



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

Columbia Fishery Resources Office Biologist Developing New Trawl Method

(See the Feature Story on Page 5)



-USFWS

Jeff Finley and Cliff Wilson of the Columbia Fishery Resources Office adjust a push trawl. They are sampling the fish community in shallow water off a sand bar in the Missouri River near Hartsburg, Missouri. The trawl is pushed and fishes under the bow of the boat.

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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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 - Columbia Fishery Resources Office Biologist Developing New Trawl Method

Large rivers such as the Missouri have unique habitats and their own set of problems. Silt banks, quickly eroded sandy swifs, secondary and tertiary side channels, and other habitats less than three feet deep can be very difficult to sample using traditional methods.

A new type of trawl under development at the Columbia Fishery Resources Office (FRO) may help biologists overcome these hindrances and effectively sample fish in very shallow waters in the Missouri River and its side channels.

Many of the Missouri River's shallow water habitats—those less than three feet deep—were lost more than 50 years ago. Little or no information remains describing the fish communities that inhabited them or the significance of these habitats to riverine fish. Biologists do know that the loss of these habitats has resulted in a drastic decline of certain riverine fish species. Recent projects undertaken by the U.S. Army Corps of Engineers (Corps) have focused on sampling fish communities associated with existing and newly created shallow water habitats.

The value of these new habitats cannot be determined unless biologists have a way to successfully sample fish in shallow waters. The push trawl technique is doing just that. Though the sample set is currently small, juvenile chubs have dominated these collections implicating the possible significance of silt banks as nursery habitats. Studies have shown the endangered pallid sturgeon feed heavily on various chub species. Additionally, juvenile sauger have also been collected with the push trawl. Sauger reproduction on the Missouri River has not yet been fully understood and their numbers have declined in recent years. As swift, shallow, cobble-bottom areas are being renovated as part of recent Corps projects, Columbia FRO hopes to see more young sauger occupy these habitats.

The challenges to sampling in shallow water areas are numerous. For example, silt banks are very productive large river areas that have not been adequately sampled because the silt substrate has the consistency of pudding and is often waist-deep. These areas are impossible to sample with seines and nearly impossible to sample using mini-fyke nets.

Secondary connected side channels create a braiding effect, as well as ever-changing tertiary channels. These channels braid, meander, and migrate much like the river once did. Side channels can eventually create multiple tie channels back to the main river resulting in a series of islands.

The various channels are often very swift, with velocities exceeding three feet per second, and have shifting sand, gravel, and organic substrates that quickly fill mini-fyke nets with debris, roll them over, wash them to the bank, or carry them off altogether. When walked on, the sand quickly erodes leaving a person sinking or stuck in the sand as it re-deposits around the feet. This makes seining virtually impossible and, at times, hazardous.

The desire to explore these often-forbidding habitats led Columbia FRO biologist Jeff Finley to create the "push trawl," which can be used to sample shallow areas with the aid of an outboard jet operated boat and forward facing outriggers. The trawl is pushed rather than pulled because of the disturbance of the jet wash, and reverse bow trawling is not possible because the outboard jet lacks reverse power. The push trawl has the potential to be used as a surrogate to seining and setting mini fyke nets, as it is more efficient to operate utilizing less man power and multiple samples can be taken with ease.



-USFWS photo by Ryan Tilley

Jeff Finley demonstrates how the push trawl system is assembled.

By pushing the trawl, biologists can sample undisturbed areas, rendering their efforts more effective. The ideal depth for the push trawl is between 1 and 4 feet. Any deeper and the net and boards will not keep in contact with the bottom. Any shallower and the sample can be crushed by the hull of the boat. The push trawl technique uses telescoping outriggers attached to the splash board of a boat's front deck. When extended, the outriggers deploy the trawl from eight feet in front of the boat. Ropes are affixed to two 18-inch high by 22-inch wide otter boards which spread trawls ranging from six feet to 12 feet wide.

Currently, the optimum trawl sizes are 8-10 feet, although Finley and his colleagues are still experimenting with board and net combinations and fixed outriggers. The ropes are attached to the otter boards and strung through sailing pulleys that dangle off the end of the outriggers, then through a deck organizer affixed to the splash board. The organizer allows both ropes to be simultaneously retrieved and makes even deployment of the boards easier.

When deployed, the trawl samples fish under the bow of the boat as it is pushed along. The boards can often be seen from the boat as they dig and stir up the substrate along side of the boat and sometimes break the surface of the water.



-USFWS
The push trawl is placed on the bow deck once pulled. One person can pull the trawl onto the deck while a boat driver is ready to reposition the boat, if necessary.

To retrieve the trawl, a deck hand pulls in the ropes until the otter boards reach the pulleys. The operator can then retrieve the cod end of the net using a gaff and place it on the deck of the boat. The trawl can now be cleared of fish, and forward momentum has not been lost, reducing the possibility of losing fish that may swim out of the net.

There are restrictions to the push trawling method. Because of the short length of rope, the otter boards will not fish correctly in water deeper than 4 feet – acceptable since standard stern trawling is already effective at these depths. Trawl length and trawl material must also be well thought-out. Longer nets place the cod end beneath the intake of the jet unit.

Many trawls have chaffing material protecting the cod. This material has a larger bar measurement and can hang up on bolts, screws, drain plugs, transducers, or anything else on the back and underside of the boat. To solve this problem, the ropes are shortened, a shallower net is used or chaffing material is removed, and the boat is cleared of hanging points.

A final restriction is water depth. It is possible to run the boat aground and trap the net between the hull and the substrate, as it is very difficult to obtain a reading from depth sounding electronics in water less than 2 feet and transducers are typically mounted on the transom.

Columbia FRO will continue to develop this technique, and biologists there feel that push trawling will have future applications in the upper reaches of the Missouri River and its tributary confluences, as well as existing and newly created shallow water habitats. They plan to present the results of this technique at future workshops and conferences.

Working to overcome sampling challenges and working to understand the significance of recreated shallow water habitats answers the call to develop, apply and disseminate state-of-the-art science and technology to conserve and manage aquatic resources outlined in the “Fisheries Program Vision for the Future.”

For additional information about this article, contact Jeff Finley at the Columbia Fishery Resources Office:
Phone 573/234-2132
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or visit their website to view other station activities:
<http://www.fws.gov/midwest/columbiafisheries/>

Partnerships and Accountability

Local Walleye Club Partners in Mississippi River Mussel Restoration Effort

As freshwater mussels are being attacked from all sides by pollution, river flow alterations, habitat loss through sedimentation, and invasive species such as zebra mussels, many conservation groups are coming together to provide assistance to restore these native mussels. One example is the partnership formed between Genoa National Fish Hatchery (NFH), the Iowa Department of Natural Resources (DNR), and Falling Rock Walleye Club (Club) of Lynxville, Wisconsin, to recover black sandshell mussels in Pool 10 of the Mississippi River.

Genoa NFH already works with the Iowa DNR to produce and stock state listed mussel species into Iowa waters. Because of its interest in walleye, volunteers from the Falling Rock Walleye Club assisted in minnow harvest this past summer to help feed advanced growth walleyes (larger than 8 inches) at Genoa NFH. Eight hundred and fifty of these advanced growth walleye were harvested in early November and were inoculated with larval mussels (glochidia) of black sandshell mussels. The walleyes were then released into the Mississippi River at Harpers Ferry, Iowa. Members of the Club were excited to see the size of the walleye they helped grow this year. It is hoped that when the glochidia complete their life cycle stage on the gills of the fish, they will find a favorable spot in the river to grow and establish new populations.

Tony Brady, Genoa NFH



-USFWS
Volunteer Ron Easton, President of the Falling Rock Walleye Club, releases walleyes into the Mississippi River. These host fish were inoculated with the larvae of black sandshell mussels in hopes of establishing wild populations.

National Fish and Wildlife Foundation Representatives Tour the "Clam Palace"

Donn Waage and Neal Feeken of the National Fish and Wildlife Foundation (Foundation) toured the Genoa NFH and learned more about ongoing native mussel restoration efforts. The Foundation was instrumental in the station's implementation of endangered mussel propagation, supplying a grant that allowed for the procurement and construction of the "Clam Palace," the hatchery's mussel propagation building.

After this initial grant and subsequent years of refining culture techniques, the building now produces more than two million juvenile mussels for ongoing Federal endangered species recovery and restoration programs. As a result of those early efforts starting five years ago, biologists are now finding mature mussels that were propagated at Genoa NFH, released into the Upper Mississippi River, and are successfully producing offspring. Freshwa-

ter mussels require a fish host to develop into the juvenile stage, making healthy and abundant fish populations a prerequisite to mussel recovery. The success of the Higgins' eye pearl mussel recovery effort has far exceeded the wildest imaginations of the pioneers of the effort, with more than 10,000 sub-adult and mature adult mussels produced from 2001 to 2005. These individuals are being placed in numerous locations in an attempt to create five stable populations with multiple year classes at each site.

Waage and Feeken also observed the fledgling Federally endangered winged mapleleaf propagation program. Last year was the first trial run of the project with 100 host catfish infested with mussel larvae (glochidia) from two females from the St. Croix River. This year 300 catfish were infested with glochidia from four females and are being held at the hatchery until spring.
Doug Aloisi, Genoa NFH



-USFWS
The "Clam Palace" at the Genoa National Fish Hatchery is critical to Regional mussel recovery and restoration programs producing over two million juvenile mussels annually.

St. Marys River Lake Sturgeon Project Funded

The National Fish and Wildlife Foundation selected the Lake Sturgeon Tracking Study project on the St. Marys River in Michigan for funding. The study is to take place during the 2006 field season. Partners are Lake Superior State University, Bay Mills Indian Community, and the Soo Area Sportsmen.

The project intent is to capture lake sturgeon in the St. Marys River using baited setlines. Lake Superior State University successfully captured lake sturgeon in the river during past projects using this technique. Once a fish is captured, biological data will be collected from each fish, and adults will be surgically implanted with a sonic telemetry tag to track each fish. Upon relocating fish using the sonic telemetry gear, an underwater camera will be deployed to characterize habitat that fish are using. Since very little is known about the lake sturgeon population that utilizes the St. Marys River, partners hope to obtain a variety of information including age/length/weight relationships, movement tendencies, spawning/feeding habitats, and population estimates.

Scott Koproski, Alpena FRO

Proceedings Posted on Great Lakes Lake Sturgeon Web Page

Proceedings of the 2004 Great Lakes Lake Sturgeon Coordination Meeting were recently posted to the Great Lakes Lake Sturgeon Web page at <http://www.fws.gov/midwest/sturgeon/>, culminating much hard work by members of the Great Lakes Sturgeon Committee over the past year and a half. Meeting participants and anyone searching for the latest information on lake sturgeon management and research in the Great Lakes can now access and download meeting material, including more than 25 presentations highlighting sturgeon rehabilitation activities. The posting is a cost-effective means to distribute information.

Henry Quinlan, Ashland FRO



The Proceedings of the 2004 Great Lakes Lake Sturgeon Coordination Meeting can be viewed on the Great Lakes Lake Sturgeon Website at: <http://www.fws.gov/midwest/sturgeon/>.

Ashland FRO 2005 Accomplishment Reports on the Internet

The Ashland FRO has compiled a list of its 2005 accomplishments. The report summarizes all the activities conducted regarding restoration projects, tribal assistance, inter-jurisdictional fisheries, Federal lands assistance, aquatic invasive species, and outreach/partnerships. To learn more about these programs and accomplishments, please direct your Internet browser to: http://www.fws.gov/midwest/ashland/accom_rpts/AccomRpt_FY05/annualrpt05.html.

Frank Stone, Ashland FRO



Aquatic Species Conservation and Management

Endangered Higgins' Eye Pearlymussels Found in Interior Waters of Iowa for the First Time in 80 Years

Fish and Wildlife Service divers, working with an Iowa DNR biologist, located the first live Higgins' eye pearlymussel in interior waters of the state in over 80 years. The mussel was found as part of a survey of interior streams associated with recent recovery efforts for this species and was located in a reach of the Wapsipinicon River near Cedar Rapids.

During the weeklong field operation, Fish and Wildlife Service divers and biologists, Iowa DNR personnel, and U.S. Army Corp of Engineer staff searched miles of likely habitat on the Upper Wapsipinicon, Cedar, and Iowa rivers looking for evidence that recent reintroductions of this Federally endangered species had been successful. More than 2,350 mussels of 24 species were identified during the search, including many state endangered and threatened individuals. These rivers and others have received tens of thousands of juvenile Higgins' eye pearlymussels in the past several years as part of a range-wide recovery effort for the species. The mussels were introduced to several Iowa rivers by releasing host fish—usually walleye, smallmouth bass, or largemouth bass fingerlings—carrying the mussels as larval encystments on their gills. Biologists from Genoa NFH, in cooperation with Iowa DNR officials, and the Mussel Recovery Team, a consortium of state and Federal cooperators, have been carrying out these releases since 2001 on interior rivers in Iowa and Wisconsin.

One of the many problems that biologists face in assessing the success of these types of reintroductions is locating released animals in these open riverine systems. The juvenile mussels, which were artificially infested on known host fish either at Genoa NFH, or in the field using a combination of wild captured and hatchery host stocks, can spend from days to months attached to their respective hosts until they reach the release stage and drop off the fish as a free living mussel. Where these fish are when this happens is a guessing game for field personnel who must then wait several years for the mussel to grow to a sufficient size to be detected, identified, and returned to the river. One Fish and Wildlife Service biologist made the analogy that, "It's more than a needle in a haystack- it's more akin to a needle in a hayfield!"

Given these challenges, it was rewarding for project personnel to find a three-year-old mussel within one river mile of the release site on the Wapsipinicon River that was identified as a Higgins' eye pearlymussel. Subsequent DNA analysis of samples confirmed the identity. Further survey operations are planned for areas adjacent to this site to see if other individuals from these initial stockings can be located. Meanwhile the project will continue to reintroduce this rare mussel to areas across the Midwest where it was once a component of the wild mussel community.

Roger Gordon, Genoa NFH



-USFWS

This Federally endangered Higgins' eye pearlymussel was found during a survey of interior streams in Iowa associated with recovery work for the species. This is the first live Higgins' eye pearlymussel located in interior waters of the state in over 80 years.

Alpena Fishery Resources Office Tags Lake Whitefish

Staff from the Alpena FRO participated in a Lake Huron lake whitefish distribution study in November. The project was funded by a grant from the Great Lakes Fish and Wildlife Restoration Act. Fish and Wildlife Service staff involved included Treaty Unit Coordinator Aaron Woldt, Project Leader Jerry McClain, and biologists Adam Kowalski, Scott Koproski, Susan Wells, Jim Boase, Anjie Bowen, and Heather Rawlings. Staff conducted tagging operations on the commercial trapnet boat *Blonnie W* operated by Jim Presau Fisheries.

The goals of this study are to determine the spatial distribution and movement patterns of eight selected lake whitefish stocks in Lake Huron and to determine the contribution of each stock to commercial fishery yields. The eight stocks selected for this study are Detour, Alpena (Middle Island and Thunder Bay), Saginaw Bay, Burnt Island, South Bay mouth, Fishing Islands, Douglas Point, and Sarnia. A total of 1,500 lake white-

fish will be tagged annually from 2004 to 2006 at each of the sites, except for Alpena and the Fishing Islands, where 3,000 fish will be tagged annually at each site. Partners from seven state, Federal, tribal, and provincial agencies will participate in this study. Study partners tagged and released 12,520 lake whitefish in Lake Huron in 2004 with the Fish and Wildlife Service's contribution of 1,481 of those fish. To date, approximately 350 tagged lake whitefish have been harvested and reported by Lake Huron fishers.

In 2005, Fish and Wildlife Service staff Floy-tagged and released 1,540 lake whitefish near Middle Island, and tagged and released an incidentally captured lake sturgeon as part of an ongoing Lake Huron lake sturgeon monitoring study. Michigan DNR staff tagged approximately 1,500 lake whitefish in Thunder Bay in November. Tagged fish were measured for length, checked for lamprey wounds, sexed, assessed for maturity, scale sampled for aging purposes, fin clipped, and released. A random subset of fish was also detained shortly to measure short-term tag retention and handling mortality. Approximately 200 fish were lethally sampled and processed as well.

Data from this study will be entered into a common database maintained by the Alpena FRO. A combined database with all 2004 data was built by Woldt and distributed to study partners in November. Combined study data, including 2005 tagging, will be distributed to partners early in 2006. Studying the spatial distribution and movement patterns of lake whitefish stocks will allow managers to determine whether the borders of current management units are biologically meaningful and to determine the contribution

of each stock to the commercial fishery. This will allow for better harvest management and protection of lake whitefish stocks.

Aaron Woldt, Alpena FRO

Will Brook Trout Swim the Waters of Minnesota Valley Refuge? Time Will Tell

Minnesota Valley National Wildlife Refuge (NWR) is home to a very special spring-fed stream that could be a trout stream in the future. This summer, the refuge's Vicki Sherry and Scott Yess of the La Crosse FRO surveyed the stream. They did not detect a single fish, but they both were very excited about the habitats and clarity of the water. Vicki arranged for two Minnesota DNR trout stream experts, Mark Nemeth and Brian Nerbonne, to look at the watershed. Both were also excited about the stream's potential.

In early November, a second fishery survey was conducted by Yess, Nemeth, and Nerbonne, who determined that only brook stickleback were present in the lower reach of the stream. All are still in agreement that the habitat looks good, but there are still some issues to work out concerning land ownership. In addition, the habitat needs to be mapped to provide recommendations on altering some prior human impacts, and the stream must be designated as a state trout stream prior to stocking brook trout. In the interim, Vicki has initiated a challenge grant to address invasive plants and streamside cleanup.

Scott Yess, La Crosse FRO



-USFWS

Fish and Wildlife Service personnel from Minnesota Valley National Wildlife Refuge (Refuge) and La Crosse Fishery Resources Office are working with the Minnesota Department of Natural Resources to develop this stream on this Refuge as a state designated trout stream.

Sturgeon Survey Gets Underway in Upper Peninsula

Fishery agencies developed the Lake Sturgeon Rehabilitation Plan for Lake Superior to help restore the ecological integrity and fishery potential of Lake Superior. Many agencies are collaborating to protect and rehabilitate lake sturgeon populations through this plan. One collaborative effort got underway this fall. Lake sturgeon were absent from the Ontonagon River for nearly 100 years. In 1998, lake sturgeon returned to the Ontonagon River via stocking by the Michigan DNR. Lake sturgeon have been stocked each year since with the exception of 2003 and 2005. The fish stocked were collected as eggs from the nearby Sturgeon River, also a tributary to Lake Superior. The number of fish stocked ranged from 2,000 to 6,500 annually. Prior to release, each five- to eight-inch sturgeon was tagged by inserting a microscopic piece of metal (coded wire tag) into the snout.

Surveys of the progress of this rehabilitation stocking effort have been limited in scope and conducted primarily in the river. This

year the Keweenaw Bay Indian Community, Michigan DNR, Great Lakes Indian Fish and Wildlife Commission, and Fish and Wildlife Service collaborated to conduct a pilot survey in Lake Superior waters near the mouth of the Ontonagon River. The agencies are interested in gathering more information to evaluate stocking progress and to describe the status of lake sturgeon in Lake Superior near the mouth of the Ontonagon River.

Despite being able to set only 8,000 feet of net, teams captured six juvenile lake sturgeons. The young, sharp-scuted fish ranged from 15 to 27 inches long. Four of the six sturgeon captured had coded wire tags, positively identifying them as stocked fish. Coded wire tags were not detected from the two largest fish, although they are likely stocked fish as well. This is consistent with experience in the St. Louis River on the Minnesota/Wisconsin border, where tag detection in stocked fish decreased as fish size increased. A thumbnail sized piece of tissue was collected from the fins of all fish. This will be genetically analyzed by Michigan State University to determine the origin of the fish without coded wire tags. The lake sturgeon were tagged and released. If these fish are captured during future Lake Superior survey work, agencies will obtain data on the growth and movement of these fish.

Henry Quinlan, Ashland FRO

Coasters Called into Service

Backup brood stock at Genoa NFH is now online as primary egg providers. In every theatre production, there is an understudy that prepares for the starring role in case the big star is unable to perform. In the Fish and Wildlife Service's fish hatchery system, we call understudies "backup brood stock." These groups of "backups" are made up of a genetic representation of an existing strain, or population of fish, and are held for the express purpose of recreating that captive population if it is affected by disease or loss of culture systems at the primary culture facility. At the Genoa NFH, the Tobin Harbor strain of coaster brook trout are held in reserve for the main captive population residing at the Iron River NFH.

This fall, the reserves were pressed into service to increase egg production numbers in the near future. Egg requests are rising for two strains of coaster brook trout residing at the Iron River NFH, and because of Genoa's warm well water temperatures, only two years are required for brook trout to reach maturity as opposed to three years at most facilities. Three separate year classes of 600 fish each of the Tobin Harbor strain were shipped from Genoa NFH to Iron River NFH this fall to join the existing captive lots. These three new year-classes will be put into service next year and will increase the number of eggs available to meet management plan objectives and assist in the genetics management of this valuable strain of "coasters."

Currently this strain is the primary source of eggs for a number of ongoing restoration efforts in Lake Superior. Coaster brook trout are brook trout that

use tributary streams as spawning and nursery areas and then migrate to large bodies of water such as Lake Superior to grow. They often get much larger than "resident" stream brook trout, reaching sizes of five pounds or more. Coasters were common to the south shore of Lake Superior until the 1900s. Causes for population declines include stream habitat degradation, over-fishing, and water quality declines. The Fish and Wildlife Service and its many partners are committed to restoring this unique and valuable native species.

Doug Aloisi, Genoa NFH

Coaster Brook Trout Fin Clipped at Genoa Hatchery

Tagging fish has long been a useful tool for understanding how hatchery fish interact within their environment. More than 5,000, seven-inch coaster brook trout were fin clipped in December at Genoa NFH. Fin clips allow biologists to distinguish between a hatchery fish and a wild fish during fishery assessments on the Great Lakes.

The coaster brook trout is a strain that is endemic to the Isle Royale region of Lake Superior. Though similar to the inland strains, coasters become larger and weigh 4 to 10 pounds. Habitat loss, pollution, and over-fishing have all contributed to the diminished number of coaster brook trout in the Great Lakes. The Genoa NFH is cooperating with Iron River NFH, Ashland FRO, and the states of Wisconsin and Michigan to restore the coaster brook trout to its native range on the southern shore of Lake Superior.

Nick Starzl, Genoa NFH

Aquatic Invasive Species

Larval Sea Lamprey Assessment Staff Complete Field Season

The Marquette and Ludington Biological Station Larval Assessment staff recently completed 2005 invasive sea lamprey larval assessment activities in many of the estimated 2,200 United States tributaries of the Great Lakes. Beginning in early May and ending in late October, assessments to determine the presence or absence of larvae focused on over 150 tributaries and offshore areas of lakes Superior, Michigan, Huron, Erie, and Ontario.

Using backpack electrofishing gear, biologists determined where and when future control actions would be required. In particular, streams were identified that need lampricide treatment during 2006. Additionally, information was obtained on density, age, length, weight structure, and geographic distribution of sea lamprey larvae. Continuing surveys also were conducted to monitor recruitment and long-term trends of abundance in the St. Marys River through use of deepwater electrofishing gear and global positioning technology.

The Fish and Wildlife Service's Sea Lamprey Control program continues to work closely with partners to control populations of sea lampreys in tributaries of the Great Lakes to protect the fishery and related economic activities in the basin, an estimated annual benefit of \$4 to 6 billion per year to the region. The Fish and Wildlife Service delivers a program of integrated sea lamprey control in United States waters of the Great Lakes as a contracted agent of the Great Lakes Fishery Commission. *Michael Fodale, Marquette Biological Station*



-GLFC

A Sea Lamprey Control technician uses backpack electrofishing gear to assess where future lampricide treatments will be required in Great Lakes tributaries and the effectiveness of past control actions.

Asian Carp Surveillance Conducted in Chicago Sanitary and Ship Canal

Fish and Wildlife Service staff from the La Crosse FRO conducted two days of surveillance for invasive Asian carp in the Chicago Sanitary and Ship Canal and the Des Plaines River during mid-November, with assistance from members of the Forest Preserve District of Cook County, Illinois. No invasive silver or bighead carp were captured or detected at any of the sites surveyed, but one grass carp was captured in the Des Plaines River, at a site located six miles downstream of the electrical fish barrier.

Sixteen common carp were also collected and given to University of Illinois researchers who surgically implanted radio transmitters into some individuals before releasing them near the downstream end of the barrier. The movements of these fish and other radio-tagged common carp will be monitored to evaluate the effectiveness of the barrier in preventing upstream fish passage. This Fish and Wildlife Service-led effort fulfilled

surveillance requirements for the month to determine whether Asian carp are approaching the electrical barrier designed to prevent them from entering Lake Michigan. The responsibility for conducting Asian carp surveillance is shared and rotated from month to month among the Fish and Wildlife Service, Illinois DNR, U.S. Army Corps of Engineers, and Metropolitan Water Reclamation District of Greater Chicago.

Mark Steingraeber, La Crosse FRO



-Duane Raver/USFWS

Common Carp

As part of the Asian carp surveillance conducted in the Chicago Sanitary and Ship Canal, University of Illinois researchers implanted radio transmitters to monitor movements of common carp in relation to the electrical barrier which is intended to block movement of aquatic species between the Great Lakes and the Des Plaines River which is part of the Mississippi River basin.

Public Use

Sullivan Creek NFH Lake Trout Retire to Big Springs

During the afternoon of November 4th, 34 very lucky lake trout brood fish were released into the Michigan DNR's Big Springs at Palms Brook State Park near Manistique, Michigan. These fish were hand picked by station staff for the occasion. All were Seneca Lake Wild strain lake trout, between the ages of twelve and fourteen years. Each fish ranged in size from 13 to 20 pounds and 29 to 36 inches in length.

The Michigan DNR requested big lake trout from Sullivan Creek NFH for their Big Springs to use as display fish for the public that visit the Palms Brook State Park. Biologists James Anderson and LeGault-Anderson used a fish distribution truck to transport the lucky retirees. Once there, each brood fish had to be individually netted out of the fish tank and placed in a metal cart for transfer to the Big Springs, which was 200 yards from the parking lot.

Big Springs, also called Kitch-iti-kipi by the locals, is 200 feet across and 40 feet deep. It is Michigan's largest freshwater spring producing over 10,000 gallons a minute from fissures in the underlying limestone. The water is a constant 45 degrees Fahrenheit, which is ideal for lake trout. Visitors can view the springs and the fish by means of a self-operated observation raft which floats over ancient tree trunks, lime-encrusted branches, and clouds of sand kept in constant motion by the gushing waters.

The legend of Kitch-iti-kipi involves Native American folklore. Kitch-iti-kipi was a young chieftain whose girlfriend got the best of him. He told her he loved her far

above the other dark-haired maidens dancing near his birch bark wigwam. As a test of his devotion, she declared that he must set sail in his canoe on the pool deep in the conifer swamp. He was to catch her from his canoe as she leaped from an overhanging bough. According to legend, the spring was named Kitch-iti-kipi in memory of the young chieftain who went to his death in the icy waters in an attempt to satisfy vain ladylove.

So, if you ever want to see some very happy retired lake trout from Sullivan Creek NFH watching the tourists watch them, visit the Big Springs!

*Crystal LeGault-Anderson,
Pendills Creek NFH*



-USFWS

Tourists can now view some of Sullivan Creek National Fish Hatchery's retired lake trout brood stock from the raft on Big Springs (Kitch-iti-kipi) at the Palms Brook State Park near Manistique, Michigan.

Local Lions Learn about the La Crosse FRO

The Onalaska Lions Club requested a presentation from the La Crosse FRO about station projects. Scott Yess visited the club in early September and narrated a presentation describing the fishery station's activities. Key projects discussed were lake sturgeon restoration, Friends group and volunteering, endangered mussel work, invasive species projects, and fishery

management activities on trust lands. The information was well received and several members were interested in the Friends group and volunteering.

Scott Yess, La Crosse FRO

If you teach a man to fish...

Jonathan Pyatskowit from the Ashland FRO assisted staff from the Whittlesey Creek NWR by describing and demonstrating different types of fishing equipment to a group of high school students in the Washburn High School Lifeskills class. This class is designed to give students activities outside of standard physical education curriculum that they can use throughout their lives. Refuge staff also gave a hands-on fishing knot tying exercise and a fish filleting demonstration. Both of these exercises gave the students the opportunity to earn extra credit points. Needless to say, many students were willing to dirty their hands for a few extra points. After the demonstration, the class fished in a pond at the Northern Great Lakes Visitor Center and several trout were caught and released.

Jonathan Pyatskowit, Ashland FRO

Neosho National Fish Hatchery Takes to the Parade Route

This is the first year that Neosho NFH participated in the City of Neosho Christmas Parade. The staff decorated the fish distribution unit and walked along the truck as it slowly moved through downtown Neosho, Missouri. Staff personally greeted many in the crowd with waves, big smiles, and candy.

Roderick May, Neosho NFH

Cooperation with Native Americans

Lake Trout Go North for the Winter

On November 1, staff from the Iron River NFH loaded excess lake trout and headed for northern Minnesota. Green Lake was the destination and is a part of the Red Lake tribal reservation. About 170 adult lake trout of the Green Lake Wild strain were released. The trout averaged between 22 and 29 inches in length and weighed between 5 and 10 pounds. Before release, each fish had a right pectoral fin and adipose fin removed to identify it as a stocked fish. The reason for stocking these large fish is that the brood stock rearing facility is reaching capacity and younger fish are stepping up to take over their elder's responsibilities. This was a win-win situation, in that the hatchery relieved some pressure on overcrowding issues and the tribe is going to benefit through outstanding recreational opportunities for young and old.

Steve Redman, Iron River NFH



-USFWS

The Iron River National Fish Hatchery staff receives plenty of help stocking retired lake trout brood stock into a Red Lake Band of Chippew Indians lake.

On a Dark and Tranquil Night...

On several dark and tranquil nights in late October and early November, conditions were perfect for electro fishing the near-shore waters of the Bayfield Peninsula of Lake Superior for brook trout. Jonathan Pyatskowitz and Glenn Miller from the Ashland FRO, along with the Red Cliff Tribe Natural Resources Department, conducted six electrofishing trips along the Bayfield Peninsula to capture brook trout. These efforts are being used to help evaluate the effectiveness of the Tribe's brook trout stocking program.

A total of 22 brook trout were captured and measured, weighed, tagged with a Floy tag, and released. Fish were identified as hatchery fish if a permanent fin clip was detected. Fish that did not have a fin clip had a tissue sample taken for genetic analysis.

Jonathan Pyatskowitz, Ashland FRO



-USFWS

Ashland Fishery Resources Office and the Red Cliff Tribe Natural Resources Department conducted electrofishing assessments along the Bayfield Peninsula, Lake Superior, to evaluate the tribe's brook trout stocking program.

Another Edition of the Midwest Tribal Aquaculture Network Goes to Print

The Ashland FRO has the unique distinction of providing technical assistance for the development of numerous tribal fish hatchery programs. One of the ways we contribute to these programs is by publishing a quarterly newsletter. The Midwest Tribal Aquaculture Network (MTAN) is dedicated to assisting tribal hatchery programs through the sharing of cool/cold water fish culture information.

The most recent addition of the MTAN (Volume 54) is now available on the Internet. This quarter's newsletter contains the following articles: The Ashland FRO is Now Equipped to Read OTC Marks, New Oxytetracycline Approval for Skeletal Marking, Calcein for Skeletal Marking – A Promising New Technology, and Formalin Treatment System Without the Stink.

The MTAN has been assisting tribal fish hatchery programs for the past 14 years. The rewards from this kind of technical assistance are in knowing we are providing information that enables hatchery programs to better utilize their resources and provide a healthier product for the fishery. The newsletter has also helped educate fish hatchery workers and direct them to other areas of opportunity so they can better research their specific needs.

Previous issues of the MTAN newsletters are accessible from the Ashland FRO web page. Readers can access this information by pointing their web browsers to: <http://midwest.fws.gov/ashland/mtan/mtanhome.html>.

Frank Stone, Ashland FRO

Leadership in Science and Technology

Neosho NFH Provides Freshwater Drum for Mussel Host Research

Twenty-five freshwater drum were transferred from the Neosho NFH to Dr. Chris Barnhart in Springfield, Missouri, for his mussel host fish work. Neosho NFH is holding approximately 300 freshwater drum for this purpose. We hope to get the fish to spawn under pond conditions this spring as a readily available host fish source for mussel propagation.

Roderick May, Neosho NFH



-Duane Raver/USFWS

Freshwater Drum

Neosho National Fish Hatchery (NFH) provided freshwater drum to Dr. Chris Barnhart for mussel host work. Neosho NFH is holding freshwater drum for future mussel propagation work.

Students and Biologists Compare and Contrast Research Techniques

Biologist James Boase presented information about fishery research taking place in the Huron Erie Corridor (waters connecting lakes Huron and Erie) to approximately 40 students, faculty, and staff from Monroe Public Schools in Monroe, Michigan. The presentation introduced the audience to some of the sampling gear that is used to sample various species of fish, plants, and invertebrates in the Huron Erie Corridor.

The school is located on more than 20 acres of upland and wetland areas and has two ponds that are used for research purposes. Both ponds support a number of native fish species, amphibians, aquatic insects, plants, and numerous waterfowl species. Research and sampling techniques that the students have been employing on the ponds were compared and contrasted with those used by the Fish and Wildlife Service and its partners. Throughout the presentation, Boase challenged the students with numerous hypothetical “problems” that biologists face during typical field studies.

Following the presentation, students handled and tested the sampling gear and asked questions about careers in the Fish and Wildlife Service. Most of the students that attend classes here are juniors and seniors taking advanced classes, and are interested in pursuing careers in mathematics and science. Literature about Fish and Wildlife Service careers was provided to each of the students and the school. The forum was an excellent opportunity to explain how the Alpena FRO is

working with researchers from various state and Federal agencies, local communities, along with private citizens in an effort to rehabilitate native fish populations in the Great Lakes.

James Boase. Alpena FRO



-USFWS photo by James Boase

Biologist James Boase presented information about fishery research taking place in the Huron Erie Corridor (waters connecting lakes Huron and Erie) to 40 students, faculty, and staff from Monroe Public Schools in Monroe, Michigan.

Aquatic Habitat Conservation and Management

Oesterriech Wetland Complex Completed

Construction is finished on the Oesterriech wetland project, a 13-acre complex of seven wetland restoration sites. Thirteen upland acres of grass waterfowl nesting cover were also enhanced and protected in the agreement. Partners on the project included the landowner, ABDI (Ashland, Bayfield, Douglas, and Iron Counties) – Land Conservation Department, Natural Resources Conservation Service, Ducks Unlimited, and the Ashland FRO through the Partners for Fish and Wildlife program.

The wetland complex will provide nesting and brood rearing sites for species such as mallards, wood ducks, and blue-winged teal. The restored wetlands and protected uplands will also provide rest and refueling areas for many species of waterfowl, shorebirds, and neotropical migrant songbirds during their annual migrations. The construction contract was awarded to K & D Excavating of Ashland, Wisconsin. The landowner contributed to the success of this project through equipment operation.

Ted Koehler, Ashland FRO



-USFWS

The Oesterriech Wetland project restored 7 wetland sites for a total of 13 acres through the Partners for Fish and Wildlife program. In addition, 13 upland acres of grass waterfowl nesting cover was also enhanced and protected. Partners on this project included the landowner, ABDI (Ashland, Bayfield, Douglas, Iron counties) Land Conservation Department, Natural Resources Conservation Service, and Ducks Unlimited.

Cutler Creek Culvert Replaced

Through the Partners for Fish and Wildlife program, the Ashland FRO partnered with the Town of Brule, Wisconsin DNR, Natural Resources Conservation Service, and the County Land Conservation Department to replace a culvert that blocked fish passage on Cutler Creek in Douglas County, Wisconsin. The old culvert, located on Castle Road, inhibits passage of brook trout and other aquatic life. Cutler Creek is a tributary to the famed Brule River and is an important spawning stream for native brook trout. The Brule and its tributaries are an integral part of the Lake Superior fishery and ecosystem as a whole. This action will enhance the Brule River watershed's fishery for miles, both above and below the old barrier. It is also an important part of the economy of the Brule area and northern Wisconsin. Anglers and tourists travel from around the world to enjoy fishing on the Brule River and to explore the Brule River State

Forest. The Wisconsin DNR has completed fish habitat projects both above and below the old barrier. With the areas now connected, another small part of the Lake Superior basin has been restored for the greater good of the entire watershed.

Ted Koehler, Ashland FRO



-USFWS

Through the Partners for Fish and Wildlife program, the Ashland Fishery Resources Office partnered with the Town of Brule, Wisconsin Department of Natural Resources, Natural Resources Conservation Service, and the County Land Conservation Department to replace a culvert that blocked fish passage on Cutler Creek in Douglas County, Wisconsin.

Greendocks: A Demonstration Site on the Indian River

Biologist Heather Rawlings met with the Tip of the Mitt Watershed Council representative Jennifer Geld and Tuscarora Township Clerk Diane Hahn in Indian River, Michigan, on November 8 to view and discuss the "Greendocks" project. The Cheboygan County Road Commission donated a strip of riparian property on the Indian River to Tuscarora Township in 2003. This site has been used by locals as a swimming hole and illegal docking site for small boats traveling through the "Inland Waterways" connecting Burt, Mullet, and Black lakes. The 340-foot strip of riparian property is stabilized by an aging steel sea-

wall. The seawall is deteriorating, and because of road run-off, a section of the riparian land is rapidly eroding into the river. The township's goal is to keep this area accessible as a swimming and docking area, control erosion, and provide in-stream habitat for walleye, yellow perch, pan fish, and possibly spawning habitat for an inland population of lake sturgeon. Once adjacent landowners see the benefits, both aesthetic and environmental, of the restoration effort it is our hope that they may consider similar projects along their properties.

The Fish and Wildlife Service and watershed council are working with township officials and engineers to design a site exclusively using natural materials such as fieldstone, large woody debris, and native vegetation to restore aquatic habitat at the site, yet provide for community needs as well. Local landowners have raised \$40,000 to restore the site and the township has agreed to match these funds. Rawlings applied for Fish and Wildlife Service funding through Private Lands Fish Habitat Restoration funds, and the watershed council is pursuing funding as well. Early project estimates place the cost at approximately \$110,000. Construction will take place during the summer of 2006.

Heather Rawlings, Alpena FRO



-USFWS photo by Heather Rawlings
Aging steel seawalls define this small riparian property in Indian River, Michigan. The Greendocks project will restore this site at both the in-stream and riparian levels for both community and natural resource use.

Michigan and Ohio Fish Passage Projects Submitted for 2006

Biologist Susan Wells of the Alpena FRO submitted six full proposals for the Fish and Wildlife Service's Fish Passage program. Included in those proposals were five dam removals (three in Ohio and two in Michigan) and one culvert replacement in Michigan. All of the projects were identified as priorities by state agencies and other partners. Restoring fish passage at the six sites would open approximately 110 river miles to fish movement for spawning, rearing, and foraging.

This is an example of collaboration between Federal and state agencies and non-governmental organizations to enhance aquatic habitat, which will benefit fish and wildlife resources. These projects have the ability to enhance fish passage of native fish species within several watersheds.

Susan Wells, Alpena FRO

Ashland Fishery Resources Office Participates in Aquatic Organisms Passage Workshop

Biologist Glenn Miller participated in a weeklong training workshop sponsored by the U.S. Forest Service and the Wisconsin Chapter of the American Fisheries Society on surveying and designing passage for aquatic organisms on streams and rivers. More than 30 participants from the U.S. Forest Service, Fish and Wildlife Service, Wisconsin Department of Transportation, Wisconsin DNR, Menominee Tribe, Great Lakes Indian Fish and Wildlife Commission, and other organizations took part in this valuable training.

Along with classroom work on identifying stream and river level stages, fluvial processes, stream reach design, and streambed simulation, the class was treated to a full day field trip to survey three types of passage projects on the Chequamegon-Nicolet National Forest. All of the lessons learned from this workshop will be put to use in designing fish passage projects for the upcoming 2006 field season.

Glenn Miller, Ashland FRO

Workforce Management

Views of a Hatchery Volunteer

I'm Dan Myers and I've been a volunteer at Jordan River NFH since April 2005. I usually come in every Saturday that I am available; although, I had to take a break this fall due to the Cross Country season. I live in Charlevoix, Michigan, and in eleventh grade, and co-president of my class at Charlevoix High.

There are many reasons why I decided to become a volunteer at the hatchery and I am glad that I did it. Mainly, I wanted a job that would be meaningful and fun, even if I didn't make any money from it. Also, I was starting to think about my future life and decided that it would look good to colleges, jobs, etc., if I had volunteer experience, especially in a field similar to which I want to explore. There also was discussion about a requirement of 40 hours of community service to receive the MEAP scholarship (about \$2,500) when I decided to volunteer here, although that requirement never came through. I've worked here far more than 40 hours now and have learned more than I did last year in school.

My experience as a volunteer has been very fun and beneficial. I have been able to do a ton of amazing things, such as cleaning tanks holding tens of thousands of fish, riding in a tanker truck carrying a cargo of lake trout to be loaded on to the M/V Toque for offshore stocking, and filling feed buckets and trucks. I've also done some really cool things such as sample counts. Whenever I wake up at 5:30 am Saturday mornings, I always think "Yes, I get to go to the hatchery today!"

While volunteering at the hatchery I have worked with a lot of wonderful people. I've had a great experience working with Rick Westerhof, the manager of the hatchery. He does a good job at keeping people together. I've also had a lot of fun working with Denise and John Johnston. I've even had the opportunity to work with Lead Biologist Tim Smigielski who knows the most about fish out of anyone I've ever met. I'm always glad to work with him. I've learned a lot working with biologists Wayne Talo and Paul Haver. Perhaps one of my favorite people to work with is Chris Olds, a college student who eats a lot and is always good at finding work to do. I've also worked with Bob Peterson, who always has stories about the outdoors that are interesting. Though I have not had to work with her much, it is obvious that Clarence Beckner does an excellent job at keeping track of things in the office. I've enjoyed working with some other volunteers too, such as Dan Sutherland and John O'Brien, who is a student from Hocking College in Ohio.

It's amazing how much these devoted people can accomplish with the budgets and resources of today. This last spring and early summer, 2.14 million lake trout were released into the Great Lakes by this hatchery alone. The quality and efficiency of work getting done here is astounding and could never be matched by normal personnel. Everyone at the hatchery gives easily their 100 percent. I only have positive things to say about this place, and I am proud to say that I have given my part in the rehabilitation of lake trout in the Great Lakes.

Dan Myers, Jordan River NFH



-USFWS

Dan Myers is a dedicated high school volunteer at the Jordan River National Fish Hatchery. He has been volunteering almost every Saturday since April 2005.

Canopy Will Keep Alpena FRO Staff Out of the Weather

During the months of September and October, biologists Adam Kowalski and Scott Koproski organized the purchase and construction of an aluminum canopy for the Alpena FRO's Tribal Unit vessel. This purchase was made possible with end-of-the-year funds provided by the regional office. Kowalski and Koproski obtained three estimates from companies and visited each welding shop to design a canopy that would effectively keep station staff out of the elements. The design of the canopy had to protect staff from the elements but not hinder work to be done. The design chosen extended the windshield vertically and added a ten-foot roof over the deck of the vessel. Vertical support posts were strategically placed to eliminate interference while lifting gill nets and anchors into the vessel during the independent lake whitefish sampling and other projects.

Adam Kowalski, Alpena FRO

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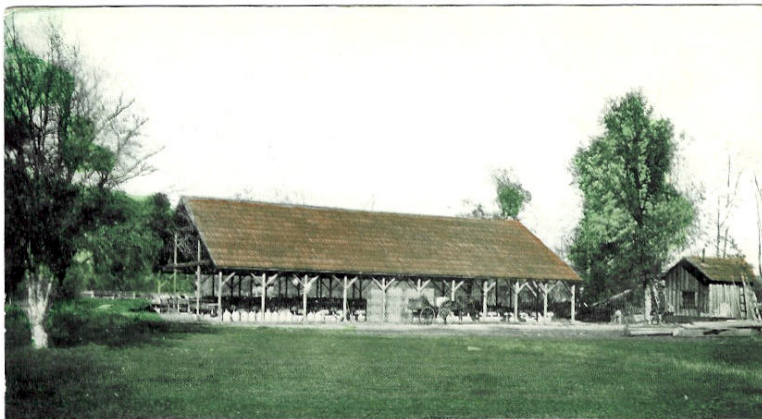
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-Jerry French Postcard Collection

Windows in time

A Glimpse into our Proud Past

The caption on this card says this hatchery was near Sacramento, California. Although one cannot determine precisely, it is thought the hatchery may depict the facility on Battle Creek, a tributary of the Sacramento River located in Shasta County. The Battle Creek hatchery was established in 1896 and operated until 1946.

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