



U.S. Fish & Wildlife Service

Fish Lines



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Region 3 - Great Lakes/Big Rivers

Leadership in Conserving, Enhancing, and Restoring Aquatic Ecosystems

Sullivan Creek National Fish Hatchery

(See the "Station Spotlight" on Page 5)



-USFWS photos

Series of photos depicting Sullivan Creek National Fish Hatchery (NFH) activities: (Top Row, Lt. to Rt.) Lake trout brood stock are crowded into a small area for spawning; James Anderson holds a male Seneca Lake strain lake trout; Crystal LeGault Anderson uses an air spawning system to remove eggs from a female; (Middle Row) Sperm (milt) is gently stripped from a male onto eggs for fertilization; Eggs are water-hardened (eggs swell up by taking in water after fertilization) in buckets; After the eggs are well developed, they are shocked by dumping them into a water-filled container (this is part of the process used to remove weak/dead eggs); (Bottom Row) Tanks for rearing future brood stock; Group photo of Tracy Roessner, Curt Friez, James Anderson, Debbie Jones, John Shuman (Crystal LeGault Anderson is not pictured); A close-up of some future brood stock.

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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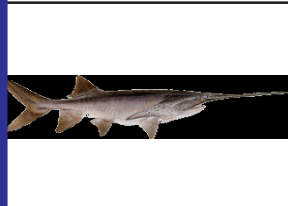
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Click here to visit our Fisheries Web Site

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

Station Spotlight - Sullivan Creek National Fish Hatchery

One of the Midwest Region's oldest Federal fish hatcheries, Sullivan Creek National Fish Hatchery (NFH) has a varied past and a bright future contributing to lake trout rehabilitation in the Great Lakes. Sullivan Creek is a substation of the Pendills Creek NFH located in the Eastern Upper Peninsula of Michigan, 30 miles west of Sault Ste. Marie, in the Hiawatha National Forest.

Originally built in 1933 by the Civilian Conservation Corps (CCC), the hatchery provided brook trout to nearby forest streams. The hatchery was shut down in 1946 because of a shortage of appropriations and manpower during World War II. In 1959, the site was renovated, became a substation of the newly built Pendills Creek NFH and began producing lake trout to be stocked into Lake Superior. In 1994, the hatchery shifted to lake trout brood stock production and has since been a provider of disease-free eggs for the program to rehabilitate lake trout in the Great Lakes.

Today, Sullivan Creek is home to some 12,000 lake trout brood stock—fish that are kept at a hatchery for their entire lives—and produces nearly 5 million eggs annually that become the production fish stocked into Lake Michigan and Lake Huron. Five strains of lake trout are held at the Hatchery: Seneca Lake, Lewis Lake, Superior Klondike, Superior Apostle Island, and Superior Traverse Island.

Spawning at the Sullivan Creek hatchery lasts from mid-August and through mid-November. The season is spread out because the different strains spawn at different times. The Superior Klondike strain is the first to spawn and the Seneca Lake strain is the last.



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This new building now covers the outdoor raceways at the Sullivan Creek NFH. The building replaced the vinyl weatherports that can be seen in the aerial photo. The building produces a safer work environment and provides quality rearing conditions for the valuable lake trout brood stock.



-USFWS

Aerial Photo of the Sullivan Creek NFH
Since this photo was taken, the four vinyl weatherports over the four sets of raceways were replaced with a single span building.

Females are stripped of their eggs after being anesthetized with a chemical known as Finquel, or MS-222. An air spawner, used on larger females, pumps oxygen into the abdominal cavity, gently pushing the eggs out. This method is easier on both the fish and the human handler. Eggs are stripped directly into a container and sent to the other end of the trout building where milt—or sperm—is stripped from anesthetized males directly onto the eggs.

After water is added and the eggs fertilized, they are rinsed and placed in an iodine solution for up to twenty minutes. They are then taken to the egg incubation room and fresh water is siphoned into them before they are enumerated and placed in incubator trays called Heath stacks.

Eggs develop inside the Heath stacks. After approximately two months, or when fish eyes are evident in the eggs, they are run through automatic pickers and hand-picked to remove the bad eggs. By the end of January, all eggs have been shipped to other Federal Hatcheries: Pendills Creek NFH, Jordan River NFH in Elmira, Michigan, Iron River NFH in Wisconsin, and Allegheny NFH in Pennsylvania and to some Michigan state fish hatcheries. In past years, eggs have also been given to research facilities. Sullivan Creek NFH has been a key to the rehabilitation of lake trout in the Great Lakes and will continue to supply brood stock.

For detailed information about the Sullivan Creek National Fish Hatchery, contact the office at (906) 248-5231 or visit the Regional website at: <http://www.fws.gov/midwest/Fisheries/fisheryoffices.htm#hiawatha>

Partnerships and Accountability

Draft Lake Trout Restoration Plan Completed for Lake Michigan

Under the auspices of the Great Lakes Fishery Commission, representatives of fishery management and research agencies of the states, tribes, and federal government drafted a Lake Trout Restoration Plan for consideration by the Lake Michigan Committee. The plan was drafted by the Lake Trout Task Group, chaired by biologist Chuck Bronte of the Green Bay FRO, and will replace a plan developed in 1985.

The new plan recommends steps to concentrate and increase stocking of lake trout in high priority areas, increase the genetic and eco-morphotypic diversity of the strains stocked, further reduce sea lamprey mortality, maintain low fishing mortality, and other measures that will increase parental stocks sizes and potential deposition, and reestablish lake trout as a community dominant species in selected areas.

Adoption of the plan will require the National Fish Hatcheries to produce more fish of selected strains and to stock them in fewer areas in the future. The plan is now under review by the Lake Michigan Committee and is expected to be finalized by spring 2006.

Charles Bronte, Green Bay FRO



-USFWS

Lake Trout

Green Bay FRO Updates Great Lakes Fish Stocking Database

The Green Bay FRO recently updated the Great Lakes Fish Stocking Database with all data available through 2004. The database is available through the Great Lakes Fishery Commission website at <http://www.glfrc.org/fishstocking/index.htm>. The database is a continuation of a project designed to provide fishery managers, scientists, and other interested parties with access to a centralized, comprehensive database of all fish stocked into the Great Lakes from hatcheries. In 1997, the commission's Council of Lake Committees asked the Green Bay FRO to assume responsibility for enhancing and maintaining the information contained in the stocking database. All stocking data are sent electronically from federal, state, provincial, and tribal agencies to the Green Bay FRO so that they can be reformatted and appended to the on-line database.

Dale Hanson, Green Bay FRO

Iron River Welcomes Trout "Home"

In the fall of 2003, staff from Iron River NFH accompanied the Wisconsin Department of Natural Resources (DNR) to the Apostle Islands off Bayfield, Wisconsin, for the DNR's fall survey for lake trout. Biologists John Johnston and Angela Baran spawned wild lake trout caught in the gill nets and the DNR recorded statistical information on the fish such as length, weight, and lamprey scars before a small amount of eggs and milt were collected and the fish released back into the lake.

The eggs from each fish pair were kept in separate containers and incubated separately for genetic purposes. Wild eggs are periodically collected to maintain a high level of genetic variation in captive brood stocks. Eggs from more than 100 pairs contributed to the new group of brood fish.

The eggs were taken from the boat directly to the Keweenaw Bay Indian Community (KBIC) Tribal Hatchery to be kept in isolation for at least 1½ years to make sure the fish are free of diseases. The KBIC Tribal Hatchery has an isolation facility separate from the rest of the hatchery to prevent any potential diseases from spreading. An agreement between the Fish and Wildlife Service and KBIC allows isolation of wild fish and eggs in exchange for training KBIC employees and stocking lake trout in tribal waters.

On July 28, the yearling fish were moved from the KBIC hatchery to Iron River NFH, where they will be kept on site for about 10 years as a source of eggs. A ceremony commemorated the

event and the public was invited to get up close and personal with the fish and learn about the lake trout rehabilitation program. After the fish were removed from the station, the facility was disinfected to prepare it for another isolation period.

Angela Baran, Iron River NFH



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This young helper grabs a "big" net full of lake trout. These fish were reared at the Keweenaw Bay Tribal Hatchery until they could be cleared of any harmful diseases. They will be used at the Iron River NFH as a brood stock to provide eggs for the lake trout rehabilitation program.

Coasters Have a New Home

Approximately 1,000 two-inch coaster brook trout recently were transferred to the new Northern Aquaculture Demonstration Facility near Iron River NFH in northern Wisconsin. These fish are the first inhabitants in this state-of-the-art aquaculture research and demonstration facility, which is capable of raising warm, cool, and coldwater fish species. The rearing facilities include a bell jar incubation system, a heath tray incubation system, several recirculation aquaculture systems, and a hydroponic plant area. The entire system is monitored by a computerized program that controls pumps, water use, flow and security. The University of Wisconsin-Superior oversees the development of the facility, with

input from an advisory committee that includes community, industry, and tribal, state, and Federal entities. The complex is located on Red Cliff Tribal land through a long-term lease agreement with the University of Wisconsin. Initial construction began in the spring of 2003 and was completed in the spring of 2005 for Phases I and II. Phase III consists of a future administration/classroom facility linked to the aquatic hatchery facility. The Iron River NFH looks forward to a long-standing relationship with this new and innovative facility.

Steve Redman, Iron River NFH



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Biologist Steve Redman (center) from the Iron River NFH monitors 1,000 coaster brook trout as they adjust to their new home. They are the first fish to inhabit the new Northern Aquaculture Demonstration Facility in northern Wisconsin.

Group Meets on 2006 Spring Rise on the Missouri River

Columbia FRO Project Leader Tracy Hill attended the third meeting of the Missouri River Spring Rise Plenary Group, composed of representatives of Federal, tribal, state, and municipal governments and diverse interest groups from across the Missouri River Basin. A spring rise on the Missouri River would be a significant increase in water flows designed to accomplish specific goals such as shifting sedimentation to create new

sandbars and islands, providing habitat for pallid sturgeon, and providing and transporting nutrients. The goal of the meeting was to develop a proposal that complies with the Fish and Wildlife Service's Biological Opinion for recovering pallid sturgeon, least terns, and piping plovers while limiting negative effects on both upstream and downstream river users. Once developed and agreed upon by the group, the proposal will be submitted to the U.S. Army Corps of Engineers and Fish and Wildlife Service for their consideration and implementation. Another meeting is planned for late August to resolve additional concerns.

Hill and branch chief Wyatt Doyle served on the Pallid Sturgeon Technical Committee for the 2006 Missouri River spring rise along with state, university, and Federal biologists who provide the insight and expertise required to develop the magnitude, duration, and peak of a spring rise that will likely occur next year. Biologists hope that this long overdue implementation will provide a spawning cue, condition spawning habitat, and disperse pallid sturgeon larvae throughout the lower 850 miles of river.

Understanding the many needs of the stakeholder groups along the Missouri River, biologists compromised in developing their plan and felt that what was put forward to the plenary group was the minimum necessary to meet the needs of the federally endangered pallid sturgeon. Columbia FRO has been involved in the recovery of the pallid sturgeon for over six years.
Tracy Hill and Wyatt Doyle, Columbia FRO

State Biologists Tour with Columbia FRO

Missouri Department of Conservation (DOC) research scientist Matt Engel and research science assistant Darrick Garner recently visited the Columbia FRO to discuss the Mitigation Project, a cooperative effort involving Columbia FRO, U.S. Army Corps of Engineers, and the states of Iowa, Nebraska, and Missouri, and aimed at improving lost habitat on the lower Missouri River. Recently hired by the DOC, Engel and Garner are touring other agencies' mitigation sites on the Missouri to learn how best to sample their agency's assigned sites. They spent the last week of July running hoop nets and mini fyke nets, trawling, and electrofishing with Columbia FRO staff at two of the station's three sites, the Overton Chute and Tate Island complex. Engel and Garner are eager to learn what methods have been tried and established at our station and anxious to begin sampling their four assigned chutes in August.

Jeff Finley, Columbia FRO

Specimens Collected for University Ichthyology Class

Biologist Jennifer Johnson collected specimens for the University of Missouri's Ichthyology course after the professor, Dr. Douglas Noltie, identified a shortage of some riverine species used in the course. Jennifer collected fish from this list during routine sampling of mitigation sites throughout the month of July. Fish collected include shovelnose sturgeon, river carpsucker, freshwater drum, skipjack herring, bighead carp, and flathead catfish. These specimens will be added to the university's reference collection and used

during the practical application laboratory portion of the class which focuses on identifying the fishes of Missouri.

Jennifer Johnson, Columbia FRO



-USFWS

These are a few of the fish that were collected for the University of Missouri-Columbia's Ichthyology course. (Top to Bottom) river carpsucker, freshwater drum, and shovelnose sturgeon

Alpena FRO Recognizes Fishers

Biologist Adam Kowalski attended the eighth annual Commercial Fishers Appreciation Dinner held in Bay City, Michigan. The dinner recognizes Michigan state-licensed and tribal commercial fishers who assist the Fish and Wildlife Service with lake sturgeon work in Lake Huron. These fishers encounter lake sturgeon as by-catch during normal fishing operations and volunteer their time to tag and collect biological information on captured lake sturgeon. Currently, 15 commercial fishers operating 21 boats participate in the study. More than 400 lake sturgeon have been tagged and released since the program began in 1995. Alpena FRO sponsored the event and presented certificates of appreciation, coffee mugs, and embroidered shirts to each of the fishers present. Approximately 30 individuals representing all participating fishery companies attended the dinner.

Adam Kowalski, Alpena FRO



Lake Sturgeon

Lake Huron Technical Committee Meets

Alpena FRO staff participated in the summer meeting of the Lake Huron Technical Committee in Sault Ste. Marie, Ontario. Project Leader Jerry McClain shared in discussions relating to lake trout rehabilitation and preparations for writing the latest State of Lake Huron report and preparing for the State of Lake Huron Conference, which will be held in the spring of 2006. McClain will be writing the invasive species section of the report and giving an oral presentation at the conference. He provided an outline of the report to the committee for comment.

Biologist Anjie Bowen provided an update from the St. Marys River Fishery Task Group, which she co-chairs, and participated in discussions relating to the walleye stocking proposal developed by the task group. Biologist James Boase provided an update on lake sturgeon management activities and led a discussion on the possible establishment of a Lake Sturgeon Task Group for the committee, which has agreed to establish the group. Boase agreed to serve as the initial chair of the group whose charges will be developed by the Lake Huron Committee and passed through the technical committee.

Jerry McClain, Alpena FRO

Newsletter Highlights Sturgeon Presentation

Research conducted by staff at the Alpena FRO was highlighted in the summer 2005 issue of the Pine River Nature Center Newsletter (<http://www.sccresa.org/prnc/newsletters.html>). The article highlights the importance of the St. Clair River for lake sturgeon survival in the Great Lakes. It is a follow-up to a spring presentation Biologist James Boase gave at the center about the ongoing research in the St. Clair River.

Situated on the Pine River, a tributary of the St. Clair, the center provides an outdoor facility for teaching. It is run by the St. Clair County Intermediate School District, which integrates the outdoor facility at the center with its classroom and textbook science curriculum for its Kindergarten through 12th grade students. Natural resource specialists are routinely invited to give presentations or workshops for the students, teachers, and local citizens.

James Boase, Alpena FRO



Whittlesey Creek Refuge Waterfowl Survey Initiated

The Ashland FRO is conducting spring and fall migratory waterfowl surveys at Whittlesey Creek National Wildlife Refuge (NWR), located in northern Wisconsin along the shores of Lake Superior. The refuge's namesake creek flows through the heart of the refuge, connecting with Lake Superior's Chequamegon Bay. The survey captures the majority of the wetland, instream and coastal habitat the refuge manages and will provide an index to the relative size of migratory populations that depend on Whittlesey Creek NWR and surrounding landscape during the journey to and from their northern breeding grounds.

With assistance from Northland College volunteer Erik Brunke and refuge staff, Ashland FRO kicked off the first round of spring observations, running surveys weekly from early April to late May. The most numerous species observed were lesser scaup with over 1,400 counted, the vast majority of which were observed on the bay, off the mouth of Whittlesey Creek. Gaining a better understanding of the areas used by scaup is important because it is one of the few species monitored under the North American Waterfowl Management Plan whose breeding population trends have declined over the past three decades. Scaup are also important to local waterfowl hunters. According to many of them, especially the open water hunters, scaup make up a large percentage of their seasonal bag. Unidentified divers were the second most numerous diving ducks counted, followed by buffleheads. The most numerous puddle ducks observed were mallards, followed by blue-

and green-winged teal. Fall surveys should begin in mid-September.

Ted Koehler, Ashland FRO



-USFWS

A pair of scaup take a leisurely swim at the Whittlesey Creek NWR. Biologist Ted Koehler (Ashland FRO), Northland College volunteer Erik Brunke, and Whittlesey Creek NWR staff conducted migratory waterfowl surveys at the Refuge.

Spring is Shocking at the Iron River NFH!

Biologists Frank Stone of the Ashland FRO and Nikolas Grueneis from Iron River NFH captured, via backpack shocking, wild trout from northern Wisconsin's Schacte Creek. This collection effort was targeted primarily for brook trout found within a three-quarter-mile section of the creek, upstream of the fish barrier. Because the creek is the primary source of water for the hatchery, it is essential to reduce wild fish stocks to the lowest possible number to minimize the potential for transferring diseases to the hatchery fish. Stone and Grueneis transferred and released 113 brook trout, ranging from two inches to 9.5 inches, downstream of the hatchery fish barrier.

Steve Redman, Iron River NFH

Aquatic Species Conservation and Management

Mussel Surveys Completed on St. Clair Delta

Working with biologists from the Michigan Department of Natural Resources, Environment Canada (EC), Walpole Island First Nation (WIFN), U.S. Geological Survey (USGS) Great Lakes Science Center, and the Belle Isle Aquarium, biologist James Boase conducted preliminary and follow-up native mussel surveys at multiple locations on the St. Clair River within the St. Clair River Delta. The purpose of the research was to identify refuge areas where native mussels can be managed and maintained. Since the introduction of the invasive zebra mussel in the 1980s, native mussels have been steadily declining in the Great Lakes. Although zebra mussels do not directly parasitize native mussels they attach themselves in large numbers to the shells of the native mussels, preventing the mussels from foraging, reproducing, and dispersing their progeny.

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 Canadian than in U.S. waters.

Historical research indicates that the highest densities and greatest diversity of native mussels were found 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 the border between the United States and Canada. The St. Clair River splits into three main channels and multiple small channels as it moves through the delta. On the U.S. side, the delta has been intensively managed and altered, and residential and commercial use dominates 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, it's a different story. The 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 or act as buffers separating upland areas from the river. Numerous isolated bays with limited access 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 location on the U.S. side of the delta.

Low boat traffic in isolated shallow bays on the Canadian side results in fewer mussels being damaged by props or dislodged. Bays that have not been breached by canals do not receive a continuous introduction of new zebra mussels, and as a result native mussels have few attached zebra mussels. In general most of the bays sampled on Walpole Island were deeper than those on the U.S. side.

Researchers with EC and WIFN have taken the first steps by identifying refuge areas in Canadian waters and have been successful at moving native

mussels from areas of high zebra mussel infestation to refuges. What has not been determined is whether all life history requirements will be fulfilled for those mussels that are placed in the refuge areas. Because most native mussels need specific host fish species for survival of their progeny, the next question is whether the fish community has changed, and will the mussels be in contact with their host fish. If we are to maintain a population of native mussels, some innovative and intensive approaches to management will have to be considered. Alpena FRO and its partners are planning to continue to identify other potential refuge areas in both United States and Canadian waters.

James Boase, Alpena FRO



-USFWS photo by James Boase

Working with biologists from Michigan DNR, Environment Canada, Walpole Island First Nation, U. S. Geological Survey's Great Lakes Science Center, and Belle Isle Aquarium, Biologist James Boase from the Alpena FRO helped conduct preliminary and follow-up native mussel surveys in the St. Clair River delta.

Fish and Wildlife Service Presents Results of Lake Trout Tagging Studies

Biologist Aaron Woldt of the Alpena FRO gave two presentations at the International Association for Great Lakes Research Conference on Great Lakes Research, where a special symposium, "Use and Misuse of Tagging Data," explored tagging issues in the Great Lakes basin.

The presentations summarized results from the *Lake Huron Enhanced Quality at Release Study* and the *Lake Huron Lake Trout Movement Study*. The enhanced quality study compared coded-wire tag (CWT) returns of standard and enhanced quality Lewis Lake strain lake trout yearlings reared at Jordan River NFH.

Since 1996, these CWT lake trout have been captured in survey, commercial (gill-net and trap-net), and recreational gears. Woldt showed two types of analyses: an effort-independent analysis using Chi Square methods to analyze returns from all sources and an effort-dependent analysis using the Wilcoxon Test for Matched Pairs to analyze only survey-caught fish. Both analyses used return data through 2004.

Results of the Lake Huron study using either analysis technique showed that the enhanced quality fish survived significantly better than the standard quality fish, although significant differences in survival were not detected for each site and each year class using the Wilcoxon Test for Matched Pairs. Enhanced quality fish survived 62 percent better than the standard quality fish in Lake Huron. Woldt compared results of the Lake Huron study to those of a Lake Michigan study at Clay Banks that

showed no differences in survival when examining only survey caught fish.

The *Lake Trout Movement Study* compared tagged returns of lake trout yearlings stocked at eight sites across the lake. Woldt's study found that lake trout moved large distances at early ages—some fish moved 100 miles or more by age two—and generally moved in an onshore direction. Only fish from Adams Point and Point Au Barques showed statistically significant trends in distance moved by fish age. Ongoing analyses includes fitting returns per effort at each site using an exponential sigmoid model to estimate lake trout home range, completing effort adjustments for the refuge and mid-lake sites, comparing movement patterns by strain for the Drummond Island and Six Fathom Bank sites, and a deeper analysis of movement by year class at each site.

Aaron Woldt, Alpena FRO

Genoa NFH Conducts Mussel Survey in Fish Creek

In 1992, a large diesel oil spill in Fish Creek, which flows through Indiana and Ohio, caused a fish and mussel die-off that resulted in a Natural Resource Damage Assessment (NRDA) settlement. Monies from the NRDA settlement funded a qualitative mussel survey of Fish Creek in 2004 and a quantitative mussel survey in July 2005. When all the data from this quantitative survey is analyzed, it will help managing agencies determine the next course of action in restoring the mussel community of Fish Creek.

Genoa NFH biologists, assisted by staff members from Bloomington and Reynoldsburg Ecological Services Field Offices, Indiana Management, the Indiana

Nature Conservancy, and the Indiana and Illinois departments of natural resources, conducted the quantitative mussel survey. Of the 64 mussel beds discovered in the 2004 survey, five beds were selected because they contained Federal or state listed species and an additional six sites were selected to cover the remaining portions of the watershed. In both the surveys, biologists found individuals of the federally endangered clubshell mussel. Tony Brady, Genoa NFH



-USFWS

Displayed are the adult and juvenile native mussels found at one site during a quantitative survey of Fish Creek. The metal instrument in the center of the image is used to measure specimens.

Coaster Brook Trout Protected at Genoa NFH

Catastrophic fish losses at private, state, or Federal hatcheries—while not common—pose a significant risk for any culture program with regard to genetic integrity of stocks, resource recovery efforts, and financial impacts to the agency or business. One of the many challenges that hatcheries face is ensuring a stable, reliable source of water to provide adequate oxygen and remove metabolites from the culture environment. Genoa NFH has been striving over the past several years to upgrade existing systems associated with the culture of coaster brook trout

to ensure that these basic requirements are met in the event of an unforeseen manmade or natural emergency.

One challenge Genoa faces is its reliance on pumped wells to maintain water quality in the culture operation. Any interruption to the power supply to these wells could have serious consequences to the coaster brook trout program.

Several years ago, Genoa NFH installed an alternate power supply in the form of an emergency back-up generator, which has been used successfully multiple times since installation to prevent losses during electrical service interruption to the facility. In a further effort to safeguard these important fish stocks, the hatchery has recently installed an emergency oxygen supply system to the brook trout production building on the hatchery. This system automatically engages to supply emergency oxygen to culture tanks in the event of a power loss or water interruption. This additional layer of protection should provide a further level of security for the hatchery's valuable stocks of coaster brook trout.

Genoa NFH is one of two national fish hatcheries in the Fish and Wildlife Service's Midwest Region that propagates this variant of the brook trout, and is heavily involved in the restoration efforts for the fish in the Lake Superior watershed. In addition to providing brood stock for the Iron River NFH in northern Wisconsin, the facility produces fingerling and yearling fish for several restoration programs in cooperation with state and tribal partners.

Roger Gordon, Genoa NFH

Fish Community Season Begins

July 1 marked the beginning of the pallid sturgeon "Associated Fish Community Project" on the Missouri River, signaling a change in some gear types used during sampling for this endangered fish. New gears used during Fish Community Season include bag seines and minifyke nets to focus on catching smaller fish such as minnows and young-of-year fish, while also attempting to continue to catch adult sturgeon and other target species of the project. The endangered pallid sturgeon are still captured during Community Season; however, the capture rate declines along with other sturgeon catch rates. While July is just the beginning of Fish Community Season, it lasts until the end of October, so we have only just begun.

Corey Lee, Columbia FRO

Green Bay FRO Involved in Large Predator Surveys in Lake Michigan

The Green Bay FRO participated in large predator surveys for lake trout and burbot in Lake Michigan. These Lake-Wide Assessment Plan surveys are an annual cooperative venture among the Fish and Wildlife Service, U.S. Geological Survey Ann Arbor station, and state departments of natural resources in Illinois, Indiana, Michigan, and Wisconsin aimed at collecting data on large predator populations throughout Lake Michigan at nine near-shore stations and two offshore stations. Data from this survey including age compositions, lamprey wounding rates by size class, relative abundance, and percent maturity by year class will be combined with survey data from the other lakewide assessment

plan stations to provide fishery managers a picture of the overall health of large predator populations in Lake Michigan.

The Green Bay FRO sampled the Sturgeon Bay and Sheboygan sites and assisted the USGS with sites in Manistique, Washington Island, and the off-shore Northern Refuge. Crews set graded mesh gill-nets at each survey site to collect relative abundance data on predator populations and provide biologists an opportunity to collect lengths, weights, age structures, sex ratios, maturity data, and lamprey wounding rates from captured fish. The Green Bay FRO set more than 21,000 feet of gill-net and sampled 168 lake trout and 29 burbot from the Sturgeon Bay and Sheboygan stations. The lake trout ranged in age from two to 11 years, and 42 percent of the fish sampled were younger than six years old.

Dale Hanson, Green Bay FRO



-USFWS

Biologists from the Fish and Wildlife Service and U.S. Geological Survey surveyed predatory fish populations in Lake Michigan on the R/V Siscowet.

Aquatic Invasive Species

Agencies and University Collaborate in Rusty Crayfish Reduction Experiment

In cooperation with the Michigan DNR, the Ashland FRO assisted the Ottawa National Forest and the University of Notre Dame in conducting a one-day experiment to assess the effectiveness of bottom trawling in reducing a population of invasive rusty crayfish. The experiment took place on 551-acre Lake Ottawa in Michigan's Upper Peninsula. Lake Ottawa is virtually devoid of aquatic vegetation, and all native crayfish have been extirpated since the infestation of rusty crayfish. Reducing the rusty crayfish abundance will allow natural predators such as smallmouth bass to control the crayfish population and return the lake to a more balanced ecosystem. Biologist Gary Czypinski, project leader and Notre Dame graduate student Brett Peters, and two other graduate students crewed the Ashland FRO's 21-foot trawler, removing about 10,000 rusty crayfish from two areas of the lake in a one day/night exercise. A chase boat crewed by Forest Service biologist Jerry Edde and technician John Pagel photographed the experiment and transported the crayfish from the trawler to shore, where they were counted, sexed and euthanized by other students. The experiment was designed under the guidance of Dr. David Lodge of Notre Dame. The University of Notre Dame conducted pre-trawl and post-trawl sampling to estimate crayfish densities. These densities will be compared to the catch per unit effort of the trawler in order to assess the effectiveness of the trawling effort. The calculation and

analysis of these data is in progress.

Gary Czypinski, Ashland FRO



-USFWS

This bottom trawl was used in Lake Ottawa to remove invasive rusty crayfish as part of a crayfish reduction experiment.

Zebra Mussels Take to the River

Divers from the National Park Service and Fish and Wildlife Service searched for zebra mussels during the last week of July on the St. Croix River, starting approximately a mile north of Stillwater, Minnesota, and working their way south. The dive team concentrated on quantitative monitoring by searching transects and assigned sites. Invasive zebra mussels were present, but the data needs to be analyzed to determine if populations are increasing.

Scott Yess, La Crosse FRO



Biologist Participates at Invasive Species Field Course

Biologist Anjie Bowen provided a presentation and handouts on the spread of invasive Eurasian ruffe and round goby in the Great Lakes at the Inland Seas Education Association's Fourth Annual Invasive Species Field Course, a three-day workshop that provides invasive species education for teachers from around the Great Lakes. A variety of speakers addressed and provided information on invasive species to the approximately 30 teachers and other professionals who attended the event. The Fish and Wildlife Service applauds this effort to continually provide quality information on Great Lakes issues to students, teachers, and the public, particularly regarding the important issue of invasive species education.

Anjanette Bowen, Alpena FRO



Public Use

Scour Basins Both Help and Hurt Fish Productivity

Three large scour holes on the Diana Bend and Overton Bottom Units of the Big Muddy National Fish and Wildlife Refuge (NFWR), created by the Missouri River during the flood of 1993, have served as a home for a variety of river fish species. Every few years, high water levels reconnect the scour holes to the river, providing an exchange of fish and nutrients. This may help productivity, yet it makes managing these fish populations a greater challenge.

A crew of fishery biologists, led by Cliff Wilson from Columbia FRO surveyed these three scour holes in July to determine species richness, diversity, abundance and condition. The crew used electrofishing and a suite of net types to collect game, non-game, and invasive fish species in each scour hole. The survey produced 3,519 fish of 36 different species from the three ponds. Some of the most interesting fish observed in the scour holes included smallmouth and spotted bass, species almost never seen in the Missouri River or in scour holes. Other species of interest included sauger, adult paddlefish, and both juvenile and adult invasive Asian carp species (bighead and silver carp).

Resource users have an interest in establishing healthy recreational fisheries in these scour holes. Some of the ideas being considered include sealing them off from their flood plains to prevent fish from being lost to flooding, prevent invasive fish species from entering, adding additional vegetation to create better habitat for the fish, and

having the state conservation departments stock catfish. Earlier this year, the Friends of the Big Muddy, a refuge Friends group, sank Christmas trees in the scour holes to create fisheries habitat. This spring, Columbia FRO stocked donated adult largemouth bass and red-ear sunfish into the scours to boost sport fish populations. Since this stocking, high river levels in June reconnected the scours to the river.

The July survey will likely give biologists an opportunity to determine whether some of these fish were lost during the flooding events. Knowing whether fish will be lost during these events will be valuable information when stocking is considered. Columbia FRO will continue to monitor these scour holes and provide recommendations to refuge managers to develop management ideas and regulations that will aid in establishing and maintaining a healthy sport fish population for the benefit of recreational anglers at the refuge.

Cliff Wilson, Columbia FRO



-USFWS

Corey Lee sets a trap net in one of three large scour holes at the Big Muddy National Fish and Wildlife Refuge. The scours were created by a Missouri River flood.

Lake Taneycomo Mitigation Continues

Lake Taneycomo mitigation commitments for July consisted of stocking 22,940 (8,841 pounds) rainbow trout by Neosho NFH. A total of 225,000 fish are stocked annually into Missouri's Lake Taneycomo, providing a fantastic recreational fishery. Neosho NFH also received another shipment of 80,000 rainbow trout eggs that will provide next year's fish. The hatchery receives five shipments of rainbow trout each year. Shipment schedules are calculated based on the time certain size fish are requested for stocking programs.

Roderick May, Neosho NFH

Scouts Take to the Outdoors at Trempealeau NWR

The Fisheries program was on hand to help out as nearly 70 Girl Scouts from southeast Minnesota and west-central Wisconsin communities of La Crescent, Holmen, La Crosse, and Onalaska learned about natural resources at Trempealeau NWR. Scouts rotated through six stations: Composting Magic, Prairie Ecosystems, Aquatic Life, Bird Migration, Forest Health, and Animal Facts, Tracks and Furs. In the Aquatic Life Session, La Crosse FRO staff taught the Scouts fish and mussel identification with live fish and mussels. Later, the scouts learned about predator and prey relationships as well as environmental influences in the fish community. At the end of the day, participants planted wildflowers and grasses on five acres at the refuge. Major partners in the

event included the Girl Scouts of America, Fish and Wildlife Service and U.S. Geological Survey. Other organizations and agencies involved were the U.S. Army Corps of Engineers, Perrot State Park, University of Wisconsin-Extension 4-H Youth Development, Wisconsin DNR. This outreach event was a huge success and plans are already made for next year's event.

Heidi Keuler, La Crosse FRO



-USFWS
Heidi Keuler introduces a group of Girl Scouts to the Fish and Wildlife Service at an event held at Trempealeau NWR.

Genoa NFH Completes Walking Tour

Staff at Genoa NFH completed a self-guided walking tour of the hatchery this month. The tour features 12 numbered stops presenting information about the hatchery's history, purpose, and several ongoing restoration programs that use fish and mussels produced at Genoa NFH. Visitors may tour the sturgeon culture building and other facilities throughout the hatchery, visiting with staff as they complete various tasks involved with care and maintenance of this complex hatchery, and stopping to observe plants and wildlife along the trail. The trail is about 1.5 miles and also features information about the various habitats available for wildlife interspersed with the

hatchery's ponds and culture buildings.

Genoa NFH is located within the Upper Mississippi River National Wildlife and Fish Refuge and provides natural habitats for birds, mammals, amphibians, and reptiles. Visitors can spend as much time as they choose viewing wildlife and plants, or observing freshwater fish and mussel culture operations. The walking tour provides an exciting opportunity for the public to visit the facilities and learn what goals Genoa NFH is working to accomplish. One of the major restoration projects at Genoa NFH includes lake sturgeon production for restoration in Legend Lake, Wisconsin, and the Red River watershed in Minnesota.

Jenny Walker, Genoa NFH



-USFWS
Jenny Walker (center) and Youth Conservation Corps students Brandon Keesler (left) and Alex Derrickson (right) work on signage for a new walking tour at the Genoa NFH.

"Yucky Critter Corner" a Popular Destination at Fair

Welcome to Yucky Critter Corner" greeted those stopping by the Ludington Biological Station's invasive sea lamprey display at the Mason County West Michigan Fair. Folks who staffed the booth found that many people had never heard of the sea lamprey, much less seen one. The booth generated a lot of

questions and the live larval and adult lampreys were a big hit with kids and adults alike. Comments from visitors included "Looks like a snake," or "I'm not swimming in the big lakes anymore – sure would not want them to attack me," or simply, "Yuk." All were assured that the waters are safe. Another question that arose quite a bit was, "When are you going to do something about the zebra mussels?"

The staff at the display booth distributed nearly 750 Fish and Wildlife Service coloring books, 1,000 Great Lakes Fishery Commission pencils, Sea Lamprey Control brochures, Sea Grant Watch Cards on various invasive species, and other information about Fish and Wildlife Service activities to the estimated 4,000 people who stopped by. During peak viewing time, an estimated 150 visitors per hour viewed the display. We received many favorable comments on the quality of the display and the information given out.

Dennis Lavis, Ludington Biological Station



-GLFC
Bob Anderson, Ludington Biological Station, staffed the sea lamprey display booth at the Mason County West Michigan Fair in Ludington.

Strike up the Band

Staff from the Iron River NFH participated in the annual Iron River Blueberry Festival parade. Biologist Steve Redman drove the 3,000-gallon tanker truck that assists in the distribution of more than 4 million lake trout in the Upper Great Lakes each spring. Biologist Nick Grueneis rode along to assist in the “distribution” of goldfish crackers. Kids young and old love a parade and this was a great opportunity to increase public awareness, especially for the August hatchery open house, and gather community support for the fish hatchery.

Steve Redman, Iron River NFH



-USFWS
Iron River NFH drove their 3,000 gallon fish distribution unit in the Blueberry Festival parade.

Neosho Outreach Gets Out and About

Neosho NFH manager Dave Hendrix and assistant manager Roderick May recently set up a booth at the Newton County Fair and fielded dozens of questions about the Neosho NFH and the Fish and Wildlife Service. In addition, Hendrix set up a booth in one of the local city parks for emancipation celebrations. Staff also attended the monthly meetings of the Newton County Tourism Council and several community-based support groups.

Roderick May, Neosho NFH

Celebrating Friday Night in Alpena

Alpena FRO biologists Aaron Woldt and Adam Kowalski staffed a Fish and Wildlife Service booth at Alpena’s “Friday Night Downtown!” festival, a city-sponsored family event held every Friday night in July in the streets of Alpena, Michigan. Each Friday event combines a different mix of live musical entertainment, kids’ games, food booths, pony rides, public safety demonstrations by local law enforcement and emergency services agencies, and information booths sponsored by local businesses, civic groups, and governmental agencies. Woldt and Kowalski distributed pamphlets, children’s coloring books and posters and spoke with more than 200 visitors to explain the role of the Fish and Wildlife Service and the Alpena FRO in conserving natural resources. Topics discussed included lake trout rehabilitation, lake trout stocking, potential impacts of double crested cormorants, sea lamprey control, the National Fish Hatchery program, aquatic invasive species control, fish passage, endangered species, the Partners for Fish and Wildlife Program, lake sturgeon tagging and tracking, lake whitefish population viability, and lake trout movement patterns.

Aaron Woldt, Alpena FRO

Ashland FRO Helps Iron River NFH

New rearing facilities at the Iron River NFH were the cause of a dedication on a beautiful Saturday afternoon in August. Staff from the Iron River NFH and other Fish and Wildlife Service offices, along with other government agencies joined in the celebration of two new buildings which cover the fish production raceways. Biologist Glenn Miller of the Ashland FRO manned an informational booth regarding the Ashland FRO and its activities. The Iron River NFH and Ashland FRO have a long and illustrious history doing various projects throughout the Lake Superior basin, including brook trout production for Whittlesey Creek NWR, Isle Royale National Park, and the Grand Portage Tribal Reservation.

Glenn Miller, Ashland FRO

Cooperation with Native Americans

Lake Whitefish Population Assessment Conducted

Ashland FRO conducted lake whitefish assessments on Lake Superior out of Grand Marais, Michigan, in July. Crews set gill nets along six randomly selected transects perpendicular to the shoreline. The areas surveyed include Grand Marais, Blind Sucker Creek, and Deer Park. Information obtained is used by agencies to manage the commercial and recreation harvest of lake whitefish, evaluate abundance and fish health, and gain a broader understanding of the lake whitefish ecological role in Lake Superior. Biological data collected by species caught included length, weight, sex, sea lamprey marks, ageing material, and stomach (diet) samples. These surveys are coordinated by the Technical Fisheries Committee formed by the 2000 Consent Decree for 1836 Treaty waters. Cooperators on this effort include the Ashland FRO, Bay Mills Indian Community, Chippewa-Ottawa Resource Authority, Michigan DNR, Pictured Rocks National Lakeshore, and Grand Marais Coast Guard Auxiliary.

Glenn Miller, Ashland FRO



-USFWS

Ashland FRO staff conducted lake whitefish assessments on Lake Superior. Henry Quinlin examines a lake trout that was also captured.

Ashland FRO Reads Oxytetracycline Marks

Frank Stone completed a brook trout evaluation project involving stocked fish from the Keweenaw Bay Tribal Fish Hatchery. The Ashland FRO received ten lots of fish to determine the presence of an oxytetracycline (OTC) mark. The 137 fish comprising this sample were collected from both hatchery-reared fish (control group retained at the hatchery) and wild fish collected during previous fishery assessments. After examining all ten lots, Stone sent a summary report to the Keweenaw Bay Indian Community. Of special interest is that several lots of wild fish showed an OTC ring on their otoliths. The conclusion was that these fish were released from the Keweenaw Bay Indian Fish Hatchery and have successfully survived into the next growing season.

A means of evaluating stocked hatchery-reared fish is an important facet of fishery management; however, the actual contributions that stocked fish provide to a fishery are often unknown. The information gained from this project will give fishery managers a better means of estimating the survival of stocked brook trout fry/fingerlings.

The treatment procedure with OTC, an antibiotic, involves keeping the fish in a small holding tank containing 700 parts per million of OTC for eight hours. During the treatment period, the OTC is incorporated into the bony structures of the fish. When these structures (otolith) are viewed using a microscope and ultraviolet light, an OTC mark will be noted as a yellow-gold band within the

otolith. The use of OTC will hopefully serve as an inexpensive fish marking tool that will allow future assessments efforts to verify the recruitment levels of brook trout that originated from hatchery programs.

Frank Stone, Ashland FRO

Green Bay FRO Surveys Whitefish in Eastern Lake Michigan

The Green Bay FRO recently completed its annual gill net surveys to monitor lake whitefish near Frankfort and Elk Rapids, Michigan. These surveys are part of a larger, multi-agency effort to collect fishery-independent data on lake whitefish populations within the 1836 ceded territory waters of Lake Michigan. Unlike commercial fishing operations, the fishery-independent surveys incorporate a statistical design that can provide fishery managers with more accurate depictions of fish abundance and population age structure than would be available from commercial fishery data alone. As outlined in the Consent Decree of 2000, statistical catch-at-age models incorporate both sources of data to calculate harvest quotas for the lake whitefish management units within treaty waters of lakes Michigan, Huron, and Superior.

Dale Hanson, Green Bay FRO

Leadership in Science and Technology

Endangered Mussels Develop on Schedule

The developmental transformation of endangered winged mapleleaf mussels from parasitic larvae into free-living juveniles proceeded on schedule over a 38-week period and culminated with the recovery of more than 11,000 juveniles that were released in the St. Croix River near Somerset, Wisconsin, on June 17. Results of earlier host fish identification tests, conducted by colleagues from the La Crosse FRO and the Upper Midwest Environmental Sciences Center (UMESC) during 2003-2004, indicated that winged mapleleaf larvae attached to channel catfish require 395 degree days of cumulative development at minimum mean daily water temperatures less than 9.25 degrees Centigrade to initiate peak juvenile recovery.

Staff from the Genoa NFH, La Crosse FRO and UMESC joined together in 2004 and 2005 to repeat this long-term test and evaluate the precision of this predictive developmental model. Peak recovery of winged mapleleaf juveniles in the lab was estimated to begin on June 11 but actually started two days earlier, representing an accuracy error rate of less than 1 percent over the test period. This result was a three-fold improvement over that achieved during 2003-2004. These findings yield important information that can be used to accurately predict when winged mapleleaf juveniles will release from host fish and can improve the survival of infested fish within cages at mussel reintroduction sites in the river by decreasing the length of time host fish need to be

held in these confined and stressful conditions. Juvenile mussels recovered during this latest test were released into the St. Croix River by a team of divers from the Twin Cities Field Office and the National Park Service's St. Croix National Scenic Riverway. A fact sheet on winged mapleleaf mussels can be viewed at: http://www.umesc.usgs.gov/reports_publications/fact_sheets/winged_mapleleaf.html.

Mark Steingraeber, La Crosse FRO



-USGS

36 Day Old Juvenile Mussel

Peer-Review of Manuscript

At the request of Dr. Ronald Hite, Distinguished Professor in the School of Public and Environmental Affairs at Indiana University and editor of the journal *Environmental Science and Technology*, La Crosse FRO biologist Mark Steingraeber completed a peer-review of a manuscript submitted to the journal by colleagues who compared a non-lethal tissue sampling technique with mobile and stationary sampling devices for assessing organic contaminants in fish. Based on his past experience

as a research biologist working on fishery resource contaminant issues for Department of the Interior agencies, Steingraeber provided several suggestions for consideration by the authors and editor to improve this report of a well-planned and executed investigation, the findings from which will be useful for evaluating organic contaminant burdens (and ultimately the health and fitness) of threatened, endangered, and recovering Salmonids and other species of fish with an adipose fin. *Mark Steingraeber, La Crosse FRO*

Lake Trout Size for Stocking Analyzed

Beginning in 1995, the Fish and Wildlife Service increased the size of yearling lake trout stocked into the Upper Great Lakes to a larger size based on the assumption that larger fish would be healthier and would survive better. This information will be used to refine target rearing sizes in Regional National Fish Hatcheries. Post-release survival of paired stockings of lake trout reared to a 20 fish/pound (standard size) with larger fish reared to 10-12 fish/pound (enhanced size) in Lake Michigan was compared to determine whether any increase in survival would offset the reduced numbers stocked. About 60,000 lake trout of each group of four year classes (1994-1997) were released as yearlings in spring near Clay Banks reef in Wisconsin, coded-wire tagged with unique identification numbers and adipose fin clipped.

Between 1997 and 2003, biologists made recaptures in four gill nets surveys conducted in spring and fall near the release

location. Comparisons of catch rates generally indicated no significant differences in the relative survival of standard and enhanced lake trout in all surveys combined, across surveys, or by year-class and survey. An autopsy-based assessment of overall fish health and condition indicated few measures were significantly different between standard and enhanced lake trout prior to stocking. Size differences between standard and enhanced fish remained statistically significant at all observed ages at recapture, although growth rates were the same for the two groups. Stocking rates in Lake Michigan were reduced concurrent with the change to larger yearlings with the expectation of increased survival, and since this did not occur, recruitment was essentially reduced for the rehabilitation program.

Charles Bronte, Green Bay FRO

Biologists Present Results of Fishing Regs Analysis

The Michigan DNR is reviewing its lake trout sport fishing regulations on Lake Michigan after Jory Jonas of the DNR and John Netto of the Green Bay FRO developed a model for analyzing the influence of fishery regulations on the lake trout population and harvest. Jonas and Netto presented this model to Michigan DNR's Lake Michigan fishery managers at a recent meeting. The managers used the model to compare the effects of size and bag limits on progress towards meeting lake trout rehabilitation and fishery objectives. The results of the modeling will assist the state with developing and evaluating management options.

John Netto, Green Bay FRO

New Trawl Boat Comes On Line

Columbia FRO took possession of a new and improved stern trawl boat from Clark Boats of Bellevue, Iowa, complementing the office's current stern trawling efforts. Changes have been made to the design of this boat to improve stability, ergonomics, and safety. The original hull design for the Missouri River stern trawlers came from a boat used by Nebraska Game and Fish Commission. These boats were primarily used for working on lakes. Though the overall layout of the new boat is relatively the same, the new hull has less rise (a flatter bottom) making the boat more stable by reducing roll, pitch and yaw. Other modifications were made to improve function of work stations. Additional floatation material was added to the back half of the boat to provide greater buoyancy.

Columbia FRO has been on the leading edge of stern trawling in the Missouri River for the past five years. Improvements in trawling net design and the reduction of labor resulting from stern trawling have enabled us to access habitats that have not been sampled effectively with traditional sampling gears.

Final equipment and rigging on the new boat should be completed by the end of August. The new trawl boat will improve our knowledge of Missouri River fish communities beginning in September. This boat keeps Columbia FRO on the cutting edge of scientific and technological breakthroughs in big river science and provides the staff of Columbia FRO a tool to effectively, efficiently, and safely perform their jobs.

Andrew Starostka, Columbia FRO



-USFWS

Columbia FRO's new stern trawl boat is almost ready for the Big Muddy.

Reference Collection Goes Digital

Columbia FRO biologist Jennifer Johnson has begun photographing commonly misidentified fish species from the station's reference collection and linking the photos to a database. There are currently 194 preserved specimens representing 78 species in the physical collection. The database will provide information such as where and when individual specimens were collected and key characteristics. Johnson is using a Scion Color Digital Camera and Scion VisiCapture software, which is primarily used for aging fish structures. She will complete photographing the entire collection as the field sampling schedule permits. These photos of prominent characteristics will aid in correct identification of fish species and provide digital images that may be used for other purposes.

Jennifer Johnson, Columbia FRO

Aquatic Habitat Conservation and Management

Fish Passage Project Would Benefit Native Brook Trout

Heavy runoff volumes and velocity on the Marengo River in Wisconsin has caused severe erosion to the riverbank and adjacent gravel road. This caused an estimated 8,000 cubic yards of material to be washed into the river, destroying more than 500 feet of river bank.

Washouts of the road paralleling the river at this site, located in Bayfield County, has occurred multiple times.

Through the Partners for Fish and Wildlife program, the Ashland FRO partnered with the Town of Lincoln, Wisconsin Coastal Management Program, County Land Conservation Department, Wisconsin DNR, The Nature Conservancy, Bad River Watershed Association, and Lake Superior Advisory team to correct this chronic problem. Through the combined effort of the team, the road was stabilized, stream banks were protected, and fish and wildlife habitat improved.

Instream habitat practices were also incorporated into the stabilization plan. The project provided a stable outlet for river floodwaters. In addition, the partners repaired and blacktopped the road to minimize further large sediment influxes into the river.

Partners for Fish and Wildlife program funding and technical assistance were provided for the instream habitat portion of the project which consisted of root wad structures, boulder placement, stream bank stabilization, and re-vegetation. These practices will primarily benefit native brook trout and other fish species which live in the Marengo River.

Ted Koehler, Ashland FRO



-USFWS

Streambanks along the Marengo River in Bayfield County, Wisconsin, were stabilized, and fish and wildlife habitat improved. Native brook trout will benefit from these habitat improvements.

Data Committee for National Fish Habitat Initiative Sets Tasks

Chuck Bronte of the Green Bay FRO represented the Fish and Wildlife Service on the Data Working Group for the National Fish Habitat Initiative at a meeting in La Jolla, California. This group will work closely with the initiative's Science Working Group to provide the data for assessment of fish habitat across the nation. Tasks include identifying data and information systems available and essential for supporting the scientific needs of the National Fish Habitat Initiative, developing an operational plan to coordinate and make available data from various sources to support the initiative, and working with data holders, appropriate agencies, non-profit governmental organizations, and others to make data available for the scientific and communication needs of the initiative.

Charles Bronte, Green Bay FRO

Building Partnerships at Watershed Celebration

Columbia FRO staff attended the ninth annual Meramec Watershed Celebration in July at Meramec State Park in Sullivan, Missouri. Sponsored by the Missouri Stream Teams, Northern Ozark Partnership, and Open Spaces Council, this event is an opportunity for the community to enjoy recreational and educational activities on the beautiful Meramec River. Columbia FRO attended to build partnerships in the Meramec River Basin to aid in development of a National Fish Habitat Initiative watershed plan. In the morning, participants enjoyed a naturalist program, tube float, and invertebrate exhibit. In the afternoon there was a naturalist program for kids and canoe races for adults. For lunch, everybody enjoyed a barbequed potluck lunch while listening to a bluegrass band. Even though it was a hot day, there were plenty of activities in and around the Meramec River making it enjoyable for all.

Nicholas Utrup, Columbia FRO

Paddlefish Report Completed for Habitat Rehabilitation and Enhancement Project

A report entitled "Seasonal Occurrence of Paddlefish Following Island Construction for the Polander Lake Habitat Rehabilitation and Enhancement Project in Upper Mississippi River Navigation Pool 5A" is available from the La Crosse FRO. The report, written by biologists Mark Steingraeber and Ann Runstrom, summarizes the findings of this post-project paddlefish survey conducted in 2002 and compares these results to the findings of

earlier pre-project surveys conducted here in 1995-1996. Collection of both pre- and post-project data such as that illustrated in this report is essential for an objective evaluation of biotic responses to riverine habitat rehabilitation and enhancement efforts. Findings from these surveys, funded by the U.S. Army Corps of Engineers' St. Paul District, suggest that island construction activities may have been seasonally beneficial to paddlefish in a portion of the lake where this outcome was intended, detrimental to paddlefish in a portion of the lake where this outcome was unintended, and of no consequence to paddlefish (as intended) in the remainder of the lake. These results may be used to guide the planning and design of future Habitat Rehabilitation and Enhancement Projects that seek to create or protect seasonal habitats for paddlefish in other portions of the Upper Mississippi River system.

Mark Steingraeber, La Crosse FRO

Biologist Tours Ohio Dams

In July, biologist Susan Wells of the Alpena FRO visited three dams in the Mahoning River watershed with representatives from the Ohio Division of Wildlife (DOW), Trumbull County Planning Department, and the Fish and Wildlife Service in Ohio to discuss dam removal using Fish Passage program funds. The dams are located in suburban areas around Youngstown, Ohio, and all are less than 20 feet in height. The dams have been identified by the Mahoning Watershed Coalition and partners for removal as part of the coalition's plan for habitat recovery. The first dam upstream is a superfund site with preliminary contaminant studies underway. The second dam upstream may be removed in the spring of 2006 by the Ohio Department of Transportation, for which they will earn mitigation credit. The third dam upstream is located within a county park, and removal has minimal local support. The coalition and partners have begun an educational campaign in the community in hopes of gaining further support for removal.

Upon conclusion of the tour, Wells and Joe Mion from Ohio DOW discussed the feasibility of these projects in the near term and discussed other possibilities for Fish Passage funding for Fiscal Year 2006 and beyond. It was decided that the second dam was the best candidate and will be pursued.

This project would enhance fish passage of native northern pike and bass into reaches of the Mahoning River Watershed.

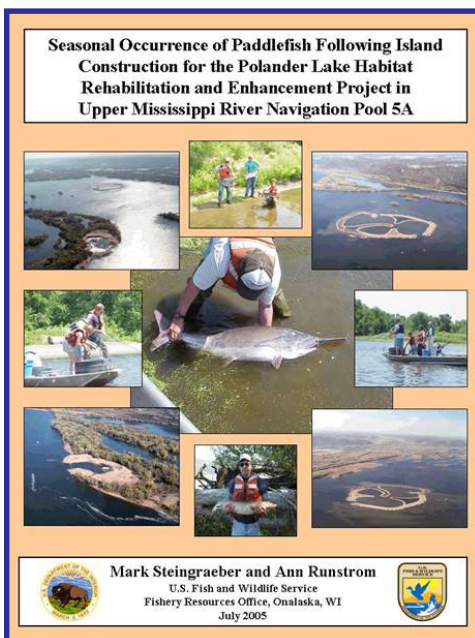
Susan Wells, Alpena FRO

Debt for Nature Review Conducted

On July 7, biologists Heather Enterline and Susan Wells attended a Debt for Nature review in Missaukee County, Michigan. Debt for Nature is a Department of Agriculture program administered by the county Farm Service Agency (FSA) office. This program allows farmers with FSA loans secured by real estate to remove acreage from active farming and place the acreage in a conservation contract of 10, 30 or 50 years. The conservation contract restricts the type and amount of development that may take place on the property covered by the agreement. In exchange, the farmers receive a cancellation of a portion of their debt on their FSA loan(s).

The Fish and Wildlife Service is a member of the review team that provides biological input and management suggestions for lands to be placed into the conservation contract. Other review team members include representatives from the FSA, Natural Resource Conservation Service, and Missaukee Conservation District. This particular landowner was considering placing 100 acres into the program. The acreage was marginal farmland, a cedar swamp, and edges of hayfields (to provide wildlife corridors or buffers from field to forest). Enterline and Wells suggested plantings, both tree and grassland, and recommended two sites for wetland restoration.

Heather Enterline, Alpena FRO



Workforce Management

Columbia FRO Prepares to Lead on Paddlefish Project

The Mississippi Interstate Cooperative Resource Association (MICRA) paddlefish stock assessment project is a multi-state cooperative study designed to assess the distribution and movement of paddlefish in the Mississippi River basin. Twenty-two state agencies, four fishery resources offices and eight National Fish Hatcheries are involved in the stocking, tagging, release, and recapture of these paddlefish. Commercial and sport anglers also lend a hand by returning rostrums and capture location information to their local fish and game office. Presently, all tags and rostrum samples are mailed to the Carterville FRO for processing and archiving. After the tag numbers have been read and recorded, the data sheets are sent to the Columbia FRO. Joanne Grady has been charged with maintaining the database for this project.

This design has served the MICRA project for the past eight years; however, storing the database and archived tags in separate locations has made it difficult to resolve tag code errors in the database. In the future, biologists Joanne Grady and Nick Utrup, and technician Casey Bergthold will receive training at Carterville FRO to properly read, process, and archive the coded wire tags used to track paddlefish. After training, the archived files will be moved to the Columbia FRO to be centrally stored with the database.

Casey Bergthold, Columbia FRO



Paddlefish

Upward Bound Student Exhibits Good Horse-Sense

Katrina Jaworski, a naturalized U.S. citizen who recently immigrated from Montreal to Mindoro, Wisconsin, shadowed biologist Mark Steingraeber of the La Crosse FRO in June through the Upward Bound program sponsored by the University of Wisconsin-La Crosse. Steingraeber introduced Jaworski to the world of freshwater mussels with a presentation and summarized the scientific investigation he recently led that identified host fish species and early life thermal requisites for this Federally endangered mussel. Then it was on to the wet laboratory where Jaworski learned to take dissolved oxygen and water temperature readings, collect juvenile mussels, and observe them with the aid of a microscope. She was also given the opportunity to see (and smell) ongoing work in the bacteriology, virology, and histology laboratories at the La Crosse FHC. Given her early familiarity with the metric system, love of horses, dislike of fish odors, and ambitious educational goals, it seems likely this bright biology student will continue to pursue her long-time dream of a career as an equine veterinarian (perhaps with the Bureau of Land Management) rather than that of a fishery biologist or fish health specialist for the Fish and Wildlife Service.

Mark Steingraeber, La Crosse FRO

Columbia FRO Partners with Big Muddy National Fish and Wildlife Refuge

Biologist Jennifer Johnson assisted technicians Adam Jones and Kyle Singer from the Big Muddy National Fish and Wildlife Refuge on August 10th with spraying herbicides on purple loosestrife. Purple loosestrife is an invasive plant with the ability to spread rapidly, once established. During the growing season, a single plant may produce over 100,000 seeds. The best time to control purple loosestrife is during mid-summer when the plant is easily recognizable and has just begun flowering. This invasive plant crowds out native plants, destroying valuable wildlife habitat. The crew targeted the Jameson Island and Lisbon Bottoms units of the refuge searching along the Missouri River banks for the plant and when found the location was recorded and then sprayed with glyphosate. The Jameson Island unit consists of 1,871 acres of bottom land containing floodplain species such as cottonwood willow and box elder, and it is across the river from the Lisbon Unit. The Lisbon unit consists of 2,013 acres of primarily young forests of cottonwood and willow. The two units provide 4,000 acres of public land for hunting, fishing, and exploring.

Jennifer Johnson, Columbia FRO

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Windows in time

A Glimpse into our Proud Past

This is a picture of the original hatchery ponds at Sullivan Creek NFH. They were built by the Civilian Conservation Corps in the 1930s and are located in the same location as the current cement raceways.

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