



Fisheries Program



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

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Green Bay FWCO Great Lakes Fish Stocking Database Updates

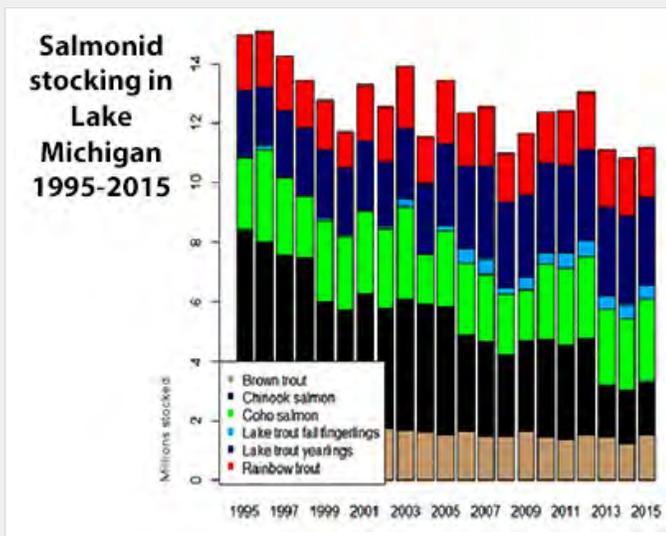
BY RYAN WEHSE, GREEN BAY FWCO

Every year tens of millions of fish are stocked into the Great Lakes by federal, provincial, state, and tribal stocking organizations.

How and where is all of this stocking information communicated and organized?

The answer is a giant on-line Great Lakes Fish Stocking Database (Database) that is updated annually by Ryan Wehse of the Green Bay Fish and Wildlife Conservation Office (FWCO). Each stocking agency contributes stocking information for all species stocked in Great Lakes waters. The data is formatted into a standard database, and submitted to the Great Lakes Fishery Commission's (GLFC) web designer Jeff McAuley by April 1st of the following year. The Database has stocking records dating back to the 1950's and is available for the public to view at <http://www.glfc.org/fishstocking/>.

The Database allows fish managers, researchers, and the general public to determine the number of fish stocked by species, location and date for each of the five Great Lakes. The Database is an important data source for managers as it provides numbers of fish entering the population for stock assessment models, and provides others with the characteristics of stocked fish including fin-clip and coded-wire tag information. The Database plays an important role in supporting fisheries management decisions and informing users of historical and current fish stocking activities.



The Green Bay FWCO recently completed a lake trout and salmonid stocking summary showing stocking trends of salmonid species from 1995-2015. This histogram shows numbers of salmonids stocked in Lake Michigan since 1995. Credit: Ryan Wehse, USFWS



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Green Bay FWCO

Inspiring Future Conservationists at the Luxemburg-Casco School Career Fair

BY TYLER HARRIS, GREEN BAY FWCO

Determining a career path when you are young can be a daunting task. Sometimes a little inspiration or information can go a long way, which is why the Green Bay Fish and Wildlife Conservation Office (FWCO) presented on behalf of the U.S. Fish and Wildlife Service (USFWS) at the first ever Luxemburg-Casco high school career fair in nearby Luxemburg, Wisconsin. The Service was represented by Fish Biologist Ted Treska (native species program) and Biological Science Technician Tyler Harris (aquatic invasive species program). They were on hand to talk to area students about careers in the USFWS.

An estimated 750 energetic and inquisitive students attended the event, ranging from 8-12th grade. Attendees were from 3 area high schools, parents of students, and the general public. Forty other presenters lined the bustling gymnasium to speak about their respective professions, including skilled trades, retail, agriculture, transportation, and many more. All participants who stopped by the booth were provided with general information about the USFWS, covering fisheries, ecological services, refuges, and law enforcement. Those lured to the booth by the fish-centric display were given a more focused explanation of the mission of the GBFWCO and the sampling techniques like electro-fishing, gillnetting, and environmental DNA testing we use to achieve the mission. Students expressing interest in our work were given advice on academic paths and extra-curricular activities that would be helpful in pursuing a fisheries career.



Green Bay FWCO staff Ted Treska (Fish Biologist) and Tyler Harris (Biological Science Technician) prepare for the crowd. Credit: USFWS



Tyler Harris (Biological Science Technician) explains a normal day in the life of a technician with an interested high school student. Credit: Ted Treska, USFWS

The event was a fun and engaging way to interact and introduce area youth to the USFWS, as well as spotlight the work of the USFWS to the public. We look forward to continuing our participation at this event in years to come.



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Inspiring Students to Get Involved with the Great Lakes

BY JANINE LAJAVIC, ALPENA FWCO-WATERFORD, MICHIGAN SUB-STATION



Biological science technicians Janine Lajavic and Lisa Kaulfersch inspiring students at Wilson Middle School in Wyandotte, Michigan. Credit: Wilson Middle School, Wyandotte, Michigan

Earlier this spring, two biological science technicians from the Alpena Fish and Wildlife Conservation Office (FWCO) - Waterford, Michigan substation, visited Christine Montemayor's 7th grade students at Wilson Middle School in Wyandotte, Michigan. Lisa Kaulfersch and Janine Lajavic shared important concepts regarding the conservation and restoration of Great Lakes fishes as well as their daily responsibilities working for the U.S. Fish and Wildlife Service.

Kaulfersch familiarized the students with the objectives and activities of the Native Species Restoration Program, concentrating on Lake Sturgeon restoration work. Kaulfersch discussed the life history of Lake Sturgeon, reasons for the Lake Sturgeon's threatened species status, importance of the species, and current restoration efforts being done to reestablish historic population levels in the St. Clair/Detroit River System. The students were shocked and amazed to learn that one female Lake Sturgeon will lay 200,000 eggs and only one will most likely make it to adulthood. The technicians brought with them a juvenile Lake Sturgeon, which

was a big hit with the students as many had not seen a Lake Sturgeon before.

To ensure the quality and health of the world's largest surface freshwater ecosystem, the Great Lakes, the Aquatic Invasive Species Issues Program works to find innovative techniques and strategies for the detection and monitoring of invasive species. This program's purpose is to prevent or delay the establishment of new non-native species and to reduce or eliminate invasive species currently established in the Great Lakes. Lajavic shared how non-native species are introduced, examples of potential Great Lakes invaders, and different sampling strategies used to detect and monitor new non-native species. Most students could name several invasive species in the Great Lakes. Students were informed not to intentionally or accidentally release their pets into the wild, to make sure their boating equipment is clean, and not to release fishing bait after use. Most students were surprised to learn that the Goldfish found in aquariums are considered an invasive species in the entire Western Hemisphere.

Kaulfersch and Lajavic discussed their career paths and the variety of professions associated with biology and ecology in an effort to introduce the students to a potential career in biology. They also informed the students of various local opportunities and events to get involved with science and the outdoors. The technicians enjoyed interacting with approximately 400 students and inspiring them to get outside and get involved!



7th grade students listening and learning about native and invasive species of the Great Lakes. Credit: Wilson Middle School, Wyandotte, Michigan



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Protecting and Restoring Hine's Emerald Dragonfly Habitat in Northeast Michigan

BY DAWN MARSH, MARQUETTE BIOLOGICAL STATION

The U.S. Fish and Wildlife Service's Coastal Program partnered with the Michigan Natural Features Inventory, Huron Pines, the Michigan Department of Natural Resources – Parks Division (DNR), Great Lakes Stewardship Network, and local community students and volunteers in Northeast Michigan to protect and restore Hine's emerald dragonfly habitat. The Hine's emerald dragonfly (HED) is one of North America's most endangered dragonflies as a result of habitat degradation and loss. Some locations where HED live are threatened by invasion of non-native vegetation species.

The project, "Building Local Capacity to Protect and Restore Hine's Emerald Dragonfly Habitat in Northeast Michigan", tested an approach of training students and volunteers from the local community to assist in conducting surveys for Hine's emerald dragonfly while mapping and treating invasive plant species. Due to the limited number of people who can identify HED, the project partners engaged and trained local State Park and Huron Pines staff, local volunteers, and environmental science students in the identification of the dragonfly and its habitat. Volunteers were also trained to identify invasive species and how to map these species if they were observed.



Photo: David Cuthrell, Michigan Natural Features Inventory

Hine's emerald dragonfly. Credit: David Cuthrell



Volunteers conferring over maps. Credit: Brandon Schroeder, Michigan Sea Grant

Over the course of the two year project, adult HED were documented at four locations around Negwegon State Park and "probable" larval HED were collected from two sites. The trained volunteers contributed 825 hours of time and mapped 548 locations of invasive plants. Follow-up invasive species treatment occurred on 400 acres of HED habitat; not only protecting HED, but also restoring and conserving their habitat of high-quality coastal fens and wooded dune and swale complexes. While raising awareness in a local community takes time and requires continued engagement from project partners, this project left a lasting impression on the community volunteers and students, especially the kids, and nurtured a local stewardship ethic that will continue to mature.



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Mussel Biologist Joins Genoa NFH Staff

BY DOUG ALOISI, GENOA NFH

Megan Bradley, formerly the Southwest Virginia Freshwater Mussel Recovery Coordinator of the Virginia Department of Game and Inland Fishes, has joined us at Genoa National Fish Hatchery (NFH) as our new freshwater mussel propagation biologist. We are very excited to have her join our team as she brings a depth of experience in intensive mussel propagation systems with her that we plan to use in the "Clam Palace", our freshwater mussel propagation facility.

Genoa's mussel program is a relatively new program, beginning in 2000, and originally concentrated on extensive mussel culture. This method focused on the placement of fish that have been "infested" with mussel larvae, or glochidia, and caged over suitable mussel habitat. As the field of mussel propagation has progressed, more intensive methods of mussel culture have been developed. These involve controlling temperature, water quality, and feed availability in specially designed culture units that typically recirculate or use standing aerated water. Megan did her Masters of Science work at Missouri State University with Dr. Chris Barnhart, one of the pioneers of modern freshwater mussel propagation. Some of the very systems that Dr. Barnhart developed have either been put into use or will be put into operation soon in order for us to further the station mission of freshwater mussel conservation. Megan will be working closely with Nathan Eckert, our senior mussel propagation biologist, on the many ongoing Recovery and Restoration projects that Genoa is working on.

Please join us in welcoming Megan to the Midwest!



Megan Bradley arrives at Genoa NFH. Credit: USFWS



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Whitney Genetics Lab Welcomes Three New Geneticists

BY EMY MONROE, WHITNEY GENETICS LAB



On the left, Zeb, Nick Berndt, Mai Yang, and Erica are checking out the new code Katie updated so they will know how to analyze the black carp data as it is generated this week. On the right, Kyle Von Ruden, Maren Tuttle-Lau, and Nick Grueneis are loading reactions in the automated liquid handling systems. Credit: Emy Monroe, USFWS

The Whitney Genetics Laboratory (WGL) team added three new employees this winter, and everyone welcomed the extra hands and creative minds to the work group. Our new team members come to us from three different states: Erica Mize moved here from South Dakota, Katherine (Katie) Bockrath moved from Georgia, and Zebadiah (Zeb) Woiak was back in Wisconsin before starting at the lab.

Each of our new employees brings a different skill set to our lab, and they have already diversified the analyses conducted in the lab and introduced new methods to streamline efforts, saving money and time. They got to know each other and the rest of the WGL team by working over the winter to optimize methods for genetic identification of wild-caught fish eggs and larvae.

These samples are collected by the U.S. Fish and Wildlife Service field offices or state partners via ichthyoplankton sampling events as part of the unified efforts against Asian carp in the Chicago Area Waterway, the Upper Mississippi River, and tributaries of both systems. WGL can now provide our partners species identification services by collecting sequences from two different genes and using those sequences to compare results to an international sequence data base. Of course, they would not be ready to go unless they were ready to help process the thousands of environmental DNA (eDNA) samples as part of the early detection and surveillance programs for bighead and silver carp.

They spent a few weeks in training with our experienced team members, and this past week, they passed their lab exams and demonstrated proficiency in following the procedures outlined in the Quality Assurance Project Plan (QAPP). Thus, they are "QAPP-certified" – and just in time, eDNA samples should begin arriving in a couple of weeks!

The lab has also been busy working with our partner lab at the US Army Corps of Engineers Research and Development Center to validate and test new eDNA markers for Black Carp. It has taken a couple of different field trips by our dedicated Carterville and La Crosse Fish and Wildlife Conservation Offices to find field positive samples to use in these validation studies. Last week, the second set of field samples were extracted, and everyone was busy in the lab on a Monday morning, setting up real-time polymerase chain reactions and learning how to analyze the data with freshly updated code on the computer. We are all looking forward to a busy and productive field season!



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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.

Several Wild Lake Trout Year-Classes are Now Contributing to Lake Michigan's Recreational Fishery!

BY RYAN WEHSE, GREENBAY FWCO

Since the 1960's, Lake trout have been stocked in Lake Michigan to restore a self-sustaining population that were extirpated in the 1950's due to overfishing and sea lamprey predation.

The first signs of successful reproduction were reported from the western shores of Lake Michigan in 2013 whereby 10-60% of lake trout recoveries from the 2007-2010 year-classes did not have fin-clips. These were fish that hatched in the lake (wild) as all stocked lake trout are marked by removing one or more fins (fin-clips) although roughly 3% of stocked fish are inadvertently released into the lake without fin-clips. Therefore we infer natural reproduction when unclipped fish comprise more than 3% of the lake trout recovered.

Tracking the relative strength of wild year-classes is a major focus of the Green Bay Fish and Wildlife Conservation Office's Native Species team. The Great Lakes Mass Marking Program sampling of the recreational fishery provides a robust source of data for tracking trends in natural reproduction. In 2015, nearly 5,800 lake trout caught by the recreational fishery were sampled and 14.5% of these were unclipped. Throughout this past winter, native species technicians Ryan Wehse, Zach Kleemann and Parker Kilsdonk aged otoliths from these unclipped fish to access which year-classes were contributing to the recreational fishery catch.

Ages are derived from fish otoliths, the fish's inner ear bones that contain growth rings, or annuli, much like annular rings found on a tree. Otolith preparation involves encasing the otolith in an epoxy, cutting a 20 micron thin-section from the core of the otolith, and counting the annuli under a microscope. Most of the unclipped lake trout were sampled from southern Lake Michigan ports in Indiana, Illinois and southern Lake Michigan and these fish ranged between four and 21 with most between 5 and 9 years of age. Our aging results corroborate that large numbers of wild fish between 5 and 8 years of age, from the 2007-2010 year classes where natural reproduction was confirmed, were caught in the recreational fishery. We also aged considerable number of 9 year old fish which suggests there may have been successful natural reproduction in the 2006 year-class but we cannot confirm recoveries from this year class exceeded the 3% rate of marking error as there are no comparable age data for fin-clipped (stocked) fish caught in the recreational fishery.

In the coming years the 2011 and later lake trout year-classes will be vulnerable to the recreational fishery. Hopefully numbers of wild lake trout will continue to grow and give hope that a naturally sustaining population is soon to come.



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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.



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