



U.S. Fish & Wildlife Service

Fish Lines

Region 3 - Great Lakes/Big Rivers

Leadership in Conserving, Enhancing, and Restoring Aquatic Ecosystems

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The Ozark Cavefish: A Tiny but Important Inhabitant of Neosho National Fish Hatchery

(See the “*Feature Story*” on Page 5)



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Ozark Cavefish

Thirty Years and Counting

(See the “*Feature Story*” on Page 6)

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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Fisheries Academy in a Word

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

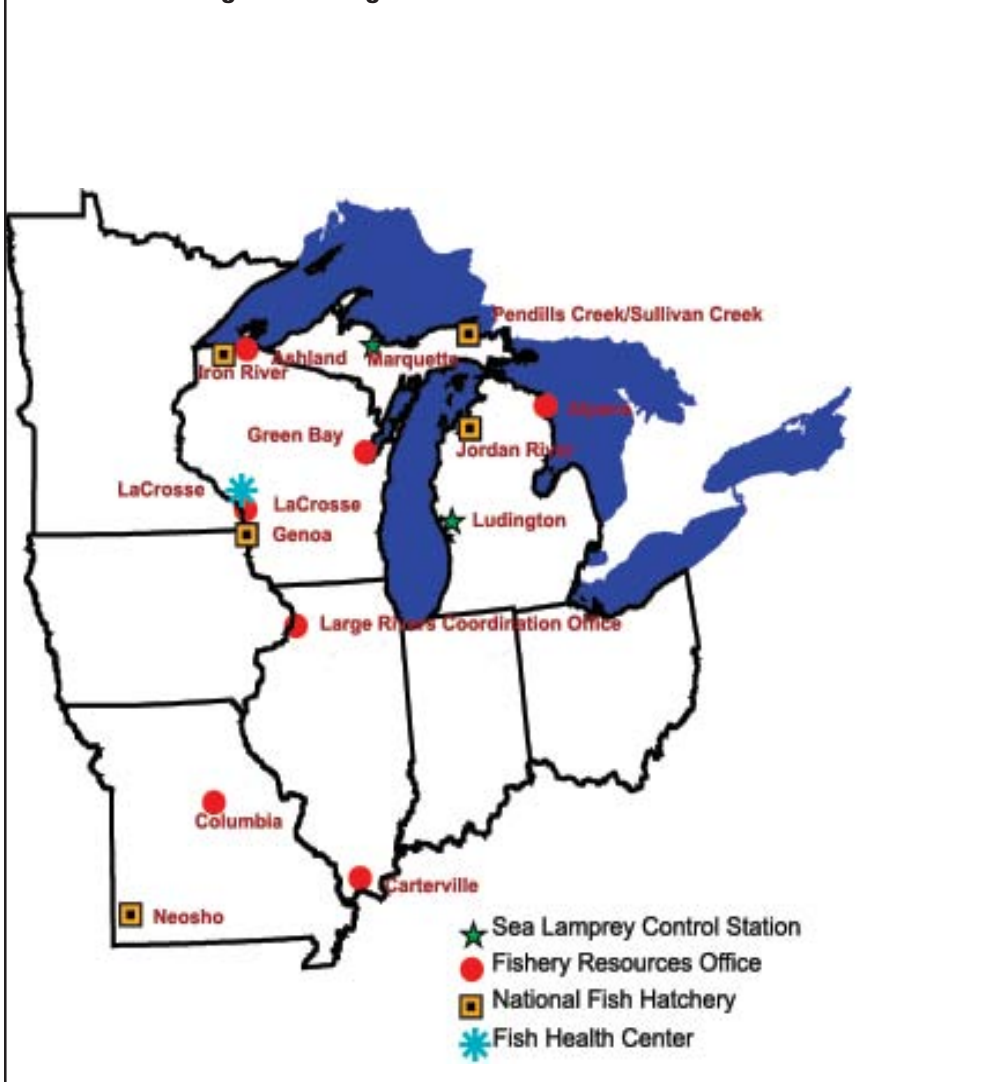
Fishery Resources Offices conduct assessments of fish populations to guide management decisions, perform key monitoring and control activities related to invasive, aquatic species; survey and evaluate aquatic habitats to identify restoration/rehabilitation opportu-

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 - The Ozark Cavefish: A Tiny but Important Inhabitant of Neosho National Fish Hatchery

Neosho National Fish Hatchery (NFH) is located in the southwest corner of Missouri. The hatchery is centered in a park-like environment and receives more than 40,000 visitors annually.

Neosho NFH is one of six hatcheries in the Midwest Region that use a variety of management tools to conserve and enhance fisheries resources; Neosho produces rainbow trout for mandated mitigation, pallid sturgeon as part of the pallid sturgeon recovery effort, freshwater drum for host fish as part of the mussel recovery effort for the Ozarks, and walleye as part of in-trade production with the Missouri Department of Conservation.

In addition to producing these species, Neosho NFH also provides a home for the threatened Ozark cavefish. Commonly called the ghost fish because of its pale white appearance, the Ozark cavefish was discovered by accident at Neosho in 1989. While working to protect one of the underground springs that provides water to the hatchery for critical mission production, a staff member discovered this unique little fish.



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The rare Ozark cavefish is at home in one of the springs that provide culture water to the Neosho National Fish Hatchery.

The cavefish is classified as endangered on the state level and as threatened by the Federal government. This tiny fish only grows to about 2 to 2.5 inches — about the size of your little finger — and it has very specific habitat needs; one reason why its numbers have dwindled. The biggest threat to the survival of the Ozark cavefish is pollution of the underground water where these fish live. Carelessly discarded pesticides, motor oil and toxic metals all filter into the



-USFWS

A monitor is set up in the Neosho National Fish Hatchery visitor center to allow people to view the cavefish in their natural environment, minimizing human contact with this rare fish.

groundwater, causing a threat to the survival of the cavefish. Destruction of its habitat by sealing cave entrances, flooding or loss of water and commercial development also threatens this fish. In addition, collection or disturbance by careless cave visitors can harm the cavefish population.

As we protect the habitat of the Ozark cavefish, we are also protecting our own habitat, for much of the drinking water in areas where the cavefish live is groundwater. Cavefish are indicators of environmental health. If they begin to disappear, it could be a signal that something is wrong with the water quality.

The Ozark cavefish is only known to live in a specific type of habitat in Arkansas, Missouri and Oklahoma called karst landscape. This porous limestone and dolomite bedrock is honey-combed with underground streams, caves and caverns. An opening forms in the limestone when water and debris slowly dissolve and erode the rock.

Cavefish are not the only species that live in caves. Bats—grey bats in particular—along with salamanders and white crayfish also depend on karst habitat. Within the cave ecosystem, the Ozark cavefish has no predators; although sometimes during floods, larger fish from outside streams may gain access to the cave pools and feed on the inhabitants.

The Ozark cavefish cannot afford to be a picky eater. It will eat almost any living material, including small invertebrates and crayfish, and even smaller fish. Bat droppings supply additional nutrients to the ecosystem along with leaf material and other debris that happens to wash in from the outside.

The cavefish has no eyes and appears to be almost translucent. It has small organs along the side and head that act like little fingers to find food. The cavefish is not a fast swimmer, but a very efficient one.

At Neosho NFH, the staff works to protect and conserve the home of the Ozark cavefish by maintaining good water quality. The staff understands the importance of educating the public about this unique little fish and the role it plays in our environment. Time is spent visiting schools through-out the area educating the kids of all ages about cavefish—another reason why Neosho is a wonderful management tool for the Ozark cavefish.

Dave Hendrix, Neosho NFH

Feature Story - Thirty Years and Counting

(NEOSHO DAILY NEWS)

Thirty years ago, a young man from Tallulah, Louisiana, took a job at a National Fish Hatchery in New London, Minnesota.

Growing up in the south where breezes are soft and warm, moving to Minnesota was a challenge for this young man.

But, it worked out just fine and young Dave Hendrix stuck it out in the Minnesota cold. From that first job in 1978, Dave has stayed with the Fish and Wildlife Service and has now reached in a 30-year career.

Here in Neosho, Missouri, Dave is well known for his efforts in community projects and his work with young people, especially in sports activities. He and his wife, Pam, have three sons and two daughters, all of whom make them very proud.

In his 30-year career, Dave has also served the Fish and Wildlife Service in Genoa and Lake Mills, Wis.; Princeton, Ind.; Leetown, W. Va.; Pendills Creek and Elmira, Mich.; Washington, D.C.; and now, as hatchery manager at the Neosho National Fish Hatchery. Dave received his bachelor of science degree in fishery biology at Southern University / Louisiana State University in Baton Rouge, La., and completed some master's degree work at Iowa State University in Ames, Iowa.

In both his personal and professional lives, Dave has been an inspiration. Many young people who have come into the Fish and Wildlife Service have received wise counsel and a fighting chance from Dave Hendrix.



-USFWS

Neosho National Fish Hatchery manager David Hendrix accepts a 30 years of service certificate and a big vote of thanks from Gerry Jackson, Assistant Regional Director - Fisheries.

Dr. Mamie Parker, who now serves in Washington, D.C., as the chief fisheries official in the nation, credits Dave with helping launch her career. When she finished her schooling, she was debating how to spend her working life. Someone referred her to Dave and, through his counsel, she has enjoyed a fine and successful career.

At a recent meeting in Indianapolis, Dave was presented with a certificate recognizing his 30 years of service to the United States of America. In those 30 years, Dave has enjoyed his work and is proud to work on projects that improve the status of both humans and wildlife. And, he is quick to note that his time in Neosho has been most rewarding. He makes no secret of his love for this community and its people.

By Kay Hively / For the Daily News

Partnerships and Accountability

Conservation Roundtable Will Serve as a Model

A December Conservation Roundtable sponsored by U.S. Senator Carl Levin of Michigan, the Great Lakes Nonprofit Institute, and the Great Lakes Water Studies Institute, showcased Fish and Wildlife Service grant programs and will serve as a template for upcoming sessions that have been requested by other Michigan congressional offices. Senator Levin's representative, Harold Chase, provided opening remarks for the session.

Four Fish and Wildlife Service biologists highlighted programs: Stewart Cogswell of the Green Bay Fishery Resources Office (FRO) presented the Fish Passage program, Bob Kavetsky of the East Lansing Field Office (FO) discussed the Coastal Program, Heather Rawlings of Alpena FRO talked about the Partners for Fish and Wildlife program, and Christie Deloria of the East Lansing FO presented the Endangered Species and Coastal Wetland Grant programs. East Lansing FO Project Leader Craig Czarnecki served as Master of Ceremonies, and Jim Hudgins of the East Lansing Private Lands Office led the wrap-up session.

The forum was casual, with abundant opportunity for the audience to ask questions and voice concerns. Invitees were local non-profit conservation organizations, conservation districts, land conservancies and local government entities. Approximately 35 citizens attended as well. Attendees completed an evaluation at the end of the session, giving both the speakers and facilities—Northwestern Michigan College's Great Lakes Campus in Traverse City—

high marks. This event was an effective forum for the Fish and Wildlife Service to interact with local partners.

Heather Rawlings, Alpena FRO



-USFWS photo by Heather Rawlings
Senator Carl Levin's representative, Harold Chase, provides opening remarks for the Conservation Roundtable. The Conservation Roundtable was established to showcase Fish and Wildlife Service habitat conservation granting programs.

Friends of Pendills Creek Hatchery Executive Committee Member Shines

Pendills Creek National Fish Hatchery (NFH) has been fortunate to have local citizens form the non-profit organization Friends of Pendills Creek Hatchery in support of the Pendills Creek/Sullivan Creek NFH Complex. The Friends Group's many outstanding members volunteer time, labor and food at hatchery events. One member's story is unique in that his interest in helping was great but his desire for change was even greater. Sam Burdick's drive caused significant change to the Friends Group's by-laws and placed emphasis on what is really important: not just printed words, but personal actions, which speak louder than words.

Sam is a local boy who was twelve years old. Originally, his only option was to be an honorary member because the by-laws state

that "all members need to be eighteen years of age." So Sam began attending executive committee meetings, contributing ideas on how to bolster the Friends Group's financial status. The committee authorized him to conduct limited sales activities and voted to approve funding to get his sales started. Sam's good salesmanship and efforts for sales of candy, logo hats, logo shirts, memberships, etc., has been nothing short of phenomenal, raising more funds for the Friends Group than all other members combined. Sam approached the executive committee with a request to have the by-laws changed to allow people twelve years of age to become full members of the group. Some executive committee members did not favor this change in by-laws but when put to a full membership vote, it passed unanimously, allowing Sam full membership and the ability to become an executive committee member.

At the Friends Group's 2006 annual meeting, Sam was nominated as a fund raising/membership executive committee member. Since that time, he has continued fund raising efforts which in turn has supported the hatchery complex with monetary donations towards the *M/V Spencer F. Baird* christening event and the recent Fishery Biologist Meeting hosted by the Pendills Creek/Sullivan Creek NFH Complex.

Sam Burdick has worked diligently to support the Friends of Pendills Creek Hatchery to make a difference, and he has become a cornerstone of the Friends Group, continuing his sales efforts bolstering the group's finances more than any other member. This is a significant contribution, for a twelve-year-old who had to fight to be-

come a member. Sometimes change is for the better.

*Curt Friez, Pendills Creek/
Sullivan Creek NFH Complex*

Alpena FRO Participates in Michigan Project Leaders Meeting

Project Leader Jerry McClain participated in a Michigan Project Leaders Meeting in East Lansing in January. Although the principal objective of this annual meeting is to update and familiarize participants with activities of the Fish and Wildlife Service's program offices in the state, this year's meeting focused on a central topic for a large portion of the first day. The Michigan Department of Natural Resources (DNR) has developed its State Wildlife Action Plan and is in the early stages of implementation. Project leaders discussed ways the Fish and Wildlife Service could assist the state with the implementation process. Mike Sweet of the Regional Federal Assistance Program and Amy Clark Eagle of the Michigan DNR were on hand to provide their perspectives and help the group develop a strategy for providing assistance. A number of action items were agreed on as starting points and continued discussion between the Fish and Wildlife Service and Michigan DNR will help guide the collaborative effort. McClain will serve as the Fish and Wildlife Service lead for communication with the Michigan DNR.

Jerry McClain, Alpena FRO

Tag Identification Database Contains More than 12,500 Tag Numbers

In December, Alpena FRO biologist Adam Kowalski completed final updates of the tagging database and met the remaining commitments of a 2004 grant from the Great Lakes Fishery Trust, to construct and maintain a database to house fish tag information such as type, number and location, and tagger contact information. The database has been operational for over a year now and contains more than 12,500 passive integrated transponder tags and more than 100 tag sequences for external tags. Kowalski completed the final report and submitted it to the Great Lakes Fishery Trust, and final payment has been received. He will continue to maintain and update the database by requesting and entering tag information annually. Feedback has been positive and the database seems to be getting a lot of use by biologists looking up information for tagged lake sturgeon they have captured. The database is housed at the Great Lakes Fishery Commission's web site at: <http://www.glfco.org/sturgeonat/index.htm>.

Adam Kowalski, Alpena FRO

Shovelnose Sturgeon Populations Evaluated at MICRA Meeting

The Mississippi Interstate Cooperative Resource Association (MICRA) sturgeon and paddlefish committee meeting in St. Louis, served as a platform for biologists, law enforcement, and regulatory representatives from eleven states, numerous Federal agencies and universities to discuss the sustainability of roe harvest from these species on the Mississippi, Arkansas and Missouri rivers. The meeting summarized a decade of monitoring and research on paddlefish, shovelnose sturgeon and pallid sturgeon in the Mississippi River basin, and Columbia FRO summarized the results of shovelnose sturgeon catches for the lower 800 miles of the Missouri River, including efforts from Nebraska Game and Parks and the Missouri Department of Conservation.

This was the first look at the data summarizing four years of intensive effort under the U.S. Army Corps of Engineers' Pallid Monitoring and Assessment Program. The results showed a wide variability in catch rates of shovelnose sturgeon throughout the Lower Missouri River, with more shovelnose captured in the lower 200 miles. Despite some commercial fishing pressure from the State of Missouri, the shovelnose population appeared depressed only near the confluence of the Mississippi River. State and Federal agencies are concerned with the increase in the price of caviar (\$450 per pound) and the effects demand will have on native shovelnose sturgeon and paddlefish populations. There is an extensive effort to monitor changes in shovelnose sturgeon and paddlefish populations, and to evaluate the effects of incidental take of the endangered

pallid sturgeon. The Fish and Wildlife Service continues collaborating with state partners to enhance our ability to provide direction in managing commercial and sport species while protecting endangered species.

Wyatt Doyle, Columbia FRO

Following the Footsteps of a Proven Winner

It began at 4:30 a.m. a January day, when Columbia FRO biologist Jeff Finley and volunteer Chris Clemens left Columbia, Missouri, for Neosho NFH. They went to meet Kay Hively, the Friends Group liaison for the hatchery and a charter member of the Friends of Neosho National Fish Hatchery, who has been instrumental in the group's development. Hively shared with Finley and Clemens ideas that did—and didn't—work over the years and provided them with several helpful references. Neosho's Friends Group is a shining example of how these volunteer efforts can benefit Fish and Wildlife Service programs. The long-awaited hatchery visitor center is on the drawing board, largely due to the Friends Group's efforts. Clemens is excited about the potential opportunities a "Friends of Columbia Fishery Resources" could provide. The group would allow people in Central Missouri to participate in projects and events with Columbia FRO and to learn about and support the Fish and Wildlife Service. We are grateful to the Neosho Friends Group members and the wonderful hatchery staff for all their advice and assistance with our fledgling group.

Joanne Grady and Chris Clemens, Columbia FRO

Middle Basin Pallid Sturgeon Workgroup Meeting Held

The Middle Basin Pallid Sturgeon Workgroup met January 17 in St. Charles, Missouri, to coordinate recovery activities for pallid sturgeon in the Missouri River below Gavins Point Dam. The group had a full agenda and made several recommendations to the Pallid Sturgeon Recovery Team. The meeting kicked off with reports from state, Federal and university resource personnel working on pallid sturgeon in the Lower Missouri and Middle Mississippi rivers. Meeting participants were alarmed to learn that mortality rates for pallid and shovelnose sturgeon in the Middle Mississippi River are 31 percent and 37 percent respectively. Recovery Team Leader George Jordan presented recommended changes on how the pallid sturgeon range will be defined, and the recovery team is proposing four management units to replace the six current Recovery Priority Management Areas. Meeting participants also planned and discussed brood stock collection activities for the spring 2007 field season. Meeting attendance was down slightly from previous years' meetings as a result of an ice storm that hit the Midwest during the previous week. Inter-agency participation in the Middle Basin Pallid Sturgeon Work Group ensures cooperation and agreement for recovery efforts of pallid sturgeon in the Missouri River.

Tracy Hill, Columbia FRO

Ashland FRO Completes Trout Scale Reading for the Michigan DNR

The Ashland FRO has completed another set of lake trout scale readings, collected from anglers at various creel check points on Lake Superior. The creel is run by the Marquette Fisheries Station of the Michigan DNR and collects scales in both 1836 and 1842 treaty waters of Lake Superior. The ageing information is used in conjunction with the biological data in models regulating harvest of lake trout in Lake Superior. Approximately 600 lake trout scales from the 2006 creel (1836 waters) and 150 scales from the 2006 creel (1842 waters) were read. This was the fifth year the Ashland FRO has assisted the Michigan DNR, and this partnership appears to be a long-term association. Data collected from the creels and surveys by natural resource agencies throughout the lake will once again ensure the rehabilitation of a native species in Lake Superior.

Glenn Miller, Ashland FRO



-USFWS

Glenn Miller of the Ashland Fishery Resources Office ages lake trout scales. The scales were collected from fish from 1836 and 1842 Treaty waters of Lake Superior.

Partnership is a Wonderful Thing

One of the most wonderful things about being at Neosho NFH is the opportunity to build partnerships. One of the strongest relationships we have is with our legislators. We make sure to keep them updated on all of the activities going on at Neosho and take time to invite them out to visit throughout the year. In January, we recognized the local staff in Senator Kit Bond and Congressman Roy Blunt's offices by presenting beautiful plaques to Stacy Burks, district office director for Senator Kit Bond, and Steve McIntosh, senior field representative for Minority Whip Roy Blunt. In order to be successful we believe that it is a "Team Effort" and our legislators are an important part of that team. Steve and Stacy are always supportive of Neosho NFH and they make every effort to attend the hatchery's many events during the year. We would like to express a big "Thank You" to our legislators' staffs.

David Hendrix, Neosho NFH

Hatchery Friends Group Meets

The Friends of the Jordan River NFH held a meeting after assisting with the hatchery *Fish are Fun* event on Jan. 30. They discussed the event and future *Fish are Fun* programs and proposed great suggestions and innovative ideas. Much of the rest of the meeting was dedicated to planning the group's first major project, a picnic pavilion with interpretive signage on hatchery grounds.

Tim Smigielski, Jordan River NFH

Ashland FRO Participates in SOLEC 2006

Sponsored by the United States and Canadian governments, the seventh biennial State of the Lakes Ecosystem Conference (SOLEC) was held Nov. 1 to 3 in Milwaukee. This year's SOLEC presented a comprehensive assessment of the state of the Great Lakes basin ecosystem based on 60 indicators in nine groups: biotic communities, contaminants, human health, coastal zones, land-use/land-cover, aquatic habitats, invasive species, resource utilization and climate change.

Ted Koehler from the Ashland FRO attended this year's conference to assist with the Lake Superior Work Group Habitat and Wildlife Committee's Lake Superior breakout session. This session presented work on the draft Lake Superior Work Group's goals to restore and protect the ecosystem of the Lake Superior basin, which, if implemented would achieve the group's desired state of the ecosystem. Selected goals were presented and feedback from the participants collected to better define the goals and explore paths toward implementation. This information will be used to develop final ecosystem goals, which will be used by the Lake Superior Work Group to implement objectives of the Lake Superior Lakewide Management Plan.

Ted Koehler, Ashland FRO

Strategic Habitat Conservation Briefing Held at Regional Office

Columbia FRO Project Leader Tracy Hill traveled to Minnesota in January to attend an inter-Regional Discussion Forum on the Strategic Habitat Conservation Framework. The purpose for the briefing was to review and discuss the message being delivered to Department of the Interior leadership regarding strategic habitat conservation implementation and identify, and refine, the Fish and Wildlife Service's conservation business model anticipated by strategic habitat conservation. The meeting provided an excellent opportunity for employees from all programs to gain a better understanding of the functional elements of the strategic habitat conservation framework and the challenges it will pose to Fish and Wildlife Service leadership. The meeting was attended by Fish and Wildlife Service personnel from Regions 3, 4, 5 and 9.

Tracy Hill, Columbia FRO

Aquatic Species Conservation and Management

Detroit River Lake Whitefish Sampling Conducted

Between October 30 and December 4, 2006, Alpena FRO biologists James Boase and Jim McFee, in conjunction with the U.S. Geological Survey (USGS), completed a lake whitefish survey in United States and Canadian waters downstream of Detroit on the Detroit River. Historically, lake whitefish used the Detroit River for spawning, but in the recent past have been absent from the system. Sampling in the fall of 2005 produced two adult lake whitefish and numerous eggs, warranting increased sampling in 2006. Unfortunately, no whitefish were captured in 2006.

Several methods were used to collect information on the stock structure of this species, including gillnets, egg mats, and egg pumping equipment. Fish and Wildlife Service biologists concentrated on gillnetting and assisted with the egg pumping, while USGS biologists focused on egg collection using the egg mats.

Crews fished nets in three zones within the sample area. Before whitefish eggs were identified in the survey, one zone was sampled each night with four, 150-foot experimental gillnets. Mesh sizes ranged from three to six inch stretch on 25-foot panels. Once whitefish eggs were confirmed in the sampling gear, netting was concentrated around the areas of egg collection.

During the first few weeks of the study, drifting vegetation fouled gillnets and diminished their effectiveness. Once the nets are choked with vegetation they become highly visible and fish avoid them. As temperatures dropped,

vegetation in the river decreased, resulting in increased catches.

Gillnetting produced no lake whitefish in 54 overnight sets. The nets collected eleven different species, including lake sturgeon and a steelhead (rainbow trout). Four lake sturgeons ranging in size from 365 to 872 mm received passive integrated transponder (PIT) tags and cinch FLOY tags after capture from the Fighting Island Complex. The 365 mm lake sturgeon was the first young of the year sturgeon captured in the Detroit River in 40 years of sampling. A 712mm male steelhead was also captured at the north end of Fighting Island—another rare find in the Detroit River.

Lengths were recorded for all other species, with more extensive data collected from 33 walleye and six yellow perch, including aging structures (otoliths and dorsal spines), sex data, and diet data. Aging structures will be analyzed this winter.

This project is an ongoing look at the lake whitefish stocks that use the Detroit River for spawning. Sampling will continue in the fall of 2007 as water temperatures approach 10 degrees Celsius.

Jim McFee, Alpena FRO

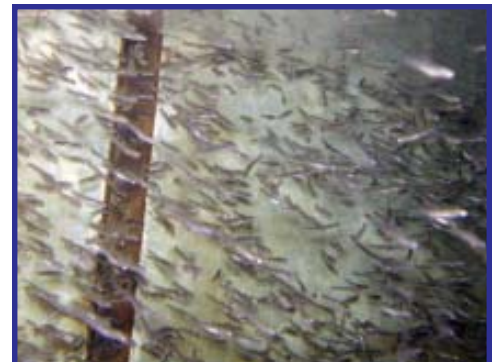


-USFWS photo by James Boase
Volunteer Aime Bourdon and biologist Jim McFee remove a young-of-the-year lake sturgeon from a net on the Detroit River, incidentally captured as part of a lake whitefish survey.

New Year Class of Lake Trout Hatches

The new-year class of lake trout, produced from the fall 2006 spawning effort, has hatched and some have begun to feed at the Jordan River NFH. The inch long fish currently average 3,000 fish to a pound. As their development progresses, we will increase their feeding frequency to about once per hour during the workday. Their feed is a high protein, commercially produced diet designed specifically for trout and salmon aquaculture. The estimated “first feeding” inventory is about 3.5 million. These fish are intended for release in the spring of 2008.

Wayne Talo, Jordan River NFH



-USFWS photo by Wayne Talo
A school of lake trout fry search for food in a rearing tank at the Jordan River National Fish Hatchery.

Fin Clipping Progresses

The remainder of the lake trout production scheduled for release in the spring of 2007 from the Jordan River NFH is presently being fin clipped. Clippers are removing the right pectoral and left ventral fins to identify the fish as hatchery-produced, as opposed to naturally spawned, in the wild. The ability to differentiate between the two is important to researchers evaluating success of rehabilitation of lake trout in the

Great Lakes. Success is defined as the reestablishment of self-sustaining naturally spawning populations of lake trout. As of the end of January, approximately 40 percent of our lake trout have been either coded-wire tagged or fin clipped. Fin clipping is expected to continue into early April.

Wayne Talo, Jordan River NFH

Coded-wire Tagging Complete

Tagging of the second and last group of lake trout for the year was completed on January 16 at the Jordan River NFH. The two groups, each approximately 60,000 fish, are for a strain comparison study. One group is comprised of Seneca Lake strain and the other of Superior-Apostle Island strain. They are scheduled to be released into Northern Lake Huron (Drummond Island Refuge) in the spring of 2007.

Wayne Talo, Jordan River NFH



-USFWS photo by Wayne Talo

Christy Reinhardt removes the adipose fin of an anesthetized lake trout. She will then implant a coded-wire tag into its snout. Marking allows researchers to identify fish that are produced at a hatchery.

Hatcheries Work Together to Restore Native Trout to Lake Superior

Wisconsin's Genoa and Iron River NFHs are an integral part of efforts to restore coaster brook trout in the Lake Superior watershed. The hatcheries have worked in tandem since the mid-1990s to produce hundreds of thousands of these regionally significant fish for stocking efforts in this largest of the Great Lakes.

Iron River NFH is the largest producer of eggs and fingerlings of this unique trout with more than 263,000 eggs and 215,000 spring fingerlings distributed in 2006. Genoa NFH annually receives up to 100,000 fertilized eggs in January from Iron River to carry out various management requests for fingerling and yearling brook trout.

Genoa also serves as a brood stock "back-up" station for Iron River's production programs by culturing various representative lots of brood stocks being maintained by Iron River NFH. This system gives Iron River the assurance that genetic samples of its valuable stocks are safeguarded against catastrophic losses on station, and takes advantage of Genoa's warmer culture environment, which can bring on maturity in newly created brood stocks up to a year sooner than the more northern hatchery. In this way and others these two Federal hatcheries will continue to work hand in hand into the future to help restore this colorful native trout to streams across Lake Superior.

Roger Gordon, Genoa NFH

New Neosho Pallid Sturgeon Building Coming Along

The pallid sturgeon building project continues to make slow but continuous progress at Neosho NFH. The additional 30 rearing tanks will be delivered the last week of February. At present, the foundation and building are complete, along with the plumbing, except for the indoor plumbing to the tanks. The mixing box is also constructed along with office room/wet lab and mechanical room. The remaining items are the mixing column, oxygen line, rearing tanks arrival, electrical work, stairs to the mixing box and landscaping. Once this project is complete, it will allow us to increase our annual pallid sturgeon production to more than 10,000 nine-inch fish. This will make a significant difference in the pallid sturgeon recovery effort for the Lower Missouri River.

David Hendrix, Neosho NFH

Rainbow Trout Tested for Virus

On Jan. 9, Kristen Dziubinski and Ryan Katona of the La Crosse FHC tested two lots of rainbow trout for Viral Hemorrhagic Septicemia (VHS) by removing tissue samples from the kidney and spleen. The samples were then analyzed and diluted with HBSS, an antibiotic. CHSE (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, the rainbow trout were taken to the Environmental Protection Agency laboratory in Duluth, Minnesota, for further testing.

Kristen Dziubinski, LaCrosse FHC

Aquatic Invasive Species

Ruffe Control Abstract Accepted for Research Conference

The International Association for Great Lakes Research (IAGLR) has accepted an abstract based on a ruffe control experiment conducted by the Ashland FRO and Northland College in Ashland, Wisconsin. The experiment to evaluate the effectiveness of bottom trawling in removing isolated colonies of invasive ruffe will be presented as a poster at IAGLR's 50th Great Lakes Research Conference – Past, Present, and Future, hosted by Penn State University. The conference will focus on the history of research in the Great Lakes, what is currently known, and a look into the future for resolving complex issues relating to limnology and lakes management. The conference convenes from May 28 to June 1, and the poster will be displayed in the session “Challenges and Successes for Addressing AIS [aquatic invasive species] in the Great Lakes and Inland Waters.” The experiment confirmed earlier observations that ruffe colonies confined to small and isolated areas of preferred habitat may be vulnerable to effective removal by physical methods. The term “effective removal” implies removal of 90 percent or more of the individuals in a colony. The conference oral and poster presentations combined will encompass 536 Great Lakes research projects.

Gary Czypinski, Ashland FRO



-USFWS

Ashland Fishery Resources Office and Northland College are experimenting with bottom trawling to control invasive Eurasian ruffe.

Asian Carp Information Provided During Seminar Series

On January 9, Alpena FRO biologist Anjie Bowen presented information on Asian carp as part of the Inland Seas Education Association's 2007 Seminar Series. Asian carp refer to four species of invasive carp (bighead, silver, black and grass) that have become established and are spreading within the Mississippi River and its tributaries. Some species have become abundant in areas of the Mississippi River drainage. They may reduce the diversity of native species and be hazardous to water users. Biologists are concerned they may spread into the Great Lakes.

Bowen discussed topics such as characteristics, identification, current distribution and concerns about Asian carp. She also described efforts to slow the spread of Asian carp into the Great Lakes via the Chicago Dispersal barrier project and what the public can do to prevent the spread of Asian carp and other invasive species. At the end of the presentation, Bowen played a short video detailing the jumping behaviors and problems associated with silver carp. The video, titled “Nuisance Fish,” is an

outreach tool that was recorded in partnership with Bill Dance, the Tennessee Wildlife Resources Agency and the Fish and Wildlife Service.

The Inland Seas Education Association's mission is “to use shipboard and onshore educational programs to inspire young people to pursue academic interests related to the Great Lakes, particularly the sciences and to enhance public understanding and stewardship of the Great Lakes and global freshwater systems.”

Anjanette Bowen, Alpena FRO

Implications of Viral Hemorrhagic Septicemia in Michigan Discussed

Project Leader Jerry McClain was interviewed by Shawn Dalton of the Southgate, Michigan, Herald Press on January 31 to discuss Viral Hemorrhagic Septicemia (VHS) in Michigan waters of the Great Lakes and implications to the fisheries.

McClain discussed locations where fish kills have occurred and the virus has been detected, as well as how the Fish and Wildlife Service is involved in sample collection and diagnostic work through the La Crosse FHC. Dalton was interested in documenting what recreational anglers might observe if a fish kill occurs, what risks are associated with the fish virus and precautions that should be taken. McClain noted that a primary concern is transfer of the virus to uninfected waters, particularly transfer from open Great Lakes waters to inland lakes and streams of the state, and outlined precautions that can be taken to help prevent the spread.

Jerry McClain, Alpena FRO

Public Use

Genoa NFH Featured on Outdoor Show

The Genoa NFH was featured on the Coulee Region's premier outdoor radio talk show. Bob Lamb and Jerry Davis, two area sportsmen and outdoor writers, featured the station on their hourly program. This is always a great opportunity to update listeners on current Hatchery programs and upcoming events. Hot issues discussed were the latest interstate fish transfer restrictions due to the Viral Hemorrhagic Septicemia (VHS) outbreak in the Great Lakes, and how the impacts of these restrictions will affect Hatchery operations. Genoa will be working closely with the La Crosse FHC and others to ensure that important programs such as endangered mussel recovery and spring egg collections on the Mississippi River can continue. The hatchery's upcoming 75th anniversary was also promoted. The event will be held on August 8, and will include many of our River partners such as the Upper Mississippi River National Wildlife and Fish Refuge, U.S. Army Corps of Engineers, our Friends Group and a cast of hundreds.

The purpose of Friends of the Upper Mississippi River Fisheries Services was discussed. The group is dedicated to maintaining and promoting the health of the Upper Mississippi River's fisheries and aquatic resource populations, and supporting the mission of the three La Crosse area Fish and Wildlife Service Fisheries stations (La Crosse FHC, La Crosse FRO and Genoa NFH). Listeners were invited to get involved, and become part of a dedicated group of individuals working to promote good

stewardship of our fish and wildlife resources.

Doug Aloisi, Genoa NFH



-WPTY

Jerry Davis (left) and Bob Lamb of Talking Tribune Outdoors featured the Genoa National Fish Hatchery on their premier Coulee Region talk show.

Hatchery's 75th Anniversary Featured in Visitors Guide

Genoa NFH is becoming more mature. That is how we intend to define the aging process as we celebrate our 75th anniversary on August 8. To promote the event, the station contacted the Vernon County Tourism Council for suggestions.

The Hatchery has been listed as a local attraction under the Genoa, Wisconsin, town page for several years, but with the scheduled 75th celebration taking place, the tourism council decided that the station warranted its own page in the 2007 Vernon County Visitors Guide. With the help of Don Fossum, owner of the Great River Resort and local representative of the council, a full page article of the hatchery's history and current programs is featured with an aerial view of the station. The beauty of the Upper Mississippi River National Wildlife and Fish Refuge can clearly be seen to the

reader, with an invitation to attend the event. The release of the 2007 guide was celebrated at the Vernon County Tourism Summit on January 27, with Brad Pflaff, local representative from U.S. Rep. Kind's office and state representatives Lee Nerison and Dan Kapanke speaking.

Doug Aloisi, Genoa NFH

Third Annual Snowmobile Open House

The Third Annual Snowmobile Open House event occurred on Saturday, February 3 at Pendills Creek NFH. Once again this year, the event was sponsored by the Friends of Pendills Creek Hatchery.

This year the Friends of Pendills Creek Hatchery assisted with soliciting local businesses for food and prize donations for the event. The Friends also donated food and worked the event serving guests a free meal. During the event, the Friends Group sold memberships, candy and logo shirts. Hatchery staff were also eager to help. Deborah Jones served as hatchery event coordinator and provided hatchery tours, along with Jenny Walker and Curt Friez, to the estimated 85 visitors that attended the event. Attendance was down this year from previous years because of near white-out conditions from snow squalls and extreme cold. Even the hatchery raceways had frozen over, limiting fish viewing.

Curt Friez, Pendills Creek NFH

Sport Show Exhibit Promotes Environmental Awareness

Staff from the La Crosse FRO, Upper Mississippi River National Wildlife and Fish Refuge (La Crosse and Winona Districts), Genoa NFH, and the La Crosse FHC hosted more than 2,800 visitors who toured the Fish and Wildlife Service display booth at the 30th Annual La Crosse Boat, Travel, and Sports Show at the La Crosse Exhibition Center. An inviting array of educational brochures, posters, photographs, taxidermy mounts, live fish and animal pelts were prominently displayed near the main entrance to the exhibition hall. Highlighted fishery resource topics included invasive Asian carps, freshwater mussels, migratory species, disease pathogens and the list of public events to celebrate the Genoa NFH 75th anniversary in August. The opportunity to personally exchange this information with the large and diverse audience makes Fish and Wildlife Service participation here a valuable outreach tool for all La Crosse area offices.

Mark Steingraeber, La Crosse FRO; Rick Nelson, La Crosse FHC



-USFWS
Visitors tour the Fish and Wildlife Service booth at the 30th Annual La Crosse Boat, Travel, and Sports Show.

Limnology Class Impressed by Student Employee's Knowledge

Home for Christmas break, student Chris Olds took an afternoon to explain to the Gaylord High School limnology class a little about the Jordan River NFH and its lake trout rehabilitation program. On January 3, 30 high school juniors and seniors gathered around Chris to observe a lake trout dissection as the Hatchery would do when performing a fish health assessment. Chris explained the functions of different organs, the signs of a healthy fish and the life cycle of a wild lake trout. A brief overview of the Jordan River NFH followed the dissection. The class was interested in the invasive species that have entered the Great Lakes as well as the new offshore stocking vessel, the *M/V Spencer F. Baird*. Chris is a graduate of Gaylord High School and it was this limnology class that sparked his interest to pursue a degree in the fish and wildlife field.

Chris Olds, Jordan River NFH



-USFWS
Chris Olds of the Jordan River National Fish Hatchery talks to a limnology class about the lake trout rehabilitation program.

Fish Are Fun...Again!

Tim Smigielski resumed his winter kids outreach program, *Fish Are Fun*, at Jordan River NFH. The topic of the evening was "Ice Fishing Michigan." Tim has two more programs scheduled on February 28 ("What About Lake Trout?") and March 29 ("Vampires of the Great Lakes – The Sea Lamprey"). The programs are designed for youngsters, with lots of animation to keep their attention on the subject. After the presentation, visitors tour the tank room and are offered an opportunity to fin clip a lake trout. The tour is followed by a hands-on activity or some other mentally stimulating, but entertaining focal point. Snacks and refreshments round out the evening.

Tim Smigielski, Jordan River NFH

Snowmobile Tourists Return,

Lack of snow and warm temperatures affected snowmobile tourism in Michigan's Northern Lower Peninsula this winter; however, conditions improved during mid-January and we began to see our normal rush of people stopping at the Jordan River NFH from the trails to see the fish and learn about the hatchery. We encourage people to stop by our visitor center year-round (our visitor center is open 24 hours daily, 365 days per year), but visitor traffic in the winter is particularly heavy because of our location adjacent to a major snowmobile trail. By reaching out to the snowmobile community, we have made contacts with people from all over the Midwest, educating them about lake trout and the role we play in their rehabilitation to the Great Lakes.

Rick Westerhof, Jordan River NFH

Fish and Wildlife Service Participates in Pheasant Fest 2007

The Fisheries, Refuges, Ecological Services and Private Lands programs were well represented during Pheasants Forever's Pheasant Fest 2007 in Des Moines, Iowa. The Fisheries program was represented by Joanne Grady and Lee Erickson of Columbia FRO and Pam Thiel from the La Crosse FRO. The three-day event drew a record setting crowd of 24,510 people despite snowy conditions on Sunday. Asian carp, zebra mussels, farm pond management and paddlefish were the most popular topics discussed, drawing questions from the crowds. The fish identification puzzle and paddlefish mount were a hit with the youngsters who enjoy fish. *Lee Erickson, Columbia FRO*



-USFWS photo by Lee Erickson

Fish and Wildlife Service employees Pam Thiel (left) and Joanne Grady enjoy the company of Teddy Roosevelt during Pheasants Forever's Pheasant Fest 2007 held in Des Moines, Iowa.

Fishery Management at DeSoto National Wildlife Refuge

The Columbia FRO, DeSoto National Wildlife Refuge, Iowa DNR and the Nebraska Game and Parks Commission met to discuss results and future stocking/assessment plans at DeSoto Lake. It was a great opportunity for agency biologists to provide pertinent recommendations to managers at

DeSoto NWR. The meeting focused on an intensive three-year fishery management project that began in 2006.

Columbia FRO technician Brian Elkington gathered sampling information from each agency in 2006 and the team used this to assess and discuss the fish stocking strategy for 2007. The first creel survey since 1989 was also accomplished in 2006 at DeSoto Lake. This was an important step in understanding the fishery. It was estimated that the DeSoto Lake fishery, during the April-October fishing season, brings in approximately \$970,000 to the local economy. The creel survey results also showed an immense fishing pressure for crappie at DeSoto Lake. The team discussed and agreed on the continued addition of cedars trees to the lake bed for crappie habitat. The walleye fry stocking program will continue as well as the channel catfish stocking in 2007; however, largemouth bass stocking was suspended because data indicate that it was not adding to the native year class. All three agencies are going to provide sampling effort at DeSoto Lake in the hopes of continually honing and improving the fishery.

Brian Elkington, Columbia FRO

Creating Awareness, One Shopper at a Time

The Missouri River was besieged with heavy ice flows as temperatures in central Missouri remained well below freezing in January. Columbia FRO field crews use this time to work on reports and projects in the cozy confines of the heated office. One such project undertaken this January will help build the experience of our volunteer staff and strengthen the relationship with BassPro Shops of Columbia, Mis-

souri, one of our partners in outdoor education.

We established a cooperative partnership with the store prior to its 2004 grand opening by collecting Missouri River fish for its display aquarium. In turn, Bass Pro Shops offered space on the support pillars of the 8,000-gallon tank for educational material about to the Fish and Wildlife Service and Missouri River restoration.

Taking the lead on this project is our station's volunteer photographer, Ashley Berkler. As a journalism student at the University of Missouri, she has great intuition for creating media to catch the public eye. Her posters will help visitors understand the ecology of some of the big river species on display. Ashley has worked with biologists at the Columbia FRO to find the best pictures of various riverine species. After designing an attractive layout, Ashley researched each species for interesting facts, identifying characteristics and colloquial names commonly used to describe these fish. In addition she included scientific concerns, such as the suspected decline of shovelnose sturgeon due to over-harvest for caviar. Her posters will be printed off on heavy stock paper, laminated and taken to the aquarium where they will be featured in a "fish of the month" display.

Volunteering her time to create this project speaks volumes for Ashley's dedication and commitment to outreach. Volunteers and partners are a critical component of our office's outreach efforts. Ashley's posters will be seen by hundreds of people weekly, most of whom are only somewhat familiar with the vast diversity of aquatic species swimming in our local waters.

Andy Plauck, Columbia FRO

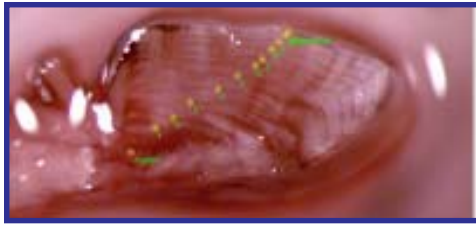
Cooperation with Native Americans

Otolith Analysis Collected During 2006 Field Activities

Biologist Scott Koproski began working on otolith samples collected for age and growth analysis during the 2006 fishery independent lake whitefish survey. Otoliths were collected from all lake whitefish, lake trout and burbot sampled during this survey. The otolith is the first calcified structure that begins to develop during the egg stage. It grows towards the anterior end of a fish, and by viewing a cross-section of the otolith you can begin to see zones of summer and winter growth. The pattern resembles the rings of a tree. Annual growth can be identified by counting the number of zones of compressed winter growth. In addition to counting the zones of winter growth, you must pay special attention to the edge of the structure. Annulus formation varies geographically with northern regions seeing annulus formation later in the summer compared to southern regions.

Koproski uses the “crack and burn” technique to differentiate the zones of summer and winter growth. By cracking the otolith laterally and placing the cracked portion into an alcohol flame, the cracked portion begins to darken to a golden brown color. Once the otolith is burned, it can be viewed using a stereo-microscope. To help view the structure, a drop of mineral oil is placed on the cracked section. The mineral oil smoothes out the structure while viewing it under the stereo-microscope and allows the age interpreter to see the image more clearly.

Scott Koproski, Alpena FRO



-USFWS photo by Scott Koproski

An otolith from a lake whitefish shows annual growth rings.

Ashland FRO Announces Several Grant Programs to Tribes

Ashland FRO biologist Frank Stone mailed an announcement to 27 tribal cooperators regarding the Fish and Wildlife Service’s Private Stewardship and Great Lakes Fish and Wildlife Restoration Grant Programs for 2007. The Private Stewardship Grants program provides Federal grants on a competitive basis to individuals and groups engaged in voluntary conservation efforts on private lands that help endangered or threatened species and candidate and other at-risk species. This program is just one of a variety of tools available under the Endangered Species Act that help landowners plan and implement projects to conserve species.

The Great Lakes Fish and Wildlife Restoration Grants program also provides Federal dollars on a competitive basis to states, tribes and other interested entities to encourage cooperative conservation, restoration and management of fish and wildlife resources and their habitat in the Great Lakes basin. They are funded under the Great Lakes Fish and Wildlife Restoration Act of 2006. Stone encouraged tribes to contact their local Fish and Wildlife Service office if they need assistance in preparing their proposals.

Frank Stone, Ashland FRO

Technical Assistance Requests Received from Tribes

Regional Tribal Liaison John Leonard asked the Ashland FRO to review a 2007 Tribal Wildlife Grant proposal from the Sac and Fox tribe (Meskwaki Settlement). Comments were provided. The purpose of this proposal is to conduct an inventory of populations of game, furbearer and non-waterfowl bird on tribal lands, which will provide baseline data necessary for the tribe to develop management programs of the flora and fauna of the Meskwaki Settlement. The data will also be used to implement management tools including habitat protection and development along with harvest quotas.

Chris Holm, Bois Forte Water Resource Program Manager, also requested review of a proposal to conduct a survey of aquatic plant communities and a risk assessment of aquatic plant invasions in Nett Lake, if a fish passage system is installed at the Nett River dam. This initial survey is essential to complete prior to installation of fish passage through or around the Nett River dam, to prevent invasive plant species from being introduced to Nett Lake. Pending the outcome of survey results, a feasibility/design study would then be carried out to identify engineering costs associated with construction of a fish passage structure around Nett River dam. This structure would allow the currently excluded fish assemblage in Nett River to access Nett Lake and provide an in-lake fish population resembling the historic assemblage.

Frank Stone, Ashland FRO

Leadership in Science and Technology

Teamwork Benefits Mussel Recovery

In the dead of winter, most aquatic biologists can be found keeping warm in front of computer monitors that glow with data collected the previous field season. Biologists at Genoa NFH and the La Crosse FRO have likewise kept warm this winter while determining thermal requirements for early life development of the endangered Higgins' eye pearl mussel.

Patterning his study after similar work conducted in 2003 on the endangered winged mapleleaf mussel, Genoa mussel propagation biologist Tony Brady reared Higgins' eye pearl mussel *glochidia*, or larvae, on largemouth bass host-fish maintained in two varying temperature regimes at the hatchery last spring. Genoa NFH staff recorded the water temperature and enumerated juvenile mussel release over metamorphosis periods from 40 (warmer regime) to 49 days (colder regime). Using a mathematical model that he developed for the earlier winged mapleleaf work, La Crosse FRO biologist Mark Steingraeber used these Higgins' eye pearl mussel data to derive the minimum threshold temperature required for metamorphosis of largemouth bass-encysted *glochidia* into juvenile mussels. This value was applied to all of the daily water temperature values to determine the cumulative temperature units of development needed for *glochidia* to complete metamorphosis on largemouth bass.

This finding represents only the second freshwater mussel for which these biological temperature constants have been reliably quantified and suggests that values for these traits are species spe-

cific. These thermal criteria can be used in future Higgins' eye pearl mussel recovery efforts to: attain targeted rates of metamorphosis in the hatchery by making knowledgeable water temperature adjustments; quantitatively estimate cumulative mussel development at any time; and guide when to place mussel bearing host-fish into rivers to maximize juvenile mussel production.

Mark Steingraeber, La Crosse FRO; Tony Brady, Genoa NFH



-USFWS
Largemouth bass, a host fish for mussels, are involved in temperature trials for the Federally endangered Higgins' eye pearl mussel, to determine optimum temperatures for survival of the early life stage of this mussel species.

Columbia FRO Offers New Technique for Sturgeon Monitoring

State and Federal partners along the Missouri River involved with the Pallid Sturgeon Population Assessment and Associated Fish Community Monitoring Program recently met to discuss basin-wide implementation of a new fish community sampling gear, the push trawl. Designed by Columbia FRO biologist Jeff Finley as a practical way to sample fish in complex side channel and shallow water habitats, the push trawl has since been used as a replacement for the labor intensive bag seine in the U.S. Army Corps of Engineers' Shallow Water Habitat Mitigation Project. The design of the push trawl allows it to be deployed off

the front of a boat and pushed through the water. It targets fish habitat that would otherwise be too difficult to sample because of variations in depth and woody debris in shallow water habitats. Paired comparisons of push trawls to mini-fyke nets—another standard sampling method—showed a two fold increase in sampling efficiency. Full implementation promises to increase biologists' ability to sample shallow and high water velocity areas never before sampled in big rivers. It will enhance the program's ability to document fish community use and sturgeon recruitment throughout the year. Basin-wide implementation of the push trawl is expected in July.

The push trawl is the fourth trawl design introduced by Columbia FRO for use in big river sampling since the Pallid Sturgeon Recovery Program began. Our scientific expertise and role as a leader in science and technology inspires us to seek out and employ more efficient methods and approaches so that we may constantly improve fisheries conservation and pallid sturgeon recovery in the Missouri River.

Nick Utrup, Columbia FRO

Aquatic Habitat Conservation and Management

Fish Passage Structure Completed in Southwest Iowa

Columbia FRO partnered with Hungry Canyons Alliance, Iowa DNR, Natural Gas Pipeline Company and the Natural Resource Conservation Service to modify a grade control structure to provide fish passage on Seven Mile Creek in Southwest Iowa. This area is unique because of loess soils, which can be highly productive but very susceptible to erosion. Many of the streams in this region are experiencing erosion problems, which not only causes problems for landowners, but also has put approximately 800 bridge crossings at risk for structural damage. This became readily apparent after flooding events in the early 1990s and the region received Emergency Watershed Protection Program funds to build grade control structures to protect these crossings. They were built of concrete sheet-pile and grout riprap with a 4:1 rise/run slope. An unanticipated consequence of these 4:1 structures was the inability of fish to pass over the structure, which caused population declines in numerous fish species.

The Seven Mile Creek project was an offshoot of another project occurring downstream. The Natural Gas Pipeline Company of America had a pipeline across the Creek that was exposed and at risk of damage due to streambed erosion. The company teamed up with Hungry Canyons Alliance to build a new weir to protect the pipeline and at the same time it was decided to replace a nearby 4:1 structure that was blocking fish migration. The structure was attractive for replacement because it was the first structure upstream

from the confluence of the West Nodaway River.

The new structure was built, and the old structure modified with a 20:1 slope. The standard building specs for these grade control structures now include grouting the rock weir structure and offsetting large boulders down the middle third of the structure. The grout prevents rock slippage to increase longevity of the structure. The large boulders help create velocity refuges for migrating fish. Iowa DNR research with Iowa State University has shown that these structures are effective in allowing fish movement upstream. An additional benefit is that these structures improved macroinvertebrate diversity and population sizes.

Nick Frohauer, Columbia FRO



A water control weir on Seven Mile Creek in Southwest Iowa (above) was modified into a riffle approach (below) to provide uninhibited fish passage.



-USFWS photos by Nick Frohauer

Applications, Surveying and 2007 Work Plans Finished for Michigan Partners Program

The beginning of a new year brought Northern Michigan a mild winter, and allowed Alpena FRO Partners for Fish and Wildlife biologist Heather Rawlings several more days to survey potential wetland restoration sites. Rawlings surveyed four wetland sites on two private landowner properties in Alcona and Presque Isle counties. Winter hit by the second week in January, which shut down the field season until April. Time then fell to drawing up projects and submitting permits for wetland restoration to the Michigan Department of Environmental Quality. Nine permits were mailed to the landowners for submission during the month of January, and four additional sites that did not require a permit were drawn up and mailed out. Rawlings met with Patrick Ertel from Huron Pines Resource, Conservation & Development (RC&D) to review river restoration work plans for the 2007 field season. Huron Pines RC&D and the Fish and Wildlife Service work together on many river restoration projects throughout Northeast Michigan. 2007 projects include two road/stream crossing restoration projects in Otsego and Montmorency counties, and stream bank erosion projects in the AuSable, Pine/VanEttan, Ocqueoc and Black River watersheds.

Heather Rawlings, Alpena FRO

Columbia FRO Partners with Conservation Opportunity Area

The Middle Meramec conservation opportunity area (COA) team works in a priority area of Missouri's comprehensive wildlife conservation strategy. The team includes state, Federal and private organizations, and meets regularly to discuss priorities, actions, funding and ideas for the Middle Meramec COA.

The Middle Meramec COA includes the middle reach of the Meramec River and its tributaries southeast of St. Louis in Missouri's Ozark region. This COA has many natural features including rugged landscapes, embedded glades, fens, caves and springs. The area contains several endangered species or species of concern such as Indiana bat, gray bat, Hine's emerald dragon fly, spectaclecase mussel and cerulean warblers.

The team has set priorities on reforestation of river bottomlands, addressing aquatic issues, using GIS to guide conservation planning, and increasing outreach efforts. Biologist Nick Frohnauer and other team members submitted a grant application for outreach, aquatic fish passage, GIS work and organizing a Middle Meramec summit. The grant opportunity was solicited by the Doris Duke Foundation and administered through the Wildlife Conservation Society's wildlife actions opportunity fund. Our proposal beat 420 others to make it into the top 80 full proposals. Final funding decisions will be announced in February.

Nick Frohnauer, Columbia FRO



-USFWS photo by Nick Frohnauer

A potential fish passage project site on Dry Creek near Steelville, Missouri, where perched culverts prevent fish passage.

Muskeg Creek Brook Trout Access Project Completed

Ashland FRO was involved through the Partners for Fish and Wildlife Program on fish passage barrier removal on Muskeg Creek in Bayfield County, Wisconsin. Muskeg Creek is a tributary to the Iron River which flows into Lake Superior. During low water, a concrete box culvert at Muskeg Creek and Eastview Road creates a fish passage barrier. Working with the town of Oulu, the problem structure was removed and replaced with a bridge in order to provide a safer crossing for the public as well as provide a natural bottom for uninhibited fish passage. This project improved fish access to more than 11 miles of stream and benefits native brook trout and other aquatic life.

Ted Koehler, Ashland FRO



-USFWS photo by Ted Koehler

The Muskeg Creek Partners for Fish and Wildlife Program project removed a box culvert and replaced the structure with a bridge which now provides uninhibited fish passage to over 11 miles of stream.

Workforce Management

Fisheries Academy in a Word

A college professor once required me to summarize each chapter of an assigned text in a single word and then explain in a paragraph why I chose that particular word.

Fisheries Academy at the National Conservation Training Center (NCTC) was a chapter in the text of my career I'll not soon forget. The academy began with an overview of the history and culture of the Fish and Wildlife Service. We were given the insightful opportunity to interact with staff from our Washington Office and gain greater understanding about their role within the agency. I realize now the political and fiscal battles they fight for us that I had previously underestimated. Their presentations on budgets and hierarchy transitioned fluidly into the Fisheries Information System, a powerful tool recently upgraded to a living database to be used for accountability and directing funds. Learning the basics of this system and how it is used in the Regions and at the Washington Office and has elevated FIS on my list of "things I had better know how to do."

Assistant Director for Fisheries and Habitat Conservation Mamie Parker provided words of encouragement to the group. I was impressed with the diversity of talents, skills, character and personalities in our Fisheries workforce. The two-week academy helped forge bonds of friendship and closeness.

After a wonderful weekend touring the monuments in Washington D.C., we returned to NCTC to compose Hazard Analysis and Critical Control Points plans and learn how to incorporate them into

our field work and stocking efforts. As the week came to a close, we listened to the occupational guidance and general advice for living from retired biologist Buddy Jensen, based on his colorful career with the Fish and Wildlife Service, and we were guided along the professional pathway of a truly inspirational project leader, Karen Kilpatrick from Natchitoches NFH. To finish the week, Project Leader Stewart Jacks of the Arizona FRO impressed upon the class a conservation ethic and a professional code of conduct reinforced by Chris Horsch, NCTC Branch Chief, in an intimate discussion of the future.

I could write a book about the experience at Fisheries Academy, the pride it instills into our workforce and the clarity of how we function as the world's leading authority on Fisheries. Rather than do that, I will summarize this chapter in the text of my career in just one word ... INSPIRING.

Jeff Finley, Columbia FRO



-NCTC

Fisheries Academy Class of 2007

Dave Bohn Comes Aboard the *M/V Spencer F. Baird*

Cherboygan, Michigan, is the home port for the *M/V Spencer F. Baird* and has been Dave Bohn's home most of his life. After graduating from high school, Dave attended Southwestern Michigan College and began working on the passenger boats to Mackinac Island. Three years later he had risen to the rank of Captain and spent the next fourteen years running and maintaining boats for three different companies and around fifteen different boats. In 1988, Dave began operating tugboats in the off season and quickly decided a change of pace and new challenges were to his liking.

Two companies and about ten tugboats later, Dave is ready for new challenges aboard the *Spencer F. Baird*. The wide assortment of vessels Dave has operated and maintained, along with marine construction experience with winches, cranes and other equipment, has prepared Dave for his new job. While working in the marine construction trade, Dave had the opportunity to sail on all five Great Lakes as well as the New York State Barge Canal and the Hudson River. He is looking forward to many years of working with the seasoned crew of the *Spencer F. Baird* and being able to step into their positions if an emergency arises. Dave holds a 200 gross ton Masters license with towing and sail endorsements for Great Lakes and Inland waters including western rivers. He is in the process of upgrading to 1,600 gross tons to give him the necessary credentials to operate the *Spencer F. Baird*. Dave has attended many varied training courses throughout his career that

have increased his safety awareness. He plans to make safety his foremost concern during his training period aboard the *M/V Spencer F. Baird* and throughout the rest of his career.

Dave Bohn, Jordan River NFH



-USFWS photo by Tim Smigielski
David Bohn is the new seaman-fisherman aboard the *M/V Spencer F. Baird*.

Biologist Discusses Communication in Natural Resources

Dr. Adrian Andrei, an assistant professor of Wildlife Science, contacted Columbia FRO for assistance with teaching a communications course specific to fish, wildlife and natural resource related professions. Biologist Jeff Finley provided a seminar and activities on selecting media outlets for communication, citing studies conducted about Americans' perceptions of natural resources and how to make conservation issues "newsworthy." The students quickly learned that most people are interested in natural resources if it directly affects their health or welfare. In a hands-on activity, the students applied content from Dr. Andrei's course in selecting appropriate communication techniques for different applications. Dr. Andrei's course is groundbreaking for the university. His realization that effective communication is lacking in many students entering the natural

resources workforce is a reflection of his level of dedication and attention to detail.

Jeff Finley, Columbia FRO

Volunteer Three-peats

For the past two years, Randy Obermiller has volunteered at Pendills Creek and Sullivan Creek NFHs when he is on downtime from his permanent job in his home city of Traverse City, Michigan. Obermiller decided to return to volunteer for a third stint at the hatcheries where he has worked a total of 1,092 volunteer hours at a variety of jobs such as feeding the lake trout, cleaning raceways, shoveling snow and assisting maintenance mechanic John Shuman with maintenance related duties. He accepts all "other duties as assigned" with a smile.

Debbie Jones, Pendills Creek NFH



-USFWS
Randy Obermiller has provided 1,092 volunteer hours of service at the Pendills Creek/Sullivan Creek National Fish Hatchery Complex over the last two years.

Natural Resources Student Job Fair Held

Columbia FRO biologist Jennifer Johnson attended the Student Job Fair of the 2007 Missouri Natural Resources Conference in Osage Beach, Missouri. The Student Job Fair is an excellent opportunity to reach a highly diverse category of students from across the Midwest. Johnson

used the forum of more than 200 natural resource students to establish contacts with aspiring biologists in aquatic conservation and advertise employment opportunities while promoting Columbia's fishery and Missouri River work. Job fair attendees asked questions and learn about the Fish and Wildlife Service's job opportunities. Johnson answered questions on subjects including the endangered pallid sturgeon, invasive Asian carp, aquatic species and habitat conservation.

Jennifer Johnson, Columbia FRO

Journalism Student Joins Columbia FRO as Volunteer Photographer

We are excited to announce the addition of Ashley Berkler, volunteer photographer, to the Columbia FRO team. Ashley is an Iowa native working on a bachelor's degree in journalism at the University of Missouri-Columbia. Prior to volunteering with us, she worked for Maquoketa Caves State Park near Bellevue, Iowa, where she developed a Junior Cave Explorers program, conducted tours of the park's 14 caves and led campground programs. Ashley has been eager to spend time in the field with our crews. She has photographed our biologists sampling on the Missouri River for the Mitigation Program and instructing a fisheries class. Ashley's main task at Columbia FRO has been the development of a deck of playing cards featuring fish species of the Missouri River. She is also working on fish information posters for BassPro Shops. Next, Ashley will be tackling our Web page. We appreciate her enthusiasm, experience and journalistic skills.

Joanne Grady, Columbia FRO

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Fish Lines

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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, Hot Springs, New Mexico (1960)

Windows in time

A Glimpse into our Proud Past:

The fish hatchery at Hot Springs was located near the Elephant Butte Reservoir in Sierra County, New Mexico. The hatchery was established in 1937 and operated until it was transferred to the Bureau of Reclamation in 1965. The City of Hot Springs was renamed Truth or Consequences after a popular radio program in the 1950s.

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