

Fish Lines

Reducing Abundance of
Sea Lamprey
in Lentic Areas

Congressman Ron Kind
Stream Restoration Site Visit

Butterflies Abound!

Lower Fox River
Lake Sturgeon Protection Plan

Welcome Pollinators!



Fish Lines

Fisheries & Aquatic Resources Program - Midwest Region

The Mission of the U.S. Fish & Wildlife Service: working with others to conserve, protect and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people.

The vision of the Service's Fisheries Program is working with partners to restore and maintain fish and other aquatic resources at self-sustaining levels and to support Federal mitigation programs for the benefit of the American public. Implementing this vision will help the Fisheries Program do more for aquatic resources and the people who value and depend on them through enhanced partnerships, scientific integrity, and a balanced approach to conservation.

Features

4 Reducing Abundance of Sea Lampreys in Lentic Areas

Sea Lamprey program takes the next step to control the pest in lentic areas.
BY MICHAEL FODALE, MARQUETTE BIOL. STA.

5 Stream Restoration Site Visit with Congressman Ron Kind

Partners host a stream restoration project tour with Congressman Kind and staff from Senators Feingold's and Kohl's offices.
BY LOUISE MAULDIN, LA CROSSE FWCO

7 Lower Fox River Lake Sturgeon Protection Plan

Protection plan for lake sturgeon that spawn below the De Pere Dam implemented.
BY ROB ELLIOTT, GREEN BAY FWCO

8 Butterflies Abound!

Iron River Elementary School help build a butterfly garden.
BY CAREY EDWARDS, IRON RIVER NFH

10 Welcome Pollinators!

Genoa NFH now welcomes people to its new Children's Butterfly Garden.
BY JENNY WALKER BAILEY, GENOA NFH



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James Anderson electrofishes Videan's Creek to get a sample of brook trout for the fish health inspection of the water supply for Pendills Creek National Fish Hatchery.

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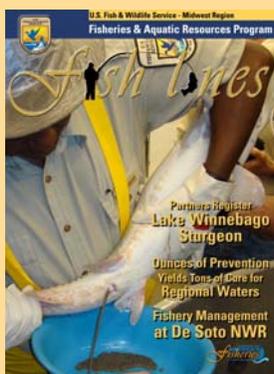
Fish Lines

2009 Vol. 7 No. 11

ASSISTANT REGIONAL DIRECTOR
Mike Weimer

To submit suggestions or comments, e-mail
david_radloff@fws.gov

U.S. Fish & Wildlife Service, Midwest Region
Fisheries & Aquatic Resources Program
1 Federal Drive, Ft. Snelling, MN 55111
Phone: 612/713-5111



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David Hendrix spawns a federally endangered pallid sturgeon.

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Conservation Briefs 12-26

- 1 2 15th Annual Aquaculture Drug Approval Coordination Workshop
BY TERRY OTT, LA CROSSE FHC
- 1 3 Targets Identified for Addressing Impairments to the Lower Green Bay and Fox River Area of Concern
BY ROB ELLIOTT, GREEN BAY FWCO
- 1 5 Lake Superior Expands Horizons for the Wild Fish Health Survey
BY COREY PUZACH, LA CROSSE FHC
- 1 5 Trawling in the Abyss
BY COLBY WRASSE, COLUMBIA FWCO
- 1 6 Genoa NFH lends a Hand and Expertise to Restore Mussels to the Ohio River
BY TONY BRADY, GENOA NFH
- 1 6 Inspection Time!
BY JAMES ANDERSON, SULLIVAN CREEK NFH
- 1 7 If You Plant It, It Will Grow... Unless the Carp Get There First
BY AARON WALKER AND MARK CORIO, COLUMBIA FWCO
- 1 7 Freshwater Drum and Common Carp Munch on Invasive Zebra Mussels
BY SCOTT YESS, LA CROSSE FWCO
- 1 8 Invasive Species of the Illinois River Screened for Diseases
BY ERIC LEIS, LA CROSSE FHC
- 1 9 Wet & "Wild" Waders at Horicon & Fox River NWRs help Sample Fish
BY HEIDI KEULER, LA CROSSE FWCO
- 1 9 Fish, Food and Fun!
BY CAREY EDWARDS, IRON RIVER NFH
- 2 0 Bag Painting is a Big Hit at Winnebago Wednesday
BY RYAN KATONA, LA CROSSE FHC
- 2 1 Research Study of Recruitment Mechanisms for Young Lake Sturgeon in Lake Michigan
BY ROB ELLIOTT, GREEN BAY FWCO
- 2 2 National Conservation Training Center Training Applied to Pallid Sturgeon Stocking Program
BY JOSHUA SCHLOESSER, COLUMBIA FWCO
- 2 2 Research Partnership formed to Describe a New Bluegill Virus
BY BECKY LASEE AND RYAN KATONA, LA CROSSE FHC
- 2 3 Recent Lake Sturgeon Diet Study Sheds New Light on Genetic Issues
BY NICK STARZL, GENOA NFH
- 2 4 Columbia Samples Dalbey Bottoms on the Missouri River
BY ADAM MCDANIEL AND CLAYTON RIDENOUR, COLUMBIA FWCO
- 2 4 Black River Watershed Work Crew Completes 2009 Season
BY HEATHER RAWLINGS, ALPENA FWCO
- 2 6 Motorboat Operator Certification Course
BY JAIME MASTERSON, PENDILLS CREEK NFH
- 2 6 Swan Lake NWR YCC Crews meet Fish of the Big Muddy
BY ANDY STAROSTKA, COLUMBIA FWCO

Congressional Actions	27
Midwest Region Fisheries Divisions	28
Fisheries Contacts	29
Fish Tails	30

Reducing Abundance of Sea Lampreys in Lentic Areas

BY MICHAEL FODALE, MARQUETTE BIOL. STA.

The fourth milestone of the Great Lakes Fishery Commission (Commission) states that the Sea Lamprey Management Program (Program) will estimate recruitment of invasive sea lampreys from all sources, including non-treated rivers, estuaries and connecting channels by 2005 as a way to better reduce sea lamprey abundance in the Great Lakes basin. As a partner of the Great Lakes Fishery Commission, not only has the Fish and Wildlife Service met that milestone, but we have recently taken

the next step to control the pest in lentic areas associated with particular streams across the basin.



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This vessel is modified to use navigational software and a mechanical sprayer to deliver granular Bayluscide to control invasive sea lampreys.

A lentic area is the immediate area off the mouth of a stream entering the Great Lake or in an inland lake within a river system. Drop-off slopes in many lentic areas can fill with sea lamprey larvae at certain times of the year and those populations are then no longer vulnerable to stream-based control tactics of chemical (TFM) applications. These areas receive larvae from streams that have either steep lower river gradients or large spring run-off events which wash larvae from the lower reaches of certain rivers. While we are not as well informed about the growth and survival rates of larvae in lentic areas compared to our knowledge of larvae in streams, we know that if left untreated, these lentic areas can produce thousands of parasites and contribute significantly to parasitic stocks in the Great Lakes. The trick to controlling these areas is to do the assessments and treatments as accurately and quickly as possible to make this work cost-effective in comparison to stream TFM treatments.

For further info about the Marquette Biological Station: <http://www.fws.gov/midwest/marquette/>

Capitalizing on techniques developed to map softer sediments in deeper waters of the Great Lakes and relating those sediments to larval sea lamprey habitat suitability (Fodale et al.; J. Great Lakes Res. 29 (sup1):190-203), the Program began a project of mapping lentic areas important to sea lampreys to quickly delineate and estimate larval sea lamprey habitats using an acoustic seabed classification device (ROXANN). Beginning in 2005, these areas were ranked annually according to their sea lamprey productive capability along with streams across the basin, and those lentic areas receiving high enough rankings are targeted for lampricide treatment.

Lampricide treatments in lentic areas are wholly different than stream-based TFM treatments. While TFM is a liquid pesticide applied in streams that relies upon stream flow to carry it downstream, Bayluscide is a granular formulated pesticide that is sprayed over the infested portion of the lentic area. Essentially, granular Bayluscide is sand granules, coated with the active ingredient and surrounded with a time release formulation not unlike that used to coat aspirin and is delivered using a mechanical spreader or gas powered blower. After being sprayed over the infested portion of the lentic area, the granules sink to the bottom, quickly dissolve and cause larvae to leave their burrows, thus receiving a lethal dose of the lampricide.

The Program has equipped 25-foot boats with mechanical spreaders and uses GPS navigational software and computers to deliver the lampricide quickly and effectively. Recent improvements to this treatment protocol have incorporated advances in technology for both delivery of the lampricide and navigation of the boats. Recently, one boat was modified to inject the granular Bayluscide with a new high-pressure nozzle technology for better and more consistent bottom coverage and auto-pilot software has been installed to minimize pilot error.

By implementing state of the art technologies, the Program is making great progress in reducing the abundance of sea lampreys even further in the Great Lakes, allowing us to focus more effectively on protecting and restoring lake trout in the Great Lakes.

Congressman Ron Kind Stream Restoration Site Visit

BY LOUISE MAULDIN, LA CROSSE FWCO

The Fish and Wildlife Service along with the Wisconsin Department of Natural Resources (DNR), Trout Unlimited and Natural Resource Conservation Service (NRCS) hosted a stream restoration project tour with Congressman Ron Kind and staff from Senators Feingold's and Kohl's offices. The tour was set up to showcase how Driftless Area partners work together under the National Fish Habitat Action Plan to achieve common goals of restoring aquatic habitat for fish, amphibians, reptiles and invertebrates. The tour was held on Big Spring Branch, a 5.5 mile exceptional resource water that contains naturally reproducing brook and brown trout and lies within the Blue River watershed of the lower Wisconsin River in Iowa County, Wis. The stream crosses both state and privately owned lands.



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Congressman Ron Kind, staffers from Senators Feingold 's and Kohl's offices, and partners visit the Big Spring stream restoration site in Iowa County, Wis.

Heavy agricultural pressure in the watershed has contributed to severe erosion of stream banks and high sediment loads to the stream, causing poor in-stream habitat for fish, invertebrates and other aquatic life. Strides made by landowners and restoration partners to improve land management practices in recent years have led to improvements in groundwater recharge, water quality and the trout fishery.

This multi-year habitat improvement project is a great on-the-ground example of similar efforts occurring throughout the Driftless Area. This project's application under the National Fish Habitat Action Plan, a national investment strategy to maximize the impact of conservation dollars on the ground, is evident by the number of partner organizations that have invested resources in the Big Spring Branch stream restoration project. A number of Driftless Area partners were able to share time together on August 25th with Congressman Kind and senators Feingold's and Kohl's staff to display support for the local area project and the national program, directed towards improving aquatic resources across the nation.

The Wisconsin DNR and NRCS shared objectives of the stream restoration project, talked about some of the habitat features within the project area that benefited fish and herptiles, touched on challenges that such a large project presents, and mentioned the various funding sources.

The Wisconsin DNR also gave a brief electroshocking demonstration to show the number of trout of various sizes that were hiding in habitat of this recently restored section of the stream.

A special thank you to those who were in attendance from natural resource agencies including the Wisconsin DNR, NRCS, Harry and Laura Nohr Chapter of Trout Unlimited, Trout Unlimited DARE, The Nature Conservancy, Pheasants Forever, Driftless Area Initiative, Southwest Badger Resource Conservation and Development Council, and the Fish and Wildlife Service Midwest Regional Office.



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A fishery assessment is conducted on the Big Spring Creek restoration site by electroshocking.



-Trout Unlimited/HarryandLauraNohr

Big Spring Creek site after flood damage (above) and the site after restoration (below).



For further info about the La Crosse FWC: <http://www.fws.gov/midwest/lacrossefisheries/>

Lower Fox River Lake Sturgeon Protection Plan

BY ROB ELLIOTT, GREEN BAY FWCO

A protection plan for lake sturgeon that spawn below the De Pere Dam on the Lower Fox River, Wis. was successfully implemented, providing suitable habitat conditions for lake sturgeon spawning and larval recruitment in 2009. This marks the second year that habitat conditions suitable for successful spawning have been maintained in this historically important sturgeon river.

Prior to the implementation of this plan, water management practices related to flood control and hydroelectric production often resulted in the dewatering of the habitat used by lake sturgeon in the lower Fox River during the egg and larval incubation period, reducing survival of eggs and larvae. Though the 25-75 adult sturgeon that currently return to spawn in this river are few compared to the thousands that historically spawned at this site, their numbers might be capable of supporting population growth given suitable environmental conditions. Implementation of this protection plan now creates opportunities to work on other rehabilitation efforts for sturgeon in this important Lake Michigan tributary.



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Lake sturgeon spawn in the Lower Fox River

After several years of on-going discussion and negotiation coupled with continued data collection and analysis by Fish and Wildlife Service personnel, the plan for protecting lake sturgeon habitat below the De Pere Dam on the Lower Fox River was agreed to by representatives from the Green Bay Fish and Wildlife Conservation Office (FWCO), Green Bay Field Office (FO), Wisconsin Department of Natural Resources (DNR), U.S. Army Corps of Engineers (Corps) and Thilmany Papers Nicolette Mill, which hold a Federal Energy Regulatory Commission (FERC) license for hydroelectric generation at this site. The "Protection Plan" was a requirement the Fish and Wildlife Service and Wisconsin DNR had requested as a condition of a new FERC license issued to the Nicolet Mill for continued hydroelectric generation.

The protection plan prescribes how Thilmany Papers will work in cooperation with the agencies and the Corps to ensure that adequate flow conditions for successful sturgeon reproduction are maintained

throughout the spawning season each year. The plan specifies a minimum water elevation in the pool above the dam which, when combined with the use of flashboards, directs adequate flow of water over the target habitat during the critical spring reproduction period. When river flows are not adequate to provide both this minimum flow and full power generation, then the Nicolet Mill will decrease hydroelectric generation as needed to maintain the necessary minimum flow over the spawning habitat.

This is the second year of plan implementation. The plan calls for staff from the Green Bay FWCO, Green Bay FO and Wisconsin DNR to be in regular communication with Nicolet Mill operators and the Corps during the critical sturgeon reproduction season. Fish and Wildlife Service and DNR biologists also provided training to Nicolet Mill operators so they can assist with sturgeon observations during the spawning period. In addition, the Corps installed a real-time on-line gage station so that all parties could better monitor the flow conditions and react to incoming changes in flow. Fortunately, flow was adequate during most of the 2009 spawning and larval incubation season though there were several days when the Nicolet Mill reduced generation to maintain needed flows. For those days, the Mill was very proactive in anticipating the need for reducing generation in time to prevent dewatering of the habitat.

For further info about the Green Bay FWCO: <http://www.fws.gov/midwest/Fisheries/library/StationFactSheets/greenbay.pdf>

Butterflies Abound!

BY CAREY EDWARDS, IRON RIVER NFH

The word “pollinator” seems like the new buzzword these days and rightly so. They are an integral part of the world’s life cycle. Efforts to cultivate areas where pollinators can reproduce, feed and grow are in effect across the country. At the Iron River National Fish Hatchery (NFH), where it is commonplace to find 1.65 million fish feeding and growing, a pollinator garden has made its debut. Since one of the Fish and Wildlife Service’s six high priorities is connecting children with nature, biologist Carey Edwards came up with a unique idea to combine both pollinators (butterflies) and children into one project on a small piece of the 1,200 acres of hatchery land.

A site was picked out and prepared. The venture produced an enormous team effort. Staff from Iron River NFH, Jordan River NFH and Pendills Creek NFH outlined the 30’ x 20’ garden with downed timber and lined the site with landscaping fabric. Community service workers filled in the garden with four inches of sand for drainage and covered the surface with eight inches of topsoil. They also prepared holes for bushes and flowering trees adjacent to the garden. Plants, bushes and trees were ordered from Hausser’s Superior View Farm, a local greenhouse and nursery. Rounding out the list of over 500 plants were butterfly plant, blazing star, yarrow, purple coneflower and bee balm.



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Iron River Elementary School students work on the new butterfly garden at the Iron River National Fish Hatchery.

Carey Edwards also had an idea to put more ownership into the project. Not only would the students help plant the garden but they would make their own stepping stone, creating a path through the garden that would allow hatchery visitors to view their hard work up close and personal. Carey hoped that students would come back repeatedly to view the garden and show family and friends the unique stones they had made. Stepping stone molds, cement and decorating accessories were purchased to have on hand for the much awaited day.

The Iron River Elementary School is located eight miles south of the hatchery in Iron River, Wis. Fifth grade teacher and avid gardener Jay Burfield was contacted about the possibility of his class participating in a day-long gardening project. Mr. Burfield was excited about the prospect - a date was set for the students to travel to the hatchery and the project was up and running. The project began with a little research on what species of butterflies are found in northern Wisconsin, which plants attract those butterflies, survivability of those plants in a harsh Wisconsin winter and where those plants can be purchased locally.

The students arrived by 9:30 a.m. on June 3rd for the first step in the gardening process. Hatchery staff mixed cement and filled stepping stone molds for all 26 students and of course, Mr. Burfield. Students smoothed out their mixture to “set up” before they could decorate them. Half the class donned gardening gloves and tools while the other half took a hatchery tour and short nature walk. Students drew the pre-made garden plan into the soil and the planting commenced. Some students like Lexi had plenty of experience in the garden. Others were not as confident and instruction was given on how deep to dig the holes



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Biologist Carey Edwards of the Iron River National Fish Hatchery assists students with planting in the butterfly garden.

and how far apart to place the plants. Alea exclaimed, “I didn’t think this was going to be any fun, but man, I’m having a great time!” After lunch, the second group repeated the same process and the garden was complete.

The two groups combined to decorate their stepping stones. Glass beads, mammal tracks, butterfly and leaf stamps were on hand to make a one-of-a-kind creation. Students enjoyed light refreshments before cleaning up the work area and catching the bus back to school at the end of the day.

The last segment in the process was to let the molds cure, place them into the garden and mulch around the plants. After a month of curing, the stones were placed into the garden and a

thick layer of wood mulch was placed around the plants to keep weeds to a minimum. Within weeks, the plants were flowering and butterflies were everywhere!

With a little bit of elbow grease and a lot of teamwork, a very successful and rewarding project was accomplished. The students were able to learn about gardening and butterflies as well as gain awareness of fish hatchery operations. Stay tuned for next year’s addition to the Iron River NFH’s butterfly garden with the new fifth grade class.



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These unique stepping stones were created by 5th grade students from the Iron River Elementary School and will be used to create a walking path in the new butterfly garden at the Iron River National Fish Hatchery.

For further info about the Iron River NFH: <http://www.fws.gov/midwest/ironriver/>

Welcome Pollinators!

BY JENNY WALKER BAILEY, GENOA NFH

Genoa National Fish Hatchery (NFH) is now welcoming all pollinators and people to its new Children's Butterfly Garden. The Children's Butterfly Garden was created by hatchery staff to provide habitat for pollinators and an introduction to some of the quiet wonders of nature for all ages. Construction of the Children's Butterfly Garden began on June 22 to kick off National Pollinator Week 2009.

Students were involved in planning, building and planting the garden, while staff members provided direction, training and expertise. For Paige and Brandon, members of the Youth Conservation Corps (YCC), and Student Temporary Employment Program (STEP) students Sam Stafslie, Katherine Murcko and Brandon Keesler, building and planting a pollinator

garden was an opportunity to learn the values of conservation while developing educational, social and job skills.

While working in the butterfly garden, students learned why native plants are important to pollinators for habitat, food and shelter, and, that natural areas where native plants are allowed to grow are in decline. By providing an area where native plants can grow without disturbance, workers are ensuring that pollinators will have a safe haven on the hatchery's grounds. The location of the Children's Butterfly Garden, next to the hatchery's office, is visible from State Highway 35 and is sure to be a safe haven for many weary travelers as well.



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The Children's Butterfly Garden at the Genoa National Fish Hatchery was created by hatchery staff to provide habitat for pollinators and an introduction to some of the quiet wonders of nature for all ages.

Pollinator plants are attractive to people as well as pollinators, and a welcoming patio offers visitors a peaceful place to view the garden as it grows, see hummingbirds, bees, and observe the butterfly life cycle. In fact, the Children's Butterfly Garden has already seen its first butterfly larvae hatch and grow on butterfly weeds that sprouted from root cuttings. The hatchery staff hopes that visitors to the garden will discover the beauty and value of nature when encountering these small wonders that so often go unseen or are overlooked.

While a visit to a butterfly garden may be fun and aesthetically pleasing, pollinator species conservation is serious business. More than 75 percent of flowering plants and food crops are pollinated by butterflies, birds, bats, bees and other animals. Pollinators are animals that carry pollen from flower to flower as they collect nectar. When the pollen is spread, flowers are fertilized and fruits develop. Without pollinators to aid in crop production, many people and animals would suffer. Recent studies indicate that pollinator species populations are declining world-wide. Many of the reasons for the declines are unknown. Some known causes of pollinator population decline are habitat loss, degradation and pesticide use. Some ways to help pollinator populations are to increase areas for native plant species, minimize pesticide use, educate others about the importance of pollinators and show people of all ages how to help out pollinator populations. Visitors will be provided with information on pollinators and directions for planting a pollinator garden at home. Some of the most important visitors to the butterfly garden will be young children. Genoa NFH is currently visited by over 500 children each year. Many of these children

are preschool age or younger and are too small to enjoy some of the hatchery's wilder places. The Children's Butterfly Garden is a safe place for young children to experience nature and learn basic science concepts.

For those who want to study more advanced science concepts, the Children's Butterfly Garden will be a place to conduct research and ecological studies. Besides being a great educational and habitat opportunity, the Children's Butterfly Garden promises to be a fun place where people can rest, relax and get



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Genoa National Fish Hatchery's butterfly garden produces its first butterfly.

their hands dirty. Volunteers may help with planting and upkeep, and Girl and Boy Scouts of America will help with seasonal maintenance such as weeding and mulching. Junior Girl Scout Troop 069 of the Badgerland Council is anticipating their first visit to the Children's Butterfly Garden in October. Let's hope that this is just the beginning of many wonderful children's experiences in Genoa NFH's pollinator garden this year!

For further info about the Genoa NFH: <http://www.fws.gov/midwest/genoa/>

15th Annual Aquaculture Drug Approval Coordination Workshop

BY TERRY OTT, LA CROSSE FHC

Terry Ott of the La Crosse Fish Health Center (FHC) attended the 15th Annual Aquaculture Drug Approval Coordination Workshop held in Little Rock, Ark. The workshop was hosted by the U.S. Department of Agriculture Stuttgart National Aquaculture Research Center, Stuttgart, Ark. The meeting was well attended with over 75 attendees from the Fish and Wildlife Service, U.S. Geological Service, U.S. Department of Agriculture, Food and Drug Administration-Center for Veterinary Medicine,



-Keo Fish Farm

Aquaculture Drug Approval workshop attendees pose for a photo at the Keo Fish Farm.

National Oceanic and Atmospheric Administration, Iowa Department of Natural Resources, Oregon Department of Fish & Wildlife, Idaho Department of Fish & Game, Wyoming Fish & Game Department and Missouri Department of Conservation. The numerous sponsors which helped make this meeting a success were Western Chemical, Syndel Laboratories, Bimeda, Frontier Scientific, Arkansas Catfish Promotion Board, Intervet, Arkansas Baitfish Association and Arkansas Agriculture Department.

Investigational new animal drugs (INAD) discussed during the three day meeting were Perox-Aid (hydrogen peroxide) to control external Columnaris disease and Gyrodactyls sp.; Halamid (chloramine-T) to control mortality due to external columnaris in warmwater finfish; and Cairox (potassium permanganate) to control outbreaks of Flavobacterium columnare.

Partnerships are essential for effective fisheries conservation. Many agencies, organizations, and private individuals are involved in fisheries conservation and management, but no one can do it alone. Together, these stakeholders combine efforts and expertise to tackle challenges facing fisheries conservation. The success of these partnerships will depend on strong, two-way communications and accountability.

Aquaflor (florfenicol) medicated feed is expanding use to 15 mg/kg fish body weight/day from 10 mg/kg. This has increased the number of INAD participants wanting to use the drug to control diseases like coldwater disease and furunculosis.

Porphyrins (AquaFrin), a novel photochemical technique for use as a broad spectrum antifungal/antibacterial agent that is a safe microbicide, was presented at the meeting by Tim Miller who is a representative from Frontier Scientific, Inc., (Logan, Utah). Porphyrins are a group of chemical compounds of which many occur in nature, such as in green leaves and red blood cells. AquaFrin is a photosensitizer that disrupts bacterial, protozoal and fungal cell walls and membranes by local production of singlet oxygen, a potent oxidant. AquaFrin is activated by white light, with optimal activation occurring in blue wavelengths most readily transmitted in water. The selective toxicity to fish pathogen microbes is due to association with the anionic, lipophilic membranes of the microbial pathogens.

We are still waiting for Slice (emamectin benzoate) which is a drug to control infestations of Argulus sp. and Salmincola sp., to become an INAD drug. The Fish and Wildlife Service hopes it will become available to hatchery personnel under INAD #11-370 sometime this fall.

The saga continues on a zero withdrawal sedative for aquaculture. At this time, Aqual-S is being withdrawn as a sedative to replace MS-222, because the Food and Drug Administration (FDA) has made a determination that a chemical component of Aqual-S is a possible carcinogen. Benzocaine is back on the list of possible sedatives to replace MS-222. In addition, the U.S. Geological Survey is looking at a terminology change with FDA-Center for Veterinarian Medicine on removing "withdrawal time" on the label to "time to capture." This change in terminology would let staff know when a fish could be consumed after a sedative is used.

For further info about the La Crosse FHC: <http://www.fws.gov/midwest/LaCrosseFishHealthCenter/>

Targets Identified for Addressing Impairments to the Lower Green Bay and Fox River Area of Concern

BY ROB ELLIOTT, GREEN BAY FWCO

Beginning in March and continuing through August 2009, representatives from several agencies, organizations and citizen advisory groups, including the Fish and Wildlife Service, participated in a series of meetings to develop targets for documenting progress towards removing impairments to the environment associated with the Lower Green Bay and Fox River Area of Concern (AOC). The resulting document titled *Beneficial Use Impairment Delisting Targets for the Lower Green Bay and Fox River Area of Concern* provides important planning goals for continued cleanup and restoration of this important Great Lakes ecosystem.

In the mid-1980s, southern Green Bay and the lower Fox River were designated 1 of 43 AOCs in the Great Lakes by the United States and Canada under the Great Lakes Water Quality Agreement (GLWQA). In 1987, Beneficial Use Impairments (BUIs) were identified for the Lower Green Bay and Fox River AOC. These BUIs were related to the contamination of sediments from historic industrial and municipal waste discharges and excessive nutrient and sediment loading from multiple sources.

The 11 Beneficial Use Impairments identified for the Lower Green Bay and Fox River AOC are:

- degraded fish and wildlife populations
- loss of fish and wildlife habitat
- degraded benthos
- degraded phytoplankton/zooplankton populations
- eutrophication or undesirable algae
- beach closings/recreational restrictions
- degradation of aesthetics
- restrictions on fish and wildlife consumption
- restrictions on dredging activities
- bird or animal deformities or reproductive problems
- restrictions on drinking water or taste/odor problems

The Great Lakes Regional Collaboration made setting delisting targets for each BUI a priority so that progress made towards restoring these beneficial uses could be documented.

Some of the targets relating to the Degraded Fish and Wildlife Populations Beneficial Use Impairments (BUI) are:

- The Area of Concern (AOC) contains healthy, self-sustaining, naturally reproducing, and diverse populations of native fish species (including walleye, northern pike, yellow perch, lake sturgeon, Great Lakes spotted muskellunge and centrarchids) in abundances sufficient to provide ecological function in the fish community; and
- The AOC contains healthy, self-sustaining, naturally reproducing, and diverse populations of native furbearers (including mink, muskrats and otter), amphibians (including spring peepers, leopard frogs, American toads, eastern gray tree frogs, green frogs, bullfrogs and salamanders), reptiles (including snapping and painted turtles), terns (common and Forster's), migratory diving ducks, dabbling ducks, marsh nesting birds and island-dependent colonial nesting birds in abundances sufficient to provide ecological function; and
- Populations of traditionally harvested fish and wildlife species are capable of supporting some level of exploitation; and
- Invasive species (lamprey, carp, gobies, white perch and others) expansion is minimized and controlled as needed to protect native species within the AOC and upstream; and
- Contaminant levels in forage fish populations do not impair the reproductive success of fish-eating birds and wildlife (including predatory fish) and meet the criteria established in Annex 1 of the *Great Lakes Water Quality Agreement*, specifically "the concentration of total polychlorinated biphenyls in fish tissues (whole fish, calculated on a wet weight basis), should not exceed 0.1 micrograms per gram for the protection of birds and animals which consume fish"; and
- The AOC supports fish and wildlife populations at levels consistent with extant fish and wildlife management plan objectives (specific numerical targets for various species including lake sturgeon, walleye, perch, marsh-nesting birds, resident nesting waterfowl, waterbirds, etc. are listed).

Some of the targets for the Loss of Fish and Wildlife Habitat Beneficial Use Impairments (BUI) are:

- **Fish and wildlife management goals are achievable as a result of the physical, chemical, and biological integrity of the Areas of Concern (AOC) waters, including wetlands; and**
- **A balance of diverse habitat types exists within the AOC that supports all life stage requirements of fish and wildlife populations (example list is provided), and**
- **The hydrologic connectivity between wetlands and the AOC is maintained and restored sufficiently to support fish spawning and allow for fish passage; and**
- **The Green Bay portion of the AOC contains water clarity and other conditions suitable for support of a diverse biological community, including a robust and sustainable area of submersed aquatic vegetation in shallow water areas. The AOC contains a diversity of plants, an abundance of submersed aquatic vegetation, and sufficient invertebrates to provide adequate food supplies to support a diverse assemblage of migratory diving ducks (both mussel and vegetation feeding), fish, and other wildlife (including aquatic invertebrates, amphibians, and reptiles); and**
- **The AOC meets water quality standards and/or water quality targets of a State and US EPA approved Total Maximum Daily Load (TMDL); and**
- **The AOC meets Wisconsin water quality criteria for dissolved oxygen and water temperature that are protective of fish and wildlife populations; and**
- **No waterbodies within the AOC are listed as impaired due to physical or water chemistry conditions in the most recent Wisconsin Impaired Waters List (303(d) List).**

Participation in this effort was widespread and diverse. Staff from the Wisconsin Department of Natural Resources (DNR) led the drafting of the resulting BUI delisting targets document with help from members of the Lower Green Bay Remedial Action Plan Science and Technical Advisory Committee (STAC), Biota and Habitat subcommittee, Lower Fox Total Maximum Daily Load (TMDL) Technical Team, Lower Fox Partners group, and representatives from the Brown County Health Department, Brown County Land and Water Conservation Department, Brown County Parks Department, DePere Sportsmen's Club, Green Bay Metropolitan Sewerage District, Northeast Wisconsin Paddlers, South Bay Marina and University of Wisconsin Extension. Rob Elliott, biologist with the Green Bay Fish and Wildlife Conservation Office (FWCO) has participated in the STAC and Biota and Habitat subcommittee for several years and contributed significantly to the development of the targets related to fish and aquatic resources.

A complete summary of the impairments, their causes and suggested actions to restore the AOC is provided in the *Lower Green Bay Remedial Action Plan* (Wisconsin DNR 1988) and the *Lower Green Bay Remedial Action Plan Update* (Wisconsin DNR 1993). Additional information is available at <http://www.epa.gov/glnpo/aoc/greenbay.html#pubs>. There has been substantial progress made towards reaching the goals outlined in these plans, including the ongoing Fox River Contaminated Sediment Remediation Project to address PCB contaminated sediment in the Lower Fox River, but at present, most of the beneficial uses identified for southern Green Bay and the lower Fox River remain impaired.

For further info about the Green Bay FWCO: <http://www.fws.gov/midwest/Fisheries/library/StationFactSheets/greenbay.pdf>

Lake Superior Expands Horizons for the Wild Fish Health Survey

BY COREY PUZACH, LA CROSSE FHC

La Crosse Fish Health Center (FHC) staff conducted a Wild Fish Health Survey on Lake Superior. Fish health samples were processed in the U.S. Geological Survey (USGS) and Fish and Wildlife Service building in Ashland, Wis. The USGS Lake Superior Biological Station collected fish for testing from Chequamegon Bay in Lake Superior, and the Wisconsin Department of Natural Resources – Bayfield office collected fish from Lake Superior near Superior, Wis.



-USFWS/ErikLeis

Chris Olds and Sarah Bauer take fish samples for the Lake Superior wild fish health survey.

survey is important to the Wild Fish Health Survey, but this survey was significant since it was the first time the La Crosse FHC center sampled slimy sculpin, three spined stickleback and burbot in Region 3. Also, spoonhead sculpin, brook stickleback and johnny darter were tested for the first time nationally.

The Wild Fish Health Survey is a national program where nine fish health centers contribute to the database. Results from past Wild Fish Health Surveys can be found at <http://www.esg.montana.edu/nfhdb/>. When we find pathogens in the wild, it reminds us why we must be careful when moving live fish and that disinfection of boats and gear is essential when traveling to different water bodies.

For further info about the La Crosse FHC: <http://www.fws.gov/midwest/LaCrosseFishHealthCenter/>

The Fisheries Program maintains and implements a comprehensive set of tools and activities to conserve and manage self-sustaining populations of native fish and other aquatic resources. These tools and activities are linked to management and recovery plans that help achieve restoration and recovery goals, provide recreational benefits, and address Federal trust responsibilities. Sound science, effective partnerships, and careful planning and evaluation are integral to conservation and management efforts.

Samples were brought back to the La Crosse FHC in Onalaska, Wis. The samples were screened for select viruses, bacteria and parasites. No viruses were detected in any of the fish from both sites; however, *Yersinia ruckeri* was detected in one rainbow smelt from the site near Superior. *Yersinia ruckeri* is a certifiable pathogen (OIE) and the causative agent of Enteric Redmouth or ERM. A common sign of enteric redmouth is hemorrhaging (or redness) in the mouth and around the gum line. Fish may also appear lethargic, have pop-eye, darkened spleen, small hemorrhaging on the swim bladder, and have discolored fluid in intestine. This bacterial pathogen can cause mortality in many different species of fish. The parasitological results are still pending from both sites.

Overall, 12 species totaling 165 fish were sampled from the Superior site, and 11 species totaling 128 fish were sampled from Chequamegon Bay. Every

Trawling in the Abyss

BY COLBY WRASSE, COLUMBIA FWCO

The buzzing drone of mosquitoes greeted us as we launched into the darkness. Some said we were crazy to trawl the Missouri River at night. They were right. Trawling this swift, snag-laden river without the aid of sunlight is not an adventure for the faint of heart. “All in the name of science,” I remarked as I attempted to cough up another mayfly that had taken residence in my throat.

The science we were after this night was an answer to a long standing question, “Do young-of-

year sturgeon utilize shallow water habitat at night?” Historically the Missouri River was a wide, shallow river with numerous islands, sandbars and side channels. Today, the river is highly altered and little of the natural shallow water habitat remains. As part of pallid sturgeon recovery on the Missouri River, several projects are underway to rebuild some of this important habitat. Understanding how sturgeon use this habitat is crucial for their successful recovery.

On this night, the tools we used to sample for young-of-year sturgeon included push trawling and

bow trawling. Push trawling excels at sampling water less than a meter deep while bow trawling is capable of sampling deeper water. The combination of these two gears allow us to effectively sample a wide range of depths and habitat types.

Over a four night period, we collected 62 young-of-year sturgeon. These data when combined with last

year's night trawling data and compared against daytime sampling should provide us with a better understanding of how these tiny, yet important, fish utilize habitat. Despite the pesky ubiquitous insects and long, sleep deprived nights, I would say that experimental night trawling was a success and may be employed in the future.

For further info about the Columbia FWCO: <http://www.fws.gov/midwest/columbiafisheries/>

Genoa NFH lends a Hand and Expertise to Restore Mussels to the Ohio River

BY TONY BRADY, GENOA NFH

A mussel community in the Ohio River that was devastated by a toxic chemical discharge will have 191 new residents, thanks to the propagation efforts of the West Virginia Division of Natural Resources (DNR) and the Ohio River Island National Wildlife Refuge. Biologists from these offices began mussel culture in 2008 and the results of their efforts were 191 mussels of three species that will be used to restore the lost mussel community. These mussels were propagated in culture cages that were designed and constructed at Genoa National Fish Hatchery (NFH).

The partnership between the West Virginian DNR and Genoa NFH began in 2007 when DNR biologists Janet Clayton and Scott Morrison visited Genoa NFH and saw the mussel propagation efforts for the federally endangered Higgins' eye pearl mussels. To date,

the Genoa style cages have produced nearly 50,000 endangered mussels that have been used for recovery in the Upper Mississippi River basin. With results like these, Clayton and Morrison were excited to attempt mussel culture in West Virginia; and in 2008, they asked Genoa NFH to build 35 cages and 13 racks that are used to suspend the cages under an existing boat dock.

The 191 mussels may not seem like many compared to the estimated one million mussels killed as a result of the chemical discharge, but it is a start. With the addition of 15 more cages in 2009 and one year under their belts along with a lot of team work, it won't be long before the mussel numbers produced in West Virginia's cages should begin to approach those seen in the Higgins' eye pearl mussel program along the Mississippi River.

For further info about the Genoa NFH: <http://www.fws.gov/midwest/genoa/>

Inspection Time!

BY JAMES ANDERSON, SULLIVAN CREEK NFH

The La Crosse Fish Health Center (FHC) performed the annual summer/fall fish health inspection July 28-29 at Sullivan Creek and Pendills Creek National Fish Hatcheries (NFH). This year, the FHC collected the normal fish samples from the hatcheries along with wild fish samples from both hatchery water supplies.

The La Crosse FHC first started collecting samples at Sullivan Creek NFH from the captive lake trout brood stock. Pendills Creek biologist Jaime Masterson assisted FHC staff with collecting brood fish, while Sullivan Creek biologist James Anderson and Jess Mollison (La Crosse FHC) headed upstream from the hatchery with a backpack shocker to collect

wild fish samples from the hatchery water supply. Due to some issues with the backpack shocker, they only collected three fish.

The La Crosse FHC staff headed to Pendills Creek NFH on July 29 to sample the lake trout production fish. Anderson electroshocked Videans Creek, which is the main water supply for Pendills Creek NFH, and Masterson assisted FHC staff with their sampling of the production fish. Anderson made some adjustments to the back pack shocker and rebounded by collecting 13 wild fish in one hour for the fish health center to sample. Now, the waiting begins to see what the results will be on the samples collected.

For further info about the Pendills Creek NFH/Sullivan Creek NFH: <http://www.fws.gov/midwest/Fisheries/library/StationFactSheets/pendills.pdf>

If You Plant It, It Will Grow... Unless the Carp Get There First

BY AARON WALKER AND MARK CORIO, COLUMBIA FWCO

Columbia Fish and Wildlife Conservation Office (FWCO) technicians Aaron Walker and Mark Corio traveled to DeSoto National Wildlife Refuge (NWR) to begin the most recent phase of a project started last spring. The project is designed to determine if carp are a limiting factor



-USFWS/Mark Corio

Aaron Walker (left) and Mark Corio (right) of Columbia Fish and Wildlife Conservation Office plant longleaf pondweed in Desoto Lake with the help of Steve Van Riper of the Desoto National Wildlife Refuge.

growth in each enclosure will be periodically measured and noted for analysis. Ultimately, the results of this experiment will aid us, and our partners, in more effectively managing the fishery at Desoto Lake. We are grateful for Darcy Cashatt and our other partners at the Iowa Department of Natural Resources who provided the plants for this project.

For further info about the Columbia FWCO: <http://www.fws.gov/midwest/columbiafisheries/>

Freshwater Drum and Common Carp Munch on Invasive Zebra Mussels

BY SCOTT YESS, LA CROSSE FWCO

Byron Karns (National Park Service) worked with Scott Yess of the La Crosse Fish and Wildlife Conservation Office (FWCO) on a study to determine what species within the St. Croix River fishery community are consuming zebra mussels. The National Park Service funded the project to electrofish at three sites from Taylor Falls, Minn. to Prescott, Wisc. Common carp and freshwater drum were collected at all three sites and the stomachs were removed. It was evident that these two species were consuming zebra mussels at the Prescott site. To date, there are no zebra mussels as far north as Taylor Falls but the study will look at what native mussels the fish may consume.



-USFWS

The LaCrosse Fish and Wildlife Conservation Office and National Park Service determined that invasive zebra mussels were being eaten by freshwater drum and common carp on the St Croix River.

Aquatic Invasive Species

Aquatic invasive species are one of the most significant threats to fish and wildlife and their habitats. Local and regional economies are severely affected with control costs exceeding \$123 billion annually. The Fisheries Program has focused its efforts on preventing introductions of new aquatic invasive species, detecting and monitoring new and established invasives, controlling established invasives, providing coordination and technical assistance to organizations that respond to invasive species problems, and developing comprehensive, integrated plans to fight aquatic invasive species.

for aquatic vegetation at DeSoto Lake, which is located approximately 25 miles north of Omaha, Neb. In general, vegetated areas provide nursery habitat that are important for the survival of fish in their first year of life. It is hypothesized that the lack of dense vegetation beds in DeSoto Lake is due to the presence of invasive common carp. Additionally, that excluding carp from key areas will help increase plant populations and provide quality nursery habitat.

Aaron and Mark teamed up with Steve Van Riper and Jeremy Havener of DeSoto NWR to plant vegetation in three (20 ft x 30 ft) experimental carp enclosures. The enclosures were divided into three equal sections. Within each section one of the following species was planted: white water lily, water stargrass, longleaf pondweed or no plants. The plant

Another analysis will look at the total amount of mussels these fish consume. Biologists will try to determine if fish can have an impact on the mussel

populations. The fish stomachs will be analyzed this winter and a report prepared by early next summer.

For further info about the La Crosse FWCO: <http://www.fws.gov/midwest/lacrossefisheries/>

Invasive Species of the Illinois River Screened for Diseases

BY ERIC LEIS, LA CROSSE FHC

The middle of June is a busy month for Midwest Region Fisheries offices. It is when the annual Goby Round-up\Asian Carp Corral occurs - an event coordinated by the La Crosse Fish and Wildlife Conservation Office (FWCO) to monitor the spread of the invasive round goby, bighead carp and silver carp in the Illinois River. The La Crosse Fish Health Center (FHC) assists the La Crosse FWCO with the monitoring and screens the fish for target pathogens.

Eric Leis and Ryan Katona (La Crosse FHC), Scott Yess (La Crosse FWCO) and volunteers Jim Robinett, Jeff Johnson and Mike Leis participated in the annual Goby Roundup/Asian Carp Corral at the Starved Rock and Alsip stretches of the Illinois River. The crews' objectives were to catch invasive round gobies and Asian carp with minnow traps, trammel nets and gill nets. Once the fish were captured, they were euthanized and screened for bacterial and viral pathogens. Currently, the results of the tests are still pending. Local news reporters interviewed staff and volunteers on the spread of the invasive species, and this year the Starved Rock crew's sampling effort appeared in an episode of "Northland Adventures."

For further info about the La Crosse FHC: <http://www.fws.gov/midwest/LaCrosseFishHealthCenter/>



-USFWS/EricLeis

Volunteer Mike Leis holds an invasive bighead carp captured from the Starved Rock area of the Illinois River during an annual invasive species assessment called the "Goby Roundup and Carp Corral."

Wet & “Wild” Waders at Horicon & Fox River NWRs help Sample Fish

BY HEIDI KEULER, LA CROSSE FWCO

Heidi Keuler from the La Crosse Fish and Wildlife Conservation Office (FWCO) traveled to Fox River and Horicon National Wildlife Refuges (NWR) during July to sample fish and provide suggestions to increase recreational fishing use on the refuges. Heidi worked with Sadie O’Dell from Fox River NWR, and John Krapfl, Wendy Woyczik and the Youth Conservation Corps (YCC) crew from Horicon NWR. The YCC crew was an integral part to get the job done at Horicon NWR. Crew members assisted with electrofishing and setting or pulling fyke and gill nets. In addition, help was needed on shore with fish identification, measuring, weighing and data collection.

While at Fox River, Heidi received an opportunity to help Sadie with an environmental education program for fourth-sixth grade summer



-USFWS

Youth Conservation Corps employees hold a walleye captured during a fishery assessment on the Horicon National Wildlife Refuge.

For further info about the La Crosse FWCO: <http://www.fws.gov/midwest/lacrossefisheries/>

Fish, Food and Fun!

BY CAREY EDWARDS, IRON RIVER NFH

The Iron River National Fish Hatchery (NFH) hosted its 7th annual open house on September 12. One of the six priorities of the Fish and Wildlife Service is children and nature, and that concept was put forth in an effort to draw children to this year’s open house. Open house coordinator and biologist Carey Edwards planned a unique experience for the hatchery with several fun outdoor activities being offered while showcasing the hatchery and its mission.

Over 300 visitors toured the hatchery; some from as far away as Colorado, Iowa and Ohio. Upon entering the hatchery, guests registered themselves, and children were offered gift bags with coloring books, stickers, and personalized Iron River NFH pencils,

As the population in the United States continues to grow, the potential for adverse impacts on aquatic resources, including habitat will increase. At the same time, demands for responsible, quality recreational fishing experiences will also increase. The Service has a long tradition of providing opportunities for public enjoyment of aquatic resources through recreational fishing, habitat restoration, and education programs and through mitigating impacts of Federal water projects. The Service also recognizes that some aquatic habitats have been irreversibly altered by human activity (i.e. - dam building). To compensate for these significant changes in habitat and lost fishing opportunities, managers often introduce non-native species when native species can no longer survive in the altered habitat.

school students.

Students

watched biolo-

gists pull fyke and gill nets onto an air boat, but then received hands-on learning experiences by identifying, measuring and weighing fish on shore and chasing aquatic invertebrates in the water. Besides fish and invertebrates, students also got the chance to hold turtles and frogs. It was a “wet and wild” time with only a couple of laughing children filling their waders with water.

Fish sampled from both refuges appear to be healthy. Data will be compiled this fall/winter on both refuges to complete formal reports. Thanks to Sadie, John, Wendy, the YCC crew and staff at Fox River and Horicon NWRs!

tattoos, crayons and carabineers. Door prizes donated from tackle companies from across the country were handed out randomly to nearly a dozen children. Guided tours from knowledgeable hatchery staff awaited groups every half hour.

The first stop for most parents was the “gyotaku” table. Gyotaku is the Japanese art of transposing the image of a fish using paint onto cloth or paper. Parents lined up to find the correct size shirt for their child’s art work. Rubber molds featured leaves, butterflies and mammal tracks and over a dozen fish including blue gill, rainbow trout and northern pike. Children were able to decorate in an array of colors for a one-of-a-kind shirt. About 100 tee shirts were made.

Another very popular activity was the casting games. Plastic lawn bass were spread out on the lawn for children to practice their casting skills. Rod and reel combinations were donated by Woods and Water Outfitters, a local sporting goods store. While supplies lasted, children received a prize for catching the wily bass.

Making a debut appearance at Iron River NFH was the Wild Rivers Chapter of Trout Unlimited. President Chuck Campbell and two other members assisted children with tying their own flies and trying their hand at fly casting in the lawn. Trout Unlimited donated all materials used and children were able to take their homemade flies home. Another newcomer joining the open house line-up was the Lake Superior Zoo-Mobile. Five different critters were on hand to view and touch and a zoo representative was on hand to answer questions about each one. There was also a display by the La Crosse, Wisc., Fish Health Center. A specialist was on hand to answer questions about disease concerns and personalized water bottles and frisbees were handed out.

The final touch to a perfect day was the barbeque lunch donated by the Brule River Sportsman's Club. Four club members cooked and served approximately 200 hot dogs to hungry guests. Potato chips and soda

For further info about the Iron River NFH: <http://www.fws.gov/midwest/ironriver/>

were also provided compliments of the Club. The NFH provided lemonade, coffee and cookies.

Partnerships are the cornerstone to any successful operation and the Iron River NFH is no exception. Thanks to these new collaborations, the hatchery was able to offer one of its most successful events to date. Next year's planning is already underway with a commitment from the Brule River Sportsman's Club to provide lunch again. Stay tuned to see what new events and collaborations take place next year.



-USFWS

Wild Rivers Trout Unlimited members assist Iron River Elementary students tie their own flies during Iron River National Fish Hatchery's open house.

Bag Painting is a Big Hit at Winnebago Wednesday

BY RYAN KATONA, LA CROSSE FHC

Sarah Bauer and Ryan Katona from the La Crosse Fish Health Center (FHC) participated in Winnebago Wednesday in Tomah, Wis. on July 29. Winnebago Wednesday is a program put on by Julee Katona from Family Resources every Wednesday in Winnebago Park throughout the summer. This program is a way to get local families outside to enjoy a variety of activities. Winnebago Wednesday has a new theme every week, ranging from transportation day, petting zoo day, water fun day and even nature day. Nature day was filled with all kinds of activities, including making insects out of sticks and stones, fur identification, fish anatomy and making fish prints on reusable cloth bags. The La Crosse FHC explained fish anatomy using rainbow trout, which were obtained from the U.S. Geological Survey, and helped very enthusiastic kids decorate the reusable bags with their favorite fish species. This program was a great success, and the FHC staff looks forward to helping out with this program in future years.

For further info about the La Crosse FHC: <http://www.fws.gov/midwest/LaCrosseFishHealthCenter/>



-USFWS

Children decorated reusable cloth bags during Winnebago Wednesday, a program to get families outside to enjoy a variety of activities throughout the summer months.

Research Study of Recruitment Mechanisms for Young Lake Sturgeon in Lake Michigan

BY ROB ELLIOTT, GREEN BAY FWCO

A three-year research effort to determine important recruitment mechanisms of young lake sturgeon in a Lake Michigan tributary was recently completed and the results submitted for publication. Dave Caroffino, a PhD researcher with the University of Alaska at Fairbanks, worked closely with Rob Elliott of the Green Bay Fish and Wildlife Conservation Office (FWCO), Mike Donofrio with the Wisconsin Department of Natural Resources, and his major professor Dr. Trent Sutton to identify mortality and recruitment mechanisms affecting early life stages of lake sturgeon. This intensive assessment was conducted on the Peshtigo River, a representative sturgeon river tributary to Green Bay that has shown promising population growth over the past 20 years. Study objectives were to estimate egg density, production of larvae and the abundance of age 0 juvenile lake sturgeon prior to river emigration; to identify and quantify the mechanisms of mortality during each life stage; to determine if predation is dependent upon the relationship between predator and prey



-USFWS/RobElliott

This wild lake sturgeon is being released back into the Peshtigo River after being marked with a temporary elastomer tag.

body size; and to assess how the identified mortality sources influence recruitment dynamics, year-class strength, and population viability. Primary funding for the study was granted by the Great Lakes Fishery Trust.

Numerous techniques and survey methods were used during various aspects of the project. During the spawning season, specially designed egg sample bags were buried within known spawning habitats in the river, seeded with naturally deposited lake sturgeon eggs, then monitored for losses to and development of the eggs and larvae in the sample bags while quantifying the predation of eggs by predators. Total egg deposition and larval production were determined using egg mat samplers and standard “D” shaped larval drift nets, and mark/recapture surveys of juveniles were continued through each summer using snorkeling and spotlight surveys as the fish continued to grow and distribute themselves down-river from the spawning grounds. Of the 699 wild produced fingerling lake sturgeon that were collected and tagged during the two summers of field study, 411 were recaptured allowing for reasonably accurate estimates of abundance, movement and survival.

Understanding these mortality and recruitment relationships, in particular those that act on early life stages that influence population success, is crucial to selecting appropriate strategies that will aid in rehabilitation efforts for this species in the Great Lakes. Lake sturgeon were once an abundant and important component of the Great Lakes fish community but declined dramatically during the late 1800s due to overfishing, habitat loss and degraded water quality. Current population levels are less than 1 percent of historic levels.

For further info about the Green Bay FWCO: <http://www.fws.gov/midwest/Fisheries/library/StationFactSheets/greenbay.pdf>

Science and technology form the foundation of successful fish and aquatic resource conservation and are used to structure and implement monitoring and evaluation programs that are critical to determine the success of management actions. The Service is committed to following established principles of sound science.

National Conservation Training Center Training Applied to Pallid Sturgeon Stocking Program

BY JOSHUA SCHLOESSER, COLUMBIA FWCO

Continuing education and training classes are important for fish and wildlife biologists working under adaptive management programs that rely on new research to direct future management actions. The “Principles of Modeling” class offered at the National Conservation Training Center (NCTC) teaches biologists how to use simple models to solve real world problems. Biologists Joshua Schloesser and Clayton Ridenour of the Columbia Fish and Wildlife Conservation Office (FWCO) attended this class and saw application to the pallid sturgeon stocking program in the lower Missouri River.

Every fall, the Middle Basin Pallid Sturgeon Workgroup stocking subcommittee needs to decide how many and when to stock the endangered pallid sturgeon - a task that is not straightforward. The stocking subcommittee must consider factors such as genetic conservation, supply of eggs, survival of hatchery raised fish in a wild river, and hatchery space when developing a stocking strategy. To help make stocking decisions, Schloesser and Ridenour developed an interactive model that predicts how many hatchery raised pallid sturgeons are expected to reach reproductive age and contribute to the future pallid sturgeon population.

The pallid sturgeon stocking model requires only three inputs to estimate the number of females expected to survive to age 15, and males to age 6, when they are first thought to be in reproductive condition: 1) the number of fish at each age the hatchery wishes to stock, 2) the proportion of fish that are female or male, and 3) the annual survival rate of hatchery raised fish in the wild. Nebraska Game and Parks Commission has estimated that only 5 percent of fingerling pallid sturgeon stocked in the fall survive to one year, 68 percent of one-year-old stocked fish survive to two years, and 93 percent of two-year-old

fish survive each successive year. By multiplying the number of fish being stocked out, with the proportion of fish that are female or male, and the annual survival rates, we can estimate how many hatchery fish are expected to still be alive from any given year class 20 years into the future.

Depending on the current supply of fish in the hatcheries, the stocking subcommittee has several options of when to stock fish into the river. The Neosho National Fish Hatchery has the capacity to raise 20,000 fingerlings, 15,000 age-1 fish, or 10,000 fish to age-2. If all fish are stocked out, 100 of the stocked fingerlings, 1,620 of the age-1 fish, or 1,680 of the age-2 fish are estimated to survive to become 15 year old reproductive females. This indicates that annually stocking age-1 fish will produce the maximum number of pallid sturgeon that survive to reproductive age (age-2 fish can only be stocked every other year when at hatchery capacity). But, if the hatchery is not at capacity it has the option to hold fish until age-2 or age-3, which will assure the greatest number of fish survive to reproductive age.

The pallid sturgeon stocking model is one tool that can help managers understand the contribution of stocked fish to an endangered population and has eliminated past debates based on personal opinions. This modeling approach is appealing because its operated in a common spreadsheet program, simple to incorporate new research, transparent in its calculations, and flexible to evaluate different stocking strategies based on the current supply of hatchery fish, all of which are important components in an adaptive management program. The training opportunities offered at NCTC have enabled biologists with the skills to solve real world problems, provide aid in difficult decision making, and help recovery efforts of the endangered pallid sturgeon

For further info about the Columbia FWCO: <http://www.fws.gov/midwest/columbiafisheries/>

Research Partnership formed to Describe a New Bluegill Virus

BY BECKY LASEE AND RYAN KATONA, LA CROSSE FHC

Emerging viruses like Viral Hemorrhagic Septicemia virus (VHSv) and Spring Viremia of Carp virus (SVCv) have devastating effects on freshwater fish in the Great Lakes and Upper Mississippi River region. Massive die-offs of a wide variety of fish

species have been attributed to VHSv and SVCv, causing large-scale mortalities of common carp. Both diseases have regulatory implications both nationally and internationally.

Recently, another emerging virus has been isolated and associated with mortality events in wild populations of bluegill. The La Crosse Fish Health Center (FHC) was able to differentiate it as a novel virus in tissue cell culture but lacked taxonomical classification or a confirmatory test. The virus has tentatively been named Bluegill Virus (BLGv) and it has been isolated primarily from bluegill and black crappie in Wisconsin and Ohio. BLGv has caused bluegill kills in Lake Monona in Madison, Wis., and Pool 8 of the Mississippi River in La Crosse, Wis.

BLGv was first isolated in 2001 by the La Crosse FHC from bluegill from Lake Montana, Wis.

La Crosse FHC staff joined Dr. Mike Hoffman and his graduate student Marisa Barbknecht from the University of Wisconsin-La Crosse to conduct research needed to classify the virus, determine the range of the virus in Wisconsin and develop a confirmatory test. This partnership has been extremely successful and to date, the virus has been tentatively classified as a Picornavirus and a diagnostic Polymerase Chain Reaction Assay (PCR) has been developed.

For further info about the La Crosse FHC: <http://www.fws.gov/midwest/LaCrosseFishHealthCenter/>

Recent Lake Sturgeon Diet Study Sheds New Light on Genetic Issues

BY NICK STARZL, GENOA NFH

Staff from the Genoa National Fish Hatchery (NFH) recently completed a 30 day study aimed at determining the genetic implications of feeding prepared diets to larval lake sturgeon. The traditional method of rearing lake sturgeon is by feeding brine shrimp nauplii, frozen bloodworms and krill which typically results in high survivability (more than 90 percent from hatch), but has many drawbacks, including high cost, moderate growth and possible disease vectors. The Genoa NFH propagates up to 60,000 lake sturgeon annually, and would benefit greatly from the ability to feed commercially produced diets (CPDs). Because of this, the Genoa NFH has been experimenting with various CPDs over the last seven years. Over that period, it has been determined that approx. 70 percent habituation (or diet acceptance) rate onto select CPDs is attainable; however, this reduction in survivability may be of genetic concern if production lots were geared toward this method.

Many of the stocking plans for lake sturgeon are developed for restoration purposes, and it is our goal in the Fish and Wildlife Service to maintain genetic variability as high as possible in these programs. The study was designed to determine if habituation onto Otohime™ feed is genetically or randomly driven by conducting a paired test of the habituation rates of larval lake sturgeon from one pair (1 female x 1 male) vs. another pair (1 female x 1 male) as well as main-

taining a control for each pair which was fed brine shrimp nauplii. Conducting the same procedure on two separate 1 to 1 crosses may help answer the question whether or not separate families habituate onto CPDs at varying rates. Although analysis of the study is incomplete, it was determined that there was a significant difference in their habituation rates, as one pair habituated onto the Otohime™ at a rate of 62 percent compared to the other pair at 77 percent. Both of the controls showed an expected high survival rate (99 percent) to the end of the study with normal growth curves.

The unequal habituation rates among the two separate pairs may suggest that habituation may cause genetic selection toward families that habituate at a higher rate than others therefore increasing the probability of genetic loss. These results show that if low habituation rate CPDs were to be used, then production methods would have to be in place to maintain the genetic composition from as many family pairs as possible - keeping family lots separate or marking the fish so that equal numbers can be pooled after the selective agent (CPDs) has passed. In any restoration/recovery program which involves stocking hatchery fish, distributing "wild" fish, or fish that closely represent the founding population, is the best way to conserve the genetic variability and restore fish populations in the natural environment.

For further info about the Genoa NFH: <http://www.fws.gov/midwest/genoa/>

Columbia Samples Dalbey Bottoms on the Missouri River

BY ADAM MCDANIEL AND CLAYTON RIDENOUR, COLUMBIA FWCO

Dalbey Bottoms is located on the Missouri River between northwest Missouri and northeast Kansas near River Mile (RM) 417. The U.S. Army Corps of Engineers (Corps) proposed to build a side channel here as part of the Missouri River Recovery Program to restore habitat for pallid sturgeon.



-USFWS/AdamMcDanielandClaytonRidenour

Technician Chris Scheppers displays a shovelnose/pallid sturgeon hybrid captured during a fishery assessment at the Dalby Bottoms site on the Missouri River.

Loss and alteration of aquatic habitats are principal factors in the decline of native fish and other aquatic resources and the loss of biodiversity. Seventy percent of the Nation's rivers have altered flows, and 50 percent of waterways fail to meet minimum biological criteria.

The Columbia Fish and Wildlife Conservation Office (FWCO) and Corps are cooperating to study Missouri River habitat at Dalbey Bottoms before and after construction to assess the ecological impact of the constructed chute on pallid sturgeon and other native Missouri River fishes.

Biologists from Columbia FWCO completed the second round of sampling at Dalbey Bottoms during early August. Project engineer Zach White from the Corps jumped aboard to assist and collaborate with Columbia FWCO and their sampling efforts. Stable weather and river conditions provided a pleasant work environment for both stern trawling and push trawling. Columbia crews managed to catch 1,672 fish, 57 of which were young-of-the-year sturgeon. One pallid sturgeon and one shovelnose-pallid sturgeon hybrid were also collected while sampling. Construction of the chute is scheduled for the winter of 2009, but we plan to return in October to sample using trotline gear. This cooperative effort provides an avenue to apply adaptive management and supports the Service's Strategic Habitat Conservation program.

For further info about the Columbia FWCO: <http://www.fws.gov/midwest/columbiafisheries/>

Black River Watershed Work Crew Completes 2009 Season

BY HEATHER RAWLINGS, ALPENA FWCO

The Black River watershed, part of the Cheboygan River watershed and a Partners for Fish and Wildlife Focus Area, is a high-quality coldwater river that has been designated by the State of Michigan as a 'Blue-Ribbon Trout Stream.' This is the only watershed in northern Michigan that exclusively supports native brook trout. The Fish and Wildlife Service has supported restoration work in this watershed for over ten years with both financial and technical assistance, and 2009 was no exception. As with many Michigan rivers, logging and development (primarily road building) have altered the dimension, pattern and profile of several reaches of the Black River. These reaches of the Black River are devoid of large woody debris and carry excessive sediment loads due to human activity. The Black River Watershed Resto-

ration Committee is working in conjunction with numerous partners to place large woody debris in the Black River, which will provide fishery habitat without negatively altering the river.

Strategic placement of large woody debris structures is designed to flush sediment downstream, which will uncover riffle and pool habitat previously clogged by large amounts of sediment. Sediment will be captured in sand traps located downstream of the sites and maintained by the Michigan Department of Natural Resources (DNR) and Canada Creek Ranch.

Large woody debris placement that occurred in 2009 benefitted brook trout, the federally endangered Hungerford's crawling water beetle population and coldwater aquatic habitat in the Black River for over ten river miles. All structures placed were subject to approval (both design and placement site) by the

Michigan Department of Environmental Quality (DEQ) permit process, Michigan Department of Natural Resources (Fisheries Division) and the Fish and Wildlife Service Partners for Fish and Wildlife coordinator. A Michigan DEQ permit has been received for the 2009-2010 field work seasons.

The summer work crew, consisting of four college students and a crew chief began on May 18, 2009. The crew started the season with the placement of large woody debris (LWD) structures in the main branch of the Black River. A total of 79 structures were placed on approximately a 3-mile stretch of the river to improve brook trout habitat by either providing cover in a part of the river that had little cover, or by slightly altering the flow of the river to restore the river to a deeper, narrower morphology and in the process uncovering potential spawning habitat, pools and riffles.

In August, the work crew began work in Canada Creek, a large tributary of the Black River. Thirty-two large woody debris structures were placed, improving two miles of Canada Creek. Time was spent in the placement of new structures and the removal/modification of woody structures that were placed in the 1970s.

Throughout the summer, the work crew removed beaver dams in which the beaver had either been trapped/removed or abandoned the dam. Active dams that were encountered were noted, GPS coordinates collected and this information will be passed on to local trappers this winter. In total, 27 beaver dams were removed in three different tributaries of the river.

This restoration work may additionally benefit the federally endangered Hungerford's crawling water beetle (beetle). This small riffle beetle exists in only three watersheds in the United States, and the Black River is one of them. During the permitting process, care was taken to keep work out of known locations of the beetle, but since this work improves the river habitat, the belief is that the beetle will eventually benefit from this work.

Fish and Wildlife Service funding provided for labor (work crew) and the transportation of the crew

and materials. Project partners included the Montmorency Conservation District which employed the work crew, Canada Creek Ranch which contributed funds and technical assistance on the work done in Canada Creek, Michigan DNR which coordinates the Black River watershed trapping program and has collected the fisheries data to guide the location of the LWD placement, North-East Michigan Council of Governments which allowed one of their employees, Nico Tucker, to supervise the group as crew chief, and the Michigan Flyfishing Club, Trout Unlimited, Montmorency County Conservation Club and Upper Black River Watershed Restoration Committee which all provided financial support for the work crew. This work was prompted by the completion of the Black Lake Watershed EPA 319 Plan in 1998.



Above - stream site devoid of large woody debris, which is the result of human influence over the years.

Below - Strategic placement of large woody debris structures is designed to flush sediment downstream, which will uncover riffle and pool habitat previously clogged by large amounts of sediment.



-USFWS

For further info about the Alpena FWCO: <http://www.fws.gov/midwest/alpena/index.htm>

Motorboat Operator Certification Course

BY JAIME MASTERSON, PENDILLS CREEK NFH

The U.S. Fish and Wildlife Service's Motorboat Operator Certification Course (MOCC) for the *M/V Spencer F. Baird*, concluded on July 16 in Cheboygan, Mich. The MOCC was designed as a safety course for all staff that work on the *Baird* during the stocking season, gillnetting and fishery assessments throughout the year. Led by Fish and Wildlife



-USFWS

Initial training in a swimming pool is the first step to introduce water safety for the Motorboat Operator Certification Course for the crew of the *M/V Spencer F. Baird*.

Service employees Adam

Kowalski and

Aaron Woldt, the three-day course covered general information about the *Baird*, getting to know the vessel and understanding boat operations. Water survival training and emergency simulations such as man overboard and use of visual distress signals were created for hands-on experience. Water safety training was performed in a swimming pool first to get comfortable with the use of personal floatation devices (PFD) and immersion suits. Although weather did not allow for going out into the open waters of Lake Huron, class members did get to suit up in immersion suits and get in the Cheboygan River for a life raft simulation. Other demonstrations and simulations included fire suppression, radio use, emergency vessel control, docking, undocking and line handling.

The Fisheries Program relies on a broad range of professionals to accomplish its mission: biologists, managers, administrators, clerks, animal caretakers, and maintenance workers. Without their skills and dedication, the Fisheries Program cannot succeed. Employees must be trained, equipped and supported in order to perform their jobs safely, often under demanding environmental conditions, and to keep current with the constantly expanding science of fish and aquatic resource management and conservation.

For further info about the Pendills Creek NFH/Sullivan Creek NFH: <http://www.fws.gov/midwest/Fisheries/library/StationFactSheets/pendills.pdf>

Swan Lake NWR YCC Crews meet Fish of the Big Muddy

BY ANDY STAROSTKA, COLUMBIA FWCO

Habitat Assessment and Monitoring Program (HAMP) crews from Columbia Fish and Wildlife Conservation Office (FWCO) met Swan Lake National Wildlife Refuge-based Youth Conservation Corps (YCC) in Miami, Mo. for a day on the Missouri River. Columbia FWCO crews were conducting standard field work so the students were able to see what real big river fisheries work is like. Unfortunately, weather conspired against the outing and by mid-morning thunder storms and rain forced everyone off the river. Though most were soaked by the time the rain ended, spirits were not dampened and the field day resumed after lunch so all had a chance to experience the operation of both the push trawl and the stern trawl. The push trawl is used to sample shallow areas of the river while the stern trawl is

used to sample areas deeper than six feet. Discussions about big river ecology and identification of big river fish species dominated the conversations. The day proved to be a welcome break for the YCC employees from their day to day duties on the Refuge. YCC is a program that has been in existence for decades and originated from the Civilian Conservation Corps of the Depression Era. The YCC has been instrumental in introducing young Americans to conservation opportunities since the program was created in 1970. Since its inception, the YCC has worked with many conservation agencies throughout the country to provide educational and team building skills for young people. Hundreds of employees currently working in land management agencies were introduced to natural resource careers through the YCC program.

For further info about the Columbia FWCO: <http://www.fws.gov/midwest/columbiafisheries/>

Congressional Actions

[111th CONGRESS Senate Bills]
[From the U.S. Government Printing Office via GPO Access]
[DOCID: s1214is.txt]
[Introduced in Senate]

111th CONGRESS
1st Session

S. 1214

To conserve fish and aquatic communities in the United States through partnerships that foster fish habitat conservation, to improve the quality of life for the people of the United States, and for other purposes.

IN THE SENATE OF THE UNITED STATES

June 9, 2009

Mr. Lieberman (for himself, Mr. Casey, Mr. Bond, Ms. Stabenow, Mr. Cardin, Mr. Sanders, Mr. Whitehouse, and Mr. Crapo) introduced the following bill; which was read twice and referred to the Committee on Environment and Public Works

A BILL

To conserve fish and aquatic communities in the United States through partnerships that foster fish habitat conservation, to improve the quality of life for the people of the United States, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SEC. 2. FINDINGS; PURPOSE.

(a) Findings.—Congress finds that—

(1) healthy populations of fish and other aquatic organisms depend on the conservation, protection, restoration, and enhancement of aquatic habitats in the United States;

(2) aquatic habitats (including wetlands, streams, rivers, lakes, estuaries, coastal and marine ecosystems, and associated riparian upland habitats that buffer those areas from external factors) perform numerous valuable environmental functions that sustain environmental, social, and cultural values, including recycling nutrients, purifying water, attenuating floods, augmenting and maintaining stream flows, recharging ground water, acting as primary producers in the food chain, and providing essential and significant habitat for plants, fish, wildlife, and other dependent species;

(3) the extensive and diverse aquatic habitat resources of the United States are of enormous significance to the economy of the United States, providing—

(A) recreation for 44,000,000 anglers;

(B) more than 1,000,000 jobs and approximately \$125,000,000,000 in economic impact each year relating to recreational fishing; and

(C) approximately 500,000 jobs and an additional \$35,000,000 in economic impact each year relating to commercial fishing;

(4) at least 40 percent of all threatened species and endangered species in the United States are directly dependent on aquatic habitats;

(5) certain fish species are considered to be ecological indicators of aquatic habitat quality, such that the presence of those species in an aquatic ecosystem reflects high-quality habitat for other fish;

(6) loss and degradation of aquatic habitat, riparian habitat, water quality, and water volume caused by activities such as alteration of watercourses, stream blockages, water withdrawals and diversions, erosion, pollution, sedimentation, and destruction or modification of wetlands have—

(A) caused significant declines in fish populations throughout the United States, especially declines in native fish populations; and

(B) resulted in economic losses to the United States;

(7)(A) providing for the conservation and sustainability of fish and other aquatic organisms has not been fully realized, despite federally funded fish and wildlife restoration programs and other activities intended to conserve aquatic resources; and

(B) that conservation and sustainability may be significantly advanced through a renewed commitment and sustained, cooperative efforts that are complementary to existing fish and wildlife restoration programs and clean water programs;

(8) the National Fish Habitat Action Plan provides a framework for maintaining and restoring aquatic habitats to ensure perpetuation of populations of fish and other aquatic organisms;

(9) the United States can achieve significant progress toward providing aquatic habitats for the conservation and restoration of fish and other aquatic organisms through a voluntary, nonregulatory incentive program that is based on technical and financial assistance provided by the Federal Government;

(10) the creation of partnerships between local citizens, Indian tribes, Alaska Native organizations, corporations, nongovernmental organizations, and Federal, State, and tribal agencies is critical to the success of activities to restore aquatic habitats and ecosystems;

(11) the Federal Government has numerous regulatory and land and water management agencies that are critical to the implementation of the National Fish Habitat Action Plan, including—

(A) the United States Fish and Wildlife Service;

(B) the Bureau of Land Management;

(C) the National Park Service;

(D) the Bureau of Reclamation;

(E) the Bureau of Indian Affairs;

(F) the National Marine Fisheries Service;

(G) the Forest Service;

(H) the Natural Resources Conservation Service; and

(I) the Environmental Protection Agency

Source is <http://www.gpoaccess.gov/bills/index.html>

Searched database by keyword = "fish"

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

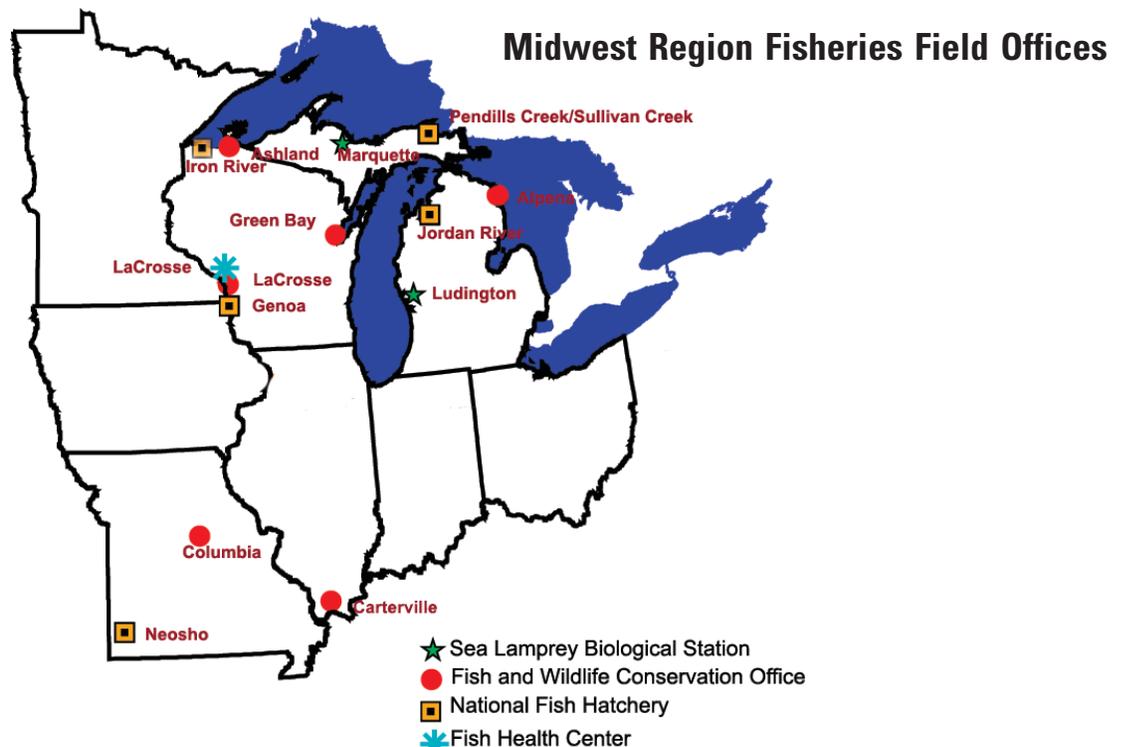
technical expertise to other Service programs addressing contaminants, endangered species, federal project review and hydro-power operation and relicensing; evaluate and manage fisheries on Service lands; and, provide technical support to 38 Native American tribal governments and treaty authorities.

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 Contacts

Mike Weimer (mike_weimer@fws.gov)

Michigan

Alpena Fish and Wildlife Conservation Office
Federal Building; 145 Water Street
Alpena, MI 49707
Scott Koproski (scott_koproski@fws.gov)
989/356-3052
Area of Responsibility (Michigan, Ohio)

Jordan River National Fish Hatchery
6623 Turner Road
Elmira, MI 49730
Roger Gordon (roger_gordon@fws.gov)
231/584-2461

Ludington Biological Station
229 South Jebavy Drive
Ludington, MI 49431
Jeff Slade (jeff_slade@fws.gov)
231/845-6205

Marquette Biological Station
3090 Wright Street
Marquette, MI 49855-9649
Katherine Mullett (katherine_mullett@fws.gov)
906/226-1235

Pendills Creek/Sullivan Creek
National Fish Hatchery
21990 West Trout Lane
Brimley, MI 49715
Curt Friez (curt_friez@fws.gov)
906/437-5231

Missouri

Columbia Fish and Wildlife Conservation Office
101 Park Deville Drive; Suite A
Columbia, MO 65203
Tracy Hill (tracy_hill@fws.gov)
573/234-2132
Area of Responsibility (Iowa, Missouri)

Neosho National Fish Hatchery
East Park Street
Neosho, MO 64850
David Hendrix (david_hendrix@fws.gov)
417/451-0554

Illinois

Carterville Fish and Wildlife Conservation Office
9053 Route 148, Suite A
Marion, Illinois 62959
Rob Simmonds (rob_simmonds@fws.gov)
618/997-6869
Area of Responsibility (Illinois, Indiana, Ohio)

Wisconsin

Ashland Fish and Wildlife Conservation Office
2800 Lake Shore Drive East
Ashland, WI 54806
Mark Brouder (mark_brouder@fws.gov)
715/682-6185
Area of Responsibility (Michigan, Minnesota, Wisconsin)

Genoa National Fish Hatchery
S5689 State Road 35
Genoa, WI 54632-8836
Doug Aloisi (doug_aloisi@fws.gov)
608/689-2605

Green Bay Fish and Wildlife Conservation Office
2661 Scott Tower Drive
New Franken, WI 54229
Mark Holey (mark_holey@fws.gov)
920/866-1717
Area of Responsibility (Michigan, Wisconsin)

Iron River National Fish Hatchery
10325 Fairview Road
Iron River, WI 54847
Dale Bast (dale_bast@fws.gov)
715/372-8510

LaCrosse Fish Health Center
555 Lester Avenue
Onalaska, WI 54650
Becky Lasee (becky_lasee@fws.gov)
608/783-8441

LaCrosse Fish and Wildlife Conservation Office
555 Lester Avenue
Onalaska, WI 54650
Pamella Thiel (pam_thiel@fws.gov)
608/783-8431
Area of Responsibility (Illinois, Iowa, Minnesota, Wisconsin)

Fish Tails

“Fish Tails” includes articles that are included in field station reports that are not published in the “Conservation Briefs.” These articles are categorized by focus area and includes the article title, author and field station. The website link, where the full article can be viewed, is highlighted in blue type.

Partnerships and Accountability

- La Crosse Fish Health Center attends Nucleospora salmonis meeting
 - Eric Leis, La Crosse FHC
- Legislative Branch Shoots to the River! Newly Appointed Resource Committee staffer tours Genoa
 - Doug Aloisi, Genoa NFH
- Wisconsin Department of Natural Resources and Fish and Wildlife Service have Annual Coordination Meeting
 - Corey Puzach, La Crosse FHC

Aquatic Species Conservation and Management

- La Crosse FHC conducts Fall Hatchery Inspection at Iron River NFH
 - Ryan Katona, La Crosse FHC

Aquatic Invasive Species

-

Public Use

- Big Muddy, Big Race
 - Joe McMullen and Brian Elkington, Columbia FWCO
- Facts, Fun and “EngFish”
 - Heidi Keuler, La Crosse FWCO
- It's Dinner Time!
 - Carey Edwards, Iron River NFH
- La Crosse FHC Participates in Youth Outdoor Fest
 - Eric Leis and Sarah Bauer, La Crosse FHC

Cooperation with Native Americans

- La Crosse FHC conducts Tribal Hatchery Inspection
 - Corey Puzach, La Crosse FHC

Leadership in Science and Technology

- Fish Health Fishes on Friday
 - Sarah Bauer, La Crosse FHC
- La Crosse Fish Health Center Implements Quality Assurance Quality Control
 - Sarah Bauer, La Crosse FHC

Aquatic Habitat Conservation and Management

- Columbia FWCO Moving Forward on ARRA Projects
 - Brian Elkington and Tracy Hill, Columbia FWCO

Workforce Management

- A New Addition to the Iron River National Fish Hatchery
 - Carey Edwards, Iron River NFH
- Equal Employment Opportunity/Diversity Training
 - Terrence Ott, La Crosse FHC
- Where Can I Learn About GPS?
 - Mark Corio, Columbia FWCO



-West Virginia DNR

The West Virginia Department of Natural Resources adopted Genoa National Fish Hatchery's mussel cage design and produced these endangered mussels in cages at this boat dock.

Partnering With the West Virginia Department of Natural Resources