526.0	Kiosk (2 panel)	
13	Michelson's Landing	IL	x	x	x	x	524.0	Kiosk (1 panel)	
13	Eagle Point Park	IA			x	x	522.7	Kiosk	
14	Hwy 30	IL	x	x	x	x	518.0	Entrance Sign	
14	Catfish Ramp	IL			x	x	517.6	Interpretive Sign	
14	5th St. Ramp	IA			x	x	517.0	Interpretive Sign	
14	Albany Municipal Boat Ramp	IL			x	x	514.0	Interpretive Sign	
14	Camanche Municipal Park Ramp	IA			x	x	511.0	Interpretive Sign	
14	Rock Creek Ramp	IA			x	x	508.0	Interpretive Sign	
14	Rock Creek Ramp	IA			x	x	508.0	Kiosk	
14	10th Street Ramp	IL			x	x	503.0	Interpretive Sign	
	Total Kiosks		63	63	108	108			
	Total Interpretive Signs		59	59	83	83			
	Total Entrance Signs		25	25	30	30			
	Total Official Notice Boards		29	29	30	30			

Table 16: Managed Hunts

			Existing	Proposed					
Pool	Feature	State	Alt. A Acres	Alt. B Acres	Alt. C Acres	Alt. D Acres	Up-River Mile	Down-River Mile	Comments
7	Gibb's Lake	WI				480	708.6	707.2	
12	Blanding Landing	IL	412				557.7	556.8	
13	Potter's Marsh	IL	1,923			1,923	526.0	522.7	Alt. D Only: No permanent blinds; boat blinds only
	Total Acres		2,335	0	0	2,403			
	Total Units		2	0	0	2			

Table 17: No-wake Zones

Pool	Feature	State	Existing	Proposed				River Mile	Agency	Comments
			Alt. A	Alt. B	Alt. C	Alt. D				
4	Wabasha	MN	x	x	x	x	760.3	Non-FWS		
4	Wilcox Landing	MN			x	x	756.5	FWS		
5	Belvidere Slough	WI	x	x	x	x	747.5	Non-FWS		
5	Halfmoon Landing	MN	x	x	x	x	747.5	FWS		
5A	None Existing									
5A	Fountain City Bay	WI		x	x	x	735.0	FWS		
5A	Verchota Landing	MN		x		x	731.0	FWS		
5A	McNally Landing	MN		x	x	x	729.0	FWS		
6	Winona	MN	x	x	x	x	725.5	Non-FWS		
7	Lytle's Landing	WI	x	x	x	x	710.0	Non-FWS		
7	Brice Prairie	WI	x	x	x	x	708.0	Non-FWS		
7	La Crosse Sailing Club	WI	x	x	x	x	705.0	Non-FWS		
8	Black River / French Island	WI	x	x	x	x	703.0	Non-FWS		
8	R & R Marine	WI	x	x	x	x	701.0	Non-FWS	30 mph max.	
8	Al's Marina	WI	x	x	x	x	700.5	Non-FWS		
8	Clinton St. Landing	WI	x	x	x	x	700.4	Non-FWS		
8	French Island Yacht Club	WI	x	x	x	x	700.3	Non-FWS		
8	Taylor Island	WI	x	x	x	x	699.0	Non-FWS	30 mph max.	
8	Bikini Yacht Club	WI	x	x	x	x	698.0	Non-FWS		
8	Houska Park	WI	x	x	x	x	697.0	Non-FWS	30 mph max.	
8	Green Island Landing	WI	x	x	x	x	695.8	Non-FWS		
8	Chut's Landing	WI	x	x	x	x	695.3	Non-FWS		
8	Goose Island Campground	WI	x	x	x	x	692.0	Non-FWS		
8	Lawrence Lake Marina	MN	x	x	x	x	690.5	Non-FWS		
9	None Existing									
9	Fish Lake	IA			x	x	672.5	FWS		
9	Cold Springs	WI		x	x	x	653.9	FWS		
10	Ambrough Slough	WI	x	x	x	x	639.0	FWS		
10	McGregor	IA	x	x	x	x	634.5	Non-FWS	Boat Traffic Caution Zone	

Table 17: No-wake Zones (Continued)

Pool	Feature	State	Existing	Proposed				River Mile	Agency	Comments
			Alt. A	Alt. B	Alt. C	Alt. D				
10	Wyalusing Park	WI		x	x	x		630.0	FWS	
10	Johnson Slough	IA		x	x	x		628.0	FWS	
11	None Existing / None Proposed									
12	Hawthorne St. Boat Ramp	IA	x	x	x	x		582.0	Non-FWS	
12	Schmitt's Harbor	IA	x	x	x	x		581.0	Non-FWS	
12	East Dubuque	IL	x	x	x	x		579.5	Non-FWS	
12	Midtown Marine	IL	x	x	x	x		579.0	Non-FWS	
12	Bent Prop. Marina	IL	x	x	x	x		578.5	Non-FWS	
12	Frentress Lake Marina	IL	x	x	x	x		576.0	Non-FWS	
12	Massey Station	IA	x	x	x	x		573.0	Non-FWS	
12	Menominee Slough	IL		x				571.0		
12	Ferry Landing	IL	x	x	x	x		567.0	Non-FWS	
12	Spruce Creek County Park	IA	x	x	x	x		559.5	Non-FWS	
13	Bellevue Municipal Landing	IA	x	x	x	x		556.8	Non-FWS	
13	Crooked Slough	IL		x				556.0		
13	Millers Hollow Landing	IL	x	x	x	x		542.0	Non-FWS	
13	Marquette Park	IL	x	x	x	x		537.0	Non-FWS	
13	North Sabula Access	IA	x	x	x	x		535.8	Non-FWS	
13	South Sabula Lake	IA	x	x	x	x		534.5	Non-FWS	
13	Spring Lake Resort	IL	x	x	x	x		533.6	Non-FWS	
13	Spring Lake 20 mph Zone	IL		x	x	x		533.0	FWS	20 mph zone
13	Big Slough	IL		x	x	x		531.5	FWS	
14	Fulton Harbor	IL	x	x	x	x		519.6	Non-FWS	
14	Ninth Avenue Ramp	IA	x	x	x	x		519.0	Non-FWS	
14	Clinton Marina	IA	x	x	x	x		518.8	Non-FWS	
14	Catfish Ramp	IL	x	x	x	x		517.6	Non-FWS	
14	Camanche Boat Harbor	IA	x	x	x	x		512.3	Non-FWS	

Table 17: No-wake Zones (Continued)

Pool	Feature	State	Existing	Proposed				River Mile	Agency	Comments
			Alt. A	Alt. B	Alt. C	Alt. D				
14	Camanche Municipal Ramp	IA	x	x	x	x	511.0	Non-FWS		
14	Rock Creek Ramp	IA	x	x	x	x	508.0	Non-FWS		
14	Green Gables Boat Harbor	IA	x	x	x	x	495.0	Non-FWS		
14	Lock & Dam 14	IA	x	x	x	x	493.8	Non-FWS		
	Total		45	55	54	55				

Table 18: Observation Decks, Towers and Photography Blinds

Pool	Feature	State	Existing	Proposed				River Mile	Comments
			Alt. A	Alt. B	Alt. C	Alt. D			
4	Rieck's Lake Photo Blind	WI			x	x	755.7		
4	Rieck's Lake Observation Deck	WI	x	x	x	x	755.3	COE/FWS cooperative	
5	Weaver Observation Deck	MN	x	x	x	x	744.0	FWS	
5	Upper Spring Lake Observation Deck	WI			x	x	743.5		
5A	McNally Observation Tower	MN			x	x	728.5		
7	Lone Tree Observation Deck	WI			x	x	712.0		
7	Mathy Prairie/Wooden deck	WI	x	x	x	x	709.0	FWS	
7	Brown's Marsh Observation Deck	WI			x	x	709.0		
7	Upper Halfway Creek Observation Tower	WI			x	x	708.0		
7	Upper Halfway Creek /Bike Trail / Observation Area	WI	x	x	x	x	708.0	FWS	
7	Upper Halfway Creek /County HWY Z/ Observation Deck	WI	x	x	x	x	707.8	FWS	
8	Wittenberg Marsh EE Facility / Observation Deck	WI			x	x	703.2		
8	I-90 Eagle Observation Deck	WI			x	x	701.8		
8	Wagon Wheel Observation Deck	MN			x	x	699.7		
8	Blue Lake Observation Tower	MN			x	x	698.5		
8	Goose Island Observation Deck	WI			x	x	691.4		
8	Goose Island Observation Deck / Hiking trail	WI	x	x	x	x	690.9	FWS	
8	Brownsville /Hwy 26 Observation Deck	MN	x	x	x	x	683.2	MN DOT	
9	Reno Bottoms Observation Deck	MN			x	x	681.1		
9	New Albin Observation Deck	MN	x	x	x	x	674.0	FWS	
9	Ferryville Observation Deck	WI	x	x	x	x	659.0	FWS/Village of Ferryville Cooperative	
9	Harper's Slough Observation Deck	IA			x	x	650.0		
10	Sturgeon Slough Observation Deck	WI	x	x	x	x	634.7	FWS	
10	WI River Delta Observation Deck	WI			x		632.9		
11	Cassville Observation Deck	WI	x	x	x	x	607.0	FWS/Village of Cassville Cooperative	

Table 18: Observation Decks, Towers and Photography Blinds (Continued)

Pool	Feature	State	Existing	Proposed				River Mile	Comments
			Alt. A	Alt. B	Alt. C	Alt. D			
11	Dago Slough Observation Deck	WI			x			604.0	
11	Potosi Observation Deck	WI			x	x		592.3	
11	Potosi Photo Blind	WI			x	x		592.3	
11	Mud Lake Observation Deck	IA			x			589.4	
11	John Deere Outdoor Classroom / Photo Blind	IA			x	x		586.0	
12	None Existing								
13	Pleasant Creek Observation Deck	IA			x			551.0	
13	Lost Mound Observation Deck	IL	x	x	x	x		549.0	FWS
13	Kellers Island Observation Deck	IA			x			536.9	
13	Spring Lake Observation Deck	IL	x	x	x	x		535.0	FWS
13	Sloane Marsh Observation Deck	IL	x	x	x	x		532.5	FWS
13	L & D 13 Observation Deck	IL	x	x	x	x		522.7	COE/FWS cooperative
14	Albany Municipal Boat Ramp / Observ. Deck	IL			x			514.0	
	Total Photo Blinds		0	0	3	3			
	Total Observation Decks / Areas		15	15	31	26			
	Total Observation Towers		0	0	3	3			

Table 19: Refuge Staffing / Districts of the Upper Mississippi River NW&FR

	Number of Full-time Equivalent																			
	Winona District				La Cross District				McGregor District				Savanna District				District Totals			
	Existing		Proposed		Existing		Proposed		Existing		Proposed		Existing		Proposed		Existing		Proposed	
Staff Positions	Alt. A	Alt. B	Alt.C	Alt. D	Alt. A	Alt. B	Alt.C	Alt. D	Alt. A	Alt. B	Alt.C	Alt. D	Alt. A	Alt. B	Alt.C	Alt. D	Alt. A	Alt. B	Alt.C	Alt. D
Refuge Districts																				
District Manager	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	4	4	4
Assistant Manager/ Refuge Operations Specialist	1	1	1	1	1	1	1	1	2	2	2	2	1	1	1	1	5	5	5	5
Administrative Technician	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	4	4	4
Law Enforcement Refuge Officer	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	4	4	4
Visitor Services Specialist	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	2	4	4	4
Wildlife Biologist	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	4	4	4
Private Lands Biologist	0	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	4	4	4
Biological Technician	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	4	4	4
Maintenance	1	2	2	2	0	2	2	2	1	1	1	1	2	2	2	2	4	7	7	7
Receptionist / Permit Specialist (Part Time)	0.0	0.5	0.5	0.5	0.0	0.5	0.5	0.5	0.0	0.5	0.5	0.5	0.0	0.5	0.5	0.5	0.0	2.0	2.0	2.0
Lost Mound Unit	0	0	0	0	0	0	0	0	0	0	0	0	1	3	3	3	1	3	3	3
¹Sub-Total Positions Each District	7.0	10.5	10.5	10.5	7.0	10.5	10.5	10.5	7.0	10.5	10.5	10.5	9.0	13.5	13.5	13.5	30.0	45.0	45.0	45.0

1. There will be some latitude in the types of positions filled. For example, a District may need two biological technicians instead of the standard one position.

Table 19: Refuge Staffing / Refuge Headquarters and Refuge-wide Totals, Upper Mississippi River NW&FR

	Number of Full-time Equivalents			
	Headquarters			
	Existing	Proposed		
Refuge Headquarters	Alt. A	Alt. B	Alt.C	Alt. D
Complex Manager	1	1	1	1
Administrative Officer	1	1	1	1
Environmental Engineer	1	1	1	1
Visitor Services Specialist	1	1	2 ¹	2 ¹
Watershed Biologist	1	1	1	1
Wildlife Biologist	1	1	1	1
Forester	0	1	0	1
Fishery Biologist	0	1	0	1
Geographic Information System (GIS) Specialist	1	1	1	1
Public Information Specialist	0	0	1	1
Receptionist (Part-time)	0	0.5	0.5	0.5
Sub-Total- Headquarters	7.0	9.5	9.5	11.5
District Totals	30.0	45.0	45.0	45.0
Refuge Wide Total Positions	37.0	54.5	54.5	56.5

1. One person stationed at the National Mississippi River Museum in Dubuque, Iowa.

Table 20: Summary of Features by Alternative

Feature	Existing Features		Total Proposed Features						Comments
	Alt. A / No Action		Alt. B Wildlife Focus		Alt. C Public Use Focus		Alt. D Wildlife and Integrated Public Use Focus		
	Units	Acres or Miles	Units	Acres or Miles	Units	Acres or Miles	Units	Acres or Miles	
Waterfowl Closed Areas and/or Sanctuaries	15	44,495	29	60,396	15	44,614	21	43,704	
No open water hunting areas	0	0	2	10,487	0	0	2	10,487	Pool 9 – 6,429 acres; Pool 11– 4,058 acres
Managed Hunts	2	2,335	0	0	0	0	2	2,403	
Administrative no hunting zones	7	3,473	9	3,731	16	5,877	13	5,322	All alternatives include Lost Mound No Entry Area
Fish catch and release area	1	700	1	700	1	700	1	700	
Heron sanctuary	0	0	1	64	0	0	1	64	
No-wake zones	45	NA	55	NA	54	NA	55	NA	
Electric motor areas	1	222	10	15,900	15	13,239	16	14,498	
Research Natural Areas	4	6,946	4	6,946	4	6,946	4	6,946	
Trails									
Canoe trails	4	32.1	4	32.1	26	176.5	21	135.5	*Alt. C and Alt. D include the proposed Ambrough Slough Canoe Area (1,853 acres)
Hiking trails	6	20.5	8	24.8	21	50.7	16	40.9	

Table 20: Summary of Features by Alternative (Continued)

Feature	Existing Features		Total Proposed Features						Comments
	Alt. A / No Action		Alt. B Wildlife Focus		Alt. C Public Use Focus		Alt. D Wildlife and Integrated Public Use Focus		
	Units	Acres or Miles	Units	Acres or Miles	Units	Acres or Miles	Units	Acres or Miles	
Auto tour routes	1	2.5	1	2.5	3	11.0	3	11.0	
Biking trails	3	10.0	3	10.0	6	17.0	5	14.1	
Fishing piers	15	NA	15	NA	20	NA	18	NA	
Commercial fishing floats / piers	4	NA	0	NA	5	NA	4	NA	
Access Facilities									
Boat access	26	NA	26	NA	27	NA	27	NA	
Walk-in access	0	NA	0	NA	3	NA	3	NA	
Canoe landing / launch	0	NA	0	NA	4	NA	2	NA	Alt. C and Alt. D include proposed improvement to Reno Canoe Launch (non-FWS)
Parking lot improvements	0	NA	0	NA	5	NA	5	NA	
Wildlife Observation Facilities									
Observation decks/areas	15	NA	15	NA	31	NA	26	NA	
Observation towers	0	NA	0	NA	3	NA	3	NA	
Photo blinds	0	NA	0	NA	3	NA	3	NA	

Table 20: Summary of Features by Alternative (Continued)

Feature	Existing Features		Total Proposed Features						Comments
	Alt. A / No Action		Alt. B Wildlife Focus		Alt. C Public Use Focus		Alt. D Wildlife and Integrated Public Use Focus		
	Units	Acres or Miles	Units	Acres or Miles	Units	Acres or Miles	Units	Acres or Miles	
Signage									
Kiosks	63	NA	63	NA	108	NA	108	NA	
Interpretive signs	59	NA	59	NA	83	NA	83	NA	
Entrance signs	25	NA	25	NA	30	NA	30	NA	
Official Notice Boards	29	NA	29	NA	30	NA	30	NA	
Proposed Buildings									
Build new maintenance facilities	2	NA	3	NA	5	NA	5	NA	
Build new office facilities	0	NA	0	NA	3	NA	3	NA	HQ office combined with Winona or La Crosse office in Alternatives C & D.
Build major visitor center	0	NA	0	NA	1	NA	0	NA	HQ Visitor Center + Office combined in Alt. C, located in Winona or La Crosse
Refuge Staffing	37.0	NA	54.5	NA	54.5	NA	56.5	NA	Number of FTEs (Full Time Equivalents)

Appendix I: Current Hunting Regulations

Upper Mississippi River National
Wildlife & Fish Refuge
Headquarters
51 East Fourth Street, Room 101
Winona, MN 55987 (507/452 4232)

Refuge Website
www.umesc.usgs.gov/umr_refuge.html



Winona District (Pools 4-6)
51 East Fourth Street, Room 203
Winona, MN 55987 (507/454 7351)

La Crosse District (Pools 7-8)
555 Lester Avenue
Onalaska, WI 54650 (608/783 8405)

McGregor District (Pools 9-11)
P.O. Box 460
McGregor, IA 52157 (563/873 3423)

Savanna District (Pools 12-14)
7071 Riverview Road
Thomson, IL 61285 (815/273 2732)

Deaf or hard of hearing persons may contact
the refuge through the Federal Relay
Number at 1 800/877 8339.

U.S. Fish & Wildlife Service
1 800/344 WILD
<http://www.fws.gov/>

U.S. Fish & Wildlife Service

Upper Mississippi River

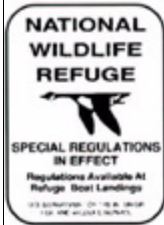
*National Wildlife
& Fish Refuge*

Hunting Regulations

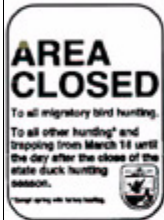


Printed 2001

Refuge Signs - Look for these signs on the refuge



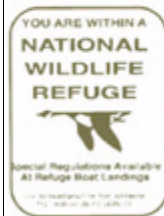
Boundary Signs
These signs mark the refuge boundary.



The area posted by these signs is closed to all migratory bird hunting. Other hunting and trapping is only allowed beginning the day after the close of the state duck hunting season, until season closure or March 15, whichever occurs first, except spring turkey hunting is allowed during state seasons. During waterfowl hunting season firearms must be unloaded while traveling through an Area Closed.



The area posted by these signs is closed to all hunting. Trapping is only allowed beginning the day after the close of the state duck hunting season, until season closure or March 15, whichever occurs first. Firearms must be unloaded and in a case while in a No Hunting Zone.



Interior Refuge Signs
These reminder signs are posted on some lands located inside the refuge boundary. (They do not mark the actual boundary line)



These reminder signs are posted on some lands located inside the Area Closed boundary. (They do not mark the actual boundary line)



Waterfowl Band Reporting

Hunters can report waterfowl bands by mail to 12100 Beech Forest Road, Waterfowl Bands Laurel, MD 20708-4087 or by calling 1-800-327-2263 (BAND) or on the internet at www.pwrc.usgs.gov/bbl/homepage/recwbnd.htm

Turn in Poachers
Iowa 1-800-532-2020
Illinois 1-877-236-7529
Minnesota 1-800-652-9093
Wisconsin 1-800-847-9367

	<p>Voluntary Avoidance Area The public is asked to refrain from boating through the portion of Lake Onalaska marked as a "Voluntary Avoidance Area" to allow waterfowl to rest and feed without being disturbed. This Avoidance Area is in effect from mid-October to mid-November.</p> <p>Spring Lake Unit in Illinois - Waterfowl Sanctuary In addition to being closed to all migratory bird hunting, the area is closed to all entry from October 1 to the end of the Illinois duck season each year. Other hunting, trapping and fishing are allowed beginning the day after the close of the Illinois duck hunting season until season closure or March 15, whichever occurs first. Visitors are allowed to use the parking lot, trail to the observation deck, and the observation deck during the Illinois duck hunting season.</p> <p>Deer and Small Game Hunting Locations posted as Area Closed are closed to all hunting until the day after the close of the duck hunting season.</p>		
<i>Area Closed</i>			
<i>Hunt Methods</i>	Shining to locate game is prohibited on the refuge. You may use lights and dogs to hunt raccoons, and other specifically authorized small mammals, in accordance with state regulations. You may only use lights on the refuge at the point of kill. All other uses of lights for hunting on the refuge are prohibited. The use or possession of any drug on any arrow for bow hunting is prohibited on the refuge. The distribution of bait and the hunting over bait is prohibited.		
<i>Tree Stands</i>	The construction or use of permanent platforms or ladders is prohibited. All stands must be removed from the refuge at the end of each day of hunting. No stand should damage a tree. Spikes, nails or screws may not be used for ladders or to attach a stand to a tree.		
		<i>Bag Limit</i>	Migratory Game Bird Hunting Only one bag limit of migratory game birds may be taken by a hunter in one days time, even if the hunter hunts in two different states.
		<i>Blinds</i>	This regulations applies to Pools 4 through 11 only. The construction of permanent hunting blinds using manmade materials is prohibited. At the end of each day's hunt, you must remove all manmade blind materials you brought onto the refuge. Any blinds containing manmade materials left on the refuge are subject to immediate removal and disposal. Manmade materials include, but are not limited to: wooden pallets, lumber, railroad ties, fence posts (wooden or metal), wire, nails, staples, netting or tarps. You are allowed to leave only seasonal blinds, made entirely of natural vegetation, and biodegradable twines, on the refuge. All such blinds are considered public property and open to use by any person on a first-come basis. You are allowed to gather only willow, grasses, marsh vegetation, and dead wood on the ground from the refuge for blind-building materials. Cutting or removing any other refuge trees or vegetation is prohibited. Constructing hunting blinds from rocks placed for shoreline protection is prohibited.
		<i>Decoys</i>	On Pools 4 through 11, you may not place or leave decoys on the refuge during the time from 1/2 hour after the close of legal shooting hours, until 1 hour before the start of legal shooting hours.
		<i>Game Retrieval</i>	Retrieving dead or wounded game birds from an Area Closed or a No Hunting Zone is allowed provided the hunter does not take a gun into the area and does not attempt to chase birds from the area. Controlled hunting and retrieving dogs may be used while engaged in authorized hunting activities during hunting season.



Hunting Information

Hunting has a deep history and tradition on the refuge with most hunting opportunities on islands and in flood plain forest, accessible mainly by boat. Over the years, hunters and hunting groups, have been very active in contributing to the refuge through voluntary support and conservation efforts.

Portions of the refuge are open to hunting and trapping in accordance with federal, state and local regulations. All regulations should be checked before hunting with the most restrictive regulation applying. Local ordinances may restrict hunting near populated areas. Contact one of the refuge offices for information regarding special regulations that apply in your area of interest. Hunters must be aware that individuals involved in other types of recreational activities may also be using the refuge and may not be aware of the hunting season.

Alcohol

Use or possession of alcoholic beverages while hunting is prohibited.

Campfires

Campfires are allowed using only dead wood on the ground, or materials brought onto the refuge such as charcoal or firewood. Burying live fires or hot coals is prohibited.

Camping

During waterfowl hunting seasons, camping is prohibited within areas posted Area Closed, No Hunting Zone, or on any sites not clearly visible from the main commercial navigation channel.

Closed Areas

The posted areas are designated on Refuge Pool Maps which can be obtained at any of the District Offices.

Firearms

Carrying, possessing, or discharging firearms or any other weapons on the refuge is prohibited, except by licensed hunters or trappers engaged in authorized activities during established seasons, in accordance with federal, state, and local regulations. Target practice is prohibited.

License/Permits

Hunters must possess a valid hunting license or firearms safety permit for the state in which they are hunting. There is no entrance fee and hunting areas can not be reserved.

Non-toxic shot

Shotgun hunters may only use or possess approved non-toxic shot while in the field, with the exception of turkey hunting.

Protected Wildlife

Only those species listed in the state hunting regulations with established open hunting seasons may be taken on the refuge. All other wildlife and plants on the refuge are protected at all times.

State Boundary

The main channel of the Mississippi River is not the state boundary line in all areas. For verification of the state boundary line, contact the Refuge Office, Department of Natural Resources, or refer to Pool Maps.

Vegetation

Cutting, removing or damaging any tree or other vegetation, standing or down, live or dead, is prohibited, without a written permit, except that willow may be used for trap stakes, commercial fishing gear, and hunting blinds. Dead wood on the ground may be cut and used for campfires.

Vehicle

All off-road vehicles are prohibited, including snowmobiles and wheeled or tracked all-terrain vehicles, on or across refuge lands at anytime, except on designated routes of travel, or on the ice over navigable waters accessed from boat landings.

Weather

Be alert to changing weather conditions. Shallow open water areas and the main river channel can become extremely dangerous in windy weather and visibility can be reduced to near zero in snow and fog. Carry extra warm clothes and emergency supplies when heading out in a boat.

Additional regulations are published in the Code of Federal Regulations Title 50, Subchapter C, The National Wildlife Refuge System.

	<p>Voluntary Avoidance Area The public is asked to refrain from boating through the portion of Lake Onalaska marked as a "Voluntary Avoidance Area" to allow waterfowl to rest and feed without being disturbed. This Avoidance Area is in effect from mid-October to mid-November.</p> <p>Spring Lake Unit in Illinois - Waterfowl Sanctuary In addition to being closed to all migratory bird hunting, the area is closed to all entry from October 1 to the end of the Illinois duck season each year. Other hunting, trapping and fishing are allowed beginning the day after the close of the Illinois duck hunting season until season closure or March 15, whichever occurs first. Visitors are allowed to use the parking lot, trail to the observation deck, and the observation deck during the Illinois duck hunting season.</p> <p>Deer and Small Game Hunting Locations posted as Area Closed are closed to all hunting until the day after the close of the duck hunting season.</p>	<p>Bag Limit</p> <p>Blinds</p>	<p>Migratory Game Bird Hunting Only one bag limit of migratory game birds may be taken by a hunter in one days time, even if the hunter hunts in two different states.</p> <p>This regulations applies to Pools 4 through 11 only. The construction of permanent hunting blinds using manmade materials is prohibited. At the end of each day's hunt, you must remove all manmade blind materials you brought onto the refuge. Any blinds containing manmade materials left on the refuge are subject to immediate removal and disposal. Manmade materials include, but are not limited to: wooden pallets, lumber, railroad ties, fence posts (wooden or metal), wire, nails, staples, netting or tarps. You are allowed to leave only seasonal blinds, made entirely of natural vegetation, and biodegradable twines, on the refuge. All such blinds are considered public property and open to use by any person on a first-come basis. You are allowed to gather only willow, grasses, marsh vegetation, and dead wood on the ground from the refuge for blind-building materials. Cutting or removing any other refuge trees or vegetation is prohibited. Constructing hunting blinds from rocks placed for shoreline protection is prohibited.</p>
<i>Area Closed</i>			
<i>Hunt Methods</i>	<p>Shining to locate game is prohibited on the refuge. You may use lights and dogs to hunt raccoons, and other specifically authorized small mammals, in accordance with state regulations. You may only use lights on the refuge at the point of kill. All other uses of lights for hunting on the refuge are prohibited. The use or possession of any drug on any arrow for bow hunting is prohibited on the refuge. The distribution of bait and the hunting over bait is prohibited.</p>		
<i>Tree Stands</i>	<p>The construction or use of permanent platforms or ladders is prohibited. All stands must be removed from the refuge at the end of each day of hunting. No stand should damage a tree. Spikes, nails or screws may not be used for ladders or to attach a stand to a tree.</p>	<p>Decoys</p> <p>Game Retrieval</p>	<p>On Pools 4 through 11, you may not place or leave decoys on the refuge during the time from 1/2 hour after the close of legal shooting hours, until 1 hour before the start of legal shooting hours.</p> <p>Retrieving dead or wounded game birds from an Area Closed or a No Hunting Zone is allowed provided the hunter does not take a gun into the area and does not attempt to chase birds from the area. Controlled hunting and retrieving dogs may be used while engaged in authorized hunting activities during hunting season.</p>

Appendix J: Public Use Regulations

Public Use Regulations

The refuge is home to fish and wildlife and you are the guest. Certain regulations are necessary to protect wildlife and to provide you with a safe and enjoyable experience.

Alcohol

Entering or remaining on the refuge when under the influence of alcohol is prohibited. Possession or use of alcoholic beverages by persons under 21 years of age is prohibited.

Boating

Boats may not be left unattended on the refuge for over 72 hours. Mooring within 200 feet of refuge boat landings, or in any areas posted with restrictive signs or buoys is prohibited. Boats left unattended or moored in violation may be impounded at the owner's expense.

Campfires

Campfires are allowed using only dead wood on the ground, or materials brought onto the refuge such as charcoal or firewood. Building fires at, or in proximity to, any developed facilities, or at any areas posted with restrictive signs is prohibited. Developed facilities include, but are not limited to, structures, boat landings, access areas, parking lots, roads, trails, etc. Building, attending, maintaining, or using any fire without sufficient clearance from flammable materials adequate to prevent its escape is not allowed.

Burying live fires or hot coals is prohibited. Burning, or attempting to burn, any nonflammable materials, or any materials that may produce toxic fumes or leave hazardous wastes is not allowed. These include, but are not limited to, metal cans, plastic containers, glass, fiberglass, treated wood products, wood containing nails or staples, wire, floatation materials, tires, other refuse, etc.

Camping

Camping on land or on boats at any one site on the refuge for a period longer than 14 days during any 30-consecutive-day period is prohibited. After 14 days, you must move all persons, property, equipment, and boats to a new site located at least one half (1/2) mile away from the previous site. Leaving tents, camping equipment, boats, or other property unattended at any site for over 24 hours is prohibited. Any property left unattended in violation may be impounded at the owner's expense. If tables, fireplaces, or other facilities are erected, you must remove all traces before departure. Camping at, or in proximity to, any developed facilities, or at any areas posted with restrictive signs is prohibited. Developed facilities include, but are not limited to, structures, boat landings, access areas, parking lots, roads, trails, etc.

During waterfowl hunting seasons, camping is prohibited within areas posted Area Closed, No Hunting Zone, or on any sites not clearly visible from the main commercial navigation channel.

Collecting

All plants, animals, and objects of antiquity, such as arrowheads, are protected. Disturbing or collecting is prohibited, except by special use permit.

Domestic Animals

Unconfined domestic animals are prohibited on the refuge, except for controlled hunting and retrieving dogs during the hunting season.

Firearms

Carrying, possessing, or discharging firearms or any other weapons on the refuge is prohibited, except by licensed hunters or trappers engaged in authorized activities during established seasons, in accordance with federal, state, and local regulations.

Fireworks

Possession or use of fireworks or explosives is not allowed on the refuge.

Fishing

Fishing is allowed in accordance with state and federal regulations. On Spring Lake Closed Area (Pool 13), fishing is prohibited from October 1 until the day after the close of the Illinois duck hunting season. On Mertes Slough (Pool 6), only hand-powered boats or boats with electric motors are allowed.

Group Events

A refuge permit is required to hold public meetings, assemblies, demonstrations, parties, organized group events, and other public gatherings, whether or not an entrance fee is charged.

Hunting and Trapping

Portions of the refuge are open to hunting and trapping in accordance with federal, state, and local regulations. Contact the refuge office for special regulations which apply. You may possess only approved nontoxic shot while in the field, except when hunting turkey and deer. You may use slugs and shot containing lead to hunt these species only. Use or possession of alcoholic beverages while hunting is prohibited.

Trappers must have a federal refuge trapping permit in addition to a state trapping license, and trap in accordance with state laws and refuge trapping permit conditions.

On areas posted No Hunting Zone, all hunting is prohibited. Trapping is only allowed beginning the day after the close of the state duck hunting season until season closure or March 15, whichever occurs first.

On areas posted Area Closed, hunting of migratory birds is prohibited. Other hunting and trapping is only allowed beginning the day after the close of the state duck hunting season until season closure or March 15, whichever occurs first, except spring turkey hunting is allowed during state seasons.

On areas open to hunting, hunting and trapping are prohibited from March 16 until the opening of state fall hunting seasons, except spring turkey hunting is allowed during state seasons.

Private Structures

Private structures of any kind are not allowed on the refuge without a special use permit, except for temporary duck blinds.

Sanitation

All public use sites must be kept clean during the period of use or occupancy. You must keep all refuse, trash, and litter contained in bags or other suitable containers, and not left scattered on the ground or in the water at any time. All public use sites must be left clean upon departure. You must remove all personal property, refuse, trash, and litter immediately upon vacating a site. Disposing of any materials on the refuge by burying or other methods is prohibited.

Vegetation

Cutting, removing, or damaging any tree or other vegetation, standing or down, live or dead, is prohibited, without a written permit, except that willow may be used for trap stakes, commercial fishing gear, and hunting blinds on the refuge. Dead wood on the ground may be cut and used for campfires on the refuge.

Vehicles

All off-road vehicles are prohibited, including snowmobiles and wheeled or tracked all-terrain vehicles, on or across refuge lands at anytime, except on designated routes of travel, or on the ice over navigable waters accessed from boat landings.

Parking beyond vehicle control barriers, or on grass or other vegetation is prohibited. Vehicles may not obstruct or impede any road, trail, fire lane, boat ramp, access gate, or other facilities. Parking in a manner to create a safety hazard, or endanger any person, property, or environmental feature is prohibited. Vehicles left parked in violation may be impounded at the owner's expense.

This is only a partial listing of Refuge public use regulations. Additional regulations are published in the Code of Federal Regulations Title 50, Subchapter C, The National Wildlife Refuge System.

Appendix K: Animal and Plant Species Lists

Amphibians p. 525
Birds pp. 526-544
Fish pp. 545-553
Mammals pp. 554-555
Freshwater Mussels pp. 556-558
Reptiles pp. 559-560
Plants pp. 561-580

Appendix K: Species Lists

Amphibians		Federally (T or E) ¹	Illinois (T or E) ¹	Iowa (T or E) ¹	Minnesota (T or E) ¹	Wisconsin (T or E) ¹	RCP ²
Common Name	Species (Scientific Name)						
Frogs and Toads							
Bullfrog	<i>Rana catesbeiana</i>						
Frog, Green	<i>Rana clamitans</i>						
Frog, Blanchard's Cricket	<i>Acris crepitans blanchardi</i>			E	E	E	
Frog, Northern Leopard	<i>Rana pipiens</i>						
Frog, Pickerel	<i>Rana palustris</i>						
Frog, Western Chorus	<i>Pseudacris triseriata</i>						
Frog, Wood	<i>Rana sylvatica</i>						
Peeper, Spring	<i>Pseudacris crucifer</i>						
Toad, American	<i>Bufo americanus</i>						
Treefrog, Gray	<i>Hyla versicolor</i>						
Treefrog, Cope's Gray	<i>Hyla chrysoscelis</i>						
Salamanders							
Mudpuppy	<i>Necturus maculosus</i>			T			
Salamander, Blue-spotted	<i>Ambystoma laterale</i>			E			
Salamander, Eastern Tiger	<i>Ambystoma tigrinum</i>						
¹ E. (Endangered) T. (Threatened) ² RCP. (Resource Conservation Priority for Fish & Wildlife Service, Region 3)							

Birds															
		Federally (T or E) ¹	Illinois (T or E) ¹	Iowa (T or E) ¹	Minnesota (T or E) ¹	Wisconsin (T or E) ¹	RCP ²	PIF Region 16 or 32 ³	ABC Green List ⁴	Spring ⁵	Summer ⁵	Fall ⁵	Winter ⁵	Migrant (m) Breeding (b) Accidental (a)	
Common Name	Species (Scientific Name)														
Avocets and Stilts															
Avocet, American	<i>Recurvirostra americana</i>								2	r	r	r		m	
Stilt, Black-necked	<i>Himantopus mexicanus</i>													a	
Blackbirds and Allies															
Blackbird, Brewer's	<i>Euphagus cyanocephalus</i>									u	u	u	r	b	
Blackbird, Red-winged	<i>Agelaius phoeniceus</i>									a	a	a	u	b	
Blackbird, Rusty	<i>Euphagus carolinus</i>								2	c		c	u	m	
Blackbird, Yellow-headed	<i>Xanthocephalus xanthocephalus</i>									u	u	u		b	
Bobolink	<i>Dolichonyx oryzivorus</i>									u	u	u		b	
Cowbird, Brown-headed	<i>Molothrus ater</i>									a	a	u	r	b	
Grackle, Common	<i>Quiscalus quiscula</i>									a	a	a	u	b	
Meadowlark, Eastern	<i>Sturnella magna</i>									c	c	c	u	b	
Meadowlark, Western	<i>Strunella neglecta</i>									r	r	r		b	
Oriole, Baltimore	<i>Icterus galbula</i>									c	a			b	
Oriole, Orchard	<i>Icterus spurius</i>									u	u			b	
Cardinals and Allies															
Bunting, Indigo	<i>Passerina cyanea</i>									c	c	c		b	
Bunting, Snow	<i>Plectrophenax nivalis</i>											r	u	m	
Cardinal, Northern	<i>Cardinalis cardinalis</i>									a	a	c	c	b	
Dickcissel	<i>Spiza americana</i>								2	c	c			b	

Birds															
Common Name	Species (Scientific Name)	Federally (T or E) ¹	Illinois (T or E) ¹	Iowa (T or E) ¹	Minnesota (T or E) ¹	Wisconsin (T or E) ¹	RCP ²	PIF Region 16 or 32 ³	ABC Green List ⁴	Spring ⁵	Summer ⁵	Fall ⁵	Winter ⁵	Migrant (m) Breeding (b) Accidental (a)	
Grosbeak, Rose-breasted	<i>Pheucticus ludovicianus</i>									c	c	c		b	
Chickadees and Titmice															
Chickadee, Black-capped	<i>Parus atricapillus</i>									c	c	c	c	b	
Chickadee, Boreal	<i>Poecile hudsonicus</i>													a	
Titmouse, Tufted	<i>Parus bicolor</i>									u	u	u	u	b	
Cormorants															
Cormorant, Double-crested	<i>Phalacrocorax auritus</i>						X			c	c	c		b	
Cranes															
Crane, Sandhill	<i>Grus canadensis</i>		T							u	u	u		b	
Crane, Whooping	<i>Grus americana</i>								1					a	
Creepers															
Creeper, Brown	<i>Certhia americana</i>		T							c	u	u	u	b	
Crows and Jays															
Crow, American	<i>Corvus brachyrhynchos</i>									a	a	a	c	b	
Jay, Blue	<i>Cyanocitta cristata</i>									a	a	a	c	b	
Jay, Gray	<i>Perisoreus canadensis</i>													a	
Raven, Common	<i>Corvus corax</i>													a	
Cuckoos															
Cuckoo, Black-billed	<i>Coccyzus erythrophthalmus</i>						X	16		u	c	c		b	
Cuckoo, Yellow-billed	<i>Coccyzus americanus</i>									c	c	u		b	

Birds														
		Federally (T or E) ¹	Illinois (T or E) ¹	Iowa (T or E) ¹	Minnesota (T or E) ¹	Wisconsin (T or E) ¹	RCP ²	PIF Region 16 or 32 ³	ABC Green List ⁴	Spring ⁵	Summer ⁵	Fall ⁵	Winter ⁵	Migrant (m) Breeding (b) Accidental (a)
Common Name	Species (Scientific Name)													
Doves														
Dove, Mourning	<i>Zenaida macroura</i>									c	c	c	a	b
Dove, Rock	<i>Columba livia</i>									c	c	c	c	b
Ducks, Geese and Swans														
Bufflehead	<i>Bucephala albeola</i>							16		c		a	r	m
Canvasback	<i>Aythya valisineria</i>						X	16		a	r	a	u	m
Duck, American Black	<i>Anas rubripes</i>						X	16	2	a	r	a		m
Duck, Long-tailed	<i>Clangula hyemalis</i>									r		r	r	m
Merganser, Red-breasted	<i>Mergus serrator</i>									c		u	u	m
Duck, Ring-necked	<i>Aythya collaris</i>									a	r	a		m
Duck, Ruddy	<i>Oxyura jamaicensis</i>									c	r	c	r	m
Duck, Wood	<i>Aix sponsa</i>						X			a	c	a	r	b
Gadwall	<i>Anas strepera</i>									c	u	a		m
Goldeneye, Common	<i>Bucephala clangula</i>									a		a	c	m
Goose, Canada	<i>Branta canadensis</i>						X			a	c	a	c	b
Goose, Greater White-fronted	<i>Anser albifrons</i>									r		r		m
Goose, Snow	<i>Chen caerulescens</i>						X			u		u		m
Mallard	<i>Anas platyrhynchos</i>						X			a	c	a	c	b
Merganser, Common	<i>Mergus merganser</i>									r		r	c	m
Merganser, Hooded	<i>Lophodytes cucullatus</i>							16		c	c	c	r	b

Birds															
Common Name	Species (Scientific Name)	Federally (T or E) ¹	Illinois (T or E) ¹	Iowa (T or E) ¹	Minnesota (T or E) ¹	Wisconsin (T or E) ¹	RCP ²	PIF Region 16 or 32 ³	ABC Green List ⁴	Spring ⁵	Summer ⁵	Fall ⁵	Winter ⁵	Migrant (m) Breeding (b) Accidental (a)	
Pintail, Northern	<i>Anas acuta</i>						X			c	r	c	r	m	
Redhead	<i>Aythya americana</i>							16		c	r	c	u	m	
Scaup, Greater	<i>Aythya marila</i>							16		u		u		m	
Scaup, Lesser	<i>Aythya affinis</i>						X			a	r	a	u	m	
Scoter, Black	<i>Melanitta nigra</i>								2			r	r	m	
Scoter, Surf	<i>Melanitta perspicillata</i>													a	
Scoter, White-winged	<i>Melanitta fusca</i>									r		u	r	m	
Shoveler, Northern	<i>Anas clypeata</i>									c	u	c		m	
Swan, Mute	<i>Cygnus olor</i>									r	r	r	r	b	
Swan, Trumpeter	<i>Cygnus buccinator</i>				T	E				r	r	u	r	b	
Swan, Tundra	<i>Cygnus columbianus</i>									a		a	u	m	
Teal, Blue-winged	<i>Anas discors</i>						X			a	c	a		b	
Teal, Cinnamon	<i>Anas cyanoptera</i>													a	
Teal, Green-winged	<i>Anas crecca</i>						X			c	r	c	r	m	
Wigeon, American	<i>Anas americana</i>									a	u	a		m	
Wigeon, Eurasian	<i>Anas penelope</i>													a	
Emberizid Finches, Sparrows and Allies															
Junco, Dark-eyed	<i>Junco hyemalis</i>									a		a	a	m	
Longspur, Lapland	<i>Calcarius lapponicus</i>									r		r	r	m	
Sparrow, American Tree	<i>Spizella arborea</i>									c		a	a	m	

Birds		Federally (T or E) ¹	Illinois (T or E) ¹	Iowa (T or E) ¹	Minnesota (T or E) ¹	Wisconsin (T or E) ¹	RCP ²	PIF Region 16 or 32 ³	ABC Green List ⁴	Spring ⁵	Summer ⁵	Fall ⁵	Winter ⁵	Migrant (m) Breeding (b) Accidental (a)
Common Name	Species (Scientific Name)													
Grebe, Horned	<i>Podiceps auritus</i>				T				2	u		u		m
Grebe, Pied-billed	<i>Podilymbus podiceps</i>		T							c	c	c		b
Grebe, Red-necked	<i>Podiceps grisegena</i>					E				r		r		m
Grebe, Western	<i>Aechmophorus occidentalis</i>													a
Gulls and Terns														
Gull, Bonaparte's	<i>Larus philadelphia</i>									u		u		m
Gull, Franklin's	<i>Larus pipixcan</i>									u		u		m
Gull, Glaucous	<i>Larus hyperboreus</i>									r		r		m
Gull, Herring	<i>Larus argentatus</i>									c	u	c	u	m
Gull, Iceland	<i>Larus glaucooides</i>													a
Gull, Lesser Black-back	<i>Larus fuscus</i>													a
Gull, Ring-billed	<i>Larus delawarensis</i>									c	u	c	u	m
Jaeger, Pomarine	<i>Stercorarius pomarinus</i>													a
Jaeger, Parasitic	<i>Stercorarius parasiticus</i>													a
Kittewake, Black-Legged	<i>Rissa tridactyla</i>													a
Tern, Black	<i>Chlidonias niger</i>		E				X	16		c	c	u		b
Tern, Caspian	<i>Sterna caspia</i>					E				u	u	u		m
Tern, Common	<i>Sterna hirundo</i>		E		T	E	X			u	u	u		m
Tern, Forster's	<i>Sterna forsteri</i>		E			E	X			c	u	u		b
Tern, Least	<i>Sterna antillarum</i>		E	E			X		2					a

Birds														
Common Name	Species (Scientific Name)	Federally (T or E) ¹	Illinois (T or E) ¹	Iowa (T or E) ¹	Minnesota (T or E) ¹	Wisconsin (T or E) ¹	RCP ²	PIF Region 16 or 32 ³	ABC Green List ⁴	Spring ⁵	Summer ⁵	Fall ⁵	Winter ⁵	Migrant (m) Breeding (b) Accidental (a)
Tern, Roseate	<i>Sterna dougallii</i>								2					a
Hawks, Kites and Eagles														
Eagle, Bald	<i>Haliaeetus leucocephalus</i>	T	T	E			X	16		c	c	a	c	b
Eagle, Golden	<i>Aquila chrysaetos</i>									r		u	r	m
Goshawk, Northern	<i>Accipiter gentilis</i>						X	16				r	u	m
Harrier, Northern	<i>Circus cyaneus</i>		E	E						u	u	u	u	b
Hawk, Broad-winged	<i>Buteo platypterus</i>									c	u	a		b
Hawk, Cooper's	<i>Accipiter cooperii</i>									u	u	c	u	b
Hawk, Red-shouldered	<i>Buteo lineatus</i>		T	E		T	X			u	u	u	r	b
Hawk, Red-tailed	<i>Buteo Jamaicensis</i>									c	c	a	c	b
Hawk, Rough-legged	<i>Buteo lagopus</i>									u		u	u	m
Hawk, Sharp-shinned	<i>Accipiter striatus</i>									c	u	a	u	m
Hawk, Swainson's	<i>Buteo swainsoni</i>		E				X		2			r		m
Osprey	<i>Panion haliaetus</i>		E			T				u	u	c		b
Hérons, Egrets, and Bitterns														
Bittern, American	<i>Botaurus lentiginosus</i>		E				X			u	u	u		b
Bittern, Least	<i>Ixobrychus exilis</i>		T							u	u	u		b
Egret, Cattle	<i>Bubulcus ibis</i>									u	r	u		m
Egret, Great	<i>Casmerodius albus</i>					T				a	c	a		b
Egret, Snowy	<i>Egretta thula</i>		E			E				r	r			m

Birds		Federally (T or E) ¹	Illinois (T or E) ¹	Iowa (T or E) ¹	Minnesota (T or E) ¹	Wisconsin (T or E) ¹	RCP ²	PIF Region 16 or 32 ³	ABC Green List ⁴	Spring ⁵	Summer ⁵	Fall ⁵	Winter ⁵	Migrant (m) Breeding (b) Accidental (a)
Common Name	Species (Scientific Name)													
Heron, Black-crowned Night-heron	<i>Nycticorax nycticorax</i>		E				X			u	u	r		b
Heron, Great Blue	<i>Ardea herodias</i>									a	a	a	r	b
Heron, Green	<i>Butorides striatus</i>									c	c	c		b
Heron, Little Blue	<i>Egretta caerulea</i>		E					2			u			m
Heron, Tri-Colored	<i>Egretta tricolor</i>													a
Heron, Yellow-crowned Night-heron	<i>Nycticorax violaceus</i>		E			T				u	r	u		b
Hummingbirds														
Hummingbird, Ruby-throated	<i>Archilochus colubris</i>									u	c	u		b
Ibises														
Ibis, Glossy	<i>Plegadis falcinellus</i>													a
Ibis, White	<i>Eudocimus albus</i>													a
Ibis, White-faced	<i>Plegadis chihi</i>													a
Kingfishers														
Kingfisher, Belted	<i>Ceryle alcyon</i>									c	c	u	u	b
Kinglets														
Kinglet, Golden-crowned	<i>Regulus satrapa</i>									u		u	r	m
Kinglet, Ruby-crowned	<i>Regulus calendula</i>									c		c		m
Larks														
Lark, Horned	<i>Eremophila alpestris</i>									r	r	r	u	b

Birds		Federally (T or E) ¹	Illinois (T or E) ¹	Iowa (T or E) ¹	Minnesota (T or E) ¹	Wisconsin (T or E) ¹	RCP ²	PIF Region 16 or 32 ³	ABC Green List ⁴	Spring ⁵	Summer ⁵	Fall ⁵	Winter ⁵	Migrant (m) Breeding (b) Accidental (a)
Common Name	Species (Scientific Name)													
Owl, Northern Saw-whet	<i>Aegolius acadicus</i>													a
Owl, Short-eared	<i>Asio flammeus</i>		E	E			X	16	2	u		u	u	m
Owl, Snowy	<i>Nyctea scandiaca</i>									r			r	m
Old World Sparrows														
Sparrow, House	<i>Passer domesticus</i>									a	a	a	a	b
Pelicans														
Pelican, American White	<i>Pelecanus erythrorhynchos</i>									c	u	c		m
Pheasants, Grouse, and Quail														
Bobwhite, Northern	<i>Clinus virginianus</i>							16		u	u	u	u	b
Grouse, Ruffed	<i>Bonasa umbellus</i>									c	c	c	c	b
Partridge, Gray	<i>Perdix perdix</i>													a
Pheasant, Ring-necked	<i>Phasianus colchicus</i>									u	u	u	u	b
Turkey, Wild	<i>Meleagris gallopavo</i>									u	u	u	u	b
Pipits														
Pipit, American	<i>Anthus rubescens</i>									r		r		m
Plovers														
Killdeer	<i>Charadrius vociferus</i>									c	c	c	r	b
Plover, American Golden-	<i>Pluvialis dominica</i>								2	u		u		m
Plover, Black-bellied	<i>Pluvialis squatarola</i>									u		u		m
Plover, Semipalmated	<i>Gharadrius semipalmatus</i>									u	u	u	u	m

Birds															
Common Name	Species (Scientific Name)	Federally (T or E) ¹	Illinois (T or E) ¹	Iowa (T or E) ¹	Minnesota (T or E) ¹	Wisconsin (T or E) ¹	RCP ²	PIF Region 16 or 32 ³	ABC Green List ⁴	Spring ⁵	Summer ⁵	Fall ⁵	Winter ⁵	Migrant (m) Breeding (b) Accidental (a)	
Rails and Coots															
Coot, American	<i>Fulica americana</i>									a	r	a	u	b	
Moorhen, Common	<i>Gallinula chloropus</i>		T				X			u	u	u		b	
Rail, King	<i>Rallus elegans</i>		E	E	E		X		1	r	r			b	
Rail, Virginia	<i>Rallus limicola</i>									c	c	c		b	
Sora	<i>Porzana carolina</i>									c	c	u		b	
Sandpipers and Allies															
Dowitcher, Long-billed	<i>Limnodromus scolopaceus</i>									u			r	m	
Dowitcher, Short-billed	<i>Limnodromus griseus</i>						X		2	u	u	u		m	
Dunlin	<i>Calidris alpina</i>								2	u	u	u		m	
Curlew, Long-billed	<i>Numenius Americanus</i>								1					a	
Godwit, Hudsonian	<i>Limosa haemastica</i>						X		2	r				m	
Godwit, Marbled	<i>Limosa fedoa</i>						X		2	r				m	
Knot, Red	<i>Calidris canutus</i>								3					a	
Phalarope, Red-necked	<i>Phalaropus lobatus</i>									r		r		m	
Phalarope, Wilson's	<i>Phalaropus tricolor</i>		E		T		X	16	2	u	u	r		m	
Ruff	<i>Philomachus pugnax</i>													a	
Sanderling	<i>Calidris alba</i>								2	u	u	u		m	
Sandpiper, Baird's	<i>Calidris bairdii</i>									u	u	u		m	
Sandpiper, Least	<i>Calidris minutilla</i>									c	c	c		m	

Birds		Federally (T or E) ¹	Illinois (T or E) ¹	Iowa (T or E) ¹	Minnesota (T or E) ¹	Wisconsin (T or E) ¹	RCP ²	PIF Region 16 or 32 ³	ABC Green List ⁴	Spring ⁵	Summer ⁵	Fall ⁵	Winter ⁵	Migrant (m) Breeding (b) Accidental (a)
Common Name	Species (Scientific Name)													
Sandpiper, Pectoral	<i>Calidris melanotos</i>									c	c	c		m
Sandpiper, Semipalmated	<i>Calidris pusilla</i>								2	c	c	c		m
Sandpiper, Solitary	<i>Tringa solitaria</i>								2	u	u	u		m
Sandpiper, Spotted	<i>Actitis macularia</i>									c	c	c		b
Sandpiper, Stilt	<i>Calidris himantopus</i>						X		2	u	u	u		m
Sandpiper, Upland	<i>Bartramia longicauda</i>		E				X	16	2	r	r			b
Sandpiper, Western	<i>Calidris mauri</i>								2	r				m
Sandpiper, White-rumped	<i>Calidris fuscicollis</i>									u	u	u		m
Snipe, Common	<i>Gallinago gallinago</i>									c	u	c	u	m
Turnstone, Ruddy	<i>Arenaria interpres</i>									u	r	u		m
Willet	<i>Catoptophorus semipalatus</i>									r	r	r		m
Woodcock, American	<i>Scolopax minor</i>						X	16	2	u	u	u		b
Yellowlegs, Greater	<i>Tinga melanoleuca</i>						X			u	u	u		m
Yellowlegs, Lesser	<i>Tringa flavipes</i>								2	c	c	c		m
Shrikes														
Shrike, Loggerhead	<i>Lanius ludovicianus</i>		T		T	E	X	32,16		r	r	r		b
Shrike, Northern	<i>Lanius excubitor</i>									u		u	u	m
Starlings														
Starling, European	<i>Strunus vulgaris</i>									a	a	a	c	b

Birds															
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Swallows															
Martin, Purple	<i>Progne subis</i>									u	u	u		b	
Swallow, Bank	<i>Riparia riparia</i>									c	u	u		b	
Swallow, Barn	<i>Hirundo rustica</i>									c	c	c		b	
Swallow, Cliff	<i>Hirundo pyrrhonota</i>									u	r	u		b	
Swallow, Northern Rough-winged	<i>Stelgidopteryx serripennis</i>									c	c	u		b	
Swallow, Tree	<i>Tachycineta bicolor</i>									a	a	c		b	
Swifts															
Swift, Chimney	<i>Chaetura vauxi</i>									c	c	u		b	
Tanagers															
Tanager, Scarlet	<i>Piranga olivacea</i>									c	u	u		b	
Tanager, Summer	<i>Piranga rubra</i>													a	
Tanager, Western	<i>Piranga ludoviciana</i>													a	
Thrushes and Allies															
Bluebird, Eastern	<i>Sialia sialis</i>									c	c	c	r	b	
Robin, American	<i>Turdus migratorius</i>									a	a	a	u	b	
Thrush, Gray-cheeked	<i>Catharus minimus</i>									c		u		m	
Thrush, Hermit	<i>Catharus guttatus</i>									u		u		m	
Thrush, Swainson's	<i>Catharus ustulatus</i>									u		u		m	
Thrush, Wood	<i>Hylocichla mustelina</i>						X	16	2	c	u	u		b	

Birds														
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Veery	<i>Catharus fuscescens</i>									u	r	u		b
Tyrant Flycatchers														
Flycatcher, Acadian	<i>Empidonax virescens</i>					T				r	r	r		b
Flycatcher, Alder	<i>Empidonax alnorum</i>									r				m
Flycatcher, Great Crested	<i>Myiarchus crinitus</i>									c	a	u		b
Flycatcher, Least	<i>Empidonax minimus</i>									c	c	c		b
Flycatcher, Olive-sided	<i>Contopus borealis</i>						X		2	r	u	u		m
Flycatcher, Willow	<i>Empidonax traillii</i>								2	u	u	u		b
Flycatcher, Yellow-bellied	<i>Empidonax flaviventris</i>									r	r	r		m
Kingbird, Eastern	<i>Tyrannus tyrannus</i>									c	c	u		b
Kingbird, Western	<i>Tyrannus verticalis</i>													a
Pewee, Eastern Wood-	<i>Contopus virens</i>									c	c	c		b
Phoebe, Eastern	<i>Sayornis phoebe</i>									c	u	c		b
Vireos														
Vireo, Bell's	<i>Vireo bellii</i>					T	X	16	2	r	r			b
Vireo, Blue-headed	<i>Vireo solitarius</i>									u	u	u		m
Vireo, Philadelphia	<i>Vireo philadelphicus</i>									u		u		m
Vireo, Red-eyed	<i>Vireo olivaceus</i>									a	a	a		b
Vireo, Warbling	<i>Vireo gilvus</i>									a	a	a		b
Vireo, White-eyed	<i>Vireo griseus</i>									r	r			m

Birds															
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Vireo, Yellow-throated	<i>Vireo flavifrons</i>									u	u			b	
Vultures															
Vulture, Turkey	<i>Cathartes aura</i>									c	c	c	r	m	
Waxwings															
Waxwing, Bohemian	<i>Bonbycilla garrulus</i>												r	m	
Waxwing, Cedar	<i>Bonbycilla cedrorum</i>									c	c	c	u	b	
Wood Warblers															
Chat, Yellow-breasted	<i>Icteria virens</i>									r	r			b	
Ovenbird	<i>Seiurus aruocapillus</i>									c	u	u		b	
Parula, Northern	<i>Parula americana</i>									r		u		m	
Redstart, American	<i>Setophaga ruticilla</i>									a	a	c		b	
Warbler, Bay-breasted	<i>Dendroica castanea</i>								2	r				m	
Warbler, Black-and-white	<i>Mniotilta varia</i>									c		c		m	
Warbler, Blackburnian	<i>Dendroica fusca</i>									c		c		m	
Warbler, Blackpoll	<i>Dendroica striata</i>									c		c		m	
Warbler, Black-throated Blue	<i>Dnedroica caerulescens</i>									r		r		m	
Warbler, Black-throated Green	<i>Dendroica virens</i>									u		u		m	
Warbler, Blue-winged	<i>Vermivora pius</i>						x	16	3	u	u			b	
Warbler, Canada	<i>Wilsonia canadensis</i>								2	r		u		m	
Warbler, Cape May	<i>Dendroica tigrina</i>									u		u		m	

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Common Name	Species (Scientific Name)													
Warbler, Cerulean	<i>Dendroica cerulea</i>					T			2	u	u			b
Warbler, Chestnut-sided	<i>Dendroica pensylvanica</i>									c		u		m
Warbler, Connecticut	<i>Oporornis agilis</i>									r		r		m
Warbler, Golden-winged	<i>Vermivora chrysoptera</i>								1	u	u	u		m
Warbler, Hooded	<i>Wilsonia citrina</i>					T				r	r			m
Warbler, Kentucky	<i>Oporornis formosus</i>					T			2	r	r			b
Warbler, Magnolia	<i>Dendroica magnolia</i>									u		u		m
Warbler, Mourning	<i>Oporornis philadelphia</i>									r	r	u		m
Warbler, Nashville	<i>Vermivora ruficapilla</i>									c		c		m
Warbler, Orange-crowned	<i>Vermivora celata</i>									r		u		m
Warbler, Palm	<i>Dendroica palmarum</i>									c		c		m
Warbler, Pine	<i>Dendroica pinus</i>									r		u		m
Warbler, Prothonotary	<i>Protonotaria citrea</i>								2	c	c			b
Warbler, Tennessee	<i>Vermivora peregrina</i>									c		c		m
Warbler, Wilson's	<i>Wilsonia pusilla</i>									u		u		m
Warbler, Worm-eating	<i>Helmitheros vermivorous</i>					E			2					a
Warbler, Yellow	<i>Dendroica petechia</i>									a	a	u		b
Warbler, Yellow-rumped	<i>Dendroica coronata</i>									a		a		m
Warbler, Yellow-throated	<i>Dendroica dominica</i>									r	r			b
Waterthrush, Louisiana	<i>Seiurus motacilla</i>									u	u	u		m

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Common Name	Species (Scientific Name)													
Waterthrush, Northern	<i>Seiurus noveboracensis</i>									c		u		m
Yellowthroat, Common	<i>Geothlypis trichas</i>									a	a	c		b
Woodpeckers														
Flicker, Northern	<i>Colaptes auratus</i>									c	c	c	u	b
Sapsucker, Yellow-bellied	<i>Sphyrapicus varius</i>									c	c	c	r	b
Woodpecker, Downy	<i>Picoides pubescens</i>									c	c	c	c	b
Woodpecker, Hairy	<i>Picoides villosus</i>									c	c	c	c	b
Woodpecker, Pileated	<i>Dryocopus pileatus</i>									u	u	u	u	b
Woodpecker, Red-bellied	<i>Melanerpes carolinus</i>									c	c	c	c	b
Woodpecker, Red-headed	<i>Melanerpes erythrocephalus</i>						X	16	2	u	u	u	r	b
Wrens														
Wren, Bewick's	<i>Thryomanes bewickii</i>		E			E	X	16		r				m
Wren, Carolina	<i>Thryothorus ludovicianus</i>									r	r	r		b
Wren, House	<i>Troglodytes aedon</i>									a	a	c		b
Wren, Marsh	<i>Cistothorus palustris</i>									c	c	c		b
Wren, Sedge	<i>Cistothorus platensis</i>						X	16		u	u	u		b
Wren, Winter	<i>Troglodytes troglodytes</i>									u	u	u	r	b

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Common Name	Species (Scientific Name)													
<p>¹ E. (Endangered) T. (Threatened)</p> <p>² RCP. (Resource Conservation Priority for Fish & Wildlife Service, Region 3)</p> <p>³ Partners In Flight Bird Conservation Plan for Dissected Till Plains (Physiographic area 32) or Partners in Flight Plan for the Upper Great Lakes Plains (Physiographic area 16)</p> <p>⁴ American Bird Conservancy Green List 1, 2, or 3: 1. Highest continental concern 2. Moderately abundant species with declines or high threats 3. Species with restricted distributions and low population size</p> <p>⁵ a. abundant (seasonally numerous) c. Common (almost certain to be seen) u. Uncommon (present but seen only occasionally) r. Rare (seen at intervals of 2-5 yrs.)</p>														

Fish*		Federally (T or E) ¹	Illinois (T or E) ¹	Iowa (T or E) ¹	Minnesota (T or E) ¹	Wisconsin (T or E) ¹	RCP ²	Pool 4 ³	Pool 5 ³	Pool 5A ³	Pool 6 ³	Pool 7 ³	Pool 8 ³	Pool 9 ³	Pool 10 ³	Pool 11 ³	Pool 12 ³	Pool 13 ³	Pool 14 ³
Common Name	Species (Scientific Name)																		
Bass Family	<i>Percichthyidae</i>																		
Bass, White	<i>Morone chrysops</i>							A	C	C	C	C	C	C	C	C	C	C	C
Bass, Yellow	<i>Morone mississippiensis</i>							H			O	O	R	U	U	U	U	O	U
Bowfin Family	<i>Amiidae</i>																		
Bowfin	<i>Amia calva</i>							C	C	C	C	C	C	C	C	C	C	C	C
Catfish Family	<i>Ictaluridae</i>																		
Bullhead, Black	<i>Ameiurus melas</i>							U	O	O	O	O	U	O	O	O	O	O	O
Bullhead, Brown	<i>Ameiurus nebulosus</i>							R	O	O	O	O	R	O	U	U		R	R
Bullhead, Yellow	<i>Ameiurus natalis</i>							U	O	O	O	O	U	O	O	O	O	O	O
Catfish, Blue	<i>Ictalurus furcatus</i>							H										H	H
Catfish, Channel	<i>Ictalurus punctatus</i>							C	C	C	C	C	C	C	C	C	C	C	C
Catfish, Flathead	<i>Pylodictis olivaris</i>							C	C	C	C	C	C	C	C	C	O	O	C
Madtom, Tadpole	<i>Noturus gyrinus</i>							O	O	O	O	O	O	U	U	U	U	O	U
Stonecat	<i>Noturus flavus</i>							R	O		H		R	U	U	U	U	U	U
Cod Family	<i>Gadidae</i>																		
Burbot	<i>Lota lota</i>			T				U	O			U	U	U	U	U		R	

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Common Name	Species (Scientific Name)																		
Bass Family	<i>Aphredoderidae</i>																		
Perch, Pirate	<i>Aphredoderus sayanus</i>							X	X	X	X	O	R	H	H	H			
Drums	<i>Scieaenidae</i>																		
Drum, Freshwater	<i>Aplodinotus grunniens</i>							A	C	C	C	C	C	A	A	A	C	C	A
Eels	<i>Anguillidae</i>																		
Eel, American	<i>Arguilla rostrata</i>							O	O	O	O	O	U	U	U	U	U	U	U
Gar	<i>Lepisosteidae</i>																		
Gar, Longnose	<i>Lepisosteus osseus</i>							C	C	C	C	C	C	C	C	C	C	C	C
Gar, Shortnose	<i>Lepisosteus platostomus</i>							C	C	C	C	O	O	C	C	C	C	C	C
Herring Family	<i>Clupeidae</i>																		
Herring, Skipjack	<i>Alosa chrysochloris</i>					E		R	R	R	H		H	H	H	H		R	R
Shad, Gizzard	<i>Dorosoma cepedianum</i>							A	A	A	A	A	A	A	A	A	A	A	A
Killifish Family	<i>Cyprinodontidae</i>																		
Topminnow, Blackstripe	<i>Fundulus notatus</i>													U	U	U			
Topminnow, Starhead	<i>Fundulus dispar</i>					E						R							

Fish*																			
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Lampreys	<i>Petromyzontidae</i>																		
Lamprey, Chestnut	<i>Ichthyomyzon castaneus</i>			T				U	U			H	U	U	U	U	U	U	U
Lamprey, Silver	<i>Ichthyomyzon unicuspis</i>							O	O	O	O	H	U	O	O	O	O	O	O
Lamprey, American Brook	<i>Lampetra Lamottei</i>			T									X						
Minnows	<i>Cyprinidae</i>																		
Carp, Bighead	<i>Hypophthalmichthys nobilis</i>																R		
Carp, Common	<i>Cyprinus carpio</i>							A	A	A	A	A	A	A	A	A	A	A	A
Carp, Grass	<i>Ctenopharyngodon idella</i>							R		R				R	R	R	U	U	U
Chub, Creek	<i>Semotilus atromaculatus</i>							X	X				X	X	X	X		X	X
Chub, Silver	<i>Macrhybopsis storeriana</i>							C	C	C	C	C	C	C	C	C	C	C	C
Chub, Speckled	<i>Macrhybopsis aestivalis</i>					T		O	C	C	C	C	R	O	C	C	C	O	C
Dace, Southern Redbelly	<i>Phoxinus erythrogaster</i>													X	X	X		X	X
Goldfish	<i>Carassius auratus</i>													X	X	X			
Minnow, Bluntnose	<i>Pimephales notatus</i>							O	O	O	O	O	R	O	O	O	O	R	O
Minnow, Bullhead	<i>Pimephales vigilax</i>							C	A	A	A	A	A	C	C	C	A	A	C
Minnow, Fathead	<i>Pimephales promelas</i>							R	U	U	U	U	O	U	U	U	U	R	U

Fish*		Federally (T or E) ¹	Illinois (T or E) ¹	Iowa (T or E) ¹	Minnesota (T or E) ¹	Wisconsin (T or E) ¹	RCP ²	Pool 4 ³	Pool 5 ³	Pool 5A ³	Pool 6 ³	Pool 7 ³	Pool 8 ³	Pool 9 ³	Pool 10 ³	Pool 11 ³	Pool 12 ³	Pool 13 ³	Pool 14 ³
Common Name	Species (Scientific Name)																		
Minnow, Mississippi Silvery	<i>Hybognathus nuchalis</i>							R	U	U	U	U	O	U	U	U	U	U	U
Minnow, Pugnose	<i>Opsopoeodus emiliae</i>							O	O	O	O	O	C	O	O	O	O	O	R
Minnow, Suckermouth	<i>Phenacobius mirabilis</i>								X	X			H	R	H	U		R	R
Shiner, Channel	<i>Notropis wickliffi</i>													C			C		
Shiner, Emerald	<i>Notropis atherinoides</i>							A	A	A	A	A	A	A	A	A	A	A	A
Shiner, Ghost	<i>Notropis buchanani</i>							H	H	H	H	H	H	H	H	R	H	H	H
Shiner, Golden	<i>Notemigonus crysoleucas</i>							U	O	O	O	O	O	O	O	O	O	O	O
Shiner, Mimic	<i>Notropis volucellus</i>							C	C	O	H	H	C	U	U	U			R
Shiner, Pallid	<i>Notropis amnis</i>					E		R	H	H		R	R	H	R	H		R	R
Shiner, Red	<i>Cyprinella lutrensis</i>																		R
Shiner, River	<i>Notropis blenniuis</i>							C	A	A	A	A	A	A	A	A	A	A	A
Shiner, Sand	<i>Notropis stramineus</i>							U	O	O	O	O	O	O	O	O	O	U	C
Shiner, Silverband	<i>Notropis shumardi</i>																	R	X
Shiner, Spotfin	<i>Cyprinella spiloptera</i>							C	C	C	C	C	C	C	C	C	C	C	C
Shiner, Spottail	<i>Notropis hudsonius</i>							C	C	C	C	C	C	C	C	C	C	C	C
Shiner, Weed	<i>Notropis texanus</i>		E	E				U	U	U	U	O	O	U	U	U	U	R	

Fish*																			
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Stoneroller, Central	<i>Campostoma anomalum</i>							X				X	X	X	X			X	
Mooneye Family	<i>Hiodontidae</i>																		
Goldeye	<i>Hiodon alosoides</i>					E		R	R	R	R	R	R	U	U	U	R	R	R
Mooneye	<i>Hiodon tergisus</i>							C	C	C	C	C	O	O	O	U	C	O	C
Mosquitofish	<i>Poeciliidae</i>																		
Mosquitofish, Western	<i>Gambusia affinis</i>																		R
Mudminnows	<i>Umbridae</i>																		
Mudminnow, Central	<i>Umbra limi</i>							X				X	R	U	U	U		R	R
Paddlefish	<i>Polyodontidae</i>																		
Paddlefish	<i>Polyodon spathula</i>				T	T	X	U	U	U	R	R	R	O	O	O	O	O	O
Perch Family	<i>Percidae</i>																		
Darter, Bluntnose	<i>Etheostoma chlorosomum</i>			E		E							H	H					
Darter, Fantail	<i>Etheostoma flabellare</i>							X	X					H	H	H			
Darter, Western Sand	<i>Ammocrypta clara</i>			T				O	O	O	O	O	O	O	O	O	O	U	U
Darter, Iowa	<i>Etheostoma exile</i>		E						X	X	X	R	R	H	H				
Darter, Johnny	<i>Etheostoma nigrum</i>							O	U	U	U	O	O	O	U	U	U	O	U

Fish*		Federally (T or E) ¹	Illinois (T or E) ¹	Iowa (T or E) ¹	Minnesota (T or E) ¹	Wisconsin (T or E) ¹	RCP ²	Pool 4 ³	Pool 5 ³	Pool 5A ³	Pool 6 ³	Pool 7 ³	Pool 8 ³	Pool 9 ³	Pool 10 ³	Pool 11 ³	Pool 12 ³	Pool 13 ³	Pool 14 ³
Common Name	Species (Scientific Name)																		
Darter, Mud	<i>Etheostoma asprigene</i>							U	U	R	H	U	O	O	H	H		O	U
Darter, River	<i>Percina shumardi</i>							O	C	C	C	U	O	U	U	U	C	C	U
Darter, Slenderhead	<i>Percina phoxocephala</i>							U	R		R	R	U	R		H		R	R
Darter, Crystal	<i>Ammocrypta asperella</i>					E	X	R	R	U	H		R			H			
Logperch	<i>Percina caprodes</i>							C	C	C	C	C	C	C	C	C	CC	O	O
Perch, Yellow	<i>Perca flavescens</i>							C	C	C	C	C	C	C	C	C	C	O	O
Sauger	<i>Stizostedion canadense</i>							A	C	C	C	C	C	C	C	C	C	C	C
Walleye	<i>Stizostedion vitreum</i>						X	C	C	C	C	C	C	C	C	C	C	C	C
Pike Family	<i>Esocidae</i>																		
Muskellunge	<i>Esox masquinongy</i>							X	X	X	H	H	H	H	H	H			
Pickeral, Grass	<i>Esox americanus vermiculatus</i>			T										X	R	X		R	R
Pike, Northern	<i>Esox lucius</i>							C	C	C	C	C	O	C	C	C	C	C	O
Silversides	<i>Atherinidae</i>																		
Silverside, Brook	<i>Labidesthes sicculus</i>							U	C	C	C	C	O	C	C	C	C	C	C
Sturgeons	<i>Acipenseridae</i>																		
Sturgeon, Lake	<i>Acipenser fulvescens</i>		E	E			X	U	U	R	H		H	R	R	R		R	R

Fish*																			
Common Name	Species (Scientific Name)	Federally (T or E) ¹	Illinois (T or E) ¹	Iowa (T or E) ¹	Minnesota (T or E) ¹	Wisconsin (T or E) ¹	RCP ²	Pool 4 ³	Pool 5 ³	Pool 5A ³	Pool 6 ³	Pool 7 ³	Pool 8 ³	Pool 9 ³	Pool 10 ³	Pool 11 ³	Pool 12 ³	Pool 13 ³	Pool 14 ³
Sturgeon, Shovelnose	<i>Scaphirhynchus platyrhynchus</i>						X	O	O	O	O	O	O	O	O	O	O	O	O
Sticklebacks	<i>Gasterosteidae</i>																		
Stickleback, Brook	<i>Culaea inconstans</i>							X				X	R	U	U	U			
Suckers	<i>Catostomidae</i>																		
Buffalo, Bigmouth	<i>Ictiobus cyprinellus</i>							O	C	C	C	C	C	C	C	C	C	C	C
Buffalo, Black	<i>Ictiobus niger</i>					T		R	H	H	H	R	R	U	U	U	R	R	U
Buffalo, Smallmouth	<i>Ictiobus bubalus</i>							O	O	O	O	O	C	C	C	C	C	C	C
Carpsucker, Highfin	<i>Carpionodes velifer</i>							U	O	O	O	O	U	U	U	U	O	O	O
Carpsucker, River	<i>Carpionodes carpio</i>							O	C	C	C	C	O	A	A	A	C	C	C
Quillback	<i>Carpionodes cyprinus</i>							C	C	C	C	C	C	CC	C	C	U	U	C
Redhorse, Golden	<i>Moxostoma erythrurum</i>							O	U	U	U	U	O	O	U	U	U	O	O
Redhorse, Shorthead	<i>Moxostoma macrolepidotum</i>							C	C	C	C	C	C	C	C	C	C	C	C
Redhorse, Silver	<i>Moxostoma anisurum</i>							C	O	O	O	O	O	O	U	U	R	U	U
Sucker, Blue	<i>Cycleptus elongatus</i>					T		U	U	R	R	H	U	U	U	U		U	U
Sucker, Spotted	<i>Minytrema melanops</i>							C	C	C	C	C	O	C	C	C	O	C	O
Sucker, White	<i>Catostomus commersoni</i>							O	C	C	C	C	U	U	U	U	X	U	X

Fish*		Federally (T or E) ¹	Illinois (T or E) ¹	Iowa (T or E) ¹	Minnesota (T or E) ¹	Wisconsin (T or E) ¹	RCP ²	Pool 4 ³	Pool 5 ³	Pool 5A ³	Pool 6 ³	Pool 7 ³	Pool 8 ³	Pool 9 ³	Pool 10 ³	Pool 11 ³	Pool 12 ³	Pool 13 ³	Pool 14 ³
Common Name	Species (Scientific Name)																		
Sunfish Family	<i>Centrarchidae</i>																		
Bass, Largemouth	<i>Micropterus salmoides</i>							C	C	C	C	C	C	C	C	C	C	C	C
Bass, Rock	<i>Ambloplites rupestris</i>							C	C	C	C	C	O	C	C	C	R	O	U
Bass, Smallmouth	<i>Micropterus dolomieu</i>							C	O	O	O	O	O	O	O	O	U	U	U
Bluegill	<i>Lepomis macrochirus</i>							A	A	A	A	A	A	A	A	A	A	A	A
Crappie, Black	<i>Pomoxis nigromaculatus</i>							C	C	C	C	C	C	C	C	C	C	C	C
Crappie, White	<i>Pomoxis annularis</i>							O	C	C	C	C	O	C	C	C	C	C	C
Pumpkinseed	<i>Lepomis gibbosus</i>							O	O	O	C	C	C	C	C	C	C	C	C
Sunfish, Green	<i>Lepomis cyanellus</i>							O	O	O	O	O	O	U	U	U	O	U	O
Sunfish, Orange-spotted	<i>Lepomis humilis</i>							R	O	O	O	O	O	O	O	O	O	O	O
Warmouth	<i>Lepomis gulosus</i>									U	U	O	U	O	O	O	O	O	U
Trout-perch	<i>Percopsidae</i>																		
Trout-perch	<i>Percopsis omiscomaycus</i>							O	O	O	O	O	U	O	O	O		R	
* Species list and pool distribution taken from Pitlo, John, Jr., et al. 1995. Distribution and Relative Abundance of Upper Mississippi River Fishes. Upper Mississippi River Conservation Committee, Rock Island, IL.																			

Fish*		Federally (T or E) ¹	Illinois (T or E) ¹	Iowa (T or E) ¹	Minnesota (T or E) ¹	Wisconsin (T or E) ¹	RCP ²	Pool 4 ³	Pool 5 ³	Pool 5A ³	Pool 6 ³	Pool 7 ³	Pool 8 ³	Pool 9 ³	Pool 10 ³	Pool 11 ³	Pool 12 ³	Pool 13 ³	Pool 14 ³
Common Name	Species (Scientific Name)																		
¹ E. (Endangered) T. (Threatened)																			
² RCP. (Resource Conservation Priority for Fish & Wildlife Service, Region 3)																			
³ X. Probably occurs only as a stray from a tributary or inland stocking.																			
H. Records of occurrence are available, but no collections have been documented in the last 10 yrs.																			
R. Considered to be rare. Some species in this category may be on the verge of extirpation.																			
U. Uncommon. Does not usually appear in sample collections; populations are small, but the species do not appear to be on the verge of extirpation.																			
O. Occasionally collected. Not generally distributed, but local concentrations may occur.																			
C. Commonly taken in most sample collections. Can make up a large portion of some samples.																			
A. Abundantly taken in all river surveys.																			

Mammals		Federally (T or E)	Illinois (T or E)	Iowa (T or E)	Minnesota (T or E)	Wisconsin (T or E)	RCP
Common Name	Species (Scientific Name)						
Bats							
Bat, Big Brown	<i>Eptescius fuscus</i>						
Bat, Hoary	<i>Lasiurus cinerus</i>						
Bat, Northern Myotis	<i>Myotis septentrionalis</i>						
Bat, Little Brown	<i>Myotis lucifugus</i>						
Bat, Red	<i>Lasiurus borealis</i>						
Bat, Silver-haired	<i>Lasionycteris noctivagans</i>						
Pipistrel, Eastern	<i>Pipistrellus subflavus</i>						
Carnivores							
Badger	<i>Taxida taxus</i>						
Bear, Black	<i>Ursus americanus</i>						
Bobcat	<i>Lynx rufus</i>			T			
Coyote	<i>Canis latrans</i>						
Fox, Gray	<i>Urocyon cinereoargenteus</i>						
Fox, Red	<i>Vulpes fulva</i>						
Mink	<i>Mustela vison</i>						
Otter, River	<i>Lutra canadensis</i>		T				
Raccoon	<i>Procyon lotor</i>						
Skunk, Spotted	<i>Spilogale putorius</i>			E	T		
Skunk, Striped	<i>Mephitis mephitis</i>						
Weasel, Least	<i>Mustela nivalis</i>						
Weasel, Long-tailed	<i>Mustela frenata</i>						
Weasel, Short-tailed	<i>Mustela erminea</i>						
Hooved Animals							
Deer, White-tailed	<i>Odocoileus virginianus</i>						
Insectivores							
Mole, Eastern	<i>Scalopus aquaticus</i>						
Mole, Star-nosed	<i>Condylura cristata</i>						
Shrew, Least	<i>Cryptotis parva</i>			T			
Shrew, Masked	<i>Sorex cinereus</i>						
Shrew, Short-tailed	<i>Blarina brevicauda</i>						

Mammals		Federally (T or E)	Illinois (T or E)	Iowa (T or E)	Minnesota (T or E)	Wisconsin (T or E)	RCP
Common Name	Species (Scientific Name)						
Marsupials							
Opossum, Virginia	<i>Didelphis virginiana</i>						
Rabbits							
Rabbit, Eastern Cottontail	<i>Sylvilagus floridanus</i>						
Rodents							
Beaver	<i>Castor canadensis</i>						
Chipmunk, Eastern	<i>Tamias striatus</i>						
Gopher, Plains Pocket	<i>Geomys bursarius</i>						
Mouse, Plains Pocket	<i>Perognathus flavescens</i>			E			
Lemming, Southern Bog	<i>Synaptomys cooperi</i>			T			
Mouse, Deer	<i>Peromyscus maniculatus</i>						
Mouse, House	<i>Mus musculus</i>						
Mouse, Meadow Jumping	<i>Zapus hudsonius</i>						
Mouse, Western Harvest	<i>Reithrodontomy megalotis</i>						
Mouse, White-footed	<i>Peromyscus leucopus</i>						
Muskrat	<i>Ondatra zibethicus</i>						
Rat, Norway	<i>Rattus norvegicus</i>						
Squirrel, Eastern Fox	<i>Sciurus niger</i>						
Squirrel, Eastern Gray	<i>Sciurus carolinensus</i>						
Squirrel, Franklin's Ground	<i>Spermophilis franklinii</i>						
Squirrel, Red	<i>Tamiasciurus hudsonicus</i>						
Squirrel, Southern Flying	<i>Glaucomys volans</i>						
Squirrel, Thirteen-lined Ground	<i>Spermophilus tridecemlineatus</i>						
Vole, Meadow	<i>Microtus pennsylvanicus</i>						
Vole, Woodland	<i>Microtus pinetorum</i>						
Vole, Prairie	<i>Microtus ochrogastor</i>						
Woodchuck	<i>Marmota monax</i>						
¹ E. (Endangered) T. (Threatened) ² RCP. (Resource Conservation Priority for Fish & Wildlife Service, Region 3)							

Freshwater Mussels									
Common Name	Species (Scientific Name)	Federally (T or E) ¹	Illinois (T or E) ¹	Iowa (T or E) ¹	Minnesota (T or E) ¹	Wisconsin (T or E) ¹	RCP ²	Status on Refuge ³	
Dreissenidae									
Zebra Mussel	<i>Dreissena polymorpha</i>						X		
Corbiculidae									
Asiatic Clam	<i>Corbicula fluminea</i>						X		
Unionidae									
Cumberlandinae									
Spectaclecase	<i>Cumberlandia monodonta</i>	C	E	E	T	E	X	R: Pool 10	
Ambleminae									
Washboard	<i>Magalonaias nervosa</i>		SC		T		X	R: Pool 10 & Below	
Pistolgrip (Buckhorn)	<i>Tritogonia verrucosa</i>			E	T	T	X		
Mapleleaf	<i>Quadrula quadrula</i>						X		
Monkeyface	<i>Quadrula metanevra</i>			T			X		
Wartyback	<i>Quadrula nodulata</i>			E	R				
Pimpleback	<i>Quadrula pustulosa</i>						X		
Threeridge	<i>Amblema plicata</i>						X		
Ebonysell	<i>Fusconaia ebena</i>		T		E	E		R: Pools 9, 10, 11	
Wabash Pigtoe	<i>Fusconaia flava</i>								
Purple Wartyback	<i>Cyclonaias tuberculata</i>			T	T	E		R: Pool 4	
Sheepnose	<i>Plethobasus cyphus</i>	C	E	E	E	E	X		
Round Pigtoe	<i>Pleurobema sintoxia</i>			E	T	SC	X		
Spike	<i>Elliptio dilatata</i>		T		SC				
Anodontinae									
Paper Pondshell	<i>Utterbackia imbecillis</i>								
Flat Floater	<i>Anodonta suborbiculata</i>					SC	X		
Giant Floater	<i>Pyganodon grandis</i>								
Creepers (aka Squawfoot)	<i>Strophitus undulatus</i>								

Freshwater Mussels								
		Federally (T or E) ¹	Illinois (T or E) ¹	Iowa (T or E) ¹	Minnesota (T or E) ¹	Wisconsin (T or E) ¹	RCP ²	Status on Refuge ³
Common Name	Species (Scientific Name)							
Elktoe	<i>Alasmidonta marginata</i>				T	SC	X	Pools 6 & 8
Rock Pocketbook	<i>Arcidens confragosus</i>				E	T	X	
Salamander Mussel	<i>Simpsonaias ambigua</i>	C		E	T	T	X	
White Heelsplitter	<i>Lasmigona complanata</i>						X	
Fluted Shell	<i>Lasmigona costata</i>			T	SC	T		R: Pool 10
Lampsilinae								
Threehorn Wartyback	<i>Obliquaria reflexa</i>							
Mucket	<i>Actinonaias ligamentina</i>				T		X	Pool 11
Butterfly	<i>Ellipsaria lineolata</i>		T	T	T	E	X	
Hickorynut	<i>Obovaria olivaria</i>					SC		
Deertoe	<i>Truncilla truncata</i>							
Fawnsfoot	<i>Truncilla donaciformis</i>							
Fragile Papershell	<i>Leptodea fragilis</i>							
Pink Papershell	<i>Potamilus ohioensis</i>							
Pink Heelsplitter	<i>Potamilus alatus</i>						X	
Lilliput	<i>Toxolasma parvus</i>							
Black Sandshell	<i>Ligumia recta</i>				SC		X	
Yellow Sandshell	<i>Lampsilis teres anodontooides</i>			E	E	E	X	
Slough Sandshell	<i>Lampsilis teres teres</i>			E		E		Pools 10, 11
Fat Mucket	<i>Lampsilis siliquoidea</i>						X	
Higgins Eye	<i>Lampsilis higginsii</i>	E	E	E	E	E	X	R: Pools 7-14
Plain Pocketbook	<i>Lampsilis cardium</i>							
Sphaeriidae								
Fingernail Clam	<i>Musculium transversum</i>							

Freshwater Mussels		Federally (T or E) ¹	Illinois (T or E) ¹	Iowa (T or E) ¹	Minnesota (T or E) ¹	Wisconsin (T or E) ¹	RCP ²	Status on Refuge ³
Common Name	Species (Scientific Name)							
¹ C. (Candidate) E. (Endangered) T. (Threatened) X. (Extirpated) SC. (Special Concern)								
² RCP (Resource Conservation Priority for Fish & Wildlife Service, Region 3)								
³ Status on Refuge: Species present in most pools, unless otherwise noted. R. Rare, only isolated occurrences in Refuge area.								

Reptiles	Species (Scientific Name)	Federally (T or E) ¹	Illinois (T or E) ¹	Iowa (T or E) ¹	Minnesota (T or E) ¹	Wisconsin (T or E) ¹	RCP ²
Common Name	Species (Scientific Name)						
Lizards							
Racerunner, Six-lined	<i>Cnemidophorus sexlineatus</i>						
Snakes							
Bullsnake, Gopher	<i>Pituophis melanoleucus</i>						
Rattlesnake, Eastern Massasauga	<i>Sistrurus catenatus</i>	C	E	E	E	E	X
Rattlesnake, Timber	<i>Crotalus horridus</i>		T		T		X
Snake, Blue Racer	<i>Coluber constrictor foxi</i>						
Snake, Brown	<i>Storeria dekayi</i>						
Snake, Eastern Garter	<i>Thamnophis sirtalis</i>						
Snake, Eastern Hognose	<i>Heterodon platirhinus</i>						
Snake, Fox	<i>Elaphe vulpina</i>						
Snake Graham's Crayfish	<i>Regina Grahamii</i>						
Snake, Kirtland's Water Snake	<i>Clonophis Kirtlandii</i>		T				
Snake, Milk	<i>Lampropeltis triangulum</i>						
Snake, Northern Red-bellied	<i>Storeria occipitomaculata</i>						
Snake, Northern Water	<i>Nerodia sipedon</i>						
Snake, Plains Garter	<i>Thamnophis radix</i>						
Snake, Prairie Lined	<i>Tropidoclonion lineatum</i>						
Snake, Rat	<i>Elaphe obsoleta</i>						
Snake, Ringneck	<i>Diadophis punctatus</i>						
Snake, Smooth Green	<i>Opheodrys vernalis</i>						
Snake, Western Hognose	<i>Heterodon nasicus</i>		T				
Turtles							
Turtle, Blanding's	<i>Emydoidea blandingii</i>		T	T	T	T	
Turtle, Common Musk	<i>Sternotherus odoratus</i>						
Turtle, False Map	<i>Graptemys pseudogeographica</i>						
Turtle, Map	<i>Graptemys geographica</i>						

Reptiles		Federally (T or E) ¹	Illinois (T or E) ¹	Iowa (T or E) ¹	Minnesota (T or E) ¹	Wisconsin (T or E) ¹	RCP ²
Common Name	Species (Scientific Name)						
Turtle, Ornate Box	<i>Terrapene ornata</i>			T		E	
Turtle, Painted	<i>Chysemys picta</i>						
Turtle, Smooth Softshell	<i>Apalone mutica</i>						
Turtle, Snapping	<i>Chelydra serpentina</i>						
Turtle, Spiny Softshell	<i>Apalone spinifera</i>						
Turtle, Ouachita Map	<i>Graptemys ouachitensis</i>						
Turtle, Wood	<i>Clemmys insculpta</i>			E	T	T	
¹ E. (Endangered) T. (Threatened) ² RCP (Resource Conservation Priority for Fish & Wildlife Service, Region 3)							

Plant Species Found on the Refuge

The following list is derived from Galatowitsch, S.M.; McAdams, T.V.; July, 1994; Distribution and Requirements of Plants on the Upper Mississippi River NWR: Literature Review. Iowa Cooperative Fish and Wildlife Research Unit, Ames, Iowa.

The floristic list was compiled from published records for the Upper Mississippi River; e.g., Mohlenbrock (1983), Peck and Smart (1986), Swanson and Sohmer (1978). Nomenclature follows Gleason and Cronquist (1991). General geographic distribution was obtained from Gleason and Cronquist (1991).

Distribution

Ubiquitous: Range extending across all UMR pools.

Northern: Range not reaching to southern pools.

Southern: Range restricted to southern pools of the UMR.

* Denotes species not indigenous to North America.

** Denotes species added to the list in 2004 by the Refuge.

Key to Plant Guilds

Woody Plant Guilds		Semi-aquatic and Terrestrial Herbaceous Guilds	
FTPT	Flood-tolerant Pioneering Trees	SE	Spring Ephemerals
FIPT	Flood-intolerant Pioneering Trees	AWF	Autumnal Woodland Forbs
SF	Swamp Forest Trees	WG	Woodland Graminoids
SFT	Softwood Floodplain Trees	V	Vines
BHT	Bottomland Hardwood Trees	MF	Meadow Forbs
FTPS	Flood-tolerant Pioneering Shrubs	MG	Meadow Graminoids
FTSS	Flood-tolerant Stable Shrubs	SAF	Semi-aquatic Annual Forbs
WS	Woodland shrubs	SAG	Semi-aquatic Annual Grasses
Aquatic Guilds		TAF	Terrestrial Annual Forbs
EP	Emergent Perennials	PP	Parasitic Plants
EA	Emergent Annuals		
RSA	Rooted Submersed Aquatics		
USA	Unrooted Submersed Aquatics		
FP	Floating Perennials		
FA	Floating Annuals		

Plant Species Found on Upper Mississippi River NW&FR

Common Name	Scientific Name	Family	Distrib.	Guild
Alder	<i>Alnus serrulata (Ait.) Willd.</i>	Betulaceae	Ubiquitous	FTSS
Alder buckthorn	<i>Rhamnus frangula L.*</i>	Rhamnaceae	Ubiquitous	FTSS
American bindweed	<i>Convolvulus arvensis L.*</i>	Convolvulaceae	Ubiquitous	V
American bugleweed	<i>Lycopus americanus Muhl.</i>	Lamiaceae	Ubiquitous	MF
American elm	<i>Ulmus americana L.</i>	Ulmaceae	Ubiquitous	SFT
American fever-few	<i>Parthenium integrifolium L.</i>	Asteraceae	Ubiquitous	MF
American germander	<i>Teucrium canadense L.</i>	Lamiaceae	Ubiquitous	MF
Aquatic liverwort	<i>Riccia fluitans</i>	Ricciaceae	Ubiquitous	FA
Arrow arum	<i>Peltandra virginica (L.) schott & Endl.</i>	Araceae	Ubiquitous	EP
Arrow-leaved violet	<i>Viola sagittata Ait.</i>	Violaceae	Ubiquitous	MF
Asiatic dayflower	<i>Commelina communis L.</i>	Commelinaceae	Ubiquitous	TAF
Awned cyperus	<i>Cyperus squarrosus L.</i>	Cyperaceae	Ubiquitous	SAG
Bald cypress	<i>Taxodium distichum (L.) Rich.</i>	Taxodiaceae	Ubiquitous	SF
Bald spikerush	<i>Eleocharis erythropoda Steud.</i>	Cyperaceae	Ubiquitous	MG
Barnyard grass	<i>Echinochloa crusgalli (L.) Beauv.</i>	Poaceae	Ubiquitous	SAG
Barnyard grass	<i>Echinochloa muricata (Beauv.) Fern.</i>	Poaceae	Ubiquitous	SAG
Basswood	<i>Tilia americana L.</i>	Tiliaceae	Ubiquitous	BHT
Bead grass	<i>Paspalum fluitans (Elliott) Kunth.</i>	Poaceae	Ubiquitous	MG
Beaked sedge	<i>Carex rostrata Stokes.</i>	Cyperaceae	Northern	MG
Bebb's sedge	<i>Carex bebbii Olney</i>	Cyperaceae	Ubiquitous	MG
Bellwort	<i>Uvularia grandiflora J.E. Smith</i>	Liliaceae	Ubiquitous	SE
Bicknell's sedge	<i>Carex bicknellii Britt.</i>	Cyperaceae	Ubiquitous	MG
Biennial gaura	<i>Gaura biennis D.</i>	Onagraceae	Ubiquitous	TAF
Big bluestem	<i>Andropogon gerardii Vitman</i>	Poaceae	Ubiquitous	FTSS
Bigleaf pondweed	<i>Potamogeton amplifolius Tuckerm.</i>	Potamogetonaceae	Ubiquitous	RSA
Bitter cress	<i>Cardamine hirsuta L.</i>	Brassicaceae	Ubiquitous	MF
Bitter cress	<i>Cardamine pennsylvanica Muhl.</i>	Brassicaceae	Ubiquitous	AWF
Bitternut hickory	<i>Carya cordiformis (Wang.) K. Koch</i>	Juglandaceae	Ubiquitous	BHT
Bittersweet	<i>Solanum dulcamara L.</i>	Solanaceae	Ubiquitous	MF
Black Ash	<i>Fraxinus nigra Marsh.</i>	Oleaceae	Northern	SFT
Black bulrush	<i>Scirpus atrovirens Willd.</i>	Cyperaceae	Ubiquitous	MG
Black cherry	<i>Prunus serotina Ehrh.</i>	Rosaceae	Ubiquitous	BHT
Black locust	<i>Robinia pseudo-acacia L.*</i>	Fabaceae	Ubiquitous	BHT

Plant Species Found on Upper Mississippi River NW&FR (Continued)

Common Name	Scientific Name	Family	Distrib.	Guild
Black mustard	<i>Brassica nigra</i> L.	Brassicaceae	Ubiquitous	TAF
Black nightshade	<i>Solanum nigrum</i> L.	Solanaceae	Ubiquitous	TAF
Black oak	<i>Quercus velutina</i> Lam.	Fagaceae	Ubiquitous	BHT
Black raspberry	<i>Rubus occidentalis</i> L.	Rosaceae	Ubiquitous	WS
Black walnut	<i>Juglans nigra</i> L.	Juglandaceae	Ubiquitous	BHT
Black willow	<i>Salix nigra</i> Marsh.	Salicaceae	Ubiquitous	FTPT
Blackberry lily	<i>Belamcanda chinensis</i> (L.) DC.*	Iridaceae	Ubiquitous	FTSS
Black-eyed susan	<i>Rudbeckia hirta</i> L.	Asteraceae	Ubiquitous	MF
Blackjack oak	<i>Quercus marilandica</i> Muench.	Fagaceae	Ubiquitous	BHT
Bladdernut	<i>Staphylea trifolia</i> L.	Staphyleaceae	Ubiquitous	WS
Bland sweet cicely	<i>Osmorhiza claytonii</i> (Michx.)	Apiaceae	Ubiquitous	SE
Blood polygala	<i>Polygala sanguinea</i> L.	Polygonaceae	Ubiquitous	TAF
Bloodroot	<i>Sanguinaria canadensis</i> L.	Papaveraceae	Ubiquitous	SE
Blue flag	<i>Iris virginica</i> L. var. <i>shrevei</i> (Small) E. Anders.	Iridaceae	Ubiquitous	EP
Blue vervain	<i>Verbena hastata</i> L.	Verbenaceae	Ubiquitous	MF
Blue-joint	<i>Calamagrostis canadensis</i> (Michx.) Nutt.	Poaceae	Ubiquitous	MG
Blunt broom sedge	<i>Carex tribuloides</i> Wahl.	Cyperaceae	Ubiquitous	MG
Bluntleaf bedstraw	<i>Galium obtusum</i> bigel.	Rubiaceae	Ubiquitous	MF
Blunt-lobed woodsia	<i>Woodsia obtusa</i> (Spreng.) Torr.	Polypodiaceae	Ubiquitous	AWF
Bog-hemp	<i>Boehmeria cylindrica</i> (L.) Sw.	Urticaceae	Ubiquitous	AWF
Boneset	<i>Eupatorium perfoliatum</i> L.	Asteraceae	Ubiquitous	MF
Bottlebrush sedge	<i>Carex hystericina</i> Muhl.	Cyperaceae	Ubiquitous	MG
Bottomland aster	<i>Aster ontarionis</i> Wieg.	Asteraceae	Ubiquitous	FTSS
Box elder	<i>Acer negundo</i> L.	Aceraceae	Ubiquitous	FTPT
Brevior's sedge	<i>Carex brevior</i> (Dew.) Mackens.	Cyperaceae	Ubiquitous	MG
Bristly crowfoot	<i>Ranunculus pensylvanicus</i> L.	Ranunculaceae	Ubiquitous	SAF
Bristly greenbrier	<i>Smilax hispida</i> Muhl.	Smilacaceae	Ubiquitous	V
Broad-leaved arrowhead	<i>Sagittaria latifolia</i> Willd.	Alismataceae	Ubiquitous	EP
Brook cinquefoil	<i>Potentilla rivalis</i> Nutt.	Rosaceae	Ubiquitous	SAF
Brook sedge	<i>Cyperus bipartitus</i> Torr.	Cyperaceae	Ubiquitous	SAG
Bulbet-bladder fern	<i>Cystopteris bulbifera</i> (L.) Bernh.	Polypodiaceae	Ubiquitous	AWF
Bull thistle	<i>Cirsium vulgare</i> (Savi) Tenore.*	Asteraceae	Ubiquitous	TAF
Bur cucumber	<i>Sicyos angulatus</i> L.	Curcubitaceae	Ubiquitous	V
Bur marigold	<i>Bidens laevis</i> (L.) BSP.	Asteraceae	Ubiquitous	SAF

Plant Species Found on Upper Mississippi River NW&FR (Continued)

Common Name	Scientific Name	Family	Distrib.	Guild
Burhead	<i>Echinodorus Corddifolius</i> (L.) Griseb.	Alismataceae	Ubiquitous	EP
Burhead	<i>Sparganium americanum</i> Nutt.	Sparganiaceae	Ubiquitous	EP
Burreed	<i>Sparganium chlorocarpum</i> Rydb.	Sparganiaceae	Northern	EP
Bushy knotweed	<i>Polygonum ramosissimum</i> Michx.	Polygonaceae	Ubiquitous	SAF
Butternut	<i>Juglans cinerea</i> L.	Juglandaceae	Ubiquitous	BHT
Buttonbush	<i>Cephalanthus occidentalis</i> L.	Rubiaceae	Ubiquitous	FTSS
Buttonbush dodder	<i>Cuscuta cephalanthi</i> Engelm.	Cuscutaceae	Ubiquitous	PP
Buttonweed	<i>Spermacoce glabra</i> Michx.	Rubiaceae	Ubiquitous	MF
Canada anemone	<i>Anemone canadensis</i> L.	Ranunculaceae	Ubiquitous	FTSS
Canada goldenrod	<i>Solidago canadensis</i> L.	Asteraceae	Ubiquitous	MF
Canada thistle	<i>Cirsium arvense</i> (L.) Scop.*	Asteraceae	Ubiquitous	MF
Canada tick-trefoil	<i>Desmodium canadense</i> (L.) DC.	Fabaceae	Ubiquitous	MF
Canada wild rye	<i>Elymus canadensis</i> L.	Poaceae	Ubiquitous	MG
Cannabis	<i>Cannabis sativa</i> L.	Cannabaceae	Ubiquitous	MF
Cardinal flower	<i>Lobelia cardinalis</i> L.	Campanulaceae	Ubiquitous	AWF
Carpetweed	<i>Mollugo verticillata</i> L.	Molluginaceae	Ubiquitous	TAF
Carrion flower	<i>Smilax herbacea</i> L.	Smilacaceae	Ubiquitous	V
Catchfly grass	<i>Leersia lenticularis</i> Michx.	Poaceae	Ubiquitous	MG
Cattail sedge	<i>Carex typhina</i> Michx.	Cyperaceae	Ubiquitous	MG
Chickweed	<i>Cerastium vulgatum</i> L.	Caryophyllaceae	Ubiquitous	MF
Chinquapin oak	<i>Quercus prinoides</i> Willd.	Fagaceae	Ubiquitous	BHT
Choke-cherry	<i>Prunus virginiana</i> L.	Rosaceae	Ubiquitous	FIPT
Cinnamon fern	<i>Osmunda cinnamomea</i> L.	Osmundaceae	Ubiquitous	MF
Cinnamon willow-herb	<i>Epilobium coloratum</i> Biehler.	Onagraceae	Ubiquitous	MF
Clammy ground cherry	<i>Physalis heterophylla</i> Nees.	Solanaceae	Ubiquitous	AWF
Clasping dogbane	<i>Apocynum sibiricum</i> Jacq.	Araliaceae	Ubiquitous	FTSS
Clearweed	<i>Pilea pumila</i> L. Gray.	Urticaceae	Ubiquitous	TAG
Climbing milkweed	<i>Ampelamus albidus</i> (Nutt.) Britton	Asclepiadaceae	Ubiquitous	FTSS
Cluster-leaftick trefoil	<i>Desmodium glutinosum</i> (Muhl.) Wood.	Fabaceae	Ubiquitous	AWF
Coarse cyperus	<i>Cyperus odoratus</i> L.	Cyperaceae	Ubiquitous	SAG
Common blackberry	<i>Rubus allegheniensis</i> Porter.	Rosaceae	Ubiquitous	WS
Common bladderwort	<i>Utricularia vulgaris</i> L.	Lentibulariaceae	Ubiquitous	USA
Common buckthorn	<i>Rhamnus cathartica</i> L.*	Rhamnaceae	Ubiquitous	WS
Common burreed	<i>Sparganium eurycarpum</i> Engelm.	Sparganiaceae	Ubiquitous	EP

Plant Species Found on Upper Mississippi River NW&FR (Continued)

Common Name	Scientific Name	Family	Distrib.	Guild
Common cattail	<i>Typha latifolia L.</i>	Typhaceae	Ubiquitous	EP
Common chickweed	<i>Stellaria media (L.) Cyrillo</i>	Caryophyllaceae	Ubiquitous	TAF
Common cocklebur	<i>Xanthium strumarium L.*</i>	Asteraceae	Ubiquitous	TAF
Common dodder	<i>Cuscuta gronovii Willd.</i>	Cuscutaceae	Ubiquitous	PP
Common horsetail	<i>Equisetum arvense L.</i>	Equisataceae	Ubiquitous	MF
Common juniper	<i>Juniperus communis L.</i>	Cuppressaceae	Ubiquitous	WS
Common plantain	<i>Plantago major L.*</i>	Plantaginaceae	Ubiquitous	MF
Common poison ivy	<i>Toxicodendron radicans ssp. negundo (Greene) Gillis</i>	Anacardiaceae	Ubiquitous	V
Common purslane	<i>Portulaca oleracea L.</i>	Portulacaceae	Ubiquitous	MF
Common ragweed	<i>Ambrosia artemisiifolia L.</i>	Asteraceae	Ubiquitous	TAF
Common reed	<i>Phragmites australis (Cav.) Trin.</i>	Poaceae	Ubiquitous	EP
Common ricciocarpus	<i>Ricciocarpus natans</i>	Ricciaceae	Ubiquitous	FA
Common skullcap	<i>Scutellaria galericulata L.</i>	Lamiaceae	Ubiquitous	MF
Common tansy	<i>Tanacetum vulgare L.*</i>	Asteraceae	Ubiquitous	MF
Common water weed	<i>Elodea canadensis Michx</i>	Hydrophyllaceae	Ubiquitous	RSA
Coontail	<i>Ceratophyllum demersum L.</i>	Ceratophyllaceae	Ubiquitous	USA
Coontail	<i>Ceratophyllum echinatum Gray</i>	Ceratophyllaceae	Ubiquitous	USA
Cottonwood	<i>Populus deltoides Marsh.</i>	Salicaceae	Ubiquitous	FTPT
Cow-parsnip	<i>Heracleum lanatum Michx.</i>	Apiaceae	Ubiquitous	MF
Crab grass	<i>Digitaria sanguinalis (L.) Scop.*</i>	Poaceae	Ubiquitous	MG
Creeping burhead	<i>Echinodorus berteroi (Sprengel) Fassett</i>	Alismataceae	Ubiquitous	SAF
Creeping dayflower	<i>Commelina diffusa Burman</i>	Commelinaceae	Ubiquitous	TAF
Creeping lovegrass	<i>Eragrostis hypnoides (Lam.) BSP.</i>	Poaceae	Ubiquitous	SAG
Crested sedge	<i>Carex cristatella Britt.</i>	Cyperaceae	Ubiquitous	MG
Crested wood fern	<i>Dryopteris cristata (L.) Gray</i>	Polypodiaceae	Ubiquitous	MF
Crown vetch	<i>Coronilla varia L. **,*</i>	Fabaceae		
Culver's root	<i>Veronicastrum virginicum (L.) Farw.</i>	Scrophulariaceae	Ubiquitous	MF
Curly dock	<i>Rumex crispus L.*</i>	Polygonaceae	Ubiquitous	MF
Curly-leaved pondweed	<i>Potamogeton crispus L.*</i>	Potamogetonaceae	Ubiquitous	RSA
Cursed crowfoot	<i>Ranunculus scleratus L.</i>	Ranunculaceae	Ubiquitous	SAF
Cutleaf coneflower	<i>Rudbeckia laciniata L.</i>	Asteraceae	Ubiquitous	MF
Daisy fleabane	<i>Erigeron annuus (L.) Pers.</i>	Asteraceae	Ubiquitous	TAF
Dandelion	<i>Taraxacum officinale Weber.</i>	Asteraceae	Ubiquitous	MF
Deer-tongue grass	<i>Panicum clandestinum L.</i>	Poaceae	Ubiquitous	TAG

Plant Species Found on Upper Mississippi River NW&FR (Continued)

Common Name	Scientific Name	Family	Distrib.	Guild
Devil's beggarticks	<i>Bidens frondosa L.</i>	Asteraceae	Ubiquitous	SAF
Diamond willow	<i>Salix eriocephala Michx.</i>	Salicaceae	Ubiquitous	FTPS
Ditch-stonecrop	<i>Penthorum sedoides L.</i>	Saxifragaceae	Ubiquitous	MF
Dock	<i>Rumex salicifolius J.A. Weinm.</i>	Polygonaceae	Ubiquitous	MF
Dodder	<i>Cuscuta compacta A.L. Juss.</i>	Cuscutaceae	Ubiquitous	PP
Dodder	<i>Cuscuta cuspidata Engelm.</i>	Cuscutaceae	Ubiquitous	PP
Dotted hawthorne	<i>Crataegus punctata Jacq.</i>	Rosaceae	Ubiquitous	FTSS
Dotted water meal	<i>Wolffia punctata Griseb.</i>	Lemnaceae	Ubiquitous	FA
Downy phlox	<i>Phlox pilosa L.</i>	Polemoniaceae	Ubiquitous	MF
Drummond's aster	<i>Aster drummondii Lindl.</i>	Asteraceae	Ubiquitous	FTSS
Duckweed	<i>Lemna obscura (Austin) Daubs</i>	Lemnaceae	Ubiquitous	FA
Duckweed	<i>Lemna perpusilla Torr.</i>	Lemnaceae	Ubiquitous	FA
Duckweed	<i>Lemna trinervis (Austin) Small</i>	Lemnaceae	Ubiquitous	FA
Duckweed	<i>Lemna valdiviana Phil.</i>	Lemnaceae	Ubiquitous	FA
Dwarf bulrush	<i>Hemicarpha micrantha (Vahl) Pax</i>	Cyperaceae	Ubiquitous	SAG
Dwarf St. John's-wort	<i>Hypericum mutilum L.</i>	Clusiaceae	Ubiquitous	MF
Dwarfhackberry	<i>Celtis tenuifolia Nutt.</i>	Ulmaceae	Ubiquitous	WS
Dye bedstraw	<i>Galium tinctorium L.</i>	Rubiaceae	Ubiquitous	MF
Early meadow rue	<i>Thalictrum dioicum L.</i>	Ranunculaceae	Ubiquitous	SE
Early wild rose	<i>Rosa blanda Ait.</i>	Rosaceae	Ubiquitous	WS
Eastern serviceberry	<i>Amelanchier canadensis (L.) Medikus</i>	Rosaceae	Ubiquitous	FTSS
Elderberry	<i>Sambucus canadensis L.</i>	Caprifoliaceae	Ubiquitous	WS
Elegant bedstraw	<i>Galium concinnum T. & G.</i>	Rubiaceae	Ubiquitous	AWF
Emory's sedge	<i>Carex emoryi Dew.</i>	Cyperaceae	Ubiquitous	MG
Enchanter's nightshade	<i>Circaea lutetiana L.</i>	Onagraceae	Ubiquitous	AWF
Eurasian milfoil	<i>Myriophyllum spicatum L. var. exalbescens (Fern.) Jepson*</i>	Haloragaceae	Ubiquitous	RSA
Eutrophic water nymph	<i>Najas minor All.*</i>	Najadaceae	Ubiquitous	RSA
Evening primrose	<i>Oenothera biennis L.</i>	Onagraceae	Ubiquitous	MF
Fall panic grass	<i>Panicum dichotomiflorum Michx.</i>	Poaceae	Ubiquitous	TAG
False buckwheat	<i>Polygonum scandens L.</i>	Polygonaceae	Ubiquitous	MF
False dragonhead	<i>Physostegia virginiana (L.) Benth.*</i>	Lamiaceae	Ubiquitous	MF
False indigo	<i>Amorpha fruticosa L.</i>	Fabaceae	Ubiquitous	FTSS
False petunia	<i>Ruellia strepens L.</i>	Acanthaceae	Ubiquitous	AWF
False pimpernel	<i>Lindernia dubia (L.) Pennell.</i>	Scrophulariaceae	Ubiquitous	SAF

Plant Species Found on Upper Mississippi River NW&FR (Continued)

Common Name	Scientific Name	Family	Distrib.	Guild
False starwort	<i>Boltonia asteroides</i> (L.) L. Her.	Asteraceae	Ubiquitous	MF
Fancy wood fern	<i>Dryopteris intermedia</i> (Muhl.) A. Gray	Polypodiaceae	Ubiquitous	AWF
Field mint	<i>Mentha arvensis</i> L.	Lamiaceae F	Ubiquitous	MF
Field thistle	<i>Cirsium discolor</i> (Muhl.) Spreng.	Asteraceae	Ubiquitous	TAF
Figwort	<i>Scrophularia marilandica</i> L.	Scrophulariaceae	Ubiquitous	MF
Fireweed	<i>Erechtites hieracifolia</i> (L.) Raf.	Asteraceae	Ubiquitous	TAF
Flat-stem pondweed	<i>Potamogeton zosteriformis</i> Fern.	Potamogetonaceae	Ubiquitous	RSA
Flatstem spikerush	<i>Eleocharis compressa</i> Sullivant	Cyperaceae	Ubiquitous	MG
Fleabane	<i>Erigeron philadelphicus</i> L.	Asteraceae	Ubiquitous	MF
Floating pondweed	<i>Potamogeton natans</i> L.	Potamogetonaceae	Northern	RSA
Floating primrose willow	<i>Ludwigia peploides</i> (HBK) Raven	Onagraceae	Ubiquitous	MF
Flowering dogwood	<i>Cornus florida</i> L.	Cornaceae	Ubiquitous	WS
Fog fruit	<i>Phyla lanceolata</i> Michx. (Green)	Verbenaceae	Ubiquitous	MF
Forest pea	<i>Lathyrus venosus</i> Muhl. var. <i>intonsus</i> Butters and St. John	Fabaceae	Ubiquitous	AWF
Forest phlox	<i>Phlox divaricata</i> L.	Polemoniaceae	Ubiquitous	SE
Fowl meadow grass	<i>Glyceria striata</i> (Lam.) A. Hitchc.	Poaceae	Ubiquitous	MG
Fox sedge	<i>Carex vulpinoidea</i> Michx.	Cyperaceae	Ubiquitous	MG
Foxtail sedge	<i>Carex alopecoidea</i> Tuckerm.	Cyperaceae	Ubiquitous	MG
Frank's sedge	<i>Carex frankii</i> Kunth	Cyperaceae	Ubiquitous	WG
Fringed loosestrife	<i>Lysimachia ciliata</i> L.	Primulaceae	Ubiquitous	MF
Fringed quickweed	<i>Galinsoga quadriradiata</i> Ruiz & Pavon	Asteraceae	Ubiquitous	TAF
Fringeleaf ruellia	<i>Ruellia humilis</i> Nutt.	Acanthaceae	Ubiquitous	MF
Frog orchid	<i>Habenaria viridis</i> (L.) Br. var. <i>bracteata</i> (Muhl.) A. Gray	Orchidaceae	Ubiquitous	AWF
Frost grape	<i>Vitis vulpina</i> L.	Vitaceae	Ubiquitous	V
Garden asparagus	<i>Asparagus officinalis</i> L.*	Liliaceae	Ubiquitous	FTSS
Garlic mustard*, **	<i>Alliaria petiolata</i>	Brassicaceae		
Giant chickweed	<i>Stellaria aquatica</i> (L.) Scop.	Caryophyllaceae	Ubiquitous	MF
Giant foxtail	<i>Setaria faberi</i> Herrm.	Poaceae	Ubiquitous	TAG
Golden alexander	<i>Zizia aurea</i> (L.) W.Do J. Koch.	Apiaceae	Ubiquitous	MF
Golden coreopsis	<i>Coreopsis tinctoria</i> Nutt.	Asteraceae	Ubiquitous	TAF
Golden dock	<i>Rumex maritimus</i> L.	Polygonaceae	Ubiquitous	SAF
Gooseberry	<i>Ribes hirtellum</i> Michx.	Saxifragaceae	Ubiquitous	WS

Plant Species Found on Upper Mississippi River NW&FR (Continued)

Common Name	Scientific Name	Family	Distrib.	Guild
Goosefoot	<i>Chenopodium album</i> L.*	Chenopodiaceae	Ubiquitous	TAF
Grape fern	<i>Botrychium dissectum</i> Sprengel var. <i>obliquum</i> Clute	Ophioglossaceae	Ubiquitous	AWF
Grape woodvine	<i>Parthenocissus vitacea</i> (Knerr.) A. Hitchc.	Vitaceae	Ubiquitous	V
Grass of parnassus	<i>Parnassia glauca</i> Raf.	Saxifragaceae	Northern	MF
Grass-leaved arrowhead	<i>Sagittaria graminea</i> Michx.	Alismataceae	Ubiquitous	EP
Grass-leaved golden aster	<i>Chrysopsis graminifolia</i> (Michx.) Elliot var. <i>latifolia</i> Fern.	Asteraceae	Ubiquitous	MF
Grass-leaved water plantain	<i>Alisma gramineum</i> Lej.	Alismataceae	Northern	EP
Gray sedge	<i>Carex amphibola</i> Steud. var. <i>turgida</i> Fern.	Cyperaceae	Ubiquitous	WG
Graybark grape	<i>Vitis cinerea</i> Engelm.	Vitaceae	Ubiquitous	V
Gray-headed coneflower	<i>Ratibida pinnata</i> (Vent.) Barnh.	Asteraceae	Ubiquitous	MF
Gray's sedge	<i>Carex grayi</i> Carey.	Cyperaceae	Ubiquitous	WG
Great lobelia	<i>Lobelia siphilitica</i> L.	Campanulaceae	Ubiquitous	MF
Great ragweed	<i>Ambrosia trifida</i> L.	Asteraceae	Ubiquitous	TAF
Great St. John's-wort	<i>Hypericum pyramidatum</i> Ait.	Clusiaceae	Ubiquitous	MF
Greater duckweed	<i>Spirodela polyrhiza</i> (L.) Schleiden	Lemnaceae	Ubiquitous	FA
Green amaranth	<i>Amaranthus hybridus</i> L.	Amaranthaceae	Ubiquitous	TAF
Green ash	<i>Fraxinus pennsylvanica</i> Marsh.	Oleaceae	Ubiquitous	FTPT
Green dragon	<i>Arisaema dracontium</i> (L.) Schott.	Araceae	Ubiquitous	FTSS
Green foxtail	<i>Setaria viridis</i> (L.) Beauv.	Poaceae	Ubiquitous	TAG
Green muhly	<i>Muhlenbergia racemosa</i> (Michx.) BSP	Poaceae	Ubiquitous	MG
Ground ivy	<i>Glechoma hederacea</i> L.	Lamiaceae	Ubiquitous	MF
Ground nut	<i>Apios americana</i> Medic.	Fabaceae	Ubiquitous	FTSS
Hackberry	<i>Celtis occidentalis</i> L.	Ulmaceae	Ubiquitous	SFT'
Hairy spurge	<i>Euphorbia vermiculata</i> Raf.	Euphorbiaceae	Ubiquitous	TAF
Hardstem bulrush	<i>Scirpus acutus</i> Muhl.	Cyperaceae	Ubiquitous	EP
Hart Wright's sedge	<i>Carex hyalinolepis</i> Steud.	Cyperaceae	Southern	MG
Hayden's sedge	<i>Carex haydenii</i> Dew.	Cyperaceae	Ubiquitous	MG
Hazelnut	<i>Corylus americana</i> Walter.	Betulaceae	Ubiquitous	WS
Hedge hyssop	<i>Gratiola neglecta</i> Torr.	Scrophulariaceae	Ubiquitous	SAF
Hedge nettle	<i>Stachys tenuifolia</i> Willd.	Lamiaceae	Ubiquitous	AWF

Plant Species Found on Upper Mississippi River NW&FR (Continued)

Common Name	Scientific Name	Family	Distrib.	Guild
Hog peanut	<i>Amphicarpa bracteata</i> (L.) Fern.	Fabaceae	Ubiquitous	FTSS
Honewort	<i>Cryptotaenia canadensis</i> (L.) DC.	Apiaceae	Ubiquitous	AWF
Honey locust	<i>Gleditsia triacanthos</i> L.	Caesalpiniaceae	Ubiquitous	SFT
Honeysuckle	<i>Lonicera x bella</i> Zabel.*	Caprifoliaceae	Ubiquitous	WS
Honeysuckles, Bush	<i>Lonicera tartarica</i> . and others*	Caprifoliaceae	Ubiquitous	WS
Hop sedge	<i>Carex lupulina</i> Willd.	Cyperaceae	Ubiquitous	MG
Hops	<i>Humulus lupulus</i> L.	Cannabaceae	Ubiquitous	V
Horned pondweed	<i>Zannichellia palustris</i> L.	Zannichelliaceae	Ubiquitous	RSA
Horse-gentian	<i>Triosteum perfoliatum</i> L.	Caprifoliaceae	Ubiquitous	AWF
Horsenettle	<i>Solanum carolinense</i> L.	Solanaceae	Ubiquitous	MF
Horseweed	<i>Conyza canadensis</i> (L.) Cronq.	Asteraceae	Ubiquitous	TAF
Illinois pondweed	<i>Potamogeton illinoensis</i> Morong	Potamogetonaceae	Ubiquitous	RSA
Indian grass	<i>Sorghastrum nutans</i> (L.) Nash	Poaceae	Ubiquitous	MG
Indian hemp	<i>Apocynum cannabinum</i> L.	Araliaceae	Ubiquitous	FTSS
Indian plantain	<i>Cacalia suaveolens</i> L.	Asteraceae	Ubiquitous	MF
Interrupted fern	<i>Osmunda claytoniana</i> L.	Osmundaceae	Ubiquitous	MF
Joe-pye-weed	<i>Eupatorium maculatum</i> L.	Asteraceae	Ubiquitous	MF
Joint rush	<i>Juncus nodosus</i> L.	Juncaceae	Ubiquitous	MG
Jumpseed	<i>Polygonum virginianum</i> L.	Polygonaceae	Ubiquitous	AWF
Kentucky bluegrass	<i>Poa pratensis</i> L.	Poaceae	Ubiquitous	MG
Kentucky coffee tree	<i>Gymnocladus dioica</i> (L.) K. Koch	Fabaceae	Ubiquitous	BHT
Knotty-leaved rush	<i>Juncus acuminatus</i> Michx.	Juncaceae	Ubiquitous	MG
Lady's thumb	<i>Polygonum persicaria</i> L.	Polygonaceae	Ubiquitous	SAF
Lake sedge	<i>Carex lacustris</i> Willd.	Cyperaceae	Ubiquitous	MG
Lance-leaved loosestrife	<i>Lysimachia lanceolata</i> Walt.	Primulaceae	Ubiquitous	MF
Large purple agalinis	<i>Agalinis purpurea</i> (L.) Penn.	Scrophulariaceae	Ubiquitous	MF
Late boneset	<i>Eupatorium serotinum</i> Michx.	Asteraceae	Ubiquitous	AWF
Leafy pondweed	<i>Potamogeton foliosus</i> Raf.	Potamogetonaceae	Ubiquitous	RS
Leafy spurge*,**	<i>Euphorbia esula</i>	Euphorbiaceae		
Lesser duckweed	<i>Lemna minor</i> L.	Lemnaceae	Ubiquitous	FA
Lizard's tail	<i>Saururus cernuus</i> L.	Saururaceae	Ubiquitous	SAF
Long-bracted tickseed	<i>Bidens polylepis</i> S.F. Blake	Asteraceae	Ubiquitous	SAF
Long-leaved ground cherry	<i>Physalis longifolia</i> Nutt.	Solanaceae	Ubiquitous	MF
Long-leaved pondweed	<i>Potamogeton nodosus</i> Poir.	Potamogetonaceae	Ubiquitous	RSA

Plant Species Found on Upper Mississippi River NW&FR (Continued)

Common Name	Scientific Name	Family	Distrib.	Guild
Low cudweed	<i>Gnaphalium uliginosum</i> L.	Asteraceae	Ubiquitous	SAF
Low cyperus	<i>Cyperus diandrus</i> Torr.	Cyperaceae	Ubiquitous	SAG
Mad-dog skullcap	<i>Scutellaria lateriflora</i> L.	Lamiaceae	Ubiquitous	MF
Marsh cress	<i>Rorripa palustris</i> (L.) Bess.	Brassicaceae	Ubiquitous	SAF
Marsh elder	<i>Iva annua</i> L.	Asteraceae	Ubiquitous	TA
Marsh fern	<i>Thelypteris palustris</i> Schott.	Polypodiaceae	Ubiquitous	MF
Marsh foxtail	<i>Alopecurus geniculatus</i> L.	Poaceae	Ubiquitous	MG
Marsh marigold	<i>Caltha palustris</i> L.	Ranunculaceae	Ubiquitous	MF
Marsh pea	<i>Lathyrus palustris</i> L.	Fabaceae	Ubiquitous	MF
Marsh speedwell	<i>Veronica scutellata</i> L.	Asteraceae	Ubiquitous	MF
Marsh spikerush	<i>Eleocharis palustris</i> (L.) Roem. & Schultes	Cyperaceae	Ubiquitous	MG
May apple	<i>Podophyllum peltatum</i> L.	Berberidaceae	Ubiquitous	SE
Meadow sedge	<i>Carex granularis</i> Muhl. ex Willd.	Cyperaceae	Ubiquitous	MG
Mermaid-weed	<i>Proserpinaca palustris</i> L.	Haloragaceae	Ubiquitous	RSA
Michigan lily	<i>Lilium michiganense</i> Farw.	Liliaceae	Ubiquitous	MF
Milfoil	<i>Myriophyllum heterophyllum</i> Michx.	Haloragaceae	Ubiquitous	RSA
Milfoil	<i>Myriophyllum pinnatum</i> (Walt.) BSP.	Haloragaceae	Ubiquitous	RSA
Mississippi arrowhead	<i>Sagittaria calycina</i> Engelm.	Alismataceae	Ubiquitous	EA
Mississippi Valley loosestrife	<i>Lysimachia hybrida</i> Michx.	Primulaceae	Ubiquitous	MF
Missouri gooseberry	<i>Ribes missouriense</i> Nutt.	Saxifragaceae	Ubiquitous	WS
Missouri ironweed	<i>Vernonia missurica</i> Rat.	Asteraceae	Southern	MF
Missouri violet	<i>Viola sororia</i> Willd.	Violaceae	Ubiquitous	MF
Mist flower	<i>Eupatorium coelestinum</i> L.	Asteraceae	Ubiquitous	AWF
Mockernut hickory	<i>Carya tomentosa</i> Nutt.	Juglandaceae	Ubiquitous	BHT
Moneywort	<i>Lysimachia nummularia</i> L.*	Primulaceae	Ubiquitous	AWF
Moonseed	<i>Menispermum canadense</i> L.	Menispermaceae	Ubiquitous	V
Mosquito fern	<i>Azolla mexicana</i> Presl	Salviniaceae	Ubiquitous	FTSS
Motherwort	<i>Leonurus cardiaca</i> L.*	Lamiaceae	Ubiquitous	MF
Motherwort	<i>Leonurus marrubiastrum</i> L.*	Lamiaceae	Ubiquitous	TAF
Mud plantain	<i>Heterantheria limosa</i> (Sw.) Willd.	Pontederiaceae	Ubiquitous	MF
Muskingum sedge	<i>Carex muskingumensis</i> Schwein.	Cyperaceae	Ubiquitous	MG
Nannyberry	<i>Viburnum lentago</i> L.	Caprifoliaceae	Ubiquitous	WS
Narrow-leaved cattail	<i>Typha angustifolia</i> L.	Typhaceae	Ubiquitous	EP

Plant Species Found on Upper Mississippi River NW&FR (Continued)

Common Name	Scientific Name	Family	Distrib.	Guild
Necklace sedge	<i>Carex projecta</i> Mack.	Cyperaceae	Ubiquitous	MG
Needle spikerush	<i>Eleocharis acicularis</i> (L.) Roem. & Schultes	Cyperaceae	Ubiquitous	MG
Nimbleweed	<i>Muhlenbergia schreberi</i> J.F. Gemelin	Poaceae	Ubiquitous	MG
Nodding bulrush	<i>Scirpus pendulus</i> Muhl.	Cyperaceae	Ubiquitous	MG
Nodding smartweed	<i>Polygonum lapathifolium</i> L.	Polygonaceae	Ubiquitous	SAF
Nodding trillium	<i>Trillium cernuum</i> L.	Liliaceae	Northern	SE
Northern arrowhead	<i>Sagittaria cuneata</i> Sheldon	Alismataceae	Ubiquitous	EP
Northern bugleweed	<i>Lycopus uniflorus</i> Michx.	Lamiaceae	Ubiquitous	MF
Northern catalpa	<i>Catalpa speciosa</i> Warder*	Bignoniaceae	Ubiquitous	BHT
Northern dewberry	<i>Rubus flagellaris</i> L.	Rosaceae	Ubiquitous	WS
Northern manna grass	<i>Glyceria borealis</i> Nash.	Poaceae	Ubiquitous	MG
Northern St. John's-wort	<i>Hypericum boreale</i> (Britt.) Bick.	Clusiaceae	Ubiquitous	MF
Northern swamp dogwood	<i>Cornus racemosa</i> Lam.	Cornaceae	Ubiquitous	FTSS
Northern three-lobed bedstraw	<i>Galium trifidum</i> L.	Rubiaceae	Ubiquitous	MF
Northern water nymph	<i>Najas flexilis</i> (Willd.) Rostk. & Schmidt	Najadaceae	Northern	RSA
Northern water plantain	<i>Alisma triviale</i> Pursh	Alismataceae	Ubiquitous	EP
Nutsedge	<i>Cyperus esculentus</i> L.*	Cyperaceae	Ubiquitous	MG
Old witch grass	<i>Panicum capillare</i> L.	Poaceae	Ubiquitous	TAG
Olney-three square	<i>Scirpus americanus</i> Pers.	Cyperaceae	Ubiquitous	MG
Ostrich fern	<i>Matteuccia struthiopteris</i> (L.) Todaro	Polypodiaceae	Ubiquitous	AWF
Pale dock	<i>Rumex altissimus</i> Wood.	Polygonaceae	Ubiquitous	MF
Pale dogwood	<i>Cornus amomum</i> Mill.	Cornaceae	Ubiquitous	FTSS
Pale touch-me-not	<i>Impatiens pallida</i> Nutt.	Balsaminaceae	Ubiquitous	TAF
Pale-spike lobelia	<i>Lobelia spicata</i> Lam.	Campanulaceae	Ubiquitous	MF
Partridge pea	<i>Chamaecrista fasciculata</i> Michx.	Fabaceae	Ubiquitous	TAF
Path rush	<i>Juncus tenuis</i> Willd. var. <i>dudleyi</i> (Wieg.)	Juncaceae	Ubiquitous	MG
Peach-leaved willow	<i>Salix amygdaloides</i> Anderss.	Salicaceae	Ubiquitous	FTPT
Pecan	<i>Carya illinoensis</i> (Wang.) K. Koch	Juglandaceae	Ubiquitous	BHT
Persimmon	<i>Diospyros virginiana</i> L.	Ebenaceae	Ubiquitous	FIPT
Pickernelweed	<i>Pontederia cordata</i> L.	Pontederiaceae	Ubiquitous	EP

Plant Species Found on Upper Mississippi River NW&FR (Continued)

Common Name	Scientific Name	Family	Distrib.	Guild
Pin oak	<i>Quercus palustris</i> Muench.	Fagaceae	Ubiquitous	BHT
Pinkweed	<i>Polygonum pensylvanicum</i> L.	Polygonaceae	Ubiquitous	SAF
Plains yellow primrose	<i>Calylophus serrulatus</i> (Nutt.) Raven	Onagraceae	Ubiquitous	MF
Pointed broom sedge	<i>Carex scoparia</i> Schkuhr ex Willd.	Cyperaceae	Ubiquitous	MG
Pokeweed	<i>Phytolacca americana</i> L.	Phytolaccaceae	Ubiquitous	MF
Possum haw	<i>Ilex decidua</i> Walt.	Aquifoliaceae	Ubiquitous	FTSS
Prairie blue-eyed grass	<i>Sisyrinchium campestre</i> E. Bickn.	Iridaceae	Ubiquitous	MF
Prairie cord grass	<i>Spartina pectinata</i> Link.	Poaceae	Ubiquitous	MG
Prairie fringed orchid	<i>Habenaria leucophaea</i> (Mutt.) A. Gray	Orchidaceae	Ubiquitous	MF
Prairie milkweed	<i>Asclepias hirtella</i> (Pennell) Woodson	Asclepiadaceae	Ubiquitous	FTSS
Prairie rose	<i>Rosa setigera</i> Michx.	Rosaceae	Ubiquitous	WS
Prairie three-awn	<i>Aristida oligantha</i> Michx.	Poaceae	Ubiquitous	FTSS
Prairietick-trefoil	<i>Desmanthus illinoensis</i> (Michx.) MacM.	Mimosaceae	Ubiquitous	MF
Prickly ash	<i>Xanthoxylum americanum</i> Mill.	Rutaceae	Ubiquitous	WS
Prickly cucumber	<i>Echinocystis lobata</i> (Michx.) T. & G.	Curcubitaceae	Ubiquitous	V
Prickly sida	<i>Sida spinosa</i> L.	Malvaceae	Ubiquitous	TAF
Purple fringed orchid	<i>Habenaria psycodes</i> (L.) Sprengel.	Orchidaceae	Ubiquitous	MF
Purple giant hyssop	<i>Agastache scrophulariaefolia</i> (Willd.) Kuntze	Lamiaceae	Ubiquitous	AWF
Purple joe-pye-weed	<i>Eupatorium purpureum</i> L.	Asteraceae	Ubiquitous	MF
Purple loosestrife	<i>Lythrum salicaria</i> L.*	Lythraceae	Ubiquitous	MF
Purple lovegrass	<i>Eragrostis spectabilis</i> (Pursh) Seud.	Poaceae	Ubiquitous	MG
Purple milkweed	<i>Asclepias purpurascens</i> L.	Asclepiadaceae	Ubiquitous	FTSS
Purple-stem beggarticks	<i>Bidens connata</i> Muhl. Willd.	Asteraceae	Ubiquitous	SAF
Purslane-speedwell	<i>Veronica peregrina</i> L.	Scrophulariaceae	Ubiquitous	TAF
Quillwort	<i>Isoetes melanopoda</i> Gay and Dur.	Isoetaceae	Northern	RSA
Rattlesnake fern	<i>Botrychium virginianum</i> (L.) Sw.	Ophioglossaceae	Ubiquitous	AWF
Raven's foot sedge	<i>Carex crus-corvi</i> Shuttlew Kunze.	Cyperaceae	Ubiquitous	MG
Red baneberry	<i>Actaea rubra</i> (Aiton) Willd.	Ranunculaceae	Ubiquitous	AWF
Red cedar	<i>Juniperus virginiana</i> L.	Cupressaceae	Ubiquitous	FIPT
Red elm	<i>Ulmus rubra</i> Muhl.	Ulmaceae	Ubiquitous	SFT
Red grape	<i>Vitis palmata</i> Vahl.	Vitaceae	Ubiquitous	V

Plant Species Found on Upper Mississippi River NW&FR (Continued)

Common Name	Scientific Name	Family	Distrib.	Guild
Red maple	<i>Acer rubrum L.</i>	Aceraceae	Ubiquitous	SFT
Red mulberry	<i>Morus rubra L.</i>	Moraceae	Ubiquitous	FTSS
Red oak	<i>Quercus rubra L.</i>	Fagaceae	Ubiquitous	BHT
Red raspberry	<i>Rubus strigosus Michx.</i>	Rosaceae	Ubiquitous	WS
Red sprangletop	<i>Leptochloa filiformis P. (Lam.) Beauv.</i>	Poaceae	Ubiquitous	MG
Red top	<i>Agrostis gigantea Roth.</i>	Poaceae	Ubiquitous	MG
Redbud	<i>Cercis canadensis L.</i>	Fabaceae	Ubiquitous	BHT
Red-head pondweed	<i>Potamogeton richardsonii (Benn.) Rydb.</i>	Potamogetonaceae	Ubiquitous	RSA
Red-osier dogwood	<i>Cornus stolonifera Michx.</i>	Cornaceae	Ubiquitous	FTSS
Red-rooted sedge	<i>Cyperus erythrorhizos Muhl.</i>	Cyperaceae	Ubiquitous	SAG
Red-stemmed plantain	<i>Plantago rugelii Dene.</i>	Plantaginaceae	Ubiquitous	MF
Red-top panicum	<i>Panicum rigidulum Bosc.</i>	Poaceae	Ubiquitous	MG
Reed canary grass	<i>Phalaris arundinacea L.*</i>	Poaceae	Ubiquitous	MG
Reed meadow grass	<i>Glyceria grandis S. Wats.</i>	Poaceae	Ubiquitous	MG
Retorse sedge	<i>Carex retrorsa Schwein.</i>	Cyperaceae	Northern	MG
Ribbon-flowered pondweed	<i>Potamogeton epihydrus Raf.</i>	Potamogetonaceae	Ubiquitous	RSA
Rice cutgrass	<i>Leersia oryzoides (L.) Sw.</i>	Poaceae	Ubiquitous	MG
River birch	<i>Betula nigra L.</i>	Betulaceae	Ubiquitous	FTSS
River bulrush	<i>Scirpus fluviatilis Torr. & Gray</i>	Cyperaceae	Ubiquitous	EP
Riverbank grape	<i>Vitis riparia Michx.</i>	Vitaceae	Ubiquitous	V
Robin's plantain	<i>Erigeron pulchellus Michx.</i>	Asteraceae	Ubiquitous	AWF
Rope dodder	<i>Cuscuta glomerata Choisy.</i>	Cuscutaceae	Ubiquitous	PP
Rose turtlehead	<i>Chelone obliqua L.</i>	Scrophulariaceae	Ubiquitous	AWF
Rough avens	<i>Geum laciniatum Murr.</i>	Rosaceae	Ubiquitous	MF
Rough fleabane	<i>Erigeron strigosus Muhl.</i>	Asteraceae	Ubiquitous	TAF
Rough-leaved dogwood	<i>Cornus drummondii Meyer</i>	Cornaceae	Ubiquitous	FTSS
Roundfruit St. John's wort	<i>Hypericum sphaerocarpum Michx.</i>	Clusiaceae	Ubiquitous	MF
Round-leaved dogwood	<i>Cornus rugosa Lam.</i>	Cornaceae	Ubiquitous	WS
Round-leaved spurge	<i>Euphorbia serpens HBK.</i>	Euphorbiaceae	Ubiquitous	SAF
Royal fern	<i>Osmunda regalis L.</i>	Osmundaceae	Ubiquitous	MF
Sago pondweed	<i>Potamogeton pectinatus L.</i>	Potamogetonaceae	Ubiquitous	RSA
Sallow sedge	<i>Carex lurida Wahl.</i>	Cyperaceae	Ubiquitous	MG
Sand bur	<i>Cenchrus longispinus (Hack.) Fern.</i>	Poaceae	Ubiquitous	TAG

Plant Species Found on Upper Mississippi River NW&FR (Continued)

Common Name	Scientific Name	Family	Distrib.	Guild
Sand Post Oak	<i>Quercus stellata</i> Wang.	Fagaceae	Ubiquitous	BHT
Sandbar lovegrass	<i>Eragrostis frankii</i> C.A. Mey	Poaceae	Ubiquitous	SAG
Sandbar willow	<i>Salix interior</i> Rowlee	Salicaceae	Ubiquitous	FTPS
Sandvine	<i>Ampelopsis cordata</i> Michx.	Asclepiadaceae	Ubiquitous	FTSS
Sassafras	<i>Sassafras albidum</i> (Nutt.) Nees.	Lauraceae	Ubiquitous	WS
Satin grass	<i>Muhlenbergia frondosa</i> (Poir.) Fernald	Poaceae	Ubiquitous	MG
Sawtooth sunflower	<i>Helianthus grosseserratus</i> Martens	Asteraceae	Ubiquitous	MF
Scouring rush	<i>Equisetum hyemale</i> L. var. <i>affine</i> (Engelm.)	Equisataceae	Ubiquitous	MF
Sedge	<i>Carex brunnescens</i> (Pers.) Poir.	Cyperaceae	Ubiquitous	MG
Sedge	<i>Carex comosa</i> f. <i>boott.</i>	Cyperaceae	Ubiquitous	MG
Sedge	<i>Carex echinata</i> Murray	Cyperaceae	Ubiquitous	MG
Sedge	<i>Carex laeviconica</i> Dewey.	Cyperaceae	Ubiquitous	MG
Sedge	<i>Carex normalis</i> Mackenz.	Cyperaceae	Ubiquitous	MG
Sedge	<i>Carex rosea</i> Schk.	Cyperaceae	Ubiquitous	WG
Sedge	<i>Carex stipata</i> Muhl.	Cyperaceae	Ubiquitous	MG
Sedge	<i>Carex trichocarpa</i> Muhl.	Cyperaceae	Ubiquitous	MG
Seedbox	<i>Ludwigia alternifolia</i> L.	Onagraceae	Ubiquitous	MF
Self heal	<i>Prunella vulgaris</i> L.	Lamiaceae	Ubiquitous	MF
Sensitive fern	<i>Onoclea sensibilis</i> L.	Polypodiaceae	Ubiquitous	MF
Sessile-flowered cress	<i>Rorripa sessiliflora</i> (Nutt.) Hitchc.	Brassicaceae	Ubiquitous	SAF
Sessile-fruited arrowhead	<i>Sagittaria rigida</i> Pursh	Alismataceae	Ubiquitous	EP
Shagbark hickory	<i>Carya ovata</i> (Mill.) K. Koch.	Juglandaceae	Ubiquitous	BHT
Sharp-lobed lobelia	<i>Hepatica acutiloba</i> DC.	Ranunculaceae	Ubiquitous	SE
Sharp-winged monkey flower	<i>Mimulus alatus</i> Ait.	Scrophulariaceae	Ubiquitous	AWF
Sheep sorrel	<i>Rumex acetosella</i> L.*	Polygonaceae	Ubiquitous	MF
Shellbark hickory	<i>Carya laciniosa</i> (Michx.) Loud.	Juglandaceae	Ubiquitous	BHT
Shepherd's purse	<i>Capsella bursa-pastoris</i> (L.) Medic.	Brassicaceae	Ubiquitous	TAF
Shingle oak	<i>Quercus imbricaria</i> Michx.	Fagaceae	Ubiquitous	BHT
Shooting star	<i>Dodecatheon meadia</i> L.	Primulaceae	Ubiquitous	MF
Short-beaked arrowhead	<i>Sagittaria brevirostra</i> Mack. & Bush	Alismataceae	Ubiquitous	EP
Short's sedge	<i>Carex shortinana</i> Dew.	Cyperaceae	Ubiquitous	MG
Showy lady's slipper	<i>Cypripedium reginae</i> Walter	Orchidaceae	Ubiquitous	MF

Plant Species Found on Upper Mississippi River NW&FR (Continued)

Common Name	Scientific Name	Family	Distrib.	Guild
Showy milkweed	<i>Asclepias speciosa Torr.</i>	Asclepiadaceae	Ubiquitous	FTSS
Shrubby St. John's-wort	<i>Hypericum prolificum L.</i>	Clusiaceae	Ubiquitous	MF
Shumard oak	<i>Quercus shumardii Buckl.</i>	Fagaceae	Ubiquitous	BHT
Siberian elm	<i>Ulmus pumila L.*</i>	Ulmaceae	Ubiquitous	SFT
Silver maple	<i>Acer saccharinum L.</i>	Aceraceae	Ubiquitous	FTPT
Skunk cabbage	<i>Symplocarpus foetidus (L.) Nutt.</i>	Araceae	Northern	SE
Slender bulrush	<i>Scirpus heterochaetus Chase</i>	Cyperaceae	Ubiquitous	EP
Slender pondweed	<i>Potamogeton pusillus L.</i>	Potamogetonaceae	Ubiquitous	RSA
Slender sedge	<i>Carex tenera Dewey</i>	Cyperaceae	Ubiquitous	MG
Small lovegrass	<i>Eragrostis pectinacea (Michx.) Ness.</i>	Poaceae	Ubiquitous	SAG
Small-headed aster	<i>Aster racemosus Elliott.</i>	Asteraceae	Ubiquitous	FTSS
Smartweed-dodder	<i>Cuscuta polygonorum Engelm.</i>	Cuscutaceae	Ubiquitous	PP
Smooth rosemallow	<i>Hibiscus laevis All.</i>	Malvaceae	Ubiquitous	MF
Smooth scouring rush	<i>Equisetum laevigatum A.Br.</i>	Equisataceae	Ubiquitous	MF
Snailseed pondweed	<i>Potamogeton diversifolius L.</i>	Potamogetonaceae	Ubiquitous	RSA
Sneezeweed	<i>Helenium autumnale L.</i>	Asteraceae	Ubiquitous	MF
Soft fox sedge	<i>Carex conjuncta E. Boott.</i>	Cyperaceae	Ubiquitous	WG
Soft rush	<i>Juncus effusus L.</i>	Juncaceae	Northern	MG
Softstem bulrush	<i>Scirpus validus Vahl.</i>	Cyperaceae	Ubiquitous	EP
Southern agrimony	<i>Agrimonia parviflora Ait.</i>	Rosaceae	Ubiquitous	AWF
Southern water nymph	<i>Najas guadalupensis (Spreng.) Morong</i>	Najadaceae	Ubiquitous	RSA
Southern water plantain	<i>Alisma subcordatum Raf.</i>	Alismataceae	Ubiquitous	EP
Spanish needles	<i>Bidens bipinnata L.</i>	Asteraceae	Ubiquitous	FTSS
Spatter dock	<i>Nuphar advena Aiton</i>	Nymphaeaceae	Ubiquitous	FP
Spectacle-weed	<i>Triodanis perfoliata (L.) Nieuwl.</i>	Campanulaceae	Ubiquitous	MF
Spiderwort	<i>Tradescantia virginiana L.</i>	Commelinaceae	Ubiquitous	MF
Spikenard	<i>Aralia racemosa L.</i>	Araliaceae	Ubiquitous	FTSS
Spikerush	<i>Eleocharis ovata (Roth) R. & S.</i>	Cyperaceae	Ubiquitous	SAG
Spiny pigweed	<i>Amaranthus spinosus L.</i>	Amaranthaceae	Ubiquitous	TAF
Spotted cowbane	<i>Cicuta maculata L.</i>	Apiaceae	Ubiquitous	EP
Spotted knapweed*,**	<i>Centaurea maculosa</i>	Asteraceae		
Spotted pondweed	<i>Potamogeton pulcher Tuckerm.</i>	Potamogetonaceae	Ubiquitous	RSA
Spotted spurge	<i>Euphorbia maculata L.</i>	Euphorbiaceae	Ubiquitous	TAF

Plant Species Found on Upper Mississippi River NW&FR (Continued)

Common Name	Scientific Name	Family	Distrib.	Guild
Spotted St. John's-wort	<i>Hypericum punctatum L.</i>	Clusiaceae	Ubiquitous	MF
Spotted touch-me -not	<i>Impatiens capensis Meerb.</i>	Balsaminaceae	Ubiquitous	TAF
Spreading chervil	<i>Chaerophyllum procumbens (L.) Crantz</i>	Apiaceae	Ubiquitous	TAF
Spring-cleavers	<i>Galium aparine L.</i>	Rubiaceae	Ubiquitous	TAF
Spurge	<i>Euphorbia humistrata (Engelm.)</i>	Euphorbiaceae	Ubiquitous	MF
Square-stemmed monkey flower	<i>Mimulus ringens L.</i>	Scrophulariaceae	Ubiquitous	MF
Square-stemmed spikerush	<i>Eleocharis quadrangulata (Michx.) Roem. & Schultes</i>	Cyperaceae	Ubiquitous	EP
Squarrose sedge	<i>Carex squarrosa L.</i>	Cyperaceae	Ubiquitous	WG
Stalked water horehound	<i>Lycopus rubellus Moench</i>	Lamiaceae	Ubiquitous	MF
Star duckweed	<i>Lemna trisulca L.</i>	Lemnaceae	Ubiquitous	FA
Stickseed	<i>Hackelia virginiana (L.) Johnston.</i>	Boraginaceae	Ubiquitous	TAF
Stick-tight	<i>Bidens cernua L.</i>	Asteraceae	Ubiquitous	FTSS
Stinging nettle	<i>Urtica dioica L.*</i>	Urticaceae	Ubiquitous	MF
Straight-leaved pondweed	<i>Potamogeton strictifolius Benn.</i>	Potamogetonaceae	Northern	RSA
Strawberry weed	<i>Potentilla norvegica L.</i>	Rosaceae	Ubiquitous	TAF
Straw-colored cyperus	<i>Cyperus strigosus L.</i>	Cyperaceae	Ubiquitous	SAG
Straw-stem beggarstick	<i>Bidens comosa (Gray) Wiegand.</i>	Asteraceae	Ubiquitous	TAF
Sugar maple	<i>Acer saccharum Marsh.</i>	Aceraceae	Ubiquitous	BHT
Sugarberry	<i>Celtis laevigata Willd.</i>	Ulmaceae	Ubiquitous	SFT
Sulfur cinquefoil	<i>Potentilla recta L.*</i>	Rosaceae	Ubiquitous	MF
Summer grape	<i>Vitis aestivalis var. argentifolia</i>	Vitaceae	Ubiquitous	V
Swamp barnyard grass	<i>Echinochloa walteri (Pursh) Heller</i>	Poaceae	Ubiquitous	SAG
Swamp buttercup	<i>Ranunculus hispidus Michx.</i>	Ranunculaceae	Ubiquitous	MF
Swamp candles	<i>Lysimachia terrestris (L.) BSP.</i>	Primulaceae	Ubiquitous	MF
Swamp dock	<i>Rumex verticillatus L.</i>	Polygonaceae	Ubiquitous	MF
Swamp loosestrife	<i>Lysimachia thyrsoiflora L.</i>	Primulaceae	Ubiquitous	MF
Swamp milkweed	<i>Asclepias incarnata L.</i>	Asclepiadaceae	Ubiquitous	FTSS
Swamp privet	<i>Forestiera acuminata (Michx.) Poiret.</i>	Oleaceae	Ubiquitous	FTSS
Swamp rosemallow	<i>Hibiscus muscheutos L.</i>	Malvaceae	Ubiquitous	MF
Swamp saxifrage	<i>Saxifraga pensylvanica L.</i>	Saxifragaceae	Ubiquitous	MF
Swamp white oak	<i>Quercus bicolor Willd.</i>	Fagaceae	Ubiquitous	BHT
Sweet flag	<i>Acorus calamus L.</i>	Araceae	Ubiquitous	EP

Plant Species Found on Upper Mississippi River NW&FR (Continued)

Common Name	Scientific Name	Family	Distrib.	Guild
Sweet gum	<i>Liquidambar styraciflua</i> L.	Hamamelidaceae	Southern	BHT
Sweet ox-eye	<i>Heliopsis helianthoides</i> (L.) Sweet.	Asteraceae	Ubiquitous	MF
Switchgrass	<i>Panicum virgatum</i> L.	Poaceae	Ubiquitous	MG
Sycamore	<i>Platanus occidentalis</i> L.	Plantanaceae	Ubiquitous	SFT
Tall beggars tick	<i>Bidens vulgata</i> Greene.	Asteraceae	Ubiquitous	SAF
Tall bellflower	<i>Campanula americana</i> L.	Campanulaceae	Ubiquitous	AWF
Tall dropseed	<i>Sporobolus asper</i> (Michx.) Kunth.	Poaceae	Ubiquitous	MG
Tall ironweed	<i>Vernonia gigantea</i> (Walter) Trel.	Asteraceae	Southern	MF
Tall meadow rue	<i>Thalictrum dasycarpum</i> Fisch. and Lall.	Ranunculaceae	Ubiquitous	MF
Tall white aster	<i>Aster lanceolatus</i> Willd.	Asteraceae	Ubiquitous	FTSS
Taper-leaf sedge	<i>Cyperus acuminatus</i> Torr. & Hook	Cyperaceae	Ubiquitous	SAG
Three-lobed coneflower	<i>Rudbeckia triloba</i> L.	Asteraceae	Ubiquitous	AWF
Three-seeded mercury	<i>Acalypha rhomboidea</i> Raf.	Euphorbiaceae	Ubiquitous	TAF
Three-way sedge	<i>Dulichium arundinaceum</i> (L.) Britt.	Cyperaceae	Ubiquitous	MG
Tomato	<i>Lycopersicon esculentum</i> Miller	Solanaceae	Ubiquitous	TAF
Toothcup	<i>Ammania coccinea</i> Rottb.	Lythraceae	Ubiquitous	SAF
Toothed spurge	<i>Euphorbia dentata</i> Michx.	Euphorbiaceae	Ubiquitous	TAF
Torrey's rush	<i>Juncus torreyi</i> Cov.	Juncaceae	Ubiquitous	MG
Trumpet flower	<i>Campsis radicans</i> (L.) Seem.*	Bignoniaceae	Ubiquitous	V
Tuckerman's sedge	<i>Carex tuckermanii</i> F. Boott.	Cyperaceae	Ubiquitous	MG
Turnsole	<i>Heliotropium indicum</i> L.*	Boraginaceae	Ubiquitous	TAF
Tussock sedge	<i>Carex stricta</i> Lam.	Cyperaceae	Ubiquitous	MG
Two-leaved miterwort	<i>Mitella diphylla</i> L.	Saxifragaceae	Ubiquitous	AWF
Upright carrion flower	<i>Smilax ecirrhata</i> (Engelm.) S. Wats.	Smilacaceae	Ubiquitous	V
Velvetleaf	<i>Abutilon theophrasti</i> Medikus.*	Malvaceae	Ubiquitous	TAF
Vernal water starwort	<i>Callitriche verna</i> L.	Callitrichaceae	Ubiquitous	RSA
Virginia creeper	<i>Parthenocissus quinquefolia</i> (L.) Planch	Vitaceae	Ubiquitous	V
Virginia water leaf	<i>Hydrophyllum virginianum</i> L.	Hydrophyllaceae	Ubiquitous	AWF
Virginiana wild rye	<i>Elymus virginicus</i> L.	Poaceae	Ubiquitous	MG
Wahoo	<i>Euonymus atropurpureus</i> Jacq.	Celastraceae	Ubiquitous	WS
Water celery (Wild celery)	<i>Vallisneria americana</i> Michx.	Hydrophyllaceae	Ubiquitous	RSA
Water cress	<i>Rorripa nasturtium-aquaticum</i> (L.) Hayek*	Brassicaceae	Ubiquitous	SAF

Plant Species Found on Upper Mississippi River NW&FR (Continued)

Common Name	Scientific Name	Family	Distrib.	Guild
Water dock	<i>Rumex orbiculatus</i> Gray	Polygonaceae	Ubiquitous	MF
Water hemlock	<i>Cicuta bulbifera</i> L.	Apiaceae	Ubiquitous	EP
Water hemp	<i>Amaranthus rudis</i> Sauer	Amaranthaceae	Ubiquitous	TAF
Water hemp	<i>Amaranthus tuberculatus</i> (Nutt.) Moq.	Amaranthaceae	Ubiquitous	TAF
Water horehound	<i>Lycopus virginicus</i> L.	Lamiaceae	Ubiquitous	MF
Water horsetail	<i>Equisetum fluviatile</i> L.	Equisataceae	Northern	MF
Water lily	<i>Nymphaea adorata</i> Aiton	Nymphaeaceae	Ubiquitous	FP
Water lotus	<i>Nelumbo lutea</i> (Willd.) Pers.	Nelumbonaceae	Ubiquitous	FP
Water meal	<i>Wolffia columbiana</i> Karst.	Lemnaceae	Ubiquitous	FA
Water meal	<i>Wolffia papulifera</i> Thompson	Lemnaceae	Ubiquitous	FA
Water meal	<i>Wolffiella floridana</i> (J.D. Smith) Thompson	Lemnaceae	Ubiquitous	FA
Water parsnip	<i>Sium suave</i> Walt.	Apiaceae	Ubiquitous	EP
Water pepper	<i>Polygonum hydropiper</i> L.	Polygonaceae	Ubiquitous	SAF
Water primrose	<i>Ludwigia polycarpa</i> Short & Peter	Onagraceae	Ubiquitous	MF
Water smartweed	<i>Polygonum amphibium</i> L.	Polygonaceae	Ubiquitous	EP
Water smartweed	<i>Polygonum aviculare</i> L.	Polygonaceae	Ubiquitous	TAF
Water smartweed	<i>Polygonum punctatum</i> Ell.	Polygonaceae	Ubiquitous	MF
Water speedwell	<i>Veronica anagallis-aquatics</i> L.	Asteraceae	Ubiquitous	MF
Water stargrass	<i>Zosterella dubia</i> (Jacq.) Small	Pontederiaceae	Ubiquitous	RSA
Water starwort	<i>Callitriche heterophylla</i> Pursh.	Callitrichaceae	Ubiquitous	RSA
Water tupelo	<i>Nyssa aquatica</i> (L.)	Cornaceae	Ubiquitous	SF
Water weed	<i>Elodea nuttallii</i> (Planch.) St. John	Hydrophyllaceae	Ubiquitous	RSA
Waxy meadow rue	<i>Thalictrum revolutum</i> DC.	Ranunculaceae	Ubiquitous	MF
Wedge grass	<i>Sphenopholis obtusata</i> (Michx.) scribn.	Poaceae	Ubiquitous	SAG
Western ironweed	<i>Vernonia baldwini</i> Torr.	Asteraceae	Southern	MF
Western poison ivy	<i>Toxicodendron rydbergii</i> (Small ex Rydb.) Greene	Anacardiaceae	Ubiquitous	V
White avens	<i>Geum canadense</i> Jacq.	Rosaceae	Ubiquitous	AWF
White baneberry	<i>Actaea alba</i> (L.) Miller	Ranunculaceae	Ubiquitous	AWF
White dog-tooth violet	<i>Erythronium albidum</i> Nutt.	Liliaceae	Ubiquitous	SE
White grass	<i>Leersia virginica</i> Willd.	Poaceae	Ubiquitous	WG
White morning glory	<i>Ipomoea lacunosa</i> L.	Convolvulaceae	Ubiquitous	TAF
White mulberry	<i>Morus alba</i> L.*	Moraceae	Ubiquitous	WS
White snake root	<i>Eupatorium rugosum</i> Houttuyn.	Asteraceae	Ubiquitous	AWF

Plant Species Found on Upper Mississippi River NW&FR (Continued)

Common Name	Scientific Name	Family	Distrib.	Guild
White turtlehead	<i>Chelone glabra L.</i>	Scrophulariaceae	Ubiquitous	AWF
White vervain	<i>Verbena urticifolia L.</i>	Verbenaceae	Ubiquitous	MF
White water crowfoot	<i>Ranunculus longirostris Godr.</i>	Ranunculaceae	Ubiquitous	RSA
White water crowfoot	<i>Ranunculus subrigidus W. Drew</i>	Ranunculaceae	Northern	RSA
White wild indigo	<i>Baptisia lactea (Raf.) Thieret</i>	Fabaceae	Ubiquitous	FTSS
Whorled milfoil	<i>Myriophyllum verticillatum L.</i>	Halagaraceae	Northern	RSA
Wild black currant	<i>Ribes americanum Mill.</i>	Saxifragaceae	Ubiquitous	WS
Wild garlic	<i>Allium canadense L.</i>	Liliaceae	Ubiquitous	MF
Wild geranium	<i>Geranium maculatum L.</i>	Geraniaceae	Ubiquitous	SE
Wild ginger	<i>Asarum canadense L.</i>	Aristolochiaceae	Ubiquitous	FTSS
Wild honeysuckle	<i>Lonicera dioica L.</i>	Caprifoliaceae	Ubiquitous	WS
Wild leek	<i>Allium tricoccum Ait.</i>	Liliaceae	Ubiquitous	AWF
Wild lily of the valley	<i>Maianthemum canadense Desf</i>	Liliaceae	Ubiquitous	AWF
Wild oats	<i>Chasmanthium latifolium (Michx.) Yates.</i>	Poaceae	Ubiquitous	WG
Wild Plum	<i>Prunus americana Marsh.</i>	Rosaceae	Ubiquitous	FIPT
Wild pumpkin	<i>Cucurbita foetidissima HBK</i>	Curcubitaceae	Ubiquitous	V
Wild rice	<i>Zizania palustris L. var. interior Fassett</i>	Poaceae	Ubiquitous	EA
Wild sasparilla	<i>Aralia nudicaulis L.</i>	Araliaceae	Ubiquitous	FTSS
Wild strawberry	<i>Fragaria virginiana Duchn.</i>	Rosaceae	Ubiquitous	MF
Wild water pepper	<i>Polygonum hydropiperoides Michx.</i>	Polygonaceae	Ubiquitous	MF
Wild yellow lily	<i>Lilium canadense L.</i>	Liliaceae	Ubiquitous	MF
Willowleaf lettuce	<i>Lactuca saligna L.</i>	Asteraceae	Ubiquitous	TAF
Winged loosestrife	<i>Lythrum alatum Pursh.</i>	Lythraceae	Ubiquitous	MF
Winged-stem	<i>Verbesina alternifolia (L.) Britt.</i>	Asteraceae	Ubiquitous	AWF
Wire sedge	<i>Carex lasiocarpa Ehrh.</i>	Cyperaceae	Ubiquitous	MG
Wood anemone	<i>Anemone quinquefolia L.</i>	Ranunculaceae	Ubiquitous	FTSS
Wood betony	<i>Pedicularis canadensis L.</i>	Scrophulariaceae	Ubiquitous	MF
Wood nettle	<i>Laportea canadensis (L.) Wedd.</i>	Urticaceae	Ubiquitous	AWF
Wood reed grass	<i>Cinna arundinacea L.</i>	Poaceae	Ubiquitous	WG
Woodland lettuce	<i>Lactuca floridana (L.) Gaertner</i>	Asteraceae	Ubiquitous	AWF
Wood-sorrel	<i>Oxalis stricta L.</i>	Oxalaceae	Ubiquitous	MF
Woolly bulrush	<i>Scirpus cyperinus (L.) Kunth</i>	Cyperaceae	Ubiquitous	MG
Woolly sedge	<i>Carex lanuginosa Michx.</i>	Cyperaceae	Ubiquitous	MG
Wooly panicum	<i>Panicum lanuginosum Ell.</i>	Poaceae	Ubiquitous	MG

Plant Species Found on Upper Mississippi River NW&FR (Continued)

Common Name	Scientific Name	Family	Distrib.	Guild
Woundwort	<i>Stachys palustris L.</i>	Lamiaceae	Ubiquitous	MF
Wrinkled goldenrod	<i>Solidago rugosa Miller</i>	Asteraceae	Ubiquitous	MF
Yam	<i>Dioscorea villosa L.</i>	Dioscoreaceae	Ubiquitous	V
Yellow foxtail	<i>Setaria glauca (L.) P. Beauv.</i>	Poaceae	Ubiquitous	TAG
Yellow star grass	<i>Hypoxis hirsuta (L.) Cov.</i>	Liliaceae	Ubiquitous	MF
Yellow water crowfoot	<i>Ranunculus flabellaris Raf.</i>	Ranunculaceae	Ubiquitous	RSA
Yellowtop	<i>Senecio glabellus Poir.</i>	Asteraceae	Ubiquitous	AWF
Yerba de tajo	<i>Eclipta prostrata L.</i>	Asteraceae	Ubiquitous	AWF

Appendix L: Plan Implementation

Appendix L: Plan Implementation

1. Introduction

This appendix summarizes the actions and needs necessary to implement Alternative D, the preferred alternative, as presented in the Draft CCP and EIS. Modification will be made as needed based on the Regional Director's alternative selection decision. This appendix will be incorporated as a separate chapter in the Final CCP.

2. Actions – Existing Funding and Staffing

The following actions are derived from objectives and strategies in the CCP and represent those actions that can be accomplished with existing resources. Some of these actions are ongoing, but most will require a new initiative and/or redirection of existing base funding and personnel. This list will help focus annual work planning and performance plan preparation during the 15-year life of the plan. Details of these actions are found in Chapter 2 of the Draft CCP and EIS.

Goal 1: Landscape

1. Prepare and print a new Land Use Allocation Plan in cooperation with the Corps of Engineers.
2. Continue modest land acquisition program.
3. Explore land exchanges with the states.
4. Continue work with the Department of the Army for land transfers at the Lost Mound Unit (Savanna Army Depot).
5. Complete a management plan for each Research Natural Area
6. Seek cooperative research/monitoring opportunities in Research Natural Areas.
7. Conduct yearly boundary reviews of Research Natural Areas.
8. Facilitate nomination package for Wetland of International Importance.

Goal 2: Environmental Health

1. Increase assistance agreements with watershed partners.
2. Continue interagency efforts on watershed partnerships and pool drawdowns.
3. Increase emphasis on water quality through habitat projects, support of state and federal initiatives, public information efforts, and interpretive and environmental education programs.
4. Increase cooperation and public education to address invasive species.

Goal 3: Wildlife and Habitat

1. Implement Pool Plans to extent possible working with Corps of Engineers and states using funding sources such as the Environmental Management Program.
2. Adopt and use guiding principles for habitat projects.

3. Amend the Wildlife Inventory Plan.
4. Establish a Refuge Research Team and conduct formal coordination meetings with U.S. Geological Survey.
5. Complete a Habitat Management Plan.
6. Complete a management plan for each federally-listed threatened and endangered species on the Refuge.
7. Complete a Fishery and Mussel Management Plan.
8. Update the Refuge Trapping Plan.
9. Conduct public information and education effort about turtles on the Refuge.
10. Continue to use fire for habitat management – implement the Refuge’s Fire Management Plan.
11. Conduct more active grassland management; include in Habitat Management Plan.

Goal 4: Wildlife-Dependent Public Use

1. Update the Refuge Hunting Plan
2. Establish new administrative No Hunting Zones to avoid user conflicts or address safety issues.
3. Modify the Waterfowl Hunting Closed Area System and regulations; post all areas each year.
4. Monitor waterfowl use and human disturbance in the Waterfowl Hunting Closed Area System.
5. Implement waterfowl hunting regulation changes (e.g. shotshell limit, spacing limit).
6. Implement managed hunt at Gibbs Lake, Lake Onalaska, Pool 7.
7. Phase out use of permanent waterfowl hunting blinds in Savanna District.
8. Modify the Potter’s Marsh managed hunt, Savanna District.
9. Eliminate the Blanding Landing managed hunt, Savanna District (Lost Mound).
10. Conduct public information campaign (media, leaflets, meetings) and increase law enforcement presence for all hunting-and-fishing-related changes.
11. In cooperation with states, issue Refuge permits for fishing tournaments.
12. Write standards for commercial fish float facilities and operations.
13. Implement consistent process for regulating commercial guiding operations.

Goal 5: Other Recreational Use

1. Implement new policies and regulations related to camping and beach-related uses.
2. Implement new beach maintenance policy and complete beach plans in cooperation with Corps of Engineers and the states.
3. Explore user fee system to off-set maintenance and administrative costs of other recreational uses.
4. Establish and post additional Electric Motor Areas.
5. Establish new slow, no wake zones.
6. Implement new regulation dealing with dog and other domestic animal use.
7. Annually review and update as needed public use regulations.
8. Conduct public information campaign (media, leaflets, meetings) and increase law enforcement presence for all general recreational use changes.

Goal 6: Administration and Operations

1. Implement a self-service boat launch fee at Refuge-operated boat ramps.
2. Review and update annually funding need databases for operations and maintenance.

3. Actions – New Funding and Staff

The following actions are derived from objectives and strategies in the CCP and represent those actions that can be accomplished if new funding and/or staffing is allocated to the Refuge. Details of these actions are found in Chapter 2 of the Draft CCP and EIS. Costs are estimates and will likely be higher or lower based on detailed project planning and timing of implementation. Staff costs reflect 2005 salary and benefit rates at grades normal for the positions described. These needs will be reflected in key Refuge System databases such as the Refuge Operating Needs System and the Maintenance Management System which provide information used in budget formulation and allocation. The Refuge will also seek other project funding such as cost share agreements with partners, grants from non-profit groups, and cost-saving or reprogramming measures within existing budget allocations. Implementing Environmental Pool Plans (Goal 3, Action 1) could be partially accomplished through the Corps of Engineers administered Environmental Management Program and the Navigation and Environmental Sustainability Program (NESP) if authorized and funded by Congress.

Goal 1: Landscape

Action	Short-term or project-specific costs (thousands)	Recurring cost per year (thousands)
1. Re-survey and post Refuge boundary in cooperation with the Corps of Engineers		\$ 50K
2. Acquire an average of 1,000 acres per year within approved Refuge boundary (Land and Water Conservation Fund funding)		\$1,500K

Goal 2: Environmental Health

Action	Short-term or project-specific costs (thousands)	Recurring cost per year (thousands)
1. Hire private lands biologist or technician for each of the Refuge's four districts to work in watersheds		\$ 280K
2. Establish Access Trust Fund for recreational access work to facilitate pool drawdowns	\$3,000K	
3. Hire temporary, seasonal technicians to complete invasive plant inventory.	\$ 250K	
4. Write invasive plant control and management plan	\$ 20K	
5. Hire fishery biologist to coordinate invasive animal control and management, and other fishery and mussel related work		\$ 100K

Goal 3: Wildlife and Habitat

Action	Short-term or project-specific costs (thousands)	Recurring cost per year (thousands)
1. Implement at least 30 percent of Refuge-priority Environmental Pool Plan actions	\$ 150,000K	
2. Hire a biologist for Districts without (2) to coordinate wildlife and habitat monitoring and management		\$ 200K
3. Hire a GIS biologist at Refuge Headquarters to support all Districts		\$ 80K
4. Monitor all federally-listed threatened and endangered species		\$ 20K
5. Issue permits for commercial fishing/clamming (hire permanent, part-time receptionist/permit specialist at each District to handle this and other permit functions in CCP)		\$ 120K
6. Develop cooperative agreements with states for sharing commercial fishing permittee and catch information (fishery biologist responsibility, costs already captured)		NA
7. Initiate 3-5 year turtle ecology study; complete turtle management plan	\$ 100K	
8. Complete, with Corps of Engineers, Forest Inventory of the Refuge	\$ 75K	
9. Hire Refuge Forester; complete Forest Management Plan		\$ 100K

Goal 4: Wildlife-Dependent Public Use

Action	Short-term or project-specific costs (thousands)	Recurring cost per year (thousands)
1. Construct 3 new fishing piers or docks	\$ 100K	
2. Construct a variety of observation decks and trails to foster wildlife observation and photography	\$ 500K	
3. Hire visitor services specialists at McGregor and Winona Districts to increase programs and services, and one to be stationed at the National Miss. River Museum in Dubuque (3 total, Districts highest priority).		\$ 240K
4. Develop and print updated maps of the Refuge, by pool, for public distribution	\$ 50K	
5. Develop and install interpretive exhibits at offices	\$ 100K	

Goal 5: Other Recreational Use

Action	Short-term or project-specific costs (thousands)	Recurring cost per year (thousands)
1. Annual funding needs to support signing, posting, leaflets, Leave No Trace program, law enforcement, permit administration, and other aspects of managing recreation on the Refuge (see also Goal 3, Action 6, permit spec.)		\$ 100K

Goal 6: Administration and Operations

Action	Short-term or project-specific costs (thousands)	Recurring cost per year (thousands)
1. Construct offices in support of overall Refuge administration, management, and public use (Winona, La Crosse, McGregor, Lost Mound Unit, and Headquarters)	\$ 10,000K	\$ 100K
2. Construct maintenance shops and equipment storage buildings at all Districts and Lost Mound Unit	\$ 3,500K	
3. Construct new boat landings, other accesses, and parking areas	\$ 500K	
4. Hire public information specialist to improve communication with public and media on Refuge programs and services.		\$ 100K
5. Hire part-time receptionist at Headquarters to handle public inquiries and assist with permit management		\$ 40K
6. Hire additional staff (3) for the new Lost Mound Unit (9,857 acres) to support biological, public use, and maintenance needs.		\$ 200K

4. Funding Summary

New Funding Summary by Major Category to Fully Implement the CCP	Short-term or project-specific costs	Recurring cost per year
Land Acquisition within approved boundary		\$ 1.5 million
Environmental Pool Plan habitat restoration and enhancement projects in lieu of other funding such as EMP or pending Navigation/Ecosystem initiative	\$150.0 million	
Access Trust Fund for pool drawdowns	\$ 3.0 million	
Office and maintenance building construction	\$ 13.5 million	\$.1 million
General operations and maintenance	\$ 1.695 million	\$ 1.63 million
TOTAL	\$168.195 million	\$ 3.23 million

5. Summary of Step-Down Plans Needed

Below is a list of step-down plans called for in the Draft CCP and EIS or required by Service policy. These Refuge-specific plans provide the details of implementing the respective program or initiative described in broad terms in the plan objectives and strategies, and in sections L.2 and L.3 above. These plans will be developed in consultation with other agencies, states, and partners. The public will be given ample opportunity for plan review and comment. Environmental assessments or other documentation will also be needed to comply with NEPA requirements.

- Habitat Management Plan (new)
- Invasive Plant Control and Management Plan
- Wildlife Inventory and Monitoring Plan (revise)
- Threatened, Endangered and Candidate Species (new)
- Research Natural Area Management Plan (new)
- Fishery and Mussel Management Plan (new)
- Fire Management Plan (revise)
- Forest Management Plan (new)
- Hunting Plan (revise)
- Fishing Plan (new)
- Visitor Services Plan (new)
- Trapping Plan (revise)
- Plans or guidelines for:
 - Managed hunts
 - Commercial fish floats
 - Fishing tournaments
 - Beach management (with COE/states)
 - Guides and guiding

6. Monitoring and Evaluation

Objectives and strategies implemented will be continually monitored and evaluated during the 15-year life of the plan. The wildlife inventory and monitoring plan update will be critical since fish and wildlife are important barometers of habitat condition and health. Many of the objectives in the plan deal directly with better monitoring and evaluation, and in this regard, adequate staffing and continued partnerships with the Corps of Engineers, states, U.S. Geological Survey, and others will be important. Many actions inherent in the plan are new directions and monitoring will help understand the effects of the actions on habitat, fish and wildlife populations, and public use patterns and levels. There will also be a growing need to understand the impacts of recreation on fish, wildlife, and habitat as use levels increase and means of use change.

In addition, the Mississippi River and its watershed will certainly change, and likely in ways unforeseen. Invasive species, floods, and climate may alter expected outcomes, and monitoring will be critical to detecting and reacting to such change.

7. Plan Review and Revision

As noted above, environmental change and unforeseen effects may call for changes in the plan. The Refuge will practice adaptive management, using monitoring, evaluation, and experimentation to learn and change aspects of the plan as needed. For example, a change in the size and distribution of Waterfowl Hunting Closed Areas is proposed to achieve a better distribution of feeding and resting areas for fall migrants. Weekly aerial surveys in the fall will provide necessary waterfowl use data to gauge effectiveness of the changes, and along with impacts from human disturbance, form the basis for any needed boundary and regulation modifications.

Since the CCP will be a constant reference and guide for Refuge staff, review will be continuous. In addition, it is expected that the public and partners will offer continuous feedback. At least every 3 years, representatives of the Corps of Engineers, states, other agencies, and non-profit and citizen groups will be invited to meet and provide more formal input into what is working, what is not, and possible changes the Refuge should consider. Revisions will be undertaken as needed by amendments to the CCP. There will be an opportunity for public review and comment prior to making any substantive changes. A major plan review and re-write will occur after 15 years.

8. Partnerships

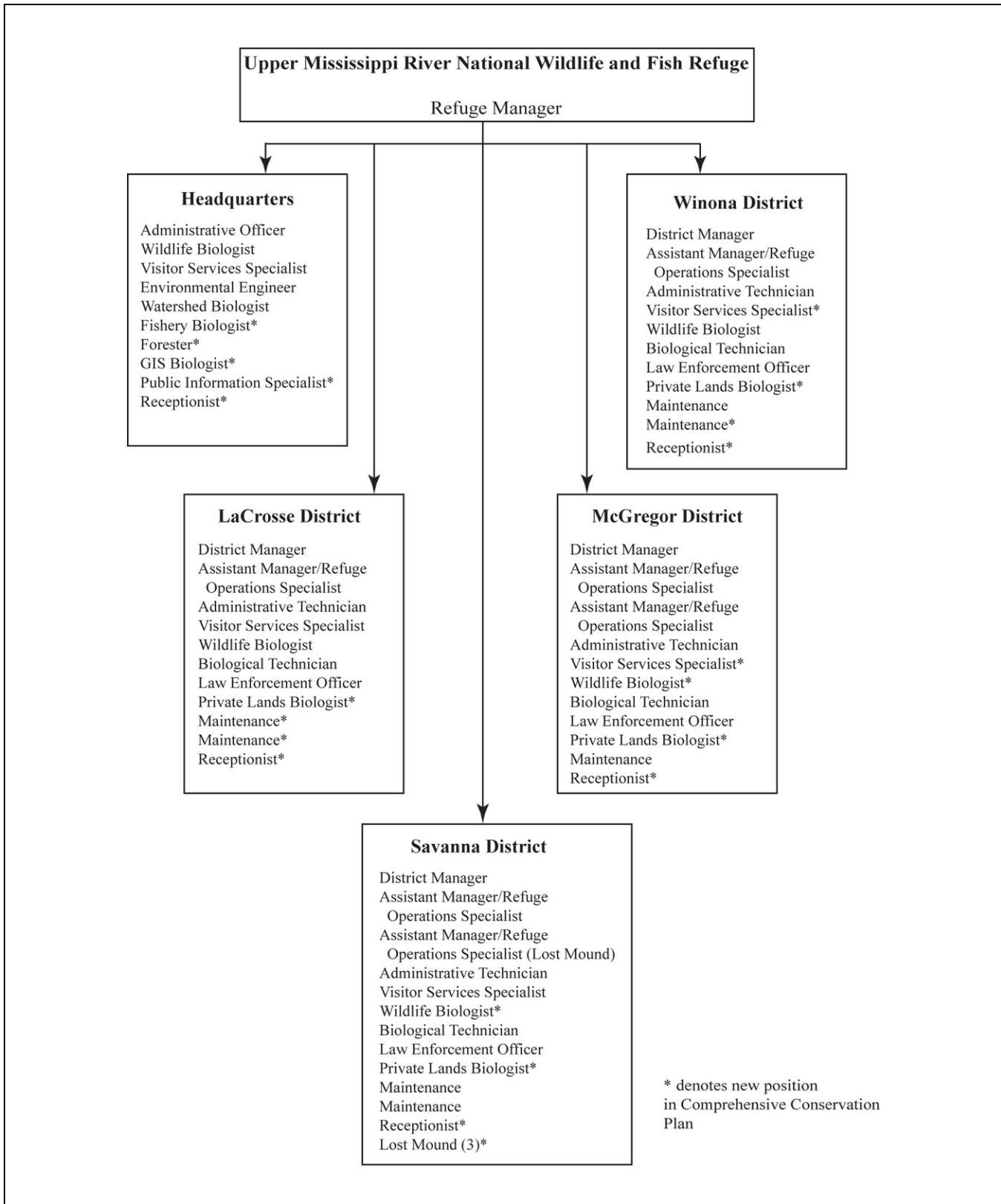
Refuge staff works closely with the departments of natural resources of Minnesota, Wisconsin, Iowa, and Illinois in designing and carrying out projects and programs. The Corps of Engineers is a critical partner due to its dominant role in navigation, water level management, forestry, and the planning and construction of environmental restoration projects. Much of the habitat restoration and enhancement work is done through the Environmental Management Program administered by the Corps, and this work could accelerate should Congress approve and fund the Navigation and Environmental Sustainability Program (NESP).

The U. S. Geological Survey, Environmental Protection Agency, Department of Agriculture, and state-level counterpart agencies all play a role in biological monitoring, research, environmental regulation, and policy making on the river, and thus the Refuge. Other U.S. Fish and Wildlife Service programs such as fisheries and ecological services also play a key role, both as leaders for certain projects and programs, and in support. The Service's Partners for Fish and Wildlife Program will continue to play a critical role in working with private landowners to improve the watersheds of the Refuge.

Conservation organizations are active in policy issues and/or land acquisition affecting the Refuge and include Audubon, The Nature Conservancy, Izaak Walton League, and American Rivers. A host of local conservation and sporting organizations like the La Crosse County Conservation Alliance are active. Lastly, many citizen conservationists help the Refuge as volunteers and as members of the Friends of the Upper Mississippi River Refuge, a citizen support group.

The forum for bringing together such a diversity of partners, who often have different missions and agendas, is both formal and informal. Established associations, commissions, committees, and working groups bring people together; plans, planning, and public meetings allow input from everyone. Specific projects and events let citizens lend a helping hand. These partnerships will remain an important part of plan implementation, both in gaining and maintaining public and partner understanding and support, and through the joint funding of specific actions.

Staff Chart, Upper Mississippi River NW&FR



Appendix M: Distribution List

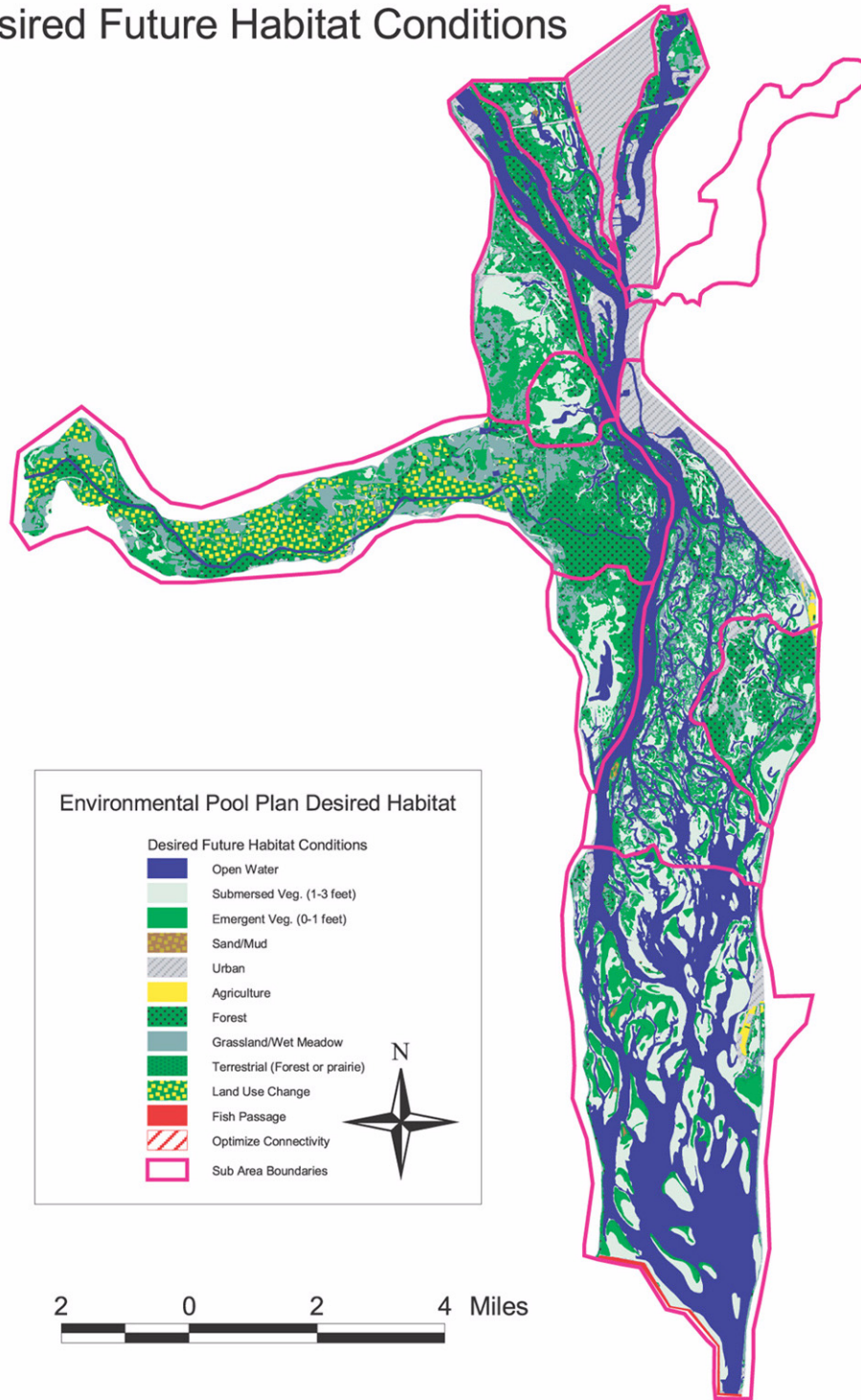
Distribution List

The Draft EIS and CCP for Upper Mississippi River NW&FR have been distributed to a wide range of citizens, non-government organizations, elected officials, and state and federal agencies. A list of the people, agencies and organizations that received notice that the draft document is available is included in Chapter 6 of the EIS.

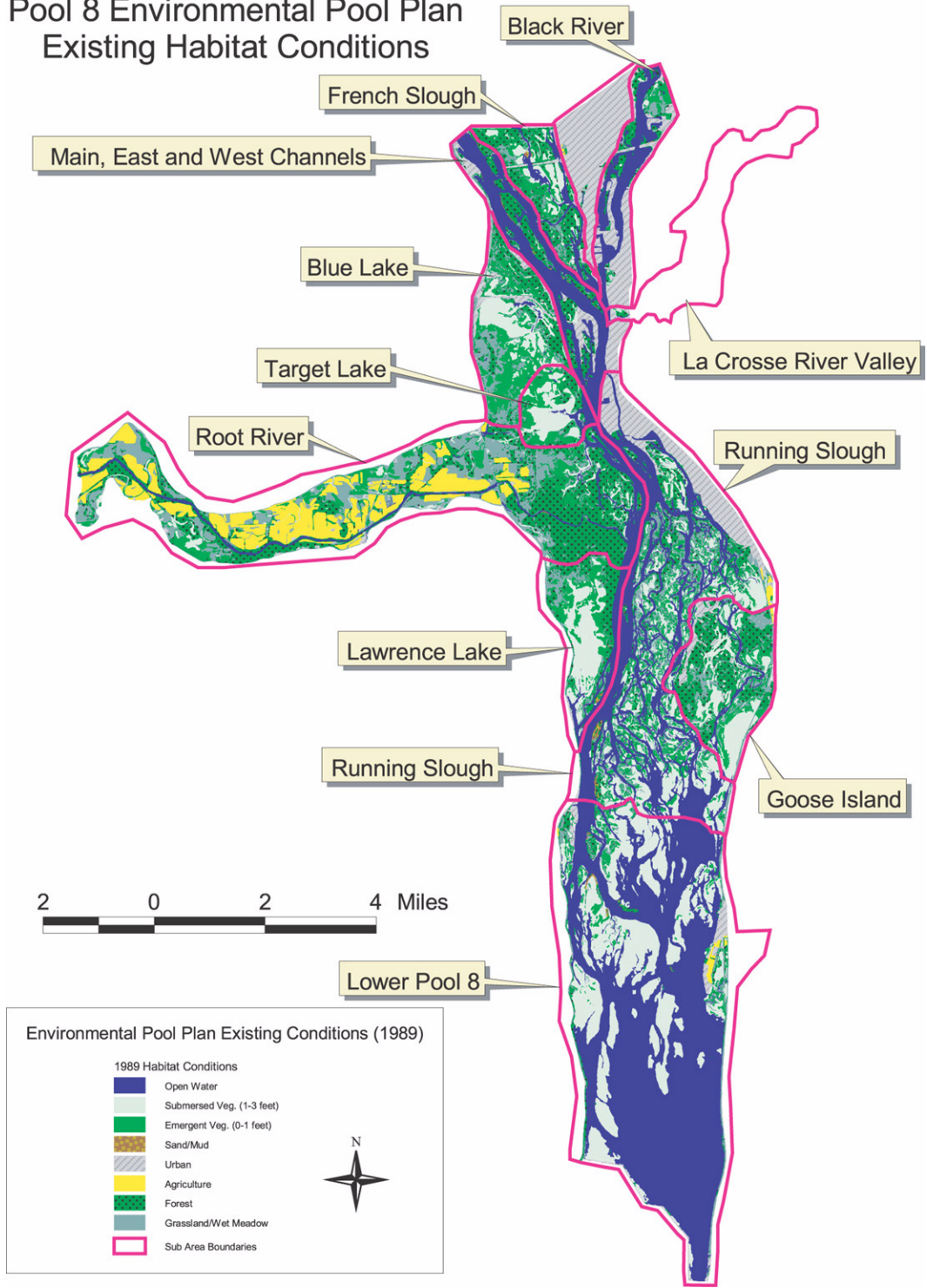
Selected elected representatives, federal, state and local agencies, organizations, and interested individuals have received a printed copy of this document.

Appendix N: Example of Environmental Pool Plans

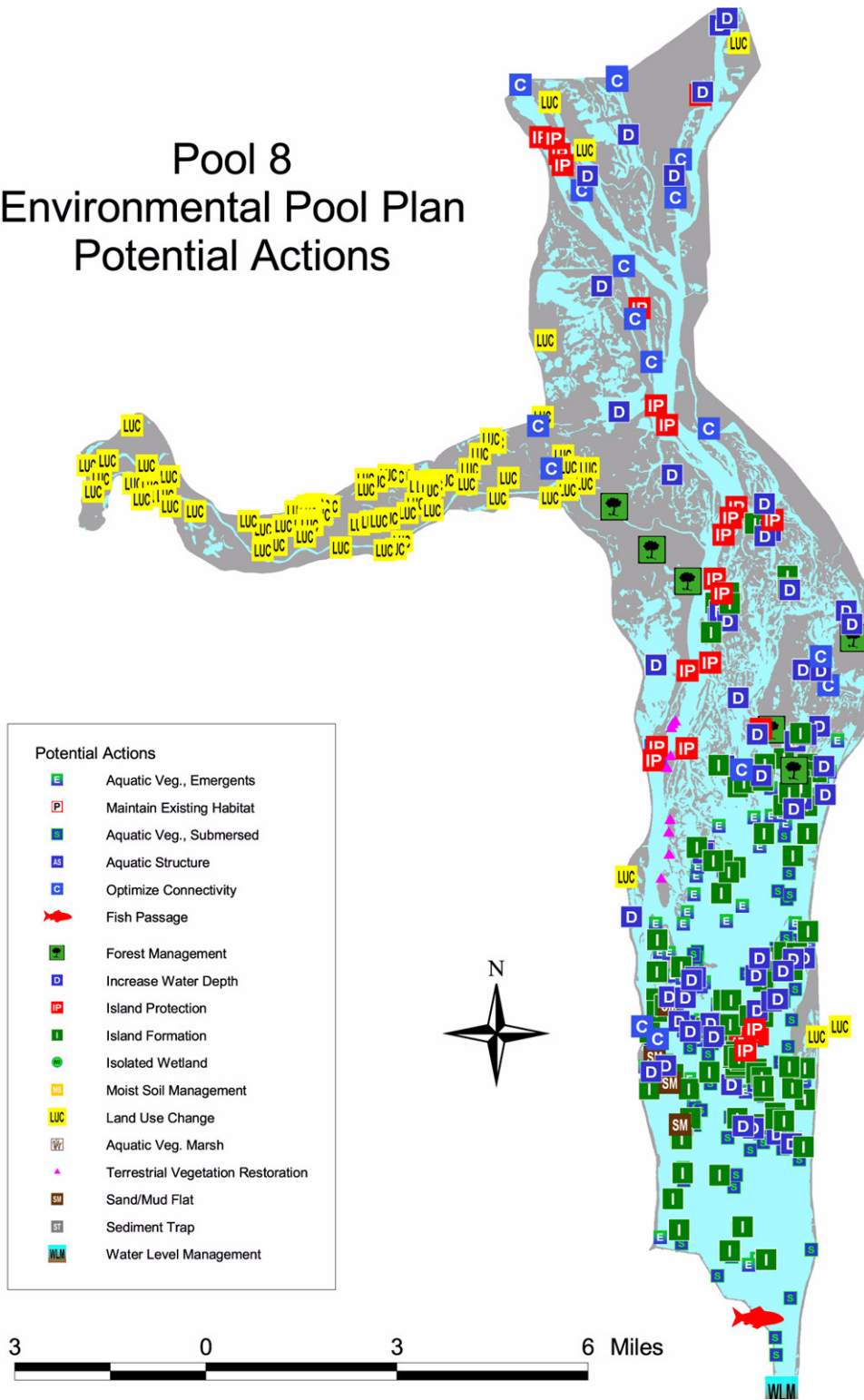
Pool 8 Environmental Pool Plan Desired Future Habitat Conditions



Pool 8 Environmental Pool Plan Existing Habitat Conditions



Pool 8 Environmental Pool Plan Potential Actions



Appendix O: Vegetation Classification System Reference and Sample

Vegetation Classification System, Upper Mississippi River NW&FR

Upper Mississippi River CODE	Upper Mississippi River Class	Upper Mississippi River Class Description	Hydrolocial Description	Habitat Needs Assessment CROSSWALK	National Vegetation and Information Standard (NVCS Code)	NVCS_DESCRIPTION
AG	Agriculture	All obviously cultivated fields. This category may include transitional fallow fields that show evidence of tilling.	Infrequently Flooded Non-Forest	Agriculture	VC.2.N.b.	Annual row-crop forbs or grasses
CN	Conifers	All natural or semi-natural evergreen communities. Typically Pine, but occasionally Cedar.	Infrequently Flooded Forest	Mesic Bottomland Hardwood Forest	I.A.8.N.b.	Rounded-crowned temperate or subpolar needle-leaved evergreen forest
DMA	Deep Marsh Annual	Dominated by Wild Rice, but may include floating-leaf species, submergents, or deep marsh perennials.	Semipermanently Flooded Non-Forest	Semi-permanently Flooded Emergent Annual	VA.5.N.1.	Semipermanently flooded temperate or subpolar grassland
DMP	Deep Marsh Perennial	Persistent emergents that prefer lots of water. Dominated by Arrowhead, Bur-reed, and Cattail and may include Pickerelweed, Giant Reed Grass, and Bulrush.	Semipermanently Flooded Non-Forest	Semi-permanently Flooded Emergent Perennial	VA.5.N.1.	Semipermanently flooded temperate or subpolar grassland
DMS	Deep Marsh Shrub	Shrubby vegetation >25%, dominated by Buttonbush and Water Willow, frequently growing in standing water. May include RFA, SV, and deep marsh perennials.	Semipermanently Flooded Shrubs	Scrub/Shrub	III.B.2.N.f.	Semipermanently flooded cold-deciduous shrubland

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DV	Developed	Areas that are predominantly artificial in nature such as cities/towns, large farmsteads, and industrial complexes.	Infrequently Flooded Non-Forest	Developed	n/a	Developed; Default to Anderson Classification
FF	Floodplain Forest	Softwood forests growing on saturated soils near the main channel and in floodplain backwaters. These forest are predominantly Silver Maple, but also include Elm, Cottonwood, Black Willow, and River Birch.	Seasonally Flooded Forest	Wet Floodplain Forest	I.B.2.N.e.	Seasonally flooded cold-deciduous closed tree canopy
GR	Grassland	Drier upland grass or grass/ forb fields. May include fallow fields, sand prairies, and shrubby vegetation < 25%.	Infrequently Flooded Non-Forest	Grassland	VA.5.N.a.	Tall sod temperate grassland
LF	Lowland Forest	Lowland Forest - More common on southern reaches of the UMRS. These forests grow along the river banks on sites that are drier than FF sites. Typical species include many Hickories, Pecan, River Birch.	Temporarily Flooded Forest	Wet Floodplain Forest	I.B.2.N.d.	Temporarily flooded cold-deciduous closed tree canopy
LV	Levee	All continuous dikes or embankments designed for flood protection. More common on southern reaches of the UMRS and typically covered with mixed grass and forbs.	Infrequently Flooded Non-Forest	Grassland	VA.5.N.a.	Tall sod temperate grassland

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MUD	Mud	Exposed, non-vegetated mudflats. May occur near the main channel or in backwaters.	Seasonally Flooded Non-Forest	Sand/Mud	VII.C.4.N.c.	Seasonally/Temporarily flooded mudflats
NPC	No Photo Coverage	Gaps in photo coverage. May include areas obscured by clouds or shadows.	No Photo Coverage	No Photo Coverage	n/a	No Photo Coverage
OW	Open Water	All non-vegetated open bodies of water.	Permanently Flooded Non-Forest	Open Water	n/a	Open Water; Default to Anderson Classification
PC	Populus Community	Predominantly Cottonwood (>50%) but may include willow and other floodplain forest species.	Seasonally Flooded Forest	Populus Community	I.B.2.N.e.	Seasonally flooded cold-deciduous closed tree canopy
PN	Plantation	All commercially-grown evergreen plantations, large nurseries, and orchards. Typically will be Red or White Pine.	Infrequently Flooded Forest	Mesic Bottomland Hardwood Forest	I.A.8.C.a.	Plantation
PS	Pasture	All grass fields used for the production of livestock.	Infrequently Flooded Non-Forest	Grassland	V.A.5.C.a.	Perennial Grass Crops
RD	Roadside Grass/Forbs	Grass/forb-covered right-of-ways along side of roads, highways, and railroads.	Infrequently Flooded Non-Forest	Grassland	n/a	Roadside Grass/Forbs; Default to Anderson Classification
RFA	Rooted Floating Aquatics	Typically Lotus and Lily, but may include Water Shield and Water Primrose. Frequently grows with submergent vegetation when RFA density is < 90%.	Permanently Flooded Non-Forest	Floating-Leaved Aquatic Bed	V.C.2.N.a.	Permanently flooded temperate or subpolar hydromorphic rooted vegetation

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SB	Sand Bar	Exposed sand bars typically found in and near the main channel, and often associated with wing dams and islands.	Temporarily Flooded Non-Forest	Sand/Mud	VII.C.2.N.c.	Temporarily flooded sand flats
SC	Salix Community	Predominantly Willow (>50%) but may include Cottonwood and other floodplain forest species.	Seasonally Flooded Forest	Salix Community	I.B.2.N.e.	Seasonally flooded cold-deciduous closed tree canopy
SD	Sand Dunes/Spoil	Sand spoil banks, beaches, and other sparsely-vegetated sandy areas.	Infrequently Flooded Non-Forest	Sand/Mud	VII.C.1.N.a.	Dunes with sparse herbaceous vegetation
SM	Sedge Meadow	Dominated by mixed Sedges but may include perennial emergents and moist soil grass/forbs.	Temporarily Flooded Non-Forest	Wet Meadow	VA.5.N.j.	Temporarily flooded temperate or subpolar grassland
SMA	Shallow Marsh Annual	Typically Wild Millet and Beggarsticks and other annual species that favor mudflats and shallow basins.	Seasonally Flooded Non-Forest	Seasonally Flooded Emergent Annual	VA.5.N.k.	Seasonally flooded temperate or subpolar grassland
SMP	Shallow Marsh Perennial	The transition zone between deep marsh and wet meadow that is dominated by Bulrush, and to a lesser extent Cattail, Arrowhead, Bur-reed, Giant Reed Grass, Smartweed, and other moist soil species.	Seasonally Flooded Non-Forest	Seasonally Flooded Emergent Perennial	VA.5.N.k.	Seasonally flooded temperate or subpolar grassland
SMS	Shallow Marsh Shrub	Mixed shrubs >25%, but typically Sandbar Willow growing near the main channel and in backwaters along with mixed emergents, grasses, and forbs.	Seasonally Flooded Shrubs	Scrub/Shrub	III.B.2.N.e.	Seasonally flooded cold-deciduous shrubland


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SS	Shrub/Scrub	Shrubby vegetation > 25% on drier soils with a mixed grass/forb understory.	Infrequently Flooded Shrubs	Scrub/Shrub	III.B.2.N.a.	Temperate cold-deciduous shrubland
SV	Submerged Aquatic Vegetation	All submersed aquatic vegetation.	Permanently Flooded Non-Forest	Submersed Aquatic Bed	VC.2.N.a.	Permanently flooded temperate or subpolar hydromorphic rooted vegetation
UF	Upland Forest	Forests growing at the edge or out of the UMRS floodplain. Species include Red/White Oak, Hickories, Elm, and other deciduous trees.	Infrequently Flooded Forest	Mesic Bottomland Hardwood Forest	I.B.2.N.a.	Lowland or submontane cold-deciduous closed tree canopy
WM	Wet Meadow	Dominated by moist soil grasses such as Reed Canary Grass and Rice Cutgrass. Also includes Loosestrife, Smartweed, and small inclusions of other mixed emergents, grasses, and forbs.	Saturated Soil Non-Forest	Wet Meadow	VA.5.N.m.	Saturated temperate or subpolar grassland
WMS	Wet Meadow Shrub	Mixed shrubby vegetation > 25%, typically Alder, Elder, False Indigo, Dogwood and/or Willow with a sedge/grass/forb understory.	Temporarily Flooded Shrubs	Wet Floodplain Forest	I.B.2.N.f.	Semipermanently flooded cold-deciduous closed tree canopy
WS	Wooded Swamp	Most common in southern reaches of UMRS. Includes Bald Cypress, Water Tupelo, Sourgum, and Black Ash.	Semipermanently Flooded Forest	Wet Floodplain Forest	I.B.2.N.f.	Semipermanently flooded cold-deciduous closed tree canopy

**2000 Land Cover Use
for the Upper Mississippi
River National Wildlife
and Fish Refuge
according to the
National Vegetation
Classification System**

Pool 8

0 1 2 4 Miles



USNVC

-  I.A.8.C.a.
-  I.B.2.N.a.
-  I.B.2.N.d.
-  I.B.2.N.e.
-  III.B.2.N.a.
-  III.B.2.N.d.
-  III.B.2.N.e.
-  III.B.2.N.f.
-  V.A.5.N.a.
-  V.A.5.N.j.
-  V.A.5.N.k.
-  V.A.5.N.l.
-  V.A.5.N.m.
-  V.C.2.N.a.
-  V.C.2.N.b.
-  VII.C.1.N.a.
-  VII.C.2.N.c.
-  VII.C.4.N.c.
-  n/a