

U.S. Fish & Wildlife Service

Restoring the Great Lakes

*Success stories about the Great
Lakes Restoration Initiative*

Spring 2026



Great Lakes Restoration Initiative's impact

The Great Lakes Restoration Initiative (GLRI) is a driver for environmental action in the Great Lakes Basin, building upon strategic recommendations presented in the Great Lakes Regional Collaboration Strategy of 2005. GLRI is a collaborative effort of the U.S. Environmental Protection Agency and more than a dozen other federal agencies, including the U.S. Fish and Wildlife Service, to address the most significant environmental concerns of the Great Lakes.

The importance of the Great Lakes is evident when we look at the numbers:

- ▶ 20 million U.S. residents in the Great Lakes Basin rely on this natural resource for drinking water, transportation, power and recreational opportunities.
- ▶ 10,000 miles of coastline (more than 4,500 miles in the U.S.) and 30,000 islands.
- ▶ 90% of surface water in the U.S. and the largest group of freshwater lakes on Earth.
- ▶ The Great Lakes commercial, recreational and tribal fisheries are collectively valued at more than \$5.1 billion annually and support more than 75,000 jobs.

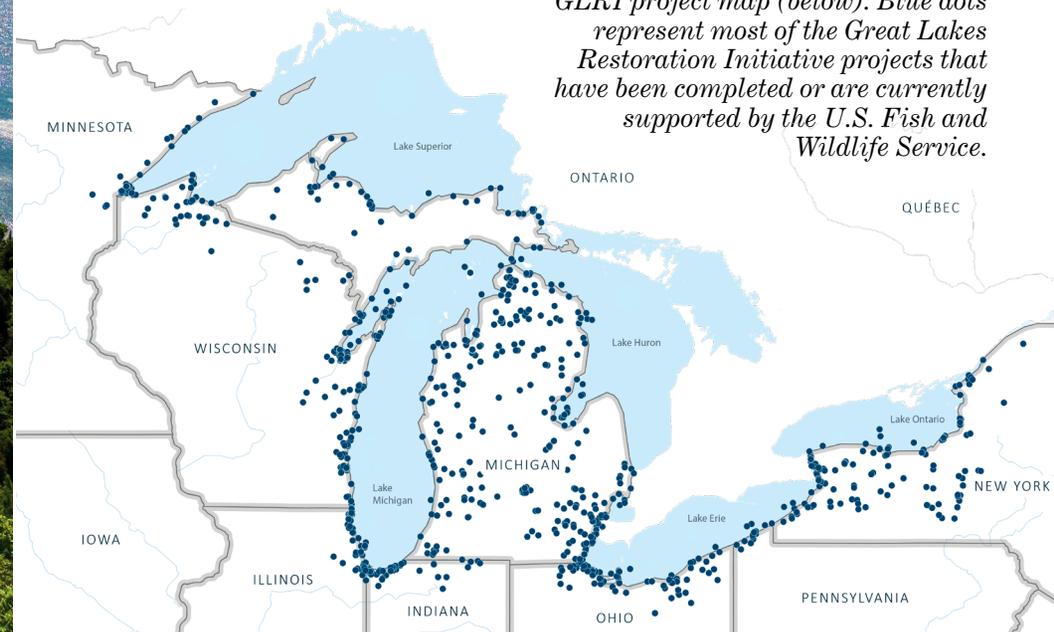
GLRI funding has enabled the Service and our partners to:

- ▶ Restore, protect and enhance more than 80,000 acres of coastal wetland and other habitats.
- ▶ Reopen more than 1,000 miles of Great Lakes tributaries.
- ▶ Implement projects on more than 11,500 acres of land and water to help control invasive species.

A view of Lake Superior from the Keweenaw Peninsula, Michigan (left).

Courtney Celley/USFWS

GLRI project map (below). Blue dots represent most of the Great Lakes Restoration Initiative projects that have been completed or are currently supported by the U.S. Fish and Wildlife Service.



Great blue heron along a wetland in Minnesota.

Courtney Celley/USFWS



Collaboration: The canvas for the Great Lakes comeback

For more than 150 years, the U.S. Fish and Wildlife Service has used the best available science to achieve excellence. From our National Fish Hatchery System to the National Wildlife Refuge System, we deliver our conservation mission for the benefit of the American people.

Within the Great Lakes region, we regularly employ data-driven strategies and 21st century technology to achieve the impactful conservation. Scientific advances are driving habitat improvements and species recovery, but we need more than scientific tools and technical expertise to deliver our mission. Landscape-level restoration in the Great Lakes Basin requires communication and coordination among tribal nations, state agencies, local communities, various organizations and other federal agencies.

The issues we face are complex and cut across jurisdictions, disciplines, organizations and boundaries.

Our agency plays an important and unique role in delivering the commitments of the Great Lakes Restoration Initiative. Approximately 70% of Great Lakes Restoration Initiative funds administered through the U.S. Fish and Wildlife Service, via the Environmental Protection Agency, support the efforts of external partners and agencies. Our partners broaden the reach and impact of our collective work by bringing a wide range of perspectives and connecting us to local communities.

Intentional collaboration transcends even the greatest challenges by inspiring pride in a shared legacy.

Opportunities for fishing, hunting and wildlife watching continue to be important economic drivers as these activities generate more than \$18 billion annually in the Great Lakes region. Today, we are nurturing waterways and water bodies to welcome home historic species like lake trout and lake sturgeon. We are addressing habitat fragmentation, which enables the recovery of threatened and endangered species. We are seeing successes in small towns and big cities across the watershed as Great Lakes communities turn toward their waterfronts rather than away.

As we look ahead, our commitment to building and deepening partnerships remains strong. Alongside our partners, we will continue to practice the art of landscape-scale restoration by blending tried-and-true methods with creative and innovative approaches.



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The enclosed highlights are only a small portion of the many successes achieved each year. If you'd like to learn more, please [visit FWS.gov/GLRI](https://www.fws.gov/GLRI).

*Lake Superior in
Michigan.*
Dawn Marsh

Using sound science to solve a Great Lakes mystery

State agencies are collaborating with the U.S. Fish and Wildlife Service and other partners to answer a question that has long vexed fisheries managers: *What happens to hatchery-raised fish after they're released into the Great Lakes?*

Background

Lake trout and cisco were once ecological linchpins of the Great Lakes, dominant predators and prey that helped to maintain balance in the food web. But overfishing, habitat degradation and the introduction of invasive species like sea lamprey and alewife devastated their populations by the mid-1900s. In response, government agencies turned to hatcheries to help fill the gap.

Importance

This work contributes to the success of hatchery stocking programs that are critical to native fish restoration.

Goals

Millions of lake trout and cisco have been stocked throughout the Great Lakes in the decades since their collapse, with mixed success. While some populations have shown signs of recovery, others remain stubbornly slow, and the goal of this work is to understand why.

GLRI funds at work

In 2025, biologists from the New York State Department of Environmental Conservation's Lake Erie Unit worked with the U.S. Fish and Wildlife Service's Lower Great Lakes

Fish and Wildlife Conservation Office to use acoustic telemetry to reveal the movements of tagged fish. Acoustic telemetry is a technology used to monitor the movement, survival, behavior and habitat use of fish and other aquatic species. Underwater receivers track tagged fish, allowing biologists to gather information about native fish including lake trout and cisco. These are key species for the \$5.1 billion Great Lakes fishery.

This project is part of a broader Great Lakes effort including our agency's Green Bay and Alpena fish and wildlife conservation office conducting parallel studies in Lake Michigan and Lake Huron, each focused on improving the success of hatchery stocking programs.

Partners

Tribal nations, state agencies, volunteers and a wide range of nongovernmental partners.

Visit [FWS.gov](https://www.fws.gov) to get the full story

[Wired for the Wild: Scientists use acoustic tracking to solve a Great Lakes mystery](#) by Denise Clay

*U.S. Fish and Wildlife Biologist
Dimitry Gorsky releases juvenile
lake trout into Lake Erie.*

Collin Farrell/USFWS



Giving lake sturgeon a strong start

U.S. Fish and Wildlife Service efforts in the Great Lakes Basin are part of a broader lake sturgeon restoration program across the waterscape of eastern and central North America. One important aspect is our early intervention as caretakers, giving new generations of the species a strong start.

Background

Collecting gametes and larval sturgeon for hatchery rearing are the two main ways we begin the annual cycle of restoration activities, which includes rearing more than 120,000 lake sturgeon in the summer for reintroductions in the fall. This bolsters existing remnant populations and reintroduces lake sturgeon into new areas of their historic range.

Importance

We take pride in our lake sturgeon restoration partnerships with tribes and states. Lake sturgeon are sacred to tribes, and states are working to restore them as part of their native fishery programs and as a valued recreational fishery.

Goals

In addition to collaborating with tribal nations and states to achieve mutual goals, we aim to re-establish lake sturgeon to the point that wild fish are reproducing enough to keep populations stable.

GLRI funds at work

Each spring, we join partners to collect gametes from spawning lake sturgeon and raise them in fish hatcheries during their most

vulnerable life stage. Most fertilized eggs are transported to Genoa National Fish Hatchery, which has one of the largest operations for lake sturgeon in the U.S., raising over 60,000 per year.

We also collect young sturgeon in their larval stage, when spawning has happened naturally. With water from natal streams continuously pumped into holding tanks, larval sturgeon are cared for in streamside rearing facilities by partners like the Little River Band of Ottawa Indians who pioneered the streamside rearing method. After a few months of growth and prior to being reintroduced, young sturgeon are implanted with tags for future monitoring to learn more about their survival needs.

In addition to partners, nine national fish hatcheries and about 20 of our fish and wildlife conservation offices take part in ongoing lake sturgeon restoration activities.

Partners

Tribal nations, state agencies, volunteers and a wide range of nongovernmental partners.

Visit [FWS.gov](https://www.fws.gov) to get the full story

[Giving lake sturgeon a strong start by Janet Lebson](#)

Despite growing up to eight feet long and weighing up to 200 pounds, lake sturgeon start as spiky fingerlings that predators love to eat. Scientists track juvenile sturgeon to learn how to improve their survival.

Colleen Andrews/USFWS



Marking lake trout for maximum impact

By mass marking fish, biologists can differentiate hatchery-raised from wild fish during surveys and can track survival, movement and growth. Since the U.S. Fish and Wildlife Service started the mass marking program 15 years ago, over 70 million lake trout have been tagged and stocked in the Great Lakes.

Background

In the mid-1900s, native lake trout populations were decimated in the Great Lakes by a perfect storm of stressors that included overfishing and invasive species like sea lamprey. However, after decades of work by countless partners, lake trout are making a comeback.

Importance

Monitoring and tracking fish is essential to understanding fish survival and the impact of recovery efforts and outcomes of management actions.

Goals

Biologists need accurate data to inform management of Great Lakes fisheries that annually generate billions of dollars for lakeside economies. Mass marking provides fish population data to inform management and improve returns on investment. This work aligns with our goals to reduce costs and maximize efficiency.

GLRI funds at work

For the last 15 years including 2025, our Green Bay office has deployed specially-designed trailers to federal and state hatcheries where biologists

circulate hatchery-raised fish through a series of tanks and tubes. Fish are implanted with coded wire tags and their adipose fins are clipped without ever leaving the water.

Fish are tagged and marked at the rate of up to 10,000 individuals an hour. That's over 160 fish per minute, which is the pace needed to meet the demand for stocking approximately 10 million fish each year.

Our biologists coordinate the program across 21 state hatcheries, four national hatcheries and one tribal hatchery. Our agency also assists partner agencies with project planning, data collection, statistical analysis and laboratory services to extract and read the coded-wire tags from harvested fish. Through partnerships, we have also tagged 68 million Chinook salmon, coho salmon and rainbow trout to provide data on valuable state-management sport fisheries.

Partners

State and tribal agencies through the Council of Lake Committees of the Great Lakes Fishery Commission.

Visit [FWS.gov](https://www.fws.gov) to get the full story

[Marking fish for maximum impact](#) by Ashley Peters

Since 2010, more than 135 million fish, including lake trout, have been tagged through the mass marking program.

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***Intentional collaboration transcends
even the greatest challenges by
inspiring pride in a shared legacy.***

Visit [FWS.gov/GLRI](https://www.fws.gov/GLRI) to learn more about
our work in the Great Lakes.

*Lake Superior, pictured here, is the largest of the
five Great Lakes and it holds 10% of the world's
fresh surface water.*

Dawn Marsh

Advancing our leadership in mussel restoration

The U.S. Fish and Wildlife Service mussel restoration program showcases some of our best cross-programmatic, cross-regional and intergovernmental partnerships, including work in the Great Lakes region.

Background

Freshwater mussels, and the host fish they rely on for reproduction, have been decimated by commercial uses, habitat degradation and invasive species. The Endangered Species Act of 1973 was a catalyst for mussel restoration.

Importance

Freshwater mussels have a special role in filtering our waters and keeping the environment healthy. Today, 300 species of freshwater mussels are the most vulnerable group of animals in North America and there are more than 90 freshwater mussels listed under the Endangered Species Act.

Goals

We combine aquatic species propagation, endangered species recovery and habitat restoration to bring mussels back from the brink. Restoration efforts and partnerships are beginning to restore freshwater mussels' place in ecosystems, which supports a healthy environment for us all.

GLRI funds at work

Mussels benefit both directly and indirectly from countless projects funded by GLRI, including those focused on watershed restoration, fish

passage and cleaning up toxic hotspots known as Areas of Concern.

As leaders in mussel propagation, Genoa and Neosho national fish hatcheries, raise a total of 17 mussel species for reintroductions at 33 locations in 10 states. These reintroductions are an important part of our endangered species recovery program. A variety of habitat conservation efforts, including restoring river flows and environmental clean-up, also help make our overall mussel restoration program successful.

By leveraging partnerships and funding from GLRI, our agency is cultivating leading expertise in mussel restoration and sharing it widely for greater impact

Partners

A wide range of partners including state and tribal fish hatcheries and nongovernmental organizations.

Visit [FWS.gov](https://www.fws.gov) to get the full story

Midwest mussel experts are leading an emergent field by Janet Lebson

Biologist Jocelynn Samu-Pittard from the Alpena Fish and Wildlife Conservation Office finds a purple wartyback while taking part in a mussel relocation survey on the Raisin River in Brooklyn, Michigan.

Haley VanScoyoc/USFWS



Conserving bird habitat through collaboration

The U.S. Fish and Wildlife Service partners with state agencies across the Great Lakes, from Minnesota to New York, to implement migratory waterbird conservation efforts.

Background

Birds don't recognize human-imposed property lines, which means collaboration helps us to navigate landscape-scale conservation challenges. Migratory birds like piping plovers, common terns and black terns help us gauge Great Lakes ecosystem health. Terns and plovers nest in wetlands or coastal areas and they feed on fish and aquatic invertebrates.

Importance

By improving habitat and monitoring populations, we can make progress towards species recovery goals.

Goals

GLRI-funded work creates resilient habitats and supports population growth by establishing native plants, controlling or managing invasive species, reconnecting both aquatic and terrestrial habitats, deploying species-specific breeding habitat improvements, educating people about coastal resources and collaborating on conservation planning.

GLRI funds at work

One example of this work can be found on the border of Minnesota and Wisconsin at Interstate Island. Our Great Lakes Coastal Program biologists have worked with the Minnesota Department of Natural Resources and the Wisconsin Department of Natural Resources to

identify and address the biggest threats to common terns. This recently resulted in a peak of 118 nests and a record-breaking 240 chicks fledged.

Additionally, GLRI-funded restoration activities have also recently improved habitat and engaged local partners on the following state lands:

- ▶ Lakeview Wildlife Management Area (NY)
- ▶ Wigwam Bay State Wildlife Area and Tawas Point State Park, Portage Marsh State Wildlife Management Area, and St. Clair Flats State Wildlife Management Area (MI)
- ▶ Illinois Beach State Park (IL)
- ▶ Long Tail Point unit of Green Bay West Shores Wildlife Area (WI)
- ▶ Ashland Tern Island in Chequamegon Bay (WI)
- ▶ Interstate Island (WI and MN)

Partners

State agencies, tribal nations, federal agencies and nongovernmental organizations.

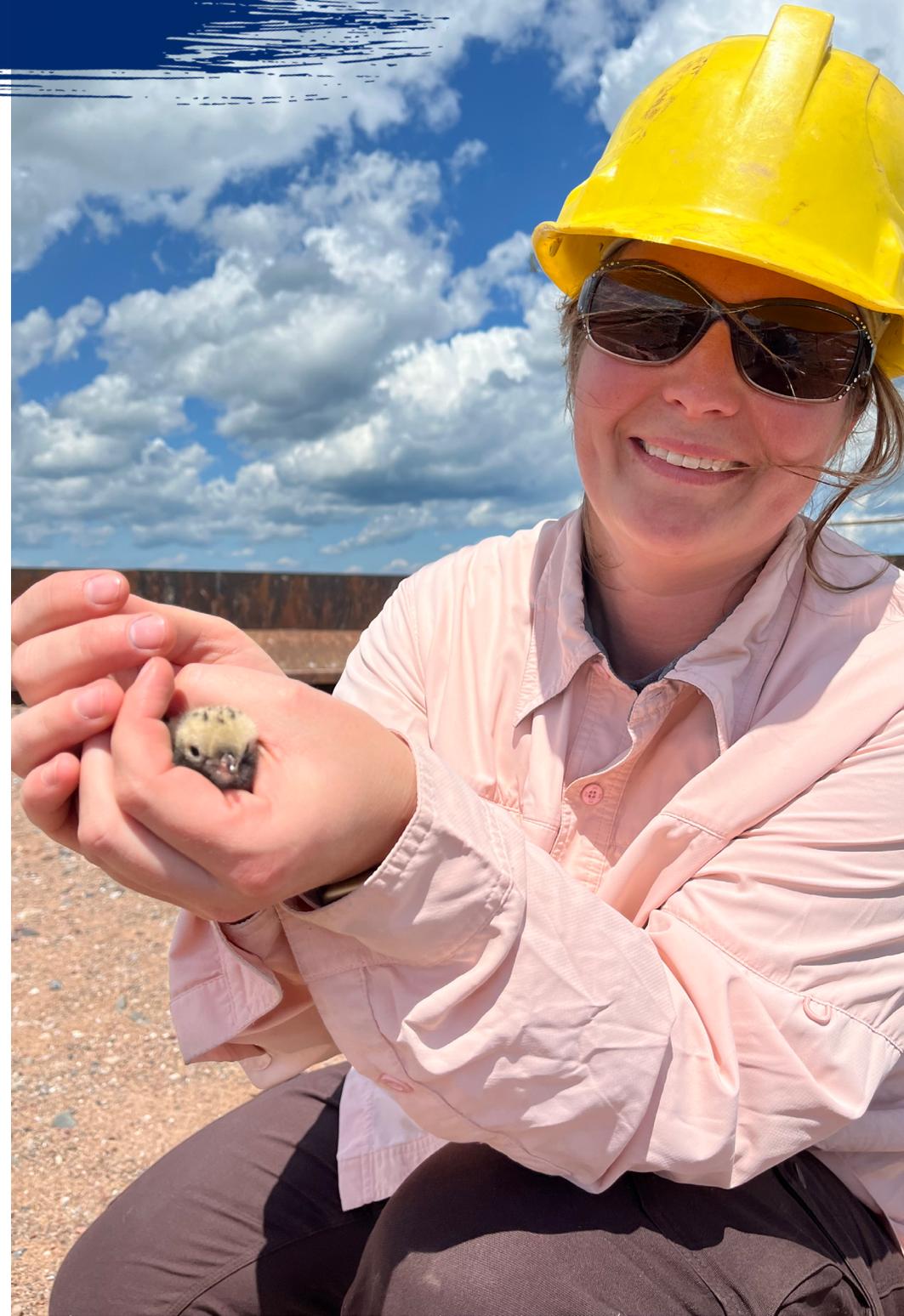
Visit [FWS.gov](https://www.fws.gov) to get the full story

[Wisconsin: Green Bay Piping Plover Recovery Soars by Jade Arneson](#)

[Supporting Conservation of \(not so\) Common Terns on Lake Superior by Lacey Hill](#)

Lacey Hill, with the US Fish and Wildlife Service Coastal Program, holds a tiny common tern chick.

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Improving the application of the Endangered Species Act

The Poweshiek skipperling is an endangered butterfly found in the Great Lakes Basin. GLRI funding boosts the U.S. Fish and Wildlife Service partnerships saving this rare butterfly, while at the same time streamlining Endangered Species Act processes for future recovery efforts.

Background

By 2022, the Poweshiek skipperling population declined by 97%, leaving an estimated 30 butterflies in the wild. It is still one of the most imperiled butterfly species in the world and was listed as federally endangered in 2014.

Importance

With U.S. Fish and Wildlife Service support, an international team of scientists came together to save the skipperling and initiated a novel zoo breeding and rearing program. The program has grown to include special protocols, training, facilities and equipment. These efforts ensured the health of this tiny population, which could be especially susceptible to parasites or diseases. This work is now being applied to other imperiled butterfly species like the Dakota skipper.

Goals

The goal for any threatened or endangered species is to delist the species due to successful recovery efforts. We have improved processes which help increase populations, by partnering with responsible, skilled and innovative experts.

GLRI funds at work

Each year, the number of captive-reared skipperlings released is growing and approximately 1,250 Poweshiek skipperlings were released into the wild in 2025.

Historically, recovery work was not always straightforward. Since the partnership was established we have created streamlined ESA processes, allowing for partners to easily complete a recovery permit application and provide study plans, references and qualifications of the people involved. The partnership zoos have used their recovery permits to test new techniques to increase the success of the butterfly's survival.

While work remains, our partners' willingness to think outside the box and innovation has led to monumental conservation gains for one of the world's rarest butterflies.

Partners

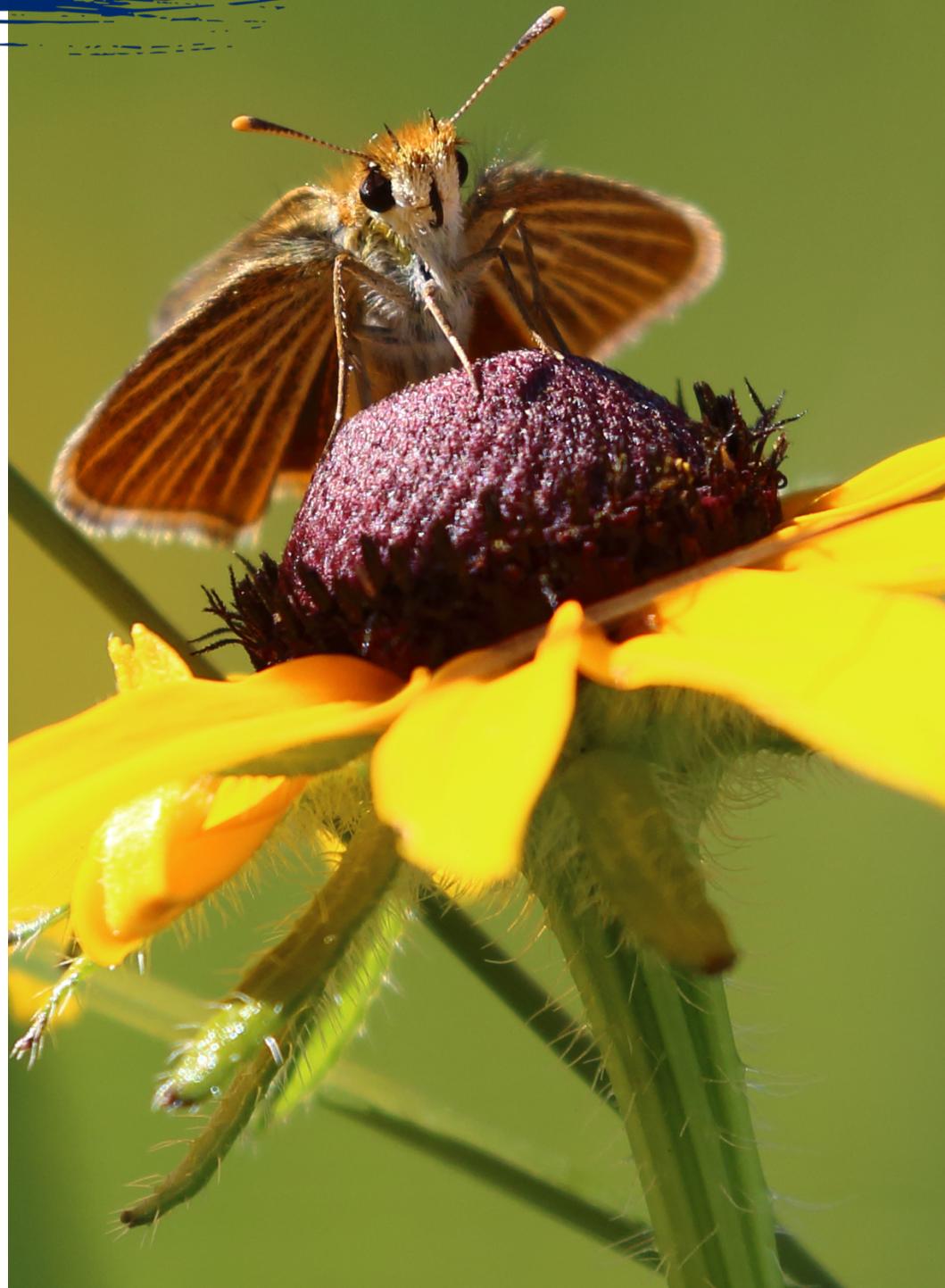
Minnesota Zoo, John Ball Zoo, Michigan State University and other partners.

Visit [FWS.gov](https://www.fws.gov) to get the full story

[When the Fate of a Species Rests in Your Hands](#) by Deborah Kornblut

The Poweshiek skipperling is attracted to restored prairies and native flowers like this black-eyed Susan for its nectar.

Vince Cavalieri/USFWS



Restoring habitat creates cleaner water for all

The U.S. Fish and Wildlife Service's National Wildlife Refuge System consists of public lands that provide vital habitat for fish and wildlife while also inviting visitors to explore unique landscapes. Thanks in part to funding from GLRI, we can continue improving public lands within the Great Lakes Basin.

Background

The thousands of acres within Ottawa National Wildlife Refuge and surrounding areas in northwest Ohio have such importance to migrating birds, that the woodlands and wetlands are known to birders as one of the top birding destinations, especially for warblers. The area is also a popular destination for hunting and fishing.

Importance

Restoration work, including invasive plant management, is beneficial for birds such as Kirtland's warblers and golden-winged warblers as well as waterfowl like green-winged teal and northern pintail. Game fish like northern pike and walleye also benefit, as well as rare native plant species like the eastern prairie fringed orchid.

Goals

By maximizing onsite water retention, biologists and land managers have achieved significant progress restoring natural water cycles and hydrological connectivity within the refuge.

GLRI funds at work

Our restoration activities have been ongoing at Ottawa National Wildlife Refuge for more than a decade. We've restored areas that were once part of an ecological wonder known as the Great Black Swamp. The refuge is also entirely within the 787 square mile Maumee Area of Concern, as designated by the U.S. Environmental Protection Agency.

We work with partners to restore areas within the refuge. Recent activity, including work in 2025, combined multiple approaches to improve habitat and add value for recreational hunters, anglers and wildlife-watchers who frequent the refuge.

Restored wetlands help reduce the severity of algal blooms in Lake Erie by removing nutrients from water. Early GLRI-funded projects restored thousands of acres of refuge wetlands and afterward, monitoring showed that nutrients in the water were greatly reduced after filtering through reconnected wetland. Also, fish diversity and numbers increased.

Partners

Ohio Department of Natural Resources and other state agencies, local units of government, nonprofit organizations, private landowners and other federal agencies.

Visit fws.gov/refuge/Ottawa for more information.

Green-winged teal flushing from wetlands.

Tom Koerner/USFWS



Removing invasives to make way for rare species

The U.S. Fish and Wildlife Service works with state agencies to improve a variety of public lands through GLRI-funded invasive plant management, including Wilderness State Park in northern Michigan.

Background

Across the Great Lakes, natural resources managers are constantly challenged by invasive species, including invasive plants. Invasives are a major threat to biodiversity because they degrade, change and displace native species.

Importance

Wilderness State Park is home to one of the most intact coastal ecosystems in the Great Lakes. In 2016, endangered piping plovers began nesting again in Wilderness State Park. Activity has been relatively consistent since then, with two to four pairs nesting there each year. In 2025, the park supported multiple nesting attempts and ultimately, a total of five chicks fledged or were released.

Goals

At Wilderness State Park, we aimed to create welcoming habitat for birds like piping plovers. By targeting removal efforts on invasives like spotted knapweed, non-native cattail and non-native phragmites, we created room for native species. Rare native plants like Pitcher's thistle, Houghton's goldenrod, and Lake Huron tansy thrive in restored areas.

GLRI funds at work

The partnership for this project began in 2021, but the area also benefited from a decade of restoration and enhancement work that improved 1,900 acres of shoreline and wetland habitat. Volunteers, including youth from Detroit's Summer Youth Employment program, have played a key role over the years.

Our agency's Coastal Program assisted the Michigan Department of Natural Resources in their efforts to restore important coastal habitat along 26 miles of Lake Michigan shoreline. Along with volunteers, they reduced invasive phragmites, sweet clover, spotted knapweed and other invasive species along the shorelines of Waugoshance Point, Waugoshance Island, Temperance Island and Sturgeon Bay.

Partners

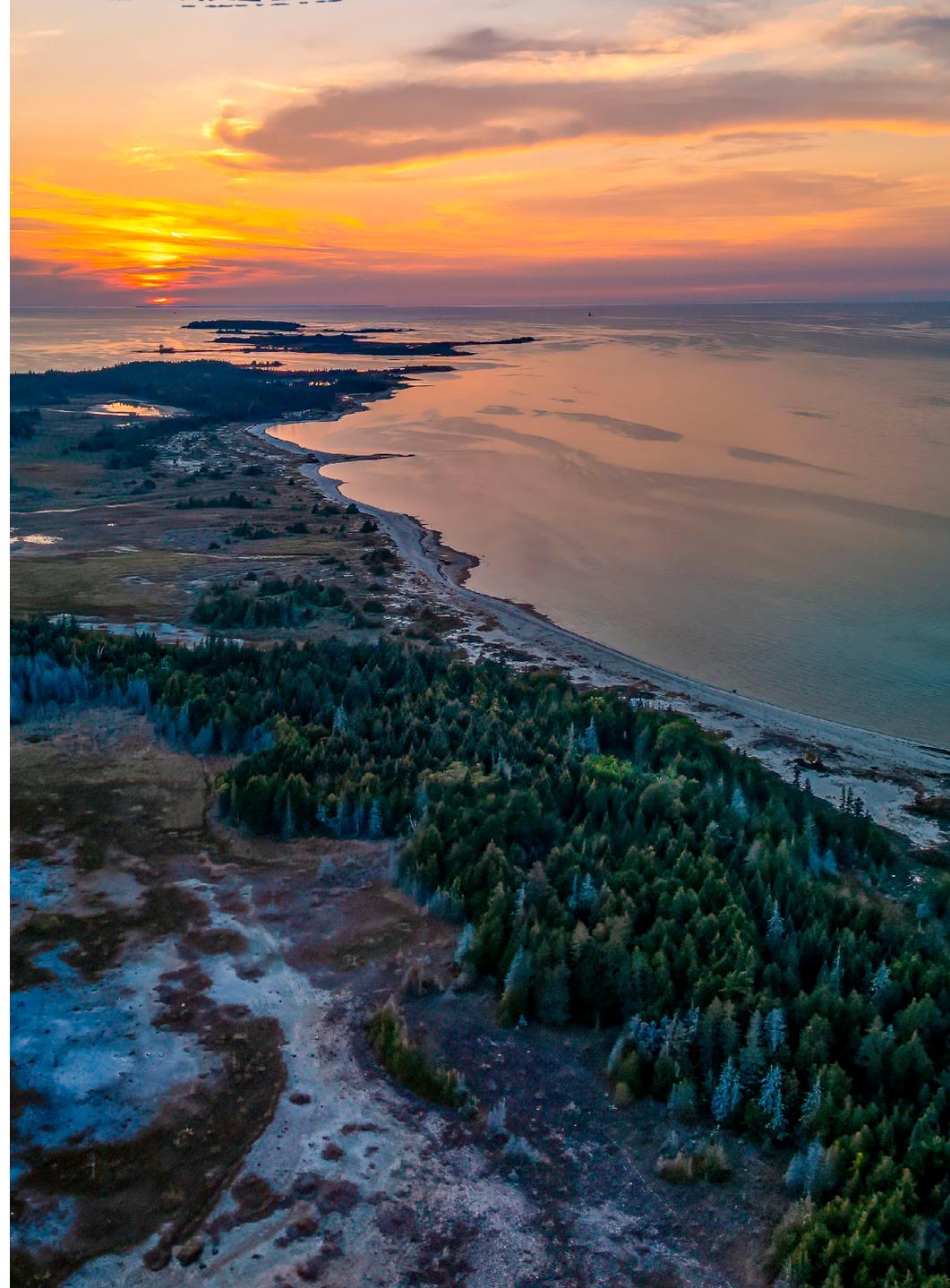
Michigan Department of Natural Resources and the Detroit Summer Youth Employment program.

Visit [FWS.gov](https://www.fws.gov) to get the full story

[Keeping invasive vegetation in check at Michigan's Wilderness State Park](#) by Elizabeth Berg

Even in seemingly remote and pristine places, like Wilderness State Park, invasive plants can take hold and prevent native species from thriving.

Paul Massie/Michigan State Parks



Katharine Lieder, with the U.S. Fish and Wildlife Midwest Fisheries Center, implants a telemetry transmitter into a bighead carp.
USFWS



FY 2025 update: Protecting the Great Lakes from invasive carp

In 2025, the Invasive Carp Regional Coordinating Committee, the 26-member, bi-national partnership focused on protecting the Great Lakes, carried out 46 projects at a total cost of nearly \$50 million – a combination of \$28.8 million in state and federal agency funding and \$21 million provided under GLRI.

Recent Progress

Ongoing targeted mass removal programs are holding the line on Illinois River invasive carp populations, amounting to about 7 million pounds removed in 2025 alone. No bighead or silver carp were found during the spring and fall intensive monitoring of the Chicago area waterway. This includes electrofishing at 280 locations and setting and pulling more than 80,000 yards of gill net at more than 400 locations.

In parts of the Illinois River where mass removal and multi-agency monitoring have been conducted in tandem for several years, partners are documenting significant decreases in invasive carp abundance – more than 70% in some pools – and starting to see encouraging signs that the health of native fish is improving.

The first phase of barrier construction was completed at Little Killbuck Creek near Lodi, Ohio, the third of three sites prioritized for barrier construction to prevent intermittent high-water conditions from enabling invasive carp to spread into the Great Lakes. Partners completed two major multi-year experimental deterrent projects at lock and dam sites that will greatly inform future deterrents.

Partners had another successful field season conducting intensive monitoring and removal of grass carp primarily from western Lake Erie tributaries, as well as widespread surveillance throughout the Great Lakes for early detection of grass carp and their eggs and larvae. Crews are getting more efficient by improving gear and capture techniques and getting small vessels into areas that were previously inaccessible.

The Black Carp Bounty Program expanded to 27 states to engage more commercial fishers in providing black carp for research. Because black carp are rarely caught, less is known about this species compared to other invasive carps. For the last 10 years, the bounty was offered in Illinois and adjoining states and now covers most of the Mississippi River Basin.

Visit fws.gov/invasive-carp for more information.

**U.S. Department of the Interior
U.S. Fish & Wildlife Service
fws.gov/GLRI**

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*Cover photo:
Blue-winged teal*
Grayson Smith/USFWS