

# Restoring the Great Lakes

*Success Stories from  
the 2015 Field Season*



The *Great Lakes Restoration Initiative* continues to be an incredible journey.  
Watch the video at [fws.gov/GLRI](http://fws.gov/GLRI)

# Welcome!

Dear Reader,

We hope our sixth edition of *Restoring the Great Lakes* finds you well. We've been busy since we last visited with you about the accomplishments of our staff and our partners. As always, we are proud to share our story of conservation with you.

The Great Lakes Restoration Initiative continues to transform the region and foster collaboration. Through our 2015 interagency agreement with the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service received more than \$41 million to support new and ongoing Great Lakes projects. In total, we have received more than \$271 million over the past six years.

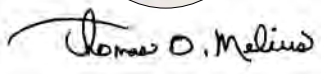
As we move forward with the implementation of the second GLRI Action Plan, we are starting to see the tangible returns on our conservation investments. Lake trout, a central focus of our Great Lakes stocking efforts for decades, are making a resurgence. Lake sturgeon are finding their way back to historic breeding grounds thanks to time and energy spent on removing barriers to fish passage. We're putting up roadblocks to invasive plants and animals, and finding better ways to curtail the movement of invasive animals that already have a foothold in our waters. Polluted areas are getting cleaned up. Everywhere you look great things are happening because of the Great Lakes Restoration Initiative.

Whether you are a resident or visitor to the Great Lakes, it is easy to become captivated by the natural beauty of the area. We invite you out to our national wildlife refuges and national fish hatcheries to learn more about the work that we do and the people who make it happen. Our GLRI supported projects in the Great Lakes reflect the passion and hard work of our staff. Come witness it for yourself.

We look forward to seeing you!

Warm regards,



  
Tom Melius  
Regional Director, Midwest Region



  
Wendi Weber  
Regional Director, Northeast Region



# Great Lakes RESTORATION



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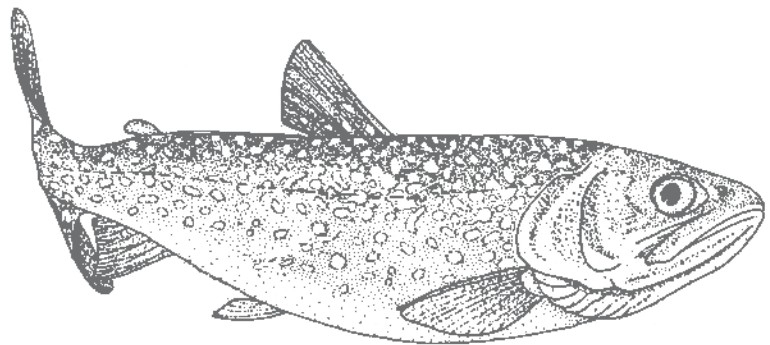
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## U.S. Fish & Wildlife Service

# Great Lakes Restoration Initiative (GLRI)



*Bird and bat radar unit. USFWS*



*Lake trout restoration. USFWS*



*Fish passage. USFWS*



*Protecting and restoring bird habitat. USFWS*

### Why save the Great Lakes?

Comprised of more than 10,000 miles of coastline and 30,000 islands, the Great Lakes provide drinking water, transportation, power and recreational opportunities to the 30 million citizens who call the Great Lakes Basin “home.” Fishing, hunting, and wildlife watching in the Great Lakes generate almost \$18 billion in annual revenue. As the largest group of fresh water lakes on Earth, the Great Lakes hold 95 percent of the United States’ surface fresh water. Unfortunately, years of environmental degradation has left the Great Lakes in need of immediate on-the-ground action to save this precious resource for generations to come.

### What is the Great Lakes Restoration Initiative?

The Great Lakes Restoration Initiative (GLRI) is a driver for environmental action in the Great Lakes. Building upon strategic recommendations for how to improve the Great Lakes ecosystem presented in the Great Lakes Regional Collaboration Strategy of 2005, President Obama’s FY 2010 budget invested \$475 million for GLRI. Funding decreased to \$300 million in FY 2011 through FY 2015. GLRI represents a collaborative effort on behalf of the U.S. Environmental Protection Agency and 15 other federal agencies, including U.S. Fish and Wildlife Service, to address the most significant environmental concerns of the Great Lakes.

### What is the USFWS’s role in the Great Lakes Restoration Initiative?

The Service facilitates the implementation of GLRI Action Plan priority programs, projects and activities to protect, restore, and maintain the Great Lakes ecosystem. Through an interagency agreement with the U.S. Environmental Protection Agency, the Service was allocated approximately \$69 million in FY 2010, \$37.4 million in FY 2011, \$43.6 million in FY 2012, \$40.5 million in FY 2013, \$49 million in FY 2014 and more than \$41 million in FY2015 to work on projects in the following focus areas:

- **Toxic Substances and Areas of Concern (AOCs):** Years after pollution stops persistent pollutants can remain in the environment, often trapped in sediments below the surface of the water. The areas of the Great Lakes Basin most severely impacted by these pollutants are known as Areas of Concern (AOCs). Service will work to restore and protect aquatic ecosystems in the Great Lakes from the threat of persistent pollutants. In addition, the Service is initiating an effort to address the looming threat of emerging contaminants, such as hand sanitizers, pharmaceuticals, and personal care products, in the Great Lakes.

- **Invasive Species:** More than 180 non-native species are established in the Great Lakes. The most invasive of these reproduce and spread, ultimately degrading habitat, out-competing native species, and disrupting food webs. Service activities will work to control and eradicate harmful non-native species in the Great Lakes. In FY 2015 \$4 million in GLRI funding was allocated to the Service to work specifically on Asian carp control and management, with an additional \$4.1 million allocated for state projects.

- **Habitat and Wildlife Protection and Restoration:** From climate change to increasing development activities along the shores of the Great Lakes, a multitude of threats are affecting the health of the Great Lakes habitats and native wildlife. Service projects will work to identify, restore, and protect important habitat for the area’s fish and wildlife.

- **Foundations for Future Restoration Actions:** The Service will foster climate resiliency in GLRI-funded projects, educate the next generation about the importance of the Great Lakes to fish, wildlife, plants and people, and continue a science-based adaptive management approach for new and ongoing projects.

**Want more information?**  
Go to <http://www.fws.gov/GLRI>

**GREAT LAKES RESTORATION INITIATIVE**



*Piping plover species recovery.* USFWS



*Conservation of Great Lakes islands and coasts.* USFWS



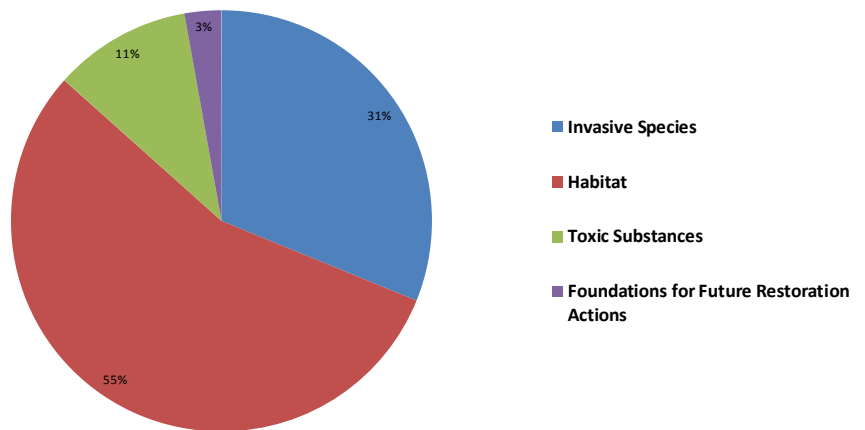
*Contaminants of emerging concern research.* USFWS

**Proud Partner**

The U.S. Fish and Wildlife Service is a proud partner in the implementation of the Great Lakes Restoration Initiative. Working with our conservation partners and utilizing our field based organization; we help to bring positive environmental change to the Great Lakes region.



**FY 2015 Distribution of USFWS Funding by Focus Area**



*Diversity and the Great Lakes: GLRI represents the collaborative efforts of a diverse group of stakeholders. Pictured above are State, Federal and Tribal representatives who participated in the Great Lakes Regional Collaboration Conveners Meeting held in Chicago, Ill. in December of 2004. This group is just a sub-set of the more than 1,500 stakeholders who helped identify needed priority actions in the Great Lakes, many of which are now being implemented through the Great Lakes Restoration Initiative.* USFWS

**Want more information?  
Go to <http://www.fws.gov/GLRI>**

# The Magna Carpa

By Katie Steiger-Meister

In our hunt for a solution to curtail the spread of Asian carp in the Great Lakes basin, the U.S. Fish and Wildlife Service continues to research and enhance our fish capture techniques. One result of our innovative efforts is a fishing vessel designed to detect and remove all sizes of silver carp from the water. We call our new creation the Magna Carpa.

Decades after first being imported into the southern United States, the silver carp is now found throughout much of the Mississippi River and its tributaries. An invasive Asian carp with no natural predators in our country's waterways, the fast-growing silver carp outcompetes native fish for food. Silver carp are also dangerous to humans. When agitated by the sound of a boat motor silver carp jump out of the water with enough force to injure recreational boaters.

The jumping behavior of silver carp creates a unique challenge that standard river fishing vessels are not



*When not in use, the Paupier nets on the Magna Carpa lift out of the water like wings.* Katie Steiger-Meister, USFWS

typically equipped to handle. With their hard hats in place, Service staff stepped up to take on the challenge.

The design and construction of the Magna Carpa was spearheaded by the Columbia Fish and Wildlife Conservation Office located in Missouri. Building off of ocean system technology, staff modified a net originally designed to catch jumping white shrimp. Known as a Paupier net, it moves on winches in and out of the water like wings and fishes the surface of the water down to a depth of 10 feet.

The net is used in conjunction with electric fields created by two electrified curtains of wire cables attached to chains placed in the water on either side of the boat. The electricity stuns silver carps, which then passively float into the Paupier nets.

For the youngest Asian carps, the Magna Carpa is equipped with a mamou net. A type of surface trawl, it is effective at capturing the small young-of-the-year Asian carp that other netting techniques can miss.

The end result of countless hours of research, engineering and building is a silver carp capturing machine. The modifications to the Magna Carpa allow it to efficiently and effectively catch thousands of silver carp in a single day, supporting our efforts to detect, remove and control Asian carp.

The Magna Carpa is a primary example of how the U.S. Fish and Wildlife Service, with the support of the Great Lakes Restoration Initiative, is pioneering new technologies in the fight against Asian carp. We will continue to explore new and innovative net modifications as we work to stop the spread of Asian carp in our nation's waters. 🐟



*The Magna Carpa was developed by the Columbia Fish and Wildlife Conservation Office located in Columbia, Missouri.* Katie Steiger-Meister, USFWS

# Lake Trout Restoration a Success!

By Kurt Schilling and  
Tim Smigielski



Lake trout are starting to make a comeback! Anglers and biologists are finding wild lake trout with more frequency, indicating that lake trout are successfully reproducing. The Great Lakes Restoration Initiative has played a key role in lake trout restoration efforts by supporting increases in the quality and quantity of stocked lake trout. Additional funding has provided opportunities for more intensive assessment and evaluation of lake trout populations and restoration strategies.

All hatchery lake trout currently stocked into the Great Lakes receive a fin clip and a coded wire tag in their snout. The marking process is directly supported by GLRI. When these fish are recaptured by biologists or anglers, the marks and tags indicate that the fish originated at a fish hatchery. When lake trout without marks or tags are captured, it indicates that the fish are from the wild and are the result of natural reproduction. The more natural fish that are produced, the closer a population is to restoration. Greater



A truck loaded with young lake trout from a national fish hatchery prepares to transfer fish to the Service's Great Lakes stocking vessel, the M/V Baird. USFWS

numbers of wild born fish mean less hatchery reared lake trout are needed to supplement the population. The outcome of successful lake trout restoration is the presence of self-sustaining populations and cessation of the lake trout stocking. For Lake Huron, this day may soon be at hand.

Annual lake trout surveys conducted in Lake Huron recently revealed that more than 60 percent of the fish collected were of wild origin.



Fish biologists from the Alpena Fish and Wildlife Conservation Office haul in a gill net during lake trout assessments completed on Lake Huron. USFWS

Currently, at least 10 different year classes are present in the lake wide population and nearly two thirds of the fish less than 24 inches in length were wild lake trout. Survey results are so good in Lake Huron that fisheries managers are currently considering the parameters that would lead to the cessation of stocking!

Lake Huron is not alone in its success. For the first time in more than 50 years fisheries managers are seeing positive signs in Lake Michigan. Multi-agency fall spawning surveys in some areas of the Lake Michigan found up to 22 percent of lake trout captured were wild born. Though

the presence of self-sustaining lake trout populations in Lake Michigan is still far from complete, restoration progress is now evident.

Knowing what strains of hatchery reared lake trout are successful in the wild is a key component to restoration. Fisheries habitat utilization studies funded by GLRI are enabling biologists across the Great Lakes to determine which hatchery strains survive the best and contribute the most to lake

trout populations. This, along with evaluations on the movements and survival of stocked fish and estimates on the amount of natural reproduction, will continue to be integral to restoration efforts.

Stocking fish into the Great Lakes is only one element of lake trout restoration. Complementary efforts include enhancing lake trout food sources and reducing threats from invasive species, such as sea lamprey. These efforts, with support from the Great Lakes Restoration Initiative, continue to be critical in sustaining the current lake trout restoration results. 🐟

# Searching for Wild Lake Sturgeon in the Lower Great Lakes!



*Staff from the Lower Great Lakes Fish and Wildlife Conservation Office and Northeast Fishery Center searching for lake sturgeon in Lake Erie. USFWS*

*By Catherine Gatenby*

Lake sturgeon nearly disappeared from the Great Lakes 100 years ago. With support from the Great Lakes Restoration Initiative, the U.S. Fish and Wildlife Service's Lower Great Lakes Fish and Wildlife Conservation Office and the Northeast Fishery Center, along with the New York State Department of Environmental Conservation, the U. S. Geological Survey, Shedd Aquarium and others are diving deep into sturgeon waters to find the answers we need to help this ancient species of fish.

While the quest for lost treasure chests of information on the lake sturgeon might not be fodder for an Indiana Jones movie, discovering the secrets of their biology may be more valuable than gold to our fish biologists. Their pursuit to uncover the secrets of the lake sturgeon involves diving into the blue waters of the Niagara River and some breathtaking adventures on the expansive Great Lakes. It takes a dedicated team of scientists, engineers,

boat captains and barge operators working together to restore the lake sturgeon and their habitat.

Far less is known about lake sturgeon in Lake Erie and Lake Ontario than in the other Great Lakes. Questions we ask ourselves as we embark on this adventure include, how big are the populations? Where do lake sturgeon spend their lives? Where is the best habitat for spawning and feeding? What do they eat? How many adults are reproducing? And the ultimate question we aim to answer is, how long before we can consider the population healthy and self-sustaining in the Great Lakes?

"We collect really valuable information by tagging wild fish. We learn about their movement, diets, hormone levels and genetic diversity which helps us answer these questions," says Dr. Dimitry Gorsky, Lower Great Lakes Fish and Wildlife Conservation Office.

Biologists are observing increasing numbers of lake sturgeon in many remnant populations across the Great Lakes.

"Over the past four years, we have captured and uniquely marked more than 600 individual fish. We used to catch between 15 to 20 fish per year just 10 years ago," reports Dr. Gorsky, "but we are steadily capturing more lake sturgeon, more than 100 fish each year. This summer, we have already captured about 200 fish and are on our way to a record year."

Of interest is the age of the sturgeon being captured.

"Most are less than 25 years old, suggesting that this ongoing recovery is in response to large scale actions that took place many years ago," says Dr. Gorsky. "The first of which may be the Clean Water Act of 1972, which set the table for preventing and removing pollution



from our waters. Also in the 1970s, some U.S. states along with the Province of Ontario, Canada enacted fishing closures on lake sturgeon to protect what fish were remaining.”

The life cycle of lake sturgeon means that it may be years before the impacts of management actions will be known.

“For species that delay reproduction, such as the lake sturgeon which doesn’t reproduce until it’s at least 12 to 25 years of age, it would naturally take decades to see an increase in population growth assuming the causes for the decline have been abated,” says Dr. John Sweka, Northeast Fishery Center. The combination of setting harvest limits and improvements in water and habitat quality is creating a favorable environment for lake sturgeon recovery.

“It’s amazing that actions begun so long ago continue to be linked to improvements in our Great Lakes,” remarked Dr. Gorsky. “Perhaps the greatest secret lake sturgeon may have revealed to us is that recovery takes time.”



*Juvenile lake sturgeon.*  
Joanna Gilkeson, USFWS

*The Harpersfield Covered Bridge and barrier in the Grand River, Ohio is positioned within the Great Lakes Basin near Lake Erie. This barrier blocks invasive sea lamprey from traveling through the Grand River to Lake Erie. The Collaborative will work to reconnect river roads and healthy native species populations while controlling invasives through strategic and collaborative planning.* Joanna Gilkeson, USFWS

## Reconnecting River Roads of the Great Lakes

*By Joanna Gilkeson and Katie Steiger-Meister*

The once free-flowing waterways of the Great Lakes Basin are today constrained by 275,000 barriers, many of which are structures like dams and culverts. Though intended for hydropower or flood control, the presence of these barriers has had unintended consequences to humans, fish and wildlife. Because of these obstructions, thousands of waterways in the Great Lakes Basin are impassable to fish and animals trying to reach important habitat. Blocked waterways also limit use by recreationalists like boaters, kayakers and anglers.

The need for many river barriers no longer exists, creating the opportunity for barrier removal. When removal is not an option, the technology exists to upgrade structures to allow for fish to pass around them. Reconnecting river roads improves habitat for fish and wildlife, and enhances outdoor recreation experiences. With 275,000 barriers identified for potential removal, the question is where to begin?

Rallied together by the Upper Midwest and Great Lakes Landscape Conservation Cooperative, a mosaic of tribal, federal, state, academic

and nonprofit groups is working together to determine which rivers and streams are priorities for restoration. The intent of the collaborative is to use a holistic approach to reconnecting river roads that takes into account the restoration opportunities and needs of the entire Great Lakes Basin. A lot hangs in the balance.

For more than a century obstructed waterways have impeded the survival of iconic native fish species, such as the lake sturgeon and brook trout. Unable to reach historic spawning grounds or food sources, their populations have rapidly declined. Ripple effects include negative repercussions to local economies that depend on outdoor tourism.

The vastness of the Great Lakes Basin, in which people, fish and wildlife are interconnected, underscores that no single entity can tackle the issue alone. With support from the Great Lakes Restoration Initiative, the members of the Upper Midwest and Great Lakes Landscape Conservation Cooperative are bringing their unique expertise and resources to the collaborative. Together, they will create a plan for how to best start reconnecting the river roads of the Great Lakes Basin.



# Setting the Stage for Sturgeon Spawning

By Zy Biesinger and  
Catherine Gatenby



*The dam below Cayuga Lake prevents lake sturgeon migration to good spawning grounds. USFWS*

As the sun rises over the Seneca River in western New York, the U.S. Fish and Wildlife Service prepares to build an underwater stage for lake sturgeon. The project was made possible with support from the Great Lakes Restoration Initiative and partners, including the U.S. Geological Survey, the New York Department of Environmental Conservation and Canals Corp., and the Finger Lakes Lake Ontario Watershed Protection Alliance.

Lake sturgeon are one of New York's largest freshwater fish, which nearly disappeared from the region in the early 1900s. Some good news is that we are beginning to see signs of recovery thanks to environmental protections through the Clean Water Act and by the state of New York, but population numbers still remain far below historic levels. One reason for persistently low population size is limited access to suitable spawning reef habitat. Lake sturgeon need fast flowing water over a clean rocky bottom for successful spawning.

*Photo insert above:  
Lake sturgeon face with barbels.*  
USFWS

Adult lake sturgeon return to the place of their birth to spawn. Like preparing for a performance, the males congregate together along rocky shoals of fast flowing water in preparation for spawning. We call this behavior "staging." Lake sturgeon returning to the Seneca River must choose which arm, east or west, to continue their upstream migration, where the river flows around an island. Instinct tells them to follow the faster flowing water, which they do. Unfortunately, that leads to an impassable dam, that regulates the river's flow from Cayuga Lake, restricting their access to suitable spawning habitat. In a move to try and solve this problem for spawning sturgeon, we joined forces with our partners to create a spawning reef located below the dam in the Seneca River.

To choose the best location for constructing the spawning reefs, we mapped three important characteristics of suitable habitat for lake sturgeon. First, we used sidescan sonar to map the river bottom and get pictures of the mix of

mud, rubble, and woody debris that can comprise spawning areas. Then we used multibeam sonar to map the changes in river depth. We also mapped water flow using an acoustic doppler current profiler. With all this information in hand, we identified three sites most likely to sustain sturgeon spawning activity. In the fall of 2014, with the help of partners we added 1,200 tons of stone covering half an acre and built three sturgeon spawning reefs.

Projects like this one are part of the strategy for recovering lake sturgeon, which historically occurred from Canada to Alabama. Sturgeon spawning habitat enhancement projects have been successful in other rivers, such as in the Detroit, St. Clair and St. Lawrence.

As expected, lake sturgeon returned to the Seneca River in the spring of 2015 during spawning season. We are hopeful that they will use the reefs as we anxiously await the fall months when we have completed our evaluation of the number of young larval fish found in the area. 🐟

# GLRI Funding Boosts Efforts to Restore Green Bay's Cat Islands

By Georgia Parham



*Work is underway to create habitat for water birds and other wildlife as part of the Cat Islands restoration effort.*

Gary Van Vreede, USFWS

Migrating birds following the west shore of Wisconsin's Green Bay funnel in to the southern tip of the bay where shallow waters and extensive beds of aquatic vegetation provide a major stopover site. The southern edge of Green Bay once contained one of the largest, most diverse wetland habitats in the Great Lakes. Here, waterfowl and other migrating birds, as well as water birds, furbearers, invertebrates and native fishes, find much needed habitat. Cat Islands once provided nesting habitat for 13 different species of colonial nesting water birds, the highest species diversity of any island in the Great Lakes.

Protecting this delicate ecosystem were the Cat Islands, a chain of barrier islands which shielded the shoreline from waves and storms. But during extremely high water levels in the mid-1970s, a series of severe storms during ice breakup resulted in catastrophic erosion and ice damage to the islands. While remnant islands and wetlands still remain, most of this habitat has been lost or degraded due to erosion, affecting both habitat and water quality.

In 1988, the Cat Island chain was identified as the top priority for habitat restoration in Green Bay. In 2012, after nearly 25 years of



*Common terns chicks hatched on a nesting platform.* Gary Van Vreede, USFWS

planning and securing funding, the Brown County Port and Resource Recovery Department began reconstruction of the first portion of the Cat Island chain with funding from a \$1.5 million U.S. Environmental Protection Agency Great Lakes Restoration Initiative grant. In 2014, with cooperation from the U.S. Army Corps of Engineers, a 2.5-mile wave barrier extending into the bay, as well as side dikes for three islands, were completed.

The chain includes three islands with a connecting dike that serves as a wave barrier. The islands will be filled over the next 20 to 30 years by the Corps of Engineers using clean dredge material from the maintenance of the Green Bay Harbor, a beneficial reuse of the material.

The goal is to reconstruct the Cat Islands to protect and restore

1,225 acres of shallow water and wetland habitats. Restoring the islands' habitat will benefit sport and commercial fisheries, waterfowl, water birds and shorebirds, and other wildlife. The wave barrier will protect the barrier islands and restored wetlands from future storm and ice damage.

Local partners are planning habitat restoration for shorebirds, piping plovers, common terns, fish and waterfowl. An endangered whooping crane has been spotted on site. The benefits of restoration have already been seen in improved water quality, re-vegetation of near shore areas and an increase in waterfowl species.

This year's restoration work has been supported by the U.S. Fish and Wildlife Service through \$210,000 in GLRI Coastal funds, along with technical support, and \$1.1 million in Natural Resource Damage Assessment settlement funds from the Lower Fox River/Green Bay Natural Resources Trustee Council. Efforts are also supported by the U.S. Army Corps of Engineers, the Port of Green Bay, the state of Wisconsin, Brown County, U.S. Environmental Protection Agency, UW Sea-Grant, UW-Green Bay and 14 terminal operators. 🐦

# Rearing Sturgeon Supports Tribal Partnerships

By Alejandro Morales and  
Katie Steiger-Meister

The Match-E-Be-Nash-She-Wish Band of Pottawatomi, also known as the Gun Lake Tribe, believe in the traditional concept that any decision made today should be ecologically sustainable for the next seven generations. To ensure that future generations can experience the wonder of seeing lake sturgeon in their native waters, the Gun Lake Tribe joined a partnership with the U.S. Fish and Wildlife Service, Michigan Department of Natural Resources and the Kalamazoo River Chapter of Sturgeon for Tomorrow to rear and release juvenile lake sturgeon into the Kalamazoo River in Michigan.

“Sturgeon, or Nmé in Pottawatomi, is culturally important to the tribe as the fish represents an animal clan in traditional beliefs. Sturgeon clan people have spiritual knowledge offered as guidance to others and they live to an old age, just like lake sturgeon,” says James Nye, tribal



*A young girl releases a juvenile lake sturgeon reared in the streamside rearing unit.* Katie Steiger-Meister, USFWS



*Two young boys view the holding tank inside the streamside rearing unit where small lake sturgeon are kept.* Katie Steiger-Meister, USFWS

spokesperson. “The rehabilitation of lake sturgeon is a reflection of the tribe’s present day progression as a community and a tribal government.”

Since April 2011 the Gun Lake Tribe has worked with the Michigan DNR and the Service’s Genoa National Fish Hatchery and Green Bay Fish and Wildlife Conservation Office to operate a small white trailer retrofitted to be a sturgeon hatchery on the Kalamazoo River. The goal of the project is to raise young lake sturgeon in a protected environment during the early months of their life while exposing them to the waters where they were spawned. After a season of healthy growth they are released back into the river, with the hope that as adults they will return to the Kalamazoo River to spawn.

Lake sturgeon populations are hard to recover because over the past 100 years lake sturgeons have faced many environmental stressors including: overfishing, inhabitable waters and loss of habitat. Once populations drop, intensive recovery efforts are needed to increase the survival rates of juvenile lake sturgeons. Environmental stressors are not the only disadvantage. Most juvenile lake sturgeons do not mature to spawn and reproduce until they are

12 to 25 years of age. Even though the recovery efforts were initiated in 2011, observers will not see a second generation until 2023 or 2026. Fingerlings that are released into the Kalamazoo are usually between 8 to 10 inches in length. Once the fingerlings are large enough to be released in the Kalamazoo River, the partners celebrate with a gathering and release the young lake sturgeon together.

“This partnership among multiple agencies is a good example of how we can all come together and restore an imperiled species,” says Elizabeth Binoniemi-Smith, Gun Lake Tribe Environmental Director.

This rearing facility also supports and facilitates the Service’s tribal trust responsibilities. As a federal agency the Service is committed to helping federally-recognized tribes in meeting their natural resource management goals and maximizing their natural resource capacity. The Kalamazoo River hatchery is the sixth streamside facility on Lake Michigan supporting the recovery of the lake sturgeon. In addition to partner support, the Kalamazoo Streamside Rearing Unit was made possible by the Great Lakes Restoration Initiative. 🐟

# Students Restore Urban Landscapes Along the Buffalo River Area of Concern

By Catherine Gatenby

For two years, biologists with the Lower Great Lakes Fish and Wildlife Conservation Office have worked with local school children and volunteers to restore habitat at a historic site called Silo City along the Buffalo River Area of Concern in Buffalo, New York. The site was invaded by nuisance plant species and suffering from environmental contamination and habitat degradation.

To foster a deeper understanding of what a healthy habitat should look like, students played a key role in restoration efforts. Students from McKinley High School and Tapestry Charter School planted a native garden along the riverfront after invasive Japanese knotweed



*Monarch butterfly caterpillar found on a milkweed plant planted at Silo City by local children. USFWS*

was cleared away. Project partners included Silo City, the Landscape and Urban Design Department from State University of New York at Buffalo, People United for Sustainable Housing Buffalo, and the Great Lakes Experience friends group.

The Lower Great Lakes Office later teamed up with the Elmwood Village Charter School's 5th grade class and Girls Scouts from Daisy

Troop #13055 and Cadet Troop #31313 to create a pollinator garden in the upland area between the river and Lake Erie.

Later in the season, students partaking in Student, Nature and Photography programs hosted by the Lower Great Lakes Office and their partners returned to the project site. Participants were able to observe first hand how student actions created a healthy habitat for plants and animals. After one month, the area was lush with plants and flowers. In early August a monarch caterpillar was even observed on one of the milkweed plants growing in the garden.

By engaging local youth in exploring and restoring habitat in their urban backyards, the Service, with support from the Great Lakes Restoration Initiative, is helping to cultivate environmental awareness, develop connections to outdoor spaces, and foster future land stewards for an ever-growing urban America. The projects also help to restore habitat for migrating fish, birds and butterflies. The Silo City native habitat restoration area will serve as a public model for restoring urban habitat, and as an outdoor classroom to support environment-based curriculums in local schools. 🦋



*With help from fish habitat biologist, Betsy Trometer at Lower Great Lakes FWCO, local Girl Scouts are helping pollinators at the historic Silo City in Buffalo, NY. Seedlings of milkweed were grown by local students and Girl Scouts, and then planted in June with other native flowering plants. USFWS*

# Getting Connected at Ottawa National Wildlife Refuge

By Annette Trowbridge



*A water structure at Pool 2B can be open and closed, allowing for fish to move through.* USFWS

Once part of a vast network of 300,000 acres of coastal wetlands and riverine marshes, today less than 10 percent of the Lake Erie coastal wetlands exist. The U.S. Fish and Wildlife Service's Ottawa National Wildlife Refuge Complex, located on the southern shore of Lake Erie, conserves and protects a portion of the last remaining coastal wetlands. Most of those wetlands are isolated from Lake Erie by earthen dikes to protect from wave action and water exchange is restricted to evaporation and transpiration, which adversely affects aquatic connectivity, fisheries, water quality, and migratory birds. As a result, these wetlands no longer provide many of the valuable ecological functions associated with a coastal wetland.

Seeking ways to improve the habitat for trust resources, staff at Ottawa National Wildlife Refuge recognized the importance of reconnecting hydrologically isolated wetlands with Lake Erie to restore and enhance the wetland's ecosystem services. With the support of Great Lakes Restoration Initiative funding, two isolated refuge wetlands were reconnected with Crane Creek and Lake Erie.

Pools 2A and 2B were isolated from Lake Erie with earthen dikes since the 1940s. Pool 2B was the first to be reconnected through the installation of a water control structure in 2011. The structure, which can be opened and closed, allowed for free exchange of water and fish passage between Pool 2B and Crane Creek, a tributary of Lake Erie. Soon another water control structure was installed to connect Pool 2A to 2B, reestablishing a hydrologic connection between approximately 160 acres of refuge coastal wetlands and Lake Erie.

The ecological benefits of the project to trust resources are astounding. Less than one week after reestablishing connectivity between the two pools, longnose gar were found spawning in Pool 2A. The wetlands now function as a productive spawning ground and nursery area with notable shifts in the predominant ageclass of several species of fish, especially northern pike. Thirteen species of fish not previously found in the pools enter through the structure and actively use the reconnected wetland.

The refuge continues to observe increases in diversity and abundance

in the avian and vegetative communities resulting in significant improvements to the water quality and fish and wildlife habitats. In addition, there is now a means to have a greater range of water management options, which will help protect these rare coastal habitats and make them more resilient to climate change. Maintaining a hydrologic connection between diked and coastal wetlands allows fishes to use vegetated habitats regularly, reduces the concentration of nutrients in coastal waters, and maintains productive habitats for birds and other biota.

Reconnecting these wetlands was critical to achieving the Refuge goals to restore functional components of the Lake Erie marsh ecosystem, to provide benefits to endangered species, waterfowl, shorebirds, migratory songbirds, colonial waterbirds, fish, and other species of concern, and provide the public wildlife-dependent recreational opportunities. 🐾

*The U.S. Fish & Wildlife Service is a proud partner in the implementation of the Great Lakes Restoration Initiative. Share in the inspiration at: <http://www.fws.gov/glri/>.*



**U.S. Fish and Wildlife Service**

# Great Lakes Restoration Initiative



**This project is funded through the Great Lakes Restoration Initiative in joint effort with the U.S. Environmental Protection Agency and federal agencies to protect and restore the Great Lakes.**



For more information on Great Lakes Restoration Initiative Projects, please visit [www.fws.gov/GLRI](http://www.fws.gov/GLRI)

## Signs of Progress

All U.S. Fish and Wildlife Service field sites which receive Great Lakes Restoration Initiative funding will be marked by a sign similar to the one pictured above. Identifying our field sites is part of our interagency agreement with the U.S. Environmental Protection Agency. This funding requirement was design to increase public awareness and transparency with regard to the use of GLRI funding.

To learn more about other Service GLRI projects, please visit <http://www.fws.gov/glri/>

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**Printed: October 2015**



**Cover Photo:** *Monarch*, Jim Hudgins, USFWS