



U.S. Fish & Wildlife Service



Fish Lines

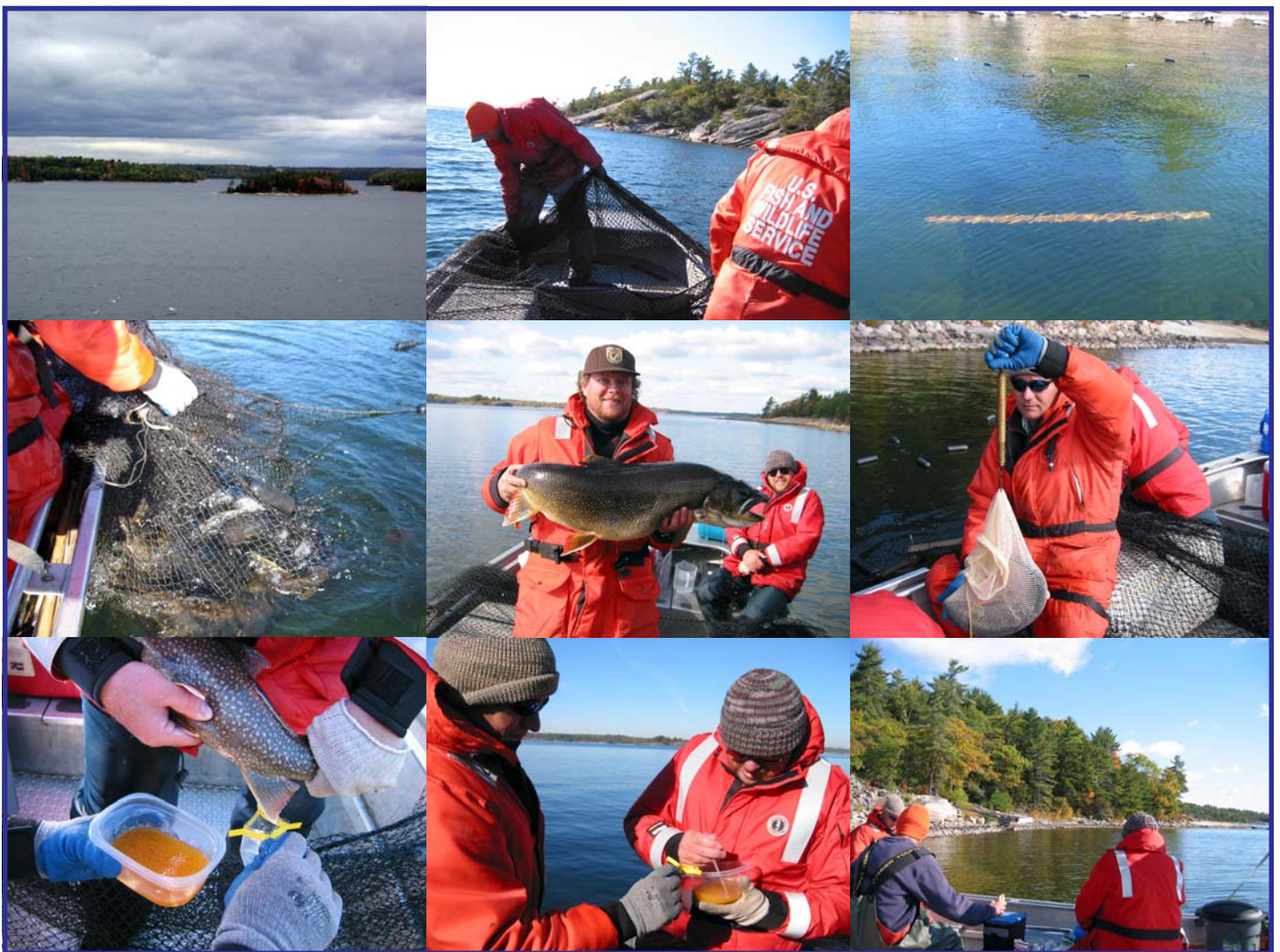
Region 3 - Great Lakes/Big Rivers

Leadership in Conserving, Enhancing, and Restoring Aquatic Ecosystems

Fiscal Year 2006
Vol. 4 No. 12

New Broodstock Development Will Benefit Lake Trout Rehabilitation Efforts

(See the "Feature Story" on Page 5)



-Ontario Ministry of Natural Resources

The Fish and Wildlife Service partnered with the Ontario Ministry of Natural Resources to develop a Parry Sound strain of lake trout brood stock for Fish and Wildlife Service hatcheries (Top row, Lt. to Rt.): View of the 1,000 Islands region of Georgian Bay, Lake Huron, near Parry Sound; Biologists deploy trap nets to capture Parry Sound spawning adults for gamete collection; A trap net is set on a lake trout spawning reef; (Middle Row) Biologists lift a trap net containing captured lake trout broodstock; This Parry Sound strain of lake trout was stocked during a past program and is still a part of the population today; A fish is carefully put in a mesh net and weighed as part of a stock assessment; (Bottom Row) Biologists collect a sample of milt as part of disease screening; Biologists collect a sample of ovarian fluid from the eggs as part of disease screening; Hard work deserves a lunch break!



Region 3 - Great Lakes/Big Rivers Region

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

Region 3 Focus Areas

1. Partnerships and Accountability

Partnerships are essential for effective fisheries conservation. Many agencies, organizations, and private individuals are involved in fisheries conservation and management, but no one can do it alone. Together, these stakeholders combine efforts and expertise to tackle challenges facing fisheries conservation. The success of these partnerships will depend on strong, two-way communications and accountability.

2. Aquatic Species Conservation and Management

The Fisheries Program maintains and implements a comprehensive set of tools and activities to conserve and manage self-sustaining populations of native fish and other aquatic resources. These tools and activities are linked to management and recovery plans that help achieve restoration and recovery goals, provide recreational benefits, and address Federal trust responsibilities. Sound science, effective partnerships, and careful planning and evaluation are integral to conservation and management efforts.

3. Aquatic Invasive Species

Aquatic invasive species are one of the most significant threats to fish and wildlife and their habitats. Local and regional economies are severely affected with control costs exceeding \$123 billion annually. The Fisheries Program has focused its efforts on preventing introductions of new aquatic invasive species, detecting and monitoring new and established invasives, controlling established invasives, providing coordination and technical assistance to organizations that respond to invasive species problems, and developing comprehensive, integrated plans to fight aquatic invasive species.

4. Public Use

As the population in the United States continues to grow, the potential for adverse impacts on aquatic resources, including habitat will increase. At the same time, demands for responsible, quality recreational fishing experiences will also increase. The Service has a long tradition of providing opportunities for public enjoyment of aquatic resources through recreational fishing, habitat restoration, and education programs and through mitigating impacts of Federal water projects. The Service also recognizes that some aquatic habitats have been irreversibly altered by human activity (i.e. - dam building). To compensate for these significant changes in habitat and lost fishing opportunities, managers often introduce non-native species when native species can no longer survive in the altered habitat.

5. Cooperation with Native Americans

Conserving this Nation's fish and other aquatic resources cannot be successful without the partnership of Tribes; they manage or influence some of the most important aquatic habitats both on and off reservations. In addition, the Federal government and the Service have distinct and unique obligations toward Tribes based on trust responsibility, treaty provisions, and statutory mandates. The Fisheries Program plays an important role in providing help and support to Tribes as they exercise their sovereignty in the management of their fish and wildlife resources on more than 55 million acres of Federal Indian trust land and in treaty reserved areas.

6. Leadership in Science and Technology

Science and technology form the foundation of successful fish and aquatic resource conservation and are used to structure and implement monitoring and evaluation programs that are critical to determine the success of management actions. The Service is committed to following established principles of sound science.

7. Aquatic Habitat Conservation and Management

Loss and alteration of aquatic habitats are principal factors in the decline of native fish and other aquatic resources and the loss of biodiversity. Seventy percent of the Nation's rivers have altered flows, and 50 percent of waterways fail to meet minimum biological criteria.

8. Workforce Management

The Fisheries Program relies on a broad range of professionals to accomplish its mission: biologists, managers, administrators, clerks, animal caretakers, and maintenance workers. Without their skills and dedication, the Fisheries Program cannot succeed. Employees must be trained, equipped and supported in order to perform their jobs safely, often under demanding environmental conditions, and to keep current with the constantly expanding science of fish and aquatic resource management and conservation.

The vision of the Service's Fisheries Program is working with partners to restore and maintain fish and other aquatic resources at self-sustaining levels and to support Federal mitigation programs for the benefit of the American public.

Implementing this vision will help the Fisheries Program do more for aquatic resources and the people who value and depend on them through enhanced partnerships, scientific integrity, and a balanced approach to conservation.

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Click here to visit our Fisheries Web Site

Great Lakes - Big Rivers Region Fisheries Field Offices

National Fish Hatcheries

The Region's National Fish Hatcheries primarily focus on native fish restoration/rehabilitation by stocking fish and eggs, such as pallid and lake sturgeon and by developing and maintaining brood stocks of selected fish strains, such as lake trout and brook trout. Hatcheries also provide technical assistance to other agencies, provide fish and eggs for research, stock rainbow trout in fulfillment of federal mitigation obligations and assist with recovery of native mussels and other native aquatic species.

Sea Lamprey Control Stations

Sea Lamprey Control Stations assess and control sea lamprey populations throughout the Great Lakes. The U.S. Department of State and Canadian Department of Fisheries and Oceans fund this program through the Great Lakes Fishery Commission.

Fishery Resources Offices

Fishery Resources Offices conduct assessments of fish populations to guide management decisions, perform key monitoring and control activities related to invasive, aquatic species; survey and evaluate aquatic habitats to identify restoration/rehabilitation opportu-

nities; play a key role in targeting and implementing native fish and habitat restoration programs; work with private land owners, states, local governments and watershed organizations to complete aquatic habitat restoration projects under the Service's Partners for Fish and Wildlife and the Great Lakes Coastal Programs; provide coordination and technical assistance toward the management of interjurisdictional fisheries; maintain and operate several key interagency fisheries databases; provide technical expertise to other Service programs addressing contaminants, endangered species, federal project review and hydro-power operation and re-licensing; evaluate and manage fisheries on Service lands; and, provide technical support to 38 Native American tribal governments and treaty authorities. In other Regions of the Service, FRO's are also referred to as Fish and Wildlife Management Assistance Offices.

Fish Health Center

The Fish Health Center provides specialized fish health evaluation and diagnostic services to federal, state, tribal and private hatcheries in the region; conducts extensive monitoring and evaluation of wild fish health throughout the region; examines and certifies the health of captive hatchery stocks; and, performs a wide range of special services helping to coordinate fishery program offices and partner organizations.

Great Lakes - Big Rivers Region Fisheries Field Offices



List of Acronyms

DNR- Department of Natural Resources
 FHC- Fish Health Center
 FRO- Fishery Resources Office
 NFH- National Fish Hatchery
 NWR- National Wildlife Refuge

Feature Story - *New Broodstock Development Will Benefit Lake Trout Rehabilitation Efforts*

The invasion of sea lamprey and over-fishing caused the collapse of Lake Huron lake trout populations in the 1940s. Lake trout were all but eliminated from the Lake Huron fish community, with the exception of two isolated stocks in Canadian waters—Iroquois Bay and Parry Sound. The Ontario Ministry of Natural Resources (OMNR) preserved remnant stocks of these two strains, and in recent years managers have been reintroducing these strains of trout in Great Lakes basin waters.

While limited success has been documented in re-establishing self-sustaining stocks of Iroquois Bay strain lake trout, the Parry Sound strain has shown a remarkable recovery in the Parry Sound region of Georgian Bay. Biologists believe that this strain of lake trout will contribute significantly to rehabilitation efforts for this imperiled native species. Self-sustaining stocks of the Parry Sound strain are continuing to expand in that region of Lake Huron and hatchery supplementation has been discontinued.

Developing and stocking the Parry Sound strain of lake trout broodstock has not been an easy process. In 1998, the Great Lakes Fishery Commission (GLFC) revised its lake trout rehabilitation guide for Lake Huron, which identifies objectives, milestones, and strategies for rehabilitation of Lake Huron's lake trout stocks. One of those strategies was the expanded use of remnant Lake Huron stocks in hatchery supplementation programs.

The guide—developed by the GLFC's Lake Huron Technical Committee—identified the Parry Sound strain as a priority for this expanded stocking. While the Parry Sound strain was available in the Ontario hatchery program and was being stocked in the Canadian waters of Lake Huron, the strain was not available to the Fish and Wildlife Service's National Fish Hatchery System for stocking in United States waters of the lake.



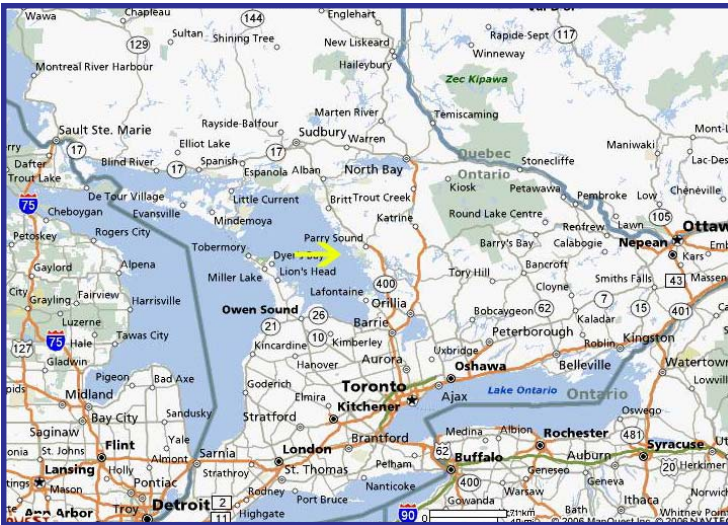
-Ontario Ministry of Natural Resources

Jordan River National Fish Hatchery biologist John Johnston poses with a wild Parry Sound strain lake trout collected during stock assessment/gamete collection in Georgian Bay, Lake Huron, in October 2005. Ontario Ministry of Natural Resources biologist Gord Durant looks on in the background.



-Great Lakes Fishery Commission

A parasitic sea lamprey is attached to this lake trout. The invasion of sea lamprey contributed to the collapse of Lake Huron lake trout populations in the 1940s.



-Mapquest

Broodstock collection for the Parry Sound strain of lake trout occurred in Georgian Bay (adjacent to Lake Huron) near the city of Parry Sound, Ontario.

In 2002, biologists with the Alpena Fishery Resources Office (FRO) and Jordan River National Fish Hatchery (NFH) initiated planning with OMNR biologists through the Lake Huron Technical Committee to develop a Parry Sound strain of lake trout for use in United States waters of Lake Huron. A number of logistical constraints were overcome to undertake the project.

To allow importation of live fish from Canada, a certification declaring the fish disease free would have to accompany them, requiring both the parental stock and the progeny to undergo extensive fish health sampling. To complete the sampling, the progeny would have to be reared in a quarantine or isolation facility in Ontario for up to two years prior to their release for importation to the United States.

In late 2004, space in a quarantine facility in Chatsworth, Ontario, was reserved and approval obtained to begin collecting gametes from wild Parry Sound lake trout for the development of a broodstock for the Region 3 Fisheries program. Because approval for repeated collection, isolation, and importation of broodstock year classes was not feasible as recommended in strain management plans, biologists decided to collect three year classes to serve as the initial founding stock for this broodstock. National fish hatchery staff will use a method called *rotational line-crossing* of these three year classes to produce future broodstock groups. Rotational line-crossing will insure that the maximum amount of genetic variability of subsequent broodstock year classes is preserved, a critical component to restoration programs.

To allow three consecutive year classes to be used for this broodstock development, biologists decided that the first collection would occur in the fall of 2005 with a target of 50 male-female pairs for each of the three year classes to fulfill genetic requirements of the Midwest Region Broodstock Program.

In October 2005, final planning for the collection of gametes and the necessary fish health screening from the founding parental pairs on Parry Sound broodstock was completed. Gamete collection by the Fish and Wildlife Service and OMNR crew coincided with fall spawning surveys in the Parry Sound region of Georgian Bay.

On October 16, 2005, Jim Boase from the Alpena FRO traveled to Parry Sound and assisted with the operation through Oct. 22. John Johnston from the Jordan River NFH traveled to Parry Sound and assisted from Oct. 23 through Oct. 30.

When the project was completed, the crew had collected 68 pairs of Parry Sound strain lake trout from wild stocks and transferred them to the Chatsworth quarantine facility. If the progeny from the 2005 collections continue to test pathogen free they will be transferred to Sullivan Creek NFH in late 2007 or early 2008. Similar transfers will occur in the two subsequent years.

If all goes as planned, this new broodstock should begin producing lake trout for stocking United States waters of Lake Huron and possibly northern Lake Michigan as early as 2012. The Lake Huron Lake Trout Task Group, a subcommittee of the technical group, will evaluate the effectiveness of this new strain in facilitating the lake trout rehabilitation program in Lake Huron.

Jerry R. McClain, Alpena FRO

John Johnston, Jordan River NFH

Rick Westerhof, Jordan River NFH

For Additional information on Parry Sound lake trout broodstock development, feel free to contact:

Alpena FRO at: 989/356-5102

Jordan River NFH at: 231/584-2461

Sullivan Creek NFH at: 906/437-5231

Partnerships and Accountability

Fish Survey Conducted in North Dakota - Resolving Devils Lake Concerns

Construction and operation of the outlet from Devils Lake connects a closed basin in North Dakota all the way to the Hudson Bay drainage through the Sheyenne and Red rivers. The outlet could potentially transfer parasites and pathogens from Devils Lake into the Hudson Bay drainage to the detriment of fish populations in that basin, especially commercial and sport fish populations in the Red River and Lake Winnipeg. These waters have a \$30 million commercial fishery for walleye, sauger, and lake whitefish. In addition to this recorded catch, fishers sell some of their catch directly to the public, and there is a substantial First Nations fishery for local consumption. The Red River also supports a significant sport fishery in both the United States and Canada.

In response to the potential threat to aquatic ecosystems in Canada and the United States from the Devils Lake outlet, the International Joint Commission requested that the International Red River Board prepare a proposal that includes 2006 summer field sampling for aquatic animal pathogens by the Fish and Wildlife Service at key locations in Devil's Lake and the Sheyenne and Red rivers, using reference sites from previous studies. Under the guidance of the National Wild Fish Health Survey, the project will attempt to sample a statistically valid number from each fish species found in the lake and river systems. This sampling plan will provide an additional tool to facilitate scientifically defensible man-

agement decisions regarding the Devil's Lake basin.

Phase II of the proposal includes a seasonal sampling approach, to gauge the occurrence and prevalence of certain fish pathogens. These pathogens may be affected by several life history characteristics and elements of the environment, especially those causing increased stress.

The pathogen survey objectives are to determine the presence, if any, and estimate the prevalence of specific fish pathogens and parasites in resident fish from Devil's Lake and the Sheyenne and Red rivers; provide fish health specialists, fisheries managers, and decision makers with a comprehensive pathogen survey report that may be used in performing risk analysis associated with biota transfer from an outlet on Devil's Lake; and provide survey results on the Web via the Fish and Wildlife Service's National Wild Fish Health Survey database.

Nine species of fish known to occur in Devil's Lake were collected: black bullhead, northern pike, black crappie, fathead minnow, white sucker, white bass, walleye, yellow perch, and brook stickleback. Red River target species are black bullhead, northern pike, black crappie, white sucker, walleye, yellow perch, common carp, channel catfish, drum, mooneye, and shorthead redhorse. Sheyenne River target species are black bullhead, northern pike, black crappie, white sucker, walleye, yellow perch, common carp, green sunfish, smallmouth bass, and tadpole madtom.

Biologists assayed samples for specific fish pathogens according to protocols and procedures of the National Wild Health Survey and the American Fisheries Society. They checked samples for the presence of fish pathogens including Channel Catfish Virus, Infectious Hematopoietic Necrosis Virus, Infectious Pancreatic Necrosis Virus, Largemouth Bass Virus, Oncorhynchus masou Virus, Viral Hemorrhagic Septicemia, furunculosis and ulcer disease, bacterial kidney disease, Enteric Redmouth disease, enteric septicemia of catfish, Edwardsiella, and whirling disease.

Crews completed two sampling trips this fall, one in September and the other in October. Fish and Wildlife Service fish health centers that participated included the Bozeman (Montana) Fish Health Center (FHC), La Crosse FHC, Dexter (New Mexico) FHC and Dworshak (Idaho) FHC. Other partners are the Spirit Lake First Nation, North Dakota Game & Fish, International Joint Commission, and U.S. Representatives on the International Red River. Fish health samples are now being processed and the results will be reported by March 2007.

Rick Nelson, LaCrosse FHC



-USFWS

Partners discuss their strategy for sampling fish for the prevalence of certain fish pathogens in the Devils Lake basin in North Dakota.

Sturgeon Restoration and Mussel Recovery Featured at American Fisheries Society Meeting

Roger Gordon and Doug Aloisi of the Genoa NFH represented the Fish and Wildlife Service at the American Fisheries Society's annual meeting this September, speaking about "Culture of Species at Risk." This special symposium was sponsored by the Fish Culture section of the society to highlight the methods of culturing some of the nation's most threatened and endangered aquatic resources.

Some of the species highlighted during the session were endangered Atlantic and Pacific salmon populations and the hatchery's own lake sturgeon and Federally endangered Higgins' eye pearl mussel culture programs. Fisheries scientists gathered from across the globe to share information through the meeting, which provides a great forum for the promotion of sound scientific practices in propagation programs.

The meeting also provides for an informal scientific review of our programs as we practice adaptive management in our long-term restoration and recovery efforts. Aloisi and Gordon highlighted the development of station-specific standard operating procedures for lake sturgeon culture from egg to release, and recent successes in the cage culture of Higgins' eye pearl mussels that resulted in the creation of a year class of more than 22,000 sub-adult mussels for use in the recovery effort.

Doug Aloisi, Genoa NFH

Congressman Dingell Hosts News Conference to Announce Humbug Marsh Funding

On Aug. 14, U.S. Congressman John D. Dingell of Michigan hosted a news conference to announce new funding for Humbug Marsh trails and a bird driving tour in the heart of the Detroit River International Wildlife Refuge (IWR).

Humbug Marsh comprises some 300 acres of forested uplands and more than 100 acres of wetlands on the Detroit River. It is hoped that once the trails and improvements are complete, the area will be a major tourist destination. Stretching for nearly a mile, Humbug Marsh is considered one of the last undisturbed wetlands located on the United States side of the river and one of the richest areas of biodiversity along the river. It provides critical habitat for many species of fish, ducks, migratory birds, mammals, and other wildlife and valued plant species. The property is adjacent to a recently acquired 44-acre site that will become the headquarters for the Detroit River IWR. Last year approximately 15,000 people visited the marsh and by 2008, when the visitor center is expected to be complete and the trails constructed, the hope is that the marsh will receive over one million visitors each year.

Approximately 50 individuals representing local governments, corporations, interest groups, citizens, and the local media were present at the news conference. Refuge manager John Hartig introduced Congressman Dingell.

James Boase, Alpena FRO



-USFWS photo by James Boase

U.S. Congressman John D. Dingell of Michigan hosts a news conference to announce new funding for Humbug Marsh trails and a bird driving tour in the heart of the Detroit River International Wildlife Refuge.

DTE Energy Hosts Dinner at Purdy Fisheries

Lake sturgeon research was highlighted at an Aug. 29 dinner party sponsored by DTE Energy and hosted by Purdy Fisheries at its outdoor dining area on the headwaters of the St. Clair River at Point Edward, Ontario. This site is near one of the largest lake sturgeon spawning grounds in the Great Lakes. Approximately 50 employees and their families from DTE Energy attended the dinner. Biologists James Boase from Alpena FRO and Bruce Manny from U.S. Geological Survey (USGS) Great Lakes Science Center spoke at the dinner.

The dinner menu featured fresh walleye and perch, along with great views. The Purdy facility has multiple venues for viewing live lake sturgeon, including a 15,000-gallon outdoor aquarium and two large concrete raceways housing lake sturgeon of varying sizes. For most, the highlight of the evening was the opportunity to see and handle the live sturgeons there.

Alpena FRO, the Great Lakes Science Center, Michigan Department of Natural Resources (DNR), and DTE Energy have collaborated on a number of studies;

including telemetry projects in Lake St. Clair, the Detroit River, and southern Lake Huron, which ultimately led to the discovery of the three lake sturgeon spawning reefs in the Huron Erie Corridor. In 2003, DTE Energy helped fund the construction of an artificial lake sturgeon spawning reef near Belle Isle in the Detroit River. This event at Purdy Fisheries provided an excellent opportunity for Alpena FRO to highlight the continued spirit of cooperation between the Fish and Wildlife Service and its partners for lake sturgeon restoration in the Great Lakes.

James Boase, Alpena FRO



-DTE Energy photo by Dave Mitchell

Alpena Fishery Resources Office biologist Jim Boase talks about lake sturgeon in the St. Clair River to DTE Energy employees and their families during an event sponsored by DTE Energy and hosted by Purdy Fisheries in Point Edward, Ontario.

Sea Lamprey Management Personnel Provide Expertise at Superfund Site

Employees of the Marquette Biological Station recently lent their expertise to train government contract workers and conduct surveys to collect larval Pacific lampreys at the Portland Harbor Superfund site, a heavily industrialized stretch of the Willamette River in downtown Portland, Oregon. The Environmental Protection Agency is the lead agency for coordinating the in-water portion of the remedial investigation, working closely with six tribal governments and other natural resources trustees at the site. Environmental consultants conduct biological, chemical and biochemical investigations on many ongoing projects along nine contaminated miles of the river.

Michael Fodale and Daniel Kochanski traveled to Oregon and partnered with these investigators in the use of the deepwater electrofisher, a device uniquely designed to collect larval lampreys at water depths ranging from 5 to 75 feet. The goal of the project is to collect specimens for contaminant analyses as a first step in the long process to determine the impacts of pollutants in this large tributary to the Columbia River. Fodale and Kochanski trained the consultants in the use of the equipment, shared sampling strategies, and collaborated in collecting lamprey tissues for the project.
Michael Fodale, Marquette Biological Station



-Great Lakes Fishery Commission

Members of two consultant firms operate a re-designed pontoon boat with a deepwater electrofisher to capture larval Pacific lampreys at a Superfund site in the Willamette River in Portland, Oregon.

Friends of the Neosho NFH Hosts Softball Fundraiser

The Friends of the Neosho National Fish Hatchery teamed up with the City of Neosho, Missouri, for the second annual all-night softball tournament. This event started last year when the Friends group and the city wanted to help with the repair cost when vandals broke the glass on Neosho NFH's large aquarium. The event was such a hit that players and city officials wanted to make it an annual event. The turnout was awesome! The first pitch was thrown around 6:00 p.m. and went around the clock until the champions were crowned. After the event, the Neosho Lions Club and the Friends group sponsored a pancake breakfast for players and officials.

Roderick May, Neosho NFH

Aquatic Species Conservation and Management

Team Initiates New Technique for Sturgeon Reintroduction

A team of biologists and researchers from the Wisconsin DNR, Michigan DNR, Little River Band of Ottawa Indians, Riveredge Nature Center, University of Wisconsin – Stevens Point, Northern Environmental Inc., and the Green Bay FRO have completed the first year of a long-term project to evaluate the use of streamside rearing facilities to reintroduce lake sturgeon into several Lake Michigan tributaries. This cooperative effort represents a new direction for sturgeon rehabilitation and follows guidelines developed by the Lake Michigan Lake Sturgeon Task Group. Critical to the success of this project is the use of small-scale portable sturgeon hatcheries designed to rear lake sturgeon under environmental conditions similar to the natural environment where the fish will be stocked. This includes raising the fish from eggs in water from the target river to facilitate imprinting to the target rivers. Imprinting is important because sturgeon return to spawn in the rivers in which they were spawned.

More than \$500,000 in grant funding was secured from the Great Lakes Fisheries Trust and through the Great Lakes Fish and Wildlife Restoration Act to help develop, implement, and evaluate the use of five streamside rearing facilities on Lake Michigan tributaries over the next four years. Rob Elliott of the Green Bay FRO is assisting with coordination and financial administration for the project and serves as chair of the Lake Michigan Lake Sturgeon Task Group that outlined the implementation procedures.

This fall marks the completion of the first rearing season for this project. In September and October, fingerling lake sturgeon that had been reared from eggs in the streamside facilities on the Milwaukee and Whitefish rivers were released into those rivers, marking the start of a 25-year effort to re-establish populations in these and other Lake Michigan tributaries. *Robert Elliott, Green Bay FRO*



-USFWS photo by Rob Elliott

This is the lake sturgeon streamside rearing facility on the Milwaukee River, Wisconsin, which is a long-term project to evaluate the use of this technique to reintroduce lake sturgeon into several Lake Michigan streams.

Carterville FRO Trawls Up Late Summer Larval Sturgeon

While trawling Middle Mississippi River in September, a Fish and Wildlife Service crew collected several larval sturgeons (less than 20 mm). Through comparisons with known age fish, they estimated these sturgeons to be two weeks old. Most literature indicate a spring spawn when water temperatures are approximately 18° C, but several Mississippi River researchers and commercial fishermen have found evidence of some sturgeon spawning throughout the summer and into fall. The larval sturgeons were captured on Sept. 13, which would suggest a late

August fertilization date. Late August saw a five-foot rise in water levels over a three-day period. The rise in water levels, after an extended period of low water, may have triggered this late summer sturgeon spawn. Columbia FRO is currently in the process of verifying that the larval sturgeons are shovelnose sturgeon.

Colby Wrasse, Carterville FRO



-USFWS photo by Colby Wrasse

This larval sturgeon (17 mm) was collected on September 13 from the Mississippi River. A rise in water levels in August may have triggered a late summer spawn.

Fish Community Analysis of the Swan Lake Habitat Rehabilitation and Enhancement Project

Colby Wrasse and Patty Herman continued the data collection phase of the Swan Lake Habitat Rehabilitation and Enhancement Project. Wrasse trained Herman on the art and science of age estimation using sagittae otolith bones from bluegill, black crappie, white crappie, and freshwater drum samples. Otoliths are bony structures that display growth rings - similar to trees. They digitized otolith images using a microscope mounted color digital camera and analyzed photos using image analysis software to perform back calculations - a method of estimating sizes at previous stages of growth.

Swan Lake is a backwater lake located at Two Rivers NWR in Calhoun County, Illinois. As part of this project, the lake has been divided into compartments so that water levels can be individually manipulated. By collecting and analyzing fish samples for age and size structure in these compartments and selected reference lakes, biologists can make preliminary assessments of reproduction, recruitment, and growth rates. These data will ultimately be used in part to determine the effectiveness of periodic draw-down as an effective management regime to encourage native vegetative growth and improve fish habitat in a controlled backwater site.

Patty Herman, Carterville FRO

Mussels Make a New Home in Iowa City

With names such as the black sandshell, plain pocketbook, and fat mucket; it is no wonder people don't know more about native freshwater mussels. Because mussels are commonly known as clams, people often associate them with beaches and oceans, not rivers and streams. Freshwater mussels also have a different life cycle than their saltwater counterparts, producing thousands of larval mussels called *glochidia* that must attach to the gills of fish and undergo a metamorphosis in order to become independent viable individuals that will grow and someday make glochidia of their own.

Habitat loss due to pollution, dams, and human impacts has caused large declines in mussel populations in most rivers and streams in the United States. Most streams in Iowa have seen drastic declines in their mussel population for the past 50 years. In recent decades, water quality has begun

to improve and mussels are making a comeback in some rivers and streams in Iowa.

Genoa NFH is working to produce mussels to be stocked into several rivers to enhance existing populations in partnership with the Iowa DNR. Genoa NFH stocked nearly 1,200 mussels of three species (black sandshell, plain pocketbook, and fat mucket) into the Iowa River in downtown Iowa City, Iowa, in September. All mussels were distinctively marked, ensuring that they will be recognized as stocked mussels. This project is just one way Genoa NFH is working with states and other cooperators to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people.

Tony Brady, Genoa NFH



-USFWS

Mussels are marked with black dots for easy identification, before being stocked an Iowa river as part of a restoration plan.

Lake Taneycomo Mitigation Stockings

Neosho NFH stocked 18,520 rainbow trout (7,192 pounds) into Lake Taneycomo during September. This puts the hatchery slightly over its mitigation commitment of 225,000 rainbow trout for Fiscal Year 2006. The State of Missouri sends over their big truck to haul these fish for the hatchery, which saves the hatchery money on distribution costs.

Roderick May, Neosho NFH

St. Marys River Fishery Task Group Conducts a Fish Community Assessment

The St. Marys River Fishery Task Group conducted a coordinated fish community assessment of the St. Marys River using variable mesh gillnets in August. The group sampled 45 sites from the upper river to Potagannissing Bay, collecting information on the diversity and relative abundance of all species and on the age, diet, lamprey wounding, and maturity of sport species. The survey was conducted as a partnership of task group member agencies and resource partners including the Michigan DNR, Ontario Ministry of Natural Resources, Department of Fisheries and Oceans Canada, Chippewa Ottawa Resource Authority, Bay Mills Indian Community, Lake Superior State University (LSSU), and Alpena FRO.

Alpena FRO and the university partnered as a survey crew and sampled six sites in Lake Nicolet and the Munuscong Channel. Biologists Adam Kowalski and Scott Koproski planned the assessment. The survey crew consisted of LSSU students Jennifer Johnson, Jason Lorenz, and Chris Wesolek, and three staff from the

Alpena FRO. We are grateful for assistance that was provided by Mark Ebener and the Inter-Tribal Fisheries Assessment Program staff and Roger Greil of the university's Aquatic Research Lab.

The St. Marys River fishery assessment was initiated by the Michigan DNR in 1975 and has been conducted every five years. In 2002 the task group agreed to assist with the survey. Information from the 2002 assessment is available on-line at: <http://www.glf.com/lakecom/lhc/SMR2002rpt.pdf>.

Jerry McClain, Alpena FRO

Rydell NWR Walleye Harvest

Dave Wedan of the La Crosse FRO, with assistance from Bob Hiltner and Jay Ciucci from the Rydell NWR, set fyke nets in Clifford Lake, initiating the Fall 2006 walleye harvest and stocking effort on the refuge. Each spring Genoa NFH staff release newly hatched walleye fry into Clifford Lake, a shallow lake which does not over-winter a fish population. After a summer of growth, these young-of-the-year walleyes are netted and stocked in tribal, Federal, and state waters.

The continued rearing success at Rydell NWR has made it the Midwest Region's premier source of walleye fingerlings for stocking Minnesota tribal and state waters. The 2006 harvest totaled 50,594 five- to eight-inch walleyes. After the harvest, Genoa NFH's Dan Kumlin, White Earth Tribal biologist Randy Zortman and crew, and Minnesota DNR's Gary Huberty and crew took the fish to stocking sites. Thanks to Rydell NWR Project Leader Dave Bennett and his staff for their help and support in making this important fisheries program a continued success!
Dave Wedan, La Crosse FRO



-USFWS

Fingerling walleyes are being removed from a grow-out pond on the Rydell National Wildlife Refuge, and will be stocked into Minnesota tribal and state waters.

Biologists Discuss Mussel Recovery Efforts in the Huron Erie Corridor

Biologists from the Michigan DNR, Walpole Island First Nation, USGS Great Lakes Science Center, DTE Energy, Genoa NFH, and Alpena FRO met on September 1, bringing together biologists who have been working on Great Lakes mussel issues, especially those affecting the Huron Erie Corridor, and providing a forum to discuss recent findings and provide direction for future rehabilitation efforts. Resource managers from the Walpole Island First Nation have been leading the efforts to establish refuge areas within the St. Clair River Delta with a focus on maintaining and protecting the remaining native mussel populations in the delta. The research leading up to the establishment of the refuge areas was largely a part of the cooperation between the First Nation, Environment Canada, the Science Center, and DTE Energy. More recently the Fish and Wildlife Service and Michigan DNR have joined these efforts.

At the meeting, mussel biologist Tony Brady from the Genoa NFH discussed recent innovative propagation techniques that have

been successfully used in supplemental stocking or reintroduction of Federally listed mussels into tributaries of the Mississippi River. Similar to populations on the Mississippi River system, mussel populations on the St. Clair Delta have been declining since the 1980s or have been extirpated from many areas because of the invasive zebra mussel. Although zebra mussels do not directly parasitize native mussels, they do attach themselves in large numbers to the shells of the native mussels, preventing the mussels from foraging, reproducing, and dispersing their progeny.

Historical research indicates that the highest densities and greatest diversity of native mussels were in deeper locations in Lake St. Clair, while shallow bays located in areas such as the St. Clair River Delta were considered marginal habitat. Today only the areas that were once considered marginal habitat have a surviving population of native mussels.

The St. Clair River Delta is the largest delta system in the Great Lakes, forming an international border between the United States and Canada. The St. Clair River splits into three main channels and multiple smaller channels as it moves through the delta. On the United States side, the delta has been intensively managed and altered, with both residential and commercial use dominating most upland areas. Steel sheet pilings separate most of the interface areas between upland areas and the river. Canals have been dredged connecting once isolated bays to most channels.

In Canadian waters, Walpole Island First Nation has maintained most of the natural integrity of the delta. Most channels have native emergent plant species that slow the flow of water into them or act

as buffers separating upland areas from the river. Numerous isolated bays with limited access points from the river or from Lake St. Clair are still intact and have not been breached by man-made channels. Travel within the shallow water bays is restricted and is not affected by heavy recreational boat traffic, unlike most locations on the United States side of the delta.

The differences in land use practices between the United States and Canadian waters of the delta may help explain why preliminary results indicate that native mussels are doing better in Canada. Low boat traffic in isolated shallow bays means fewer mussels are damaged by props or dislodged. Bays that have not been breached by canals do not see a continuous introduction of zebra mussels, and as a result, native mussels have few attached zebra mussels. In general most of the bays sampled on Walpole Island were relatively deeper than on the United States side.

Researchers have taken some first steps by identifying refuge areas in Canadian waters, and have been successful at relocating native mussels from areas of high zebra infestation. Most native mussels need specific host fish species for survival of their progeny, and it has not been determined whether all life cycle requirements will be fulfilled for mussels placed in those refuge areas. Some of the propagation techniques presented at this recent meeting may help achieve the goals of rehabilitating native mussel populations in the Great Lakes. If we are to maintain a population of native mussels, some innovative and intensive approaches to management will have to be considered. The Fish and Wildlife Service and partners are

planning to continue to identify other potential refuge areas in both United States and Canadian waters and will also continue working to identify innovative management techniques.

James Boase, Alpena FRO
Tony Brady, Genoa NFH



-USFWS photo by James Boase

These native mussels, collected from the St. Clair River Delta, are infested with invasive zebra mussels.

The Class of 2006 Has Left the Building!

The lake trout reared indoors since last November at Jordan River NFH have been relocated. Crews moved approximately 2.2 million fingerlings of three strains to the outdoor raceways by September 19. At this time in the rearing cycle, the fingerlings become too crowded to remain in the tank room. This annual process went off without a hitch. Many staff were involved in the process, including student Chris Olds and volunteer Andy Pavelek. Wayne Talo, Paul Haver, Denise Johnston, John Johnston, and Tim Smigielski participated in the move to varying degrees during the month. The lake trout will remain in the outdoor raceways until they reach their final destination in Lake Huron or Lake Michigan beginning in April 2007. Raising and stocking lake trout is an important component of the Fish and Wildlife Service's rehabilitation efforts in the Great Lakes.

Tim Smigielski, Jordan River NFH

Declining Prey Abundance Noted in Lake Huron

Alpena FRO collected samples of prey fish in September and October for a Great Lakes Fish and Wildlife Restoration Act funded study to determine salmon and lake trout response to declining prey abundance in Lake Huron. Alpena FRO is an associated investigator for the study, coordinated by Jim Bence of Michigan State University and Ji He and James Johnson of the Michigan DNR Alpena Fishery Research Station.

Crews collected prey during annual fall trawling efforts to detect new populations of aquatic invasive species, gathering samples from 13 species at nine ports from Detour to Harbor Beach. Michigan State University will analyze the samples to determine their energy density and value to predators. USGS and Michigan DNR will also collect prey samples for this study. We are grateful to District biologist Jim Baker with the Michigan DNR – Bay City Field Office, who provided needed assistance during prey sample collections.

Anjanette Bowen, Alpena FRO

Aquatic Invasive Species

Lake Huron and St. Marys River Ports Surveyed for New Populations of Invasive Species

Alpena FRO conducted surveillance for new populations of invasive species and documented the existing fish community at shipping ports and rivers in northwestern Lake Huron and the St. Marys River during September and October. Crews surveyed 12 locations — eight sites in Lake Huron and four in the St. Marys River — with bottom trawling gear. A target of 30 minutes of effort was conducted at each sample site. Crews detected no new populations of invasive species. Eurasian ruffe were not found at any locations while round goby continue to persist at Lake Huron locations. Neither have been found in the St. Marys River to date.

Crews captured 26 species, including 24 species in Lake Huron and 15 in the St. Marys River, during 215 and 110 minutes of effort, respectively. Bottom water temperatures during the survey ranged from 9.1 - 19.4°C and averaged 14.2°C in Lake Huron and 10.9°C in the St. Marys River. Biologist Anjie Bowen coordinated survey efforts with assistance from biologists Adam Kowalski, Heather Rawlings, and James Boase. We are grateful to Jordan River NFH biologist John Johnston who also provided needed assistance.

Anjanette Bowen, Alpena FRO
Tim Smigielski, Jordan River NFH



-USFWS photo by Anjanette Bowen
Alpena Fishery Resources Office completed aquatic invasive species surveillance in Lake Huron during September.

Fish and Wildlife Service and Corps of Engineers Discuss Asian Carp Issues on Capitol Hill

The Fish and Wildlife Service's Midwest Region and the U.S. Army Corps of Engineers' Chicago District traveled to Washington, D.C., to provide congressional staffers with an overview of invasive Asian carps in the United States and the status of the Chicago Sanitary and Ship Canal electric dispersal barriers. Carterville FRO biologist Greg Conover and Corps Project Manager Chuck Shea provided the briefing to approximately 25 staffers at the Rayburn House Office Building. Numerous questions posed by the staffers demonstrated their interest in the issues.
Greg Conover, Carterville FRO

Canadian-American Team Destroys Rifle River Sea Lampreys

On Sept. 20, 15 staff members from Fisheries and Oceans Canada crossed the border to join 17 staff from the Ludington Biological Station and 22 staff of the Marquette Biological Station field crew for a lampricide treatment of the Rifle River. The Canadians are based at the Sea Lamprey Control Centre in Sault Ste. Marie, Ontario.

The Rifle River, in Michigan's Ogemaw and Arenac counties, is a designated state Natural River and is one of the Lower Peninsula's most popular recreational streams. It is home to bald eagles, as well as lake sturgeon and other protected species of fish, turtles, and mussels. Given its excellent water quality, outstanding habitat, and the fact that there are few dams on the system, the Rifle River is one of the most complex and difficult streams to treat with lampricide. In years past, it was treated piecemeal, tributary by tributary, because personnel available in both offices of the Sea Lamprey Control program were insufficient to treat it as a whole. Treating all tributaries of a stream at the same time requires a large, experienced staff. The resulting treatment will be more effective and use much less lampricide.

In recent years, Canadian field crews have helped with two other large Michigan treatments including the Big Manistee and Manistique rivers and the Grand River in Ohio. They have also been solely responsible for treatments of several streams in Michigan's Eastern Upper Peninsula. Canadian Sea Lamprey Control Centre staff holds pesticide applicator certifications in Michigan, New

York, and Ohio. Their cheerful assistance allows the Great Lakes Fishery Commission to optimize efforts directed to sea lamprey control across the Great Lakes.
Dennis Lavis, Ludington Biological Station



-GLFC photo by Ellie Koon
John Tibbles, Department of Fisheries and Oceans Canada (left) and Ron Cloutier, Ludington Biological Station prepare to apply lampricides to the Rifle River.

La Crosse FRO Answers the Question, "Can These Fish Really Fly?"

Approximately 330 students from six middle schools in the La Crosse, Wisconsin, area attended the annual Seventh Grade Environmental Day in Galesville, Wisconsin. Heidi Keuler from the La Crosse FRO gave a presentation on Asian carp titled "*Can These Fish Really Fly?*". Students listened, dropping their jaws as Keuler presented information on potential maximum size of the carp, food consumption, reproduction, ability to spread, and impacts to the ecosystem. During the discussion, students created interesting solutions to the problem of Asian carp moving up the Mississippi River toward the Great Lakes. There was a lot of laughter at the end of the presentation when Keuler showed a movie of the "flying fish" and pictures of the recent Redneck Tournament held on the Illinois River near Bath, Illinois, which targeted Asian carp.

The take-home messages students remembered were: do not release pet fish from their aquariums, do not dump bait buckets after fishing, and call the Fish and Wildlife Service or their local DNR office if they suspect they caught one.
Heidi Keuler, La Crosse FRO

Invasives Hazard Analysis and Critical Control Point Plans

Using the Hazard Analysis and Critical Control Point Planning Wizard, La Crosse FRO biologist Mark Steingraeber recently drafted plans to prevent the spread of aquatic invasive species and fish disease pathogens among waters in four upper Midwest states through recurring management activities. This software identifies critical control points and simplifies the process of creating these plans for FRO activities that could spread aquatic invasive species and fish disease pathogens to new locations. It was developed as a tool for natural resource managers by the Fish and Wildlife Service's Dr. David Britton and is available for downloading at: <http://www.haccp-nrm.org/>.

Program execution requires the user to answer a series of questions about a management activity. Based on these responses, an activity-specific plan is created in a standardized format and saved as a text document that can be edited, if necessary. Based on existing La Crosse FRO equipment maintenance practices designed to prevent the spread of aquatic invasive species and fish disease pathogens, Steingraeber used the Planning Wizard software to prepare four draft plans for a variety of active and passive sampling methods commonly used to collect fish. Pending approval, La Crosse FRO staff will implement these plans to provide a

documented framework that assures reusable sampling equipment maintained by this office is appropriately treated to prevent the spread aquatic invasive species and fish disease pathogens.

Biologists from Carterville FRO recently completed their station Hazard Analysis and Critical Control Point planning exercise also. Development of these plans is a high priority for Region 3 Fisheries offices.
Mark Steingraeber, La Crosse FRO
Nate Caswell, Carterville FRO

International Symposium on Asian Carps

Carterville FRO assisted in the planning and execution of an "International Symposium on the Invasive Asian Carps in North America." The two-day symposium held in Peoria, Illinois, was well attended with speakers from Australia, Canada, China, and the United States. Illinois State Senator Mike Jacobs and State Representatives David Leitch and Jim Watson addressed attendees to show their support for managing and controlling these invasive fishes. Carterville FRO biologist Greg Conover, who chairs an Asian Carp Working Group for the Fish and Wildlife Service and the Aquatic Nuisance Species Task Force, delivered opening remarks and discussed the draft *National Management and Control Plan for Asian Carps in the United States*. Carterville FRO also developed and provided three posters for the symposium. The symposium proved to be a productive forum for both the formal and informal exchange of current information relative to the various aspects of management and control of Asian carps.
Greg Conover, Carterville FRO

Public Use

4H Conservation Tour Held at Jordan River NFH

Michigan State University Extension 4H and the Antrim County Soil Conservation District co-sponsored the "2006 Conservation Tour" at the Jordan River NFH. More than 300 fifth and sixth grade students from Antrim County attended the day-long event. The students rotated among stations on the hatchery grounds. There were many volunteers and partners involved in addition to hatchery staff. Michigan Department of Environmental Quality, Antrim Soil Conservation District, Michigan DNR, Michigan Visitor Center, See North, Tip of the Mitt Watershed Council, and Michigan State University Extension participated. Volunteer workers from Americorps and the hatchery rounded out the crew.

The students learned about the importance of our watersheds and the need for high quality water for trout culture. Students especially enjoyed the station headed by Maureen Jacobs and Julie Fraley from the Michigan DNR hatcheries. Students collected aquatic insects in the Jordan River, identified them, and learned the significance of their distribution and abundance to the ecosystem. Wayne Talo and John Johnston demonstrated pond cleaning, talked about fish culture in general, and provided the teachers with hand-outs detailing some hatchery math examples to teach the kids once they got back to school (see our Website at: <http://www.fws.gov/midwest/JordanRiver/education.htm>). Once back to the hatchery building, Stan Moore from MSU Extension and hatchery manager Rick Westerhof tag-teamed the key messages of sea

lamprey control and lake trout rehabilitation. Tim Smigielski followed up with an explanation of fish distribution and a tour of the tank room. Wow, the day was long and busy and we received so many compliments from parents, kids, and spectators. Thanks to Dee Miller, Antrim County 4H Education Director, who coordinated the event for the 4H.

Tim Smigielski, Jordan River NFH



-USFWS photo by Wayne Talo

John Johnston demonstrates the finer points of raceway cleaning to a group of 4H students.

Northland Sportsman's Family Hunting and Fishing Expo a Success

More than 1,000 grinning kids passed through the Northland Sportsman's Club event on September 10, where biologists Wayne Talo and Tim Smigielski from Jordan River NFH promoted Great Lakes fisheries programs. The kids and their parents learned about aquatic invasive species, sea lamprey control, lake trout rehabilitation, and hatchery operations. Smigielski tirelessly told the same jokes to every group of children who stopped for a trout tattoo.

The families enjoyed samples of wild game, trout fishing ponds, shooting sports, archery, and a number of exhibits sponsored by the Michigan Trappers Association, National Wild Turkey Federation, Audubon Society, and Michigan

DNR Law Enforcement. It was great fun and this event is a super forum for us to tell our stories to the public.

Tim Smigielski, Jordan River NFH

Celebrating Our Hunting and Fishing Heritage

America is a nation steeped in tradition. Important, but often overlooked, is our hunting and fishing heritage which is intricately woven into the fabric of our American pedigree. In earlier times, hunting and fishing were the chief means of procuring sustenance for our daily lives. Today, hunting and fishing are chiefly recreational pursuits, but still remain vitally important. The American sportsman has always stood at the forefront of conservation, but with the increasing urbanization and modernization of today's society, our hunting and fishing heritage is being lost, and along with them the conservation ethics of the modern sportsman. That is why today, more than ever before, we need to remember, celebrate, and embolden our hunting and fishing traditions.

This mission is the chief impetus behind "National Hunting and Fishing Day." This annual event was first established in 1972. Each year thousands of anglers, hunters, and conservationists take part in the event. Some of the highlights include duck calling competitions, large aquarium and taxidermy displays, workshops, and guest speakers. All events are intended to educate and inspire the conservation-minded sportsman.

This year Carterville FRO participated in the celebration held in southern Illinois at John A. Logan College. Staff distributed

information and answered questions from the public. The Carterville FRO Asian carp displays and videos elicited a great deal of interest and were valuable educational tools. Besides questions on invasive species, staff also responded to inquiries on lake management, sport fish restoration, and careers in the natural resources field. The event was a learning experience for all involved, providing a historical context to many of the conservation issues we face today and will continue to face in the future. Most everyone would agree that the weekend was a fun filled celebration of the rich hunting and fishing traditions of America.

Colby Wrasse, Carterville FRO

Educational TV Show Features Sea Lamprey Control

Sea Lamprey Control personnel from the Ludington and Marquette Biological Stations will be featured in an educational TV series called "Exploration with Richard Wiese." Filming took place October 5 during a lampricide treatment of the Brevort River in Michigan's Upper Peninsula. The theme of the show is lake trout rehabilitation in the Great Lakes.

Wiese arrived at the field site with a producer, two cameramen, and a production assistant. They spent a very pleasant afternoon with us, filming the lampricide application at Brevort Lake Dam and a sea lamprey population estimate conducted by the larval assessment unit. The New York City-based crew was wowed by the beauty of the area and the spectacular fall colors. The lake trout segment is expected to air sometime in 2007.

Dennis Lavis, Ludington Biological Station



-GLFC photo by Ellie Koon
Richard Wiese and crew filmed sea lamprey control activities during an October treatment of the Brevort River for an educational TV series called *Exploration with Richard Wiese*.

Hunting and Fishing Day Celebrations Held

Manager Dave Hendrix and Assistant manager Rod May traveled to Springfield, Missouri, to participate in Bass Pro Shops' National Hunting and Fishing Day celebrations. Two Friends group members also participated. Hatchery staff put on countless tattoos and gave out lots of information. Washington Office staff Stuart Leon and Richard Christian, along with Regional Officer Supervisor Todd Turner, visited and toured the hatchery the day before the event and dropped by the booth during the event. Director Dale Hall was the featured speaker for the evening banquet.

Roderick May, Neosho NFH

Alpena FRO Participates in Scoutfest 2006

On September 23 biologist Scott Koproski participated in the 2006 Scoutfest, hosted by the Thunder Bay Recreational Center in Alpena, Michigan. Scoutfest is an event that brings together Boy Scout and Girl Scout troops from northeast Michigan for a weekend to participate in archery, monkey

bridge, rock climbing, and campfire cooking, just to name a few. More than 130 scouts participated.

More than 75 scouts stopped by the Alpena FRO booth. Many of the kids had some sort of fishing story they wanted to share, such as: "I caught a fish that was as big as I am" or "I don't like fish because they are slimy." Games, fish mounts, and brochures were available to all who stopped by. Koproski provided information on aquatic invasive species, native species, and fielded a variety of questions dealing with the Great Lakes ecosystem. By providing the scouts a brief exposure to fish and wildlife management, it may entice a few to choose a similar career path.

Scott Koproski, Alpena FRO

Biologist Participates in Naturefest for Kids

Biologist Susan Wells participated in an annual day-long outdoor festival at the Sprinkler Lake Education Center in Harrisville, Michigan, that featured interactive science displays, horse rides, crafts, and a petting zoo. Alpena FRO hosted a booth with educational material and fish puzzles, and partnered with Huron Pines Resource Conservation & Development to operate an interactive watershed model depicting the path of sediments and pollutants after a rain event when buffers such as trees and wetlands are lost. Approximately 300 children and adults visited the booth. The festival allowed the Alpena FRO the opportunity to fulfill one of the station goals of distributing information to the general public about fish and wildlife resources, natural ecosystems and programs.

Susan Wells, Alpena FRO

Genoa NFH Helps at Cabela's Masters Walleye Championship

Genoa NFH staff assisted with the Masters Walleye Championship sponsored by Cabela's at its retail store in Prairie du Chien, Wisconsin. Hatchery staff safely held walleye during the weigh-in period and returned them back to the Mississippi River in the station's 450-gallon fish distribution truck.

A pro/am event, in which an amateur angler is assigned to each of the competing teams, preceded the championship competition, providing anglers with a once in a lifetime fishing tutorial from the best of the best in walleye tournament angling. The public was invited to watch the weigh-ins at 3:00 p.m. each day. The largest walleye brought to the scale weighed in at more than eight pounds!

Fifty teams from throughout the country competed for the largest three day combined weight to win the grand prize of \$25,000. Mild weather contributed to a successful event.

Nick Starzl, Genoa NFH



-USFWS
Dan Kumlin of the Genoa National Fish Hatchery holds a walleye that was the focus of the Cabela's Masters Walleye Championship held in the Upper Mississippi River near Prairie du Chien, Wisconsin.

Genoa NFH Celebrates 150th Vernon County Fair

The Genoa NFH was honored to be a part of the 150th anniversary celebration of the Vernon County Fair in southwestern Wisconsin. This makes the fifth consecutive fair season that Genoa NFH personnel have staffed an outreach booth and aquarium display at the fair, attended by more than 13,000 people. Many of the fairgoers made a point to stop and see the miniature aquatic community shown in the hatchery aquarium. Both live mussels and fish were displayed, with the biggest hits being the lake sturgeon, or "dinosaur fish" as fairgoers often called them. Sunglasses, coloring books, and fish tattoos were also in high demand with the kids.

Darla Wenger, Genoa NFH

Upper Mississippi Cooperative Conservation Highlighted

Cooperative efforts to conserve natural resources of the Upper Mississippi River were highlighted during an open house on September 9 at the U.S. Geological Survey's (USGS) Upper Midwest Environmental Sciences Center in La Crosse, Wisconsin. Despite gloomy weather, a festive crowd of more than 1,400 adults and children attended the carnival-like event, which was held, in-part, outdoors under a "big-top" tent. While enjoying refreshments and river-themed musical entertainment, visitors had the opportunity to meet science center partners from the Fish and Wildlife Service, U.S. Army Corps of Engineers, Wisconsin DNR, and University of Wisconsin-La Crosse. They learned how the organizations work together to conserve the diverse natural resources the river

sustains. The event, titled "Taking the Pulse of the River," also gave visitors many hands-on opportunities to discover more about a variety of Upper Mississippi fish and wildlife species and methods used to study these creatures and their habitats.

Representing the Fish and Wildlife Service at this event were staff from the Upper Mississippi River National Wildlife and Fish Refuge (NW&FR) - La Crosse District—displaying its ever popular 'ducks on a stick' exhibit—and the La Crosse FRO, which offered visitors an equally popular opportunity to create colorful and stylish one-of-a-kind fabric fish prints. The Friends of the Upper Mississippi River Refuges and Friends of the Upper Mississippi River Fishery Services also provided valuable assistance at the event. These Fish and Wildlife Service offices appreciated the opportunity to participate with other partners in this successful USGS-sponsored outreach event and spread the message of cooperative conservation.

Mark Steingraeber, La Crosse FRO



-USGS
A visitor at the Upper Midwest Environmental Sciences Center in La Crosse, Wisconsin, models a stylish fish print scarf created at the La Crosse Fishery Resources Office display booth.

Cooperation with Native Americans

Coasters Find a Home

Retired coaster brook trout were stocked into waters on the Grand Portage Tribal Reservation in September. Staff from the Iron River NFH planted approximately 1,700 Siskiwit Bay strain coaster brook trout ranging from 12 to 17 inches and about 1,800 Tobin Harbor strain coaster brook trout ranging from 8 to 17 inches into Taylor Lake, a designated trout lake on the reservation. All fish had year-class and strain specific fin clips that will enable biologists to monitor them. This stocking event was unique in that fish were hauled via distribution truck from the hatchery, then offloaded onto four-wheel drive utility vehicles and taken half a mile through the woods, over rocks, and through mud to their final destination in Taylor Lake. These stockings provide recreational fishing opportunities for the tribe.

Dale Bast, Iron River NFH



-USFWS
Biologist Steve Redman of the Iron River National Fish Hatchery transfers brook trout to a tribal utility vehicle for stocking into remote lakes on the Grand Portage Reservation.

Alpena FRO Assists Chippewa Ottawa Resource Authority with Walleye Assessments

During the week of September 18, biologist Scott Koproski assisted the Chippewa Ottawa Resource Authority (CORA) with its annual juvenile walleye assessment of the St. Marys River. Using the Alpena FRO electrofishing vessel, Koproski and two CORA staff members sampled three locations in the St. Marys River system—Waiska Bay, Lake George, and Sugar Island Side Channel—over three nights to determine the contribution of hatchery reared walleye to the St. Marys River.

Hatchery-stocked walleye are immersed in oxytetracycline prior to release, leaving a mark on calcified structures like otoliths and vertebrae that can be detected in the lab. Data collected will also be used to determine appropriate stocking levels and stocking locations for this system.

Walleye are both a recreationally and commercially important species in 1836 Treaty waters. The Alpena FRO will continue to evaluate CORA's stocking success in the future. Staff from the Alpena FRO has been assisting CORA with this walleye assessment for the past 13 years.

Scott Koproski, Alpena FRO

Fish and Wildlife Service Biologists Attend Modeling Subcommittee Meeting

Biologist Aaron Woldt of the Alpena FRO chaired the September meeting of the Modeling Subcommittee of the Technical Fisheries Committee. The primary focus of this meeting is to generate preliminary 2007 harvest limits for lake whitefish management units in 1836 Treaty waters of lakes Huron, Superior, and Michigan. As stipulated in the 2000 Consent Decree, preliminary lake whitefish harvest limits must be calculated by the subcommittee, reviewed by the technical committee, and presented to the parties to the decree each year.

Preliminary lake whitefish harvest limits were presented to the technical committee for review on October 27. The subcommittee will complete final lake whitefish harvest limits and present them to the technical committee at its December meeting. John Netto of the Green Bay FRO presented the modeling results and harvest limit recommendation for whitefish management unit WFM-02 in Lake Michigan. He also presented sea lamprey induced mortality estimates for Lake Michigan lake trout based on 2006 data collections. Harvest limits produced at this meeting, when reviewed by the parties and approved, will become binding 2006 lake whitefish harvest limits for 1836 Treaty waters.

Aaron Woldt, Alpena FRO

John Netto, Green Bay FRO

Leadership in Science and Technology

A Safer Way to Preserve Fish

The negative health effects of formaldehyde have long been known, yet formaldehyde-based solutions such as formalin remain the fixative of choice for many biologists. In the past, alternatives to formalin have proven ineffective, leading to difficulties in the identification and long term storage of fish. The Carterville FRO has recently begun using Streck Tissue Fixative™ (STF) as a primary fish fixative. STF has been a valuable tissue fixative in the medical field for many years, but its use in the natural resources field is not widespread.

Fishery researchers at the University of Alaska Fairbanks have been using STF as a fixative for the past ten years and have found it to be a viable alternative to formalin. During the past five months, Carterville FRO has used STF for small fish, with good results. In some cases, biologists found that fish preserved in STF retain color better and remained more pliable than fish preserved in formalin. To date, they have not used STF on large fish or for long-term storage. Streck Tissue Fixative™ is not without some health risks, but available data and personal experience indicate it is safer than formalin. Unlike formalin, STF is not a known carcinogen. Carterville FRO will continue to experiment with this promising alternative to traditional fixatives. *Colby Wrasse, Carterville FRO*



-USFWS photo by Colby Wrasse
Staff at the Carterville Fishery Resources Office are looking at Streck Tissue Fixative (STF) as a safer way to preserve fish opposed to formalin.

Alternative Sea Lamprey Controls Reduce Reproduction in St. Marys River

Sterile-male release and Strapping are alternative control technologies to lampricide treatments being used to control invasive sea lampreys in the St. Marys River, which connects lakes Superior and Huron and borders the United States and Canada. These alternative techniques have been used since 1991, and were intensified in 1997. In 2006 about 26,000 male sea lampreys were captured in more than 25 Great Lakes tributaries in the United States and Canada, sterilized, and released into the St. Marys River.

The sterile-male release technique reduces reproduction by causing females to waste their eggs by mating with sterile males. Sea lamprey traps operated by the Fish and Wildlife Service and its partner the Department of Fisheries and Oceans Canada, removed more than 10,000 sea lampreys—41 percent of the spawning population—from the St. Marys River. In addition to removing the reproductive potential of females, traps also removed males, which reduced competition for sterile males seeking mates. The combination of releasing sterile males and trapping reduced reproduction by 84 percent during 2006, and has reduced reproduction by about 87

percent since 1997. The Fish and Wildlife Service delivers an integrated program of sea lamprey management in the United States waters of the Great Lakes as a contracted agent of the Great Lakes Fishery Commission.

Michael Siefkes, Marquette Biological Station

Six-Month Check Up for Coasters

On October 16 Iron River NFH biologist Angela Baran completed a full inventory of the elastomer tagged Tobin Harbor strain coaster brook trout at the hatchery. This 2004 year class was tagged in March to determine how well elastomer tags would work for future marking of brood and production fish (see *Fish Lines* - Volume 4 No. 6, page 20). Thirty days after the initial tagging, the fish were inventoried, and approximately 10 percent had lost their tags completely. The full inventory in October showed an additional 20 percent lost their tags. This inventory will also help with future color and site choice. For example, the blue tags in the adipose eyelid were harder to distinguish without the flashlight because of natural blue coloring around the eye. Improved marking techniques will lead to improved management of hatchery brood and production fish.

Angela Baran, Iron River NFH

Aquatic Habitat Conservation and Management

Fish and Wildlife Service and Partners Provide Fish Passage on Big Rock Creek

Funding secured by the Carterville FRO allowed partners to build fish passage structures at two dams on Big Rock Creek, a Fox River tributary in Kane and Kendall counties in northeast Illinois, opening the entire Big Rock Creek watershed, over 70 miles of streams, to the Fox River. Partners on the project were the Illinois DNR, Conservation Foundation, Big Rock Creek Watershed Committee, City of Plano, and Mr. and Mrs. Roy Harrington.

Big Rock Creek is a rural stream in a rapidly expanding urban area. It is one of the larger tributaries of the Fox River. Based on recent Illinois DNR fish and mussel surveys, this creek is one of Illinois' highest quality streams. A 2002-2003 biological survey gave all main stem sampling stations an "A" rating, described by the Illinois Biological Stream Characterization as a "Unique Aquatic Resource." The creek has an excellent smallmouth bass fishery, and is home to the state endangered greater redhorse and threatened spike mussel.

Two dams, Drake's Dam and Harrington Dam, in the lower section of the creek were the only in-stream structures known to impede fish passage, blocking fish throughout most of the year and affecting the distribution of several species, including greater redhorse, channel catfish, and mottled scullions. In addition, miles of the creek dried up during the 2004 and 2005 droughts, threatening the loss of other upstream fish and mussel species. With the dams in

place there was no way for these species to return from downstream sources when water levels improved.

The first phase of the project was construction of a rock ramp at Plano Dam, which took three days and 1,300 tons of rock, up to three feet in diameter. According to Illinois DNR Streams Specialist Steve Pocatello, fish tried to pass immediately, swimming through high gradient areas even before the ramp was finished. A blunt nose minnow was the first fish observed passing the dam. Crews also observed smallmouth bass, shorthead redhorse, and northern hog suckers on the ramp before construction was complete. The second phase of the project was the construction of a bypass channel around Harrington Dam, a privately owned dam used to feed water to off-channel ponds. Because the owner did not want the water level in his ponds to be affected by the project, notching and ramping of the dam was not a feasible alternative. The upper end of the bypass channel is at the same elevation as the dam, so it is designed primarily to work under high flows during the spring when fish are migrating.

The Illinois DNR has been evaluating the effectiveness of the two structures. Several hundred individuals of the larger, more mobile species such as shorthead

redhorse have been tagged below the structures to determine whether they are able to pass. A few of these fish have been recaptured, and a number of minnows and darters have been observed actually living in the ramp itself. Evaluation of these structures will continue for several years.

Big Rock Creek is a unique system that has remained a high-quality resource in the face of heavy agriculture and development pressure. Restoring fish passage at these dams reconnected 69 miles of perennial streams to the Fox River. It opened the watershed for use as spawning and nursery habitat, which will benefit not only the resident stream species but also Fox River species.

This project was the first of its kind for the Fish and Wildlife Service's Fish Passage Program in the Illinois, and we hope that it will serve as an example for other fish passage projects in the state. We thank all of our partners, especially the landowners, for their willingness to see this project through. The project was a success, but only through the hard work and cooperation of the many people involved. We would particularly like to thank Illinois DNR Streams Specialist Steve Pocatello, who was instrumental not only in keeping the project on track but also in assisting with this report.

Nate Caswell, Carterville FRO



-Illinois DNR photos by Steve Pescitelli

A rock ramp was constructed to provide fish passage at this site on the Big Rock Creek in Illinois.

Fish Passage Program Provides Funding for Brewster Creek in Northeastern Illinois

Fish now pass by two small dams on Brewster Creek, a Fox River tributary in northeastern Illinois, as Phase II of a stream restoration plan for Brewster Creek is now complete. Brewster Creek is a perennial tributary to the Fox River and features a 15-square-mile watershed in Kane, Cook, and DuPage counties, Illinois. The Brewster Creek watershed comprises residential developments, agricultural land, forested areas, a small commercial area, and open space.

Until 2006, Brewster Creek had three dams along its length that blocked fish movements. One was a 10-foot high dam on Camp Tu-Endie-Wei, an outdoor education facility owned and operated by the YWCA of Elgin. This dam was designated by the State of Illinois as a Class I dam, meaning it had a high probability of causing loss of life and/or substantial economic loss in the event of a failure. This dam was removed in 2003-2004 as Phase I of a stream restoration plan for Brewster Creek, at a cost of over \$800,000. The dam removal restored a 4.3-acre impounded lake to a naturalized, meandering stream with vegetated banks.

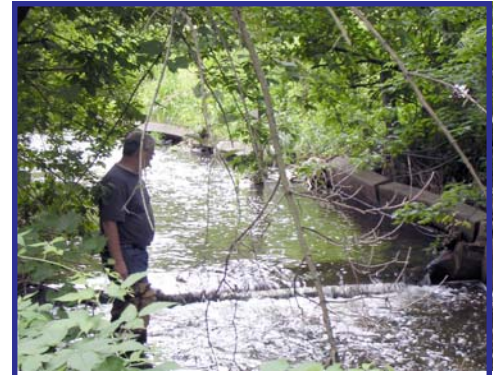
Removal of the YWCA dam and the two smaller dams in Phase II was achieved through partnerships with the U.S. Geological Survey, U.S. Environmental Protection Agency, Illinois Environmental Protection Agency, Illinois DNR, Northeastern Illinois Planning Commission, Fish and Wildlife Service, Kane County Department of Environmental Management, Fox River Ecosystem Partnership, Northeastern Illinois Planning Commission, Shedd Aquarium, Chicago Wilderness, The Conser-

vation Foundation, Fox Valley Land Foundation, White Gate Skeet Club, Beth & Cliff DeSanto, Penny & Gary Mallo, the Arnold Family, and Christopher B. Burke Engineering West, Ltd.

Carterville FRO came on board in 2004, providing partial funding for Phase II of the Brewster Creek stream restoration. In order to completely eliminate barriers to fish in Brewster Creek, the two smaller dams needed to be removed or modified. Carterville FRO provided nearly \$50,000 through the Fish Passage Program. The three-foot high DeSanto dam downstream of the YWCA dam was notched, and a rock ramp was built to provide fish passage. The Arnold Dam, a small concrete dam just downstream of the DeSanto Dam, was also notched and ramped. Additionally, some sediment management and stream bank stabilization was carried out to create a long-term, stable stream ecosystem.

This project eliminated fish migration barriers to approximately 10 miles of stream in a 15-square-mile watershed, improved water quality, and reduced downstream siltation. In addition, stream surveys conducted by the Illinois DNR in 1998 revealed the presence of seven species below the dams that did not occur above the dams. This list included stonecats, suckers, and smallmouth bass, an important recreational species. A small stream requires a continuous connection to a larger stream to remain healthy, and species such as smallmouth bass and suckers typically use small tributary streams for spawning and nursery areas. We hope that future surveys will show these species and others using the entire Brewster Creek watershed.

Nate Caswell, Carterville FRO



-Kane County DEM

Arnold Dam is on Brewster Creek which is a Fox River tributary in northeastern Illinois (above). A rock ramp was constructed to provide uninhibited fish passage at the dam site (below).



-USFWS photo by Rob Simmonds

Harlow Island Fisheries Monitored

Colby Wrasse, Adam McDaniel, and Patty Herman of the Carterville and Columbia FROs continued the pre-project data collection for the Harlow Island Fisheries Monitoring project. Field sampling has been challenging. In August drought-like conditions nearly dried out both the experimental and control sites. Setting and retrieving mini-fyke nets became difficult because of the viscous nature and depth of the muddy substrate. Electrofishing these sample sites was not possible in August. Despite these conditions, Wrasse, McDaniel, and Herman caught bowfin, short-nose gar, long-nose gar, orange spotted sunfish, and mosquito fish. Anecdotally, common carp were ob-

served foraging along the land/water interface with the dorsal portions of their bodies completely exposed.

Harlow Island, located on the Middle Mississippi River National Wildlife Refuge (NWR), is a remnant side channel of the Mississippi River that is connected only during high-water periods. Columbia FRO is currently in the pre-project monitoring phase of a U.S. Army Corps of Engineers'-funded project that will reconnect this remnant side channel to the main river as part of a program to improve navigation and restore ecosystems of the Middle Mississippi River. Ultimately this project aims to compare changes in the fish community at the modified Harlow Island site with changes in the control side channel site to determine the effectiveness of ecosystem restoration efforts in the Middle Mississippi River.

Patty Herman, Carterville FRO

Thunder Bay River and Black River Habitat Restoration Projects Completed

Summer work crews on the Thunder Bay and Black rivers concluded their season on August 18. Supported by the Alpena FRO's Partners for Fish and Wildlife program, private landowners, local sporting organizations, and non-governmental organizations; these work crews accomplished an impressive amount of work.

The summer work crew on the Black River in the Cheboygan River watershed placed 145 large woody debris structures for the purpose of fish cover and to deflect the current of the river to restore a deeper, narrower river channel. Crews placed these structures on seven stretches of the Black River, actively improving ten river miles of the watershed. In addition to

the large woody debris structures, the crew removed 25 beaver dams on four headwater streams, benefiting eight miles of stream habitat, in conjunction with an active trapping program on two of the creeks. In addition, they restored one erosion site. The Black River watershed is a coldwater system, with brook trout and lake sturgeon the predominant species. The Federally endangered Hungerford's crawling water beetle is located in both tributaries and the main branch of this river.

The Thunder Bay River work crew restored six erosion sites in Alpena and Montmorency Counties, benefiting five miles of river habitat. Two access stairways were built on the main branch of the river, and 2,000 shrubs were planted to stabilize the upper banks of erosion sites restored in the two previous years. Projects benefited yellow perch, northern pike, and smallmouth bass in this cool water watershed.

Heather Rawlings, Alpena FRO



-Montmorency Conservation District

The Black River (Michigan) summer work crew pounds duck-billed anchors into banks to secure a cedar tree. Trees were strategically placed and anchored into the river to provide aquatic habitat.

Wetland Construction Wrapping Up

The Alpena FRO Partners for Fish and Wildlife program is in the process of completing construction of 23 wetlands on 13 private properties in 7 northern Michigan counties. Construction began in May and was completed by the end of September, restoring or enhancing 84 acres of wetlands for the 2006 fiscal year. Four new excavating companies were contracted for the season, and for the most part, their work has been exceptional. Fall rains filled these wetlands and provided important habitat for the fall bird migration.

Heather Rawlings, Alpena FRO

Fish Passage Restoration along the Potagannissing River

The Potagannissing Dam project was completed on September 22, restoring 1 mile of riverine habitat and providing access to 434 acres of wetland habitat for migrating fish in Potagannissing Bay. A small dam on the Potagannissing River, within three miles of the Harbor Island NWR in Potagannissing Bay, blocked upstream passage of many fish species; particularly northern pike, walleye, and white sucker. Many marsh-like lakes exist upstream of this dam and historically provided ideal spawning habitat for northern pike.

The Michigan DNR installed an old, denile style fish ladder at the dam in the 1970s, but it never proved successful at passing fish either upstream or downstream. Crews removed the inadequate fish ladder and the headwall of the dam. They placed a series of four rock weirs below the removed headwall to create a rock fish ramp, reducing slope and creating appropriate resting pools for

upstream migration of important native species, particularly northern pike which have been declining in this region. Partners are the Michigan DNR who completed the design, survey, and permit work for this project and the Drummond Island Sportsman's Club who brought this project to our attention and contributed funds.

Susan Wells, Alpena FRO



-USFWS photo by Susan Wells
Potagannissing Dam on the Potagannissing River, within three miles of the Harbor Island NWR in Potagannissing Bay, was replaced by a series of rock weirs to reduce slope and provide resting pools for migrating fish.

River Survey Measures Success

On August 15 biologist Susan Wells assisted student employee Andrea Ania with stream survey work in the Rifle River watershed. They took two stream cross-sections for each of the eight sites, part of a larger project that will aid in determining the effects of restoration work occurring in the Rifle River watershed. Other factors being considered for this project include flow data, temperature data, and fishery data. Ania will be compiling the information as part of her graduate studies.

Susan Wells, Alpena FRO



-USFWS photo by Susan Wells
Alpena Fishery Resources Office staff conducts stream survey work in the Rifle River watershed that will aid in determining the effects of restoration that will occur in the river.

Stream Restored on the Red River in Northern Wisconsin

The Green Bay FRO partnered with the Stockbridge-Munsee Community to restore 2,460 feet of stream on the Red River, the first phase of a project to restore more than a mile of stream damaged by logging operations.

Currently the river in this section is wide and shallow which reduces habitat, promotes higher water temperatures, and reduces sediment transport. Partners reconstructed the channel using natural channel design and stream modification methods and used root wads, tree drops, and boulders to provide instream habitat. The benefits will be a narrower and deeper channel and instream habitat for fish and other aquatic species, which will provide a more natural hydrologic channel for the river. Native brook trout will benefit from the deep pools for cover and riffle areas for spawning substrate which the project created. Tribal managers support restoring brook trout, a culturally significant species.

Stewart Cogswell, Green Bay FRO

Fish and Wildlife Service Works with Partners and Dam Owner to Develop Fish Passage

Throughout this past year, Green Bay FRO staff has been involved in a working group to scope out alternatives and develop a preferred plan for providing needed and effective up- and downstream fish passage at the Menominee and Park Mill dams on the Menominee River, a Wisconsin tributary to Lake Michigan. Members of the work group include representatives from the Wisconsin and Michigan DNRs, National Park Service, River Alliance, the Green Bay Ecological Services Field Office, and the dam owner North American Hydro.

The group meets every other month and communicates regularly to complete assignments and work through the process of planning for and designing feasible means for providing fish passage at these dams. Because these dams also serve as critical barriers to sea lamprey migration, the passage facilities need to incorporate trap and sort facilities capable of selectively passing target fish species such as lake sturgeon, while continuing to block non-native species. Recently the group has worked with Curt Orvis, Fish and Wildlife Service Fish Passage Hydraulic Engineer from the Northeast Region, to develop conceptual drawings for several fish passage devices and facilities capable of meeting all objectives identified by the group. These conceptual plans will be used to estimate costs associated with various options.

Enhanced access by native fish species to historically important habitats, currently or potentially blocked by existing and newly planned barriers, continues to be a needed component to an integrated approach to maintenance, rehabili-

tation, and restoration of native fish populations. Considerations include access and safe passage to critical habitat by all life stages, while precluding passage of undesirable invasive species, such as sea lamprey.

Robert Elliott, Green Bay FRO

Water Flow Alterations Planned to Protect Sturgeon Spawning and Reproduction

The Green Bay FRO, U.S. Army Corps of Engineers, Wisconsin DNR, Green Bay Ecological Services Field Office, and Thilmany Paper Company are collecting data to determine options for providing necessary water flow over habitat used by lake sturgeon for reproduction in the Lower Fox River tributary to Green Bay. Through negotiations with the Federal Energy Regulatory Commission (FERC) and the hydroelectric facility operator Thilmany Paper, the Fish and Wildlife Service was successful in getting an article included in the FERC license that requires a *Sturgeon Protection Plan* to address the need to provide adequate water flow over habitat used by lake sturgeon during their reproduction season. The data collection efforts are in support of plan development.

Water level management within the Wolf River-Lake Winnebago-Fox River drainage basin is a highly regulated process that requires the U.S. Army Corps of Engineers to accommodate a multitude of resource needs and user interests that include hydro-power generation, pleasure boating, fishing, emergent plant restoration, and flood control. Sturgeon returning to spawn in the lower Fox River below the De Pere Dam are often literally getting the short end of the straw, being subject to

whatever variable water flow is left over. This situation often results in the spawning grounds becoming dewatered during egg incubation and larval development. The collection of flow data resulting from operational modifications at the dam, including the selective placement of flash boards and the occasional decrease in electric generation, are being measured to determine options for improving water flow over the spawning grounds during periods of low water flow.

Rob Elliott, Green Bay FRO



-USFWS photo by Rob Elliott

Lake sturgeon spawning in the lower Fox River, Wisconsin. Due to a multitude of resource needs and user interests, this habitat can become dewatered during egg incubation and larval development.

Green Bay FRO Continues Butterfly Creek Culvert Replacement Project

Green Bay FRO continued work in September on a culvert replacement project on Butterfly Creek, a cold-water tributary to the Little Manistee River, one of Michigan's premier trout streams and the sole source of steelhead brood stock for Michigan's steelhead fishery. The crossing of Butterfly Creek and 4 ½ Road contributed significant sediment, degrading both the creek and the Little Manistee River. The project is designed to replace the existing culvert with a larger, longer struc-

ture with a submerged flow line. About 500 feet of asphalt was installed to control runoff and prevent further soil erosion from entering the stream. Diversion outlets and riprap were placed to control erosion and direct road runoff into adjacent areas away from the stream.

The project improved water quality for Butterfly Creek and the Little Manistee River resulting in direct benefits to both fish and aquatic invertebrates.

Stewart Cogswell, Green Bay FRO



-USFWS photo by Stewart Cogswell

A new culvert was placed in Butterfly Creek, a cold-water tributary to the Little Manistee River which is one of Michigan's premier trout streams and the sole source of steelhead brood stock for Michigan's steelhead fishery.

Workforce Management

Hatchery Volunteer Moves on to Permanent Employment

Dan Traynor, who has been part of a partnership between the Michigan DNR Charlevoix Research Station and Jordan River NFH, will begin his professional career next week. Dan, who already has an impressive array of experience for his age, has taken a position as a fish assistant with the Michigan DNR Fisheries Division. He will be part of the statewide Creel Census Program, covering the Port of Grand Marais on Lake Superior and some large inland lakes in the east central portion of Michigan's Upper Peninsula. Dan had been with Jordan River NFH since May. He worked as a volunteer at the hatchery for one day per week in return for affordable housing. During the remainder of his time he worked with the Michigan DNR Charlevoix staff on a variety of Great Lakes research projects. Good Luck Dan, and thanks for the quality work during your stay.

Tim Smigielski, Jordan River NFH



-USFWS photo by Wayne Talo

Dan Traynor, who has been part of a partnership between the Michigan DNR Charlevoix Research Station and Jordan River NFH, will begin his professional career next week as a fish assistant with the Michigan Department of Natural Resources

Cambridge Scientific Abstracts Literature Search Training

Literature search services offered by the Conservation Library at the National Conservation Training Center (NCTC) provide a valuable resource for Fish and Wildlife Service employees seeking published scientific information to help them accomplish the agency's conservation mission. This resource also supports the agency's Science Excellence Initiative and was recently improved by the addition of the Cambridge Scientific Abstracts (CSA) MultiSearch Tool, an on-line service that allows all searchable databases to be queried from one Web interface. Introductory training for this powerful new literature search tool was recently offered during an on-line Web session co-hosted by NCTC and CSA staff with simultaneous participation by 25 agency scientists from offices across the country, including biologist Mark Steingraeber of the La Crosse FRO.

Trainees learned to perform quick and advanced searches, select databases and date ranges

for searching, use Boolean operators and field codes, interpret search results, and save or print search results. Informed use of this powerful tool will enable these agency science professionals to rapidly search and access complete citations and abstracts for published science articles of interest from the convenience of their office or any other Internet-accessible location. Addition of the CSA-MultiSearch Tool to the NCTC Conservation Library Literature Search web page will encourage science excellence in the Fish and Wildlife Service by improving opportunities for agency scientists to access and apply scientific information to conserve fish, wildlife, plants, and their habitats.

Mark Steingraeber, La Crosse FRO

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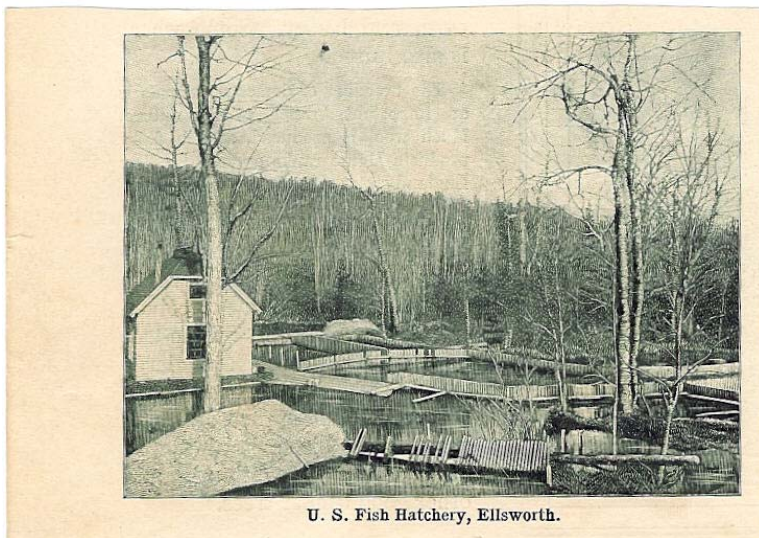
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U. S. Fish Hatchery, Ellsworth.

-Jerry French Postcard Collection; U.S. Fish Hatchery; Ellsworth, Maine

Windows in time

A Glimpse into our Proud Past:

The Ellsworth Fish Hatchery, better known as the Craig Brook National Fish Hatchery, is located in Hancock County, Maine. Established in 1889, the Craig Brook National Fish Hatchery is our nation's oldest salmon hatchery.

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