



# Fisheries Program

# fish lines



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## Dragonflies to Arrive at Genoa NFH in 2015

BY ANGELA BARAN, GENOA NFH



Genoa NFH will be "working out the bugs" involved in raising the endangered Hines Emerald Dragonfly. Credit: USFWS

In February of 2013, staff from Genoa National Fish Hatchery (NFH) travelled to Vermillion, South Dakota to meet with students and faculty from the University of South Dakota (USD) studying the Hines Emerald Dragonfly. The hatchery was contacted by the Green Bay and Chicago Ecological Services Field Offices to see if it would be possible to transfer small scale laboratory based propagation to a larger production scale.

The Hines Emerald Dragonfly was placed on the Federal Endangered Species list in 1995; the primary reason for the species decline is loss of habitat due to urban development. The historic range for the dragonfly was Alabama, Illinois, Indiana, Ohio, Missouri, Michigan and Wisconsin. It has been extirpated from Alabama, Ohio and Indiana. Habitat restoration efforts are underway in several locations and with the culture methods being developed, there is great hope for this species to stabilize and re-establish in historic ranges.

The visit with USD students and staff two years ago led to a search for funding to begin working with this new species at Genoa NFH. In the fall of 2013, hatchery staff began working with USD and the Chicago Ecological Services Office on a proposal for the Cooperative Recovery Initiative. This initiative provides funding for projects working with threatened or endangered species on or near refuge lands. The fish hatchery is in a unique situation, being located within the Upper Mississippi National Wildlife and Fish Refuge, allowing the opportunity to apply for the funding. Genoa NFH seems to be an almost ideal setting for possible dragonfly culture with access to the hatchery's natural wetland and the multiple food sources utilized by the many species cultured at the hatchery.

A proposal was submitted in 2013, requesting funding for a mobile rearing unit, cage construction and additional staff for the hatchery to begin culturing the Hines Emerald Dragonfly as well as funding for a coordinator position at the Chicago ES Office and for USD to perform collection efforts and genetic sampling. The proposal made it to the final steps of the process but other projects were selected for 2014. The hatchery, the Chicago ES office and USD worked on the proposal again in the fall of 2014 and submitted a revised proposal. In early February 2015, the group received word that the proposal was selected and work will begin in the spring/summer of 2015! Stay tuned for updates on the construction of the trailer and cages and for the arrival of the Hines Emerald Dragonfly larvae at Genoa NFH.



## Friends Host Kids Ice Fishing Event at the Genoa NFH

BY DOUG ALOISI, GENOA NFH

The 2015 Annual Kids Ice Fishing Day held on Saturday, February 7th was great fun in spite of this year's arctic weather blast in the upper Midwest. The U.S. Fish and Wildlife Service's three La-Crosse area fisheries offices again hosted a Kids Ice Fishing event with the help of our Friends Group, the Friends of the Upper Mississippi.

The kids fishing day which had humble beginnings, back when it was held at Goose Island Park just south of La Crosse Wisconsin, is now a highly anticipated winter event. Over 450 people arrived on station to learn more about ice fishing, and have an opportunity to fish for rainbow trout on a stocked pond at Genoa NFH.



Another happy face from the 2015 Kids Ice Fishing Day at Genoa NFH. Credit: USFWS



A Great Memory was made with this catch at the Kids Ice Fishing Day. Credit: USFWS

Many of the 250 kids ages 5-12 and their parents,

had never been ice fishing before, so they were given a short primer on ice fishing techniques and ice safety, which was provided by Eric Leiss, (fish biologist and ice fishing expert from the La Crosse Fish Health Center). Soon after the lesson ended, the kids put their new found knowledge to work, ice fishing for the rest of the morning on Pond 11. And because the trout were so cooperative, many children caught their very first fish through the ice, with some kids going home with a limit of five rainbows.

Our Friends group provided a light lunch to the participants and a warming tent with coffee and cocoa was available, even though it was a warm day for Wisconsin, with highs all the way up to the mid 20's! Many thanks go to our volunteers, the Friends Group, the Genoa NFH staff and staff from the three La-Crosse area fisheries offices, for getting families outside to enjoy all nature has to offer, even in the midst of winter.



## Risk Assessments at Carterville FWCO Reveal Important Information and Interesting Species

BY ALLISON LENAERTS AND LUCAS SHEA, CARTERVILLE FWCO



African clawed frogs were used extensively in laboratory testing in the 1950s and 1960s. Credit: H. Krisp

As technicians at the Carterville Fish and Wildlife Conservation Office (FWCO), most of our office work consists of the dreaded Risk Assessment. Risk Assessments are kind of self-explanatory; we use current information to assess the risk of a species becoming invasive in the United States. Although the work is important and can yield valuable species information, we all still prefer to sample in the field or do anything to not be chained to a desk. As daunting as the work is, we have encountered some interesting species, for example the African clawed frog (*Xenopus laevis*).

The African clawed frog is native to most of Africa, except for East Africa, but has multiple occurrences in the United States. They can reach sizes of five inches and live up to 12 years but have been recorded to live as long as 30 years. This species is highly adaptable and has the ability to tolerate sewage and saline waterways. In addition, the African clawed frog has a high tolerance for fairly cold temperatures and can easily take advantage of new man made habitats. Unlike native frog species, the African clawed frog lacks a tongue, doesn't hold

its hind legs underneath itself and lacks a visible tympanum. Mature adults also have three black claws on the toes of their hind feet.

African clawed frogs have been introduced into the United States through their use in laboratory research. This species has been extensively used in laboratories from genetics to human pregnancy diagnosis in the 1950s and 1960s. Human pregnancy was tested by injecting urine from a woman into the frog then observing if the frog had produced eggs, meaning the woman was pregnant. African clawed frogs were used in other experimentation because of their close evolutionary relationship to humans. Their establishment in the wild is correlated to the termination of their use in diagnosing human pregnancy, but they are also a popular aquarium pet which can lead to further introductions. Currently, the African clawed frog is considered a nuisance in its native and introduced range. The main impact it has on native areas is consumption of fish, amphibians and benthic species. It is also a known carrier of the chytrid fungus. Due to its high adaptability, this species continues to expand its global distribution. Although the African clawed frog is already present in the United States, this information is beneficial in understanding pathway vectors and introduction impacts, which may be applied to numerous other species of concern.

As we begin sampling in the field this spring, we are reminded by the invasive species present that preventative measures like Risk Assessments are crucial to stopping the spread of other invaders.

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## “Luther College Lab Day” Leaves Non-Science Majors Excited and Enthused

BY NICHOLAS BERNDT, WHITNEY GENETICS LAB

J-term students attending Dr. Dawn Reding's “genetics and society” class at Luther College visited the Whitney Genetics Lab (WGL) for what is becoming an annual event. During the visit, students get hands on experience processing their own eDNA samples. Sample preparation includes filtering water samples, loading PCR plates, and performing gel electrophoresis. The fun part for the students is experiencing things they never would get to otherwise.



Whitney Genetics Lab technician Kyle Von Ruden shows a student correct pipetting technique for loading PCR plates. Credit: Mai Yang, USFWS

wearing a lab coat, using an electronic pipette, and other things we consider run of the mill procedures and tools suddenly turn into the coolest thing ever.

It's a great feeling for WGL staff to see people get excited about science as well. At the end of the day, the students went away with hands on experience exploring cutting edge genetic applications, and a better understanding of how genetics and science fit into modern conservation.



Luther College students filter water samples through a vacuum manifold. Credit: Mai Yang, USFWS

For some, their first ever introduction to genetics was in class just a week prior! You see, these students are not the typical biology, fisheries, or genetics students that normally tour the lab. These students are fulfilling science credit requirements for graduation in a non-science field, so they have virtually no experience with the tools and applications we deal with on a daily basis. Musical theater, art, elementary education, and accounting are a few of the programs of study the students were in. Simple things like



Luther College students get oriented on various laboratory equipment used for eDNA sample preparation before entering the lab. Credit: Mai Yang USFWS



## Partnership Works with Gun Lake Tribe to Restore Lake Sturgeon Spawning Habitat

BY DARIN SIMPKINS, GREEN BAY FWCO



Juvenile Lake sturgeon. Credit: Katie Steiger-Meister, USFWS

The U.S. Fish and Wildlife Service Great Lakes Coastal Program, in partnership with Match-E-Be-Nash-She-Wish Band of Pottawatomis Indians (also known as The Gun Lake Tribe), Michigan Department of Natural Resources and Grand Valley State University to restore lake sturgeon (N<sup>m</sup>) spawning habitat in the Kalamazoo River, Michigan.

The only known spawning habitat currently being utilized is 26 miles upstream from Lake Michigan, and is located directly below Calkins hydroelectric facility. This project is part of a larger effort to restore more than 78,000 square feet of lake sturgeon spawning habitat. It will potentially move spawning locations further downstream from dam operations. River surveys have been conducted and areas for restoration have been selected.

Engineering has been completed for the riffle, glide and bank habitats. Material from aggregate suppliers is being secured and construction of the riffle and glide habitats will start in July 2015, after spawning activities of lake sturgeon has subsided

for the year. Beginning in the spring of 2016, the restored habitat will be assessed for utilization and reproductive success employing egg deposition and larval drift surveys.

Educational outreach for sturgeon conservation and protection has been conducted during sturgeon release ceremonies and sturgeon guard river patrols. Sturgeon guarding efforts during spawning season have been occurring annually. For more information on the Kalamazoo River Lake Sturgeon Restoration project, contact the Environmental Director for the Gun Lake Tribe, Elizabeth Binoniemi-Smith at (269)792-1968 or (269)792-1969.

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## A Cooperative Effort to Stop Asian Carp

BY KYLE MOSEL, LA CROSSE FWCO

The start of the 2014 field season kicked off with permitting, presentations, and online meetings to increase collaboration with private clubs, states, and federal partners working on the Upper Mississippi River (UMR) to stop the spread of Asian carp. These collaborations allow us to work in five states and cover an expansive array on the Mississippi River. The LaCrosse Fish and Wildlife Conservation Office was involved in multiple Asian carp projects on the UMR during 2014. Asian carp projects included juvenile and adult detection, acoustic telemetry, otolith microchemistry, and eDNA. Each project is part of an integral role to determine what can be done to stop these invasive species from expanding their range and are a part of the Action Plan for Management of Asian carp in the Upper Mississippi River.

During 2014, acoustic telemetry was one of these integral projects which has provided key information to understand movement of bighead and silver carp in the lower UMR pools in our region. We worked closely with the Minnesota Department of Natural Resources, US Coast Guard, US Army Corps of



La Crosse FWCO fish biologist Kyle Mosel attaches and deploys a VR2W receiver attached to a US Coast Guard Buoy. Credit: USFWS



La Crosse FWCO technician Trevor Cyphers holds a 80 lb bighead carp caught in a flooded backwater on Pool 17. Credit: USFWS

Engineers, and Missouri Department of Conservation to create an acoustic array (130 receivers) running from Minneapolis, Minnesota to Caruthersville, Missouri ranging close to 1000 miles. Based upon a million detections collected in 2013 and 2014, cooperators have been able to determine if movement is occurring upstream or downstream, in and out of backwaters, in and out of tributaries, and through the lock chambers. So far 86 silver, bighead, and silver x bighead hybrid carp from Pool 16 to 19 have been surgically implanted



LaCrosse FWCO fish biologist Kyle Mosel and lockmaster deploy a VR2W receiver inside Lock 16. Credit: USFWS

with acoustic transmitters which we have been tracking with both passive (VR2W's receivers) and active (manual tracking) methods. Each fish has been tagged with an acoustic transmitter. The transmitters are small (less than 2% of their body weight) and will remain operating for two or four years depending on the size of the tag and how often each tag transmits data. This telemetry project is ongoing with transmitter's batteries expected to last into 2018.

For 2015 we plan to tag another 64 bighead and silver carp with acoustic transmitters, capture another 100 Asian carp for otolith microchemistry analyses, ramp up our juvenile detection efforts, collect more eDNA samples, and manually track fish at least once a month. We are also currently evaluating our array from 2014 to determine how to improve upon our existing array design. Based on what we have learned from 2014, we should be able to be more effective at targeting Asian carp from Pool 17 to 19 and farther upstream. By collaborating with state and federal agencies, such insights will help to improve detection and control capabilities within the region and amongst all partners.



Group of VR2W receivers. Credit: USFWS



## 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.

### **New Vaki Fish Counter for Hatchery**

*BY PAUL G. LARSON, IRON RIVER NFH*

All fish hatcheries need to know the number of fish that they are holding in a raceway or tank. This number is important for a number of reasons such as the amount of feed required and whether there is adequate space available for the fish in the tank or raceway. Typically, the inventory process involves finding the number of fish per pound. This consists of taking samples of fish (usually about 200 per sample) and recording the weight followed by counting the number of fish in the samples. Once this number is derived, fish can be inventoried by weight for the raceway or tank. At Iron River National Fish Hatchery (NFH) where 1.4 million fish are raised annually, this is time consuming. Hatchery staff is always interested in adopting methods that may expedite the processes and allow for day to day activities, like sample counting and inventories, to be carried out more efficiently and accurately.

Iron River NFH purchased a Vaki Micro Counter in the fall of 2014. Fish move through a scanning area in the machine where outlines are recorded. Special software is used to analyze and count each image. It has the ability to accurately count fish at the rate of 36,000 to 570,000 fish/hour depending on the fish size. What once took days to accomplish can now occur in mere hours.

So far the hatchery has had the opportunity to test the accuracy of the machine with pre-inventoried fall fingerling lake trout and conduct monthly sample counts. Future testing is anticipated with smaller fish during late winter and early spring 2015. The results for comparing accuracy and time savings have been positive and at this point it looks like the counter will be an effective tool for the hatchery.

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### **2014 Larval Sea Lamprey Assessment**

*BY MARY WILSON, MARQUETTE BIOLOGICAL STATION*

During the 2014 field season, the U.S. Fish and Wildlife Service (Service) staff made substantial contributions to guiding the efforts of the Sea Lamprey Control Program (SLCP). SLCP staff stationed at the Marquette and Ludington biological stations worked tirelessly to reduce the devastating effects of the invasive sea lamprey on the Great Lakes fishery.

The larval assessment teams are responsible for finding streams and tributaries harboring sea lamprey larvae around the Great Lakes. They use specialized electrofishers to irritate the larvae to the point that they leave their burrows in the stream bottom where they are captured and identified. The data collected is used to estimate the sea lamprey larval population in each infested stream. The teams survey all tributaries to the Great Lakes that have potential to harbor sea lampreys, including those where larval sea lampreys have been found in the past, and those where they have never been detected. Larval assessment data are then used to decide which streams will be treated with lampricides the following year, the exact locations where lampricides will be applied in each stream, and how the larval population is distributed within a stream.

The crews' work spread across eight Great Lakes states and access to many locations required remote travel by hiking, ATVs and boats. A total of 428 streams and waterways were surveyed and included assessments at 3,082 different sites. All of this work took place during the field season that lasts from April to October. When larval survey sites border the United States and Canada, the Service often partners with the Department of Oceans and Fisheries Canada staff to complete these surveys. Larval assessments are critical to successful sea lamprey control.

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## 2014 Sea Lamprey Control

BY MARY WILSON, MARQUETTE BIOLOGICAL STATION

The accomplishments U.S. Fish and Wildlife Service's Sea Lamprey Control Program during 2014 were exceptional and noteworthy. The many large river systems that were targeted for treatment as part of a large-scale treatment initiative in addition to the base program level of lampricide control proved ambitious and its accomplishment was no small feat. The staff from the Marquette and Ludington biological stations combined forces with the Great Lakes fishery Commission and their international partners from Fisheries and Oceans Canada to deliver an outstanding program of lampricide control, working around the clock and in challenging environments to reduce the impacts of the invasive sea lamprey on the Great Lakes fishery.

The lampricide control teams apply chemicals to streams that have been found to harbor larval sea lampreys. Teams often worked 10 days straight to complete a comprehensive treatment on just one stream. Lampricides are typically applied for 12 hours straight and staggered shifts are needed that require staff to report at unconventional times such as 4 a.m. or 11 p.m. During the first few days of a treatment, employees travel to a stream site and begin tests to determine how much TFM (the chemical used to remove larval sea lampreys from streams) will be needed. Crews also conduct studies with a dye to measure stream flow characteristics and plan application and boost sites needed to carry the treatment the necessary distances for effective removal. The teams regularly coordinate with local landowners to get access to private or remote areas of stream. The lampricide team targets many sites across eight states throughout the Great Lakes region. Highlights regarding the U.S. lampricide control operations during 2014 include:

- Completion of lampricide treatments in 50 streams and 7 lentic areas.
  - Removal of over 18 million larvae from Great Lakes tributaries.
  - Coordination with 537 landowners to deliver effective treatments .
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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.

### 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.



## Midwest Region Fisheries Contacts

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