



Fiscal Year 2007
Vol. 5 No. 3

U.S. Fish & Wildlife Service

Fish Lines

Region 3 - Great Lakes/Big Rivers

Leadership in Conserving, Enhancing, and Restoring Aquatic Ecosystems

Fish Are Breathing A Whole Lot Easier at Pendills Creek National Fish Hatchery

(See the "Feature Story" on Page 5)



-USFWS

Aireal photo of the Pendills Creek National Fish Hatchery

To view other issues of "Fish Lines", see our Regional website at: (<http://www.fws.gov/midwest/Fisheries/>)



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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New Project Leader for the Ashland FRO

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 - Fish Are Breathing A Whole lot Easier at Pendills Creek National Fish Hatchery

Fish are breathing a whole lot easier! Thanks to new water filtration and oxygen supplementation systems now operational at the Pendills Creek National Fish Hatchery. During the 2002 Lake Trout Rehabilitation Program Evaluation, FISHPRO a private consulting firm identified several recommendations for hatchery enhancements that would lead to the Fish and Wildlife Service's desire to produce more lake trout for rehabilitation efforts. The challenge for the Pendills Creek National Fish Hatchery staff was to identify what remedial actions or enhancements would reap the most benefit for the fish, allowing for increased production of very high quality yearling lake trout to aid in rehabilitation efforts.



-USFWS

Eight series of production ponds (raceways) provide sixteen rearing units to raise yearly lake trout at the Pendills Creek NFH. Covers provide shade and protection for the fish.

Pendills Creek NFH was established in 1951 and consists of sixteen fish production raceways. The primary water source for the hatchery is Videan's Creek which produces flows to over 5,000 gpm. Water quality issues were a source of concern even back when the facility was first constructed and over the last 55 years water quality has deteriorated. Since the primary water supply is a natural stream, there is a primary concern over pathogen potential of viruses and bacterial diseases. Wide temperature variation also occurs throughout the year with extremely cold water in the winter to excessively warm water temperatures in spring, summer and fall reaching near lethal limits for cold water fish. Remember, the warmer the water the less capability it has to hold oxygen.



-USFWS

The Videan's Creek intake structure directs water into a hatchery supply pipeline.

Recently, a series of twenty-two beaver dams were inventoried on Videans Creek which allow water to pool up behind them, forming shallow ponds where water temperatures really warm up on hot summer days. Organic silt and sediment also pose a severe issue related to small fish, since this fine silt and debris acts as an irritant on young fish gills allowing secondary infection to occur, increasing mortality rates, adding stress and reducing fish growth.



-USFWS

Beaver dams on Videan's Creek affect the water quality at the hatchery by allowing water to pool up behind them, forming shallow ponds where water temperatures warm up on hot summer days. Excessive silt loads will enter the hatchery water supply if the dam washes out.

Water quality issues needed to be addressed with remedial actions taking place before any increase in fish production could occur. The first stage was development of plans to address the water quality issues; water filtration, water disinfection and oxygen supplementation were identified as enhancement needs. The final plan incorporated several phases of construction and equipment purchases to complete the project. Initially, water filtration by drum filter and low-head oxygenators would be primary enhancements with an additional disk water filtration system and ultra violet-light disinfection system added later.



-USFWS

The new filtration building at the Pendills Creek National Fish Hatchery houses a system to remove most of the organic silt and sediment from the Videa's Creek water supply, prior to entering the fish culture facilities.

The hatchery now has both the drum filter and low-head oxygenators in place and functioning. After some minor mechanical adjustments, water is filtered down to a 40 micron particle size and can boost dissolved oxygen levels easily to 120% supersaturated levels. Although water temperatures can be extremely high, our capability to adjust and boost oxygen levels is helping the lake trout cope better. The water filtration system is removing debris that normally would pass thru our fish helping reduce another stressor upon our fish.



-USFWS

The water filtration system and oxygen supplemental components are now installed to treat the water supply. A water disinfection component and an additional filtration drum will be added when funds are available.



-USFWS

The large drum filter (left) removes sediment and oxygen meters (right) allow hatchery staff to adjust the amount of oxygen that is added to the water before entering the culture ponds.

The addition of another disk filtration system and ultra-violet disinfection system will eliminate more water quality issues and reduce more stressors on our fish. Long term plans consist of working with the U.S. Forest Service, primary land owner and partner, to remove beaver dams and hopefully control beaver populations through biological methods. Once Videa's Creek becomes free flowing, water temperatures will most likely drop down to more normal colder water temperatures conducive to cold water fish.

For additional information about this article and the Pendills Creek National Fish Hatchery contact Curt Friez at:

Phone: 906/437-5231

E-mail: curt_friez@fws.gov

Partnerships and Accountability

Columbia FRO Lends a Helping Hand

Technician Tammy Knecht assisted Jason Dattilo and Patty Herman of the Missouri Department of Conservation (MDC) with pallid sturgeon assessment sampling on the Kansas River, leading the operation of the jet boat crew over a three-day period. Due to extremely low water levels on the Kansas River, the shallow draft jet propulsion boat operated by Columbia Fishery Resources Office (FRO) was needed to safely navigate and avoid hidden danger. Sampling was a success despite adverse weather conditions.

Population assessment crews sample for endangered pallid sturgeon on 2,300 miles of the Missouri River and tributary rivers. Many federal and state agencies work together to conserve native sturgeon population and their cooperative efforts have led to increased knowledge of pallid sturgeon abundance, reproduction, recruitment and distributions along the Missouri River. This partnership with MDC will increase the amount of sampling that can be done when water levels are extremely low.

Tammy Knecht, Columbia FRO



State and Federal Collaboration Continues to Improve Missouri River

Each year, representatives from state and federal agencies involved in pallid sturgeon monitoring on the Missouri River meet to discuss the year's successes and determine whether revisions to the standard protocol are needed. The Pallid Sturgeon Population Assessment and Monitoring Team comprises representatives from the Columbia FRO, four state fish and wildlife agencies, and two other Fish and Wildlife Service offices. The team has been actively sampling with a standardized protocol since 2003; however, 2006 marks the first year of full implementation throughout the entire Missouri River. Along with full sampling coverage, the team now has a centralized database maintained by the Missouri Department of Conservation and a statistician in place to provide recommendations for adaptive management.

Biologists are currently in the process of analyzing results from gear comparisons and pallid sturgeon captures from the past three years to determine whether improvements may be made in sampling protocols and stocking plans. The team captured more than 200 pallid sturgeon basin-wide in 2006 including several juvenile wild fish that are thought to be about three years old. These juvenile captures are an example of the program's successful ability to document new wild production as it relates to the recovery of the species.

Wyatt Doyle, Columbia FRO

Enforcement Sweep Checks Commercial Sturgeon Fishing on the Mississippi River

Columbia FRO provided sturgeon identification assistance for a law enforcement sweep of the Middle Mississippi River. Law enforcement officers from four states, special agents from multiple Fish and Wildlife Service offices, and biologists from the Missouri Department of Conservation and Columbia FRO took part in the operation, which was intended to check commercial sturgeon fishermen and equipment to ensure compliance with regulations. The detail began with introductions, assignment of teams and a presentation by Andy Starostka from the Columbia FRO on identification of Midwest sturgeon species.

Cold temperatures and high winds hampered the detail and caused damage to several boats, and one injury when an officer fell on an ice covered deck and damaged his knee. Because of the inclement weather, few fishermen were contacted on the water, though some nets were found. The operation was still considered a success and will lay the foundation for future law enforcement sweeps of commercial sturgeon harvest on the Mississippi and Missouri rivers.

Andy Starostka and Jeff Finley, Columbia FRO

MICRA Executive Board Winter Meeting Held

Project Leader Tracy Hill attended the winter meeting of the Mississippi Interstate Cooperative Resource Association (MICRA) Executive Board to review the activities of the various subcommittees of MICRA (Paddlefish, Gamefish and Mussel) and plot the direction and course of the group for the coming year. In addition to establishing and approving a working budget for the committees' activities during 2007, the meeting provided an excellent opportunity for MICRA's Executive Board to address Asian carp issues and learn about the National Fish Habitat Action Plan. The meeting participants also spent considerable time discussing the Paddlefish/Sturgeon subcommittee's upcoming annual meeting that will focus on issues related to harvest of shovelnose sturgeon. A multi-agency partnership effort to address fishery conservation issues in the Mississippi River basin is consistent with the core principals of the Fish and Wildlife Service's Fishery Program and is essential to protect, enhance and restore native riverine species in this system.

Tracy Hill, Columbia FRO

Paddlefish Symposium Held at Midwest

Project Leader Tracy Hill attended the Paddlefish Conservation and Management Symposium held in conjunction with the 67th annual Midwest Fish & Wildlife Conference in Omaha, Nebraska. The symposium's purpose was to update Mississippi River basin biologists and managers on the current status and trends of paddlefish populations. Scientists throughout the country provided

new information which has been collected since 1983, when the first paddlefish symposium occurred.

Hill gave a presentation titled *Summary of the National Paddlefish Stock Assessment Project 1995-2004*, highlighting efforts of the Columbia FRO to manage the Mississippi Interstate Cooperative Resource Association national paddlefish stock assessment database. Approximately 100 individuals from state, federal, academic and nongovernment organizations participated in the symposium.

Tracy Hill, Columbia FRO

Results of Sturgeon Studies Presented at Coordination Meeting

Green Bay FRO biologist Rob Elliott contributed as a co-author to several papers presented at the recent Great Lakes Lake Sturgeon Coordination meeting in Sault Ste. Marie, Michigan. This meeting brought together more than 120 lake sturgeon researchers, biologists, and enthusiasts from 40 different state, tribal/first nation, Federal, and provincial governments, universities, and private and other non-governmental organizations. Lead organizers for the meeting were Jim Boase (Alpena FRO), Henry Quinlan (Ashland FRO), Betsy Trometer (Lower Lakes FRO) and Rob Elliott (Green Bay FRO).

Elliott has been coordinating with a number of universities and natural resource agencies on numerous projects over the past several years, and this meeting provided an excellent venue to share results from some of these efforts. Contributed presentations that Elliot co-authored included: *Abundance and mortality of early-life stages of lake sturgeon in the Peshtigo River, Wisconsin; Deter-*

mination of lake sturgeon habitat availability in northern Lake Michigan tributaries: applications to the restoration process; Genetic assignment of open water stocks to rivers of origin and comparative analyses of recruitment in lake sturgeon; Development of Lake Sturgeon Genetic Stocking Guidelines; Historical distribution of lake sturgeon (Acipenser fulvescens) in the Lake Michigan Basin; PIT tag technology, usage, compatibility, and data exchange, and three papers describing lake sturgeon reintroduction efforts using streamside rearing on Lake Michigan rivers.

Further details of these presentations will be available in the meeting proceedings that will be posted on the Great Lakes Lake Sturgeon Web Page at: <http://www.fws.gov/midwest/sturgeon/index.htm>.

Rob Elliott, Green Bay FRO



-USFWS photo by Rob Elliott
Biologist Rob Elliott of the Green Bay Fishery Resources Office holds a juvenile lake sturgeon captured from Green Bay waters of Lake Michigan.

Viral Hemorrhagic Septicemia Crisis Takes Hold

Project Leader Rick Nelson of the La Crosse Fish Health Center (FHC) participated in a Washington, D.C., meeting last December with management and fish health representatives from Regions 3, 5 and the Washington Office. The discussion topic was the fish pathogen Viral Hemorrhagic Septicemia (VHS), and major issues discussed were funding opportunities in FY07, 08, & 09 and time tables for achieving goals; Animal and Plant Health Inspection Service (APHIS) emergency restriction regarding movement of live fish susceptible to VHS; Wild Fish Health Survey improvement and update review of web database; and committee assignments.

Participants included Todd Turner, Region 3 Fish Hatchery supervisor; Rick Nelson, director of the La Crosse FHC; John Coll, director of the Lamar FHC in Region 5; Guppy Blair, Fish Health Biologist and Fish and Wildlife Service liaison to National Aquatic Animal Health Task Force in Region 1; and Washington Office staff Stuart Leon, chief of Hatcheries; Jon Streufert, branch chief of Hatchery Operations and Maintenance; Joe Moran, branch chief of Budget and Performance Management, Deputy Assistant Director for Fisheries Everett Wilson; Robert Bakal, National Aquatic Health Coordinator biologist; and Josh Bradley, Wild Fish Survey Database biologist. Because of the national importance of the VHS issue to the Fish and Wildlife Service and the Great Lakes basin, many of the issues have quick completion dates to be ready for the upcoming field season and the concerns of new outbreaks and the spread of the disease.

Rick Nelson, La Crosse FHC

Fish and Wildlife Service Leads Salmon and Trout Mass Marking Implementation Plan Meeting

Biologist Charles Bronte of the Green Bay FRO arranged and coordinated the first meeting of an Implementation Task Group of the salmon and trout mass marking initiative of the Great Lakes Fishery Commission, to lead an interagency team of federal, state, tribal and provincial biologists tasked with developing a plan to fin clip and/or coded-wire tag all salmon and trout stocked into the Great Lakes. The initiative is being spearheaded by the Council of Lake Committees of the Great Lakes Fishery Commission and is modeled after a similar program that has been underway in the Pacific Northwest for decades. If implemented, this program would bring a wealth of new data on the performance and fate of stocked salmon and trout in the Great Lakes and generate an unparalleled level of cooperation among all management agencies under the umbrella of the Great Lakes Fisheries Commission.

A two-day meeting was held to begin developing the equipment and manpower needs for mass marking/tagging the 30 million trout and salmon stocked annually in the Great Lakes. The tasked group will concentrate on an initial demonstration project to tag all Chinook salmon and lake trout stocked into lakes Michigan and Huron in an effort to develop an unbiased estimate of Chinook salmon natural reproduction and to better tract the performance of lake trout for the rehabilitation effort in those lakes. A funding task group will simultaneously pursue efforts to fund the program for an initial start up cost of around \$7 million and an annual operations budget of \$3 million.

The Council of Lake Committees has endorsed the idea of making the Region 3 Fisheries Program the center of a New Salmon Mass Marking Laboratory that will be responsible for all tagging, database management, tag extraction functions, and support experimental design and data analysis activities, as well as coordinate data recovery operations for the entire Great Lakes Basin.

Charles Bronte, Green Bay FRO

Region 3 Fish Culturists Gather

Fish culturists from offices in the Midwest Region met in mid-December in Sault Ste. Marie, Michigan, to attend the annual Region 3 Fish Culturists Symposia, which highlights the current status of Fish and Wildlife Service production programs across Region 3 and serves as an information exchange for regional fish culturists, biologists, and maintenance personnel associated with hatcheries, fishery resources offices and fish health centers.

Genoa NFH staff presented on several topics including science and technology within Region 3 hatcheries, advances in smallmouth bass culture and fish production pond modifications. Biologists Paul Haver and John Johnston of the Jordan River NFH presented slide shows detailing the specifications for their new fish distribution truck to be delivered this spring and the work done last fall to prepare the *M/V Spencer F. Baird* for hauling fish. The agenda also included speakers from all five of the regional fish hatcheries, Lake Superior State University, and the Chippewa Ottawa Resource Authority.

Roger Gordon, Genoa NFH
Wayne Talo, Jordan River NFH

Aquatic Species Conservation and Management

Fish Marking Begins

Fin-clipping of the 2006 year class of lake trout began the first week of December at Jordan River NFH. All hatchery-reared lake trout released into the Great Lakes must be readily identifiable to differentiate them from wild, naturally-spawned lake trout, which helps researchers assess the success of the Great Lakes Lake Trout Rehabilitation Program. The fin clip pattern changes every year, on a seven-year rotation. This year's clip is a combination clip of the right pectoral and left ventral fins. Most of the lake trout released in 2007 will have this mark, with the exception of a small number of fish to be used for special studies - they will receive a coded-wire tag and an adipose fin clip.

Since every fish that will be stocked into the Great Lakes is individually handled and clipped, this work is time consuming. A crew of seasonal employees, some of whom have been working here for many years, clip fins and tag fish for us. Marking is expected to continue through March.

Wayne Talo, Jordan River NFH



-USFWS photo by Wayne Talo

The right pectoral fin is removed from this cultured lake trout to differentiate this fish from a wild, naturally spawned fish.

Eggs Received for 2007 Trout Year Class

Jordan River NFH began receiving shipments of lake trout eggs in mid-November, from brood stock spawning that occurred during the fall months at three brood stock hatcheries. Eggs are shipped after they have reached the "eyed" stage, when the eye of the developing fish can be seen within the egg. Typically, between 60 and 70 percent of the eggs survive to first feeding, or about six to eight weeks after we receive them. From these eggs, we will raise approximately a million fish to 2.5 inches in length for transfer to the Pendills Creek NFH in the spring. The remaining fish should number slightly more than two million, and we will stock them into lakes Michigan and Huron during the spring/summer of 2008. To meet stocking commitments, various strains of lake trout eggs were received as follows: Lewis Lake Wild strain from Saratoga NFH, Wyoming (3,275,412); Lewis Lake Wild from Sullivan Creek NFH, Michigan (546,639); Superior Apostle Island Wild from Iron River NFH, Wisconsin (791,796); and Seneca Lake Wild from Sullivan Creek NFH (811,674).

Wayne Talo, Jordan River NFH



-USFWS

Lake trout eggs are beginning to hatch after several months in incubators.

Fish and Wildlife Service Discusses Results of Green Bay Cormorant Study

Double-crested cormorant populations in the Great Lakes have grown substantially from the low level of the 1970s. The public and resource managers have become concerned that the increase in cormorant numbers may have detrimental impacts on other natural resources. The Wisconsin DNR, University of Wisconsin and U.S. Department of Agriculture's Division of Wildlife Services conducted a study to determine the diet of the Cat Island cormorant colony in the southern areas of Green Bay. The results of the third year of field work from this study were summarized at a recent meeting and presented by graduate student Sarah Meadows. Biologist John Netto of the Green Bay FRO presented his preliminary results of his analysis to estimate the population abundance of yellow perch vulnerable to cormorant predation. The participants then discussed how best to proceed with the analysis and what additional research might be needed in order to increase the understanding of the role of double-crested cormorant predation on the fish populations of Green Bay.

John Netto, Green Bay FRO

Jordan River NFH Staff Assist with Lake Trout Spawning

Each year lake trout and coaster brook trout brood stock facilities in the Great Lakes basin request assistance for fall spawning operations, and this year Jordan River NFH staff assisted the Iron River and Sullivan Creek NFHs. Biologist Wayne Talo helped out at Iron River NFH the first week in October, while John Johnston provided assistance at Sullivan Creek NFH. Biologist Paul Haver worked at Sullivan Creek the week of October 9. Chris Olds, a Student Temporary Employment Program employee from Jordan River NFH, intermittently traveled from Lake Superior State University to aid in spawning at Sullivan Creek NFH as well.

Tim Smigielski, Jordan River NFH

Growth at the Genoa National Fish Hatchery

Have you ever fed a hatchery rainbow trout? If you have, you know that fish feed disappears like candy on Halloween. Domesticated strains of rainbow trout eat vigorously in captivity, and can grow up to an inch a month; however, wild strains of trout used for restoration programs are often skittish of people, creating feeding challenges. The coaster brook trout reared at the Genoa NFH are often one generation from wild stocks, and therefore do not feed as well when humans are around. In an effort to increase the brook trout's growth, Dan Kumlin and Nick Starzl installed automatic feeders over their rearing tanks. The feeders allow the fish feed to be fed throughout the day with minimal disturbance.

Although the feeders have only been installed for one month, the

average monthly growth rate has increased approximately 25 percent when compared to the historic monthly average. Once stocked, the increased size should enhance the survivability of these rare brook trout, and that's a step toward the successful restoration of this native fish.

Nick Starzl, Genoa NFH



-USFWS

Dan Kumlin tests feeders installed over the coaster brook trout raceways at the Genoa National Fish Hatchery. Preliminary results show a 25% increase in growth compared to the historic average.

Viral Hemorrhagic Septicemia in Great Lakes Watersheds

A new, unwanted visitor is staking claim to the Great Lakes watershed and St. Lawrence River system, leaving numbers of dead and dying fish in its wake. Viral Hemorrhagic Septicemia (VHS), a disease normally associated with Pacific salmon in the northwest and Atlantic cod and other species of the Atlantic Ocean, surfaced in the Great Lakes watershed in 2005, infecting a large number of species previously not known to have been susceptible to the virus. Biologists have found numbers of economically important species of fish to be at risk, including walleye, yellow perch and bass species. Because of

the threat of VHS entering existing aquaculture facilities and impacting captive fish populations, the U.S. Department of Agriculture's (USDA) Animal Plant Health Inspection Service (APHIS) issued an emergency order on Oct. 24, 2006, halting the movement of all fish species listed as susceptible from the Great Lakes states of Minnesota, Wisconsin, Michigan, Illinois, Indiana, Ohio, New York and Pennsylvania. The emergency order was in place until proper and safe methods of safeguarding captive populations of aquatic animals are determined, and to prevent out-of-basin transfer of VHS.

The initial emergency order affected Genoa NFH's endangered mussel recovery program, which transfers fish species listed as susceptible to VHS to states such as Iowa, Minnesota, Wisconsin and Illinois with mussel larvae attached to their gills. Though Genoa's fish originate from the Upper Mississippi River watershed, the order is based on state geographic boundaries, leading to a shutdown. The hatchery has been involved in mussel recovery since 2000, with millions of federally endangered Higgins' eye pearl mussel and winged mapleleaf mussel juveniles released.

After consultation with many state conservation agencies and other affected parties, APHIS amended its initial ruling on November 14, allowing for fish transfer to proceed, as long as adequate fish health sampling occurs. Genoa is working with the La Crosse FHC to ensure that all hatchery fish populations are tested so that spring river brood stock collections and mussel work can proceed.

Another aspect of the VHS threat has been raised as Genoa NFH's Great Lakes rehabilitation activities are affected. The station

operates an isolation building to keep hatchery fish populations separate from wild eggs and resulting fish.

Wild fish are used to bolster the genetic potential of captive brood stocks or develop new captive strains. These fish are brought in and tested on three different inspection periods before clearing them, to be assimilated into captive brood stock populations at other hatcheries. This ensures that no disease such as VHS enters the hatchery and causes fish losses. In the past, coldwater species were isolated only from coldwater species, with the resulting effluent entering ponds where warmwater species of fish are raised. Because of VHS's infectivity to many species, plans to update Genoa's isolation facility to a quarantine facility with disinfected hatchery effluent are underway.

La Crosse FHC staff

Article on Remnant Lake Sturgeon Genetics Published

Green Bay FRO biologist Rob Elliott co-authored a recent journal article in the "Transactions of the American Fisheries Society" that describes the genetic characteristics and structure of remnant lake sturgeon populations in the Upper Great Lakes. The reported results have significant implications for methods selected for rehabilitation of this species in the Great Lakes, and represent a significant amount of cooperative work by a number of agencies, institutions and researchers across the upper Great Lakes.

As reported in the paper, there is evidence that remnant lake sturgeon populations in the upper Great Lakes basin are spatially genetically structured. Most populations were found to differ significantly from one another,

strongly suggesting that each is a reproductively separate group, most likely due to strong natal fidelity and associated homing at the time of spawning. Among the 11 populations studied, population assemblages of greater similarity were evident and corresponded to general basin of origin and watershed. Despite the dramatic declines in abundance and distribution of lake sturgeon over the last 150 years, genetic diversity in these remnant Great Lakes populations remains high, and there is no evidence suggesting population bottlenecks or genetic drift have contributed to losses in diversity or influenced the observed population structuring. This is likely due to the species longevity and intermittent spawning behavior having buffered them from genetic losses over the relatively short time period since their decline (approximately five generations).

This work has provided an important foundation of information for the ongoing development of genetic conservation and related stocking guidelines for lake sturgeon in the Great Lakes that will help guide future rehabilitation actions and efforts. Conserving the current genetic diversity should be an important objective of ongoing and future rehabilitation efforts that focus on increasing abundance of these remnant populations and reintroducing populations to waters where they have been extirpated.

Pat De Haan, past graduate student at Michigan State University, was lead author on this paper and used this work as part of his Masters thesis. De Haan worked out of the Green Bay FRO for two summers with Elliott on this project, and is employed at the Abernathy Fish Technology Center in Washington State.

Rob Elliott, Green Bay, FRO



-USFWS photo by Rob Elliott

Spawning lake sturgeon in the lower Fox River, Lake Michigan.

Lakers of the Fall Stocked

Last fall, Iron River NFH with assistance from Pendills Creek and Jordan River NFH's planted approximately 383,000 fingerling lake trout that were reared at the Iron River NFH. The fall fingerlings were loaded onto fish distribution trucks, driven many miles and stocked at dusk in several sites around Lake Michigan. The stocking locations were determined with the assistance of the Green Bay FRO. These fall-planted lake trout helped fulfill requirements set by the 2000 *United States vs. Michigan Consent Decree* and contributed to lake trout rehabilitation efforts in Lake Michigan.

Steve Redman, Iron River NFH

Pallid Sturgeon Captures on the Missouri off and Running

The endangered pallid sturgeon monitoring season got off to a great start. Every winter, Columbia FRO staff sets approximately 30,000 feet of gill and trammel nets on the lower 250 miles of the Missouri River for the Pallid Sturgeon Population Assessment Project. Unseasonably warm weather in December provided field crews with an opportunity to work without the dangerously cold temperatures typically associated with winter sampling. We are lucky that we added several new technicians in 2006. They were all eager to see their first pallid sturgeon and more than willing to brave cold mornings on the river. As luck would have it, technicians Lee Erickson, Tammy Knecht and Derek Eisenbrei, along with volunteer Chris Clemens saw multiple pallid sturgeons in their first week of gillnetting. They captured six pallid sturgeon in December.

A large pallid sturgeon was pulled onto the deck of the boat on one memorable morning in December. The fish was quickly removed from the net and placed in a holding tank. Biologist Andy Plauck knew that a pallid about that size was captured very close to that location last year. A quick scan of the uniquely numbered PIT (passive integrated transponder) tag proved it to be the same fish. Pallid sturgeon #460E3A112D was captured in January 2006 behind the exact same wing dike. The fish had grown about a half inch and gained more than half a pound. Could the recapture of this sturgeon in the exact location and about the same time of year be an indication of a specific habitat preference for pallid sturgeon? Ongoing cooperative research with

the U.S. Geological Survey in pallid sturgeon telemetry tracking may confirm some of our observations and suspicions about habitat selection and preference. With discoveries such as this one, we hope to increase our understanding of the Missouri River ecosystem and aid in the recovery of this endangered species.

Because this pallid sturgeon was of hatchery origin, stocked by the Missouri Department of Conservation in the early 1990s, this fish could not be used for brood stock. Field crews all along the Missouri River are actively looking for wild fish for artificial propagation as a tool to keep the species around until we can determine how to recover self-sustaining populations and promote natural reproduction. Hatchery fish can not be used repeatedly for brood stock, to avoid swamping the genetic pool with related fish. Columbia FRO anticipates catching wild pallid sturgeon later this spring for hatchery use.

Andy Plauck, Columbia FRO

Ice Storm Hits Southwest Missouri and Neosho NFH

A devastating ice storm hit the southwest corner of Missouri in mid-January, destroying thousands of trees and collapsing power lines all over the area, including Neosho NFH. The storm has been recorded as the worst in many years, leaving some areas without power for almost two weeks.

The trees at the Neosho NFH were devastated, but the fish are fine. A back-up natural gas generator allowed the production operation for the many pounds of rainbow trout for mitigation programs for Lake Taneycomo to carry on as usual. The endangered Pallid Sturgeon Recovery Program for the lower Missouri River was secured by back-up gravity flow water that allowed everything to proceed as normal.

The staff at the hatchery was not as fortunate, with power outages lasting up to eight days at our homes. This will be a storm that will be remembered for a long time with major clean-up and major funding needed for the process.

David Hendrix, Neosho NFH



-USFWS photo

The Neosho National Fish Hatchery experienced a devastating ice storm. The tree in the background was planted by the Boy Scouts in the early 1990's and was destroyed along with thousands of trees throughout the Neosho, Missouri area.

Aquatic Invasive Species

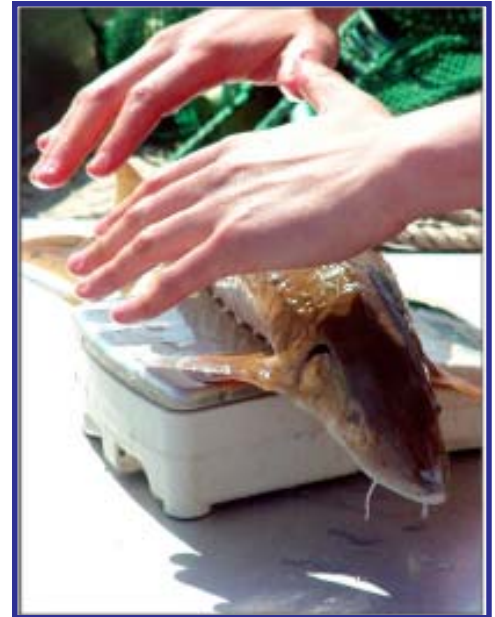
Ruffe Reduction Experiment Benefits Sturgeon Study

The Ashland FRO and the Upper Great Lakes Management Unit of the Ontario Ministry of Natural Resources (OMNR) continue to investigate the feasibility of bottom trawling to reduce an abundant invasive ruffe colony in the Kaministiquia River, Ontario, a tributary of Lake Superior. Biologists believe that a high density of midge fly larvae—also referred to as tubiflex worms—in this site is attracting the ruffe as well as native lake sturgeon. A total of 4.7 hours of trawling effort in 2005 and 2006 has netted 6,837 adult ruffe and 14 juvenile lake sturgeon. OMNR is coordinating with Ontario Hydroelectric in a water flow project that allows adult lake sturgeon to access a known spawn-

ing site upriver from the ruffe reduction site. OMNR reported that 9 out of the 11 sturgeon captured during the 2005 ruffe reduction were likely spawned in this upriver site in 2004.

If ruffe reduction in the Kaministiquia River proves feasible, the juvenile lake sturgeon by-catch from future ruffe reductions would aid OMNR in establishing an index of juvenile sturgeon abundance, a useful monitoring tool during years in which a water drawdown prevents sturgeon access to their spawning site. At least one five-day continuous trawling effort is required to assess the feasibility of an effective long term ruffe reduction in this site. Ashland FRO and OMNR are coordinating this trawling effort.

Gary Czypinski, Ashland FRO



-USFWS

Juvenile lake sturgeon by-catch, during trawling operations to reduce invasive ruffe numbers, will be used to establish an index of juvenile lake sturgeon abundance in the Kaministiquia River, Ontario.

“Nuisance Fish” Video Available

The La Crosse FRO is currently distributing the video “Nuisance Fish,” produced by Bill Dance and the Tennessee Wildlife Resources Agency. This six-minute production focuses on the invasive Asian carp and works well at school presentations, recreation shows, natural resource group meetings, and for anyone concerned about aquatic resources on the Mississippi River watershed and the Great Lakes.

For copies, contact the La Crosse FRO at:

555 Lester Avenue
Onalaska, WI 54650
(608) 783-8434 (Phone)
(608) 783-8450 (Fax)

Heidi Keuler, La Crosse FRO

Public Use

Brood Stock Hatcheries Retire Excess Lakers

Staff from the Iron River and Sullivan Creek NFH's loaded excess lake trout from many different strains and year classes and headed for several lakes throughout the area. With the approval of the Michigan DNR and Ashland FRO, crews stocked fish from the Iron River NFH into lakes Roland and Independence—both in the Upper Peninsula of Michigan—with approximately 900 Superior Apostle Island strain retired brood stock. In addition, the Keweenaw Bay area of Lake Superior received about 260 adults of the Superior Traverse Island strain and Beaver Dam Lake in northern Wisconsin received 500 adults of both brood stock strains. The lake trout averaged between 16 and 30 inches in length and weighed between 2 and 12 pounds. Each fish had a strain specific fin clip for identification.

In addition, Jordan River NFH biologists John Johnston and Tim Smigielski assisted John Shuman of the Pendills Creek NFH in hauling excess adult lake trout out of Sullivan Creek NFH. About 300 fish of multiple species, whose best years were behind them, were stocked in Gull Lake in Kalamazoo County, Michigan. This stocking was coordinated with Michigan DNR fisheries staff.

These large fish were stocked because the brood stock rearing facilities had reached capacity and younger fish were ready to take over. The reduction of fish greatly improves the rearing capacity at the hatcheries, while supplying exceptional recreational opportunities for the public.

Steve Redman, Iron River NFH

Tim Smigielski, Jordan River NFH



-USFWS

Biologist Kurt Schilling releases large lake trout into Beaver Dam Lake. The fish are no longer needed as brood stock, but will create a fantastic recreational fishing opportunity.

Upper Mississippi River Presentation Delivered

Upper Mississippi River Conservation Committee (UMRCC) coordinator Scott Yess gave a presentation describing the History, Form and Function of the UMRCC to the Mississippi River Citizens Committee. This group tracks issues concerning the river along the Minnesota/Wisconsin border. The group followed the presentation with several good questions.

Scott Yess, La Crosse FRO



Jordan River Biologist Teaches Cubs How to ID Fish

This is how it happens. You innocently go to your son's science lab as a volunteer instructor. The dad at the next table asks, "So what do you do for a living?" He happens to be the local scout master. An exchange of cards, one email, and we've reached 45 more people with our stories. The scouts have their meetings in the evenings and it's too dark for a full blown tour of the Jordan River NFH at that time. So, Tim Smigielski went 20 miles down the road to Gaylord, Michigan, on December 21 and gave a presentation for the boys and parents called "How to Identify Great Lakes Trout and Salmon." He also discussed lake trout rehabilitation and sea lamprey control. The scouts and parents really enjoyed this educational opportunity and have planned a hatchery tour in March.

Tim Smigielski, Jordan River NFH

Brownies Buzz in the Lab

Brownie Troop 893 visited the Columbia FRO in December to catch a glimpse of the laboratory duties of a biologist. The group is led by Elizabeth Wilson, a teacher at our neighboring school, Paxton Keeley Elementary. The girls began their afternoon adventure with a slide show of fish found in the Missouri River and moved to the lab, where they took a look at juvenile sturgeon under microscopes. They also aged fish by looking at annuli rings in their scales, assembled a fish identification puzzle and made fish print t-shirts using a sturgeon mold. The young ladies enjoyed their afternoon in the lab and were abuzz with excitement and discovery. Their experience can best be summed up by a quote from one budding young scientist, "Looking at stuff under the microscope makes me feel like a smart grown up."

It is never too soon to plant the seeds of natural resource conservation in the minds of our youth. These young ladies, though only in single digit grades, may well remember the lab experience at the Columbia FRO when applying for college in the future.

Jeff Finley, Columbia FRO



-USFWS photo by Jeff Finley

A Brownie holds a young sturgeon during a laboratory visit to the Columbia Fishery Resources Office.

Toy Drive is a Success at Ashland FRO

Ashland FRO, along with the National Park Service Great Lakes Network Office and U.S. Geological Survey Lake Superior Biological Office, teamed up and collected toys for the annual Ashland Firefighters "Toys for Tots and Teens" program. This is the fifth year the offices have contributed to this worthy program. Toys collected through this program are distributed throughout the surrounding Ashland – Bayfield - Iron counties area. This toy drive is in its 24th year in the area and is able to give presents to 500–700 kids annually.

Glenn Miller, Ashland FRO



-USFWS

The Ashland Fishery Resources Office, National Park Service, Great Lakes Network Office and U.S. Geological Survey Lake Superior Biological Office teamed together for an annual toy drive.

New Look for Fish Lines, Region 3 Fisheries Web Page

Frunk Stone (Ashland FRO) and Jeff Finley (Columbia FRO) met with Regional Office employees Karla Bartelt and Dave Radloff to discuss updates to the look of the *Fish Lines* newsletter and the Fisheries Internet Home page. The team also drafted recommendations on marketing the Region 3 Fisheries Program for greater visibility. Our suggestions included enhancing the look and feel of *Fish Lines* in order to broaden our audience, revitalization of Region 3 Fisheries website to update content, plus overall marketing strategies.

Currently, *Fish Lines* is geared toward Fish and Wildlife Service and stakeholders; however, the publication has the potential to be more than that. By providing guidance to the field on writing style and content, we hope to provide more reader-friendly articles that will be viewed by a large, diverse audience. The group also identified an approach to revitalize the Regional Fisheries website that will expand on the content and ease navigation to all the relevant sites. Although time lines are still being developed, the team hopes to have the new look for the *Fish Lines* newsletter and the Fisheries web site by April 2007.

Frank Stone, Ashland FRO

Cooperation with Native Americans

Grant Assistance Requested from Chippewa Indians

Tribal Wildlife Biologist Mike Schrage from the Fond du Lac Indian Reservation and Tribal Fisheries Biologist Paul Christel from the Lac Courte Oreilles Band of Lake Superior Chippewa requested that the Ashland FRO review and comment on a draft Tribal Wildlife Grant (TWG) project for 2007. Biologist Frank Stone reviewed the draft documents and discussed the project proposals with Schrage and Christel.

The Fond du Lac project would establish funding for extensive moose field research in northeast Minnesota. The band is seeking \$199,706 from the TWG Program to continue monitoring and improve their understanding of the causes of mortality and survival rates of this important moose herd. The band is conducting this research in partnership with the Minnesota DNR and the 1854 Treaty Authority, representing the Bois Forte and Grand Portage Bands of Lake Superior Chippewa.

The Lac Courte Oreilles Conservation Department is proposing to initiate restoration activities for several coldwater stream habitats on the reservation. The proposed project would protect and enhance stream habitat on the reservation by removing barriers to fish passage, re-establishing shoreline vegetation through the planting of desired species, and by installing in-stream structures to increase cover and spawning areas for native brook trout.

Tribal resource programs throughout the United States will receive financial help in 2007 to initiate projects ranging from base

line data collection and habitat restoration to the control of invasive plant species. The TWG and Tribal Landowner Incentive Program (TLIP) provide new funding opportunities to tribes for activities that protect and restore habitats that will benefit fish and wildlife species of tribal significance. TWG grants also support the efforts of tribal governments to develop or augment the capacity to manage, conserve, or protect fish and wildlife species of concern through the provision of additional funding and technical support.

Frank Stone, Ashland FRO



Graveyard Creek Channel Restoration Complete

The recently completed Graveyard Creek Channel Restoration Project restored, enhanced and protected instream fish and wildlife habitat and riparian areas on this northern Wisconsin creek. Historic logging and associated beaver activity contributed to the decline of natural habitat. The unnatural abundance of young forest altered the channel of Graveyard Creek, causing an excessively braided condition,

which degraded the habitat for native brook trout.

The habitat restoration and enhancement was performed by incorporating and installing brush bundles and other instream fish habitat structures into the stream channel to restore the stream to its historic channel and reduce erosion into Graveyard Creek and Lake Superior. This project benefited brook trout and other aquatic species on Graveyard Creek, a Lake Superior tributary located on the Bad River Indian Reservation in Ashland County, Wisconsin. The Bad River Tribe, Natural Resources Conservation Service and Ashland FRO Partners for Fish and Wildlife Program contributed to this project.

Ted Koehler, Ashland FRO



-USFWS

Brush bundles and other instream fish habitat structures were placed into Graveyard Creek to restore and enhance habitat. The site is on the Bad River Indian Reservation in Ashland County, Wisconsin.

Leadership in Science and Technology

Growing Research Partnerships: A Sure Sign of Success

Genoa NFH partnered with the Department of Environmental and Molecular Toxicology at North Carolina State University in 2006 by providing freshwater mussels to complete a project for the U.S. Environmental Protection Agency (EPA). While the findings of this EPA study are not yet published, the results left researchers questioning how long mussels can “clam up” to avoid exposure to chemicals and pollutants.

As a self-preservation mechanism, freshwater mussels will completely close their shells when exposed to harmful concentrations of chemicals and pollutants. In essence, mussels will “hold their breath” as long as they can or until the chemical exposure has passed. Greg Cope from the university contacted Genoa NFH staff requesting 90 additional yearling mussels to conduct experiments to answer these avoidance questions. Braving the first extreme cold snap of the year, hatchery divers suited up and jumped into the Mississippi River at Dubuque, Iowa, to collect 90 fatmucket mussels that the hatchery was culturing in floating cages at the National Mississippi River Museum and Aquarium’s Ice Harbor. The mussels were returned to Genoa NFH and inspected for invasive zebra mussels. Any zebra mussels were removed before the fatmuckets were shipped. At the last report, the mussels arrived in North Carolina healthy and happy. Genoa NFH may provide the university with mussels in 2007 to further expand their EPA work.

Tony Brady, Genoa NFH



-USFWS

Jars are used to hold native mussels that are undergoing toxicity testing at the Department of Environmental and Molecular Toxicology at North Carolina State University.

Partnering with Ohio on VHS

The La Crosse FHC was assisted by the Ohio Division of Wildlife in late October in determining whether Viral Hemorrhagic Septicemia (VHS) could still be detected in the waters of Lake Erie. VHS was isolated this spring following a large fish kill on the lake.

Fish samples were necropsied at the Sandusky Division of Wildlife Office. The species which were examined included emerald shiner, yellow perch, white perch, freshwater drum, steelhead, gizzard shad, white bass, walleye and rainbow smelt. In addition to VHS testing, the fish were also screened for bacterial and parasitic infections. Results are pending.

Eric Leis, La Crosse FHC



-USFWS

Eric Leis of the La Crosse Fish Health Center samples fish from Lake Erie to determine whether Viral Hemorrhagic Septicemia can still be detected in the lake.

Wild Fish Samples Tested for Virus

On Jan. 9, two lots of rainbow trout were tested for Viral Hemorrhagic Septicemia (VHS) by Kristen Dziubinski and Ryan Katona in the La Crosse FHC. The presence of VHS was tested by removing tissue samples from the kidney and spleen of rainbow trout. The samples were then stomached, and diluted with HBSS, an antibiotic. Chinook salmon cells and EPC (epithelial papilloma of carp) cells were then inoculated with the diluted fragments. These cell lines are used to monitor for VHS and the cells will be screened for up to 28 days. After the kidney and spleen samples were taken from rainbow trout, they were taken to the Environmental Protection Agency lab in Duluth, Minnesota, for further testing.

Kristen Dziubinski, La Crosse FHC

Ashland FRO Vessel Fleet and Assessment Activities Summarized

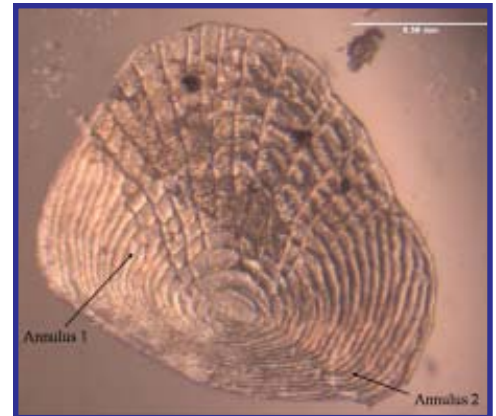
Ashland FRO staff summarized the Great Lakes vessel and assessment capabilities for the station as part of a region-wide compilation of this information. Ashland FRO has three vessels dedicated to Lake Superior fishery assessment: the *R/V Chub*, a 29.5-foot gill net vessel; the *Northern Shoveler*, a 26-foot vessel capable of conducting bottom and mid-water trawling; and the 20-foot vessel *Shiny*, outfitted for trawling in embayments and estuaries of the Great Lakes. Combined, these vessels and associated crew spend up to 110 days on the water each year conducting surveys that contribute to management and harvest limits for lake whitefish, rehabilitation of lake sturgeon and coaster brook trout, research of lake trout morphometric diversity, abundance and distribution of siscowet lake trout, and surveillance of ruffe and other aquatic invasive species.

Henry Quinlan, Ashland FRO

Columbia FRO Compiles Missouri River Chub Ages

Columbia FRO biologist Jennifer Johnson and technician Lee Erickson are nearing the completion of a three-year chub ageing project. More than 1,350 chubs were collected throughout the Missouri River from Montana to Missouri over three seasons for age and growth analysis. Johnson and Erickson aged each scale independently by placing the scales between two glass slides and examining them through a microfiche reader. In instances where the assigned age was different between the two readers, scales were read a second time by both readers. After the scales were aged, technician Brian Elkington measured growth between the scale annuli using software which allows a color digital camera connected to a dissecting scope to capture images of the scale and display them on a computer screen. Age and growth data will be summarized in a three year report for the Missouri River Pallid Monitoring program. Growth differences between years and throughout the Missouri River will give biologists information to relate to environmental factors affecting native river species.

Jennifer Johnson, Lee Erickson, and Brian Elkington, Columbia FRO



-USFWS

This is a scale of a two year-old sturgeon chub. The two annuli are marked.

Aquatic Habitat Conservation and Management

Cunningham Wetland Restoration Project Accomplished

The Cunningham wetland restoration project was completed during the summer of 2006, restoring 2.1 acres of wetlands and enhancing 2.3 acres of upland grass waterfowl nesting cover through a deferred haying/grazing agreement. The restoration took place on former agricultural land in Ashland County, Wisconsin. A Habitat Development Agreement was signed to protect the restored area for 10 years.

Species benefiting from the habitat restoration and protection project include migratory waterfowl such as wood duck and American black duck, and migratory songbirds such as wood thrush and yellow warbler. Prior to and during construction this summer, a female American black duck and brood were observed multiple times on a wetland site on the same property which was restored two years prior. The landowner, Ashland Bayfield Douglas Iron - Land Conservation Department and the Ashland FRO, were all partners on this project. Funding from the Fish and Wildlife Service was provided through the Partners for Fish and Wildlife Program.

Ted Koehler, Ashland FRO



-USFWS

The Cunningham wetland restoration project in Ashland County, Wisconsin, was completed in 2006. It consisted of one restoration site totaling 2.1 acres and 2.3 acres of upland grass waterfowl nesting cover.

Green Bay FRO Contributes to Bridge Replacement Project

The Green Bay FRO worked cooperatively with the Oconto County, Wisconsin, Highway Department, Wisconsin Department of Transportation and the Wisconsin DNR to replace the only bridge on Messenger Creek, a state-designated, class-one trout stream supporting natural reproduction of native brook trout. The bridge was more than 50 years old and needed replacement as the surface and structures were in poor condition and required continuous maintenance.

Initial cost estimates suggested a 150-foot culvert was the most affordable option. After consultation with environmental professionals, Oconto County decided to build a new bridge instead of a culvert, at a substantially higher cost, to better accommodate fish passage. Due to the higher cost, additional funding sources were needed. Oconto County Highway Department searched for additional funding sources from variety of agencies until the final cost was covered. The decision to build a bridge instead of a culvert will

have direct positive impacts by allowing uninhibited fish passage to all five miles of the coldwater trout stream.

Stewart Cogswell, Green Bay FRO

Winter Electrofishing – It's Shocking!

Staff from La Crosse FRO and Genoa NFH, along with several volunteers, assisted the Wisconsin DNR on a study to document centrarchid (sunfish family) wintering habitat locations and quality. Crews electrofished from boats to collect fish, and took lengths for all centrarchids along with a count for non-target species. Wisconsin is working with Minnesota and Iowa to collect data on their portion of the Upper Mississippi River. The concept of over-wintering habitat as a limiting factor to centrarchid populations has been documented in some pools of the Upper Mississippi. River managers are working hard to determine the extent of the problem. This information will help managers target and propose habitat projects that could provide wintering habitat which would increase populations.

Scott Yess, La Crosse FRO

Group Meets to Plan Improvements to Effluent Management

Cleaning effluent water from the Jordan River NFH currently passes through a settling basin system before it reaches the Jordan River, slowing down the flow of waste-laden water so that solid particles can settle out and be retained, rather than pass through to the river. This system has been in place since the mid-1970s. The Fish and Wildlife Service contracted with FishPro, an aquaculture consulting group, to propose

improvements to the Great Lakes Lake Trout Rehabilitation Program facilities and produce a basic design for improvements to our settling basin system.

Craig Swedenborg of the Engineering Division visited the hatchery on December 19 to discuss the rehabilitation work to be done on our effluent treatment system. He toured the proposed construction site and received input from staff regarding additional features we would like incorporated into the design.
Wayne Talo, Jordan River NFH



-USFWS

The effluent basin at the Jordan River National Fish Hatchery settles out waste solids from fish culture operations, minimizing the impact on the Jordan River.

New Procedures in Place to Rank Low-Water Crossings in Darter Range

Biologists Joanne Grady and Nick Frohnauer met with Missouri Department of Conservation (MDC) biologists, stream specialists and Niangua darter researchers to assess data collected from low-water crossings throughout the range of this threatened fish. The group examined data collected from 54 road crossings over streams within the darter range to determine whether they were jump barriers, velocity barriers or behavioral barriers for the darter. Jump barriers were any culverts perched above the water level. Velocity barriers are tentatively defined as culverts

with velocities exceeding two feet per second. Behavioral barriers exist at crossings with culverts in the water but at some distance from the stream bottom, as darters are benthic fish without swim bladders. This analysis, in combination with Niangua darter population information gathered by MDC, will be used to rank crossings and watersheds for structure replacement projects. A new index proposed at this meeting, Percent Passable Face, for use where wetted culverts do not present a jump barrier to the darter, divides the sum of the culvert width corrected for percent blockage by the length of the crossing. It is theorized that the smaller this number, the harder fish will have to work to find the culvert opening.

Joanne Grady, Columbia FRO



-USFWS photo by Casey Bergthold

Biologist Nick Frohnauer of the Columbia Fishery Resources Office takes measurements of a culvert at a fish passage site for the Niangua darter crossing inventory.

Missouri River Agency Coordination Team Meets

Biologist Jennifer Johnson attended the quarterly meeting of the Missouri River Recovery Agency Coordination Team in Omaha, Nebraska. The meetings are intended to brief state and federal agencies on the progress of this program. Under the Missouri River Fish and Wildlife Mitigation Project, the U.S. Army Corps of

Engineers has restored and developed a variety of aquatic and terrestrial features in the Missouri River and its floodplain to enhance habitats for fish and wildlife. Monitoring will enable the team to determine whether the mitigation sites are performing as expected. Columbia FRO continues to partner with state agencies to conserve and increase native fish populations in the Missouri River and to identify and take appropriate actions that will help achieve desired resource goals and outcomes.

Jennifer Johnson, Columbia FRO

Cartersville FRO Continues Work on Stone Dike Alteration Project

Man has altered the Mississippi River; one of the most obvious modifications is the gauntlet of stone wing dikes that constrict the river to a deep and relatively straight shipping channel. The creation and maintenance of this shipping channel has allowed for high volume commercial barge traffic. Unfortunately, modifications such as wing dikes have also altered natural fish habitat; and as a consequence, many of the islands, side channels, and shallow water habitats have vanished. Alteration of stone wing dikes is viewed as one way to increase diversity of important aquatic habitats while still maintaining a navigable shipping channel, a compromise of sorts between ecological and economical interests.

Cartersville FRO is in the midst of a project that will ultimately evaluate the effects of dike alterations on the fish communities of the Middle Mississippi River. Cartersville FRO is in the second year of pre-project monitoring for this U.S. Army Corps of Engineers-funded Stone Dike Alteration Project. Cartersville FRO biolo-

gists Caswell, Echols and Wrasse continued winter fishery sampling on the project in December. The biologists used a variety of gears (gill nets, hoop nets, electrofishing, trawling, and mini-fyke nets) to sample the fish communities of both the experimental site and the control site. Sampling throughout the year allows biologists to see how fish communities use habitat seasonally.

Colby Wrasse, Carterville FRO



-USFWS photo by Colby Wrasse

Biologist Nate Caswell hands over a flathead catfish to Rick Echols. The fish was collected on the Mississippi River during gill netting as part of the Stone Dike Alteration Project.

Carterville FRO Submits Draft Report for the Stone Dike Alterations Project

Carterville FRO completed a draft of the first report for pre-project monitoring of the fish community in the Herculaneum reach of the Middle Mississippi River for the Stone Dike Alterations Project. The U.S. Army Corps of Engineers' St. Louis District is planning a project that will alter the configuration of dike fields in this reach to restore some habitat diversity in the river. Notching wing dikes and constructing chevron dikes will create island and side channel habitat that this reach is lacking.

From July 2005 through June 2006, Carterville FRO surveyed the fish community in this reach to obtain baseline data for evaluating potential benefits of restoration for the fish community. Using a suite of fishery gears (electrofishing, mini-fyke nets, hoop nets, gill nets and trawling), crews captured a wide range of species. Surveys were also conducted at a similar "control" reach located near Trail of Tears State Park in Missouri. This will help to determine whether changes in the fish community are systemic or the result of restoration activities. Carterville FRO completed a report covering this first year and submitted it to the U.S. Army Corps of Engineers and Missouri Department of Conservation for review. The report is in revision.
Nate Caswell, Carterville FRO

Carterville FRO Attends Agricultural Landscapes Workshop

Biologist Nate Caswell attended the Managing Agricultural Landscapes for Environmental Quality Workshop in Kansas City, Missouri, in October 2006. The workshop was hosted by the Soil and Water Conservation Society, with the primary objective of "fostering discussion among scientists and technicians working to quantify the environmental benefits of conservation practices on agricultural land at landscape or watershed scales." The workshop included sessions on resource assessment, research methods, targeting and realistic expectations of conservation activities. These topics are becoming more relevant to the Fish and Wildlife Service as we shift toward smaller focus areas and take a watershed-level approach to habitat conservation and restoration. They are especially relevant to Carterville FRO, as the primary land use in much of the geographic area covered by our office (Illinois, Indiana, and Ohio) is agriculture.
Nate Caswell, Carterville FRO

Workforce Management

New Project Leader for the Ashland FRO

We are very pleased to announce the selection of Mark Brouder as the new project leader for the Ashland FRO. Mark joins us from Region 2 where he has worked as the assistant project leader for the Arizona FRO for the past 2 1/2 years. During that time he helped develop cooperative conservation efforts throughout the Southwest with state, local and private agencies to improve protection efforts for natural resources. His work focused on restoring the threatened Apache trout and the endangered humpback chub, bonytail chub, and razorback sucker.

Mark also has a long history of working with many Native American tribes and with private landowners throughout Arizona to improve fish populations and aquatic habitats. Prior to working with the Fish and Wildlife Service at the Arizona FRO, Mark held various biologist positions for the state of Arizona where he studied the effects of the Glen Canyon Dam on endangered humpback chubs in the Colorado River. Most recently, Mark served on the Science Advisory Team for the National Fish Habitat Partnership. Mark brings a lot of technical and management expertise, along with many demonstrated leadership skills, to Ashland.

Mark grew up in Chicago and holds a Master's degree in fisheries from Murray State University in western Kentucky and Bachelor of Science degree in fisheries from Southern Illinois University. He is an avid outdoorsman and is looking forward, along with his wife Brenda and their two-year-old

daughter, Emma, to spending many a fine day enjoying the bountiful fish and wildlife resources in northern Wisconsin and Minnesota. Mark will join our great staff on Feb. 19 and will be a great asset to Region 3, and especially to our efforts in the Great Lakes basin. We are excited to have him join our team.

Frank Stone, Ashland FRO



-USFWS

Mark Brouder is the new project leader at the Ashland Fishery Resources Office (FRO). He transferred from the Arizona FRO.

New Hatchery Volunteer on Board

Nathan Skop is one of the newest volunteers at Jordan River NFH. Nathan is from East Jordan, Michigan, and graduated from East Jordan High School in 2001. He attended Kalamazoo Valley Community College, then transferred to Western Michigan University where he studied biology. While at Western, Nathan worked in an Environmental Studies Research lab studying the effects of disease organisms on aquatic invertebrate populations. Nathan graduated from Western Michigan in December 2005 with a major in biology and a minor in chemistry. In the spring of 2006, he began working as a seasonal

employee for the Sea Lamprey Control program. Nathan began volunteering at the Jordan River NFH in December, looking to gain experience and an understanding of how a hatchery operates.

Nathan Skop, Jordan River NFH



-USFWS photo by Wayne Talo

Jordan River National Fish Hatchery volunteer Nathan Skop sample-counts lake trout eggs.

Honor Student Volunteers at Jordan River NFH

Emily Heinzmann is a college senior who volunteers at Jordan River NFH. She was raised in Gaylord, Michigan, and graduated from St. Mary Cathedral High School as valedictorian in 2003. This fall she will begin her fourth year as an honor student at Colorado State University, where she is majoring in wildlife biology and minoring in fisheries. Emily actively participates in Colorado State's chapters of "The Wildlife Society" and the "Society for Conservation Biology." Emily will also be working in a research lab studying aquatic invertebrates in stream food webs. In addition, she enjoys spending time volunteering for various organizations, one of which is the Jordan River NFH. During her time at Jordan River, Emily received valuable hands-on experience that she feels is not available in a classroom setting.

Emily gained an understanding of cold water hatcheries by performing daily fish culture duties, participating in meetings and conference calls and taking part in the planning and implementation of hatchery operations.

Emily Heinzmann, Jordan River NFH

Navy Veteran Joins Columbia FRO as Volunteer

We are pleased and proud to announce the addition of Chris Clemens, volunteer extraordinaire, to the Columbia FRO team. Chris is a Texas native with a Bachelor's in engineering and a Master's in military science from New Mexico State University. He worked as a nuclear propulsion officer on Navy surface ships before relocating to Missouri. When our staff started to warn him about the dangers of gillnetting in winter ice on the Missouri River, Chris informed us that the Navy had sent him to Alaska, where EVERYTHING freezes on the deck. "The main difference between Alaska and Missouri is that in the long days of Alaska, the sun shines almost 24 hours a day. Missouri's winter is a biological rollercoaster. It'll be very cold for a short time and then warm back up." Chris's main task at the Columbia FRO is the development of a Friends group to support our station. In addition, he is working on grants and assisting with field work.

Chris Clemens and Joanne Grady, Columbia FRO

College Students Spend Summer Gaining Fisheries Experience

Columbia FRO was fortunate to have students from three universities work with them this past summer. The seven students acquired skills that will assist them in their future fisheries careers. While assisting crews in the field, they learned how to identify big river fish species, deploy a variety of gear types and collect and record data. In the shop they learned how to repair and perform maintenance on boats, nets and trucks. In the lab they learned to press and read fish scales for aging and how to key out fish species that were unidentified in the field.

The volunteers included three students from the University of Missouri-Columbia (UMC). Chris McLeland and Kyle Winders assisted the Habitat Assessment and Monitoring Project's (HAMP) crew. They are both working on B.S. degrees in fisheries and wildlife at the University of Missouri-Columbia and continued on with us this fall as Student Temporary Experience Program (STEP) students. Chris will be graduating in May and is well on his way to a career in fisheries research. Kyle is currently vice president of the Fisheries and Aquatic Sciences Society at the university. He will graduate in December and looks forward to graduate school and a future in fisheries management.

Dustin Martin assisted with both the Mississippi Interstate Cooperative Resource Association (MICRA) and HAMP projects. He graduated in December from UMC with a B.S. in fisheries and wildlife and is attending graduate school in Nebraska. We look forward to seeing how far he will go in his career.

Courtney Culler assisted with the HAMP project and became a

master net mender. He will graduate in May. He looks forward to graduate school, then a life filled with bass fishing and a little fisheries research work on the side.

Two students from Lincoln University also worked at the station. Breanna Hicks assisted with the MICRA national paddlefish stock assessment project by performing data entry and by retrieving coded-wire tags from paddlefish rostrums. She will be graduating in May 2009 with a B.S. in agriculture and an emphasis on natural resources. She enjoyed her summer with us and has decided on a career in wildlife research.

Cody Luebbering assisted crews for both the Population Assessment (Pallid) project and the Mitigation project. Cody came to us from Saint Thomas, Missouri, where he grew up with the Osage River in his back yard. He will graduate in December from Lincoln with a B.S. in agriculture and an emphasis on natural resources. He will be returning to the Columbia FRO as a STEP student in the summer field season. We appreciated his river experience and his inexhaustible energy while performing fieldwork.

Nick Siepker assisted the Pallid projects crew this summer. If he doesn't become a professional bass angler he will be graduating in December 2008 from South Dakota State University with a B.S. degree in wildlife and fisheries sciences. After graduation he plans on going to graduate school and working in fisheries management.

Cliff Wilson, Columbia FRO

Great Lakes - Big Rivers Regional Fisheries Offices

Regional Office, 1 Federal Drive, Fort Snelling, MN 55111-4056; 612/713-5111

Gerry Jackson (gerry_jackson@fws.gov)

Michigan

Alpena Fishery Resources Office
Federal Building; 145 Water Street
Alpena, MI 49707
Jerry McClain (jerry_mcclain@fws.gov)
989/356-3052

Jordan River National Fish Hatchery
6623 Turner Road
Elmira, MI 49730
Rick Westerhof (rick_westerhof@fws.gov)
231/584-2461

Ludington Biological Station
229 South Jebavy Drive
Ludington, MI 49431
Dennis Lavis (dennis_lavis@fws.gov)
231/845-6205

Marquette Biological Station
3090 Wright Street
Marquette, MI 49855-9649
Katherine Mullet (katherine_mullet@fws.gov)
906/226-6571

Pendills Creek/Sullivan Creek
National Fish Hatchery
21990 West Trout Lane
Brimley, MI 49715
Curt Friez (curt_friez@fws.gov)
906/437-5231

Missouri

Columbia Fishery Resources Office
101 Park Deville Drive; Suite A
Columbia, MO 65203
Tracy Hill (tracy_hill@fws.gov)
573/234-2132

Neosho National Fish Hatchery
East Park Street
Neosho, MO 64850
David Hendrix (david_hendrix@fws.gov)
417/451-0554

Illinois

Carterville Fishery Resources Office
9053 Route 148, Suite A
Marion, Illinois 62959
Rob Simmonds (rob_simmonds@fws.gov)
618/997-6869

Wisconsin

Ashland Fishery Resources Office
2800 Lake Shore Drive East
Ashland, WI 54806
Mark Brouder (mark_brouder@fws.gov)
715/682-6185

Genoa National Fish Hatchery
S5689 State Road 35
Genoa, WI 54632-8836
Doug Aloisi (doug_aloisi@fws.gov)
608/689-2605

Green Bay Fishery Resources Office
2661 Scott Tower Drive
New Franklin, WI 54229
Mark Holey (mark_holey@fws.gov)
920/866-1717

Iron River National Fish Hatchery
10325 Fairview Road
Iron River, WI 54847
Dale Bast (dale_bast@fws.gov)
715/372-8510

LaCrosse Fish Health Center
555 Lester Avenue
Onalaska, WI 54650
Richard Nelson (rick_nelson@fws.gov)
608/783-8441

LaCrosse Fishery Resources Office
555 Lester Avenue
Onalaska, WI 54650
Pamella Thiel (pam_thiel@fws.gov)
608/783-8431



Fish Lines

Region 3, Great Lakes/Big Rivers
2007 Vol. 5 No. 3

U.S. Fish & Wildlife Service
Region 3
Division of Fisheries
1 Federal Drive
Ft. Snelling, MN 55111

Phone: 612/713-5111

Questions or comments concerning *Fish Lines* can be addressed to Dave Radloff, 612/713-5158 or email at david_radloff@fws.gov



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Jerry French Postcard Collection; U.S. Fish hatchery, Gloucester, Massachusetts (1905)

Windows in time

A Glimpse into our Proud Past

The Gloucester Fish Hatchery was established in 1887 on the north side of Massachusetts Bay in Essex County, Massachusetts. The hatchery was transferred to the U.S. Treasury Department in 1954.

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