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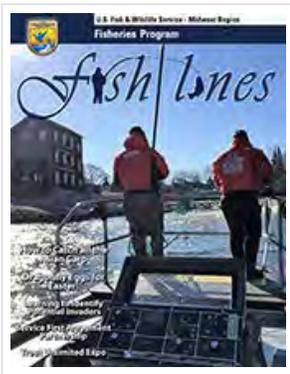
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Alpena Fish and Wildlife Conservation Office

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Apr 26, 2018
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How to Catch all the Asian Carp



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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.



St. Louis, Missouri How to Catch all the Asian Carp

BY WYATT DOYLE AND JASON GOECKLER, COLUMBIA FISH AND WILDLIFE CONSERVATION OFFICE



The multi-agency Asian carp removal effort took three weeks to complete. Credit: Photo courtesy of Missouri Department of Conservation.

In a recent fishing exercise at Creve Coeur Lake in Maryland Heights, Missouri, our biologists worked with the Missouri Department of Conservation, U.S. Geological Survey and the St. Louis County Parks Department to remove 47,000 Asian carp from the lake. The lake is primarily infested with silver carp, a type of Asian carp that jumps out of the water when agitated by the sound of a boat motor. With conventional fishing methods unable to efficiently and effectively capture thousands of these unwanted fish, the team of partners looked to China, the country of origin for silver carp and other Asian carp species, for inspiration.

Able to swim 30 miles per hour, evade nets and fishing boats, as well as fishing hooks and lures, silver carp pose an extreme fishing challenge. While silver carp populations have steadily increased in lakes and rivers of the United States, they continue to decline in China where they are seen as a valuable source of nutrition. To remove thousands of Asian carp from the 320-acre Creve Coeur Lake, partners deployed a Chinese "fish herding" technique to slowly move fish across the lake into a confined

space for removal.

Herding was done with high intensity sound coupled with deep water electricity and floating nets. The technique was largely successful, until the fish formed a tight ball, refusing to move the last few feet into the desired removal location. Concerned the tight ball of fish would escape, the quick-thinking partners assembled equipment and personnel to remove the fish from the water.

The successful removal of 47,000 silver carp, averaging 5 pounds each, was a monumental undertaking. From start to finish, the effort took three full weeks, 20 people, one track hoe, two skid loaders, 10 boats and a mile of net. Cool temperatures at night also created ice on the lake that had to be broken each morning before work could continue.

Creve Coeur Park Lake, once packed full of silver carp, is now largely free from them. After nearly a decade of competing with native fish species for food and space, native sport fish like crappie have a chance to regain their foothold in the lake and create a desirable fishery for anglers. Once again, recreational boaters will be able to enjoy the lake without the excessive risk of jumping silver carp. The absence of the invasive Asian carp will also reduce the likelihood of smelly and unsightly fish kills at the scenic urban park. Through this partnership effort, it is anticipated the lessons learned will allow for other groups to successfully remove Asian carp in invaded waters throughout the Midwest.



47,000 invasive Asian carp were removed from Creve Coeur Lake in Maryland Heights, Missouri. Credit: Photo courtesy of Missouri Department of Conservation.



To remove thousands of Asian carp from the 320 acre Creve Coeur Lake, partners deployed a Chinese "fish herding" technique to slowly move fish across the lake into a confined space for removal. Credit: Photo courtesy of Missouri Department of Conservation.



Dragonfly Eggs for Easter!

BY ANGELA BARAN DAGENDESH, GENOA NFH

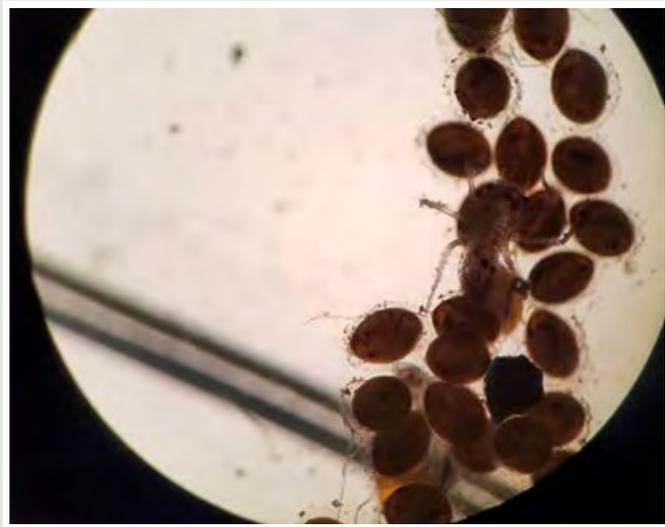
Genoa National Fish Hatchery (NFH) received 100 Hine's emerald dragonfly eggs from the University of South Dakota (USD) on Easter Day, April 1st, 2018. Collection efforts for 2017 in both Door County, Wisconsin and near Chicago, Illinois improved greatly over 2016, allowing the station to work with the eggs again and learn more about this early life stage.

Hine's emerald dragonflies mate during the summer, with females releasing their eggs into shallow pockets of water in wetlands. These eggs generally develop to the point of having their eyes visible in the shell before they go dormant for the winter. Then as the groundwater warms up in the spring, the larvae will begin hatching, going through several instars (molting) over the next 2-5 years.

Once the eggs arrived on station they immediately began hatching. The newly hatched larvae were placed in pond water immediately to ensure they had food available to them when they were ready to start eating. They will start off by feeding on microscopic zooplankton found in the pond water, once they grow large enough to be safely moved, they will be placed in the cages in one of the hatchery ponds, feeding on whatever invertebrates are smaller than them and happen to cross their paths.

This new species on station began with a Cooperative Recovery Initiative Grant in 2014, funding 3 years of work to discover a new way to raise large numbers of the larvae, which were initially cared for individually at USD. The hatchery has had many speed bumps along the way, but is continually learning from the dragonfly and has been fortunate enough to receive funding for another year of work.

The larvae will remain on station over the summer in a hatchery pond, receiving wellness checks weekly and monthly, monitoring their growth and ensuring non-target species are kept out of the cages. At the end of the growing season they will be transferred back to staff at USD to be placed in emergent cages the next spring in their new homes, either Door County or near Chicago.



Hine's emerald dragonfly eggs arrived at Genoa NFH in time for Easter. Note: Some larvae have emerged in this image. Credit: USFWS



Learning to Identify Potential Great Lakes Invaders

BY JESSICA BOWSER, ALPENA FWCO, DETROIT RIVER SUB-STATION



Workshop participants are shown the gill rakers from a bighead carp. Bighead carp gill rakers can be an identifying characteristic between Asian carp species.
Credit: USFWS

In early March, 30 biologists and technicians from several agencies including, Michigan Department of Natural Resources, Ohio Department of Natural Resources, U.S. Geological Survey - Great Lakes Science Center, and four U.S. Fish and Wildlife Conservation Offices (FWCO) including, Lower Great Lakes FWCO, Green Bay FWCO, Ashland FWCO, and Alpena FWCO, came together to learn how to identify potentially new invasive fish species in the Great Lakes at the University of Michigan Museum of Zoology. Doug Nelson, the fisheries collection manager, and Kevin Wehrly from the Michigan DNR helped to facilitate the class and share their expertise. The U.S. Fish and Wildlife Service has identified 42 fish species as being a potential risk for introduction into the Great Lakes. Attendees got a chance to examine most of the 42 fish species and compare them to similar looking or "doppelgänger" native fish species.

detect new aquatic invasive species before they are established in the Great Lakes. USFWS staff routinely work in locations that are at a higher risk for new species introduction, and our partners assist in the surveillance of new invasive species. Invasive species can get into the Great Lakes in a number of ways including, ballast water discharge and aquarium releases, and because of this staff could come into contact with fishes from around the world. With the possibilities of exotic fishes entering the Great lakes, hands on experience with the fish identified as the greatest risk is invaluable.

The U.S. Fish and Wildlife Service (USFWS) has implemented an Early Detection Monitoring Program under its Aquatic Invasive Species program. The goal of the Early Detection Monitoring Program is to

Staff started the day with a presentation by Kevin Wehrly showing what identifying features to look for on the non-native fishes to differentiate them from native species. Attendees were then able to observe most of the fish species from the high risk list as well as their native fish look-a-likes. At the end of the session, the participants were quizzed with a lab practical to see if they were able to correctly identify the potential invaders from Great Lakes native fish. Some species are difficult to tell apart from our native species, and will require us to be vigilant in the field to make sure fish are being properly identified.



Kevin Wehrly with Michigan DNR explains the differences between Yellow Perch and European Perch. European Perch (potential invasive species) and Yellow Perch (native species) are almost identical to one another. Credit: USFWS



Service First Agreement Partnership

BY REBECCA NEELEY, CARTERVILLE FWCO - WILMINGTON, IL SUBSTATION

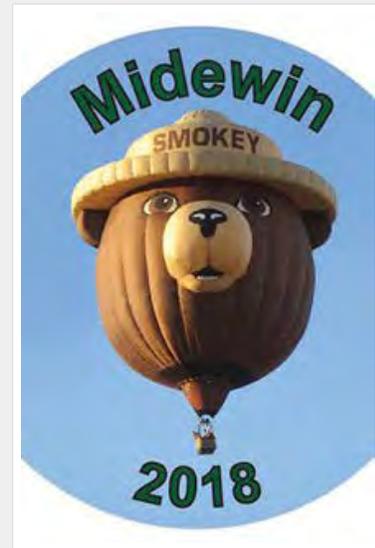


Jean Kennan with U.S. Forest Service holds an Asian carp captured during survey work. Credit: Rebecca Neeley, USFWS

For the last three years, the U.S. Fish and Wildlife Service (USFWS) Carterville Fish and Wildlife Conservation Office – Wilmington, Illinois Substation has thrived under a continuing Service First Agreement with the U.S. Forest Service Midewin National Tallgrass Prairie (MNTP).

Service First is a partnership authority available to all agencies of the U.S. Department of Agriculture and U.S. Department of the Interior. Through this agreement the Wilmington Substation has improved operational efficiency by having boots on the ground in a matter of minutes to continue the fight against Asian carp. Through this partnership, the MNTP has welcomed the USFWS as family and include staff in many of their events as well as joining in USFWS events.

Every May, the MNTP participates in the Route 66 Red Carpet Roll Out. This event is the official opening of Route 66 for the summer and includes 13 cities along Route 66. In 2017, staff from the MNTP and USFWS along with 20 additional companies and organizations hosted the public. Staff from the USFWS had several Asian carp as well as aquatic insects available for the public to view. Both were a big hit, the kids loved looking at the insects and the parents marveled at the size of the carp. In 2015, the MNTP welcomed 27 Bison to the property and the numbers have expanded over the years. We look forward to an even bigger turnout in 2018 with the presence of the Smokey the Bear hot air balloon. If you are ever in the Chicago area stop by and visit the Bison and a restored prairie ecosystem.



2018 Midewin National Tallgrass Prairie Button. Credit: Rick Short, U.S. Forest Service



Staff prepare and maintain headstones prior to Memorial Day events. Credit: U.S. Forest Service

Another event each May that the USFWS and the MNTP participates in is a day of service at the Abraham Lincoln National Cemetery. The week before Memorial Day each year, a team of staff members from both agencies help prepare the cemetery for annual Memorial Day programs.

Additionally, each year MNTP staff joins USFWS staff on the water for an intense day of Asian carp sampling. This exchange has allowed the MNTP staff to see what we really do on the water and with the boats they see in the parking lot each day.

Through this Service First Agreement, the MNTP and USFWS staff has become like a family and we continue to support the

work conducted by each agency.



Ashland, Wisconsin Trout Unlimited Expo

BY BRANDON KEESLER, IRON RIVER NATIONAL FISH HATCHERY

The Wild Rivers Chapter of Trout Unlimited held an event on March 31st 2018 at Northland College in Ashland, Wisconsin to promote their group and raise funds for future projects. Trout Unlimited's (TU) mission is "To conserve, protect and restore North America's coldwater fisheries and their watershed". TU has been a strong supporter of the Iron River National Fish Hatchery (NFH) over the years. Iron River NFH set up a booth to help support our partner and promote our facility, the work we do and the mission of the Fish and Wildlife Service.

Here at the hatchery we raise 1.3 million lake trout and over 200,000 brook trout annually. The lake trout are stocked into Lake Michigan and Lake Huron. The brook trout are stocked into northern Minnesota, the Upper Peninsula of Michigan, and local waters here in Bayfield County. The Iron River NFH brought educational materials to exhibit. The display included an aquarium with juvenile lake trout and coaster brook trout and informational brochures explaining the goal of the fish hatchery system and how the fish hatchery operates within the U.S. Fish and Wildlife Service.



Brandon Keesler with Iron River NFH talks hatchery operations with Trout Unlimited Expo attendee. Credit: USFWS

Despite the inclement weather, the event was well attended. Local residents from the surrounding community attended the event to raise money for the local chapter of TU through silent auction and raffles. Chili and baked goods were available for event goers throughout the day. Over twenty other agencies and organizations were on hand to support TU with informational booths. Iron River NFH appreciates this partnership with TU and looks forward to years of collaborating on future events.



You Shall Pass!

Fisheries Evaluation of the Frankenmuth Rock Ramp

BY JUSTIN CHIOTTI, ALPENA FWCO, DETROIT RIVER SUB-STATION

Located in Frankenmuth, Michigan, along the Cass River, the Frankenmuth rock ramp was designed to reconnect the fish of Saginaw Bay to more than 73 miles of historically significant spawning areas.



An aerial image of the rock ramp located in Frankenmuth, MI. Credit: CTI and Associates of Wixom, MI.

While the focus of the project is on

fish passage, the project maximizes opportunities to benefit Frankenmuth's local economy. Historically the site of the Frankenmuth Dam, the rock ramp was completed in the fall of 2015. Originally built as a mill, the Frankenmuth Dam impounded water upstream and served as a tourist attraction where the "Bavarian Belle Riverboat" and "Frankenmuth Fun Ships" operate during the summer. However, due to safety concerns and major upgrades needed to support the dam, the city decided to construct the rock ramp to provide a permanent solution to their dam problem. The rock ramp maintains the former impoundment created by the dam and imitates natural rapids consisting of fourteen wedge shaped weirs spaced about twenty feet apart. The entire rock ramp is approximately 300 feet in length.



Staff from the Alpena FWCO – Detroit River Substation conducting electrofishing assessments downstream of the rock ramp, Frankenmuth, MI. Credit: Justin Chiotti, USFWS

Since 2010, fish biologists from the Alpena Fish and Wildlife Conservation Office have been collecting data in the Cass River to evaluate changes in the fish community as a result of the rock ramp. Costing nearly \$3.5 million, project partners wanted to ensure that the rock ramp was allowing fish passage of migratory fish species from Saginaw Bay and metrics were created to define the success of the rock ramp for fish passage. These metrics include the detection of tagged fish recaptured upstream of the rock ramp, presence of indicator species not detected upstream prior to dam removal, and an increase in the relative abundance of indicator species upstream. Over the last three years, staff from the Detroit River Substation and Michigan Department of Natural Resources have tagged over 2,500 fish downstream of the rock ramp in hopes of detecting them during upstream assessments. Fish species tagged include northern pike, white sucker, redhorse suckers, walleye, and smallmouth bass.



A net pen filled with tagged fishing being released downstream of the rock ramp in Frankenmuth, MI. Credit: Janine Lajavic, USFWS

To date, thirteen tagged fish have been detected upstream during electrofishing assessments or by local recreational anglers. Species detected upstream include white suckers, redhorse suckers, and smallmouth bass, proving that the rock ramp allows these species to access habitat upstream during certain flow conditions. New species detected upstream since the dam removal include freshwater drum, walleye, flathead catfish, and gizzard shad. Fisheries assessments will continue during the spring and summer of 2018 to further assess the fish community.

While complete dam removal is usually the most effective option when the goal is to reconnect fish habitat, the City of Frankenmuth solved their dam problem while meeting both economic and ecological goals of the community. The Frankenmuth fish passage project was a collaborative project with many different funding agencies, for more information and live webcam please visit: http://www.frankenmuthcity.com/residents/dam_project/index.php



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.

Iron River National Fish Hatchery Participates in Science Fest 2018

BY BRANDON KEESLER, IRON RIVER NFH

On April 14 2018, Iron River National Fish Hatchery (NFH) participated at Science Fest 2018 in Superior, Wisconsin. Science Fest is an event held at the University of Wisconsin-Superior and is hosted by the Students of Science members. The event includes over 50 exhibits in all realms of science for all ages.

The Iron River NFH display included an aquarium with juvenile lake trout and brook trout, two mounts of adult lake trout and brook trout, and a display showing the various activities at the hatchery. Various brochures were available for visitors covering information about the hatchery and other information the U.S. Fish and Wildlife Service is involved with. Coloring and activity books were popular with the children visiting the exhibit.

Despite the blustery weather, plenty of visitors came to see the various exhibits. The exhibit experienced numerous visitors throughout the event. Overall, it was good opportunity for people to learn about the hatchery and plan a visit to the facility.

Trout in the Classroom Augments School's Science Curriculum

BY JORGE BUENING, IRON RIVER NFH

What better way to learn about the life cycle and development of Lake Trout than seeing it first hand, up close and personal every day in your school science class? That is exactly what happens at the Northwestern Middle School and Superior High School.

In December these two classes received eyed lake trout eggs from the Iron River National Fish Hatchery (NFH). The students were able to watch the eggs hatch, monitor the fry as they absorbed their yolk sac, and observe the swim-up process as the fry began eating their first meals. By spring the fish were beginning to out-grow their aquarium so hatchery staff came and removed the fish. This also gives staff an opportunity to give a virtual tour of the hatchery. During this presentation the purpose for the hatchery and the way fish are raised is explained. There is also time to explain some general fish anatomy and answer some of the students' questions about fish and hatcheries.

Just like most things this program is not free. Thanks to a donation from the Brule River Sportsmen Club the classrooms were equipped with a chiller, aquarium, and filter to provide a suitable habitat for raising lake trout. A big thanks also to the participating classes, for without their flexibility with their course layout and their classroom space this program would not be possible.

The U.S. Fish and Wildlife Service is committed to developing programs like this one that help explain what we do and why we do it. Getting that message out and involving our youngsters is essential to the preservation of our mission and ensuring it continues to resonate. Our mission is to work with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people.



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.

Whitney Genetics Lab

The Whitney Genetics lab provides environmental DNA (eDNA) surveillance for the early detection of invasive Silver and Bighead carp as part of the Asian Carp Regional Coordinating Committee's plans to detect, monitor, and respond to the threat of invasive carp in the Great Lakes. The lab also provides analysis for determining the ploidy of wild-caught Black and Grass carp, two more invasive carp species.



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