



U.S. Fish & Wildlife Service - Midwest Region

# Fisheries & Aquatic Resources Program

# *fish lines*

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Camp Chickagami

Eurasian Ruffe eDNA  
Sampling Expanded in  
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Take Part in a Science  
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U.S. Fish & Wildlife Service

# Fisheries, Midwest Region

Conserving America's Fisheries



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### Accessible Fishing Event for Children

Possibly one of the greatest days of 2013 on the Upper Mississippi happened at the tail end of a torrential downpour...[Read More](#)



Accessible Fishing Event for Children



Eurasian Ruffe eDNA Sampling Expanded



Have you ever wanted to take part in a science investigation?



Progress toward the Rehabilitation of Lake Trout



Place Based Education: Camp Chickagami

## 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.



## Genoa NFH Hosts Accessible Fishing Event for Children with the Help of a very large "CAST"

BY DOUG ALOISI GENOA NFH



Boat captain and child celebrate their catch. Credit: USSA

Possibly one of the greatest days of 2013 on the Upper Mississippi happened at the tail end of a torrential downpour, which nearly swept southwest Wisconsin into northern Illinois this June. The Genoa National Fish Hatchery (NFH) was originally approached about organizing a fishing event on Pool 9 of the Upper Mississippi River by our Regional and Washington offices earlier this spring. After gathering support from United States Fish and Wildlife Service (FWS) Fisheries program field stations and National Wildlife Refuges on the River with many local and national partners, the diverse group banded together to host a memorable event of fishing for critically ill children and children with limited accessibility to enjoy the outdoors.

The event planning commenced by working with CAST for Kids and the United Special Sportsman Alliance, two national advocates for creating opportunities to get critically ill children outside in outdoor "make a wish" situations. Through these organizations, the participants and their families were contacted and children were outfitted with

fishing poles and gear to make a morning of fishing a reality on the big River. The only thing left to chance was the weather. And did we ever find out just what nature is capable of. On the morning of the 21st, Genoa recorded over 3.25 inches of rain in one hour and the Corps of Engineers Blackhawk Park where the event was scheduled to take place ended up underwater in many places.



Proud angler and mentor show off their catch at the CAST fishing event held at the Genoa NFH. Credit: USSA

With children and their families already on their way, Plan B was executed and the accessible fishing pond located on Genoa NFH grounds was the new location for the event. After a tour of the hatchery, the skies cleared and the children were set loose on the banks of the hatchery pond which is home to bluegill, sunfish, yellow perch and rainbow trout. Many smiles were created as eager volunteer boat captains and other volunteers helped the kids reel in their "trophies". Much gratitude and thanks go to FWS staff, our local Friends groups, and the volunteer boat captains that never got a chance to get their boats in the water, but stayed and helped the children fish. After catching their fill of fish, a barbecue lunch sponsored by the Genoa Lions club finished off the day. This was an event where the volunteers and staff likely felt more satisfied than even the successful anglers as they packed up and dried off for the trip home.



Service employees mentored anglers at the CAST event. Credit: USSA

Service employees mentored anglers at the CAST event. Credit: USSA



## Eurasian Ruffe eDNA Sampling Expanded in Northeastern Michigan

BY ANJANETTE BOWEN ALPENA FWCO

Late this spring, staff from The Nature Conservancy (Andrew Tucker), Central Michigan University (Jennifer Bergner and Allison Snider) and the Alpena Fish and Wildlife Conservation Office (FWCO) (Anjanette Bowen and Steven Gambicki) collected and filtered water samples from a number of northern Michigan locations in eastern Lake Superior, the upper St. Marys River and northwestern Lake Huron. The samples will be processed in an effort to detect the presence of Eurasian ruffe (ruffe) genetic material in the form of environmental DNA (eDNA). This effort expanded ruffe eDNA sampling that was originally conducted during the fall of 2012 on northwestern Lake Huron.

Ruffe are an invasive fish species that was first captured in the Great Lakes from western Lake Superior in the mid-1980s and have since spread across the southern shore of Lake Superior to Tahquamenon Bay, and into areas of Lakes Huron and Michigan. Ruffe are thought to compete with native species for habitat and food resources. They were first captured in northeastern Michigan at the Thunder Bay River in Alpena during 1995. Traditional sampling captured ruffe until 2003, however, ruffe have been absent from the catch in recent years. Ruffe were also reported from other tributaries to northern Lake Huron in 2008 (Trout River in Rogers City) and 2011-2012 (Cheboygan River in Cheboygan). The status of these sightings is unknown. Subsequent traditional sampling in these areas has not captured ruffe.



Andrew Tucker (The Nature Conservancy) and Jennifer Bergner (Central Michigan University) collect a bottom water sample on the Cheboygan River in northeastern Michigan while Allison Snider (Central Michigan University) records locational information. The water samples will be analyzed for the presence of Eurasian ruffe eDNA. Credit: Anjanette Bowen

Watershed	Location	Samples Collected
Lake Superior	Tahquamenon River	38
	Roxbury Creek and Naomikong Creek	21
	Pendills Creek	14
St. Marys River	Waiska River/Back Bay	25
	Leigh/Ashmun Bay	50
	Sugar Island Area	26
Lake Huron	Cheboygan River	37
	Rogers City Area: Trout River, Port of Calcite, Swan River	38
	Thunder Bay area: Thunder Bay River, Lafarge dock area, Norwegian Creek, Squaw Bay, Devils River	65

Ruffe eDNA water sampling locations in northeastern Michigan.

Credit: USFWS

detect whether ruffe continue to persist in areas where they have been reported but not captured with traditional gear.

In 2006 ruffe were found at the eastern edge of Lake Superior at the mouth of the Tahquamenon River. This location is near the origin of the St. Marys River – the connecting pathway between Lake Superior and northern Lake Huron. Should ruffe enter the St. Marys River, they could pose a new risk of invasion into Lake Huron. Traditional sampling in the St. Marys River has not captured ruffe. The presence or absence of eDNA is another tool that can potentially be used to help determine the status of ruffe in specific areas of northern Michigan.

The goal of sampling on Lake Superior from the upper St. Marys River to the Tahquamenon River was to use eDNA to detect whether ruffe have expanded their range from the Tahquamenon area into the St. Marys River. Ruffe are known to exist in the Tahquamenon River and Tahquamenon Bay, however, have not been detected in the St. Marys River with traditional gear. The goal of sampling on northern Lake Huron was to use eDNA to detect whether ruffe continue to persist in areas where they have been reported but not captured with traditional gear.

A total of 314 2-liter water samples were collected including 101 samples from the upper St. Marys River, 73 samples from eastern Lake Superior, and 140 samples from northwestern Lake Huron. Sampling was conducted in areas described as favorable habitat for ruffe – slow flowing river and side channels, river mouths, and back water areas. Both surface and bottom water samples were collected. The water samples were filtered in Alpena FWCO's eDNA processing trailer. Lake Superior State University's Aquatic Research Laboratory in Sault Ste. Marie and Bay Mills Indian Community in Brimley partnered in this effort by providing water and space to park the eDNA processing trailer. The filtered samples will be analyzed by Central Michigan University to determine the presence or absence of ruffe eDNA. Results should be available during the summer of 2013.



## Have you ever wanted to take part in a science investigation?

BY MARK STEINGRAEBER LA CROSSE FWCO



Hexagenia mayfly nymphs excavate U-shaped burrows in silt laden sediment of the Upper Mississippi River where they live for one or more years. Credit: Cal Fremling, USFWS

<http://www.fws.gov/midwest/lacrossefisheries/mayfly.html>

Medical specialists often seek members of the public to voluntarily participate in trials to determine the effectiveness of new treatments and document health outcomes.

The La Crosse Fish and Wildlife Conservation Office (FWCO) and several of its partners are likewise seeking help from those who work, commute, reside, or recreate along the Upper Mississippi River to voluntarily participate in efforts to monitor the seasonal pulse of Old Man River by observing and reporting mayfly emergence events that occur here throughout the summer.

These observations will form the core of a citizen-scientist reporting network that will document the annual geographic range and relative abundance of burrowing mayflies, sentinels of the river's environmental health.

Learn more about burrowing mayflies and becoming a citizen-scientist mayfly emergence observer at



Emergent Hexagenia mayflies blanket road signs along the Upper Mississippi River, near Stoddard, Wisconsin. Credit: USFWS



A swarm of emergent Hexagenia mayflies clings to vegetation along the banks of the Upper Mississippi River, near Stoddard, Wisconsin. Credit: USFWS



## Evidence of Continued Progress toward the Rehabilitation of Lake Trout in Northern Lake Huron

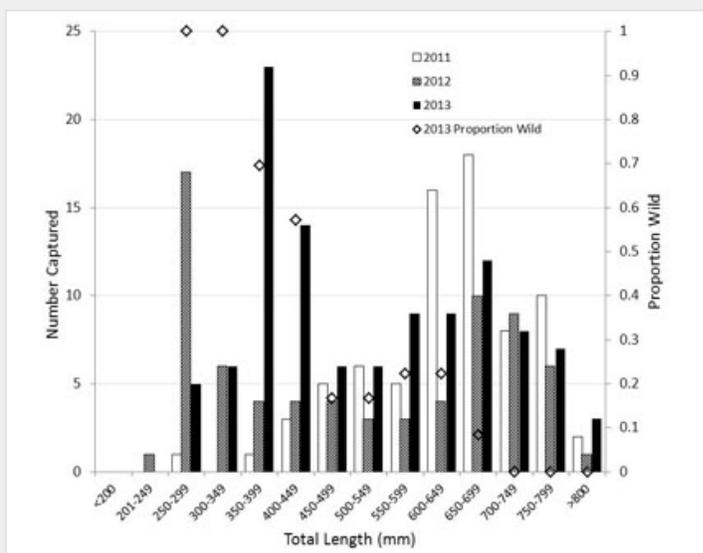
BY STEPHEN LENART ALPENA FWCO

During May and June, staff from the Alpena Fish and Wildlife Conservation Office (Alpena FWCO) conducted a juvenile lake trout survey in 1836 treaty waters of northern Lake Huron (Alpena north to Hammond Bay). This study was designed to index juvenile lake trout abundance and collect biological data on juvenile lake trout for population models developed for lake trout stocks in northern Lake Huron.

During the survey, Alpena FWCO staff conducted 20 graded-mesh (2.0-3.5") gill net lifts at randomly selected locations (Figure 1) in two Lake Huron lake trout management units: MH-1 (Rogers City north) and MH-2 (Rogers City south to Black River). Biological data were collected from all lake trout encountered, including length, weight, sex and maturity, diet, visceral fat index, and lamprey wounding. Similar biological data were collected from non-target species. Tissue samples were taken from unclipped (presumably wild) lake trout for future DNA analysis.



Juvenile lake trout captured during Alpena FWCO juvenile lake trout survey. Credit: Joseph Gerbyshak



Length histogram of lake trout captured during Alpena FWCO juvenile survey during 2011-2013. Diamond markers denote 2013 proportion wild for each 50 mm length bin. Credit: Stephen Lenart

Fifty-four lake trout less than 500 mm (a commonly accepted size cutoff for juveniles) were captured during 2013. Thirty-six of the 54 juveniles were of wild origin, based on the absence of fin clips. Lake trout between 350 and 450 mm in length dominated the catch in 2013, providing continued evidence for the strong year classes that dominated the 2012 survey (Figure 2).

All lake trout less than 350 mm in length were of wild origin. Juveniles were evenly dispersed among the depth strata sampled (100-150' and >150') and were captured at all of the ports surveyed, though catch rates for wild juveniles were highest near Rogers City, where 58% of the wild juveniles were captured. Total catch-per-unit-effort (CPUE) of juvenile lake trout (wild plus hatchery) was 1.7 fish per 1000 feet of net in 2013. CPUE of wild juveniles increased two-fold from 2012 to 2013 (0.56 to 1.13). Hatchery juvenile CPUE increased from 0.12 in 2012 to 0.56 in 2013.

Multiple cohorts of wild juvenile lake trout continue to be observed in the population, suggesting that mechanisms that favor natural reproduction remain in place. These results demonstrate continued progress toward the rehabilitation of lake trout in northern Lake Huron.



## Place Based Education: Camp Chickagami

BY JOSEPH GERBYSHAK ALPENA FWCO



Many students had never seen a fish with such brightly colored markings as the rainbow darters that they caught beach seining. Credit: USFWS

On May 31st, biologist Joseph Gerbyshak taught a lesson on aquatic ecosystems to a group of 5th graders from Lincoln Elementary School, Alpena, Michigan. The students were on a field trip to Camp Chickagami, a youth outdoor educational camp established in 1929 on the shores of Lake Esau in Southern Presque Isle County, Michigan.

The students participated in a hands-on presentation about the food web in Lake Esau. First, a quick review was given about how energy gets into the food web and how food webs start with primary producers. Primary consumers were the next link discussed. The students viewed a short video clip of an adult stonefly emerging from its nymph exoskeleton. This was a new concept for many of the students, most had no idea some insects start their lives in the water. The students then sorted through kick net samples for aquatic invertebrates. They were surprised by the size of the dragonfly and mayfly nymphs that were found in the samples. One lucky student found a juvenile painted turtle in her sample.

Transitioning from the base of the food web, the students used different types of gear to catch additional members of the food web. First, the students tried their luck at beach seining. They were fortunate enough to capture numerous rainbow darter; most students had never seen a fish with such brightly colored markings. In order to capture a larger diversity of fish species, minnow traps and mini-fyke nets were set a day prior.

The students pulled the minnow traps and caught shiners and juvenile rock bass, more key forage species. In anticipation of catching upper level predators, the students assisted in pulling the mini-fyke nets. The mini-fyke nets did not disappoint as they yielded an assortment of predator and prey species. A large walleye was captured and served as a good example of the upper end of the food web in Lake Esau.

As Gerbyshak explained that the walleye likely moved into shallow water in the evening to feed on the same forage species the students had captured earlier, "right on cue" the walleye regurgitated a partially digested rock bass. Most students were intrigued, as it was a perfect example of the food web interactions in Lake Esau. After seeing many parts of the food web, the students gained a better understanding of the dynamics and complexity of aquatic ecosystems.



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# Fisheries, Midwest Region

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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.

### Partners Agree to Study Potential Sea Lamprey Barrier on Bad River, Wisconsin

Submitted BY MICHAEL FODALE MARQUETTE BIOLOGICAL STATION

Members from the tribal council of the Bad River Band of Lake Superior Chippewa Indians (Band), Bad River Natural Resources Department, and U.S. Fish and Wildlife Service's Sea Lamprey Control Program (Service) met during the May 2013 tribal council meeting to discuss a feasibility study regarding the potential for a seasonal sea lamprey barrier in the Bad River. The U.S. Army Corps of Engineers' (Corps) feasibility study, technically called a preliminary restoration plan (PRP), builds on the historic "Integrated Management Plan for Controlling Sea Lampreys in the Bad River," agreed upon and signed by the Band, Service and Great Lakes Fishery Commission. The management plan was implemented during 2010 to establish a collaborative framework to explore alternative ways to continue to suppress sea lamprey populations in the Bad River while allowing periodic lampricide treatments. The Band has been a strong partner with the Service for more than 40 years in the battle against sea lampreys in Lake Superior waters.

Moving forward with this feasibility study allows the Corps to further investigate sites on the river that show promise for successfully locating a low head sea lamprey barrier for the Band to consider. The barrier would operate seasonally to block migrating adult sea lampreys in the spring, yet be open during the remaining part of the year to allow movement of fishes important for the Band. An important feature that must be observed for siting of any barrier is that the hydrology of the river must be sufficient to support such a structure. The Band has a long history of stewardship of the river and supported moving forward with the feasibility study through unanimous passage of the motion at the meeting.

### Third Graders Enjoy a Field Trip to Paxton Quarry and...Learn How to Fish

BY ANDREA ANIA ALPENA FWCO

On a beautiful sunny day in late May, Wilson School 3rd graders (Alpena Public Schools) were bused to Paxton Quarry for a full day field trip. Paxton Quarry is the site of a former shale mine owned by LaFarge Corporation (Alpena, MI). The quarry mine is now full of water and stocked with fish, which the company uses for educational and recreational purposes. Bass, rainbow trout and walleye are some of the fish species stocked in the quarry waters. During this field trip students were taught how to use a fishing pole and given an opportunity to catch fish. They also learned about aquatic insects and local plants and animals that live in the area.

The Friends of the Lake Huron Watershed (FOLHW), a newly formed Friends Group with the Alpena Fish and Wildlife Conservation Office (FWCO), spearheaded the event. Members Carl Anderson, Tom Gilfillan, Gerry Kraft, Roger Witherbee, and Ron Young educated and instructed students during the field trip along with Alpena FWCO staff. LaFarge Corporation provided access and use of the site, day use facilities, and fishing opportunities; Bucks Bait and Tackle donated the bait.

### Ashland FWCO Provides Support with Wisconsin's Lake Trout Catch-At-Age Model

BY MIKE SEIDER ASHLAND FWCO

Throughout the winter 2012 and spring of 2013, Ashland Fish and Wildlife Conservation Office fishery biologist Mike Seider provided technical assistance with the statistical catch-at-age (SCAA) model developed for wild lake trout in the Apostle Islands region of Lake Superior.

Working closely with biologists from the Wisconsin Department of Natural Resources, Red Cliff and Bad River Bands of Lake Superior Chippewa, and Great Lakes Indian Fish and Wildlife Commission, Mike helped to update data inputs and improve the model's performance. The entire Wisconsin portion of Lake Superior lies within 1842 Treaty waters, and safe harvest limits have been set cooperatively by the Wisconsin State-Tribal Biological Committee since 1985. Since 2001, SCAA model outputs have been used to monitor the lake trout population and set safe harvest limits.

The SCAA model incorporates data from a variety of sources including the sport and commercial fisheries and agency gill net surveys. Although the commercial fishery targets lake whitefish, lake trout are also harvested in commercial gill nets and trap nets. Commercial statistics are summarized from mandatory reporting and on-board monitoring by state and tribal agencies. A

popular sport fishery for lake trout also persists in the Apostle Islands too. The State conducts creel surveys at the major ports and estimates harvest and effort for inclusion in the model.

Spring and summer gill net surveys are also conducted to collect biological samples from the lake trout population. Age data and relative abundance, independent of the fishery, are important for ground-truthing the model. Annual samples of the fisheries and surveys age compositions are critical to these model, thus countless hours are spent by biologists each year, carefully ageing lake trout which may only grow an inch per year and live to be over 40 years old. Sea lamprey attack rates on lake trout are also measured each year during the spring survey. Annual attack/ wounding rates are used to estimate mortality attributed to lamprey predation on lake trout (another important input to the model).

Collection of important data via surveys and monitoring has been an important part of the management of lake trout in Wisconsin and throughout Lake Superior. The use of SCAA models has fostered opportunities for data sharing and greater collaboration among agencies. Maintaining and updating the data needed for most SCAA models is a large task and could not be accomplished effectively without successful cooperation between the partner agencies.

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### **Pendills Lake Fish Health Survey**

*BY ANJANETTE BOWEN ALPENA FWCO*

Early this summer Fish Biologist Anjanette Bowen of the Alpena Fish and Wildlife Conservation Office assisted Cory Pusach and Ryan Katona from the La Crosse Fish Health Center with a fish health survey of Pendills Lake in Chippewa County, Michigan.

The lake serves as a back-up water supply for Pendills Creek National Fish Hatchery, which raises lake trout for stocking in the upper Great Lakes. Fish health sampling is important for keeping the hatchery disease and pathogen free. Samples were taken from Pendills Lake fish to determine if disease or pathogens are present in the fish community.

Fyke nets were used to sample fish from the lake. John Shuman from Pendills Creek NFH assisted with netting during part of the survey. Five species of fish were collected - brown bullhead, northern pike, pumpkinseed sunfish, rock bass, and yellow perch. The total catch was recorded and lengths were measured on a representative sample from each species.

Kidney and spleen samples were collected from a number of brown bullheads, pumpkinseed sunfish, rock bass, and yellow perch to detect bacterial and viral pathogens. The samples will be processed at the La Crosse Fish Health Center in Onalaska, Wisconsin and laboratory results on the pathology of the samples will be available at a later date.

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# Fisheries, Midwest Region

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## Debut of New Mobile eDNA Water Filtering Lab

BY STEVEN GAMBICKI ALPENA FWCO

Aquatic invasive species have always been a concern for Great Lakes enthusiasts. Since the 1800's, over 180 non-native species have been found within the Great Lakes. Some have become problematic – also known as invasive species, causing severe environmental and economic losses. Once an invasive species is established, it is extremely difficult to control their spread and minimize their damage. New invasive species threaten the seven billion dollar a year Great Lakes fishery. Early detection of new invasive species is vital to protecting the Great Lakes fishery.

The U.S. Fish and Wildlife Service (FWS) recently began analyzing environmental DNA (eDNA) as a means of detecting the presence of aquatic invasive species genetic material. The Alpena Fish and Wildlife Conservation Office (FWCO) is using a new tool to streamline eDNA processing. Alpena FWCO staff took delivery of a new mobile eDNA water filtering lab in the fall of 2012. The mobile lab makes filtering of water samples for eDNA more efficient. During the months of May, June and July of 2013, Alpena FWCO staff has used the new mobile lab to filter water samples for early detection of invasive species from the Lake Huron-Lake Erie corridor, Lake Michigan, Lake Superior and St. Marys River.



The new mobile eDNA water filtering lab deployed at the Sandusky River, Ohio. Credit: USFWS



Tim Strakosh (Green Bay FWCO) filters a water sample taken from the Muskegon River, Michigan. Credit: USFWS

Water filtering for eDNA is logistically complicated to coordinate because of different sampling sites and the need for sterile filtering locations, deionized water and sterile equipment. With the new mobile lab all the equipment can be brought directly to the water sampling sites, saving hours of moving equipment and supplies. The mobile lab is a sterile self-contained unit that includes all the equipment necessary for filtering water samples. One issue is the need for large amounts of deionized water. Deionized water, used as a control during the filtering process, had to be acquired from cooperating institutions while in the field, or purchased in large quantities beforehand. The new mobile lab contains a deionized water system. Now deionized water is only the turn of a faucet handle away.

As the USFWS strives to protect the Great Lakes from new invasive species, and stem the spread of current invasive species, the new mobile eDNA water filtering lab is an excellent, sterile, fully functional lab on wheels.



U.S. Fish &amp; Wildlife Service

# Fisheries, Midwest Region

Conserving America's Fisheries

## 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.



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