



U.S. Fish & Wildlife Service - Midwest Region

Fisheries & Aquatic Resources Program

# Fish Lines

Biologists Playing with  
Toy Barges?

River Model Project  
Completed

Hello Baby Lake  
Trout!

“Partners Move  
the Needle”

Snuffbox Recovery  
Efforts





U.S. Fish & Wildlife Service

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Conserving America's Fisheries



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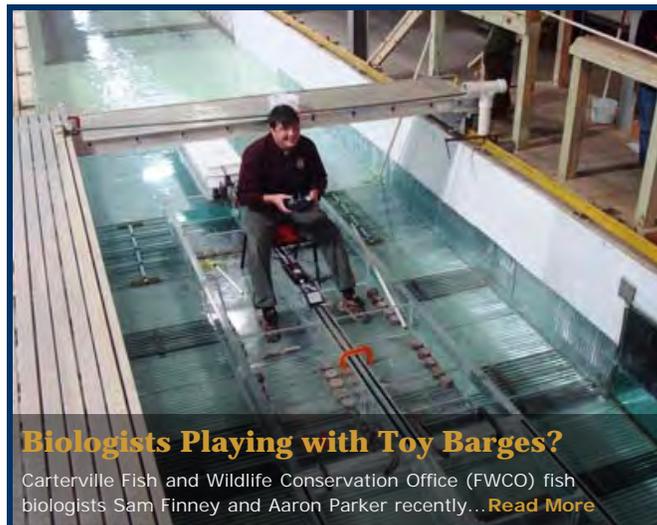
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### Biologists Playing with Toy Barges?

Cartersville Fish and Wildlife Conservation Office (FWCO) fish biologists Sam Finney and Aaron Parker recently...[Read More](#)



**Biologists Playing with Toy Barges?**



**River Model Project Completed**



**Hello Baby Lake Trout!**



**"Partners Move the Needle"**



**Snuffbox Recovery Efforts**

## Fish Tails

"Fish Tails" refers to articles that are entered by field staff in the U.S. Fish and Wildlife Service's Field Notes website, but are not published 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. To view these articles, click on the links below. Enjoy!

1. None available at time of publication.

Last updated: February 14, 2013



## Biologists Playing with Toy Barges?...The Things We'll Do to Stop Asian Carp!

BY SAM FINNEY, CARTERVILLE FWCO



Cartersville FWCO Assistant Project Leader Sam Finney has a little fun operating a model barge in Vicksburg Mississippi. Credit: Aaron Parker USFWS

Cartersville Fish and Wildlife Conservation Office (FWCO) fish biologists Sam Finney and Aaron Parker recently traveled to Vicksburg, Mississippi to play with toys. Just kidding of course, but at times childhood memories returned, particularly for Sam who got the opportunity to operate a remote-controlled model barge.

This January, Aaron and Sam traveled to the U.S. Army Corps of Engineers (USACE) Environmental Research and Development Center (ERDC) to share results, information, and ideas about barge and electric barrier related research that is ongoing at the Cartersville FWCO and at ERDC. Our visit included watching ERDC personnel perform example experiments with the model barges, in aquaria, and in mock electric fields.

Researchers at ERDC have several ongoing studies. One involves a 1:17 scale model of barges and the Aquatic Nuisance Species Dispersal Barrier near Chicago, Illinois. The electric dispersal barrier that is currently in place in the Chicago Sanitary and Ship Canal is unique

when compared to other electric fish barriers, in that barge vessels regularly traverse it. Because of this, hydrologists, engineers, and biologists are working together to answer questions about the likelihood that fish may be entrained (trapped) past the barrier by barges traveling through the area. Other ongoing ERDC studies include Asian carp swimming performance, and Asian carp interactions and reactions to simulated electric fields. All of these studies are designed to optimally operate the current barrier system near Chicago, and to better design future barrier systems.

The laboratory work that is currently taking place at the Vicksburg ERDC facility was very complementary to field work that we have performed at the electric dispersal barrier. We are studying fish behavior around barges as they traverse the barrier as well as studying wild fish behavior, interactions with the barrier system, locations, and abundances around the barrier. After seeing the laboratories and the experiments in action, we sat down with 17 other scientists and some of us took turns giving presentations on Asian carp physiology and swimming abilities, hydrology effects by model barges, electricity effects on Asian carp in a laboratory setting, and finally, results from our DIDSON monitoring and caged-fish work at the barrier system using both conventional boats and barge vessels. Afterwards, the group engaged in a very productive discussion about what all of our combined research has answered now and what work should be done in the future.

The Cartersville FWCO, Vicksburg ERDC, and Chicago USACE all have exciting and important work planned for 2013 and plans are already in place to have a similar meeting, next year. Working together with ERDC staff and staff from the Chicago District of the USACE will serve to strengthen all of the studies related to the barrier and help to continue to keep Asian carp out of the Great Lakes!



US Army Corps of Engineers personnel operate a model barge through a model barrier at the ERDC research facility in Vicksburg, Mississippi. Credit: USFWS Sam Finney



## America's Great Outdoors River Model Project Completed

BY ANDREA ANIA, ALPENA FWCO

The Sulphur Springs Assessment and Restoration project restored 400 linear feet of stream and 0.5 acres of high quality native riparian habitat in the Chagrin River Watershed (Ohio). Although there were delays due to heavy rains from hurricane Sandy, channel and floodplain construction and plantings were completed by mid-November thanks to the efforts of project manager Christina Znidarsic of the Chagrin River Watershed Partners, Inc. (CRWP). This project restores and reconnects a segment of Sulphur Springs that was dammed in the 1930's for recreation. The dam was breached in recent years, leaving an entrenched stream that was disconnected from its floodplain and lacked riparian vegetation.

The segment of Sulphur Springs that was restored is located in the South Chagrin Reservation of the Cleveland Metroparks (CM). The Chagrin River watershed is home to some of the last relict populations of native Ohio brook trout, dating back to the last glaciations over 10,000 years ago.

Through restoration and monitoring, this project will assess if the stream is suitable for reintroduction of the state-threatened native Ohio brook trout, or, alternately, high quality minnow species (reidside dace and southern redbelly dace) that are indicators of healthy headwater streams.



Before: Historic impoundment and remnant outlet structures. Credit: Andrea Ania



Before: Immediately downstream of historic dam outlet structures and dyke. Credit: Andrea Ania

The Sulphur Springs Assessment and Restoration project was identified by Secretary of the Interior Ken Salazar as being among the 51 river projects selected nationwide to serve as models of the America's Great Outdoors Rivers, a program designed to conserve and restore key rivers across the nation, expand outdoor recreational opportunities and support jobs in local communities. Project partners include CRWP, CM, State of Ohio, and the Emerald Necklace Chapter of Trout Unlimited.

The CM will continue to monitor stream flow and water temperature into 2013 to measure post-construction conditions. The CRWP has also developed and continues to implement an education campaign to teach local residents about practices that minimize impacts to the watershed (rain gardens, rain barrels, shade trees, native landscaping).



After: Stream banks have been sloped and stabilized with native vegetation and old dam outlet structures have been removed to restore the stream and riparian area. Credit: USFWS



After: Structures have been removed and the dyke sloped back and stabilized with native vegetation to restore the floodplain and stream. Credit: USFWS



## Hello Baby Lake Trout!

BY CAREY EDWARDS, IRON RIVER NFH



Study eggs disinfect and water harden before subsamples of each female are taken.  
Credit: USFWS

and reproductive capacity increased, the hatchery has had some small successes along the way. Two brood lines were created in 2010 and their eggs were successfully turned into production fish and stocked into waters of Lakes Erie and Michigan.

This past fall, yet another study presented itself in collaboration with Penn State University involving the use of a chemical called luteinizing hormone releasing hormone analog (LHRHa). LHRHa is a synthetic compound similar in structure to the natural LHRH hormone in mammals. Through a sequence of events involving the pituitary gland and ovaries or testis, the end result can hasten the maturation of eggs during the final stages of egg production.

One line was chosen (A line) for the study with three treatments being administered; 10ug, 20ug, and saline (control) solution. 28 fish were randomly chosen from the population for each treatment group, marked with an identifying fin clip, weighed and injected with a dosage of "solution." The following week, fish were checked for ripeness and spawned accordingly. All fish in the 10ug and 20ug groups were ready to spawn while about half of the control group needed an additional two weeks to complete maturation.

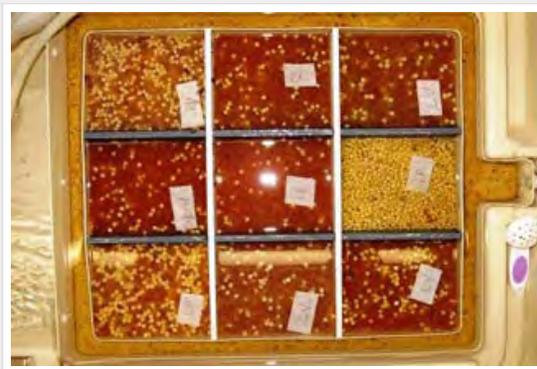
The next step in the study was to individually incubate a subsample of each female's eggs to compare percent eye-up by treatment group. The remainder of each female's eggs was pooled by treatment group and incubated. After eye-up occurred, each female's eggs were evaluated, pooled by treatment group, and percent eye-up was calculated for individuals as well as the pooled groups.

The average eye-up for individual was as follows: 10ug=62.8%; 20ug=62.7%; control=51.9%. The results from the pooled treatment groups and fish not included in the study are as follows: 10ug=69.7%; 20ug=68.4%; control=51.5%; non-study A=32.4%; non-study B=35.4%.

The increased survival has allowed us for the first time in the hatchery's history to produce enough eggs to meet our production goals and all egg requests for Klondike Reef lake trout. With continued success using LHRHa, brood stock numbers could be tailored to open up resources for other Great Lakes restoration activities.

The Klondike strain of lake trout entered the hatchery system in 1995 and originated from wild gametes collected from lake trout captured on Klondike Reef in northeastern Lake Superior. They are considered a "humper" strain as they live in water greater than 600 feet and "come up" to the reef to spawn. Hatchery stockings of this strain have been documented to perform well in deep water areas of Lake Erie.

Currently, Iron River National Fish Hatchery (NFH) has two mature captive lines that were created in 2003. These fish were spawned for the first time in 2008 but producing viable eggs proved to be problematic and unsuccessful. For the last five years, these fish and their eggs have been studied tirelessly. Spawning techniques, incubation methods and diet formulations have been honed and then honed again, with minimal success in improving survivability. Compared to other lake trout strains with greater than 70 percent eye-up success, Klondikes do not measure up, with a success rate averaging 3 to 35 percent. This equates to a lot of work and little to show for it. As the brood fish aged



A subsample from each female is incubated separately for evaluation after eye-up. Credit: USFWS



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### “Partners Move the Needle” Salmon Trout River Fish Passage and Habitat Restoration Project

BY TED KOEHLER, ASHLAND FWCO

The Salmon Trout River located in the Huron Mountains of Michigan's Upper Peninsula is the last river on Lake Superior's south shore where coaster brook trout naturally reproduce. The U.S. Fish and Wildlife Service (Service) has been working for many years with dozens of important partners to increase populations of these large and magnificent trout. The Superior Watershed Partnership and Land Trust and the Service's Coastal Program – Great Lakes recently completed a project to help restore the health of the Salmon Trout River watershed in order to benefit coaster brook trout and other important fish and wildlife species.

Project activities included removing a barrier on a priority road/stream crossing and replacing it with a bottomless arch culvert, completing improvements to the road approaches at two crossing sites to reduce stream sedimentation, and controlling sediment from an unauthorized stream ford. Additional project activities included outreach to landowners and other watershed stakeholders to improve and protect water quality and fish habitat.



Fish passage barrier on an unnamed tributary to the East Branch of the Salmon Trout River. Credit: Superior Watershed Partnership



Newly installed bottomless culvert. Credit: Superior Watershed Partnership

The project significantly furthered the habitat restoration goals of the Salmon Trout River Watershed Management Plan. It also furthered the objectives of the Great Lakes Fishery Commission's Brook Trout Rehabilitation Plan for Lake Superior as well as the Binational Program's Lake Superior Lake wide Management Plan. Measureable outcomes of the project included eliminating over 90 tons of fish habitat smothering sediment per year from the road crossing and approaches; restored fish passage with approximately one mile of stream made available for native fish including brook trout; and improved understanding of best management practices by many landowners and stakeholders in the Salmon Trout River watershed.



Severe erosion from road approaches at a crossing of the Main Branch of the Salmon Trout River. Credit: Superior Watershed Partnership



Completed site work on road approaches, installation of storm water detention areas, and site stabilization including seeding and mulching of disturbed and bare soil areas. Credit: Superior Watershed Partnership



## Genoa NFH Helps State Partner Start Snuffbox Recovery Efforts

BY NATHAN ECKERT, GENOA NFH



Twenty mussel cages, bases and sorting table loaded for transport. Credit: USFWS

and wire screening. Existing jigs and designs were used to assure the cages match previously constructed cages, and that the parts are interchangeable.

The snuffbox uses the logperch, a slender bottom dwelling fish, as a host. Because the logperch is smaller than the bass, catfish or walleye that are normally stocked in mussel culture cages; smaller screen had to be used to assure that the host fish could not escape while carrying their mussels. In addition, a sorting table was also built so that sand and mud from the cages can be sieved to easily reveal sub-adult mussels that survived. The cage tops, bottoms and sorting table are now loaded on a trailer waiting for schedules to match up for us to take them down to their new home in Indiana where state biologists will put them to use. If their efforts are fruitful the snuffbox will thrive again in Indiana and Genoa NFH will have played a small role in the recovery of this endangered species.

For over 10 years Genoa National Fish hatchery (NFH) has been culturing sub-adult freshwater mussels in culture cages placed out in lakes and streams. During this time the design of the cage has changed a few times, but the current model has been in place for several years and is strikingly similar to the original. The mussel culture cage consists of a rectangular frame wrapped with galvanized wire to hold fish and a plywood base with legs to hold the cage several inches from the stream bottom. These cages have been used at multiple locations to produce sub-adult freshwater mussels of several species. One of the species that has been raised in the Genoa style mussel culture cage is the snuffbox, a species that was recently added to the Federally Endangered species list.

The Indiana Department of Natural Resources recently requested that Genoa NFH construct 20 mussel culture cages for them to begin a restoration program for the snuffbox. The staff at Genoa NFH was able to find the time during December to cut and weld the frames and then attach the plywood



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### **Jordan River National Fish Hatchery...Come Experience it For Yourself!**

BY ROGER GORDON, JORDAN RIVER NFH

Curious travelers within Michigan's Northwestern Lower Peninsula just may be lucky enough to find one of the U.S. Fish and Wildlife Service's least known assets. Located in a quiet corner of rural Antrim County, Michigan, Jordan River National Fish Hatchery (NFH) is composed of 116 acres of forested uplands nestled deep in the river valley of the beautiful Jordan River. Surrounded by thousands of acres of State forests and bordering the clear cold waters of its namesake stream, Jordan River NFH has long been a four season destination of nature enthusiast of all kinds. Authorized for creation in 1961 as part of a multi-faceted approach to restoration of lake trout in the Great Lakes, Jordan River NFH first began releasing fish in 1965. Over the past 47 years the hatchery has produced in excess of 140 million lake trout for restoration in lakes Superior, Huron and Michigan. With an annual production of over three million fingerling and yearling trout, Jordan River is the largest National Fish Hatchery in the Midwest, with production exceeding 166,500 pounds per year.



Fall Fest - Hundreds of visitors enjoy the annual "Fall Fest" held in early October at Jordan River NFH. Credit: USFWS



Fingerlings - Some of the millions of fingerling and yearling trout produced at Jordan River NFH. Credit: USFWS

While producing millions of lake trout for restoration in the Great Lakes is the main focus of the facility, it is not the only thing that visitors can experience during their visit. Jordan River NFH is home of a very active citizen Friends Group. This group assists station personnel with a wide variety of day to day tasks, activities, and programs. By far the



most popular with the public is the "Baby Brookies" children's fishing program. This activity, sponsored by Friends donations, grants, and cooperator assistance, produces 5,000 trophy sized brook trout to be used in children's fishing activities throughout the State of Michigan. Currently the program services more than six off station outreach events supporting Youth in the Great Outdoors initiatives. Area primary and secondary school students assist station personnel and Friends volunteers with culture (raising) of these highly sought after fish on the station for up to three years, before donating the brook trout to cooperating non-profit groups for use in children's fishing events. This popular program annually provides thousands of youth and their families the opportunity to enjoy the outdoors in a free, safe, and rewarding fashion.

Another popular offering at Jordan River NFH is our close proximity to the nationally known North Country Trail. This trail, which meanders across the northern tier of states from North Dakota to New York hosts thousands of hikers annually. Through the close relationship of the hatchery's Friends organization and the Jordan Valley Chapter of the North Country Trail Association, hatchery sponsored volunteers maintain over three miles of picturesque trail adjacent to the hatchery. For those less

Baby Brookies Fishing Event - These kids had a hard time just hoisting their own catch!  
Credit: USFWS

adventurous visitors the hatchery maintains .7 miles of hiking trails on the facility grounds. These accessible trails offer a four season experience to visitors with spring ephemeral flowers, summer birding opportunities, fall hunting and fishing access, and winter snowshoeing.

So if your reason to visit is to learn more about fishery restoration projects on the Great Lakes, see and feed the "Baby Brookies", or enjoy the multi-use facilities that the Jordan River NFH provides, we are sure you will have a great time in our beautiful valley.



Spring on the Hiking Trail - Many visitors enjoy the natural beauty of the North Country Trail and Hatchery Explorer Trails. Credit: USFWS



Diverse Opportunities - Spectacular four season views are the reward for visitors that climb the Hatchery Overlook Trail at Jordan River NFH! Credit: USFWS

# Midwest Region Fisheries Divisions

## 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.

## Fish and Wildlife Conservation Offices

Fish and Wildlife Conservation 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 opportunities; 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

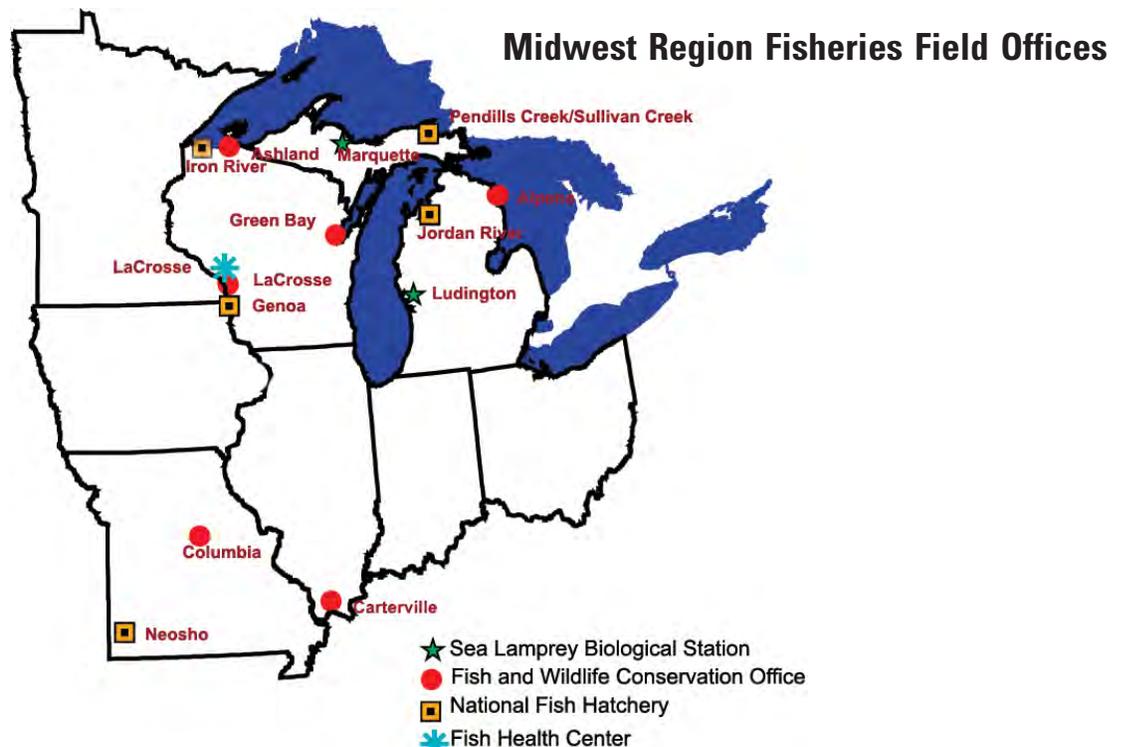
technical expertise to other Service programs addressing contaminants, endangered species, federal project review and hydro-power operation and relicensing; evaluate and manage fisheries on Service lands; and, provide technical support to 38 Native American tribal governments and treaty authorities.

## 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.



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