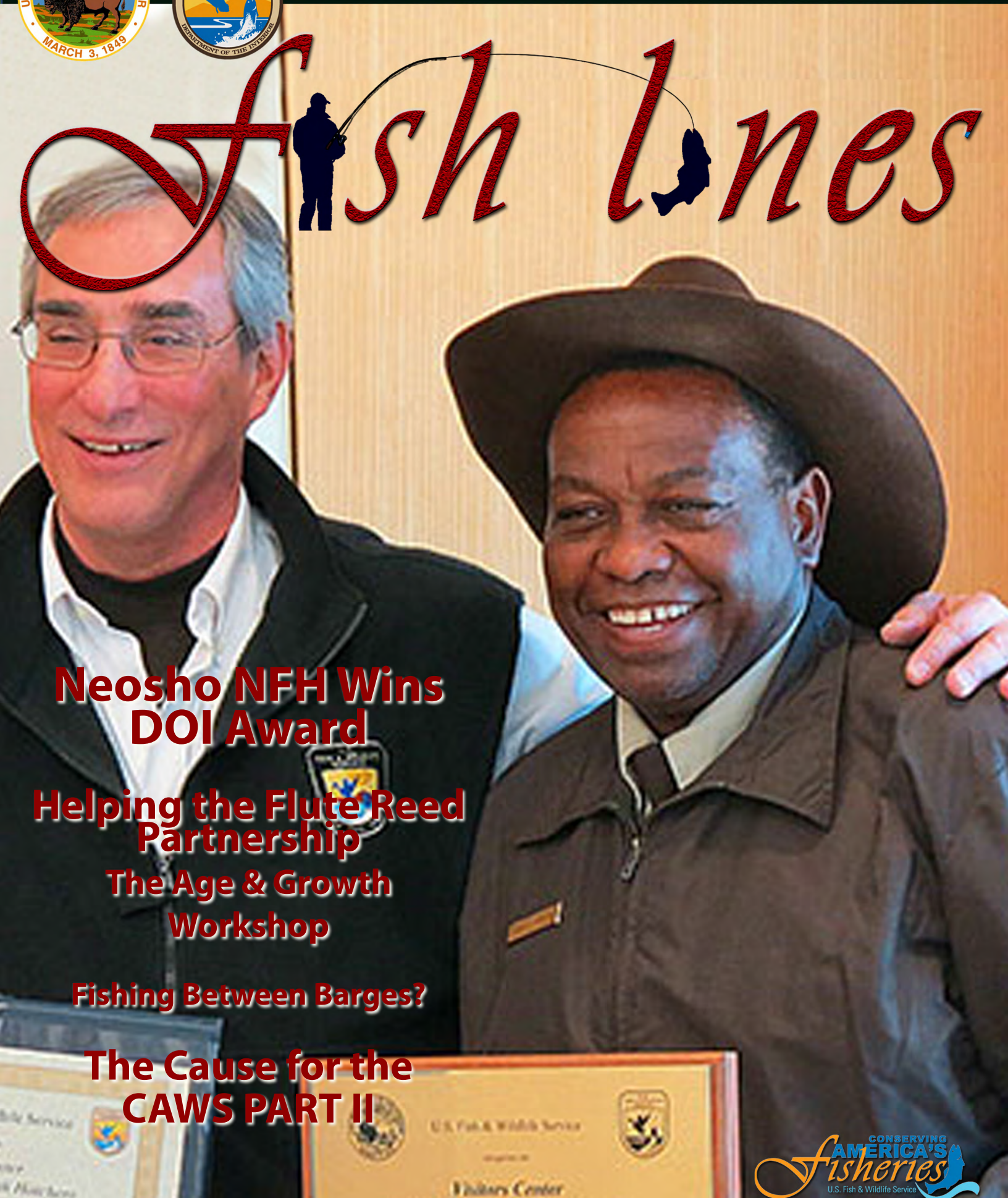
U.S. Fish & Wildlife Service - Midwest Region

Fisheries Program

Fish lines



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Fish Tails

"Fish Tails" refers to articles that are submitted by field staff that do not appear as a feature in the current edition of Fish Lines. These articles provide examples of the diverse work that the Service's Midwest Fisheries Program and partners perform on behalf of our aquatic resources and for the benefit of the American public.

Field Notes

"Field Notes" is an online searchable database that showcases hundreds of employee-written summaries of field activities and accomplishments of the U.S. Fish and Wildlife Service from across the nation.

Last updated: February 13, 2014

Neosho National Fish Hatchery Wins DOI Environmental Achievement Award

BY KATIE STEIGER-MEISTER, EXTERNAL AFFAIRS- MIDWEST REGION

Midwest Regional Director Tom Melius presents the Department of the Interior Environmental Achievement Award to Neosho National Fish Hatchery's Manager, David Hendrix. Credit: USFWS

In January, Midwest Regional Director Tom Melius and Midwest ARD of Fisheries Todd Turner visited Neosho National Fish Hatchery in Missouri to present staff with a Department of Interior Environmental Achievement Award. Earlier in the month Assistant Secretary Rhea Suh announced that Neosho National Fish Hatchery was a recipient of the 2013 award. A model of sustainability, the Visitor Center was nominated in the "Building the Future" award category.

Awards recognize departmental employees and partners who have attained exceptional achievements under Executive Order 13514 "Federal Leadership in Environmental, Energy, and Economic Performance" and for cleaning up contaminated land. The Award categories are: Sustainability Hero; Green Innovation; Lean, Clean and Green; Good Neighbor; Green Dream Team; Building the Future; and Environmental Remediation.

An interdisciplinary panel of reviewers from the Department's bureaus and offices evaluated nominations to recommend Award recipients and honorable mentions. The panel is chaired by the Office of Environmental Policy and Compliance.

Neosho National Fish Hatchery was established in 1888 and is the oldest operating federal fish hatchery. The hatchery encompasses approximately 18 acres in the heart of the town of Neosho, Missouri, due to availability of excellent-quality spring water. It raises endangered pallid sturgeon for recovery efforts in the lower Missouri River and rainbow trout for stocking in Lake Taneycomo. It supports conservation of the endangered Ozark cavefish and restoration of native mussels.

Now more than 20 years after the hatchery's centennial, this new high-performance 9,839 square-foot Visitor Center, which is the first Service building to earn a Leadership in Energy and Environmental Design (LEED) Gold rating officially from the U.S. Green Building Council (USGBC), opened in December 2010. Energy efficiency strategies used throughout the building include a cool roof, day lighting, low-e glazed windows, energy-efficient lighting and a 31.13 ton geothermal heat pump. The Visitor Center is architecturally designed to mimic the original headquarters from 1888, which featured similar onion dome and witches hat roof styles.

Left to Right: Todd Turner, Fisheries Program, Assistant Regional Director; Tom Melius, Midwest Regional Director; David Hendrix, Manager, Neosho National Fish Hatchery. Credit: USFWS

Helping the Flute Reed Partnership Restore Minnesota Lake Superior Tributary Habitat

BY TED KOEHLER, ASHLAND FWCO

Restoring Lake Superior tributary habitat is critical for brook trout and other native fish as well as naturalized fish species important for recreation. The U.S. Fish and Wildlife Service's (Service) Ashland Fish and Wildlife Conservation Office (FWCO) worked with the Flute Reed Partnership and other partners on a riparian restoration and enhancement project in the Flute Reed watershed which is centrally located along Lake Superior's Minnesota north shore. Funding for the Service's portion of the project was provided by the Partners for Fish and Wildlife Program's Fish Habitat Restoration funds.

The Minnesota Department of Natural Resources worked with the partnership to determine where to strategically plant individual species in order to most benefit the river system. They also worked with the volunteers on proper tree planting techniques. The partnership also spent many hours of time contacting watershed landowners in order to educate them on the project and secure access to important restoration locations.

Volunteers planting trees on the Flute Reed Riparian Habitat Restoration Project. Credit: Flute Reed Partnership

Volunteers taking in a demonstration on tree planting technique on the Flute Reed Riparian Habitat Restoration Project. Credit: Flute Reed Partnership

Upon completion of the planning, trees were planted May 25th and 26th, 2013 on eight different private properties in the Flute Reed watershed. Sixteen volunteers from Northern Bedrock Conservation Corps in Duluth helped with planting and reported having a good time working together in the woods while benefitting the areas fish and wildlife. In total 1,500 conifer seedlings were planted and included 1300 white spruce, 100 white pine and 100 white cedar. Many of the white pine and cedar were fenced in order to protect them from deer and the occasional moose.

The Age & Growth Workshop

BY KATHERINE JARDINE, LA CROSSE FWCO

This winter Biological Science Technicians Trevor Cyphers and Katharine Jardine with La Crosse Fish and Wildlife Conservation Office (FWCO) attended two short courses offered by the Minnesota Chapter of the American Fisheries Society. These courses were held on the St. Paul Campus of the University of Minnesota. Together the courses provided twenty hours of training in data collection and analysis.

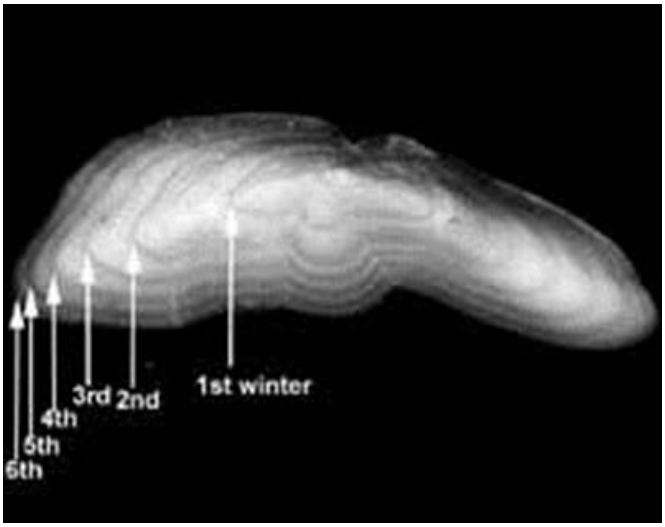

Photo of a magnified cross section of an otolith. Credit: Bedford Institute of Oceanography

Dr. Daniel Isermann of the Wisconsin Cooperative Fishery Research Unit at University of Wisconsin-Stevens Point taught the first class: Estimating Age and Growth of Fish. Primary discussion topics included: purposes for estimating the age and growth rates fish; sample size; selection, removal, and processing of calcified structures by both lethal and nonlethal means; and interpretation of annuli.

Fish scales, otoliths (ear bones), fin rays and cleithra (a bone at the rear margin of the gill cavity) are commonly used for estimating age and growth rates. Similar to the annular growth rings found in trees, layers of calcium are deposited in the bony structures of fish at different rates throughout the year forming visible annuli (growth rings) that can reveal the approximate age of fish. Methods for removing and processing a bony structure, as well as the reliability of a given structure to reveal the age of fish, can vary among different species with some structures considered more dependable than others.

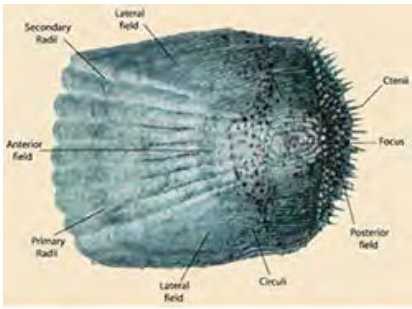

Photo of magnified scale. Credit: University California San Diego (UCSD)

For example, a nonlethal method includes collecting a scale(s) or fin ray from the exterior of a fish. In contrast, otolith or cleithra removal is lethal and requires knowledge of size, location, and the precise removal technique to avoid damaging the structure. Only in certain circumstances is the lethal method an option.

Stations were set up for instructor demonstrations and for the class to actively participate in locating, removing, processing and aging various bony structures. I really enjoyed the hands on activities, as it gave me the chance to learn proper technique and the opportunity to ask Dr. Isermann specific questions.

Photo of cleithrum. Credit: Vermont Fish and Wildlife Department

Dr. Derek Ogle, Professor of Mathematics and Natural Resources at Northland College in Ashland, Wisconsin taught the second class: Analyzing Age Data with R. Here we learned how to analyze and interpret age and growth data by writing scripts and functions using the R software programming language.

Dr. Ogle focused on back-calculating past fish length, deriving and applying an age-length key, computing measures of precision, and producing growth models using R software. The class was able to follow along with Dr. Ogle as he explained each topic and complete provided exercises using our personal laptops.

As a Northland College alumnus and a former student of Dr. Ogle, it felt as if I were back in college once again! It was great to see him again and have the opportunity to build on my past education as well as apply that knowledge to my current profession.

Fishing Between Barges?

BY STEFAN PETERSEN, CARTERVILLE FWCO

During the last year and a half, Carterville Fish and Wildlife Conservation Office (FWCO) and US Army Corps of Engineers (USACE)-Chicago District have performed a number of tests to determine fish reactions to the electric barrier within Chicago's Sanitary and Ship Canal (CSSC). Due to barges occasionally pushing fish into the electric field, all projects have required a great amount of ingenuity to attach devices in front of, or between barges for investigative purposes.

Previously, Carterville FWCO recorded fish reactions to the electrified area by entrapping fish in pens fastened to barges and videotaping their behavior. Another test conducted, involved attaching floats to gizzard shadand deploying them in various open spaces throughout the barge configurations. The most recent experiment added another degree of complexity by not only releasing float-tethered gizzard shad, but also attaching a gill net horizontally between the barges being pushed through the electric barrier.

Keith O'Loughlin with Carterville FWCO gets safely behind the "skirt" of a barge as it begins to enter the fish barrier with nets deployed. Note the ropes going from the barge down into the water. Credit: USFWS

In order to complete this task, members of Carterville FWCO and USACE – Chicago District devised a system of ropes and weights used for attachment. First, ten pound weights were connected along the lead line of the gill net to keep it taut against the current. Then another rope was connected to the float line using carabiners. This rope was strung up to several cleats on the barges to support the gill net. After the gill net was hung from the barge, more ropes were connected from the ends and middle of the gill net's lead line to keep it upright as the barge was pushed upstream.

After the net was deployed, the design proved to be successful. No problems were discovered when the barge moved upstream, great data was collected and the experiment was conducted safely. More opportunities for creative work like this looks to be in the future for Carterville FWCO, as study of the electric barrier continues.

The Cause for the CAWS PART II: The New Canal System

BY HEATHER GARRISON, COLUMBIA FWCO

Chicago Sanitary and Ship Canal wall. Credit: Heather Garrison-USFWS

In Part I, we explored the life of the Illinois & Michigan (I&M) Canal - from its first realization in the 1600's, to construction centuries later in the mid 1800's, through its 30 years of operation, on to its all-but-demise by the 1880's and finally its current preservation as the I&M Heritage Corridor used for recreation. Where the I&M Canal's story ends (in terms of its traditional use), another story begins.

The I&M Canal was originally built for transportation, i.e., ships and barges. It was only after sanitation issues rose in the rapidly growing city that it began to transport something more - sewage and storm water runoff. Realizing the critical need for managing sanitation in Chicago, engineers began developing plans for the Chicago Sanitary and Ship Canal or CSSC (then called the Chicago Drainage Canal) where this time sanitation was the primary consideration and transportation was secondary. Construction led by the Sanitary District of Chicago (now the Metropolitan Water Reclamation District of Greater Chicago) started in 1892 and was opened eight years later thanks in part to dynamite, steam shovels and many other innovative earth-moving machines. It wasn't for several more years, and the construction of the Main Channel Extension, that it was completely connected to the Des Plaines River. This new canal, although only two-thirds the length of the I&M canal, was on average over three times as wide and four times as deep as its predecessor. It reversed the flow of the Chicago River "permanently." This engineering feat removed more than 26 million cubic yards of earth and 12.9 million cubic yards of solid rock (more than for the Panama Canal!). As part of the project, the Lockport Controlling Works and then the Lockport Powerhouse were built at the downstream end of the canal to regulate the flow, mitigate the forty foot elevation drop to the Des Plaines River below and utilize the flowing water for power generation.

As the CSSC started flowing into the Des Plaines River, construction began on another channel farther north and closer to Lake Michigan. The North Shore Channel (Wilmette Channel) was completed in 1910, diverting even more lake water into the Chicago River. Previously known as the "North Branch" of the Chicago River, this tributary became stagnant once the river was reversed. To flush this fetid water downstream, the channel was extended northward to the lake and a pumping station was built at the uppermost portion. The Wilmette Pumping Station provided enough flow to push water down the nearly eight mile channel to the main branch of the Chicago River. Not long after the North Shore Channel was operational, work began on the Calumet-Saganashkee Channel (Cal-Sag Channel) to the south. This channel also reversed flow that historically went into Lake Michigan, forcing it down the Des Plaines River. Starting in 1911, it took 11 years to construct the 16 mile-long channel between the Calumet River and the CSSC.

Chicago Sanitary and Ship Canal wall during excavation. Credit: The Field Museum Library Archive

The Cal-Sag was the last channel built in this system. In 1938 the Chicago Lock was opened. It prevented the Chicago River from back flowing into Lake Michigan at the Chicago Harbor, while still allowing some flow from the lake and vessels to pass through. The T.J. O'Brien Lock & Dam was in operation by the mid-1960's and served a similar purpose but on the Calumet River south of Chicago proper. It took more than 70 years planning, digging, funding and innovation and the entire series of connected canals, channels and pumping structures joined together to form what we know as the Chicago Area Waterway System (CAWS).

Sources:

Map of the Chicago Area Waterway System (CAWS), includes TARP Reservoirs and other points of interest. Man made canals and altered flows are in black, while natural systems and flow are in blue. Credit: Produced by Heather Garrison, ArcMap 10.1

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About Sullivan Creek National Fish Hatchery

BY CRYSTAL LEGAULT ANDERSON, PENDILLS CREEK NFH

Sullivan Creek National Fish Hatchery (NFH), (formerly known as Hiawatha Forest NFH) is one of the oldest fish hatcheries in the Midwest Region. It has quite a historical past, and is poised to continue to support the lake trout rehabilitation program in the Great Lakes far into the future. Sullivan Creek is a sister-station of the Pendills Creek NFH located in the Eastern Upper Peninsula of Michigan, 30 miles west of Sault Sainte Marie, in the Hiawatha National Forest.

Historical "Sullivan Creek Rearing Ponds" prior to renovations. Credit: USFS

Originally built in 1933 by the Civilian Conservation Corps (CCC), the hatchery was used by the U.S. Forest Service to produce brook trout for nearby streams. The hatchery, then called the Sullivan Rearing Ponds, was shut down in the 1940s because of a shortage of appropriations and manpower during World War II. In 1959, the site was transferred to the US Bureau of Sport Fisheries and Wildlife and renamed Hiawatha Forest NFH. The rearing ponds were renovated and the facility became a substation of the newly built Pendills Creek NFH; producing lake trout for stocking into the Great Lakes. In 1994, the hatchery mission changed, becoming a lake trout brood fish station, and has since distributed over 65 million disease-free eyed lake trout eggs to other federal, state, tribal, and academic agencies. In 2003, the hatchery was renamed the Sullivan Creek NFH, to more reflect its original historic name.

Old incubation at Sullivan Creek NFH. Credit: USFWS

Today, Sullivan Creek is home to two distinct strains of lake trout brood fish: Seneca Lake Wild and the Huron Parry Sound Wild. The Huron Parry Sound Wild is the only lake trout brood fish in the US Fish and Wildlife Service system originating from Lake Huron itself. The Seneca Lake Wild is a reliable strain that has been used for decades, originating in the Finger Lakes of New York.

This spawning year, just fewer than six million lake trout eggs were shipped to Pendills Creek NFH, Jordan River NFH, the State of Michigan and the US Geological Survey Hammond Bay Biological Station in Michigan, Iron River NFH, the State of Wisconsin and the Upper Midwest Environmental Science Center in Wisconsin, Allegheny NFH in Pennsylvania and Dale Hollow NFH in Tennessee.

Lake trout brood stock building at Sullivan Creek NFH. Credit USFWS

During 2013, and into 2014, Sullivan Creek NFH has had ongoing construction of a new egg incubation/future brood rearing building to replace the “temporary” egg incubation which was originally set up during 1996 in a cement block garage. The new incubation building was used for the first time during the 2013 spawning season, and has so far been very

New egg incubation facilities help to efficiently and effectively achieve the mission of the hatchery. Credit: USFWS

successful. The future brood rearing portion will be tested as soon as our new Huron Parry Sound Wild brood eggs hatch and develop enough to move into rearing tanks.

Last updated: February 13, 2014

Fish Tails

Articles submitted by field staff that do not appear as a feature within Fish Lines. These articles provide examples of the diverse work that is performed on behalf of aquatic resources.

Egg-cellent Forage for Mussel Host Fish!

BY ANGELA BARAN, GENOA NFH

Genoa National Fish Hatchery (NFH) received its first batch of rainbow trout eggs from Ennis National Fish Hatchery for the new production season in December. The hatchery receives a total of 200,000 Arlee strain rainbow trout eggs each winter to be used as a disease free forage (food) source for the host fish in the mussel program. Channel catfish are infested each fall with winged mapleleaf mussel glochidia (baby mussels to be) and are held in tanks over the winter until they can go into mussel cages in the spring. The resulting mussel larvae will drop off their host fish and grow in the bottom of the cage for another year and a half until they are large enough to avoid predation and survive well in their stocking locations. In addition to the channel catfish, Genoa NFH holds over smallmouth bass, largemouth bass, freshwater drum and walleye to be used as mussel hosts for several species of mussels that brood in the spring. By obtaining the disease free eggs and hatching them on station, the hatchery can ensure a very nutritious and natural food source for the fish, as well as preventing any transmission of outside diseases.
More Mussels Headed Out the Door

More Mussels Headed Out the Door

BY NATHAN ECKERT, GENOA NFH

Late this fall Genoa National Fish Hatchery (NFH) began delivery of mussels for a new research project with the US Geological Survey in La Crosse, Wisconsin. The project seeks to determine the toxicity of a lampricide to native mussels. We were given a list of 13 potential species from across the Great Lakes Region to test and were asked to provide a small number of both the adult and sub-adult life stages for up to six species. We decided to focus on species that are currently being propagated, or could be readily collected. Through our partners in other states we were able to acquire three species of adults and four species of sub-adults. Annual production at Genoa NFH added another sub-adult species, and three additional species were collected from wild locations in the Upper Mississippi River Watershed by Genoa NFH divers. In total, six species of adults and five species of sub-adults were provided. This delivery would not have been possible without our partners who were willing to send small numbers of animals they already had on-hand. Results of the research will determine if the chemical in question is safe for native freshwater mussels and that information will be used to shape future management of streams in the Great Lakes Basin.

U.S. Fish & Wildlife Service

Fisheries, Midwest Region

Conserving America's Fisheries

Midwest Region Fisheries Divisions

National Fish Hatcheries
The Region's National Fish Hatcheries (NFH) focus on native species recovery and restoration. Primary species include: lake trout, endangered pallid sturgeon, and endangered, threatened, and native mussels. Other major programs include coaster brook trout and lake sturgeon restoration, fulfilling tribal trust responsibilities for native aquatic species, and cost reimbursed rainbow trout production for recreational fishing. Hatcheries also provide technical assistance to other agencies, provide fish and eggs for research, and develop and maintain brood stocks of various species and strains.

Fish and Wildlife Conservation Offices
Fish and Wildlife Conservation Offices (FWCO) conduct assessments of fish populations to guide management decisions, play a key role in targeting and implementing native fish and habitat restoration programs; perform key monitoring and control activities related to aquatic invasive species; survey and evaluate aquatic habitats to identify restoration/rehabilitation opportunities; work with private land owners, states, local governments and watershed organizations to complete aquatic habitat restoration projects under the Service's National Fish Passage Program, National Fish Habitat Partnerships, 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 relicensing; evaluate and manage fisheries on Service lands; and, provide technical support to 38 Native American tribal governments and treaty authorities.

Sea Lamprey Biological Stations
The Fish and Wildlife Service is the United States Agent for sea lamprey control, with two Biological Stations assessing and managing sea lamprey populations throughout the Great Lakes. The Great Lakes Fishery Commission administers the Sea Lamprey Management Program, with funding provided through the U.S. Department of State, U.S. Department of the Interior, and Fisheries and Oceans Canada.

Fish Health Center
The Fish Health Center provides specialized fish health evaluation and diagnostic services to federal, state and tribal hatcheries in the region; conducts extensive monitoring and evaluation of wild fish health; 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. The Whitney Genetics Lab serves as a leading edge genetics laboratory and conducts environmental DNA (eDNA) sample processing for early detection of invasive species.

U.S. Fish & Wildlife Service

Fisheries, Midwest Region

Conserving America's Fisheries

Midwest Region Fisheries Contacts

Todd Turner, Assistant Regional Director, Fisheries
todd_turner@fws.gov

Alpena Fish & Wildlife Conservation Office
480 West Fletcher St.
Alpena, MI 49707
Scott Koproski (scott_koproski@fws.gov)
989/356-3052
Area of Responsibility (MI, OH)

Ashland Fish & Wildlife Conservation Office
2800 Lake Shore Drive East
Ashland, WI 54806
Mark Brouder (mark_brouder@fws.gov)
715/682-6185
Area of Responsibility (MI, MN, WI)

Carterville Fish & Wildlife Conservation Office
9053 Route 148, Suite A
Marion, Illinois 62959
Rob Simmonds (rob_simmonds@fws.gov)
618/997-6869
Area of Responsibility (IL, IN, OH)

Columbia Fish & Wildlife Conservation Office
101 Park Deville Drive; Suite A
Columbia, MO 65203
Tracy Hill (tracy_hill@fws.gov)
573/234-2132
Area of Responsibility (IA, MO)

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

Green Bay Fish & Wildlife Conservation Office
2661 Scott Tower Drive
New Franken, WI 54229
Mark Holey (mark_holey@fws.gov)
920/866-1717
Area of Responsibility (IN, MI, WI)

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

Jordan River National Fish Hatchery
6623 Turner Road
Elmira, MI 49730
Roger Gordon (roger_gordon@fws.gov)
231/584-2461

LaCrosse Fish Health Center
555 Lester Avenue
Onalaska, WI 54650
Acting Terry Ott (terrance_ott@fws.gov)
608/783-8441

LaCrosse Fish & Wildlife Conservation Office
555 Lester Avenue
Onalaska, WI 54650
Acting Scott Yess(scott_yess@fws.gov)
608/783-8432
Area of Responsibility (IA, IL, MO, MN, WI)

Ludington Biological Station
229 South Jebavy Drive
Ludington, MI 49431
Jeff Slade (jeff_slade@fws.gov)
231/845-6205

Marquette Biological Station
3090 Wright Street
Marquette, MI 49855-9649
Kasia Mullett (katherine_mullett@fws.gov)
906/226-1235

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

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

Sullivan Creek National Fish Hatchery
21200 West Hatchery Road
Brimley, MI 49715
Curt Friez (curt_friez@fws.gov)
906/437-5231