



U.S. Fish & Wildlife Service - Midwest Region

## Fisheries Program

# Fish Lines

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## U.S. Fish & Wildlife Service Fisheries, Midwest Region

Conserving America's Fisheries

### When Nature's Water Filter Helps Out with Human Water Filters

BY NATHAN ECKERT, GENOA NFH



Close up of sensors attached to Fatmucket mussels. Credit: Bob Bohannon

This is accomplished by a multi-tool approach for measuring water quality. The use of YSI sonde probes and a UV-VIS Multi lyser scan the river for water quality parameters such as Turbidity, pH, Nitrate and Total Organic Carbon. The use of fatmucket mussels is beneficial because they are sensitive to very minute changes in water quality, which provides us with enhanced monitoring of river water conditions.

The mussels are housed in a water tank along with the testing probes. The mussels are wired to a computer that measures their activity. Computer algorithm software then analyzes their activity. If warranted then an e-mail notification goes out to interested parties whom can follow up and investigate if river quality is affected. The Moline Water Division is excited to have the mussels helping to provide public health protection. You can read more and view shared data at:

[http://v4.wqdata.com/webdblink/umr\\_network.php](http://v4.wqdata.com/webdblink/umr_network.php)

The native mussel program at the Genoa National Fish Hatchery (NFH) often supplies mussels of various life stages for a variety of research projects. These are often one-way visits as the animals are tested at the upper limits of their tolerances for various substances. This time, however, some of our mussels found a new home to help monitor the quality of the water supply for the Quad Cities in Illinois and Iowa.

We sent 40 fatmucket mussels for a bio-monitoring effort to provide advanced warning of river contamination to local Public Water Supplies in the Quad Cities. The mussels are located at the Riverside Bio-monitoring Early Warning Station located on the Mississippi River in Bettendorf, Iowa. This station is a joint effort between state and federal agencies, water utilities, universities, engineering firms, and led by the Upper Mississippi River Basin Association. The station is used to provide advanced warning of river water quality changes, including local contamination or spill events.



Fatmucket mussels with sensors attached in their monitoring chamber. Credit: Bob Bohannon



## An Egg-citing Story

BY CAREY EDWARDS, IRON RIVER NFH

For the past twelve years, raising trout and salmon in the classroom has been common place in the Northwood's of Wisconsin. The program started at the Superior Middle School and has since spread to Northwestern, and Ashland Middle schools. What better way would there be to teach students about the life history of trout and salmon then to have them raise fish in the classroom? All it takes is a 30 gallon aquarium, chiller unit and trout or salmon eggs. The equipment is quite costly, but with the help of two local sportsman's group donating the funds for chillers and aquariums, the schools were up and running.

The last ingredient for the program was eggs and Iron River National Fish Hatchery agreed to provide lake trout eggs for the program with the stipulation that the fish would be humanly euthanized at the projects end. (This is due to stringent regulations and permitting in the transportation of fish due to disease concerns.)

Nearly 900 students spread out in three schools, welcomed 500 eggs into the aquarium mid-October.

They monitored water temperature daily and made sure the conditions were perfect for the developing fish. Excitement abounded when the eggs hatched, followed by surprise and disappointment that the newly hatched fry sought shelter in the gravel. After over 30 days of waiting, the eager students began feeding the fish as they swam-up. Some aquariums have better success than others with anywhere from 12 to 200 fish surviving the duration of the project.

As part of the program, the hatchery agreed to come to the classroom and continue the learning process. Fish biologist Carey Edwards brought the hatchery to life with a power point presentation, emphasizing math's everyday occurrence at the fish hatchery. This helped to strike home how important and frequently math is used in everyday life.

This program is very rewarding for all involved. The school, sportsman's club and hatchery are looking forward to this fall, when the next group of students gets to learn about the life history of lake trout.



Eggs are incubated, hatched and reared in three aquariums across northern Wisconsin. Credit: USFWS



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### Our First Big Propagation Effort for Salamander Mussels

BY JORGE BUENING, GENOA NFH

If you have been following these newsletter articles for any length of time, you have had it engrained into you that freshwater mussels require a fish host to complete their lifecycles. That fact holds true in most instances, one of the exceptions is the salamander mussel, *Simpsonaias ambigua*. This mussel deviates from the norm by using an amphibian as a host, to be more specific, mudpuppies. One other anomaly sets this mussel apart from other freshwater bi-valves, the niche that it exploits in water-ways. Generally freshwater mussels are found spread out in the substrate, salamander mussels are found in tight crevices along rocky areas. Generally the places that mudpuppies like to hide, makes sense, right?

The Genoa National Fish Hatchery (NFH) is working this year toward producing salamander mussels for the Chippewa River. With funding from the Xcel Energy Natural Resources Fund we collected gravid female salamander mussels last fall. This spring we infested 102 mudpuppies with salamander mussel glochidia. The mudpuppies were then moved to one of our cage locations and placed in ten culture cages to allow the juvenile mussels to drop-off and develop throughout the summer. We will return in the fall to determine if any of the juvenile mussels survived all of the high water that has hit the region this spring. Our lab estimates say that the effort should have produced over 50,000 juveniles. A very good effort for our first attempt at large scale production for this species. Any sub-adult mussels that are recovered will be stocked in the Chippewa River to bolster the existing population.



A tub of mudpuppies running into baby mussels. Credit: USFWS



White speckles on the gills are baby mussels. Credit: USFWS

This project is an example that corporate entities, state agencies and the federal government can work together to enhance our biological communities and preserve our natural resources.



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### BaySail Partnership: A Win-Win Effort for Conservation and Education

BY ANJANETTE BOWEN, ALPENA FWCO



Students aboard the BaySail Great Lakes Freshwater Ecology Voyage prepare traps to sample for invasive round goby and rusty crayfish.

Since 2009, the Alpena Fish and Wildlife Conservation Office (FWCO) has partnered with BaySail's Appledore Tallships based in Bay City, Michigan to enhance educational experiences of youth during BaySail's Great Lakes Freshwater Ecology Voyages in the upper Great Lakes.

The voyages provide youth a hands on introduction to the Great Lakes, environmental issues, and field sampling. Students learn to develop scientific habits through data collection and exploration. The voyages take the students to a variety of locations across the upper Great Lakes.

We were able to partner with BaySail to have students minnow trap for round gobies and rusty crayfish at set locations during their voyages. The effort teaches students how to follow sampling protocols and use sampling gear to collect scientific data. The information on round goby and rusty crayfish presence/absence and relative abundance within Lake Huron is useful to the aquatic invasive species program at the Alpena FWCO.

The partnership provides a win win effort for conservation and education. In addition to Freshwater Ecology Voyages, BaySail also fosters public education about environmental issues in the Great Lakes and Saginaw Bay through other public cruises. Alpena FWCO has provided preserved invasive species specimens to the program, which allows cruise visitors to view invasive species up close. Invasive species WATCH identification cards are also provided to cruise visitors, helping them recognize and report any invasive species they may encounter.

For more information about BaySail's environmental stewardship efforts or to learn more about their cruises, visit their [website](#).



Collecting data on round gobies that are captured during the voyage. Information on aquatic invasives collected during the sail is provided to the US Fish & Wildlife Service. Credit: David Leanza, BaySail.



## U.S. Fish & Wildlife Service Fisheries, Midwest Region

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### Iron River NFH Efforts to be Disease Free

BY CAREY EDWARDS, IRON RIVER NFH



Beka McCann and Terry Ott, from the Lacrosse Fish Health Lab, inject coaster brook with a furunculosis vaccine. Credit: USFWS

Small brood fish (approximately two grams in weight) are immersed in a dip while larger brood fish receive an injectable version of the vaccine. This is the fourth year that the vaccine has been implemented with adults being injected in mid-July and the final immersion of juveniles in early September. It is hoped that the early vaccination process will be part of a successful biosecurity plan at the Iron River National Fish Hatchery to help maintain a disease free status.



Approximately 10,000 lake trout and coaster brook trout (pictured here), are injected with a vaccine for furunculosis as part of Iron River National Fish Hatchery's biosecurity plan. Credit: USFWS

Furunculosis (pronounced fur-unc-you-low-sis) is a bacterial disease primarily found in cultured salmonid and warm water species. It is found widespread in natural waters. Diseased fish appear lethargic, go off feed and display clinical signs such as exophthalmia (bulging eyes), hemorrhagic fins, and furuncles (open boil-like sores). The pathogen is usually transmitted as the result of contact with diseased or carrier fish but can also occur via water passed from one contaminated water supply to another (tank to tank). Fish may be carriers of the disease without showing any clinical signs, which is why hatchery fish are biannually tested by the La Crosse Fish Health Lab.

The disease positive classification can impact the U.S. Fish & Wildlife Service's ability to meet stocking goals with its many partners including state and tribal agencies because some states have regulations regarding the transport of eggs and fish from positive facilities. A priority for Iron River National Fish Hatchery has been to maintain a disease free status.



Fish are crowded, netted into an anesthetic bath, injected with the vaccine and moved back into the raceways. Credit: USFWS



## U.S. Fish & Wildlife Service Fisheries, Midwest Region

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### What it takes to Stock Millions of Lake Trout Every Year

BY CAREY EDWARDS, IRON RIVER NFH



Lake trout are piped from the distribution trucks to the M/V Spencer F. Baird to be stocked on reefs in Lake Michigan and Lake Huron. Credit: USFWS

decisions are made years in advance on how many brood fish are needed to meet future goals for egg production and how often gametes are to be collected from the wild to keep hatchery stock genetically sound. Decisions are also made as to what strain of lake trout will be raised and where it will be stocked and often times, studies are conducted with multiple strains of lake trout at a given site to determine what type of lake trout survives better. These studies could not be completed without the mass marking program which began in 2010. It is a coordinated effort between all jurisdictions to mark (tag or clip) all trout and salmon stocked in the Great Lakes to evaluate whether a fish caught in an assessment is a native or hatchery fish. Information gathered from tagged fish could impact the type of lake trout and how many are being stocked from each hatchery.

Putting aside all the planning and technology that takes place at each hatchery to make and grow a healthy lake trout to stocking size, whether it leaves as a shore stocked fall fingerling or as a yearling or is stocked off of the M/V Spencer F. Baird as part of the main distribution season, the planning and collaborative processes that takes place is commendable. Nearly a dozen Fish and Wildlife, Coast Guard and Department of Natural Resource offices work together in what is nearly a three month operation to stock fish on reefs in Lake Michigan and Lake Huron. The end result is the stocking of approximately 4.4 million lake trout, and we are in the process of making it happen all over again, next year.

Growing and stocking lake trout is a vastly complicated process that starts years in advance before the fish are even created. It doesn't just happen at the local Department of Natural Resources or Fish and Wildlife Office, it encompasses a plethora of state, federal, and tribal agencies as well as conservation clubs and other organizations. Managing inter-jurisdictional fisheries can be tricky. A federal court order, called the 2000 Consent Decree, was negotiated between the state of Michigan and five Chippewa and Ottawa tribes to set forth standards in managing the fishery in 1836 Treaty waters of Lake Superior, Lake Michigan and Lake Huron with the Fish and Wildlife Service being the United States representative for implementation of the Decree. All of these groups work together to evaluate the fisheries, assess the status of fish stocks, establish harvest limits, stock fish and control parasitic sea lamprey which is all part of restoring lake trout in the Great Lakes.

From a hatchery standpoint,



Fish are run through mass marking trailers

where they will receive a coded wire tag and adipose fin clip before being stocked into the Great Lakes. Credit: USFWS



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## 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.

### Outstanding Employee

BY RANDY OBERMILLER, PENDILLS CREEK NFH

During certain times of the year, Pendills Creek National Fish Hatchery (NFH) and Sullivan Creek NFH need a hand to help get the job done.

When this need arises, both Pendills Creek and Sullivan Creek call upon Aaron Stallman. Since 2003, Aaron has worked in many capacities for the U.S. Fish & Wildlife Service as a term employee. During those years, Aaron has become a valuable asset to the hatchery complex.

Whether filling in for permanent staff during vacations, assisting during spawning season, or working during fish distribution, Aaron can always be counted on to help out when called upon.

While working at Pendills Creek NFH as an Animal Caretaker, Aaron has performed a variety of duties related to fish culture and maintenance. Some of the duties he performed include: cleaning raceways, feeding fish, recording various fish culture information, helping with sample counting, janitorial work, and assisting the hatchery staff with a variety of projects.

During spawning season, which usually starts by the middle of September and runs until the middle of November, Aaron has also worked at Sullivan Creek NFH. Sullivan Creek NFH is a substation of Pendills Creek NFH and a lake trout brood stock facility, which requires extra help during this time. Aaron has helped with the spawning process by sorting, picking, fertilizing, and collecting lake trout eggs.

Aaron has also worked as a Coded Wire Technician with the Great Lakes Fishery Mass Marking Initiative. Traveling throughout the state of Michigan at various state and federal fish hatcheries, he has worked in the Auto Fish Trailer. The Auto Fish System involves the process of clipping the adipose fin and inserting a coded wire tag resulting in uniform marking and identification of trout and salmon stocked into the Great Lakes.

Aaron is dependable, reliable, and has a great work ethic. We are fortunate to be able to call on him to fill in at the hatchery complex on a short notice, and we are proud to have him in our ranks.

### Butterflies Abound!

BY CAREY EDWARDS, IRON RIVER NFH

It seems like the new buzzword these days is pollinator and rightly so. They are an integral part of the world's life cycle. Efforts to cultivate areas where pollinators can reproduce, feed and grow are in effect across the country. The Iron River National Fish Hatchery is also doing its part to provide safe harbor for pollinators.

Coming back for the sixth year is the Iron River Elementary School 5th grade class. This year's efforts were put forth in rejuvenating the first garden made in 2009. In an effort to put more ownership into the project, the students would not only help plant the garden but they would also make their own stepping stone. Stones were decorated with an assortment of stamps, stones and shells.

Once the students smoothed out their concrete mixtures, it was time to plant. Students spent the remainder of the morning weeding the connecting gardens and re-planting flowers in the old one. After lunch, the students toured the hatchery and decorated their stepping stones.

With a little bit of elbow grease and a lot of teamwork, a very successful and rewarding project was accomplished. The students were able to learn about gardening and butterflies as well as gaining awareness of fish hatchery processes. Stay tuned for next year's addition to the Iron River National Fish Hatchery's butterfly garden with the new fifth grade class.



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## 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.



## Midwest Region Fisheries Contacts

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### Cartersville Fish & Wildlife Conservation Office

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### Columbia Fish & Wildlife Conservation Office

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### Genoa National Fish Hatchery

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### Iron River National Fish Hatchery

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### Jordan River National Fish Hatchery

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### Marquette Biological Station

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