U.S. Fish & Wildlife Service - Midwest Region

Fisheries & Aquatic Resources Program

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CONSERVING AMERICA'S Fisheries
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Fisheries, Midwest Region

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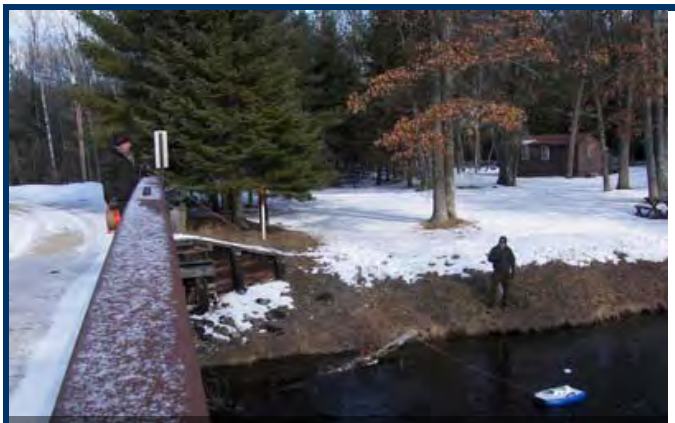

Setting Sail with New Technology

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Fish Tails

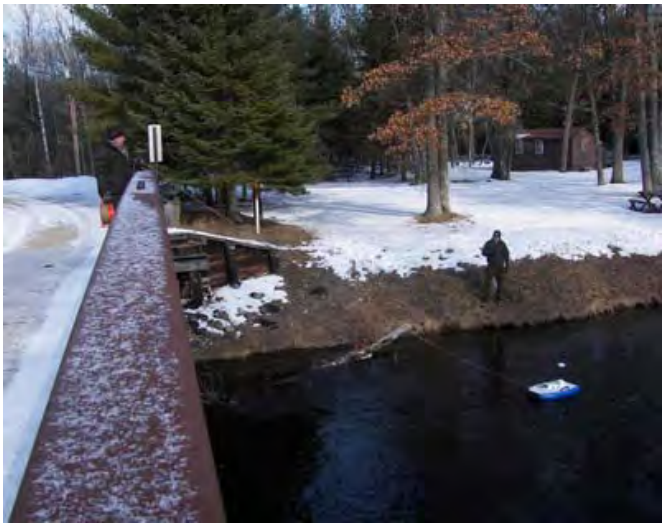
"Fish Tails" refers to articles that are submitted by field staff that do not appear as a feature in the current edition of Fish Lines. These articles provide examples of the diverse work that the Service's Midwest Fisheries Program and partners perform on behalf of our aquatic resources and for the 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.

Sea Lamprey Control Sets Sail with New Technology

BY JENNA TEWS, LUDINGTON BIOLOGICAL STATION



Jenna Tews and Matt Lipps, biologists with the Sea Lamprey Control Program, practice maneuvering the RiverSurveyor on the AuSable River in Gaylord, Michigan. Credit: USFWS

Staff from the Sea Lamprey Control Program at the Ludington Biological Station kept a close eye on the discharge of Cattaraugus Creek, a tributary to Lake Erie, as an early spring lampricide treatment loomed. Accurate discharge measurements are crucial in planning and applying appropriate concentrations of lampricide necessary to kill the larvae of the invasive sea lamprey. With snow melt and spring rain, discharge in Cattaraugus Creek can increase from a few hundred cubic feet per second (cfs) to several thousand cfs in just a few hours. Estimating discharge with standard stream gauging equipment can be both challenging and dangerous, particularly when the stream bottom consists of slippery shale bedrock. In the past, if conditions were too dangerous for the crew to gauge, the discharge at various access points along the stream was estimated using the single US Geological Survey stream gauge located in the middle of the watershed. Providing more accurate estimates of stream discharge is highly desirable for planning and implementing lampricide treatments.

In the fall of 2012, Ludington staff learned of a newer technology that uses an Acoustic Doppler Profiler (ADP) to accurately measure stream discharge. After meeting with a product representative, who demonstrated how to use the ADP, it was clear that this technology was very applicable to measuring stream discharge, particularly in large rivers. The ADP was already being used by the Service's Alpena Fish and Wildlife Conservation Office (FWCO) and without hesitation they agreed to loan it to the Ludington Biological Station.

Jenna Tews and Matt Lipps met with Joseph Gerbyshak, Alpena FWCO, to receive training on this newer technology. Joseph demonstrated how the 9-beam ADP equipped with GPS mounts onto the SonTek Hydroboard and communicates with a computer on shore using a Bluetooth device. With a line run off the front of the Hydroboard the RiverSurveyor can be deployed from a bridge and pulled back and forth across the river without personnel having to enter the stream. The software and equipment is very user friendly, and after a couple hours of training the RiverSurveyor was ready to set sail in gathering data to assist the Sea Lamprey Control Program.

Matt Lipps, biologist with the Sea Lamprey Control Program, monitors the RiverSurveyor and software as it measures discharge on the Cattaraugus River in Gowanda, New York. Credit: USFWS

The RiverSurveyor was put to the test measuring discharge just prior to the lampricide treatment in Cattaraugus Creek in late March. This newer technology allowed the crew to collect data at sites that are unable to be gauged using the traditional wading method. The Riversurveyor was used at various sites all along the river and provided a solid foundation of flow data that assisted in a successful lampricide treatment.

Many thanks to Alpena FWCO for working together with the Sea Lamprey Control Program in sharing this technology, which provided accurate measures of stream discharge and reduced safety risks associated with gauging a large river.

The Sea Lamprey Control Program continues to work closely with partners to control populations of sea lampreys in tributaries of the Great Lakes to protect the fishery and related economic activities in the basin (an estimated annual benefit of more than $7 billion/year to the region). The Service delivers a program of integrated sea lamprey control in U.S. waters of the Great Lakes in partnership with the Great Lakes Fishery Commission.

Extreme Electrofishing

BY DAVID KEFFER, LUDINGTON BIOLOGICAL STATION

In late February, Biological Science Technicians, John Stegmeier, Gary Haiss, and Tim Granger from the Ludington Biological Station's larval assessment team, started their field season two months early. Facing air temperatures as low as 20°F, water temperatures near freezing, and snow showers, the crew worked in the frigid waters of the White and Pentwater rivers, located in the southwestern portion of Michigan's lower peninsula. Wrapped in many layers, they donned backpack electrofishing equipment and began collecting larval sea lamprey for use in several research projects. With the assistance of volunteers from Michigan State University and the Great Lakes Fisheries Commission's (GLFC) Secretariat, they have overcome the harsh conditions and managed to collect 10,000 of the 25,000 larvae requested by researchers. The larvae were transported to the US Geological Survey's Hammond Bay Biological Station near Millersburg, Michigan, where they are being held in several tanks, known as the "pheromone farm". Researchers collect water from the holding tanks and pump it through a series of resin filled columns designed to collect biological compounds released from the larvae. The extracted compounds are further isolated in the lab and used for field research.

Gary Haiss Ice-Electrofishing for larval sea lamprey in the Pentwater River, Michigan. Credit: John Stegmeier, USFWS

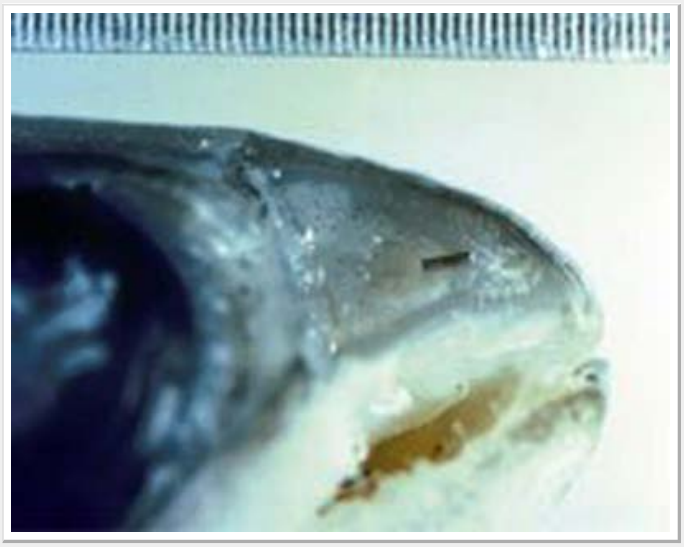
Larval collections for research are a common part of the annual responsibilities of the larval assessment team. In previous years, up to 35,000 larvae have been collected for various GLFC funded projects and the collections have been a valuable method of training new employees on the use of the electrofishing equipment. However, this has been the earliest and coldest time of the year that larvae have been collected to support ongoing research.

So why do researchers want the larvae to be collected so early in the year? Recent research, being led by Dr. Weiming Li at Michigan State University, has demonstrated that compounds released by larval sea lamprey burrowed into the stream sediment may be critical to initiating the upstream movement of migratory adult sea lampreys into streams before the onset of the spawning season. Measurement of the quantities of compounds excreted from late winter to early spring will be used to investigate the hypothesis that the release of attractive migratory compounds by larval sea lamprey may peak during this time of year. Results from this research could be used to disrupt spawning runs of sea lamprey and improve efforts to control sea lampreys in the Great Lakes.

The Sea Lamprey Control Program continues to work closely with partners to control populations of sea lampreys in tributaries of the Great Lakes to protect the fishery and related economic activities in the basin (an estimated annual benefit of more than $7 billion/year to the region). The Service delivers a program of integrated sea lamprey control in U.S. waters of the Great Lakes in partnership with the Great Lakes Fishery Commission.

Great Lakes Fish Tag and Recovery Lab Begins 2013 Tagging Season

BY CHARLES BRONTE, GREEN BAY FWCO



Code-wire tag in the snout of a young salmon. Credit: Northwest Marine Technology

Each year millions of salmon and trout are released by management agencies to enhance fishing opportunities and restore species. This contributes to a multi-billion dollar sport fishery that helps fuel the economy of the Great Lakes region. To help evaluate the ecological and economic return that these introductions provide, the U.S. Fish and Wildlife Service places a code-wire tag in the snout of millions of lake trout and Chinook salmon each year. These tiny tags have a coded number that identifies a particular group of fish that represent a stocking location and a particular strain or a hatchery where they were raised. When these fish are recovered by fishers and the returned data is analyzed, biologists can get a measure of the effectiveness of their stocking programs and progress toward restoration of native species such as lake trout.

Tagging of Chinook salmon raised in state hatcheries serving lakes Michigan, Superior, and Huron has already begun, and will take place from mid-March to mid-May at seven state hatcheries in Michigan, Wisconsin, Illinois and Indiana. A total of 2.6 million fish will be tagged and receive an adipose fin clip from computer-operated automated tagging trailers that can process over 7,000 fish per hour. Lake trout tagging at federal and state hatcheries will begin later in the year.

State Fish Hatchery	Agency	Tagging Dates	Numbers to be tagged
Jake Wolf	Illinois DNR	March 12-14	300,000
Mixsawbah	Indiana DNR	March 14-18	210,000
Wolf Lake	Michigan DNR	March 11-15	115,000
Wild Rose	Wisconsin DNR	April 2-11	685,000
Kettle Moraine	Indiana DNR	May 25-28	231,000
Platte River	Michigan DNR	April 16-25	974,000
Thompson	Michigan DNR	May 6-10	46,000

Tagging schedule for Chinook salmon at state hatcheries in 2013. Credit: Charles Bronte, USFWS

Bat Hibernacula Workday

BY HEATHER RAWLINGS, ALPENA FWCO

The U.S. Fish and Wildlife Service (FWS), in conjunction with the Michigan Department of Natural Resources (DNR), Great Lakes Stewardship Initiative, Eastern Michigan University, Friends of Rockport State Recreation Area, and Alpena Public Schools have teamed up to protect a man-made bat hibernacula located at an old quarry site north of Alpena, Michigan. This site, along the Lake Huron shoreline, became a part of Rockport State Recreation Area in 2011. Three species of bats (big brown bat, little brown bat, and tricolored bat) were located on-site in 2010 by Eastern Michigan University staff. This is one of only two known bat hibernacula in the lower peninsula of Michigan and the only site on Lake Huron. The two hibernacula are each 10-foot by 12-foot concrete tunnels commonly called surge tunnels, which were used to transport gravel through the quarry when the area was being actively mined.

Biologist Heather Rawlings digging in the surge tunnel to open up passage for bats. Credit: Anjanette Bowen, USFWS

The group has joined forces to protect both the public and the bats by sealing off the surge tunnels with the exception of one gated area that can be used by bats and bat researchers to access the tunnels. The tunnels, with the exception of the gated area, will be covered with five to 10 feet of overburden (on-site gravel), which will help insulate the tunnels to create a slightly warmer and more favorable environment for the overwintering bats. Alpena High School students will be fabricating and attaching the metal gates to the surge tunnels to secure the winter hibernacula. They will also be building and mounting bat houses that will provide summer roosting habitat. Construction is planned for late May.

A small subgroup met on-site at the northern surge tunnel on March 28th to dig out a small section of the tunnel that had been filled in with gravel by accident in the late fall, November 2012. Our fear was that bats had been trapped in the surge tunnel by this fill and our goal was to dig out enough gravel to open up tunnel access for the bats. This was the first time the ground had thawed enough to allow us to try to open up the site. U.S. FWS biologists Anjanette Bowen and Heather Rawlings, Michigan DNR Parks and Recreation staff David Deckett and Eric Braun, Great Lakes Stewardship Initiative Americorps intern Helen Ann Prince, and Friends group member Bill Grigg dug for about an hour to clear an opening the circumference of a five gallon bucket. Our hope is that the bats will be able to fly or crawl out of the tunnel to gain their freedom this spring. The tunnel openings will be completely uncovered later this spring, the gates fitted, and a permanent solution will be found to protect this site.
One exciting aspect of this project is that none of the Michigan bat populations have acquired White-Nosed Syndrome to date. If and/or when the fungus makes its way to these populations, there is potential for this man-made site to undergo annual disinfection to keep future generations healthy.

Kalamazoo Streamside Rearing Trailer Waiting for its Precious Cargo

BY DOUG ALOISI, GENOA NFH

Lake Sturgeon returning to spawn Credit: USFWS

Spring is finally inching its way into the Lower Peninsula of Michigan, and with its arrival one of the state's most fascinating aquatic creatures, the lake sturgeon, are inching their way up their natal rivers to spawn. This brings a flurry of activity on the banks of the Kalamazoo River, one of the few remaining Lake Michigan tributaries that have a small remnant population of lake sturgeon remaining.

Lake sturgeon populations throughout their historic range have been severely reduced due to overfishing, reduced available spawning habitat due to river obstructions, and pollution reducing suitable water quality. The sturgeon's unique life history also extends the time it takes populations to recover, with females not reaching spawning ages until they are over 20 years old.

Federal, state and tribal agencies and conservation groups came together in the Kalamazoo River and formed a partnership to ensure that the Kalamazoo strain of lake sturgeon did not disappear. In 2011, the maintenance staff from the Genoa National Fish Hatchery (NFH), located in Wisconsin, constructed a streamside rearing unit to be deployed on the banks of the Kalamazoo River, to use river water as a culture source for lake sturgeon eggs and fry. The eggs and fry are captured by state, tribal biologists and volunteers from the Kalamazoo Chapter of Sturgeon for Tomorrow and brought into the trailer for rearing until they are large enough to avoid most predators.

Lake sturgeon early life history mortality is very high, with many different species of fish and crayfish delighting in a caviar dinner every spawning season. The streamside rearing unit keeps eggs and fry safe from predation, while at the same time providing river water for the fish to be reared on, which will help them navigate back to their birth site 20+ years later. The streamside rearing trailer can raise up to 1500 8 to 10 inch lake sturgeon fingerlings for release back into the Kalamazoo annually. The fingerlings have been found to survive very well, and with continued year classes being released, it is hoped that a spawning population containing many year classes of sturgeon can be restored.

Kalamazoo trailer deployed and ready in spring 2013. Credit: USFWS

As the spring season has been prolonged this year, biologists have had time to prepare the egg traps, fry drift nets and gear to increase the chances of getting enough eggs and fry to fill the trailer. This month the trailer was taken out of storage and placed streamside to wait for water temperatures to climb to over 50 degrees, the temperature when spawning activity commences. Culture systems were tested and all maintenance checks performed to ensure that a healthy cargo of sturgeon will be the result of this year's trailer operations on the banks of the Kalamazoo.

Ludington Biological Station and the Sea Lamprey Control Program

BY JEFF SLADE, LUDINGTON BIOLOGICAL STATION

Adult sea lamprey shows off its devastating teeth and sucker mouth. Credit: Ted Lawrence, Great Lakes Fishery Commission Secretariat. Credit: USFWS

The sea lamprey (*Petromyzon marinus*) is a destructive invasive species in the Great Lakes that contributed to the collapse of lake trout (*Salvelinus namaycush*) and other native species in the mid-20th century and continues to affect efforts to restore and rehabilitate the fish-community. Sea lampreys attach to fish and extract blood and body fluids. It is estimated that about half of sea lamprey attacks result in the death of their prey and an estimated 18 kg (40 lbs) of fish are killed by every sea lamprey that reaches adulthood. The Sea Lamprey Control Program (SLCP) is administered by the Great Lakes Fishery Commission (Commission) and implemented by two control agents: the Canadian Department of Fisheries and Oceans and the United States Fish and Wildlife Service (Service). The Ludington Biological Station is one of two Service field stations responsible for developing, planning and implementing the SLCP in U.S. waters of the Great Lakes, the other being located in Marquette, Michigan. The SLCP is a critical component of fisheries management in the Great Lakes because it facilitates the rehabilitation of important fish stocks by significantly reducing sea lamprey-induced mortality.

Biological Science Technician Tim Granger collects larval sea lampreys in the Big Manistee River. Credit: Ludington Biological Station. Credit: USFWS

The Ludington Biological Station (LBS) was established in 1956 and is located near the eastern shoreline of Lake Michigan in Ludington, Michigan. The primary responsibilities of the LBS are to direct, implement and evaluate SLCP activities in tributaries and lentic areas located along the eastern shore of Lake Michigan, western shore of Lake Huron, and U.S. shore of Lake Erie. Our larval assessment team consists of nine permanent and two temporary employees and our lampricide control team consists of 14 permanent and three temporary employees. Field teams are supported by a four person administrative staff. The larval assessment team uses backpack electrofishers and lampricides to determine the distribution of larval sea lampreys in infested areas, detect new populations of larval sea lampreys, estimate the density and size structure of larval sea lamprey populations, establish application locations for lampricide treatments, and to evaluate the effectiveness of barriers and lampricide treatments. The lampricide control team periodically treats tributaries harboring sea lamprey larvae with lampricides that eliminate or reduce larval populations before they recruit to the lake as juvenile lampreys and feed on host fishes. Specialized equipment and techniques are employed to provide concentrations of lampricides that eliminate approximately 95% of the sea lamprey larvae, while minimizing the risk to non-target organisms.

Biological Science Technician Justin Martisius applies lampricides to the Pere Marquette River to kill larval sea lampreys. Credit: Ludington Biological Station. Credit: USFWS

The LBS also houses the primary facility for storing the lampricides used to control sea lamprey populations in U.S. waters of the Great Lakes. Our lampricide storage facility is capable of holding about a one year supply of lampricides needed for a typical year of lampricide treatments in the entire Great Lakes.

We work closely with partners to educate the public regarding the impact and management of aquatic invasive species and control populations of sea lampreys in tributaries of the Great Lakes to protect the fishery and related economic activities in the basin (an estimated annual benefit of more than $7 billion/year to the region).

U.S. Fish & Wildlife Service

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Fish, Mussels and Dragonflies? Oh, My!

BY ANGELA BARAN, GENOA NFH

Late this winter, staff from Genoa National Fish Hatchery (NFH) traveled to Vermillion, South Dakota to meet with students and faculty studying the Hines Emerald Dragonfly at the University of South Dakota. The hatchery was contacted by the Green Bay and Chicago Ecological Services Field Offices to see if it would be possible to raise the dragonfly larvae on a larger scale than in the university setting.

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 raised at the hatchery. Sitting down with the students and staff at the university allowed for an open discussion about possible ways to take what has been learned about the species and develop large scale efforts to culture this species. It also helped to frame up what new questions and methods need to be tested to take the next step for this species. For example, how my larvae can occupy a specific space without cannibalism or causing illness? How fast can they be grown without compromising life history or behaviors? The next step will be to see if there are funding sources available to begin working with this species and the staff and students at the university will be visiting Genoa NFH to see if the site will work for dragonfly culture.

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.

Casting a Wide (Gill) Net

BY COLBY WRASSE, COLUMBIA FWCO

Each year of gill netting on the Missouri River presents challenges. In past years, flooding, ice flows, or very warm temperatures have hindered progress. This season, the extremely low water levels threw us a curveball.

The low water left many boat ramps unusable or hazardous to use, which led to longer travel times to sample sites. Also, accessing many of the habitats we normally sample proved trying at time. Despite these obstacles, by March we had completed standard gill netting for the Pallid Sturgeon Population Assessment Project. We deployed 250 gill nets, equaling more than nine miles of net, and captured 19 pallid sturgeon. Most of the pallid sturgeon we collected were adult size, with 15 of the pallid sturgeon measuring greater than 30 inches. We also captured six lake sturgeon, with the largest weighing over 20 pounds. Other species of interest included shovelnose sturgeon (more than 3,000 individuals) and blue sucker (more than 100 individuals).

The gill net effort is part of the larger Pallid Sturgeon Population Assessment Project which uses a suite of gears to sample pallid sturgeon and the fish community of the Missouri River. This is the eleventh year we have deployed gill nets for this long term monitoring project. Our 2013 pallid sturgeon total for gill nets represents the second highest annual total we have recorded. Although we commonly collect hatchery reared (stocked) pallid sturgeon, truly wild pallid sturgeon remain exceedingly rare in our samples.

UP Version of Spring, 2013

BY TIMOTHY FALCONER, PENDILLS CREEK FWCO

According to folklore, if it is cloudy when a groundhog (Marmota monax) emerges from its burrow on Groundhog Day (February 2nd), then spring will come early; if it is sunny, the groundhog will supposedly see its shadow and retreat back into its burrow, and the winter weather will continue for six more weeks.

This year the prognosticating rodent Punxsutawney Phil was wrong as a weatherman. At 7:28 am Eastern time on February 2, 2013, the “King of the Groundhogs, Seer of Seers, Prognosticator of Prognosticators, Weather Prophet without Peer”, as titled by the people interested in keeping this tradition alive, was summoned from his ceremonial burrow at Gobbler's Knob in Punxsutawney, Pennsylvania. After emerging from his den into the 8 degree Fahrenheit (F) (-13° Celsius) morning air and overcast skies, Phil failed to see his shadow, signaling that weather for the remainder of winter will be mild and spring-like.

According to some sources close to the groundhog’s inner sanctum, Phil’s predictions are correct 100% of the time, even though statistically Punxsutawney Phil's winter prognostications have been correct only 39% of the time. On a day in which the weather features a mix of sun and clouds, it's conceivable that Phil could come up with both predictions depending on the hour. This year is one of only 17 occasions on which Phil has not seen his shadow. Since the first prediction in 1887, he has seen his shadow 100 times. Nine years of predictions are either unknown or missing.

Currently in Michigan’s Upper Peninsula (the UP), we are still dealing with snowy conditions that have delayed the distribution of lake trout into the Great Lakes. During the month of April at Pendills Creek National Fish Hatchery, we have seen air temperatures as high as 44 degrees F and as low as 16 degrees F. That is not too unusual for spring, with the cool nights giving way to some sunny days, but as of April 15th, we have also had a total of nearly 15 inches of snow, averaging out to about an inch of snow every day.

With this being my first winter in the UP in over a decade, I need to get used to all this snow and cold weather again, but, according to a friendly little ball of fur known as Punxsutawney Phil, this really must be what “spring” is like in the UP.

Midwest Region Fisheries Divisions

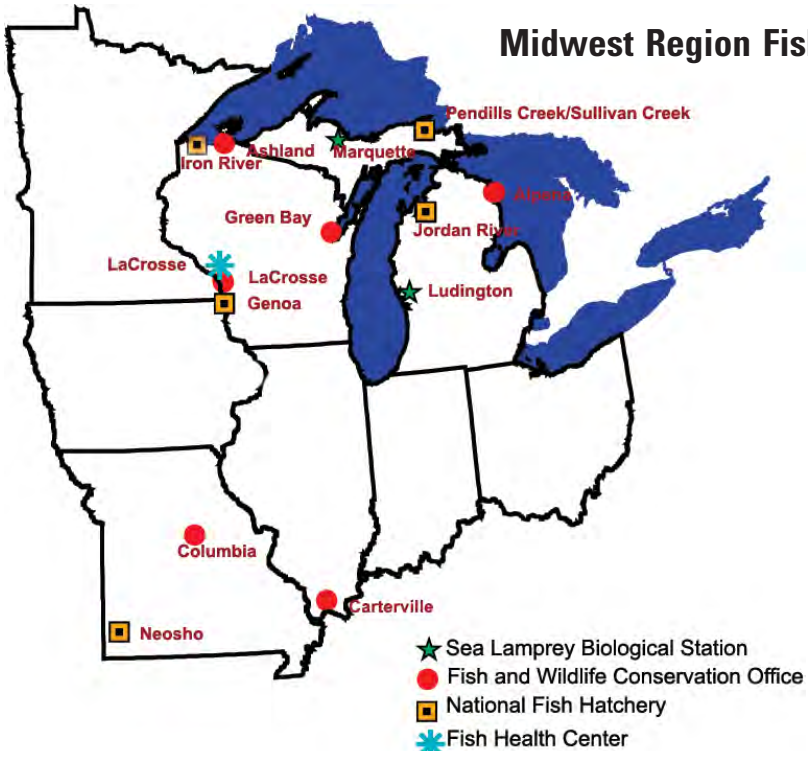
National Fish Hatcheries
The Region's National Fish Hatcheries primarily focus on native fish restoration/rehabilitation by stocking fish and eggs, such as pallid and lake sturgeon and by developing and maintaining brood stocks of selected fish strains, such as lake trout and brook trout. Hatcheries 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.

Midwest Region Fisheries Field Offices



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