



INVASIVE CARP
REGIONAL COORDINATING
COMMITTEE

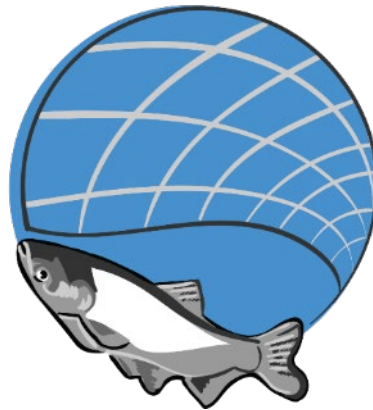
2026 INVASIVE CARP ACTION PLAN



Invasive Carp Action Plan for Fiscal Year 2026

June 2026

Invasive Carp Regional Coordinating Committee



ICRCC Member Agencies:

Illinois Department of Natural Resources
Illinois Environmental Protection Agency
Indiana Department of Natural Resources
Michigan Department of Natural Resources
Michigan Department of Environment, Great Lakes &
Energy
Minnesota Department of Natural Resources
New York Department of Environmental Conservation
Ohio Department of Natural Resources
Pennsylvania Department of Environmental
Protection
Pennsylvania Fish and Boat Commission
Wisconsin Department of Natural Resources
Grand Traverse Band of Ottawa and Chippewa Indians
Ontario Ministry of Natural Resources and Forestry

Quebec Ministère de l'Environnement, de la Lutte
contre les changements climatiques, de la Faune
et des Parcs
National Oceanic and Atmospheric Administration
U.S. Army Corps of Engineers
U.S. Coast Guard
U.S. Department of Transportation
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
U.S. Geological Survey
National Park Service
Fisheries and Oceans Canada
Great Lakes Fishery Commission
Great Lakes Commission
Metropolitan Water Reclamation District of Greater
Chicago

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EXECUTIVE SUMMARY

This Invasive Carp Action Plan (Action Plan) outlines a comprehensive management strategy to protect the Great Lakes from the threat posed by Silver Carp, Bighead Carp, Grass Carp, and Black Carp—collectively referred to in this document as “invasive carp.”

The Action Plan was developed by the 26 U.S. and Canadian federal, state, provincial, tribal, regional, and local agencies that comprise the Invasive Carp Regional Coordinating Committee (ICRCC). The ICRCC is convened by the U.S. Fish and Wildlife Service and the U.S. Environmental Protection Agency to assist its members in implementing their authorities to prevent the introduction and establishment of invasive carp in the Great Lakes.

Projects in the Fiscal Year (FY) 2026 Action Plan are implemented through \$51,414,126 in agency funding and further supported by \$21,000,000 in Great Lakes Restoration Initiative funding, which has been pivotal in allowing state agencies to expand their efforts within their jurisdictional waters for the benefit of the entire region. These U.S. domestic projects protect a commercial and recreational Great Lakes fishery valued at almost \$5.1 billion annually.

The activities conducted by the U.S. ICRCC member agencies under this Action Plan are geographically focused to accomplish key goals:

- **Blocking invasive carp movement through the Illinois Waterway**, with a focus on efforts conducted by the U.S. Army Corps of Engineers and its partners to maintain the Electric Dispersal Barrier System and construct the Brandon Road Interbasin Project and by the State of Illinois and its partners to reduce overall populations within the Illinois River.
- **Installing hydrologic barriers to prevent invasive carp movement through intermittent waterways**, with a focus on the State of Ohio’s closure of the intermittent connection at Little Killbuck Creek (Medina, Ohio) and the ongoing maintenance of previously constructed barriers by the State of Indiana and its partners at Eagle Marsh (Fort Wayne, Indiana) and the State of Ohio at the Ohio & Erie Canal (Akron, Ohio).

THE CHALLENGE

Invasive carp – Silver Carp, Bighead Carp, Grass Carp, and Black Carp – have increased in abundance and migrated hundreds of miles upstream through the Mississippi River and its tributaries toward the Great Lakes. Natural resource management agencies in the Great Lakes region are working to prevent further spread of these species. Management of invasive carp at this scale is unprecedented and has required the development of many new prevention, detection, and control techniques. Preventing the introduction and establishment of invasive carp in the Great Lakes is a daunting challenge.

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- **Preventing the establishment of Grass Carp in the Great Lakes**, with a focus on efforts conducted by the States of Ohio and Michigan and their partners within the western basin of Lake Erie and its tributaries.
- **Better understanding Black Carp populations to inform management strategies**, with a focus on identifying capture methods and better understanding the population within the Illinois River.

Funding also supports the basic coordination and communication activities of the ICRCC, including the development of this Action Plan.

First developed in 2010, the Action Plan has incorporated the most current science on invasive carp populations, control technologies, and management techniques. The 2026 Action Plan continues to reflect this adaptive approach.

Through the projects implemented through this Action Plan, the U.S. member agencies of the ICRCC remain committed to protecting our environment, our favorite pastimes, and our economic prosperity.

Appendix A includes the FY 2026 Project Funding Matrix.

Appendix B includes FY 2026 agency projects with project descriptions and intended outcomes. Any references to project implementation in future years are subject to the availability of appropriations. An acronym list is also included in Appendix B.

Appendix C includes the ICRCC Principles of Coordination.

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1. INTRODUCTION

The Fiscal Year (FY) 2026 Invasive Carp Action Plan (Action Plan) is the current iteration of the Invasive Carp Regional Coordinating Committee's (ICRCC) strategy for Great Lakes protection. The 44 projects in the FY 2026 Action Plan address priority management and monitoring projects focused on one or more of the four invasive carp species further described below and are supported by a combination of \$51,414,126 in agency funding and \$21,000,000 in Great Lakes Restoration Initiative (GLRI) funding. These projects help protect the Great Lakes commercial and recreational fishery, valued at almost \$5.1 billion annually.

Additional general information on invasive carp can be found at [Homepage | Invasive Carp Regional Coordinating Committee](#). Information available on the website includes:

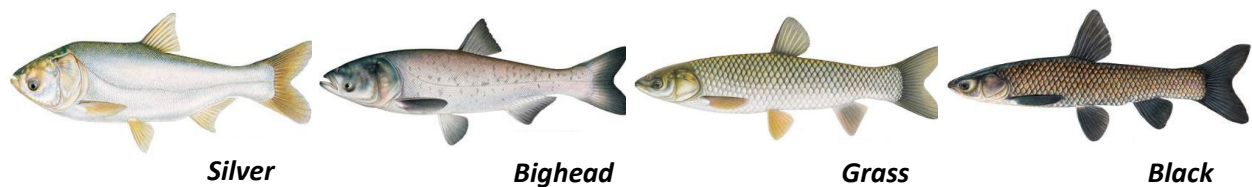
- [Who We Are](#)
- [What We Do](#)
- ICRCC Principles of Coordination

2. INVASIVE CARP AND THE GREAT LAKES — THE THREAT

Invasive carp have posed a growing challenge to North America's aquatic ecosystems and the communities that depend on healthy aquatic resources. Ongoing management efforts are needed to protect our environment, our favorite pastimes, and our economic prosperity.

The general term “invasive carp” in this document refers to four species: Silver Carp, Bighead Carp, Grass Carp, and Black Carp (**Figure 1**). The following sections provide an overview of the biology, the distribution of each of these carp in North America, and the potential impacts they could cause if they spread into the Great Lakes.

Figure 1. Invasive Carp



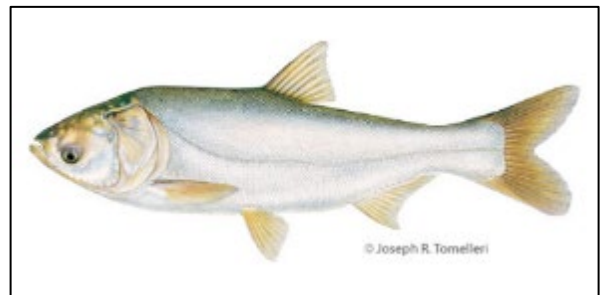
Throughout this document, the term “invasive carp” refers to the following four species: Silver Carp (*Hypophthalmichthys molitrix*), Bighead Carp (*H. nobilis*), Grass Carp (*Ctenopharyngodon idella*), and Black Carp (*Mylopharyngodon piceus*). Illustration by Joseph R. Tomelleri.

2.1 Silver Carp

Silver Carp (**Figure 2**) can grow to 60 or more pounds and feed primarily on phytoplankton, as well as zooplankton, invertebrates, detritus, and bacteria. They efficiently filter suspended material from the water with highly specialized gill rakers.

Silver Carp adversely affect many native species because they feed on plankton, the primary food source for mussels, larval fish, and certain adult fish. The establishment of large populations of Silver Carp in the Great Lakes could compromise recreational and commercial fishing due to impacts on existing species and pose a threat to human safety due to their jumping behavior when startled. These fish, sometimes referred to as “flying carp,” have caused numerous personal injuries and property damage from collisions with people and their boats during recreational boating and fishing (**Figure 3**).

Figure 2. Silver Carp



Silver Carp. Illustration by Joseph R. Tomelleri.

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Silver Carp are now well established throughout much of the Mississippi River basin, and range expansion has been observed in the Ohio River and other major sub-basins in recent years (**Figure 4**).

The Silver Carp population within the Illinois Waterway (IWW) currently poses the greatest threat to the Great Lakes. The population front (or upstream “leading edge”) of adult Silver Carp in the IWW remains within Dresden Island Pool, approximately 47 miles and two lock structures from Lake Michigan. This population front has remained unchanged for over 10 years. Individual Silver Carp have been captured further upstream closer to Lake Michigan; however, no signs of reproduction have been detected above Dresden Island Pool. See also **Figure 13** on page 13.

For more information on Silver Carp, visit [Silver Carp | Invasive Carp Regional Coordinating Committee](#).

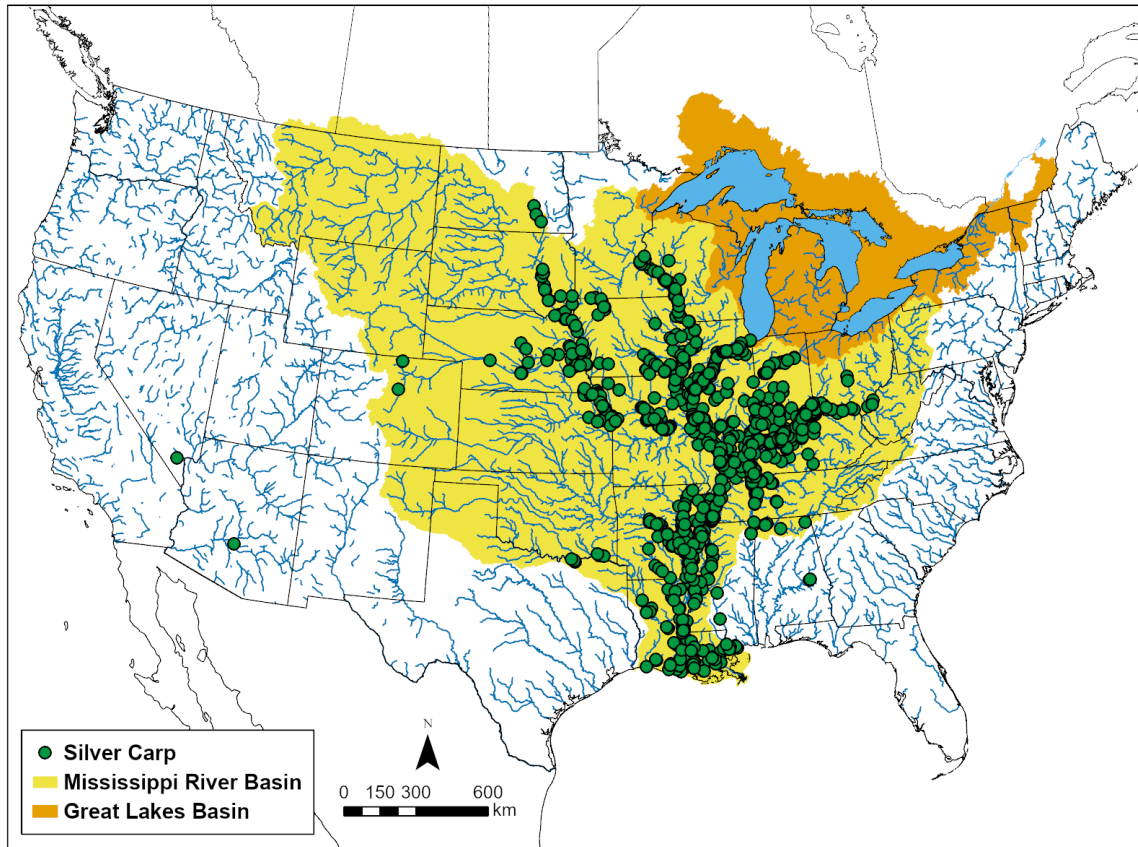
An animated map of the spread of Silver Carp in the United States may be viewed here: [USGS Species Animated Map](#).

Figure 3. Jumping Silver Carp



Invasive carp jumping from the water at Barkley Dam. Photo courtesy of Kentucky DFWR

Figure 4. Documented Occurrence of Silver Carp



Data Source: U.S. Geological Survey's Nonindigenous Aquatic Species Database (<https://nas.er.usgs.gov>) Map produced on 2026-03-23

Documented occurrence of Silver Carp (reported through March 23, 2026). USGS Nonindigenous Aquatic Species Database). Note: This map represents historical collection records that indicate one or more fish were captured but does not necessarily mean that fish are reproducing or have a population in the area.

2.2 Bighead Carp

Bighead Carp (**Figure 5**) can grow to 100 pounds or more and feed on or near the surface of the water, as well as in midwater and benthic (bottom) environments, consuming primarily zooplankton, blue-green algae, aquatic insects, and detritus. They efficiently filter suspended material from the water with highly specialized gill rakers.

Figure 5. Bighead Carp



Bighead Carp. Illustration by Joseph R. Tomelleri.

Bighead Carp adversely affect many native species because they feed on plankton, the primary food source for mussels, larval fish, and certain adult fish. The establishment of large populations

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of Bighead Carp in the Great Lakes could compromise recreational and commercial fishing due to impacts on existing species.

Like Silver Carp, Bighead Carp are now well established throughout much of the Mississippi River basin, with range expansion documented in several river sub-basins (**Figure 6**).

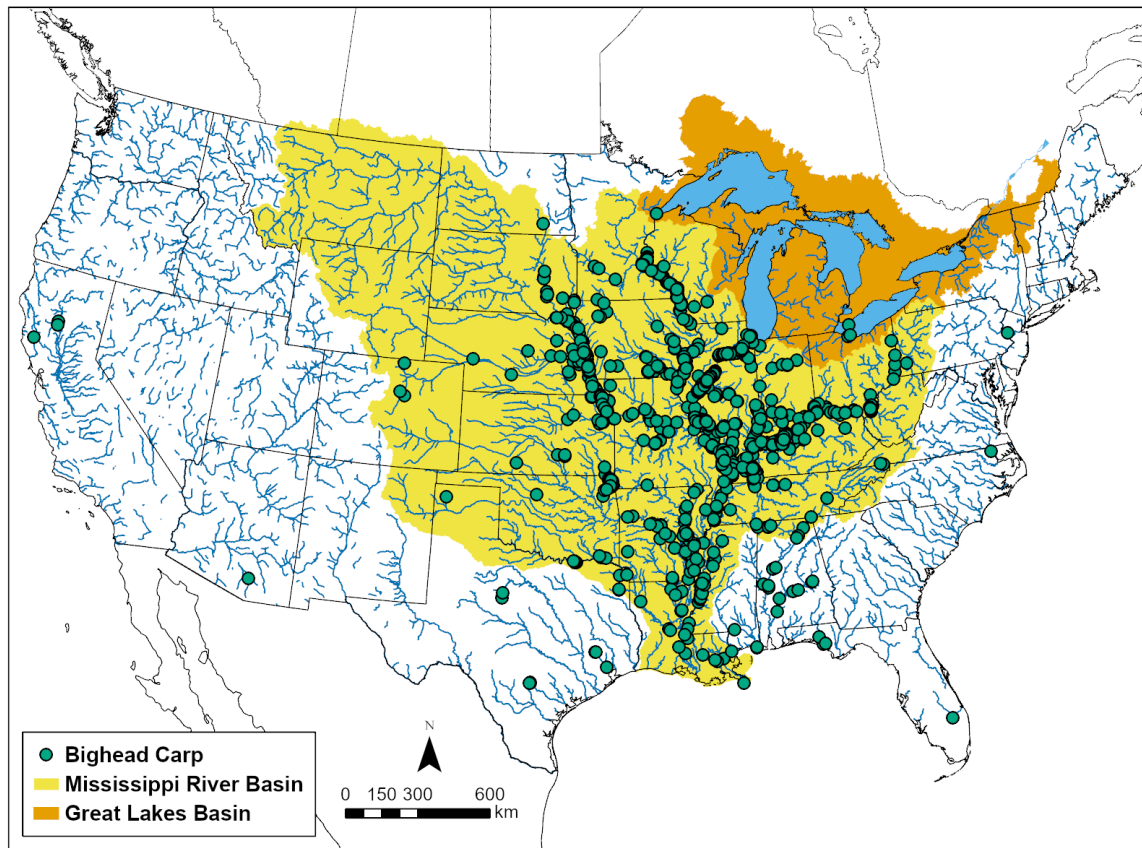
The established population within the IWW currently poses the greatest threat for the introduction of Bighead Carp into the Great Lakes. The adult population front of Bighead Carp in the IWW remains within Dresden Island Pool, approximately 47 miles and two lock structures from Lake Michigan. The population front has remained unchanged for over 10 years. Individual Bighead Carp have been captured further upstream closer to Lake Michigan; however, no signs of reproduction have been detected above Dresden Island Pool. See also **Figure 13** on page 13.

For more information on Bighead Carp, visit [Bighead Carp | Invasive Carp Regional Coordinating Committee](#).

An animated map of the spread of Bighead Carp in the United States may be viewed here: [USGS Species Animated Map](#).

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Figure 6. Documented Occurrence of Bighead Carp



Data Source: U.S. Geological Survey's Nonindigenous Aquatic Species Database (<https://nas.er.usgs.gov>) Map produced on 2026-03-23

Documented occurrence of Bighead Carp (reported through March 23, 2026). USGS Nonindigenous Aquatic Species Database). Note: This map represents historical collection records that indicate one or more fish were captured but does not necessarily mean that fish are reproducing or have a population in the area.

2.3 Grass Carp

Grass Carp (**Figure 7**) can grow to more than 80 pounds and feed primarily on submerged aquatic vegetation.

Adults can consume over 20 percent of their body weight in vegetation per day. Because of this feeding behavior, Grass Carp have been stocked in small lakes and ponds to control nuisance aquatic plants; however, this aggressive feeding behavior can also make Grass Carp invasive. To limit the reproduction and spread of Grass Carp used for aquatic plant control, aquaculture providers have created infertile adult Grass Carp. These infertile Grass Carp are also referred to as “triploid” because they have

Figure 7. Grass Carp



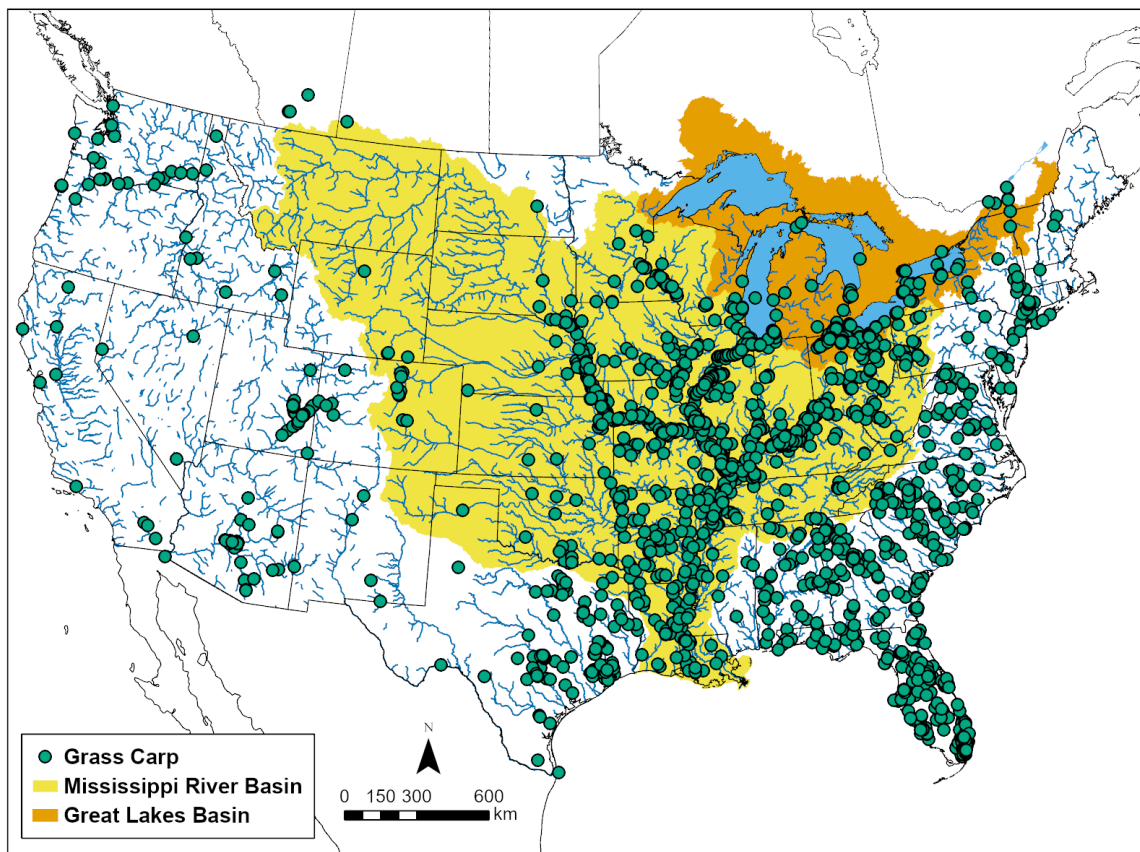
Grass Carp. Illustration by Joseph R. Tomelleri.

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three sets of chromosomes rather than the normal two sets, which prevents the fish from reproducing. Illinois, Indiana, Ohio, Pennsylvania, and New York only allow triploid Grass Carp to be used for vegetative control in ponds in compliance with applicable state regulations. Michigan, Wisconsin, Minnesota, and the Province of Ontario prohibit live possession of any Grass Carp (neither diploid nor triploid).

Occurrences of Grass Carp are widely documented throughout much of the contiguous United States. Populations of Grass Carp are now reproducing in major rivers near the Great Lakes, including the Mississippi, Missouri, and Ohio rivers and many other smaller tributaries (**Figure 8**).

Figure 8. Documented Occurrence of Grass Carp



Data Source: U.S. Geological Survey's Nonindigenous Aquatic Species Database (<https://nas.er.usgs.gov>)

Map produced on 2026-03-23

Documented occurrence of Grass Carp (reported through March 23, 2026). USGS Nonindigenous Aquatic Species Database) Note: This map represents historical collection records that indicate one or more fish were captured but does not necessarily mean that fish are reproducing or have a population in the area.

Grass Carp pose a significant environmental risk to the Great Lakes, as described in the [Ecological Risk Assessment of Grass Carp \(*Ctenopharyngodon idella*\) for the Great Lakes Basin](#), a binational, peer-reviewed risk assessment published in 2017. The risk assessment indicated that it is "very likely" that Grass Carp will become established in Lakes Erie, Huron, Michigan, and Ontario within

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10 years unless a program can be developed that could control the population growth and dispersal. **Table 1** provides an estimated timeframe for Grass Carp establishment in the Great Lakes absent any control program. U.S. and Canadian agencies are actively developing and implementing Grass Carp control programs within their jurisdictional waters. [Positive correlations](#) between mortality and the number of fish harvested through this program in past years suggest that removal is driving increases in the mortality rate.

Table 1 — Risk Assessment of Grass Carp Establishment in the Great Lakes

Location	Timeframe
Lake Erie	High – by 5 years
Lakes Michigan, Huron, Erie, and Ontario	Very Likely – by 10 years
Lake Superior	Low – at 50 years

Source: Ecological Risk Assessment of Grass Carp (Ctenopharyngodon idella) for the Great Lakes Basin, 2017

Grass Carp have been historically detected and captured in all the Great Lakes except Lake Superior. To date, there is no evidence of Grass Carp spawning activity outside of Lake Erie. Grass Carp are occasionally removed from the Chicago Area Waterway System (CAWS) during Seasonal Intensive Monitoring (SIM) activities. Grass Carp are regularly detected and captured in Lake Erie, with reproduction documented in the Sandusky, Maumee, and Huron rivers. Lake Erie Grass Carp tend to stay within the lake and the rivers where they spawn; however, there are two known instances of Grass Carp originating in Lake Erie traveling into other lake basins. In one case, the analysis of the otoliths (earbones) of a Grass Carp captured from Lake Michigan showed a micro-chemistry profile indicative of previously living in Lake Erie. In another case, a fish with an implanted transmitter was detected by a telemetry array in Lake Huron. The spawning population within the western basin of Lake Erie currently poses the greatest threat to the Great Lakes from this species.

For more information on Grass Carp, visit [Grass Carp | Invasive Carp Regional Coordinating Committee](#) and the [Lake Erie Grass Carp Response Website](#).

An animated map of the spread of Grass Carp in the United States may be viewed here: [USGS Species Animated Map](#).

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2.4 Black Carp

Adult Black Carp (**Figure 9**) can grow to upwards of 150 pounds and feed primarily on mollusks and snails, using their molar-like pharyngeal teeth to crush the shells. Its preference is to occupy benthic (bottom) areas of rivers. Because of its known feeding ecology, its escape into the Mississippi River raised significant concern among resource managers for the long-term viability of the historical



Figure 9. Black Carp

Black Carp. Illustration by Joseph R. Tomelleri.

native mussel fauna in the Upper Mississippi River basin, of which over 70 percent are already imperiled or extinct. If Black Carp were to eventually enter the Great Lakes, there would be serious concern for native mollusk populations already impacted by invasive dreissenid mussels (quagga and zebra mussels).

Black Carp detections are gradually increasing within the Mississippi River basin, including in the Illinois and Ohio rivers.

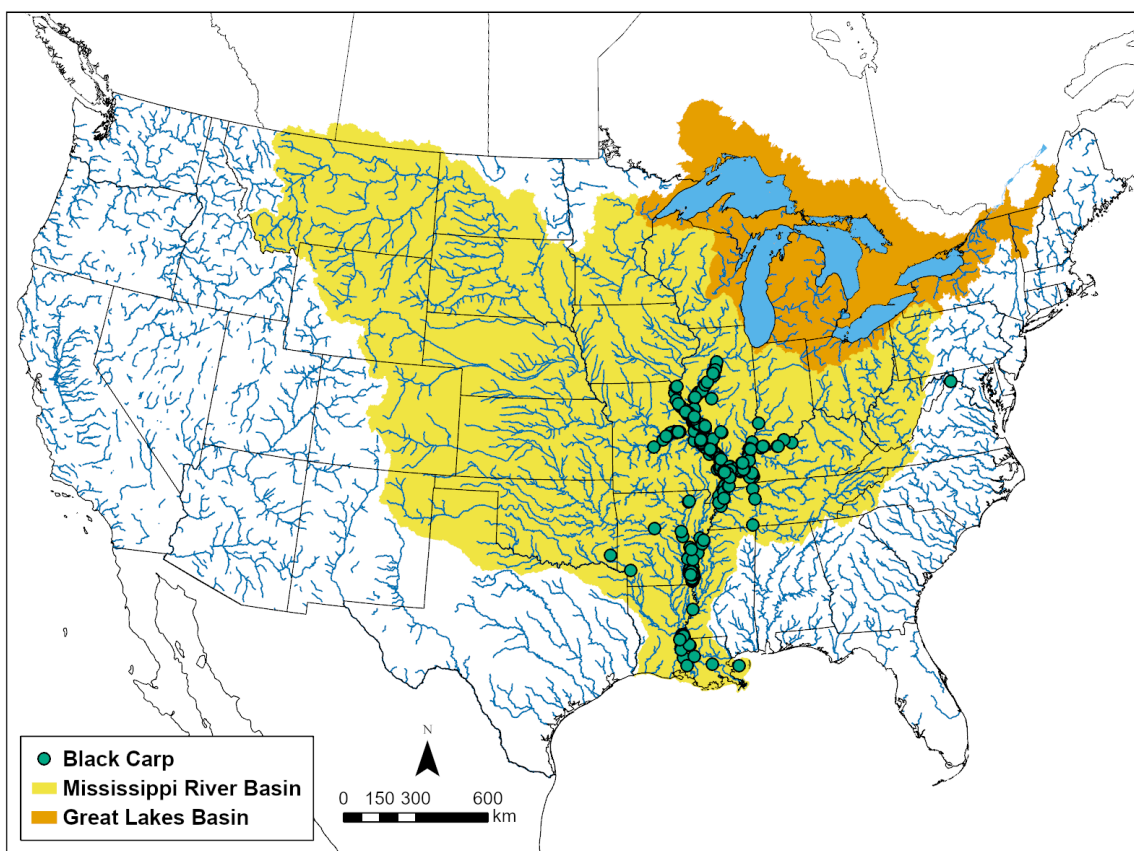
Large juvenile and adult Black Carp were initially reported in the Illinois River in 2010. Since 2015, the Illinois Department of Natural Resources (ILDNR) has augmented monitoring of the range expansion of Black Carp within the Upper Mississippi River basin through incentive payments to Black Carp anglers and commercial fishers. Recorded captures have increased throughout the lower 183 miles of the Illinois River as a result of these incentives. The furthest upstream capture in the Illinois River occurred in 2023, approximately 8.5 miles upstream of Henry, Illinois, within the Peoria Pool and approximately 124 river miles and six lock structures away from Lake Michigan (**Figure 10**).

For more information on Black Carp, visit [Black Carp | Invasive Carp Regional Coordinating Committee](#).

An animated map of the spread of Black Carp in the United States may be viewed here: [USGS Species Animated Map](#).

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Figure 10. Documented Occurrence of Black Carp



Data Source: U.S. Geological Survey's Nonindigenous Aquatic Species Database (<https://nas.er.usgs.gov>) Map produced on 2026-03-23

Documented occurrence of Black Carp (reported through March 23, 2026), USGS Nonindigenous Aquatic Species Database). Note: This map represents historical collection records that indicate one or more fish were captured but does not necessarily mean that fish are reproducing or have a population in the area.

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3. SUMMARY OF 2026 ICRCC MEMBER AGENCY ACTIONS

The activities conducted by the U.S. ICRCC member agencies under this Action Plan are geographically focused to accomplish key goals:

- **Blocking invasive carp movement through the IWW**, with a focus on the efforts conducted by the U.S. Army Corps of Engineers (USACE) and its partners to maintain the Electric Dispersal Barrier System (EDBS) and construct the Brandon Road Interbasin Project (BRIP) and by the State of Illinois and its partners to reduce overall populations within the Illinois River.
- **Installing hydrologic barriers to prevent invasive carp movement through intermittent waterways**, with a focus on the State of Ohio's closure of the intermittent connection at Little Killbuck Creek (Medina, Ohio) and the ongoing maintenance of previously constructed barriers by the State of Indiana and its partners at Eagle Marsh (Fort Wayne, Indiana) and by the State of Ohio at the Ohio & Erie Canal (Akron, Ohio).
- **Preventing the establishment of Grass Carp in the Great Lakes**, with a focus on efforts conducted by the States of Ohio and Michigan and their partners within the western basin of Lake Erie and its tributaries.
- **Better understanding Black Carp populations to inform management strategies**, with a focus on improving capture methods and better understanding the population within the lower Illinois River.
- **Support basic coordination and communication activities of the ICRCC**, including the development of this Action Plan.

The following sections provide additional details on the activities which support each of these goals. At the end of each section is a table of the funded actions with links to more detail on each action in Appendix B.

3.1 Blocking Invasive Carp Movement through the IWW

The IWW consists of over 300 miles of navigable water from the confluence of the Mississippi River and Illinois River at Grafton, Illinois to several rivers and canals in the Chicago region. At the northeast end of the IWW, the CAWS provides a year-round aquatic connection to Lake Michigan (**Figure 11**). Lake Michigan is hydrologically connected to the other four Great Lakes.

The coordinated interagency effort to address the risk of invasive carp in the IWW began in 2009 with a prevention and fish suppression effort conducted in the CAWS that supported maintenance actions on the USACE's EDBS. This was the impetus for creating the ICRCC, which brought together the agencies potentially affected by the expansion of invasive carp into the Great Lakes region. The scope of the Action Plan has since evolved beyond a singular focus on the CAWS; however, preventing the movement of invasive carp through the IWW remains a major focus.

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Figure 11. CAWS Waterbodies



Map showing the CAWS. Source: Great Lakes Commission

A series of locks managed by USACE controls water flow within the IWW. **Figure 12** identifies the locks and dams making up the IWW.

Figure 12. Lock and Dams within the IWW

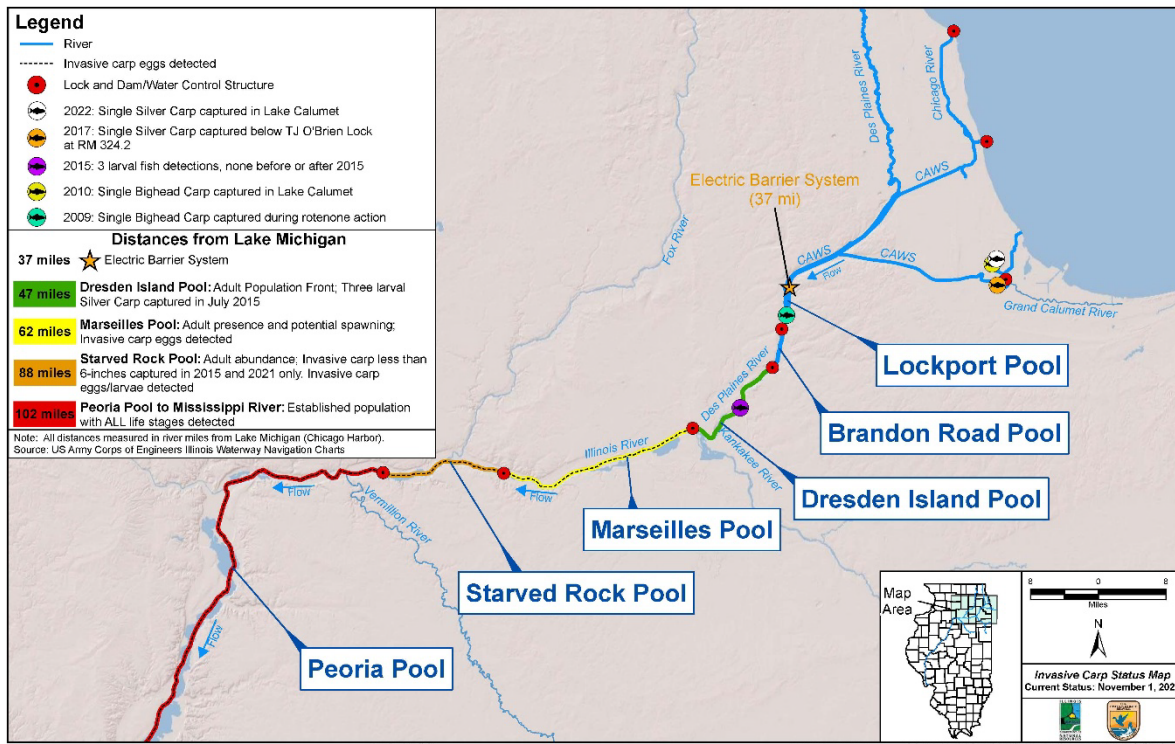


Map showing the locks and dams in the IWW. Source: ILDNR

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Each of these locks creates a “pool” upstream, which bears the name of the downstream lock. For example, the Peoria Lock and Dam creates the Peoria Pool upstream, and this pool extends from the Peoria Lock & Dam to the Starved Rock Lock & Dam, the next furthest lock upstream. Populations of invasive carp in the IWW are generally characterized by pool. For reference, **Figure 13** illustrates the pools in the upper IWW, the population status of Silver Carp and Bighead Carp, and the individual live fish captured above the electric barrier. The last carp detected above the electric barrier was [a dead Silver Carp found in Lake Calumet in 2024](#). This discovery prompted additional sampling by agency crews in the vicinity of where the carcass was discovered to rule out the presence of live invasive carp. No live invasive carp were observed or captured.

Figure 13. Upper IWW Pools and Stages of Silver Carp and Bighead Carp Invasion



Map showing the locks and dams in the IWW. Source: ILDNR

The Monitoring and Response Work Group (MRWG) is the principal body that supports the extensive coordination needed for work in the IWW. The MRWG is co-chaired by ILDNR and the Great Lakes Fishery Commission (GLFC).

The 2026 actions for “Preventing Invasive Carp Movement through the IWW” are grouped into three categories of activity, which are described in more detail in the following sections:

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- IWW Deterrent Technology Operation and Development
- IWW Removal Actions
- IWW Monitoring and Decision Support

3.1.1 IWW Deterrent Technology Operation and Development

The USACE has operated the EDBS within the Chicago Sanitary and Ship Canal (CSSC) in Romeoville, Illinois, since 2002. It was the first technology used to prevent the upstream movement of invasive carp in the IWW. The barrier system is located approximately 37 miles from Lake Michigan and is formed of steel electrodes that are secured to the bottom of the CSSC. The electrodes are connected to a control building that generates a DC pulse through the electrodes, creating an electric field in the water that discourages fish from crossing.

Over the years, several operational and procedural improvements have been implemented to improve the effectiveness and continuously deliver an uninterrupted flow of electricity to the water to deter fish. The demonstration dispersal barrier (Barrier I) has been operating since 2002. A more permanent dispersal barrier was constructed in two segments, Barriers IIA and IIB, which began full-time operation in 2009 and 2011, respectively. Construction of a more permanent Barrier I, which includes two new electrode arrays and the original demonstration barrier with upgrades, was completed in 2024 (**Figure 14**).

Because the IWW forms a continuous connection between the Great Lakes and Mississippi River basins, a major management goal has been the development of technologies that deter the upstream migration of invasive carp without harming native fish or water quality. Successfully developed and tested technology will be used in the BRIP, which began construction in 2025.

Figure 14. USACE EDBS in the CSSC



Schematic of the USACE EDBS in the CSSC. Source: USACE

As another line of defense, the Brandon Road Lock and Dam near Joliet, Illinois, was identified as the critical pinch point where layered technologies could be used to stop invasive carp populations from moving into the Great Lakes. USACE and the States of Illinois and Michigan,

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have signed the project partnership agreement and begun construction of the BRIP. The BRIP project plan includes multiple deterrents, including an electric barrier, acoustic deterrents, a bubble curtain, and a flushing lock (**Figure 15**).

A Presidential Memorandum, titled *Protecting the Great Lakes from Invasive Carp*, was issued by the White House on May 9, 2025. The memo speaks to the commitment of the administration to the BRIP and directs key federal agencies to coordinate and prevent the migration and expansion of invasive carp into the Great Lakes. The first of three phases of the BRIP began in 2025. Site preparation and channel rock excavation was completed in July 2025. The remaining work in the first phase consists of the construction of leading-edge deterrents and is ongoing. The entire multi-year project is expected to be completed in 2033.

To support the later stages of the BRIP, agencies are testing and refining deterrent technologies that could be used at this location. This work is also being coordinated with the MRWG's Behavioral Deterrents Work Group.

Figure 15. Recommended Structural Plan – USACE Brandon Road



Note: ABC Deterrent refers to Automated Barge Clearing Deterrent, and RDB Guidewall refers to the Right Descending Bank Guidewall. Source: USACE

Acoustic deterrents have been the subject of a multi-year investigation. The Bio-acoustic Fish Fence (BAFF) and the Underwater Acoustic Deterrent System (uADS) have been piloted as two different technologies intended to deter invasive carp. The BAFF project tested an integrated sound, bubble and light deterrent at the Barkley Lock and Dam (Cumberland River, KY) and was completed in 2025. The uADS has been installed in the approach channel at Lock No. 19 near Keokuk, Iowa (**Figure 16** and **Figure 17**) and is being operated experimentally through 2026. Both locations are high-head dam structures with no overflow conditions and where an established population of invasive carp exists. Available information suggests that acoustic deterrents reduce

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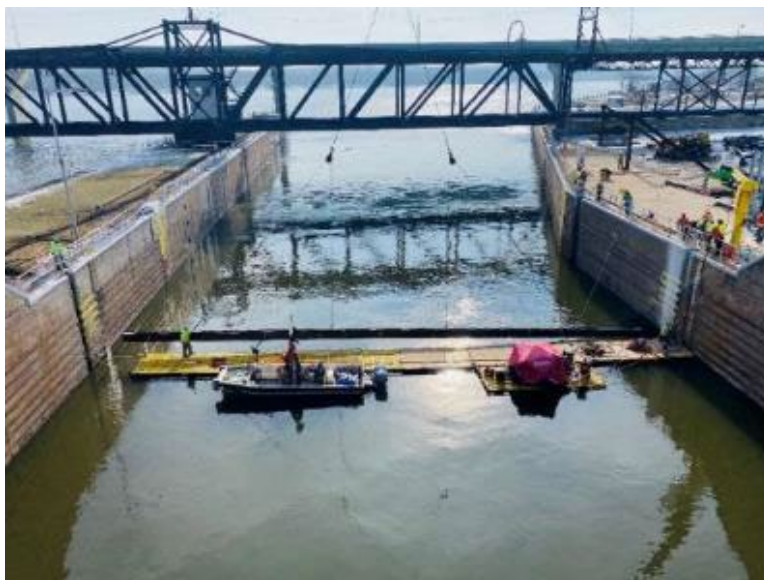
the passage of Silver Carp and Bighead Carp through these dam structures by about 50 percent. Detailed results of these studies are expected to be published in 2026 and 2027.

Figure 16. Downbound Tow Traversing uADS – Lock No. 19 (Keokuk, Iowa)



A downbound tow and barges traversing downstream lock approach channel over the uADS at Lock No. 19. Photo credit: Christa Woodley, USACE ERDC

Figure 17. Soundbar Installation – Lock No. 19 (Keokuk, Iowa)



Installation of the soundbar portion of the uADS in the lock approach channel of Lock No. 19 in February 2021. Photo credit: Marybeth Brey, USGS

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In addition, the use of carbon dioxide injected into water is being investigated as a non-lethal behavioral deterrent. The temporary application of a carbon dioxide infusion system at a navigational lock in Wisconsin has shown this deterrent to be promising. Researchers are exploring delivery mechanisms and using fluid dynamic models to determine how to create the appropriate dose and duration to be effective in the IWW, including potential use for fish clearing at the EDBS as it undergoes annual maintenance and as an additional deterrent in the BRIP.

Table 2 lists the IWW Deterrent Technology Operation and Development projects supported by the 2026 Action Plan.

Table 2 — IWW Deterrent Technology Operation and Development Projects

Project Number	Lead Agency	Project Title <i>(Click on Project Title to go to the project in Appendix B)</i>
ID1-26	USACE	Operation and Maintenance of the Electric Dispersal Barrier System
ID2-26	USACE	Implementation of the Brandon Road Interbasin Project
ID3-26	USGS	Water Quality and Velocity Monitoring in Support of the Brandon Road Project
ID4-26	USACE	Further Evaluation of Underwater Acoustics as a Deterrent for Invasive Carp
ID5-26	USGS	Technical Support for the Evaluation of Underwater Acoustics as a Deterrent for Invasive Carp
ID6-26	USACE	Planning for the Use of Carbon Dioxide Deterrent in the Illinois Waterway
ID7-26	USGS	Technical Support for the Use of Carbon Dioxide Deterrent in the Illinois Waterway

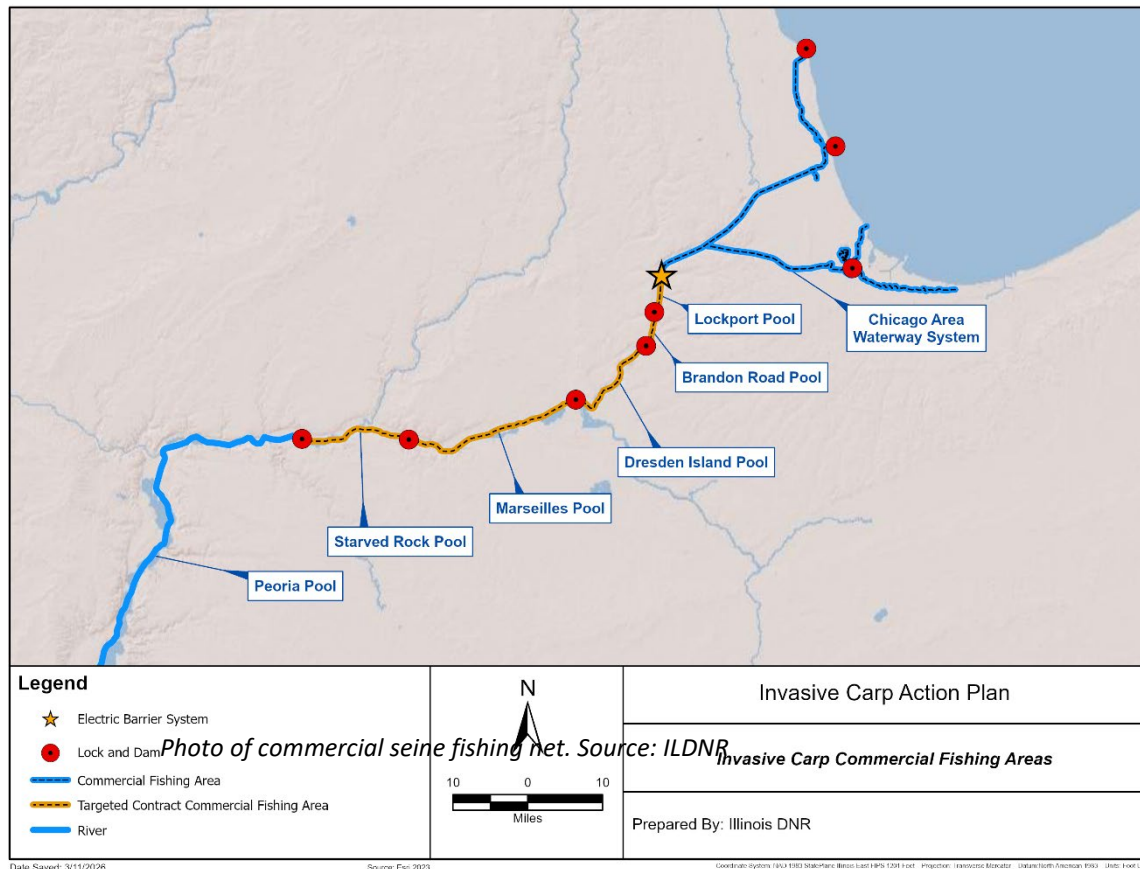
3.1.2 IWW Removal Actions

The State of Illinois and its partners actively remove invasive carp from the IWW to stop the expansion of populations of invasive carp and reduce population pressure threatening the EDBS and the Great Lakes basin. Removal actions are needed annually because invasive carp from the Mississippi River continue to swim into the lower Illinois River and invasive carp naturally tend to swim upstream toward the EDBS. This work is led by the Removal Work Group of the MWRG.

Two different removal programs are being implemented in the upper and lower Illinois River. In the upper river above Starved Rock Dam, fish densities are lower, and removal is specifically targeted through contracted fishing operations. As experience has grown, so has the effectiveness of this program. These fishers have learned how to optimize fishing efforts by targeting specific areas during times of the year when invasive carp congregate (**Figure 18**). This led to a record-breaking harvest of Silver Carp in the 10-day period in the fall of 2023.

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Figure 18. Contracted Commercial Fishing Sampling Area



Map of fishing areas used by contracted commercial fishers in the IWW. Source: ILDNR

The harvest used a seine fishing net (**Figure 19**) that surrounds fish on the sides and underneath and brings them to the bank. The seine is proving to be an effective removal technique in cool water when silver carp cannot jump out over the net. The goal is to remove at least one million pounds of invasive carp annually with contracted fishing to minimize the populations near the EDBS (**Figure 20**).

In the lower river below Starved Rock Dam, there are higher fish densities, and it is most cost-effective to incentivize invasive carp harvest by legally licensed Illinois commercial fishers. The Enhanced Invasive Carp Fishing Program offers Illinois-licensed commercial fishermen a financial incentive for each pound of invasive carp removed from the Peoria Pool and sold to fish processors or other buyers.

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Figure 19. Commercial Fishing Seine Net



Photo of seine net. Source: ILDNR

Figure 20. Contract Fishing on the IWW



Photo of contract fishers removing invasive carp from the Illinois River. Source: ILDNR

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Table 3 lists the Removal Actions – Contract Fishing projects supported by the 2026 Action Plan.

Table 3 — Removal Actions – Contract Fishing Projects

Project Number	Lead Agency	Project Title (<i>Click on Project Title to go to the project in Appendix B</i>)
IR1-26	ILDNR	Contract Fishing for Invasive Carp Removal Near the Electric Dispersal Barrier System
IR2-26	ILDNR	Enhanced Invasive Carp Removal in the Lower Illinois River

3.1.3 Monitoring and Decision Support

The continued monitoring and assessment of invasive carp in the IWW is critical for assessing the threat of upstream movement and informing decisions on where to target prevention and control actions. Surveillance upstream and downstream of the EDBS monitors for invasive carp that might have moved beyond this critical control point.

This work is led by several work groups of the MRWG, including:

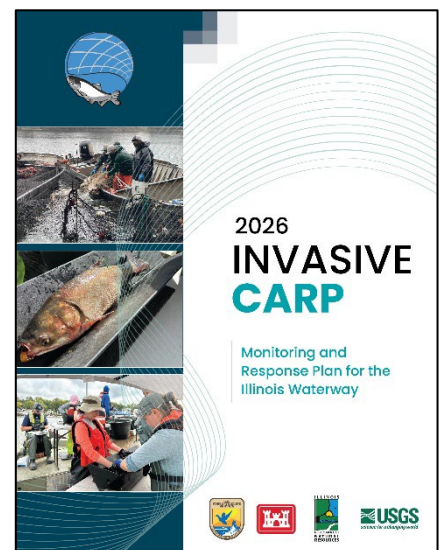
- Contingency Response Work Group
- Detection Work Group
- Hydroacoustics Work Group
- Telemetry Work Group
- Monitoring Work Group
- Modeling Work Group

The MRWG’s Monitoring Response Plan (MRP) (**Figure 21**) is developed annually to coordinate the Work Groups’ efforts to evaluate invasive carp status on a pool-by-pool basis within the IWW and target monitoring and control efforts accordingly. The 2026 MRP can be found on the ICRCC website at [2026 Invasive Carp Monitoring and Response Plan](#). The following sections provide a brief overview of this work.

Contingency Planning and Response

While performing routine invasive carp activities, the ICRCC member agencies remain prepared to implement contingency (rapid response) actions through the MRWG Contingency Response Plan (CRP) for the Upper IWW and CAWS. The CRP is triggered if a change is detected in the population status of invasive carp in the Starved Rock, Marseilles, Dresden Island, Brandon Road,

Figure 21. Monitoring and Response Plan Cover



The MRP has been produced annually since 2011.

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and Lockport pools. For more information on the CRP, see [Homepage | Invasive Carp Regional Coordinating Committee](#). Agencies are prepared to shift resources from other activities to support response actions deemed necessary by the appropriate jurisdictional authority in the event of new invasive carp detections.

An interagency CRP tabletop exercise is planned for 2026 to ensure agency personnel are prepared to implement appropriate response actions if needed.

Should there be any detections of invasive carp in nearshore waters or open waters of Lake Michigan, the ICRCC member agencies rely on the GLFC and its Lake Michigan Committee members to coordinate actions and strategies to address fisheries management and invasive carp in Lake Michigan.

Early Detection

Early detection work consists of a semi-annual intensive monitoring effort in the CAWS and ongoing surveillance work in the upper Illinois River. This work is complemented by enforcement activities to detect illegal activities that could transport and spread invasive carp.

SIM is the planned intensive surveillance of the CAWS upstream of the EDBS conducted in the spring and fall. This effort monitors for invasive carp that might have moved past the EDBS. Prior to the SIM events, the U.S. Fish and Wildlife Service (USFWS) conducts environmental deoxyribonucleic acid (eDNA) monitoring as an added level of screening. Then, the SIM effort uses targeted sampling with various gears, including seines, trammel nets, and hoop nets, to detect, capture, and remove any invasive carp from upstream locations. On rare occasions, individual live Bighead Carp or Silver Carp have been captured during targeted sampling conducted upstream of the EDBS. In 2010, an adult Bighead Carp was captured during sampling in Lake Calumet within the CAWS; in 2017, an adult Silver Carp was captured in the CAWS below T.J. O'Brien Lock and Dam during SIM sampling; and, in 2022, an adult Silver Carp was captured during sampling by USACE and ILDNR in Lake Calumet. In addition, a [dead Silver Carp found in Lake Calumet in 2024](#). Based on an analysis of the chemical markers of these fish, it is probable that they originated in the Illinois River and then moved or were transported above the EDBS. ILDNR also continues to investigate possible human-mediated pathways that could spread invasive carp.

To further support early detection, the ICRCC member agencies also sample downstream of the EDBS, including surveillance in the Lockport, Brandon Road, Dresden Island, and Marseilles pools, using boat electrofishing, electrified dozer trawling, hoop netting, and mini-fyke netting. This work helps detect upstream migrations of small and juvenile Silver Carp and Bighead Carp. USFWS particularly focuses surveillance in the upstream reaches (Marseilles and Dresden Island pools) where small (less than 6 inches in total length) fish have not been observed or collected.

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USFWS field crews also sample Illinois waters of the Kankakee, and Des Plaines rivers using multiple gears to target both large and small invasive carp.

The use of eDNA continues to be an important early detection monitoring tool. USFWS maintains program capacity through agency funding to support strategic eDNA surveillance for invasive carp in the Great Lakes and Mississippi River basins.

***Looking beyond the IWW with eDNA.** As an added level of surveillance, USFWS continues to work in close collaboration with Great Lakes states and tribes to plan and collect water samples for detection of Bighead Carp and Silver Carp eDNA material in Great Lakes tributaries. USFWS also implements a broader early detection program for aquatic invasive species (AIS), including invasive carp, using traditional nets in the nearshore U.S. waters of the Great Lakes.*

Recognizing that invasive carp can be transported through illegal activities, ILDNR law enforcement will continue robust education and enforcement activities at bait shops, bait production/distribution facilities, fish processors, and fish markets or other food establishments known to prefer live fish for release or food preparation.

Hydroacoustics

Hydroacoustic sampling is a tool used to monitor fish populations by using sound waves. It continues to be used, along with other gears such as electrofishing and netting, for monitoring of invasive carp in the Alton through Lockport pools to help quantify the movement and relative size of populations in the IWW. Hydroacoustics also can be used to gain greater temporal resolution on fish abundance and distribution.

Hydroacoustic surveys within the EDBS and in the area immediately downstream (approximately 1.2 miles) of the barrier occur at regular intervals throughout the year. These surveys are intended to identify the presence of any large-bodied fish (fish larger than 12 inches in total length) near the EDBS and help evaluate the potential risk of fish passage in the event of operational changes at the barrier (e.g., maintenance events).

Telemetry

Telemetry tracking in the IWW continues to be an important source of information quantifying the movement and size of populations. Through the telemetry project, invasive carp are captured, implanted with acoustic transmitters, and released in areas where they are already established (**Figure 22**). Then their

Figure 22. Acoustic Transmitter Being Surgically Implanted into an Invasive Carp



Photo shows USGS personnel surgically implanting an acoustic transmitter into an invasive carp. Photo credit: Marybeth Brey, USGS

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movements are tracked across an acoustic receiver array. Individual tagged invasive carp are detected most years below Brandon Road Lock and Dam. To date there have been no tagged invasive carp detected on acoustic receivers in the IWW upstream from Brandon Road Lock and Dam.

Population Monitoring and Modeling

One of the ongoing challenges for invasive carp management in the IWW is estimating population size within the system. This is complicated due to the concurrent effects of invasive carp migrating in from the Mississippi River, reproduction and population growth occurring within the IWW, the upstream and downstream movement of fish between pools, the effect of removal actions, and naturally occurring mortality.

Agencies are using standardized methods to collect total length, weight, age, sex, and maturity data for invasive carp captured in the lower six pools of the river to develop the demographic information needed to model the population. Many years of data are required to develop enough information to support accurate estimates of invasive carp populations.

Additional monitoring efforts collect data associated with invasive carp populations, including invasive carp eggs, native zooplankton, and associated hydrological data. Several experiments will also be done with a mobile fish transfer system with associated technology to support fish scanning and sorting capabilities.

Using the information from several of the monitoring programs, quantitative fishery analysis tools, including the Spatially Explicit Invasive Carp Population (SEICarP) model and the Statistical Catch-at-Age (SCAA) model, are being developed to assess the population trends over time within the IWW. The SEICarP model was developed to provide managers with a tool for predicting the effect of various management strategies by evaluating invasive carp populations and generating estimates of large-scale pool-to-pool movement. The SCAA model under development will use catch statistics, age and growth data, and telemetry-based movement data to provide a finer quantitative estimate of invasive carp populations within the IWW. This model can be used iteratively to set management targets, estimate the effectiveness of management actions, and recalibrate management targets based on new information.

Table 4 lists the Monitoring and Decision Support Projects supported by the 2026 Action Plan.

Table 4 — Monitoring and Decision Support Projects

Project Number	Lead Agency	Project Title <i>(Click on title to go to the project in Appendix B)</i>
IM1-26	ILDNR	Early Detection Monitoring and Contingency Response in the Illinois Waterway

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Project Number	Lead Agency	Project Title <i>(Click on title to go to the project in Appendix B)</i>
IM2-26	USFWS	Support for Early Detection in the Upper Illinois Waterway
IM3-26	USFWS	Early Detection Monitoring for Invasive Carp in the Great Lakes
IM4-26	USFWS	Invasive Carp eDNA Sampling and Analysis
IM5-26	ILDNR	Alternate Pathway Surveillance by Illinois Law Enforcement
IM6-26	ILDNR	Invasive Carp Movement and Stock Assessment in the Illinois Waterway Using Telemetry and Hydroacoustics
IM7-26	USFWS	Assessment of Invasive Carp in the Vicinity of the Electric Dispersal Barrier System using Hydroacoustics
IM8-26	USGS	Telemetry Support to Assess Invasive Carp Movement in the Illinois Waterway
IM9-26	USFWS	Telemetry Support to Assess Invasive Carp Movement in the Peoria and Starved Rock Pools of the Illinois Waterway
IM10-26	USFWS	Invasive Carp Demographics in the Illinois Waterway
IM11-26	ILDNR	Assessment of Invasive Carp Reproduction and Ecosystem Response in the Illinois Waterway
IM12-26	USGS	Support for the Assessment of Invasive Carp Reproduction and Collection of Associated Hydrological Data
IM13-26	ILDNR	Evaluation of Fish Transfer System to Promote Native Species Movement and Invasive Carp Harvest
IM14-26	USGS	USGS Support for Invasive Carp Population Modeling in the Illinois River
IM15-26	USFWS	USFWS Support for Invasive Carp Population Modeling in the Illinois River
IM16-26	USGS	Invasive Carp Database Management

3.2 Hydrologic Barriers to Prevent Invasive Carp Movement through Intermittent Waterways

ICRCC member agencies are involved with building and maintaining hydrologic barriers that prevent the spread of invasive carp between the Mississippi River and Great Lakes basin through intermittent waterways.

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Using previous funding, Ohio Department of Natural Resources (OHDNR) completed the berm design, permitting, wetland mitigation, and construction of a rock berm at highest risk for flooding (Phase 1) on Little Killbuck Creek in northwest Ohio. The remaining project (Reaches 2 through 7, Phases 2 through 6) will be phased over multiple years and will further stabilize and maintain the current earthen berm and upgrade related infrastructure. Phase 1 of the project was completed in October 2025 and is a new rock berm on Medina County Park District property. Phase 2 of the project will address the second highest AIS risk, including purchasing an easement for the current earthen berm, FEMA floodplain modeling, upgrading a pumping facility to ensure dry conditions, improving the access road for future construction phases, and screening a culvert at the east end of the project. Later phases will include the maintenance of the current earthen berm and additional measures. Two additional barriers constructed in prior years are the Eagle Marsh (Fort Wayne, Indiana) and the Ohio & Erie Canal Aquatic Nuisance Species Barrier project (Akron, Ohio) (**Figure 23**). Working with local agencies, the Indiana DNR and OHDNR will continue to maintain those barriers, respectively.

Figure 23. Alternate Pathways for Potential Interbasin Movement of AIS



Map identifying Great Lakes and Ohio River watersheds and status of interbasin pathways projects. Source: OHDNR

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Table 5 lists the Hydrologic Barriers to Prevent Invasive Carp Movement through Intermittent Waterways projects supported by the 2026 Action Plan.

Table 5 — Hydrologic Barriers to Prevent Invasive Carp Movement through Intermittent Waterways Projects

Project Number	Lead Agency	Project Title <i>(Click on Project Title to go to the Project in Appendix B)</i>
HB1-26	OHDNR	Closure of Connection Between the Mississippi River Watershed and Great Lakes Watershed at Little Killbuck Creek Ohio
HB2-26	OHDNR	Maintenance of Structures at Ohio & Erie Canal to Prevent Inter-Basin Movement of Invasive Carp

3.3 Preventing Establishment of Grass Carp in the Great Lakes

Individual Grass Carp have been historically detected and captured in all the Great Lakes except Lake Superior. However, Grass Carp are captured consistently in Lake Erie where there is evidence of Grass Carp spawning activity.

The GLFC's Lake Erie Committee (LEC) of fishery managers coordinates efforts to monitor, assess, understand, and control the Grass Carp population in Lake Erie through the implementation of its [2024-2028 Lake Erie Grass Carp Adaptive Response Strategy](#). The binational LEC, comprised of fishery managers from Michigan, Ohio, Pennsylvania, New York, and Ontario and supported by Canadian and U.S. federal agencies, adopted this 5-year adaptive response strategy to prevent Grass Carp from attaining densities capable of adversely affecting vegetated habitats and associated fish communities and fisheries in Lake Erie. In addition, the GLFC's Grass Carp Advisory Committee (GCAC) helps coordinate actions that address specific LEC priorities and provides advice on maintaining surveillance activities where appropriate in other Great Lakes watersheds.

The major focus in Lake Erie is the removal of Grass Carp, led by the University of Toledo and U.S. agency strike teams. According to the Lake Erie Grass Carp Adaptive Response Strategy, overall abundance appears below the threshold of causing detectable levels of adverse impacts and appears to have declined since 2018 in the Sandusky River (Ohio) owing to intensive response efforts. The 'SpawnCast' web-based decision support tool produces forecasts of potential Grass Carp spawning events to help target strike team control actions. Beginning in 2022, Grass carp efforts shifted to previously unexploited areas upstream of major riffles and gillnets were added as a sampling gear both of which increased numbers removed.

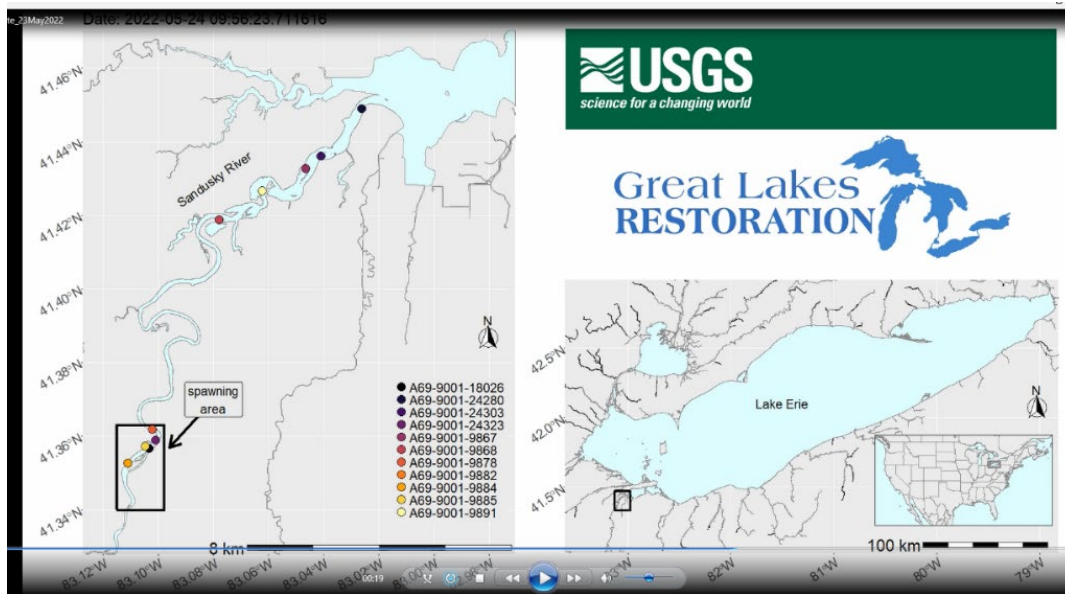
Ongoing monitoring of tagged Grass Carp indicates that they are continuing to mostly inhabit the western basin of Lake Erie, with limited movement to eastern areas of Lake Erie, minimally to Lake Huron, and some fish return to western Lake Erie. Monitoring and telemetry studies will

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continue to be used to guide response actions, and models will continue to be developed to help track the effectiveness of the response effort. An animated video depicting a one-day Grass Carp spawning event in the Sandusky River may be viewed here:

<https://www.usgs.gov/media/videos/telemetered-grass-carp-ctenopharyngodon-idella-movements-during-a-known-spawning-event>

Figure 24. Telemetered Grass Carp Movements During a Spawning Event



Telemetered Grass Carp movements during a known spawning event on 23 May 2022, in the Sandusky River, Ohio. Source: USGS

To ensure that no other significant populations exist in the Great Lakes, agencies will continue to implement targeted Grass Carp surveillance and removal actions. Potential population locations will be monitored and Grass Carp will be removed when encountered in sampling gears. **Table 6** lists the Preventing Establishment of Grass Carp in the Great Lakes projects supported by the 2026 Action Plan.

Table 6 — Preventing Establishment of Grass Carp in the Great Lakes Projects

Project Number	Lead Agency	Project Title <i>(Click on Project Title to go to the Project in Appendix B)</i>
GC1-26	OHDNR	Removal of Grass Carp in Ohio Waters of the Lake Erie Western Basin
GC2-26	MIDNR	Removal of Grass Carp in the Lake Erie Western Basin and Early Detection Monitoring in Great Lakes Tributaries

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Project Number	Lead Agency	Project Title <i>(Click on Project Title to go to the Project in Appendix B)</i>
GC3-26	USFWS	Support for Removal of Grass Carp in the Lake Erie Western Basin and Early Detection Monitoring in Great Lakes Tributaries
GC4-26	USFWS	Invasive Carp Ploidy Analysis to Assess Reproductive Risk of Detected Populations
GC5-26	USGS	Predicting and Identifying Grass Carp Spawning Locations
GC6-26	USGS	Refinement of the Grass Carp Spawning Event Prediction Tool
GC7-26	USGS	Using Telemetry to Better Understand Grass Carp Movements and Habitat Use
GC8-26	USGS	Strontium Isotopes and Grass Carp Ichthyoplankton in Sandusky Bay
GC9-26	USGS	Grass Carp Impacts on Great Lakes Wetland Habitats
GC10-26	NOAA	Using Modelling to Identify Best Assessment Practices for Grass Carp
GC11-26	USGS	Comparison of Gear Efficiency for Grass Carp Removal in Lake Erie Tributaries
	GLFC	Grass Carp Control in the Lake Erie Basin

3.4 Understanding Black Carp Population Dynamics to Inform Management Strategies

Naturally reproducing populations of Black Carp are present and increasing their range in the Mississippi River basin, and a population exists in the lower and middle Illinois River. U.S. ICRCC member agencies continue to focus on effectively locating and removing Black Carp from the Illinois River using eDNA surveillance and traditional fishery gear. In addition, a collaboration with commercial fishers is helping to collect data from their captures of Black Carp from within the Mississippi River watershed, including near the Illinois River Confluence. These collections, along with other monitoring information, help to identify capture methods and provides information on Black Carp population dynamics to further inform management strategies. Coordination of these activities will continue to occur through the Black Carp Work Group.

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Table 7 lists the Understanding Black Carp Population Dynamics to Inform Management Strategy projects supported by the FY 2026 Action Plan.

Table 7 — Understanding Black Carp Population Dynamics to Inform Management Strategy Projects

Project Number	Lead Agency	Project Title (Click on Project Title to go to the project in Appendix B)
BC1-26	ILDNR	Enhanced Detection of Black Carp in the Lower Illinois River
BC2-26	ILDNR	Black Carp Data Collection from Commercial Fishers and Recreational Anglers
BC3-26	USGS	Support for Black Carp Monitoring and Population Assessment
BC4-26	USFWS	Support for Black Carp Monitoring and Interagency Coordination

3.5 ICRCC Communications and Support

The FY 2026 Action Plan includes key activities to continue effective communication and partnership coordination efforts in support of the ICRCC's purpose of Great Lakes' protection from invasive carp. USFWS, in coordination with partners, will continue to lead the timely development and delivery of strategic communications for the ICRCC, resulting in better information sharing among ICRCC member agencies about population status, control efforts, and technological advancements. Communications priorities include the continued development of the ICRCC website [Homepage | Invasive Carp Regional Coordinating Committee](#) as the main platform for consolidated information about the partnership and its most significant activities. ICRCC communications efforts are also coordinated with members involved with rapid response management actions that might occur, as described in the Upper IWW CRP.

Additional support for achieving the ICRCC's purpose is provided through the FY 2026 Action Plan for general partnership operational and logistical needs, including contractor staffing capacity, as needed.

The ICRCC will continue to collaborate with other invasive carp management efforts and partnerships outside the Great Lakes to leverage opportunities, best practices, strategies, and resources on invasive carp prevention and control across multiple basins in support of the goals of the national *Management and Control Plan for Bighead, Black, Grass, and Silver Carp in the United States* (National Plan). These collaborative efforts will further support the efforts of

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partners to identify and leverage expertise, share data, and increase capacity to address the challenge of preventing the introduction and establishment of invasive carp more broadly and holistically on a multi-basin, regional, and national scale.

Table 8 lists the ICRCC Communications and Support projects supported by the FY 2026 Action Plan.

Table 8 — ICRCC Communications and Support Projects

Project Number	Lead Agency	Project Title <i>(Click on Project Title to go to the project in Appendix B)</i>
MS1-26	USFWS	ICRCC Strategic Communications with Partners and Stakeholders
MS2-26	USFWS	ICRCC Mission Support

4. NATIONAL INVASIVE CARP MANAGEMENT

The ICRCC's efforts to prevent the introduction and establishment of invasive carp in the Great Lakes take place within a broader U.S. and Canadian context. Invasive carp represent a significant challenge to natural resource managers across much of the U.S. and Canada.

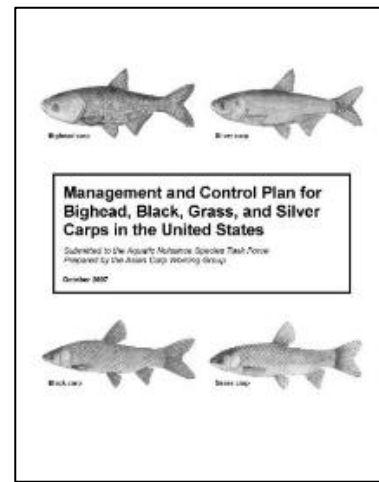
4.1 U.S. National Invasive Carp Management

In the U.S., the river corridors of the Mississippi River basin provide an expansive network of interconnected pathways for the potential movement of invasive carp into the watershed's 31 states. Geographically-focused management strategies are being implemented, stepped down from the national guidance provided in the *Management and Control Plan for Bighead, Black, Grass, and Silver Carps in the United States* (Figure 25). ([Action Plans and Reports | Invasive Carp Regional Coordinating Committee](#)).

Figure 26 demonstrates the extent of Bighead Carp and Silver Carp populations within the Mississippi River basin's mainstem rivers. Working through the Mississippi Interstate Cooperative Resource Association (MICRA) framework, interagency invasive carp partnerships were initially formed in 2014 to address the threat of invasive carp in the Upper Mississippi River and Ohio River sub-basins and are now operating in all major river sub-basins of the Mississippi River basin (Figure 27).

Monitoring, tracking, and managing multiple populations of the four species across large, complex, multi-jurisdictional watersheds underscore the challenging and evolving nature of effectively addressing the threat posed by invasive carp. Accordingly, agencies have developed strategies and approaches to scientifically assess invasive carp and collect critically needed information to inform actions while continuing to focus on aggressive measures to prevent and control further introduction and range expansion. Additional information can be found at: <http://micrarivers.org/invasivecarp/>.

Figure 25. Management and Control Plan Cover

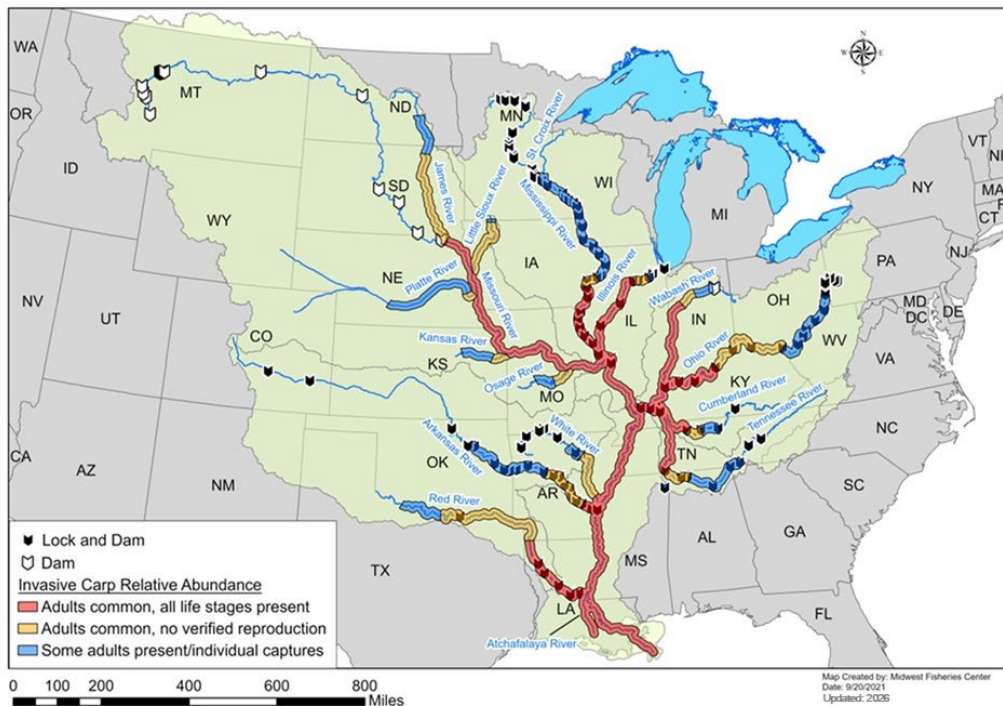


Management and Control Plan developed by the Aquatic Nuisance Species Task Force, Washington, D.C., 2007

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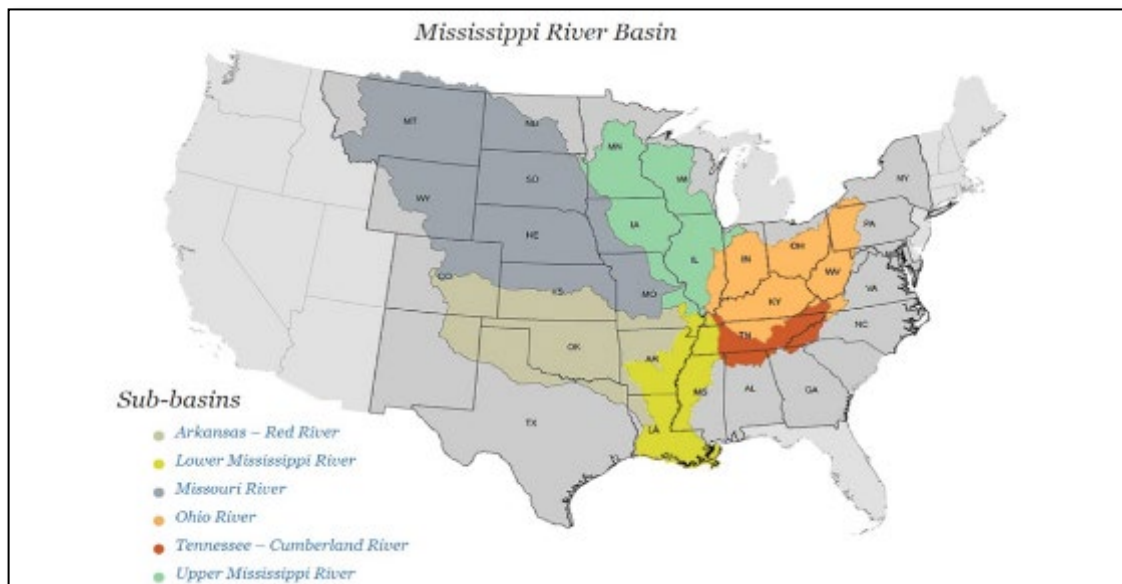
Figure 26. Status of Bighead Carp and Silver Carp – Mississippi River Basin

Bighead Carp and Silver Carp: Characterization of Relative Abundance in the Mississippi River, Ohio River, Tennessee River, Missouri River, and Red River Basins



Map showing the status of Bighead Carp and Silver Carp in the Mississippi River basin.
Source: USFWS

Figure 27. Delineation of Mississippi River Sub-Basins with Invasive Carp Partnerships



U.S. map showing states with Mississippi River sub-basin invasive carp partnerships. Source: USFWS

4.2 Canadian National Invasive Carp Management

Within Canada, Fisheries and Oceans Canada (DFO), the Ontario Ministry of Natural Resources (OMNR), and the Québec Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs (MELCCFP) are key Canadian Federal and Provincial ICRCC partner agencies working to address the threat of Grass Carp, Bighead Carp, Silver Carp, and Black Carp to the Great Lakes and St. Lawrence River. Their efforts include policy, prevention, early detection surveillance, research, and scientific oversight activities in the Canadian waters of the Great Lakes and St. Lawrence River, representing a critical component to ensuring a basin-wide approach to addressing the threat. More information on these efforts can be found at the following agency websites:

- The official website of [Fisheries and Ocean Canada](#)
- The official Quebec website [Welcome to Québec.ca | Gouvernement du Québec](#)
- Ontario's website on [Invasive carps | ontario.ca](#)
- The response plan of [Invasive Carp Response Plan – Invasive Carp Canada](#)

Appendix A

FY 2026 Funding Matrix

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Table A-1 – Funding by Project

-	Action	Lead Agency	Project Title	GLRI Funding	Agency Funding
Preventing Invasive Carp Movement through the Illinois Waterway ID – Illinois Waterway Deterrent Technology Operation and Development IR – Removal Actions – Contract Fishing IM – Monitoring and Decision Support	ID1-26	USACE	Operation and Maintenance of the Electric Dispersal Barrier System	\$0	\$12,979,000
	ID2-26	USACE	Implementation of the Brandon Road Interbasin Project	\$0	\$28,000,000
	ID3-26	USGS	Water Quality and Velocity Monitoring in Support of the Brandon Road Project	\$80,000	\$0
	ID4-26	USACE	Further Evaluation of Underwater Acoustics as a Deterrent for Invasive Carp	\$850,000	\$0
	ID5-26	USGS	Technical Support for the Evaluation of Underwater Acoustics as a Deterrent for Invasive Carp	\$650,000	\$491,000
	ID6-26	USACE	Planning for the Use of Carbon Dioxide Deterrent in the Illinois Waterway	\$600,000	\$0
	ID7-26	USGS	Technical Support for the Use of Carbon Dioxide Deterrent in the Illinois Waterway	\$150,000	\$360,000
	IR1-26	ILDNR	Contract Fishing for Invasive Carp Removal Near the Electric Dispersal Barrier System	\$2,400,000	\$0
	IR2-26	ILDNR	Enhanced Invasive Carp Removal in the Lower Illinois River	\$2,300,000	\$0
	IM1-26	ILDNR	Early Detection Monitoring and Contingency Response in the Illinois Waterway	\$4,000,000	\$0
	IM2-26	USFWS	Support for Early Detection in the Upper Illinois Waterway	\$685,000	\$675,000
	IM3-26	USFWS	Early Detection Monitoring for Invasive Carp in the Great Lakes	\$335,000	\$1,400,000
	IM4-26	USFWS	Invasive Carp eDNA Sampling and Analysis	\$0	\$2,400,000
	IM5-26	ILDNR	Alternate Pathway Surveillance by Illinois Law Enforcement	\$158,000	\$0
	IM6-26	ILDNR	Invasive Carp Movement and Stock Assessment in the Illinois Waterway Using Telemetry and Hydroacoustics	\$400,000	\$0

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-	Action	Lead Agency	Project Title	GLRI Funding	Agency Funding
Preventing Invasive Carp Movement through the Illinois Waterway ID – Illinois Waterway Deterrent Technology Operation and Development IR – Removal Actions – Contract Fishing IM – Monitoring and Decision Support	IM7-26	USFWS	Assessment of Invasive Carp in the Vicinity of the Electric Dispersal Barrier System using Hydroacoustics	\$71,000	\$0
	IM8-26	USGS	Telemetry Support to Assess Invasive Carp Movement in the Illinois Waterway	\$355,000	\$104,000
	IM9-26	USFWS	Telemetry Support to Assess Invasive Carp Movement in the Peoria and Starved Rock Pools of the Illinois Waterway	\$150,000	\$400,000
	IM10-26	USFWS	Invasive Carp Demographics in the Illinois Waterway	\$450,000	\$250,000
	IM11-26	ILDNR	Assessment of Invasive Carp Reproduction and Ecosystem Response in the Illinois Waterway	\$274,000	\$0
	IM12-26	USGS	Support for the Assessment of Invasive Carp Reproduction and Collection of Associated Hydrological Data	\$80,000	\$75,000
	IM13-26	ILDNR	Evaluation of Fish Transfer System to Promote Native Species Movement and Invasive Carp Harvest	\$242,000	\$0
	IM14-26	USGS	USGS Support for Invasive Carp Population Modeling in the Illinois River	\$135,000	\$290,000
	IM15-26	USFWS	USFWS Support for Invasive Carp Population Modeling in the Illinois River	\$100,000	\$200,000
	IM16-26	USGS	Invasive Carp Database Management	\$161,000	\$436,000
	HB1-26	OHDNR	Closure of Connection Between the Mississippi River Watershed and Great Lakes Watershed at Little Killbuck Creek Ohio	\$1,000,000	\$0
	HB2-26	OHDNR	Maintenance of Structures at Ohio & Erie Canal to Prevent Inter-Basin Movement of Invasive Carp	\$20,000	\$0

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-	Action	Lead Agency	Project Title	GLRI Funding	Agency Funding
Preventing Establishment of Grass Carp in the Great Lakes	GC1-26	OHDNR	Removal of Grass Carp in Ohio Waters of the Lake Erie Western Basin	\$650,000	\$0
	GC2-26	MIDNR	Removal of Grass Carp in the Lake Erie Western Basin and Early Detection Monitoring in Great Lakes Tributaries	\$410,000	\$150,000
	GC3-26	USFWS	Support for Removal of Grass Carp in the Lake Erie Western Basin and Early Detection Monitoring in Great Lakes Tributaries	\$1,800,000	\$850,000
	GC4-26	USFWS	Invasive Carp Ploidy Analysis to Assess Reproductive Risk of Detected Populations	\$80,000	\$40,000
	GC5-26	USGS	Predicting and Identifying Grass Carp Spawning Locations	\$375,000	\$365,627
	GC6-26	USGS	Refinement of the Grass Carp Spawning Event Prediction Tool	\$85,000	\$30,000
	GC7-26	USGS	Using Telemetry to Better Understand Grass Carp Movements and Habitat Use	\$200,000	\$605,499
	GC8-26	USGS	Strontium Isotopes and Grass Carp Ichthyoplankton in Sandusky Bay	\$180,000	\$0
	GC9-26	USGS	Grass Carp Impacts on Great Lakes Wetland Habitats	\$100,000	\$0
	GC10-26	NOAA	Using Modelling to Identify Best Assessment Practices for Grass Carp	\$177,000	\$70,000
	GC11-26	USGS	Comparison of Gear Efficiency for Grass Carp Removal in Lake Erie Tributaries	\$166,000	\$0
	N/A	GLFC	Grass Carp Control in the Lake Erie Basin	\$0	\$1,000,000
Understanding Black Carp Population Dynamics to Inform Management Strategies	BC1-26	ILDNR	Enhanced Detection of Black Carp in the Lower Illinois River	\$243,000	\$0
	BC2-26	ILDNR	Black Carp Data Collection from Commercial Fishers and Recreational Anglers	\$42,000	\$0
	BC3-26	USGS	Support for Black Carp Monitoring and Population Assessment	\$405,000	\$133,000
	BC4-26	USFWS	Support for Black Carp Monitoring and Interagency Coordination	\$91,000	\$10,000

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-	Action	Lead Agency	Project Title	GLRI Funding	Agency Funding
ICRCC Communications and Support	MS1-26	USFWS	ICRCC Strategic Communications with Partners and Stakeholders	\$175,000	\$100,000
	MS2-26	USFWS	ICRCC Mission Support	\$175,000	\$0
Total Funding	--	--	--	\$21,000,000	\$51,414,126

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Table A-2 – Funding by Agency

Agency	GLRI Funding FY 2026 (\$)	Agency Funding FY 2026 (\$)
Illinois DNR	\$10,059,000	\$0
Ohio DNR	\$1,670,000	\$0
Michigan DNR	\$410,000	\$150,000
NOAA	\$177,000	\$70,000
GLFC	\$0	\$1,000,000
USACE	\$1,450,000	\$40,979,000
USFWS	\$4,112,000	\$6,325,000
USGS	\$3,122,000	\$2,890,126
TOTALS	\$21,000,000	\$51,414,126

Appendix B

FY 2026 Invasive Carp

Action Plan Projects

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ACRONYM LIST

Acronym	Definition
AIS	Aquatic Invasive Species
ANS	Aquatic Nuisance Species
BAFF	Bio-Acoustic Fish Fence
BCWG	Black Carp Work Group
BRIP	Brandon Road Interbasin Project
BRLD	Brandon Road Lock and Dam
CAWS	Chicago Area Waterway System
CarpDAT	Catalog for Invasive Carp Data
CMWSC	Central Midwest Water Science Center
CERC	Columbia Environmental Research Center
CO2	Carbon Dioxide
CRP	Contingency Response Plan
CSSC	Chicago Sanitary and Ship Canal
CWG	Communications Work Group
DFO	Department of Fisheries and Oceans Canada
DNR	Department of Natural Resources
EDBS	Electric Dispersal Barrier System
eDNA	Environmental Deoxyribonucleic Acid
EDM	Early Detection Monitory
ERDC	Engineer Research and Development Center
FBC	Fish & Boat Commission
FEMA	Federal Emergency Management Agency
FluEgg	Fluvial Egg Drift Simulator
FWCO	Fish and Wildlife Conservation Office
FY	Fiscal Year

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Acronym	Definition
GCAC	Grass Carp Advisory Committee
GLATOS	Great Lakes Acoustic Telemetry Observation System
GLFC	Great Lakes Fishery Commission
GLMRIS	Great Lakes and Mississippi River Interbasin Study
GLRI	Great Lakes Restoration Initiative
GPS	Global Transitional System
IADNR	Iowa Department of Natural Resources
ICRCC	Invasive Carp Regional Coordinating Committee
ILDNR	Illinois Department of Natural Resources
INDNR	Indiana Department of Natural Resources
ILRCdb	Illinois River Catch Database
INHS	Illinois Natural History Survey
IRBS	Illinois River Biological Station
ISU	Invasive Species Unit
IWW	Illinois Waterway
KDFWR	Kentucky Department of Fish and Wildlife Resources
LTRM	Long-term Resource Monitoring
MAM	Multi-Agency Monitoring
MIDNR	Michigan Department of Natural Resources
MNDNR	Minnesota Department of Natural Resources
MDC	Missouri Department of Conservation
MRWG	Monitoring and Response Work Group
NAS	Non-Indigenous Aquatic Species
NWIS	National Water Information System
NWM	National Water Model
NYDEC	New York Department of Environmental Conservation

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Acronym	Definition
NOAA	National Oceanic and Atmospheric Administration
OHDNR	Ohio Department of Natural Resources
PAFBC	Pennsylvania Fish and Boat Commission
PVC	Polyvinyl chloride
QA/QC	Quality Assurance/Quality Control
qPCR	Quantitative polymerase chain reaction
RAFT	Riverine Acoustic Fish Telemetry
SCAA	Statistical Catch-at-Age
SDM	Structured Decision Making
SEICarP	Spatially Explicit Invasive Carp Population
SIM	Seasonal Intensive Monitoring
SIU	Southern Illinois University
SIUC	Southern Illinois University Carbondale
TNWRRA	Tennessee Wildlife Resources Agency
TWG	Technology Work Group
U.S.	United States
uADS	Underwater Acoustic Deterrent System
UMN	University of Minnesota
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UMESC	Upper Midwest Environmental Services Center
VPS	Vemco Positioning Array
WIDNR	Wisconsin Department of Natural Resources

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PREVENTING INVASIVE CARP MOVEMENT THROUGH THE ILLINOIS WATERWAY

Migration Deterrents and Technology Development

ID1-26: Operation and Maintenance of the Electric Dispersal Barrier System

- **Lead Agency:** USACE
- **Agency Collaboration:** None
- **GLRI Funding:** \$0
- **Agency Funding:** \$12,979,000

Project Summary

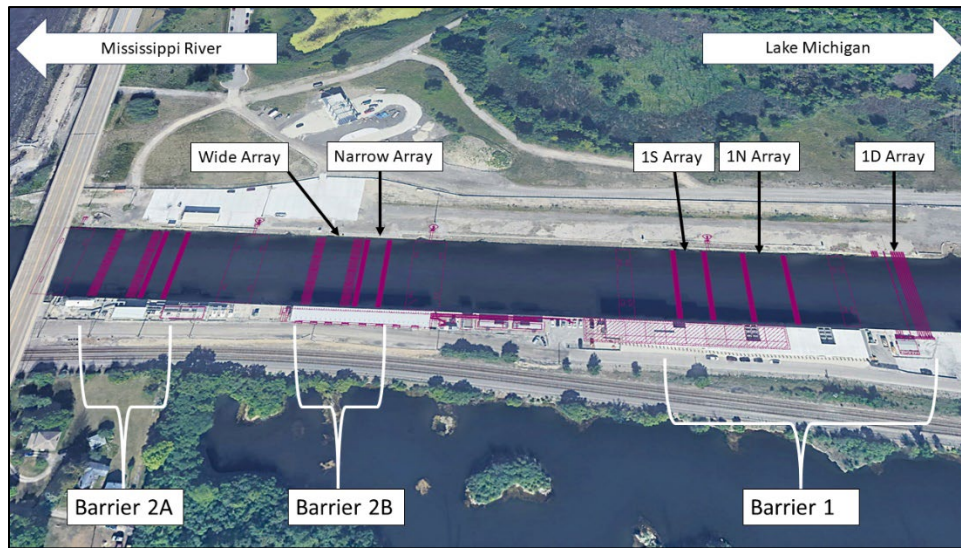
This project involves the operation and maintenance of the EDBS on the CSSC in Romeoville, Illinois. This project provides the last line of defense to prevent the establishment of invasive carp in the Great Lakes by maintaining constant electrical current in the water of the CSSC. Funding supports continuous operations as well as efforts to improve the efficacy of the system.

Project Description

The CSSC is a man-made waterway creating the only continuous connection between Lake Michigan and the Mississippi River basin. The EDBS was developed to prevent the spread of invasive fish species between these watersheds. USACE has operated electric barriers in the CSSC since 2002 (Figure 1). Over the years, several operational and procedural improvements have been implemented to improve their effectiveness and continuously deliver an uninterrupted flow of electricity to the water to deter fish. Barrier I construction was completed in 2024. In 2025, USACE activated the new components of Barrier I for full time operation and continued to operate and maintain existing barriers. Final safety testing of the system is underway and scheduled for completion in 2026. Additionally, in 2026, USACE plans to acquire permanent real estate interest on the leased project site.

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Figure 1 — USACE EDBS in the CSSC



Map showing the location of EDBS electrodes in the CSSC and supporting facilities. Source: USACE

Figure 2 — IGBT Switches



*Photo of the IGBT switches that pulse the electricity into the CSSC.
Source: USACE*

Figure 3 — Bank of Capacitors



*Photo of a bank of capacitors that provides continuous power to the IGBT switches that is then sent to the electrodes in the CSSC.
Source: USACE*

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PREVENTING INVASIVE CARP MOVEMENT THROUGH THE ILLINOIS WATERWAY

Migration Deterrents and Technology Development

ID2-26: Implementation of Brandon Road Interbasin Project

- **Lead Agency:** USACE
- **Agency Collaboration:** None
- **GLRI Funding:** \$0
- **Agency Funding:** \$28,000,000

Project Summary

This project will support the design, construction, and implementation of structural and nonstructural measures at BRLD near Joliet, Illinois, which will prevent, to the maximum extent possible, the upstream transfer of ANS from the Mississippi River basin into the Great Lakes basin while minimizing impacts to waterway uses and users. Construction of the project has begun since the Project Partnership Agreement with the local sponsors (States of Illinois and Michigan) was signed on July 1, 2024. Federal funds received to date in conjunction with local sponsor funds are being used to complete design of the entire project, fabricate gates and speakers, and complete construction of the first of three increments. The first increment consists of an automated barge clearing deterrent, a bubble deterrent, and an acoustic deterrent, as well as site preparation work. The first construction contract for site preparation and channel rock excavation was awarded in November 2024 and completed in July 2025.

Project Description

The project includes a layered system of structural controls and non-structural measures. The structural plan includes a new control point at BRLD in addition to the control point already provided by the CSSC EDBS in Romeoville, Illinois. The new structural control point would include an acoustic fish deterrent, a bubble deterrent, an engineered channel, an electric deterrent, a flushing lock, and an automated barge clearing (barge entrainment) deterrent. The project includes managing the waterway below the BRLD as a “population reduction zone,” where monitoring and overfishing would occur.

Non-structural measures that may be implemented, primarily by other federal and state agencies, include public education and outreach, non-structural monitoring, integrated pest management, piscicides, manual or mechanical removal of fish, research, and development of two boat launches.

The project is being constructed in three increments:

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- Increment I-A: automated barge clearing deterrent, bubble curtain deterrent, acoustic deterrent, support facilities, and upstream boat ramp.
- Increment I-B: site preparation and channel rock excavation.
- Increment II: flushing lock, right descending bank wall, and channel rock excavation.
- Increment III: electric deterrent, acoustic deterrent, engineered channel floor and walls, support facilities, and downstream boat ramp.

The proposed project also includes fishery management efforts to offset impaired migration of native fish between the upper and lower Des Plaines River.

Figure 4 — Overall Project Features



Overhead view of BRLD depicting the locations of the deterrents and the support features. Source: USACE

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PREVENTING INVASIVE CARP MOVEMENT THROUGH THE ILLINOIS WATERWAY

Migration Deterrents and Technology Development

ID3-26: Water Quality and Velocity Monitoring in Support of Brandon Road Interbasin Project

- **Lead Agency:** USGS
- **Agency Collaboration:** USACE
- **GLRI Funding:** \$80,000
- **Agency Funding:** \$0

Project Summary

This project will support the operation and maintenance of a real-time continuous water quality stream gaging station at the upstream bullnose of BRLD in the IWW in Illinois. This project will result in essential data documenting the pre-deterrent water chemistry conditions at BRLD and temporal variations associated with the river and lock and dam operations. This project will help prevent invasive carp from becoming established in the Great Lakes by providing information about potential impacts and engineering challenges associated with the deployment of barrier technologies in the downstream approach channel to BRLD. This funding will produce water quality data at the upstream bullnose to BRLD served via the USGS National Water Information System. Temporary relocation of the downstream stream gage from the approach channel was necessary due to construction in the approach channel that started in January 2025.

Project Description

The BRLD on the Des Plaines River near Joliet, Illinois, was identified for implementation of invasive species control measures. The BRIP includes the planned development of several deterrent technologies in an engineered approach channel to BRLD (underwater acoustic deterrent systems, electric barrier, bubble curtains, etc.). While not originally included in the design, carbon dioxide is also being considered as a potential deterrent at the site. The BRIP is now in the construction phase.

In support of the BRIP, USGS will continue [monitoring water quality](#) at the upstream bullnose of BRLD. Data includes water temperature, specific conductance, pH, dissolved oxygen, turbidity, chlorophyll-a, phycocyanin, and dissolved carbon dioxide. As part of this project, USGS will also provide hydrologic science support and expertise for the BRIP on an as-needed basis and continue to collaborate with USACE scientists and engineers on related studies and publications.

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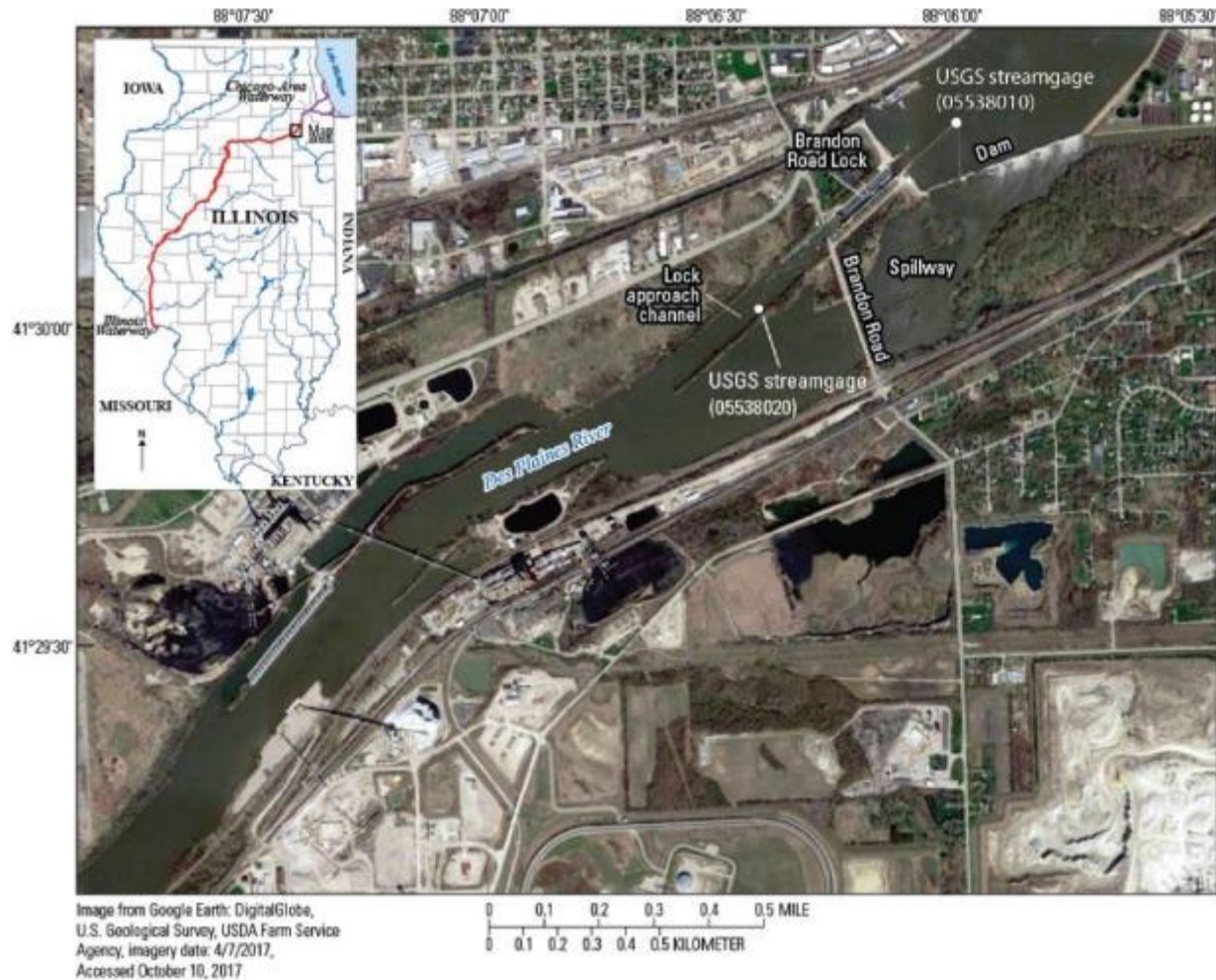
Figure 5 — The USGS Streamgage 05538010



Photograph of the USGS stream gage 05538010 Des Plaines River at Rockdale, Illinois located at the upstream bullnose of BRLD on the Des Plaines River.

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Figure 6— USGS Streamgage 05538020 in Des Plaines River near Brandon Road Lock and Dam



Map of the Des Plaines River (Illinois) near BRLD and the location of USGS streamgage 05538020 and 05538010 (modified from [Engel et al. \[2017\]](#)). In FY 2025, USGS 05538020 was temporarily relocated to the former site of USGS 05538010 to allow for construction in the downstream approach channel. Source: USGS

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PREVENTING INVASIVE CARP MOVEMENT THROUGH THE ILLINOIS WATERWAY

Migration Deterrents and Technology Development

ID4-26: Further Evaluation of Underwater Acoustics as a Deterrent for Invasive Carp

- **Lead Agency:** USACE
- **Agency Collaboration:** USGS, USFWS, ILDNR, MIDNR, MNDNR, WIDNR, University of Iowa, University of Illinois, U of Minnesota
- **GLRI Funding:** \$850,000
- **Agency Funding:** \$0

Project Summary

This project will further develop uADS and signals to deter invasive carp. This project will help prevent invasive carp from becoming established in the Great Lakes by developing acoustic deterrent designs that result in greater efficacy and lower operation and maintenance costs. The funding will generate data and models to inform underwater acoustics planning and deployment efforts within the IWW and other locations that could impact the Great Lakes.

Project Description

uADS can be installed at “pinch points” in the river system, such as BRLD, where invasive carp are only able to swim upstream through a lock chamber because the head height of the dam structure is impassable. When acoustic deterrents are used in combination with bubble and electrical deterrents, deterrent systems are better able to engage the visual, lateral line, and hearing systems of invasive carp.

This project will refine the uADS application for the BRLD ANS Barrier Project and generate information that can be used at other potential deployment locations. The work will examine the efficacy of deterrence, impacts on native species, and develop acoustic noise models. The impacts of ship navigation on field strength and efficacy will also be assessed. This funding will produce a summary of uADS results from the test site at Lock No. 19 and complete fish passage manuscripts. Experiments on bigheaded carp behavior to new signals will be conducted, and signal amplification or masking relative to bubble and electrical deterrents will be considered. A computational model of the impact of vessels on the uADS will also be generated. All efforts and products will support the BRIP. The results of the project can also inform efforts to reduce the forward migration of invasive carp from other locations in the Mississippi River basin.

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Figure 7— Underwater Acoustics Deterrent Systems and Maps



(UPPER LEFT) Photo of the uADS speaker weldment (e.g., soundbar) during removal for maintenance. (UPPER RIGHT) Location of the uADS at Lock No. 19, Keokuk Iowa. (MIDDLE LEFT) Photo of a Lubell 1424HP transducer after 1 yr of deployment (expected wear). (MIDDLE CENTER) Photo of a Lubell 1424HP transducer after 6 months of deployment (accelerated corrosion) in low voltage exposure (over the parasitic array) at the EDBS (Romeoville, IL). (MIDDLE RIGHT) Location of isolation uADS deployed over the Parasitic Array, Romeoville, IL. (LOWER LEFT) BRIP array of deterrents. (LOWER RIGHT: Location of BRLD (Des Plaines River, Illinois). Photo credit: USACE

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PREVENTING INVASIVE CARP MOVEMENT THROUGH THE ILLINOIS WATERWAY

Migration Deterrents and Technology Development

ID5-26: Technical Support for the Evaluation of Underwater Acoustics as a Deterrent for Invasive Carp

- **Lead Agency:** USGS
- **Agency Collaboration:** USACE, USFWS, IADNR, ILDNR, UMN, MNDNR, WIDNR
- **GLRI Funding:** \$650,000
- **Agency Funding:** \$491,000

Project Summary

This project will complete research on field deployments of acoustic deterrents in Kentucky [multi-modal deterrent; Barkley Lock and Dam, Cumberland River], Illinois/Iowa (uADS; Lock 19, upper Mississippi River), and other lab or field locations. This project will result in deployments and rigorous testing of experimental deterrents in rivers, specifically at locks and dams, and prevent invasive carp from becoming established in the Great Lakes by developing acoustic deterrent designs that result in greater efficacy and lower operation and maintenance costs. This funding will produce 1) final presentations, reports, and publications on the culmination of 3 years of the evaluation of the multi-modal deterrent at Barkley Lock and Dam; 2) a 4-year summary, presentations, and publications of fish passage and fine-scale fish behavior at Lock 19; 3) technology transfer or removal plans for deterrent locations; and 4) summaries and publications of research and development on uADS in an Illinois River backwater, sound-CO₂ pond studies, and feasibility studies for deploying acoustic deterrents at non-lock approach locations. All efforts and products will support the BRIP.

Project Description

Significant work has been done to identify potential biological and physical deterrent techniques that discourage the movement of Bighead Carp, Silver Carp, Grass Carp, and Black Carp while allowing the passage of native fish and shipping to continue. Previous studies in controlled experimental settings have documented that all four invasive carps responded negatively to various underwater sound stimuli, while many native fish species responded little to the same sounds. Building off these studies and deploying large-scale experimental acoustic structures at critical passage points in rivers will help managers understand the effectiveness of acoustic deterrents in natural settings where invasive carp populations are already established. For two large-scale deployments (uADS at Lock 19 and BAFF at Barkley Lock and Dam), underwater sound equipment was installed at movement bottlenecks in the river system where carp are only able to swim upstream through a lock chamber because the head height of the dam structure is

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impassable. Migration of fish was then confined to a single passage point and could be monitored using telemetry and hydroacoustic equipment.

Data collected over the past 5 years are being used to assess and refine acoustic deterrents in multiple ways. In addition to field-testing of uADS at navigation locks, laboratory and smaller field evaluations are being completed to refine and optimize deterrent techniques, sound frequencies, sound pressure levels, and speaker designs to repel invasive carps while limiting or eliminating undesirable effects on native species. The goal is to limit upstream passage, specifically in areas with access to the Great Lakes.

The focus of this funding will be on completing data analyses and presenting results that can be used for the future management of invasive carp. The focus will include final data analyses, presentations, and publications to conclude the study of the BAFF system at Barkley Lock and Dam. Evaluation of a uADS at Lock No. 19 (Upper Mississippi River) will continue, and funding supports personnel, fish monitoring/tagging, operation and maintenance, and data analysis and summarization. Project focus will be on testing new signals in continuous operation and monitoring full upstream fish passage instead of fine-scale movements. In addition, data analyses and publications from past field testing in the Illinois River and laboratory/pond evaluations of deterrents will be completed.

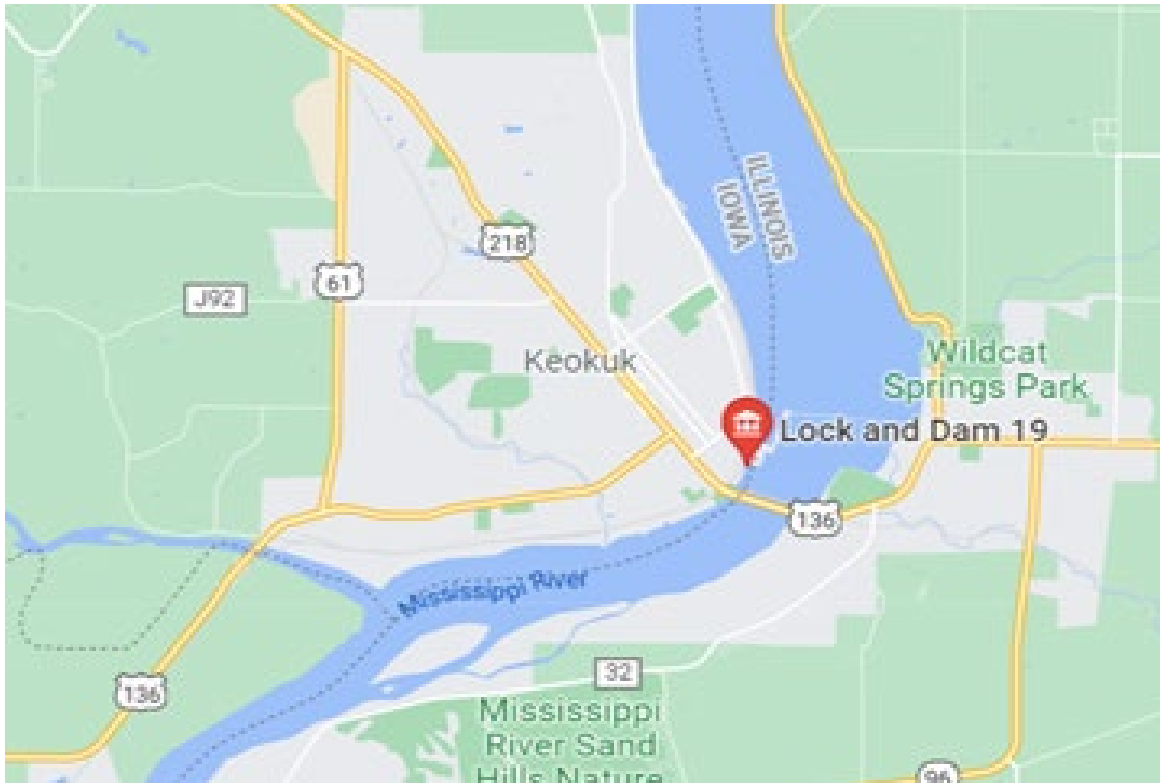
Figure 8 — Fish Tagging to Evaluate uADS



Biologists conduct fish tagging by surgically implanting acoustic transmitters in fish to evaluate the uADS. Photo credit: USGS

Invasive Carp Action Plan: Fiscal Year 2026

Figure 9 — Location of the uADS at Lock No. 19



The location of the uADS at Lock 19 on the Mississippi River in Keokuk, Iowa. Source: USGS

Invasive Carp Action Plan: Fiscal Year 2026

PREVENTING INVASIVE CARP MOVEMENT THROUGH THE ILLINOIS WATERWAY

Migration Deterrents and Technology Development

ID6-26: Planning for the Use of Carbon Dioxide Deterrent in the Illinois Waterway

- **Lead Agency:** USACE
- **Agency Collaboration:** USGS
- **GLRI Funding:** \$600,000
- **Agency Funding:** \$0

Project Summary

This project will model the use of CO₂ as an invasive carp deterrent at BRLD. This project will potentially enhance the current multi-deterrent strategy of bubbles, electricity, and sound with the use of CO₂ in the lock chamber to further prevent the movement of invasive carp toward the Great Lakes. This funding will produce a model of CO₂ delivery and transport within the aquatic environment and forecast the fish deterrent response.

Project Description

CO₂ injection into water is a well-understood method for preventing fish from continuing to move upstream. At the BRIP, CO₂ has been identified as a candidate for fish clearing near the downstream lock gates. This project will identify the CO₂ injection method and amounts and estimate the spatial distributions of dissolved CO₂ under several operational scenarios. This information is needed to guide subsequent engineering design so that CO₂ deterrence can be part of the BRIP.

The project will be implemented by developing a 3D water flow model and an integrated CO₂ model for three operational scenarios: 1) static conditions, 2) lock emptying conditions, and 3) the presence of a barge. Each operational condition will change the pattern of water flow and the distribution of CO₂. Understanding how this occurs will assist with engineering design and result in a system that maximizes fish deterrence and minimizes operational costs.

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Figure 10 – Carbon Dioxide Deterrence Zone at BRIP



Top frame shows schematic of the BRIP and the proposed carbon dioxide addition zone. Bottom image is an example of carbon dioxide being added to a concrete channel. Source: USACE

Invasive Carp Action Plan: Fiscal Year 2026

PREVENTING INVASIVE CARP MOVEMENT THROUGH THE ILLINOIS WATERWAY

Migration Deterrents and Technology Development

ID7-26: Technical Support for the Use of Carbon Dioxide Deterrent in the Illinois Waterway

- **Lead Agency:** USGS
- **Agency Collaboration:** USGS, USACE, USFWS
- **GLRI Funding:** \$150,000
- **Agency Funding:** \$360,000

Project Summary

This project will support the planning for CO₂ injection system at the existing EDBS and support the assessment of its feasibility for BRLD to inform the BRIP. This project will assess the feasibility of CO₂ as a deterrent and help prevent invasive carp from becoming established in the Great Lakes by clearing fish from specific areas where they are at risk of moving upstream. This funding will continue project team coordination, complete regulatory requirements, modernize cost estimates, and model CO₂ with a forecasted fish response.

Project Description

CO₂ injection into water is a well-understood method for preventing fish from continuing to move upstream. This project focuses on assessing the feasibility of CO₂ as a potential method to clear fish from the EDBS within the CAWS and its potential use at the BRLD.

The EDBS undergoes annual maintenance and sporadic outages, which could present an opportunity for fish to move upstream toward Lake Michigan. This project will determine if CO₂ could be applied during or after maintenance to further reduce the risk of upstream expansion toward the Great Lakes. Additionally, if successful, CO₂ could enhance general safety by eliminating the need to place boats within the electrified field to manually remove fish.

At the BRIP, CO₂ has been identified as a candidate for fish clearing near the downstream lock gates. This project will identify the injection method and amounts of CO₂ and estimate the spatial distributions of dissolved CO₂ under several operational scenarios. This information is needed to guide subsequent engineering design so CO₂ deterrence can be considered in the BRIP.

Invasive Carp Action Plan: Fiscal Year 2026

Figure 11 — Carbon Dioxide Deterrence Zone at BRIP



Top frame shows schematic of the BRIP and the proposed carbon dioxide addition zone. Bottom image is an example of carbon dioxide being added to a concrete channel. Source: USACE

Invasive Carp Action Plan: Fiscal Year 2026

PREVENTING INVASIVE CARP MOVEMENT THROUGH THE ILLINOIS WATERWAY

REMOVAL – CONTRACT FISHING

IR1-26: Contract Fishing for Invasive Carp Removal Near the Electric Dispersal Barrier System

- **Lead Agency:** ILDNR
- **Agency Collaboration:** None
- **GLRI Funding:** \$2,400,000
- **Agency Funding:** \$0

Project Summary

This project will continue the use of contracted commercial fishing to remove invasive carp from the Upper IWW. The goal is to remove at approximately 1.3 million pounds of invasive carp from the Upper IWW annually, especially targeting the Starved Rock and Marseilles pools. The project prevents invasive carp from becoming established in the Great Lakes by reducing the population pressure on the EDBS.

Project Description

Contract commercial fishing will be deployed primarily in the Starved Rock and Marseilles pools to suppress adult populations of invasive carp above the reproductive front to reduce the risk of upstream expansion. Reducing the number of adult fish in this area where small fish have only rarely been found suppresses upstream migration, reducing the risk of invasive carp populations nearing the electric dispersal barrier. Twenty-four weeks of contracted removal in these pools is scheduled annually, resulting in approximately 1.3 million pounds of invasive carp removed per year. Contract commercial fishing begins in the spring following ice-out and continues to mid-summer, when temperatures become too warm to harvest fish effectively. Effort resumes in September until winter ice conditions. Agency biologists direct the contract commercial fishing effort to maximize removal in the target reaches. Analysis of the invasive carp removed provides valuable biological information on fish condition, age, and demographics. This

Figure 12 — Capturing Invasive Carp



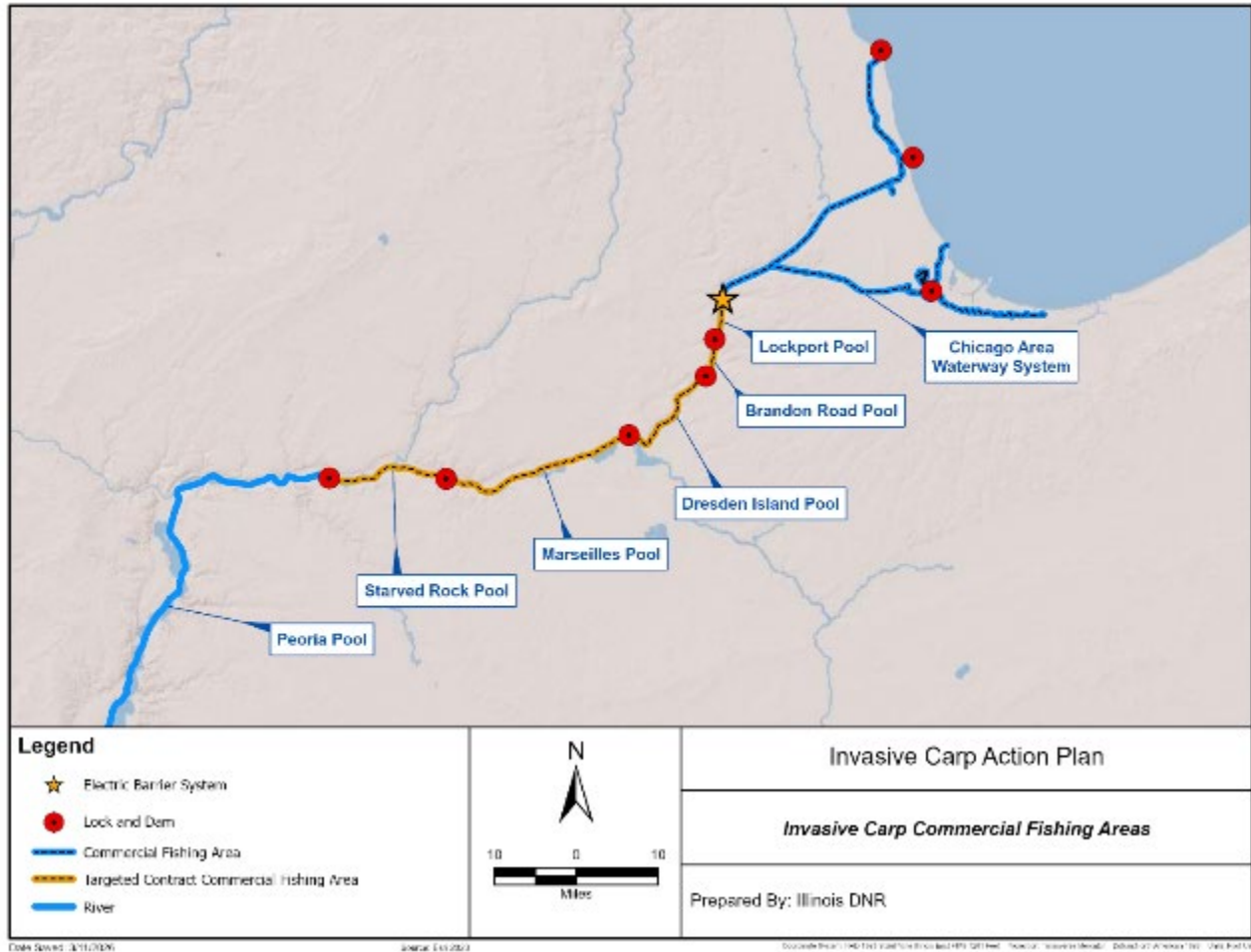
Illinois contract fishers remove invasive carp. Photo credit: ILDNR

Invasive Carp Action Plan: Fiscal Year 2026

harvest is expected to result in populations in the Dresden Island Pool that are below 90 percent of levels observed in 2015, as measured by hydroacoustics.

The contracted fishers are also available as rapid responders. These fishers can be called in response to information that requires investigation or if additional harvest is needed.

Figure 13 — Location of Commercial Fishing Areas



Map shows the approximate coverage of contract fishing from Starved Rock up through the CAWS. Source: IL DNR

Invasive Carp Action Plan: Fiscal Year 2026

PREVENTING INVASIVE CARP MOVEMENT THROUGH THE ILLINOIS WATERWAY

REMOVAL – CONTRACT FISHING

IR2-26: Enhanced Invasive Carp Removal in the Lower Illinois River

- **Lead Agency:** ILDNR
- **Agency Collaboration:** None
- **GLRI Funding:** \$2,300,000
- **Agency Funding:** \$0

Project Summary

This project will continue the Enhanced Contract Fishing Program and add contracted facilitation for processors to support the transportation of invasive carp caught in the Alton, LaGrange, and Peoria pools of the Illinois River. These pools cover approximately 240 miles of the river from Cairo to Peoria, Illinois. This project will result in significant removal of invasive carp from these areas and prevent invasive carp from becoming established in the Great Lakes by reducing the number of individual fish reaching the upper Illinois River. This funding will result in the removal of approximately 8.7 million pounds of invasive carp.

Project Description

This project will continue the Enhanced Contract Fishing Program in Illinois in the Alton, LaGrange, and Peoria pools of the Illinois River. This project will also continue the Contracted Facilitation Program to support processors in transporting invasive carp from the water to a facility. This funding supports the use of a contractor to develop and implement management strategies for enhanced removal of invasive carp. On behalf of ILDNR, the contractor will subcontract 40 to 50 contract fishers who fish in a range of frequencies from several days per week to weekly to seasonally, typically removing an aggregate average total of approximately 530,000 pounds per month. Also, on behalf of ILDNR, the contractor will subcontract three to five fish processors who pick up invasive carp or who have facilities or buying stations within 10 miles of the water's edge of Alton, LaGrange, and Peoria pools. Fishing locations vary but

Figure 14 — Invasive Carp Removal

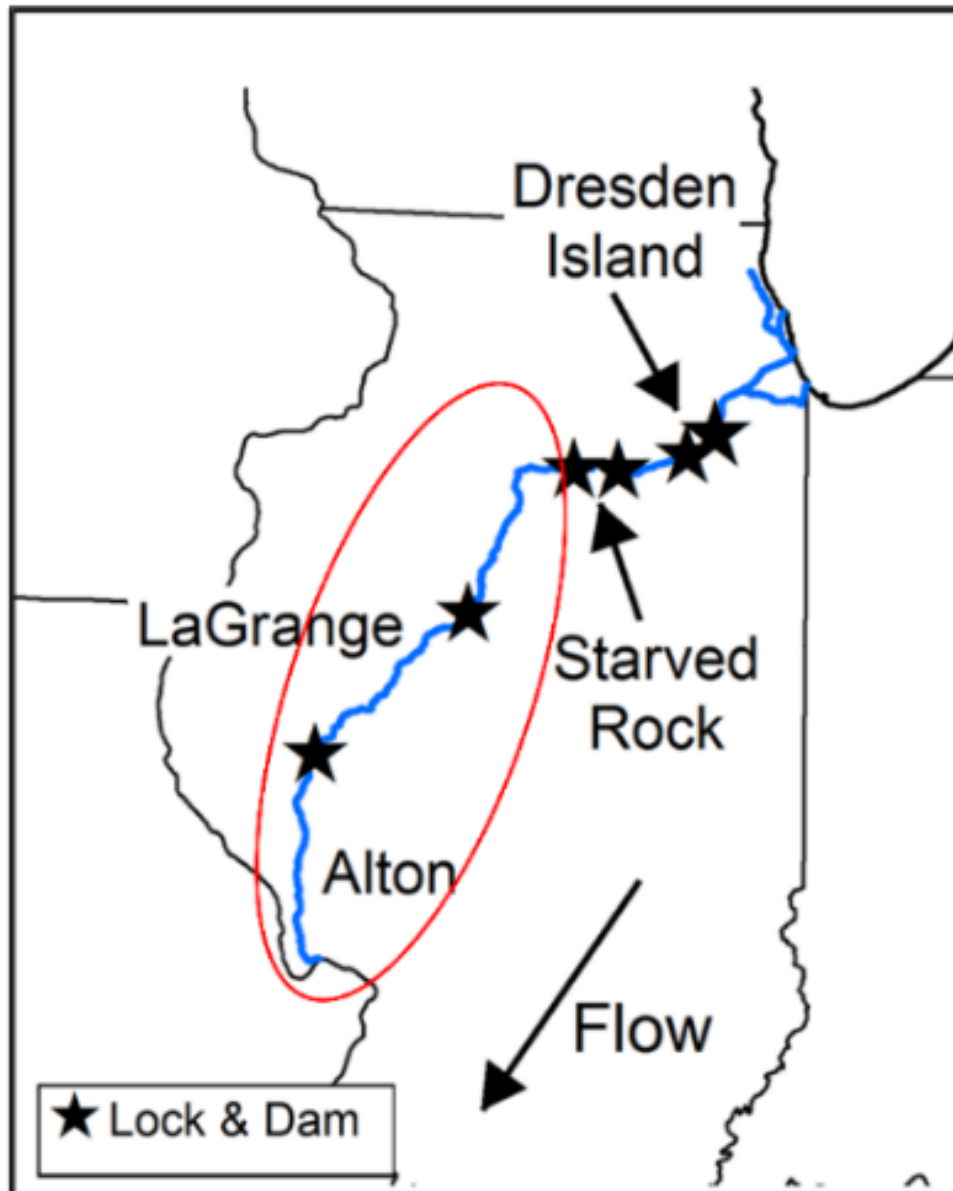


Invasive carp removal on lower Illinois River.

Invasive Carp Action Plan: Fiscal Year 2026

originate from approximately 10 boat launch locations throughout the three-pool area. Figure 15 depicts the project area in coordination with management efforts. This project will result in the removal of 8.7 million pounds of invasive carp in the Lower Illinois River and thus reduce the number of invasive carp reaching the upper Illinois River.

Figure 15 — Location of Commercial Fishing Areas



Lower Illinois River project location (red oval). Source: ILDNR

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PREVENTING INVASIVE CARP MOVEMENT THROUGH THE ILLINOIS WATERWAY

Monitoring and Decision Support

IM1-26: Early Detection Monitoring and Contingency Response in the Illinois Waterway

- **Lead Agency:** ILDNR
- **Agency Collaboration:** INHS-IRBS, USACE, USFWS, USGS
- **GLRI Funding:** \$4,000,000
- **Agency Funding:** \$0

Project Summary

This project will implement monitoring and early detection in the upper Illinois River within the state of Illinois. This project will result in monitoring for invasive carp above the EDBS, monitoring of carp population changes within the pools above Starved Rock, and agency support for contract commercial fishing in these same areas if needed to suppress carp populations and prevent invasive carp from becoming established in the Great Lakes. This funding will produce two intensive 2-week monitoring efforts above the EDBS and three periods of multi-gear sampling below the barrier to monitor for the presence and changes to invasive carp numbers.

Project Description

This project will implement a multi-pronged approach of early detection, monitoring, and control of invasive carp in the upper Illinois River. Intensive monitoring will occur in the Spring and Fall using both conventional and eDNA monitoring in the CAWS EDBS. This sampling is focused on detecting any individual invasive carp that may move past the EDBS.

Monitoring and removal of invasive carp will also be conducted below the dispersal barrier where adult invasive carp are present, utilizing a semi-annual unified method approach and deploying contract commercial fishers in conjunction with agency staff. Electrofishing, hoop nets, and mini-fykes will be deployed weekly to monitor for the presence of small invasive carp above the reproductive front. Contingency planning, rapid

Figure 16 — Capturing Silver Carp

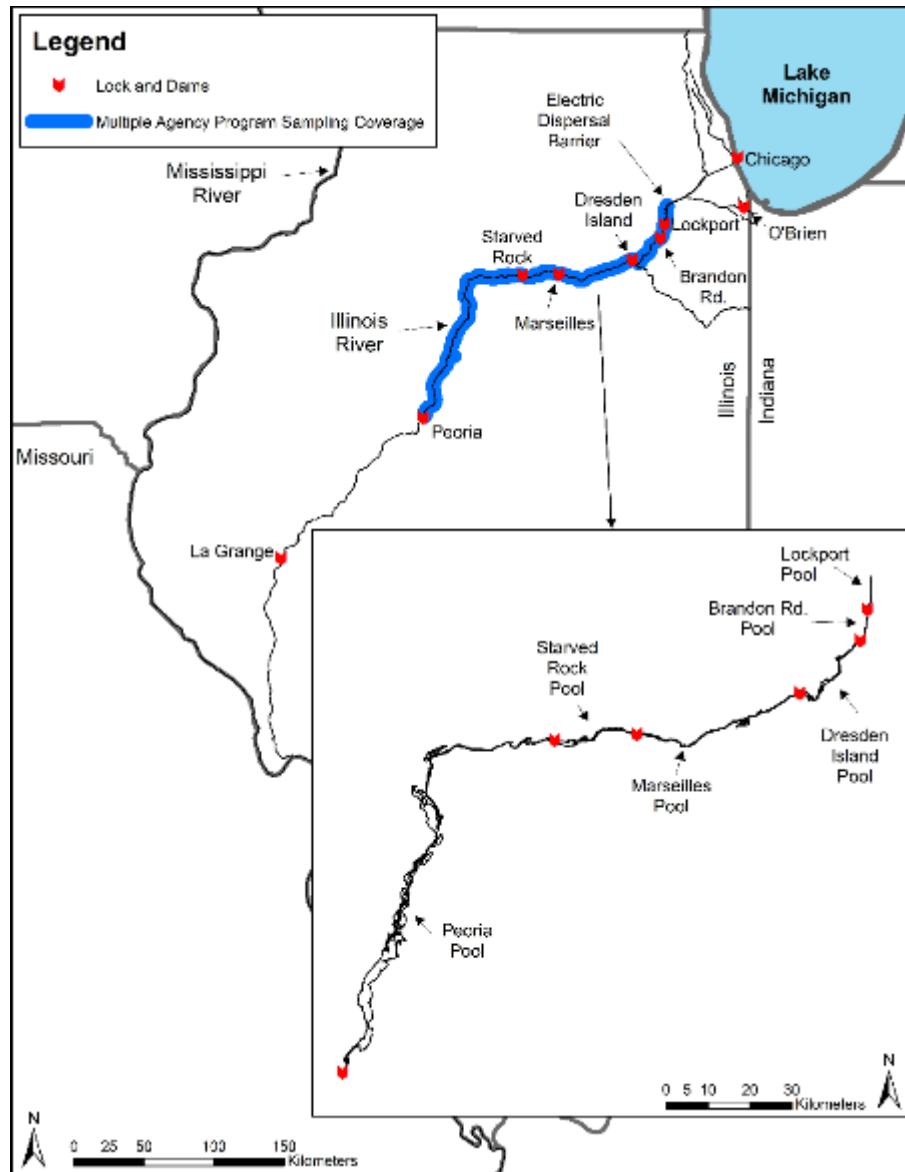


Agency biologists' electrofishing invasive carp on the Illinois River. Source: ILDNR

Invasive Carp Action Plan: Fiscal Year 2026

response, and training are also supported by this effort. This plan supports agency efforts to rapidly deploy staff, equipment, and contract fishers should an invasive carp be reported above the EDBS. This project will prevent invasive carp from becoming established in the Great Lakes by preventing the movement of invasive carp through the Illinois River and CAWS to Lake Michigan.

Figure 17 — Multiple Agency Program Sampling Locations



Map of upper Illinois River above Starved Rock. Source: ILDNR

Invasive Carp Action Plan: Fiscal Year 2026

PREVENTING INVASIVE CARP MOVEMENT THROUGH THE ILLINOIS WATERWAY

Monitoring and Decision Support

IM2-26: Support for Early Detection in the Upper Illinois Waterway

- **Lead Agency:** USFWS
- **Agency Collaboration:** USACE, INHS, ILDNR, SIU, USGS
- **GLRI Funding:** \$685,000
- **Agency Funding:** \$675,000

Project Summary

This project will monitor for changes in the known distribution of different life stages of invasive carp in the upper portions of the IWW. Data collected for this project will be provided to resource managers to inform them of changes to species distributions and determine if a contingency response is warranted to prevent the establishment of invasive carp in the Great Lakes. This funding will produce data and reports describing the spatial distribution of invasive carp by life stage in the Upper IWW and ensure that individual fish are detected. Monitoring crews will also participate in the two SIM sampling periods and any contingency response events.

Project Description

This project will detect upstream changes in the presence of large (over 153 millimeters in total length) or small (less than or equal to 153 millimeters in total length) invasive carp by implementing monthly sampling (March to November) throughout the Upper IWW (i.e., above Marseilles Lock and Dam in the Illinois River, the Chicago River, and the Illinois waters of the Kankakee and Des Plaines rivers). Multiple gears will be used to target both large and small invasive carp, including boat electrofishing, electrified dozer trawl, mini-fyke nets, fyke nets, and gill nets. These early detection efforts inform decisions under the Upper IWW CRP, which determines if a coordinated response to an invasive carp detection in the Upper IWW is required.

Figure 18 — USFWS Staff Sorting Gizzard Shad



USFWS staff sorting Gizzard Shad to make sure no small invasive carp were present. Source: USFWS

Invasive Carp Action Plan: Fiscal Year 2026

Early detection sampling in the Upper IWW will be conducted via a combination of fixed and random site selection. Targeted sites may be added based on sightings of large fish or the need to survey new areas. In the downstream portions of the IWW, site selection will be focused on habitat types within which invasive carp are known to congregate. The project will also support SIM events, monitoring of any flooding events in the upper Des Plaines River, and contingency response efforts.

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PREVENTING INVASIVE CARP MOVEMENT THROUGH THE ILLINOIS WATERWAY

Monitoring and Decision Support

IM3-26: Early Detection Monitoring for Invasive Carp in the Great Lakes

- **Lead Agency:** USFWS
- **Agency Collaboration:** ILDNR, MIDNR, INDNR
- **GLRI Funding:** \$335,000
- **Agency Funding:** \$1,400,000

Project Summary

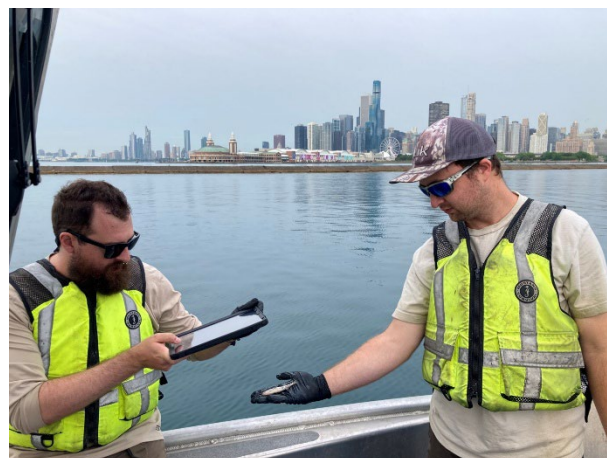
This project will implement early detection surveillance program for invasive carp species in the Great Lakes at high-risk locations in southern Lake Michigan. An array of traditional fishery sampling gears targeting all life stages of invasive carp (i.e., electrofishing, netting) will be used to maximize detection probability if invasive carp species are present. This program complements the invasive carp eDNA monitoring program implemented by state and tribal partners in the U.S. waters of the Great Lakes and key tributaries. This project will prevent invasive carp from becoming established in the Great Lakes by providing targeted, comprehensive early detection monitoring efforts to inform potential contingency response actions if needed.

Project Description

USFWS will continue to implement early detection surveillance for Bighead Carp, Silver Carp, Grass Carp, and Black Carp in and near highest-risk locations in Lake Michigan. This program complements the invasive carp eDNA and comprehensive basinwide early detection monitoring programs currently implemented by the USFWS and partners.

Sampling will continue to target strategic areas, including Calumet River, Burns Harbor, and Burns Ditch in southern Lake Michigan. A wide array of traditional and novel gears will be used to target eggs, larvae, juveniles, and adult life stages of invasive carp species. This project will be conducted in close coordination with the Great Lakes fishery management agencies of the respective jurisdictions in which sampling is being conducted.

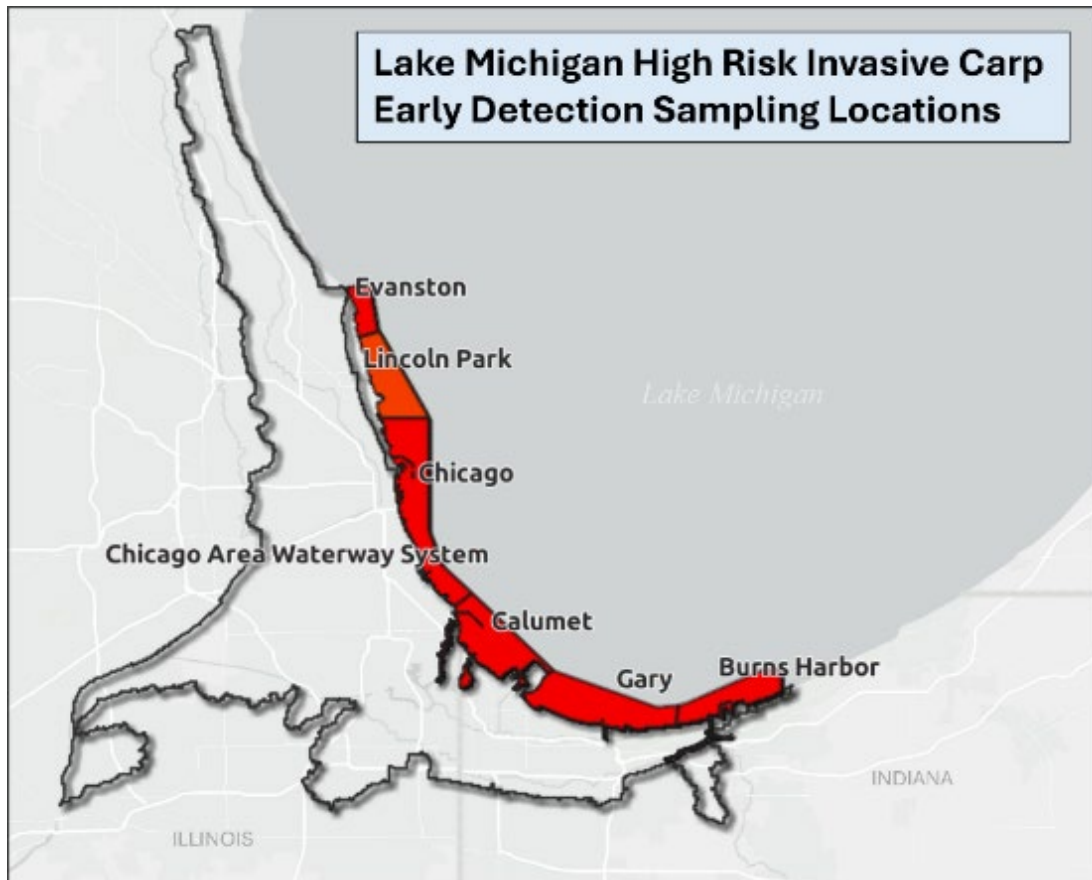
Figure 19 — Collecting Data During Sampling Event



USFWS biologists collecting data during a sampling event in Lake Michigan near Chicago. Photo credit: USFWS

Invasive Carp Action Plan: Fiscal Year 2026

Figure 20 — Great Lakes High Risk Sampling Locations



Map showing high-risk aquatic invasive species sampling surveillance locations in southern Lake Michigan. Source: USFWS

Invasive Carp Action Plan: Fiscal Year 2026

PREVENTING INVASIVE CARP MOVEMENT THROUGH THE ILLINOIS WATERWAY

Monitoring and Decision Support

IM4-26: Invasive Carp eDNA Sampling and Processing

- **Lead Agency:** USFWS
- **Agency Collaboration:** States and Tribes
- **GLRI Funding:** \$0
- **Agency Funding:** \$2,400,000

Project Summary

This project will continue monitoring for the presence of Bighead Carp and Silver Carp eDNA in the Great Lakes, Upper Mississippi River, and Ohio River basins. Water samples from Great Lakes tributaries will be collected in collaboration with state and tribal partners and analyzed for the presence of Bighead Carp and Silver Carp DNA to provide an early warning of invasive carp populations that pose a threat to the Great Lakes. This funding will produce results for up to 10,000 collected and analyzed water samples.

Project Description

The USFWS applies the science of eDNA as an early detection and monitoring tool to protect the Great Lakes from invasive carp. This work includes the continued refinement and development of state-of-the-art tools, field sampling and laboratory protocols, and expanded analytical capacity. This supports a robust eDNA monitoring program for efficiently sampling high-priority locations for the presence of Bighead Carp and Silver Carp. Building on genetics work completed for Bighead Carp and Silver Carp, USFWS will continue to support developing monitoring techniques for Grass Carp surveillance as part of this monitoring program.

The USFWS facilitates individual jurisdictional partner meetings in the early spring of each year to finalize sampling plans and review communication protocols. Sampling typically begins in April and can extend into November. The data is provided to partners as it is processed. This project also provides support for results interpretation and additional assistance to jurisdictional leads, as needed.

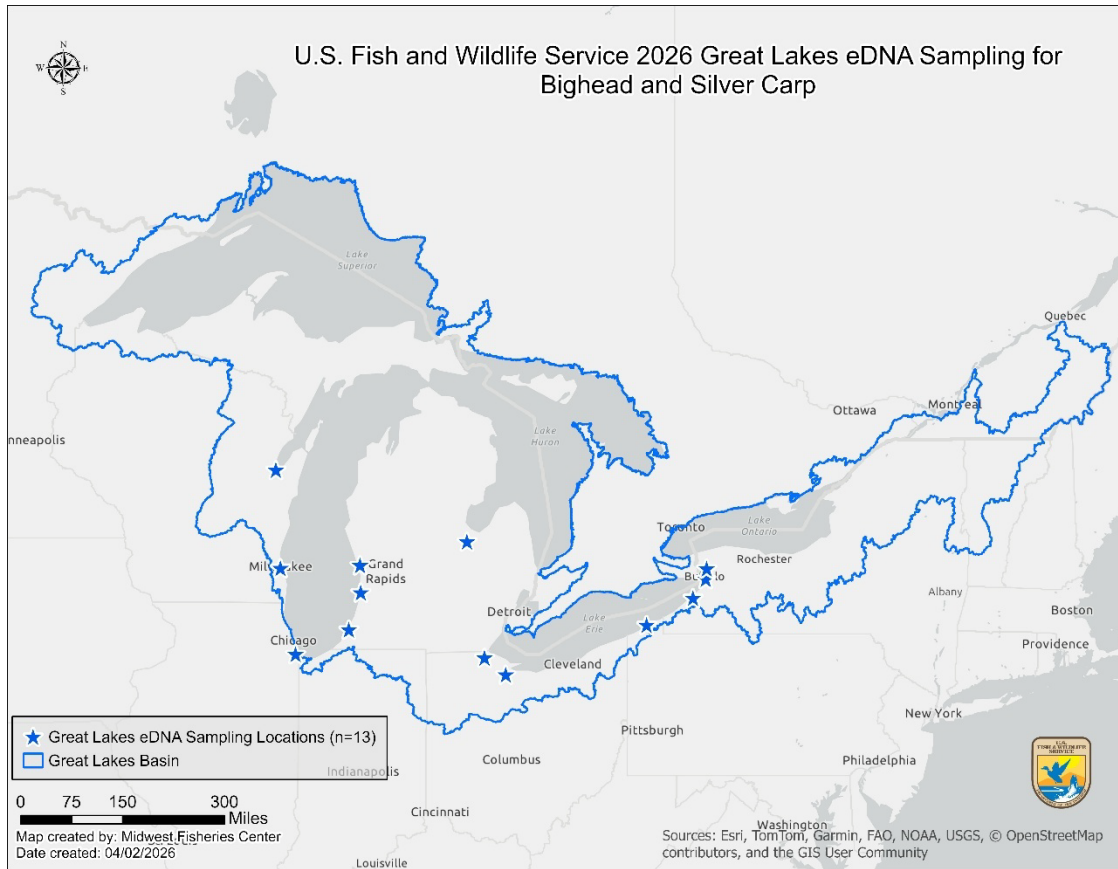
Figure 21 —USFWS Personnel Collecting eDNA Water Samples



A USFWS Fish and Wildlife biologist collecting water samples for invasive carp eDNA analysis from the Muskingum River. Credit: USFWS

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Figure 22 — USFWS Great Lakes eDNA Sampling for Bighead Carp and Silver Carp



Great Lakes basin map showing locations where invasive carp eDNA sampling typically occurs.

Source: USFWS

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PREVENTING INVASIVE CARP MOVEMENT THROUGH THE ILLINOIS WATERWAY

Monitoring and Decision Support

IM5-26: Alternate Pathway Surveillance by Illinois Law Enforcement

- **Lead Agency:** ILDNR
- **Agency Collaboration:** None
- **GLRI Funding:** \$158,000
- **Agency Funding:** \$0

Project Summary

This project will deliver regulatory enforcement to prevent the introduction or expansion of aquatic invasive species within the waters of the State of Illinois and jurisdictions throughout the Great Lakes basin. This project will result in the prevention and detection of illegal human activities that increase the likelihood of invasive carp becoming established in Illinois waters and the Great Lakes. This funding will support surveillance operations, enforcement efforts, and provide program law enforcement assistance.

Project Description

The ILDNR ISU specializes in closely regulating water-related industries that are likely to cause future introductions or expansion of invasive species into state waters. Such industries include recreational and commercial fishing; aquaculture; fish transportation; and bait, pet, aquarium, and live food markets. ISU's efforts to date have resulted in the apprehension of numerous individuals and businesses that blatantly disregard regulations enacted to prevent the spread of AIS in each of the above-listed industries. Recidivism rates for these types of crimes are low because of the severe penalties for those caught, but unfortunately, industry newcomers hoping to make quick money too often fill the void. Therefore, a substantial risk to the state's natural resources remains for the foreseeable future, mitigated only by the efforts of specialized organisms in trade law enforcement units.

ISU coordinates with other state and federal partners to protect this region and can quickly assemble a trained team of

Figure 23 — Inspecting a Delivery of Live Fish



Conservation Police Officer nets fish from containers on a fish truck that was delivering live fish to food markets in Chicago during a fish truck inspection detail. Photo credit: ILDNR

Invasive Carp Action Plan: Fiscal Year 2026

officers when necessary. Developing and administering AIS law enforcement training is a crucial element of this project, as it creates a force multiplier for detection and prevention. ISU works alongside its non-law enforcement partners within this program to provide any necessary law enforcement support. This funding will support a minimum of 10 aquatic organism inspections in the trade industry, a minimum of 5 intelligence-based enforcement operations, continued program support for law enforcement issues, and at least 5 transportation enforcement details focusing on detecting and intercepting illegal aquatic life shipments. This project will continue to participate in the basin-wide enforcement initiative targeting the illegal trade of AIS listed on the Great Lakes and St. Lawrence Governors and Premiers' "least wanted" list. These high-risk AIS include all four invasive carp species and present an ongoing threat to the waterways.

Figure 24 —Shipment of Aquatic Invasive Species Seized



Anacharis, a live invasive aquatic plant, was seized as evidence during a large-scale enforcement operation targeting the shipping and selling of aquatic invasive species within the aquarium industry that present an imminent threat to the Great Lakes. Photo credit: ILDNR

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PREVENTING INVASIVE CARP MOVEMENT THROUGH THE ILLINOIS WATERWAY

Monitoring and Decision Support

IM6-26: Invasive Carp Movement and Stock Assessment in the Illinois Waterway Using Telemetry and Hydroacoustics

- **Lead Agency:** ILDNR
- **Agency Collaboration:** SIU, USACE, USGS, INHS
- **GLRI Funding:** \$400,000
- **Agency Funding:** \$0

Project Summary

This project will assess the effect of enhanced contract removal efforts and inform directed harvest in the Lower Illinois River in the state of Illinois. This project will result in the assessment of population trends and help quantify upstream movements. This funding will provide resources to analyze trends in density and size distributions of invasive carp in the Lower Illinois River to target contracted harvest and assess the effect of harvest on densities of invasive carp.

Project Description

This project will evaluate the effects of harvest by measuring changes in invasive carp spatial distributions and densities in the Lower Illinois River. This project uses several approaches to assess the invasive carp populations to aid removal and response efforts. Hydroacoustic sampling and analysis will occur to help determine the relative change in abundance of invasive carp in recent years. Monitoring of acoustically tagged invasive carp will continue from Alton to Dresden Island pools across an array of stationary receivers. Invasive carp will be implanted with acoustic transmitters to supplement the existing number of acoustically tagged individuals. The resulting movement data will be used to identify pool-to-pool movement rates (including dam versus lock passage routes) for inclusion into models and to assess potential changes in upstream movements by comparing the number of tagged fish at large in each pool to data from previous years. Maintaining a high number of tagged fish in the Lower Illinois River also allows for the identification of potential upstream movements

Figure 25 — Research Vessel Shovelnose

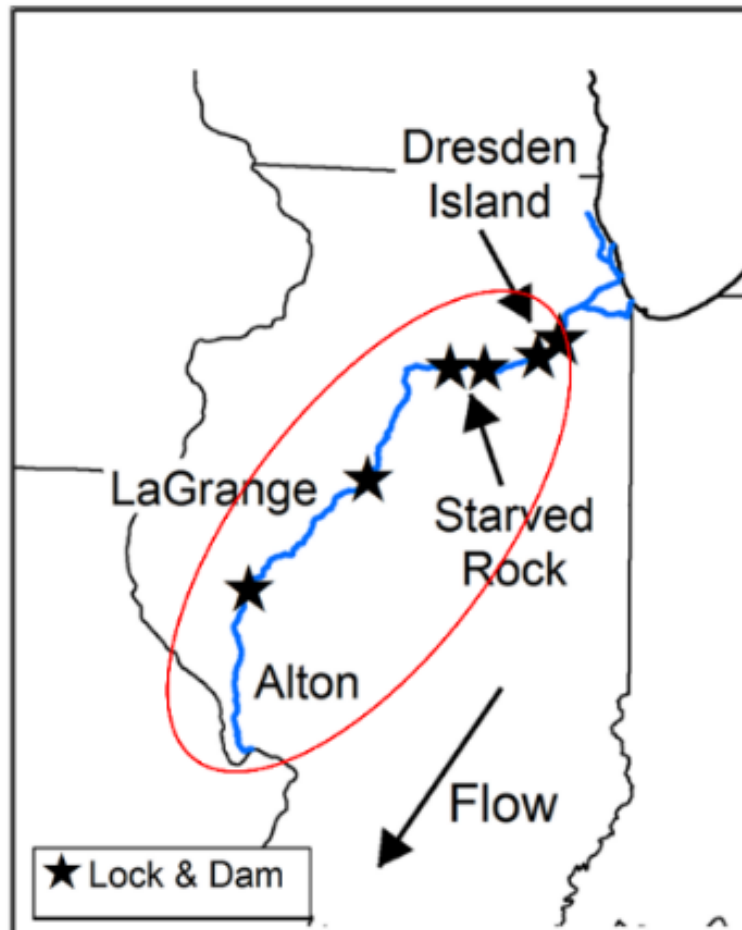


Research Vessel Shovelnose collecting fish density data in the Illinois River.

Invasive Carp Action Plan: Fiscal Year 2026

via detection on real-time receivers that could determine whether a contingency response action is necessary.

Figure 26 — Project Location Areas



Map of project sites on the Illinois River. Source: ILDNR

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PREVENTING INVASIVE CARP MOVEMENT THROUGH THE ILLINOIS WATERWAY

Monitoring and Decision Support

IM7-26: Hydroacoustic Surveys of Fish Abundance and Distribution in the Upper Illinois Waterway

- **Lead Agency:** USFWS, Carterville Fish and Wildlife Conservation Office – Wilmington Substation
- **Agency Collaboration:** SIU, USACE, USGS, ILDNR, INHS
- **GLRI Funding:** \$71,000
- **Agency Funding:** \$0

Project Summary

This project will provide hydroacoustic estimates of large fish abundance and distribution in the Upper IWW and near the EDBS. The data collected for this project will help managers in understanding the actions necessary to prevent invasive carp from becoming established in the Great Lakes by providing regular updates on fish presence near the EDBS. This funding will produce monthly reports about large fish abundance and distribution near the EDBS.

Project Description

Hydroacoustic monitoring in the Upper IWW enhances invasive carp management by reporting spatial and temporal patterns of fish targets. The barrier surveys aid in assessing the potential risk of large fish, potentially Bighead Carp or Silver Carp, passing through the EDBS during operational changes or maintenance to the EDBS. Having a greater understanding of the temporally varying abundances and spatial distributions of fish near the EDBS is important to barrier management, as it allows operational and maintenance decisions to be made while considering potential risk factors.

Estimates of length and depth of targets made by hydroacoustic surveys are used with corresponding telemetry data, allowing managers to make inferences about possible fish species identified as targets. Barrier surveys are conducted in coordination with resource managers to aid in invasive carp management efforts.

Figure 27 — Deploying Hydroacoustic Transducers



USFWS biologist deploying hydroacoustic transducers. Source: USFWS

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Figure 28 — 2026 Proposed Hydroacoustic Coverage Area



Map highlighting the hydroacoustic survey area downstream and within the EDBS on the IWW at Romeoville, Illinois. Source: USFWS

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PREVENTING INVASIVE CARP MOVEMENT THROUGH THE ILLINOIS WATERWAY

Monitoring and Decision Support

IM8-26: Telemetry Support to Assess Invasive Carp Movement in the Illinois Waterway

- **Lead Agency:** USGS
- **Agency Collaboration:** USACE, USFWS, SIU, ILDNR, INHS, GLFC
- GLRI Funding: \$355,000
- Agency Funding: \$104,000

Project Summary

This project focuses on techniques and models informed by fish tagging and acoustic telemetry data. Results will inform decisions on management actions to control the abundance of invasive carp in the Illinois River system in the state of Illinois to help prevent invasive carp from becoming established in the Great Lakes. This funding will support the maintenance of real-time telemetry to inform contingency actions, summarize immigration and emigration estimates, provide guidance for efficient distribution of tagging effort and receiver placement in the Illinois River, develop estimates of fishing mortality and population size of Silver Carp in the Starved Rock Pool, and support other agency projects using acoustic telemetry.

Project Description

Extensive acoustic telemetry, physical marking, and capture data are being employed to assess the long-term movement patterns of bigheaded carp in the Illinois River and estimate parameters needed for the development of population models used to evaluate management actions. Existing acoustic telemetry data is combined with supplemental data (e.g., physical tag returns or contract removal numbers) to directly evaluate the impacts of contract fish removal over time. This project will result in 1) updated transition probability estimates (multi-state model) from telemetry data to parameterize population models used to evaluate alternative management actions, 2) the operation and maintenance of the real-time alert system for tagged carp, 3) the measurement of immigration/emigration of invasive carp to/from the Illinois River, and 4) estimates of population size and fishing mortality of Silver Carp to prevent invasive carp from becoming established in the Great Lakes.

USGS will support several organizations to accomplish shared goals. Movement probabilities and their associated uncertainty among Illinois River pools will be used to further develop USFWS population models. A final movement model will be run on the full dataset to support modeling development. Data collected on physical recaptures in the Starved Rock Pool by USACE and ILDNR

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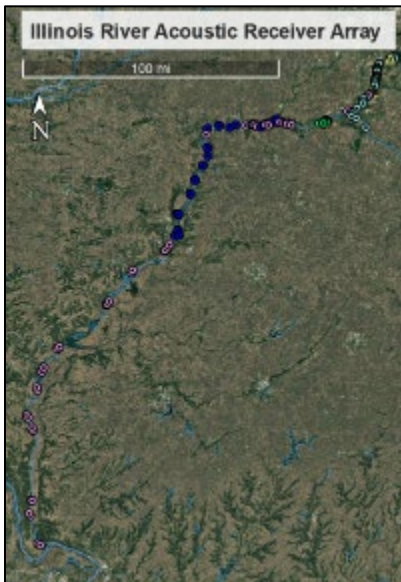
will be used with acoustic telemetry data to refine fishing mortality and population estimates across the Illinois River. Preliminary estimates of Illinois River immigration and emigration will also be generated. Acoustic telemetry receivers, located in the Heidelberg Materials gravel pits, will inform the operation/use of two different control technologies being tested by INHS. A real-time acoustic receiver network of seven receivers at strategic locations with remote data serving, detection alert, and detection summary features will be updated and maintained to help inform potential contingency response actions.

Figure 29 — Real-time Telemetry Receiver



The real-time telemetry receiver installed upstream of Brandon Road Lock and Dam to inform contingency actions. Photo credit: USFWS.

Figure 30 — Illinois River Acoustic Receiver



Map of the Illinois River with colored dots indicating the locations of acoustic telemetry receivers. Each color represents a different agency responsible for maintaining the individual receivers (pink = SIU, dark blue = USFWS, green = USGS, light blue = USACE, yellow triangles = USGS real-time receivers). Source: USGS.

Figure 31 — Tagged Silver Carp



Silver Carp tagged with external jaw tag and dorsal loop tag by a multi-agency team in the Starved Rock pool of the Illinois River. Photo credit: USGS.

Invasive Carp Action Plan: Fiscal Year 2026

PREVENTING INVASIVE CARP MOVEMENT THROUGH THE ILLINOIS WATERWAY

Monitoring and Decision Support

IM9-26: Telemetry Support to Assess Invasive Carp Movement in the Peoria and Starved Rock Pools of the Illinois Waterway

- **Lead Agency:** USFWS
- **Agency Collaboration:** USGS, USACE, SIU
- **GLRI Funding:** \$150,000
- **Agency Funding:** \$400,000

Project Summary

This project will provide telemetry data support for a statistical model that estimates invasive carp population status in the IWW. This project will result in estimates of the movement of invasive carp in the Peoria and Starved Rock pools. The telemetry data will support model predictions used to inform agencies on potential management options. This funding will produce approximately 125 more tagged invasive carp across the Peoria and Starved Rock pools of the Illinois River, as well as provide for the deployment, operation, and retrieval of 20 acoustic receivers in these pools.

Project Description

Modeling helps assess the invasive carp population status in the IWW. USFWS crews will tag an additional 125 Silver Carp and Bighead Carp with acoustic transmitters in and around the Peoria and Starved Rock pools spanning from river miles 164 to 243. The information gained from these fish will improve the accuracy of models that estimate the invasive carp population and carp movement through lock and dams. Fish will be tracked using 13 acoustic receivers in the Peoria Pool and 7 acoustic receivers in the Starved Rock Pool of the IWW. Some receivers will be placed in areas with reduced coverage, and the Telemetry Work Group will be consulted prior to deployment.

This project involves providing tagged invasive carp with acoustic transmitters, data analyses, and optimizing the

Figure 32 — Implanting an Acoustic Tag



USFWS biologists surgically implanting an acoustic tag in Silver Carp. Source: USFWS.

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acoustic receiver array within the IWW. Funding will be used to purchase acoustic transmitters and surgery supplies and support operational costs associated with telemetry fieldwork (fish tagging and maintaining/downloading acoustic hydrophones deployed in the IWW). All data from telemetered invasive carp will be uploaded to the RAFT database for distribution to and use by other work groups.

Figure 33 — Telemetry Array Area in Peoria and Starved Rock Pools



Telemetry receiver and tag deployment area. Source: USFWS.

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PREVENTING INVASIVE CARP MOVEMENT THROUGH THE ILLINOIS WATERWAY

Monitoring and Decision Support

IM10-26: Invasive Carp Demographics in the Illinois Waterway

- **Lead Agency:** USFWS
- **Agency Collaboration:** Multiple-Agency Monitoring Program – ILDNR, INHS
- **GLRI Funding:** \$450,000
- **Agency Funding:** \$250,000

Project Summary

Fisheries-independent data will be collected with the electrified dozer trawl to provide population trend data with standardized capture methods. This project will also process invasive carp otoliths to determine the age of invasive carp collected in the lower six pools of the Illinois River. Age and growth data will be provided to the Modeling Work Group to inform invasive carp population models in the Illinois River. Such models will be used to evaluate the relative importance of fishing mortality, fish movement, and natural mortality to observed declines in Silver Carp abundance, thereby informing intensive invasive carp harvest efforts and other management in the Illinois River to prevent introduction and establishment in the Great Lakes.

Project Description

This funding will support the collection of invasive carp by USFWS personnel with the electrified dozer trawl in approximately three periods from June through October in the eight pools of the Illinois River (i.e., Alton, LaGrange, Peoria, Starved Rock, Marseilles, Dresden Island, Brandon Road, and Lockport pools). Otoliths will be analyzed in the USFWS-Columbia Fish and Wildlife Conservation Office aging laboratory. Age and growth data will be provided to the Multiple Agency Monitoring program and ultimately into the MRWG central database. These standardized collections help provide data for modeling the status of the Silver Carp populations along the entire Illinois River. Such models will be used to evaluate the relative importance of fishing mortality, fish movement, and natural mortality to observed declines in Silver Carp abundance, thereby informing intensive invasive carp harvest

Figure 34 — Electrified Dozer Trawl



Members of the Columbia FWCO displaying invasive carp captured in the electrified dozer trawl. Source: USFWS

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efforts and other management in the Illinois River to prevent introduction and establishment in the Great Lakes.

Figure 35 — Project Work Locations



Illinois River sampling occurs from Alton to Lockport as indicated in blue. All fish ages are processed at the USFWS fish aging lab in Columbia, Missouri. Source: USFWS.

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PREVENTING INVASIVE CARP MOVEMENT THROUGH THE ILLINOIS WATERWAY

Monitoring and Decision Support

IM11-26: Assessment of Invasive Carp Reproduction and Ecosystem Response in the Illinois Waterway

- **Lead Agency:** ILDNR
- **Agency Collaboration:** INHS, Eastern Illinois University, SIU, USGS-CMWSC, USFWS-Carterville FWCO
- **GLRI Funding:** \$274,000
- **Agency Funding:** \$0

Project Summary

This project will monitor for invasive carp reproduction in the IWW. This project will detect spawning areas that can be targeted by management actions to slow the expansion of invasive carp in the Illinois River and prevent invasive carp from becoming established in the Great Lakes. This funding will support monitoring that will quantify adult invasive carp densities, reproductive productivity, juvenile invasive carp abundance, and recruitment to inform invasive carp removal efforts.

Project Description

Ichthyoplankton sampling is conducted to monitor for the presence of invasive carp eggs and larvae to assess the extent, location, timing, and magnitude of invasive carp reproduction in the IWW. Samples are collected with ichthyoplankton push nets at weekly intervals during late April through early July and biweekly from mid-July through October, with more frequent sampling effort during periods when temperature and flow conditions are thought to be optimal for invasive carp spawning. Potential presence of invasive carp eggs and larvae in some samples will be assessed by screening for invasive carp DNA to prioritize samples for rapid processing and provide information on the individual species identity of invasive carp eggs and larvae present. Microscopy will be used to quantify the overall numbers of invasive carp eggs and larvae.

These data are used as an early detection system for monitoring the upstream expansion or contraction of reproductive bigheaded carp populations and potential Black Carp population reproduction, as well as quantifying relationships between invasive carp adult densities, reproductive output, and subsequent recruitment to assess the level of removal needed to degrade the ability of invasive carp to perpetuate themselves through reproduction.

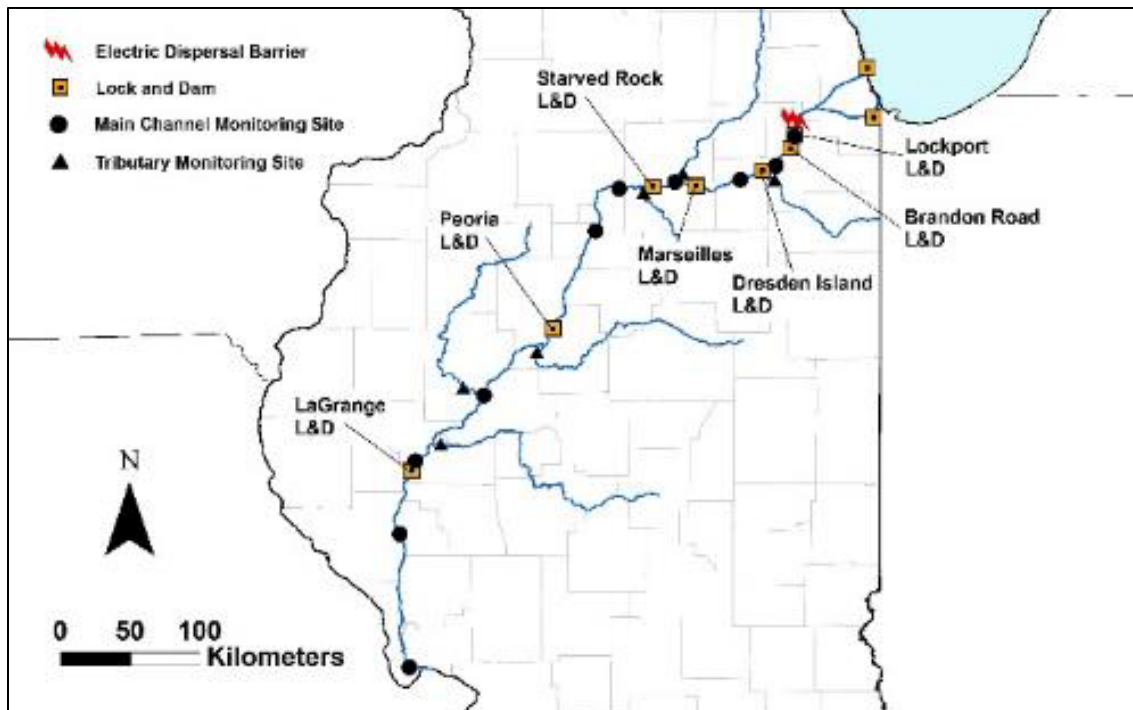
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Figure 36 — Deploying an Ichthyoplankton Push Net



An INHS technician deploying an ichthyoplankton push net mounted to the front of a sampling boat.
Source: INHS

Figure 37 — Main Channel and Tributary Monitoring Sites



Map of Illinois River identifying location of locks and dams, and main channel and tributary ichthyoplankton monitoring sites. Source: INHS

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PREVENTING INVASIVE CARP MOVEMENT THROUGH THE ILLINOIS WATERWAY

Monitoring and Decision Support

IM12-26: Support for the Assessment of Invasive Carp Reproduction and Collection of Associated Hydrological Data

- **Lead Agency:** USGS
- **Agency Collaboration:** ILDNR, INHS, USACE, USFWS, NOAA
- **GLRI Funding:** \$80,000
- **Agency Funding:** \$75,000

Project Summary

This project will assess the influence of river hydraulics and water quality on the population range, movement, and spawning/recruitment success of invasive carp in the IWW. This project will result in essential data and an identification of invasive carp spawning locations to inform barrier technologies and control efforts. This funding will also provide FluEgg modeling support for state and federal partners.

Project Description

This project encompasses data collection and analysis aimed at understanding how invasive carp interact with the hydraulics and water quality of a river. These data inform efforts to deter and control invasive carp through novel barrier technologies, commercial fishing, and mass harvest events. This project focuses on the IWW and includes real-time water quality monitoring and the identification of probable spawning areas of sampled invasive carp eggs/larvae using the FluEgg.

This funding will provide science support for invasive carp technology development and control efforts, including continuous water quality monitoring to support control efforts, application of reverse FluEgg simulations to identify spawning locations from ichthyoplankton data in the IWW and publication of results in coordination with the INHS, and hydrographic surveys and data analysis.

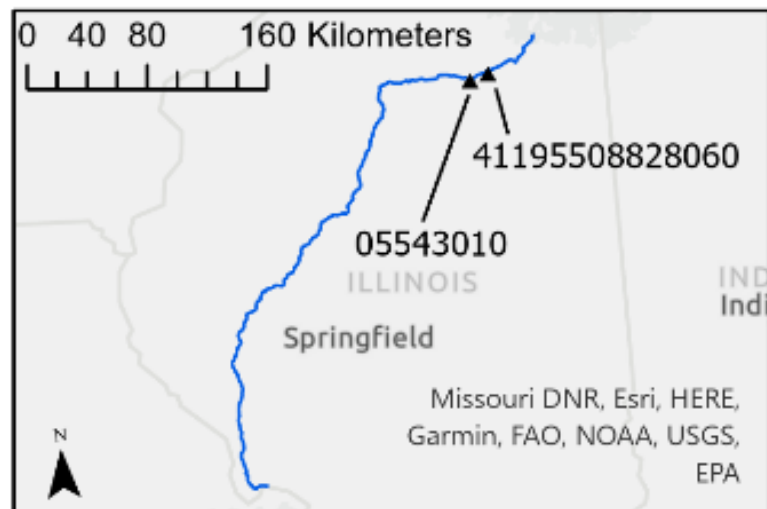
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Figure 38 — Water Quality Monitoring Stations



(A) Photograph of the real-time, continuous water quality monitoring station 05543010 Illinois River at Seneca. (B) Interior and (C) exterior of the gage house at the real-time continuous water quality monitoring station 411955088280601 Hanson Gravel Pit at Culvert Near Morris, IL

Figure 39 — Water Quality Monitoring Stations in Marseilles Pool



The blue line is the centerline of the Illinois River. The two black triangles show two real-time, continuous water quality monitoring stations in the Marseilles Pool of the IWW, (05543010 Illinois River at Seneca and 41195508828060 Hanson West Pit near Morris, IL).

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PREVENTING INVASIVE CARP MOVEMENT THROUGH THE ILLINOIS WATERWAY

Monitoring and Decision Support

IM13-26: Evaluation of Fish Transfer System to Promote Native Species Movement and Invasive Carp Harvest

- **Lead Agency:** ILDNR
- **Agency Collaboration:** INHS-IRBS, USGS-CERC, USGS-UMESC, USACE
- **GLRI Funding:** \$242,000
- **Agency Funding:** \$0

Project Summary

This project will evaluate invasive carp attraction and the use of a mobile fish movement system/ladder with associated technology to support fish scanning and sorting capabilities in Illinois and the IWW. The resulting implementation of the mobile pilot fish passage system will contribute to the reduction of carp populations by autonomous invasive carp removal to help prevent invasive carp from becoming established in the Great Lakes, while promoting the passage of native fish. This funding will support the operation and project oversight of the pilot fish passage system, and the identification of conditions necessary to attract invasive carp and native species use of the fish ladder.

Project Description

This project will support the evaluation of invasive carp attraction and the use of a mobile fish movement system/ladder with associated technology to support fish scanning and sorting capabilities. A floating mobile platform to support the fish ladder will allow for the unit to be evaluated in multiple locations and help determine the optimum height and angle for the ladder system. Prior work has shown that Silver Carp and Grass Carp will climb a fish ladder, but native fish outperformed the invasive ones in the pilot study. The more flexible design will allow us to optimize the fish ladder for invasive carp movement while also assessing the conditions necessary to selectively pass native fish. As deterrents are configured to stop carp, there is a desire at some locations to selectively pass native fish. This technology could automate the process and increase connectivity to native fish while further constraining invasive

Figure 40 — Mobile Steeppass Fish Ladder with Scanner



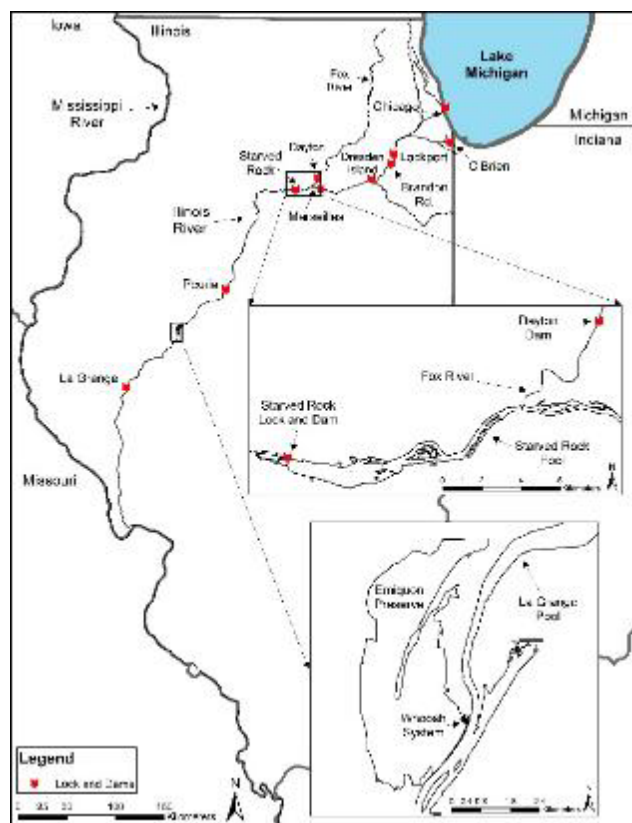
Mobile Steeppass with scanner located at the Emiquon Pump Ditch connected to the Illinois River.

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fish. Collaboration among research agencies will contribute to the evaluation of fish movement technology and advance management tools for invasive carp and native fishes in the Illinois River Basin.

This funding will continue to test the system and further optimize invasive carp passage and removal. The project will conduct a series of experiments controlling multiple variables, including angle of steeppass, flow rate and depth of water in the steeppass, flow rate and depth of water in the flow box, elevation of steeppass distal end to or in the water's surface, invasive carp attractants, and environmental conditions conducive to invasive carp movement. The invasive carp response to these manipulated variables will be monitored through a combination of PIT tag antennas within the steeppass unit and high-residency receivers to position the fish within the test area and their approach to the steeppass. Once proof of concept is demonstrated, the use of the mobile selective passage system at pinch point dam locations will be explored and evaluated at Dayton Dam on the Fox River or Starved Rock Lock and Dam on the Illinois River.

Figure 41 — Project Location Areas



Map of current location (Emiquon ditch), Marseilles Reach (East Pit) destination as of November 2026 and potential other locations to mobilize (Including Starved Rock and Dayton dams). Map by Brandon Harris, IRBS

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PREVENTING INVASIVE CARP MOVEMENT THROUGH THE ILLINOIS WATERWAY

Monitoring and Decision Support

IM14-26: USGS Support for Invasive Carp Population Modeling in the Illinois River

- **Lead Agency:** USGS
- **Agency Collaboration:** USFWS, ILDNR, INHS, SIU
- **GLRI Funding:** \$135,000
- **Agency Funding:** \$290,000

Project Summary

This project will develop data-driven population models for invasive carp in the Illinois River. This project will result in population status estimates and will identify management recommendations to further reduce the risk of the establishment of invasive carp populations in the Great Lakes. This funding will support the development of length-based Bayesian biomass and SCAA models to estimate invasive carp harvest mortality and population size.

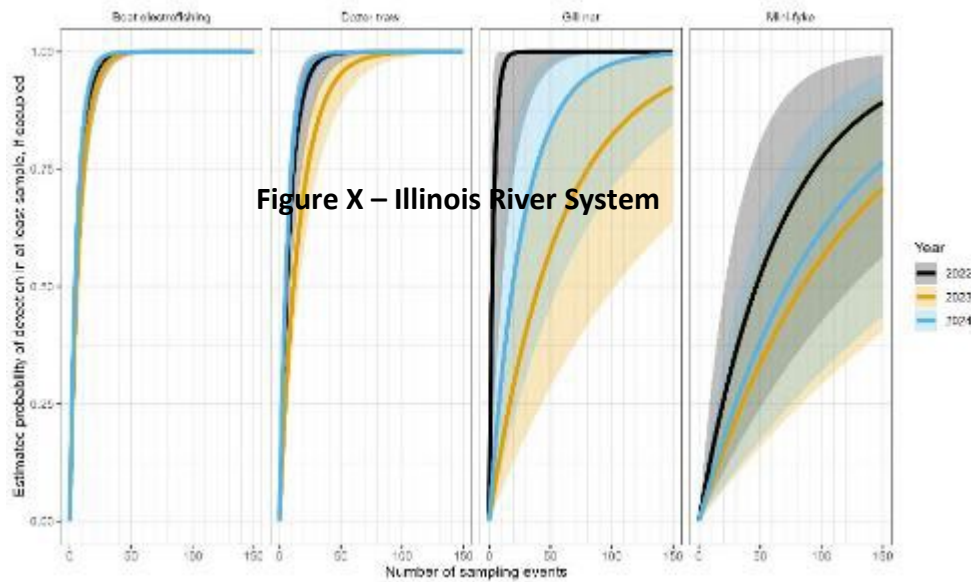
Project Description

This project will provide estimates of harvest mortality that can be used to determine the effectiveness of current management actions and monitoring efforts required to assess future populations. Together, these products will help inform the allocation of resources and efforts to improve the effectiveness of invasive carp management and monitoring in the Illinois River.

This project will support the development of length-based Bayesian biomass and SCAA models to estimate bigheaded carp harvest mortality and population size. These models will help managers understand the effectiveness of current management efforts and identify knowledge gaps to guide future data collection and management actions.

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Figure 42 — Estimated Probability of Detecting Bigheaded Carp



Estimated probability of detecting bigheaded carp in at least one sample (y-axis), if the species were present at a location, given different numbers of samples (x-axis) from the USFWS early detection monitoring program in the Upper Illinois River from 2022–2024. Facet columns correspond to gear types. Black lines correspond to detection probabilities using estimates from 2022 data, yellow lines correspond to 2023 data, and blue lines correspond to 2024 data. The shaded regions correspond to the 95% credible interval for each year. The figure originally appeared in Erickson et al. (under review)

Figure 43 — Illinois River System



Map of the Illinois River, including the six pools with known established Silver Carp populations that were included in the population model: Alton, La Grange, Peoria, Starved Rock, Marseilles, and Dresden Island. Recruitment takes place in the lower three pools. The figure originally appeared in Kallis et al. (2023), with updated state lines and boundaries added for this document.

Invasive Carp Action Plan: Fiscal Year 2026

PREVENTING INVASIVE CARP MOVEMENT THROUGH THE ILLINOIS WATERWAY

Monitoring and Decision Support

IM15-26: USFWS Support for Invasive Carp Population Modeling in the Illinois River

- **Lead Agency:** USFWS
- **Agency Collaboration:** USGS, ILDNR, INHS, SIU
- **GLRI Funding:** \$100,000
- **Agency Funding:** \$200,000

Project Summary

This project will develop objective, data-driven tools to inform management decisions concerning bigheaded carp control efforts in the Illinois River. These tools will result in population status estimates and will identify management recommendations to reduce the risk of the establishment of bigheaded carp populations in the Great Lakes. This funding will produce sampling guidance for invasive carp monitoring in the Upper Illinois River and begin efforts at a broader data synthesis in collaboration with other work groups. Through guiding the magnitude and location of harvest efforts and sampling for monitoring efforts, this project will help guide efforts to prevent the establishment of bigheaded carp in the Great Lakes.

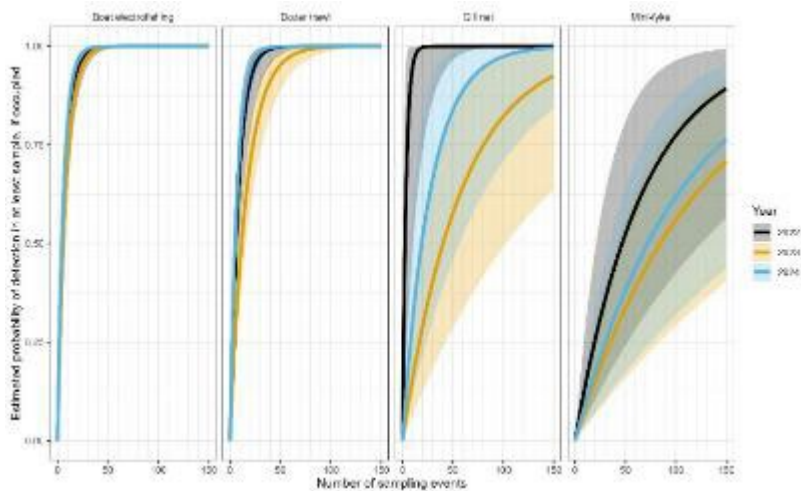
Project Description

This project supports ongoing modeling efforts to provide recommendations regarding the magnitude and spatial allocation of fishing effort and movement deterrents to reduce the risk of bigheaded carp introduction to the Great Lakes and will provide estimates of harvest mortality that can be used to determine the effectiveness of current management actions. In addition, these efforts will provide estimates of sampling efforts necessary to guide bigheaded carp monitoring in the Upper Illinois River. Together, these products will help inform future decision-making regarding the allocation of resources and efforts to improve the effectiveness of bigheaded carp management and monitoring in the Illinois River.

This project will continue to support the development of length-based biomass and SCAA models to estimate bigheaded carp harvest mortality and population size. These models will help managers understand the effectiveness of current management efforts and identify knowledge gaps to guide future data collection and management actions. In addition, this project will begin a synthesis of existing data, in collaboration with other work groups, to determine how data may be used to inform modeling in support of informing bigheaded carp management.

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Figure 44 — Estimated Probability of Detecting Bigheaded Carp



Estimated probability of detecting bigheaded carp in at least one sample (y-axis), if the species were present at a location, given different numbers of samples (x-axis) from the USFWS early detection monitoring program in the Upper Illinois River from 2022–2024. Facet columns correspond to gear types. Black lines correspond to detection probabilities using estimates from 2022 data, yellow lines correspond to 2023 data, and blue lines correspond to 2024 data. The shaded regions correspond to the 95% credible interval for each year. The figure originally appeared in Erickson et al. (under review).

Figure 45 — Illinois River System



Map of the Illinois River, including the six pools with known established Silver Carp populations that were included in the population model: Alton, La Grange, Peoria, Starved Rock, Marseilles, and Dresden Island. Recruitment takes place in the lower three pools. The figure originally appeared in Kallis et al. (2023), with updated state lines and boundaries added for this document.

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PREVENTING INVASIVE CARP MOVEMENT THROUGH THE ILLINOIS WATERWAY

Monitoring and Decision Support

IM16-26: Invasive Carp Database Management

- **Lead Agency:** USGS
- **Agency Collaboration:** USFWS, USACE, ILDNR, IADNR, INHS, SIU, ISU
- **GLRI Funding:** \$161,000
- **Agency Funding:** \$436,000

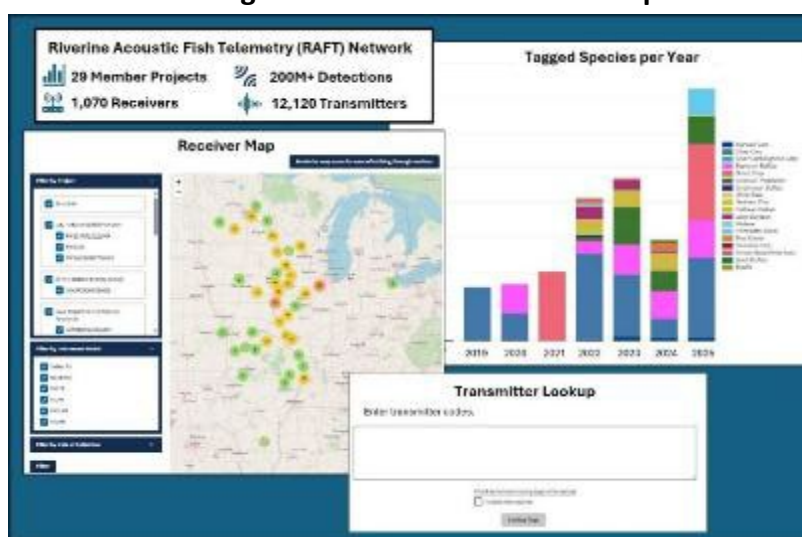
Project Summary

This project will provide invasive carp data management and decision support tools for the Illinois River. This project will result in 1) a multi-agency telemetry database called the RAFT Network and 2) a data system for invasive carp data (CarpDAT). This project will help prevent invasive carp from becoming established in the Great Lakes by providing partners access to data and tools to analyze, visualize, model, and understand invasive carp movements and life history. This funding will support improvements and updates to the RAFT Network and development of CarpDAT.

Project Description

The goal of this project is to provide data management, informational products, and decision support tools to aid and inform the management and removal of invasive carp in the Illinois River to help prevent invasive carp from reaching the Great Lakes. The funding for this project will be used to develop and maintain invasive carp data systems. The RAFT Network is a common repository for invasive carp researchers and resource managers who are using acoustic telemetry tags to track and monitor carp. CarpDAT acts as a centralized reference for sharing information about research and projects involving invasive carp. Integrating and transforming invasive carp-

Figure 46 — RAFT Network Composite



Composite image of the RAFT Network with usage statistics, a chart of tagged species per year, the receiver map, and the transmitter lookup page. Source: USGS.

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related data sets into actionable information requires a clear understanding of invasive carp life history. The tools developed on top of these data systems will allow researchers to evaluate the impact of different control methods and create integrated pest management plans. The accumulated data can also be used to inform modeling efforts in the Illinois River and other surrounding basins.

The funding for this project will support the transition of RAFT to the cloud by working with the USGS Cloud Hosting Solutions group to install the RAFT web application, import data, connect Ocean Tracking Network nodebooks, and remove the old RAFT site. In addition, feature development and maintenance of RAFT will continue by adding administrative tools for project owners, investigating efficiencies for data download and delivery, responding to user feedback for improvements, and expanding visualization tools.

Figure 47 — Project Area



Map of the Upper Mississippi River Basin project area and Illinois River.

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HYDROLOGIC BARRIERS TO PREVENT INVASIVE CARP MOVEMENT THROUGH INTERMITTENT WATERWAYS

HB1-26: Closure of Connection between the Mississippi River Watershed and Great Lakes Watershed at Little Killbuck Creek, Ohio

- **Lead Agency:** OHDNR
- **Agency Collaboration:** OHDNR
- **GLRI Funding:** \$1,000,000
- **Agency Funding:** \$0

Project Summary

The GLMRIS Report, completed by the USACE in 2014, determined the Little Killbuck Creek as a medium risk connection for the transfer of invasive carp from the Mississippi River basin (Little Killbuck Creek) to the Great Lakes basin (Black River). The Little Killbuck Creek connection is a low-lying area that provides a direct water connection between the two watersheds during high water events. The connection will be closed using a combination of a rock and earthen berm to separate the basins and close this connection using a phased approach, addressing the highest risk areas first based on flood risk. This funding will support non-construction activities, Phase 2 oversight, preliminary design for Phase 3, and finalization of the FEMA compliance for the project.

Project Description

Using previous funding, OHDNR completed the berm design, permitting, wetland mitigation, and construction of a rock berm that is at the highest risk for flooding (Phase 1). The remaining project will be phased over multiple years and will require stabilization of the current earthen berm (Reaches 2-7) and other infrastructure upgrades.

Phase 1 of the project was completed in the fall of 2025 and consists of a new rock berm on Medina County Park District property. Later phases will include maintaining the current earthen berm and additional measures on privately-owned property. Phase 2 of the project will address the second-highest AIS risk, including the purchase of an easement for the current earthen berm, FEMA floodplain assessment, design administration, upgrade of a pumping facility to ensure dry conditions, improvements to the access road for future construction phases, and a screening structure for a culvert. This funding will support non-construction activities, Phase 2 oversight, preliminary design for Phase 3, and finalization of the FEMA compliance for the entire project.

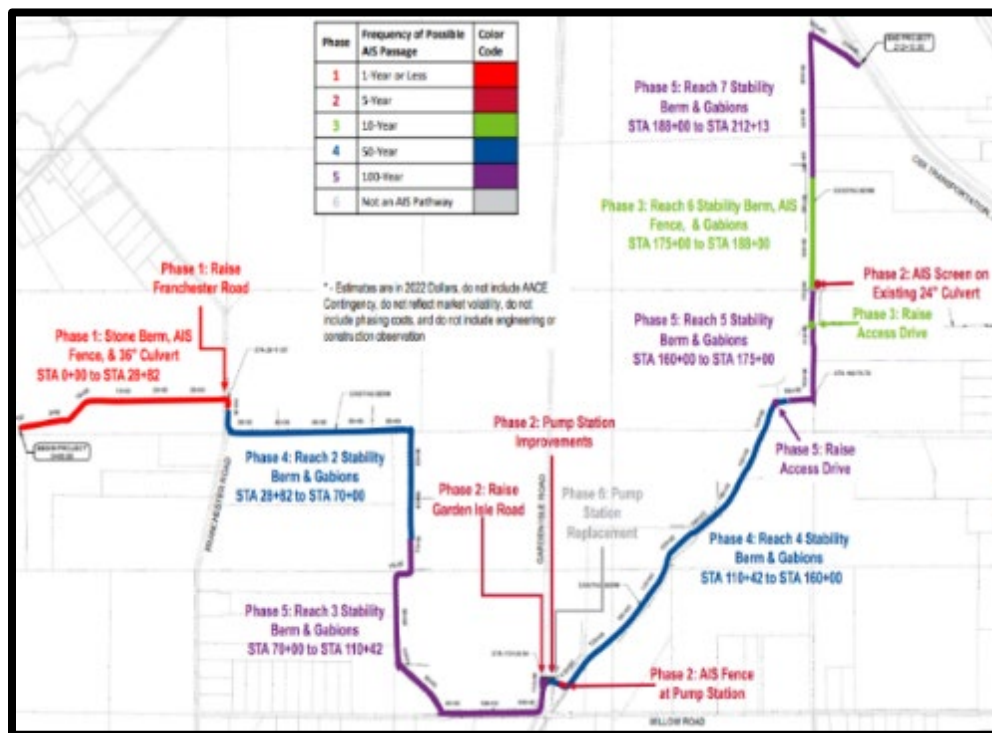
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**Figure 48 — Little Killbuck Creek
GLMRIS Connection**



Map showing the Little Killbuck Creek connection and the Great Lakes and Mississippi River basins. Source: OHDNR

Figure 49 — Little Killbuck Creek Barrier – Risk Based Phases



Schematic identifying the risk-based phases for the Little Killbuck Creek barrier project. Source: OHDNR

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HYDROLOGIC BARRIERS TO PREVENT INVASIVE CARP MOVEMENT THROUGH INTERMITTENT WATERWAYS

HB2-26: Maintenance of Structures at Ohio & Erie Canal to Prevent Inter-Basin Movement of Invasive Carp

- **Lead Agency:** OHDNR
- **Agency Collaboration:** None
- **GLRI Funding:** \$20,000
- **Agency Funding:** \$0

Project Summary

This project will help prevent invasive carp from entering Lake Erie via a watershed connection between the Ohio River and Lake Erie at the Ohio Erie Canal in Akron, Ohio. Following completion of the engineering component of this project, annual maintenance is necessary to continue effective prevention measures at this area in the Ohio Erie Canal.

Project Description

Invasive carp, specifically Bighead Carp and Silver Carp, have been confirmed downstream in the Ohio River, and these fish could move upstream toward Lake Erie through a series of tributaries in the coming years. Taking proactive steps helps prepare for what could eventually become a greater threat to the ecology and economy of the Great Lakes.

The GLMRIS Report, completed by the USACE in 2014, determined the Ohio Erie Canal as a medium risk connection for transfer of Bighead Carp, Silver Carp, and Black Carp from the Mississippi River basin to the Great Lakes basin. The Ohio Erie Canal project included design and construction of various structural measures to prevent or reduce the probability of these invasive aquatic nuisance species moving from the Tuscarawas River Watershed (headwaters of the Muskingum River) into the Cuyahoga River Watershed, and eventually Lake Erie, via the Ohio Erie Canal.

USACE initiated the construction of physical barriers in the spring of 2019 using Great Lakes Restoration Initiative funding and completed construction in the spring of 2020. Close coordination of the study, design, and construction was maintained with OHDNR and Summit County Metro Parks. Once the project was completed in 2020, the OHDNR took over maintaining the invasive control structures. Maintenance of this GLMRIS connection will be accomplished through a partnership with the OHDNR Division of Parks and Watercraft, the owner of the property, and the OHDNR will manage maintenance of this property through this funding.

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Figure 50 — Ohio & Erie Canal – Gabion Basket Barrier



*Photo of the Gabion Basket Barrier at the Ohio & Erie Canal.
Source: OHDNR*

Figure 51 — Little Killbuck Creek GLMRIS Connection



*Map showing Little Killbuck Creek connection
and the Great Lakes and Mississippi River.
basins. Source: OHDNR*

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PREVENTING THE ESTABLISHMENT OF GRASS CARP IN THE GREAT LAKES

GC1-26: Removal of Grass Carp in Ohio Waters of the Lake Erie Western Basin

- **Lead Agency:** OHDNR
- **Agency Collaboration:** University of Toledo, GLFC, MIDNR, USFWS, USGS
- **GLRI Funding:** \$650,000
- **Agency Funding:** \$0

Project Summary

This project will conduct aggressive control actions in locations of known Grass Carp spawning in the Sandusky and Maumee rivers in Ohio and other Lake Erie tributaries. Funding will be used for three Grass Carp strike teams and research at the University of Toledo that will contribute to the [2024-2028 Lake Erie Grass Carp Adaptive Response Strategy](#). This project reduces the risk of spreading and establishing Grass Carp in the Great Lakes by reducing the number of spawning fish, while also collecting information to inform future adaptive response actions.

Project Description

This project supports monitoring and control work by field crews to remove Grass Carp from the western basin of Lake Erie, specifically in the Sandusky and Maumee rivers, and other Lake Erie tributaries. The goal is to work with agency partners to remove 373 diploid Grass Carp from Lake Erie annually. The removal goals were identified through the SDM process facilitated by Michigan State University. The SDM process will be revisited to determine project effectiveness and future actions. The long-term goal of this work is to suppress and/or eradicate the Grass Carp population in Lake Erie and prevent this member of the invasive carp family from becoming established in the Great Lakes.

Priorities for our approaches have been established by the Lake Erie Committee's Lake Erie Grass Carp Adaptive Response Strategy. Planning for continued Grass Carp actions is being conducted in collaboration with the GLFC, the Council of Great Lakes Fishery Agencies Invasive Fishes Executive Committee, and the Council of Lake Committees Lake Erie Committee. Coordination of Grass Carp activities in Lake Erie will be through the GCAC, which is facilitated by OHDNR and MIDNR. Per the Terms of Reference, GCAC Task Groups "undertake and coordinate special focused activities needed to achieve GCAC and individual lake committees' objectives." Five Task Groups are within the GCAC: Data Management, Field Work, Telemetry, Modeling, and Barriers/Deterrents.

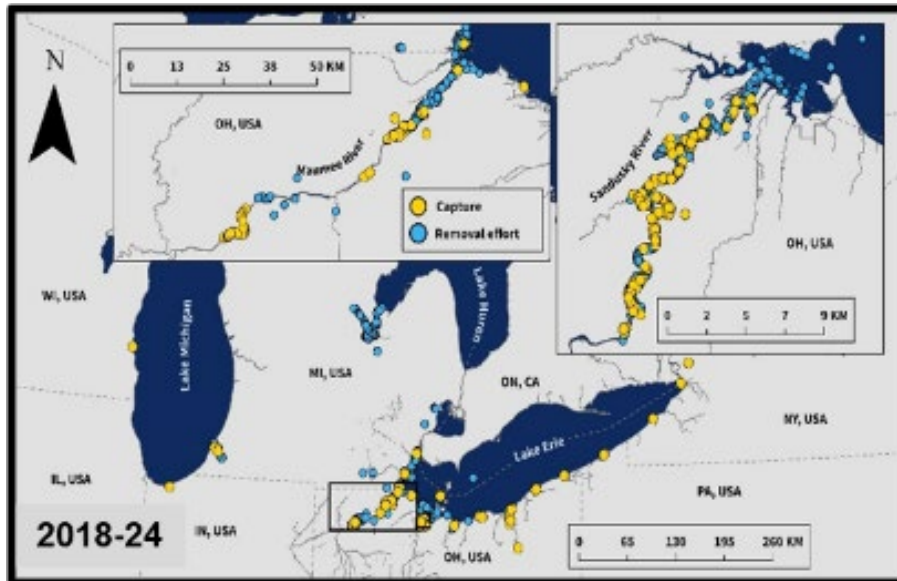
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Figure 52 — Grass Carp Strike Team



OHDNR Grass Carp Strike Team sampling for Grass Carp in the Sandusky River. Source: OHDNR

Figure 53 — Great Lakes Basin Grass Carp Collections



Map showing Grass Carp captures and removal effort at multiple locations in the Great Lakes basin, 2018-2024. Source: OHDNR

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PREVENTING THE ESTABLISHMENT OF GRASS CARP IN THE GREAT LAKES

GC2-26: Removal of Grass Carp in Michigan Waters and Support for Removals in Ohio Waters of the Lake Erie Western Basin

- **Lead Agency:** MIDNR
- **Agency Collaboration:** OHDNR, USFWS, USGS, GLFC, University of Toledo, Michigan State University
- **GLRI Funding:** \$410,000
- **Agency Funding:** \$150,000

Project Summary

This project will implement Grass Carp response actions in Michigan and Ohio waters of Lake Erie and the Michigan waters of Lake St. Clair, the Detroit River, Lake Michigan, and connecting waters. This project will result in the removal of Grass Carp within the Great Lakes and the prevention of invasive carp becoming established in the Great Lakes through removal events with gill nets and electrofishing. This funding will contribute to the objectives of the [2024-2028 Lake Erie Grass Carp Adaptive Response Strategy](#), including implementing control to minimize population expansion in Lake Erie, minimizing the likelihood of introduction and establishment of new breeding Grass Carp populations in nearshore areas of Lake Erie, and assisting with data collection that will help evaluate the effectiveness of Grass Carp response strategies.

Project Description

This project will sustain Michigan's contribution to the regional response efforts within Lake Erie, Lake St. Clair, the Detroit River, and connecting waters. Project activities will focus on targeted removal during spawning and aggregation events, sustained monitoring efforts, integrated movement data to guide removal timing and location, and data analyses contributions that will help inform decision-making. Primary removal methods will include electrofishing and gill nets. Surveillance will also be conducted in select Lake Huron and Lake Michigan tributaries to detect potential spread. Deliverables from this work will include reduced local Grass Carp populations, improved understanding of their movements and population trends, a maintained public-facing Grass Carp response [website](#), a maintained quality data and quality assurance standards, and facilitated processes that help inform adaptive response strategies and strengthen Great Lakes management efforts.

MIDNR coordinates with partners, including USFWS, USGS, OHDNR, Michigan State University, and the University of Toledo, using protocols established by the GCAC. Grass Carp removal and monitoring protocols are standardized among GCAC members and partners. MIDNR's Grass Carp biologist co-leads the Grass Carp removal database management and data quality analysis with

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USFWS and will continue coordinating with project partners by participating in the Grass Carp Data Task Group and sending out biweekly harvest and survey effort reports to partners during the field season. MDNR will also help coordinate GCAC members to revisit the components of a decision-making framework.

Figure 54 — Scanning for Grass Carp During Electrofishing



MIDNR crew scanning for Grass Carp to remove with electrofishing. Photo credit: MIDNR

Figure 55 —Michigan Major Rivers of the Lower Peninsula



Map showing areas for planned Grass Carp removals and surveillance that include 1) Grand River, 2) Kalamazoo River, 3) St Joseph River, 4) select waters of Lake St. Clair, 5) Western Basin of Lake Erie, including the River Raisin and Huron River, and 6) the Maumee River. Source: MIDNR.

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PREVENTING THE ESTABLISHMENT OF GRASS CARP IN THE GREAT LAKES

GC3-26: Support for Removal of Grass Carp in the Lake Erie Western Basin and Early Detection Monitoring in Great Lakes Tributaries

- **Lead Agency:** USFWS
- **Agency Collaboration:** Fisheries and Oceans Canada, USGS, INDNR, MIDNR, WIDNR, NYDEC, OHDNR, PAFBC, GLFC, SIU, Michigan State University, University of Buffalo, University of Toledo, USFWS La Crosse Fish Health Center
- **GLRI Funding:** \$1,800,000
- **Agency Funding:** \$850,000

Project Summary

USFWS will provide capacity for Grass Carp surveillance and capture efforts in the waters of Lakes Erie, Michigan, and Ontario—specifically in Wisconsin, Michigan, Indiana, Ohio, Pennsylvania, and New York. The project will implement early detection monitoring and removal of grass carp in coordination with state agencies and other partners of the ICRCC and Grass Carp Advisory Committee (GCAC).

Project Description

USFWS FWCOs will deploy field crews and provide laboratory assistance to support partners and implement state-led Grass Carp early detection and removal actions in alignment with GCAC priorities. FWCOs will 1) maintain support for existing Grass Carp crews on-the-water, 2) provide co-leadership for the GCAC, 3) support GCAC data management and QA/QC plans, 4) collect biological samples for aging, health, and ploidy analysis, 5) assist with implementation of telemetry efforts (e.g., GLATOS, satellite, acoustic, VPS) to track Grass Carp movements, and 6) coordinate with partners to plan and implement innovative detection and control techniques.

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Figure 56 — Grass Carp Captures by USFWS



Grass Carp Captures by USFWS in the Maumee River, Ohio – Fall 2024 Sampling Effort. Source: USFWS

Figure 57 — Historical Sampling Locations



Historical sampling locations for the USFWS Great Lakes Grass Carp Program. Source: USFWS

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PREVENTING THE ESTABLISHMENT OF GRASS CARP IN THE GREAT LAKES

GC4-26: Grass Carp Ploidy Analysis to Assess Reproductive Risk of Detected Populations

- **Lead Agency:** USFWS, La Crosse Fish Health Center
- **Agency Collaboration:** USGS-Great Lakes Science Center, Great Lakes Grass Carp Committee, USFWS-Alpena Fish and Wildlife Conservation Office, USFWS—Green Bay Fish and Wildlife Conservation Office, ILDNR, MIDNR, NY DEC, OHDNR, University of Buffalo, University of Toledo
- **GLRI Funding:** \$80,000
- **Agency Funding:** \$40,000

Project Summary

This project assesses the reproductive capability of wild-caught Grass Carp by determining the ploidy or sets of chromosomes of captured carps. Diploid Grass Carp, those with two (2) sets of chromosomes, can reproduce; triploid Grass Carp, those with three (3) sets of chromosomes, are considered sterile and unable to reproduce.

This project will provide ploidy determinations for captured wild Grass Carp in the Great Lakes Basin and states of Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin. This funding will produce more than 200 flow cytometric analyses of Grass Carp to determine the threat of reproduction in the Great Lakes.

Project Description

Ploidy determination is a genetic analysis of the reproductive capabilities of captured Grass Carp and Black Carp using flow cytometry. Determination of captured Grass Carp ploidy serves as an indicator of the reproductive status of the captured fish; triploid Grass Carp are sterile (e.g., escaped from intentional stockings for aquatic weed or snail control), while diploid Grass Carp are naturally reproducing and may establish invasive populations.

Results from this project are used by partner agencies to inform the risk of new population establishment or range expansion and to focus the implementation of potential response and control actions on areas of need where diploid fish threaten to establish reproductive populations. Ploidy results, along with collection data and images, are reported to the Great Lakes Grass Carp Advisory Committee and the USGS NAS Database: <https://nas.er.usgs.gov/>.

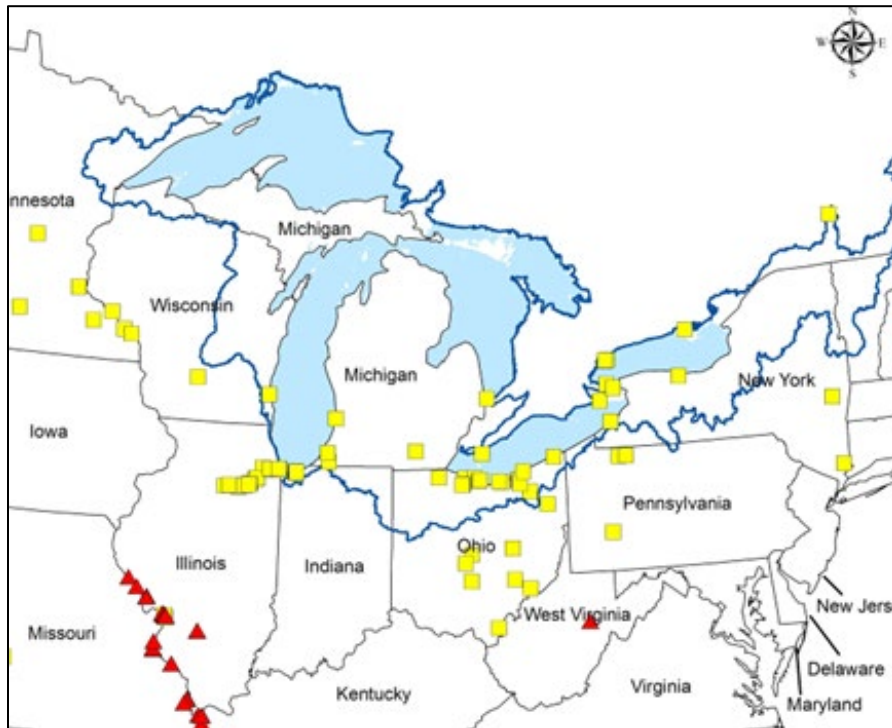
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Figure 58 — Captured Grass Carp



Image of a person holding a large Grass Carp captured from the Great Lakes. Photo credit: USFWS.

Figure 59 — Map of Black Carp and Grass Carp Capture Locations



Map of Black Carp (red triangles) and Grass Carp (yellow squares) capture locations in Great Lakes states. Source: USFWS.

PREVENTING THE ESTABLISHMENT OF GRASS CARP IN THE GREAT LAKES

GC5-26: Predicting and Identifying Grass Carp Spawning Locations

- **Lead Agency:** USGS
- **Agency Collaboration:** INHS, USFWS, OHDNR, University of Toledo, MNDNR, DFO Canada
- **GLRI Funding:** \$375,000
- **Agency Funding:** \$365,627

Project Summary

This project will address critical data gaps related to Grass Carp management in the Great Lakes focused on predicting and identifying spawning locations. Project objectives and focus topics include:

- Identifying Grass Carp spawning tributaries and specific spawning location.
- Collection of hydraulic data collection and performing egg drift simulations for the Huron River in Ohio.
- Using modelling to evaluate and guide early life stage sampling practices for invasive carp across river systems.

This project will result in improved understanding of Grass Carp spawning and reproductive ecology and help prevent invasive carp from becoming established in the Great Lakes by identifying areas where reproduction occurs to aid prioritization of control efforts.

Project Description

This project will sample and model Grass Carp early life stages (eggs and larvae) in tributaries to the Great Lakes.

Ichthyoplankton nets will be used in several tributaries where Grass Carp are either known to spawn, have been identified as high risk of Grass Carp spawning, or have had recent collections of diploid Grass Carp. Priority survey rivers are determined in coordination with partner agencies through the Grass Carp Advisory Committee. Grass Carp eggs and larvae will be examined for developmental stage, and all collection data and developmental stages of eggs and larvae will be entered into a database, which will support models that estimate specific spawning locations. This information will be provided to managers to inform efforts to remove Grass Carp from the Great Lakes.

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This funding will also support further work on the Huron River in Ohio. Grass Carp habitat use in the Huron River is largely unknown beyond the collection of Grass Carp eggs in 2022 and the observation of one reproductively viable adult. Using limited information, scientists at the USGS Central Midwest Water Science Center developed preliminary spawning location estimates using stream velocities derived from the NWM and the FluEgg. To improve the model, streamflow, velocity, bathymetry, and water level data will be collected during spawning-like flow events using acoustic Doppler current profilers and water level loggers. These data will be used to validate NWM outputs and could support future development of a hydraulic model for the Huron River for egg drift simulations to guide future management and removal efforts.

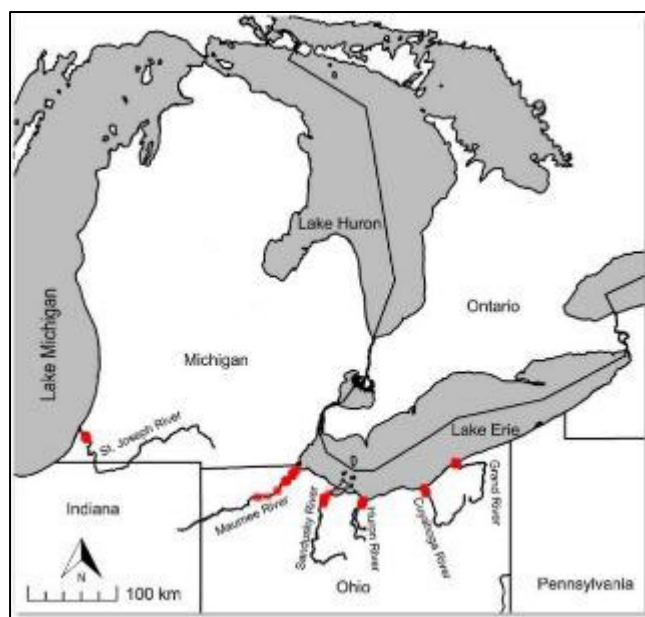
Finally, this project will examine how different sampling strategies may increase the detection probability of invasive carp eggs/larvae through an analysis of existing egg/larval drift simulation results in regulated and unregulated river systems of multiple scales. Funding will produce a method for using drift simulation results to identify locations and depths where the concentration of eggs/larvae is greatest under a variety of conditions (flows, temperatures, spawning locations); application of that method to other rivers including the Illinois, Sandusky, and Maumee Rivers; and a preliminary analysis aimed at developing both site-specific sampling guidance as well as general sampling guidance that is applicable to other river systems.

Figure 60 — Huron River Ichthyoplankton Sampling



A field crew from USGS Great Lakes Science Center washes net contents into a collection jar during a survey for Grass Carp eggs in the Huron River, Ohio. Photo credit: Corbin Hilling (USGS, Public Domain).

Figure 61 — Grass Carp Ichthyoplankton Sampling Sites



Great Lakes tributaries surveyed for Grass Carp eggs and larvae by USGS and University of Toledo. Sampling sites are shown as red squares. Source: USGS

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PREVENTING THE ESTABLISHMENT OF GRASS CARP IN THE GREAT LAKES

GC6-26: Refinement of the Invasive Carp Spawning Event Prediction Tool

- **Lead Agency:** USGS
- **Agency Collaboration:** NOAA, USGS-GLSC, OHDNR, University of Toledo, DFO Canda, INDNR-INHS, MNDNR, INDNR
- **GLRI Funding:** \$85,000
- **Agency Funding:** \$30,000

Project Summary

This project will continue the development of USGS SpawnCast, a web-based decision support tool that provides 5-to-10-day forecasts of potential invasive carp spawning events in tributaries to the Great Lakes and adjacent river basins with known interbasin connections to the Great Lakes (Illinois, Upper Mississippi, and Ohio rivers). This project will result in the ability for management agencies to make informed decisions about when and where to deploy Grass Carp strike teams in the Great Lakes Basin and prevent invasive carp from becoming established in the Great Lakes by providing advanced warning of spawning events, guiding early detection monitoring efforts near invasion fronts, and identifying when and where control efforts can have the greatest impact on invasive carp populations in the Great Lakes and adjacent basins. This funding will be used to maintain and operate the USGS SpawnCast webpage for existing forecast sites and to complete the development and deployment of a new, interactive dashboard utilizing NOAA's NWM and spawning suitability index models to produce reach-based invasive carp spawning forecasts for stream networks throughout the Great Lakes, Illinois, Upper Mississippi, and Ohio River basins.

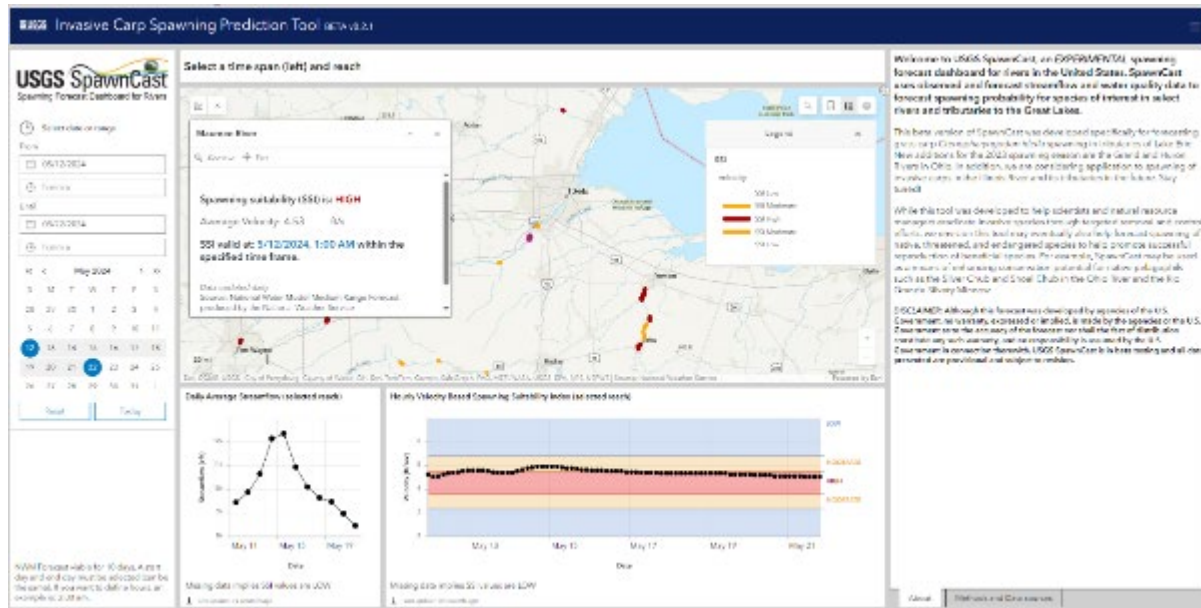
Project Description

USGS SpawnCast uses observed and forecasted hydrologic, hydraulic, and water quality conditions combined with species-specific spawning requirements to forecast spawning probability for species of interest in select rivers and tributaries of the Great Lakes. USGS SpawnCast currently provides hourly forecasts for Grass Carp spawning in five tributaries to Lake Erie (the Sandusky, Maumee, Cuyahoga, Grand, and Huron rivers). USGS began developing an interactive dashboard that utilizes output from NOAA's NWM to produce reach-based Grass Carp spawning forecasts for tributaries throughout the Great Lakes Basin. This expansion of USGS SpawnCast will provide users with detailed Grass Carp spawning forecasts for thousands of river reaches around the Great Lakes, allowing more efficient use of human resources for the collection of ichthyoplankton samples and targeted removal of adult Grass Carp. The development of species-specific spawning suitability index models will allow USGS SpawnCast to

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predict when and where Grass Carp, Bighead Carp, and Silver Carp spawning is possible throughout the Great Lakes and adjacent river basins up to 10 days in advance. Advanced notice allows partner agencies to ensure control and monitoring assets are deployed with the maximum potential for success.

Figure 62 — Screen Shot of the USGS SpawnCast Interactive Dashboard



Screen shot showing a beta version of the USGS SpawnCast interactive dashboard (multipaneled graphical user interface with a forecast period selection panel, an interactive map with highlighted river reaches that have moderate and high spawning suitability index values during the forecast period, and timeseries plots of streamflow and velocity for the highlighted reach).

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PREVENTING THE ESTABLISHMENT OF GRASS CARP IN THE GREAT LAKES

GC7-26: Using Telemetry to Better Understand Grass Carp Movements and Habitat Use

- **Lead Agency:** USGS
- **Agency Collaboration:** USGS, Joint Strategic Plan partners (particularly OHDNR and MIDNR), GLFC, USGS-CERC, Quantitative Fisheries Center of Michigan State University
- **GLRI Funding:** \$200,000
- **Agency Funding:** \$605,499

Project Summary

This project will address the threat of invasive Grass Carp by developing a comprehensive understanding of seasonal movements and habitat use to determine when and where eradication efforts would be most effective in Ohio, Michigan, Pennsylvania, and New York within Lakes Erie and Huron and tributaries to these lakes. This project will result in detailed observations of Grass Carp spawning, feeding, and overwinter behavior and prevent invasive carp from becoming established in the Great Lakes by determining when and where eradication efforts would be most effective. This funding will produce a publication examining detailed Grass Carp habitat use and selection in the Sandusky River, a summary of Grass Carp seasonal movements and locations in lake and tributary habitats, real-time tracking of Grass Carp movement in spawning tributaries and some nearshore habitats, and an analysis of Maumee River movement patterns.

Project Description

The goal of this project is to address the threat of invasive Grass Carp by developing a comprehensive understanding of seasonal movements, habitat use, and areas of aggregation to determine when and where eradication efforts would be most effective. The work will be accomplished with primarily acoustic telemetry, leveraging the GLATOS in a basin-wide interagency collaboration. The goal of this project directly addresses a top priority of the Council of Great Lakes Fishery Agencies and objectives of the [2024-2028 Lake Erie Grass Carp Adaptive Response Strategy](#). This strategy is coordinated through the GCAC.

Behavioral information on Grass Carp spawning, feeding, and overwinter behavior is highly sought by managers to inform the development of control and eradication (via capture and removal) strategies. Detailed observations of the location and timing of Grass Carp movements will also be compared to abiotic conditions to explore potential cues to these observed patterns. To address these questions, a tiered network of telemetry receivers was created. Information

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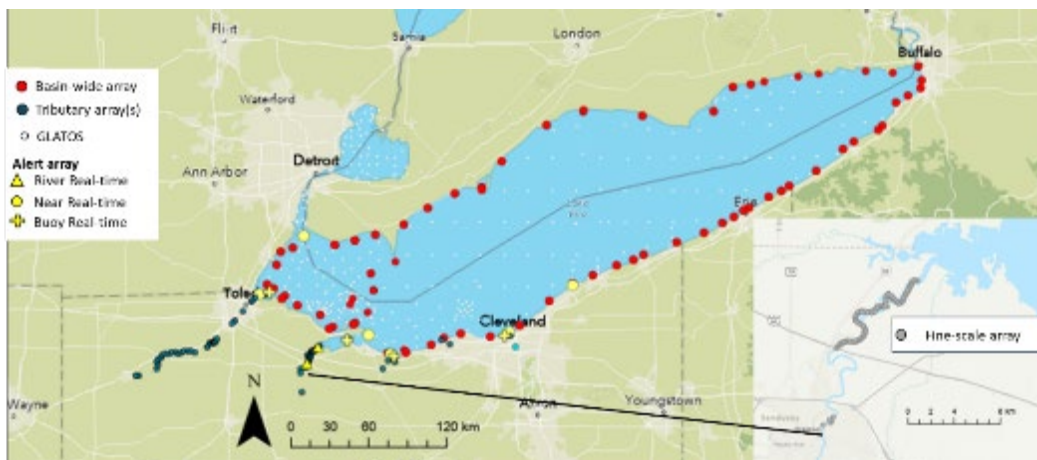
from detections of tagged Grass Carp from this array will be used in analyses of seasonal habitat use and fine-scale tributary habitat use with applications to inform and improve removal efforts.

Figure 63 — Tagged Grass Carp



Grass Carp tagged with acoustic telemetry transmitter being released into the Sandusky River. Photo credit: USGS

Figure 64 — Location of Grass Carp Tiered Telemetry Arrays



Lake Erie and the location of Grass Carp tiered telemetry arrays (a.) and a close-up of the Fine-scale array (b.). The Grass Carp receivers and arrays are shown in red, blue, gray, and yellow while other existing strategically located GLATOS receivers are shown in white. Source: USGS

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Figure 65 — Implanting a Transmitter into a Grass Carp



A biologist surgically implants a transmitter into a Grass Carp near Mississippi River Lock No. 19. Source: USGS

PREVENTING THE ESTABLISHMENT OF GRASS CARP IN THE GREAT LAKES

GC8-26: Strontium Isotopes and Grass Carp Ichthyoplankton in Sandusky Bay

- **Lead Agency:** USGS
- **Agency Collaboration:** NOAA, USFWS, OHDNR, MIDNR
- **GLRI Funding:** \$180,000
- **Agency Funding:** \$0

Project Summary

This project will analyze the spatiotemporal variability in strontium isotope ratios and the hydrodynamics of Sandusky Bay, Ohio, across a wide range of environmental conditions. This project will result in improved understanding of the fate, transport, and recruitment potential of Grass Carp eggs and larvae within the bay and other open-water environments and prevent invasive carp from becoming established in the Great Lakes by informing risk assessments, population models, control methods, and early detection efforts.

Project Description

This project will result in a better understanding of the potential for Grass Carp egg hatching and recruitment within Sandusky Bay, Ohio, and prevent invasive carp from becoming established in the Great Lakes by addressing a key uncertainty in Grass Carp risk assessment—hatching and recruitment in open waters of the Great Lakes.

This funding will be used to (1) simulate egg and larval transport for known and suspected spawning events in 2015 through 2019 using an existing Environmental Fluid Dynamics Code hydrodynamic model; (2) determine if bay hydrodynamics can help explain why 2019 produced a strong year class compared to 2015, despite having similar in-river spawning conditions for both years based on annual cumulative spawning suitability indices; and (3) perform a laboratory-based assessment of the effect of thermal stratification on Grass Carp egg settling velocity to better parameterize transport models and understand potential for egg settling in lakes and reservoirs.

In addition, strontium isotope ratio ($^{87}\text{Sr}/^{86}\text{Sr}$) distributions in Sandusky Bay water will be compared with egg and larval transport predictions from hydrodynamic modelling and otolith microchemistry from captured Grass Carp. Such an analysis may help validate model-predicted egg and larval transport and identify nursery habitat in Sandusky Bay for targeted control efforts.

Figure 66 – Map of Sandusky Bay



Map showing Sandusky Bay in relation to Lake Erie and the Sandusky River. Source: USGS

Figure 67 – Survey Sampling Grid of Sandusky Bay



Survey sampling grid overlaid on an aerial image of Sandusky Bay with a visible sediment plume from the Sandusky River in July 2007. Source: Google Earth

PREVENTING THE ESTABLISHMENT OF GRASS CARP IN THE GREAT LAKES

GC9-26: Grass Carp Impacts on Great Lakes Wetland Habitats

- **Lead Agency:** USGS
- **Agency Collaboration:** MIDNR, OHDNR, USFWS, University of Toledo
- **GLRI Funding:** \$100,000
- **Agency Funding:** \$0

Project Summary

This project will quantify potential Grass Carp impacts on aquatic vegetation in Ohio and Michigan wetland habitats. This project will result in herbivory thresholds at which degradation of wetland habitats could occur and will prevent invasive carp from becoming established in the Great Lakes by developing system-specific density targets at which adverse effects could be expected. This funding will produce stable isotope analyses, a method used to trace dietary sources in fish, to define Grass Carp resource use and estimates of wetland plant community responses to herbivory to inform prioritization of removals by quantifying vulnerability of wetland habitats.

Project Description

Grass Carp are herbivores and could negatively influence water quality and habitat availability for native species (e.g., fish, birds, amphibians) by reducing vegetated aquatic habitat. To date, the impacts of Grass Carp on Great Lakes aquatic vegetation are unknown. Improving the understanding of Grass Carp impacts in Lake Erie was defined as an objective in the current Lake Erie Grass Carp Adaptive Response Strategy, with “determine how to best detect and assess adverse impacts of Grass Carp herbivory in the region” defined as a management priority. Further, the Grass Carp Adaptive Response Strategy defined “uncertainty of the density threshold(s) at which Grass Carp herbivory becomes detrimental” as a key management consideration. Consequently, understanding Grass Carp impacts and how those impacts change with Grass Carp density is important for management decisions. We propose quantifying individual effects on aquatic vegetation and identifying Grass Carp abundance levels at which degradation of wetland habitat could occur. The overarching questions to be addressed include 1) What is the per-capita effect of Grass Carp on Great Lakes wetland habitats? and 2) at what abundance level would Grass Carp induce declines in habitat benefits to Great Lakes aquatic species?

Following the development of a Grass Carp dynamic energy budget model (a model to estimate how Grass Carp consume and use energy from food), we plan to estimate wetland plant dynamics

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with herbivory to assess foraging impacts. A key step in forecasting foraging impacts is to assess Grass Carp diets and assimilation. Grass Carp diet metabarcoding (genetic analysis of stomach contents) from the Lake Erie basin detected numerous plant taxa, but their relative importance is unclear—genetic detections in stomach contents may not equate to assimilation into tissues. Consequently, partners at University of Toledo, USFWS, and MIDNR have collected tissue samples from harvested Grass Carp for stable isotope analysis. Pilot analyses of Grass Carp and plant samples for carbon and nitrogen stable isotopes have been completed at the USGS Geology, Geophysics, and Geochemistry Stable Isotope Laboratory. Analysis of additional fish and plant samples, as well as analysis of sulfur isotopes, will improve understanding of which resources are being assimilated into Grass Carp tissues. Stable isotopes will help assess the relative contributions of terrestrial vs aquatic resources, foraging habits across time and space, the role of microbe colonization of plants to nutrition, and contributions of rooted vs non-rooted aquatic resources (e.g., duckweed, algae). Following the estimation of consumption rates and refined understanding of food resource use, we will work to estimate plant responses to herbivory. Estimation of plant dynamic rates in relation to herbivory will inform the estimation of plant production potential and support inferences on aquatic plant community changes in response to varying levels of Grass Carp abundance. Finally, we propose modeling exercises to estimate Grass Carp abundance levels that would exceed growth rates of Lake Erie aquatic vegetation (e.g., Grass Carp densities when exceeding sustainable vegetation consumption thresholds occur). The results will permit the estimation of Grass Carp abundance levels at which herbivory and plant growth could disrupt vegetation growth dynamics and potential impacts on water quality and habitat availability for native species (e.g., fish, birds, amphibians) are likely.

Figure 68 — Biofilm Collection from Submerged Tree



A USGS GLSC field crew collects a biofilm sample from a submerged tree for stable isotope analysis. Photo Credit: USGS

Figure 69 — Lake Erie Wetland Habitats



Wetland habitats (green) in western Lake Erie (U.S. side only shown) in relation to confirmed Grass Carp spawning rivers (Huron, Maumee, and Sandusky rivers). The inset map depicts the location of larger map area (red box) within the Laurentian Great Lakes region. Source: USGS

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PREVENTING THE ESTABLISHMENT OF GRASS CARP IN THE GREAT LAKES

GC10-26: Using Modelling to Identify Best Assessment Practices for Grass Carp

- **Lead Agency:** NOAA
- **Agency Collaboration:** Michigan State University-Quantitative Fisheries Center
- **GLRI Funding:** \$177,000
- **Agency Funding:** \$70,000

Project Summary:

This project will use simulation methods to evaluate stock assessment approaches for Grass Carp and other invasive carps in the Great Lakes region. This project will result in improved guidance on the best approaches to assessing population abundance and preventing invasive carp from becoming established in the Great Lakes by improving our ability to evaluate the effectiveness of control measures. This funding will produce a technical report and a conference presentation describing the progress made in identifying best-practice stock assessment methods.

Project Description:

Stock assessments are used for setting fishery harvest regulations guiding management activities, as well as generating recommendations for control/suppression of invasive species. A limitation of these invasive species assessments, however, is control/suppression harvest is generally treated as analogous to the commercial or recreational fishery harvest information for which stock assessment methods have been designed. This may lead to inaccurate conclusions about the effectiveness of suppression efforts. This modelling project will seek to develop recommended best practices for conducting stock assessments for invasive carps.

In collaboration with the Michigan State University Quantitative Fisheries Center, simulation methods will be used to evaluate the best approaches for conducting stock assessments for invasive carps, with emphasis placed on the assessment of Grass Carp in Lake Erie. This guidance will be targeted to cover aspects related to data collection as well as stock assessment model design to deal with the intricacies that can sometimes arise with suppression programs. The effort will draw on previous research and recommendations for stock assessments that have been generated for fished species but will be adapted for use on invasive species. In doing so, this work will provide important insights for the assessment of invasive carp abundance and the evaluation of the effectiveness of control measures to prevent further spread and maintain Great Lakes ecosystem health.

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PREVENTING THE ESTABLISHMENT OF GRASS CARP IN THE GREAT LAKES

GC11-26: Comparison of Gear Efficiency for Grass Carp Removal in Lake Erie Tributaries

- **Lead Agency:** USGS
- **Agency Collaboration:** USFWS, MIDNR, University of Toledo, INHS, GCAC
- **GLRI Funding:** \$166,000
- **Agency Funding:** \$0

Project Summary:

This project will compare gear used for capturing Grass Carp to optimize removal efficiency in the western Lake Erie basin in Ohio, with replication in Pool 19 of the Mississippi River. This project will result in data which support current sampling approaches or will identify new gears and approaches which maximize capture efficiency to reduce the probability of Grass Carp establishment in the Great Lakes by informing the management action of removal. This funding will produce Grass Carp removals and data comparing gear types, which will be presented at the GCAC meeting.

Project Description:

Dedicated strike teams have been mechanically removing Grass Carp from the western Lake Erie basin since 2018 using a variety of methods including active and passive gear, such as electrofishing and hoop nets, and a combination of active and passive gears. Both standardized sampling (fisheries independent) and targeted removals (fisheries dependent) data have been collected and inconsistently used to assess the success of removal efforts. Attempts to assess the program with these data have been heavily caveated due to some detection probability uncertainty relating to individual gears. Current sampling data in conjunction with telemetry data from acoustic tagged fish have indicated low catchability of Grass Carp across the primary methods of capture (Acre et al. 2024). Additionally, telemetry data have been used to assess movement patterns of Grass Carp in the Sandusky River and determine activity levels are greater at night (Bonjour et al. 2025). Both low catchability and Grass Carp movement patterns suggested a disconnect between Grass Carp behavior and removal crew methods which has led to the recent implementation of overnight gill net sets. Gill nets have proven successful in increasing the number of captured Grass Carp. However, this rapid gear shift has also resulted in additional uncertainty about interpretation of collected data.

To continue improving removal efficiency and better inform future population assessments, we propose to deploy multiple gear types in the western Lake Erie basin to capture Grass Carp and evaluate the efficacy of gears under different conditions, with replication in Pool 19 of the

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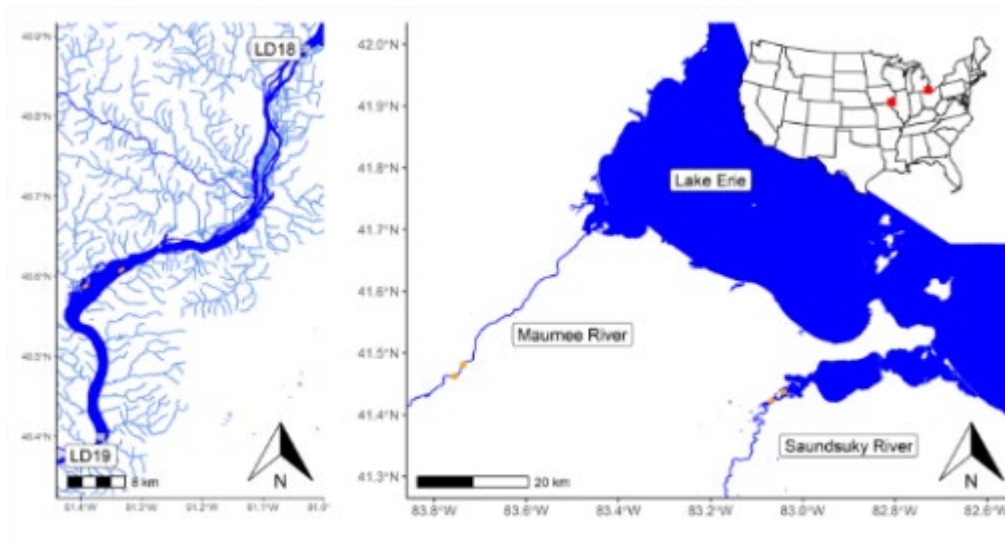
Mississippi River. This data will also be used to improve detection probability estimates for abundance modeling, a metric to assess the effectiveness of Grass Carp management actions.

Figure 70 — Deploying Hoop Nets



Three USGS employees deploying hoop nets from a boat to capture Grass Carp in the Sandusky River, OH. Photo credit: USGS

Figure 71 — Locations of Grass Carp Removal Gear Research



Pool 19 on the Mississippi River (dark blue, left) and the western Lake Erie basin (right) where proposed gear comparison for Grass Carp removal research will occur. LD = Lock and dam. Map created in Project R using National Hydrography Dataset. Source: USGS

UNDERSTANDING BLACK CARP POPULATION DYNAMICS TO INFORM MANAGEMENT STRATEGIES

BC1-26: Enhanced Detection Monitoring of Black Carp in the Lower Illinois River

- **Lead Agency:** ILDNR
- **Agency Collaboration:** INHS-IRBS, USGS-CERC
- **GLRI Funding:** \$243,000
- **Agency Funding:** \$0

Project Summary

This project will monitor Black Carp in the Alton Reach of the Illinois River. This project determines the annual change in Black Carp abundance and helps prevent invasive carp from becoming established in the Great Lakes by assessing and guiding management activities in the lower Illinois River. This funding will produce estimates of the population growth and expansion of Black Carp and will support telemetry-informed rapid response removal efforts in the Illinois River as necessary.

Project Description

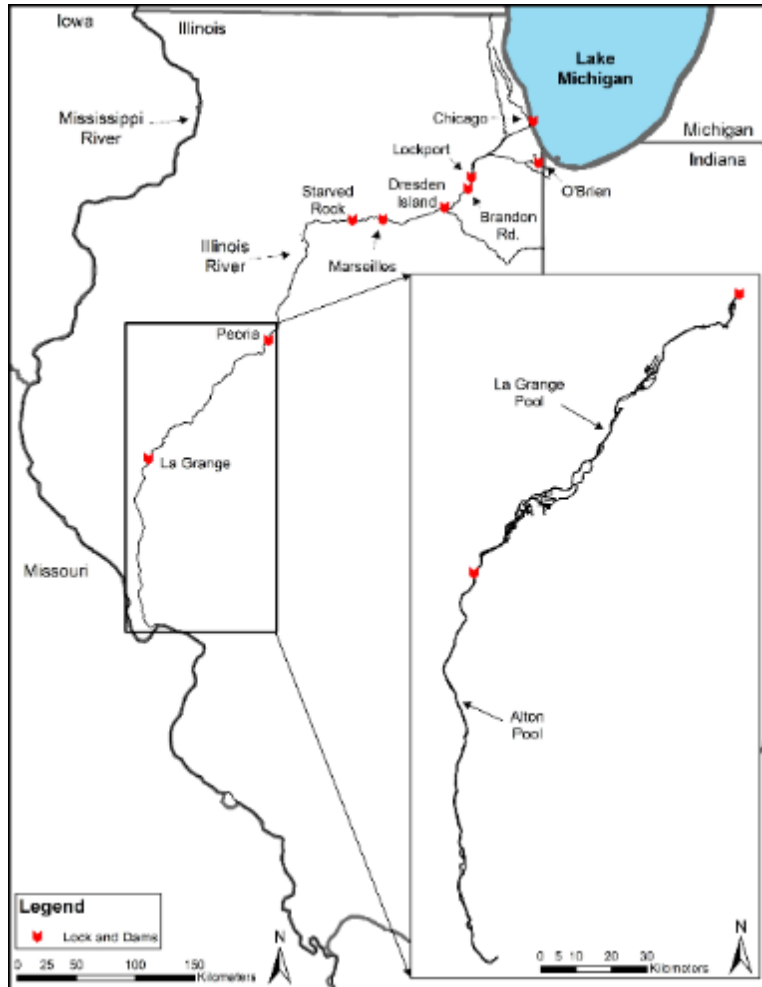
Invasive Black Carp have invaded the Illinois River system and have recently been captured in the Alton, La Grange, and Peoria reaches of the lower Illinois River. Currently, the invasion of Black Carp is represented by only a few reported individuals, and little is known about the size of the population or potential scope of ecosystem changes that may result from the invasion. The ILDNR has been closely monitoring the range expansion of Black Carp up the Illinois River. Critical to any inferences about the range expansion of Black Carp is better knowledge of their population levels in invaded reaches. The limited number of Black Carp reported to date has been mostly from incidental commercial fishermen catches while targeting other species. These captures and associated data (e.g., length, weight, age, diet, and otolith microchemistry) are valuable; however, the limited number of reported individuals makes it difficult to assess their prevalence/establishment in the lower Illinois River. More robust estimates of the current population level are essential to the long-term management and potential control of Black Carp in the Illinois River.

Continued sampling using hoop nets baited with experimental baits will be used to assess the population of Black Carp in the lower Illinois River and test the efficacy of different baits. The baits to be used in Illinois River monitoring will be guided by targeted efforts of known Black Carp populations and laboratory investigations at USGS and INHS. The sampling effort will be doubled in the Alton Reach, closer to the source population, to increase the probability of capture. In the Alton Reach of the Illinois River, the existing Upper Mississippi River Restoration Program's LTRM

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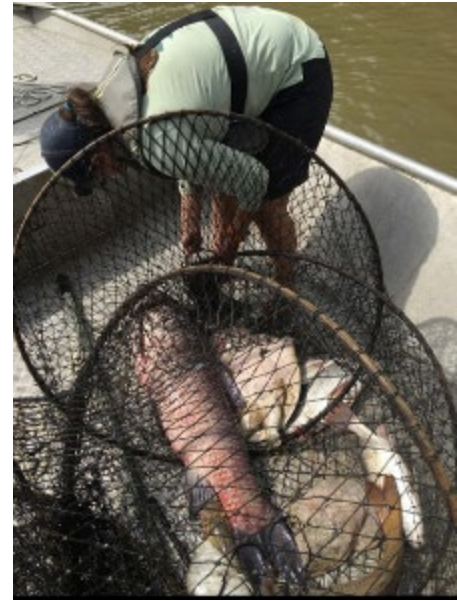
and MAM standardized hoop netting efforts will be expanded to include clam-based and cottonseed-based baits. Expanded hoop netting efforts will be randomly fished in main- and side-channel border habitats, like ongoing standardized LTRM hoop netting efforts. Fishery-independent Black Carp abundance estimates are necessary to detect status changes and to help direct and assess management actions. Increased presence in the Alton Reach and other Illinois River reaches will help with rapid response and telemetry-informed netting in these regions.

Figure 72 — Map of Reaches



Map of Alton and La Grange reaches in the Illinois River. Alton reach will be the primary target pool for fishery-independent monitoring in this funding request. Source: IRBS

Figure 73— Black Carp Capture



River biologist pulling baited hoop net with Black Carp capture below Lock and Dam 26. Photo credit: INHS

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UNDERSTANDING BLACK CARP POPULATION DYNAMICS TO INFORM MANAGEMENT STRATEGIES

BC2-26: Black Carp Data Collection from Commercial Fishers and Recreational Anglers

- **Lead Agency:** ILDNR
- **Agency Collaboration:** INHS, USFWS, USGS
- **GLRI Funding:** \$42,000
- **Agency Funding:** \$0

Project Summary

This project will provide payments to commercial fishers and recreational anglers who submit Black Carp captured within the Mississippi River basin for agency analysis. This project will result in valuable information regarding habitat preference, capture methods, and range expansion of Black Carp and will help prevent invasive carp from becoming established in the Great Lakes by functioning as an early detection monitoring tool. This funding will support the collection and evaluation of up to 350 specimens.

Project Description

ILDNR will monitor the range expansion of Black Carp within the Mississippi River basin through incentive payments to commercial fishers and recreational anglers who submit harvested Black Carp for data collection and analysis. These submittals have proven to be one of the few viable methods of collecting Black Carp, and most Black Carp data points are the result of these submittals. Personnel

will travel to confirm any Black Carp specimens collected by commercial fishers from major rivers in the Mississippi River basin, fish processing facilities in Illinois, or agency offices (e.g., ILDNR, INHS) where commercial fishermen take Black Carp. Depending on capture location, some fish carcasses may be identified by personnel from the USGS's CERC or shipped to USGS-CERC for processing. Data generated from this project will provide information on the status, range, and population trends of Black Carp in the Mississippi River basin.

Commercial fishers and recreational anglers will provide information on capture methods, collection date, and collection location (GPS coordinates, nearest river mile, or other identifying landmarks). A \$100 reward will be provided for each wild-caught Black Carp, with a maximum of

Figure 74 — Captured Black Carp

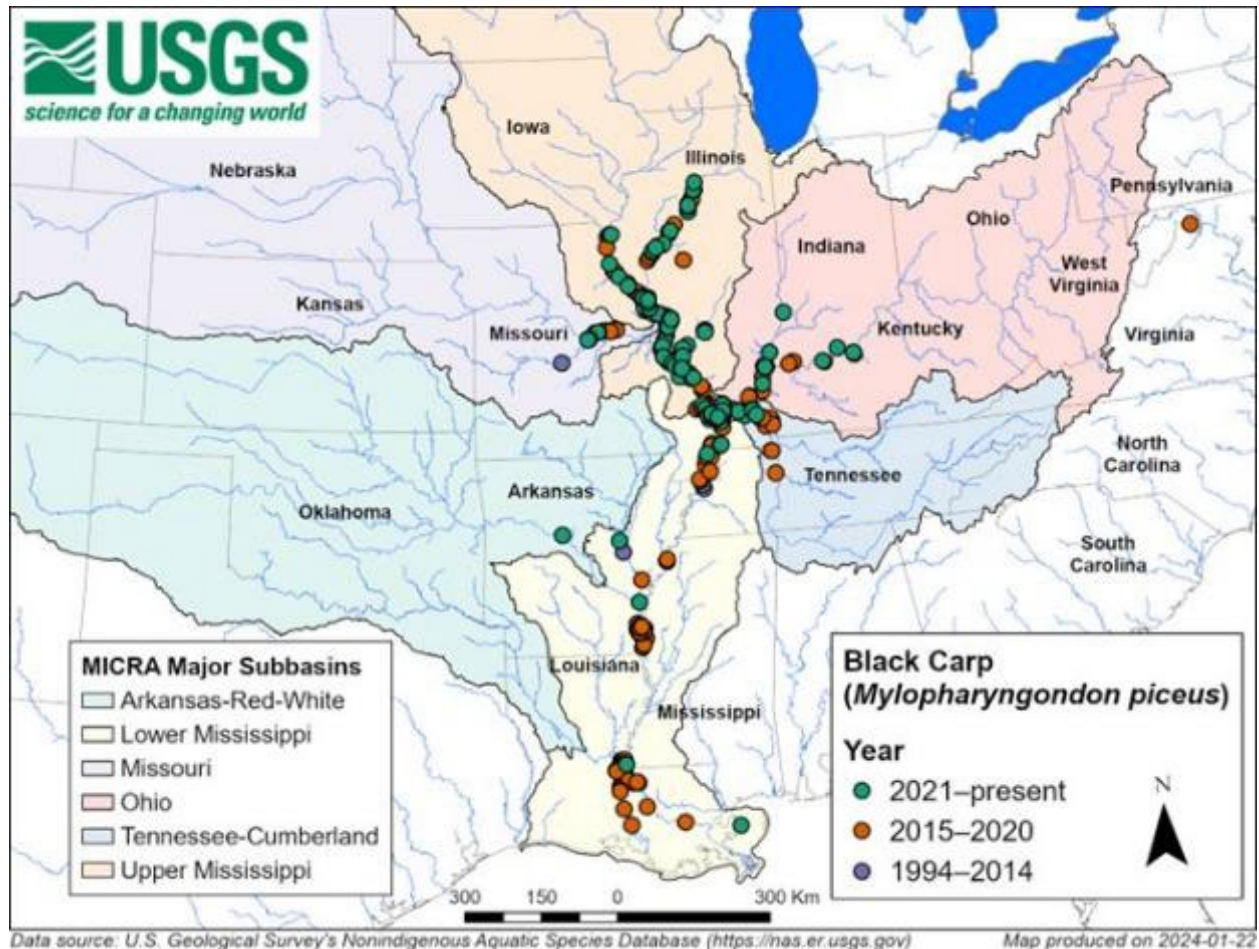


Black Carp.

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\$1,000 to any individual for Black Carp collected in a month. Collection information will be sent to the USGS for inclusion in their Nonindigenous Aquatic Species database.

Figure 75 — Map of Black Carp Fisher Incentive Range



Map of Black carp fisher incentive program range.

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UNDERSTANDING BLACK CARP POPULATION DYNAMICS TO INFORM MANAGEMENT STRATEGIES

BC3-26: Support for Black Carp Monitoring and Population Assessment

- **Lead Agency:** USGS
- **Agency Collaboration:** USFWS, INHS, ILDNR, Mississippi River Basin States
- **GLRI Funding:** \$405,000
- **Agency Funding:** \$133,000

Project Summary

This project will advance the understanding of the life history, behavior, and catchability of Black Carp in the Illinois River and adjacent Mississippi River in Missouri and Illinois. This project will assess catch by entanglement techniques (gill and trammel nets), movement between the Illinois and Mississippi rivers, validation of aging methods for Black Carp, and management of the decision-theoretic adaptive management program for Black Carp in the Illinois River. The project will prevent invasive carp from becoming established in the Great Lakes by supporting Black Carp research within the existing population range. This funding will use telemetry to assess the probability of Black Carp movement between the Illinois and Mississippi rivers, identify alternative methods for setting entanglement gears among various habitat conditions, and validate aging methods.

Project Description

The efforts represent a multifaceted project divided among 1) assessing the probability of Black Carp movement between Pool 26 of the Upper Mississippi River and the Illinois River, 2) identifying alternative entanglement methods to improve catch rates, and 3) validating Black Carp aging structures to inform future demographics research.

Movement rates between the Illinois and Mississippi rivers assist with understanding the contribution of the Mississippi River population of Black Carp to the lowest segments of the Illinois River and the effects on upstream colonization. This work is in partnership with Illinois Natural History Survey biologists performing fisheries-independent monitoring of Black Carp. This

Figure 76— Black Carp Captured

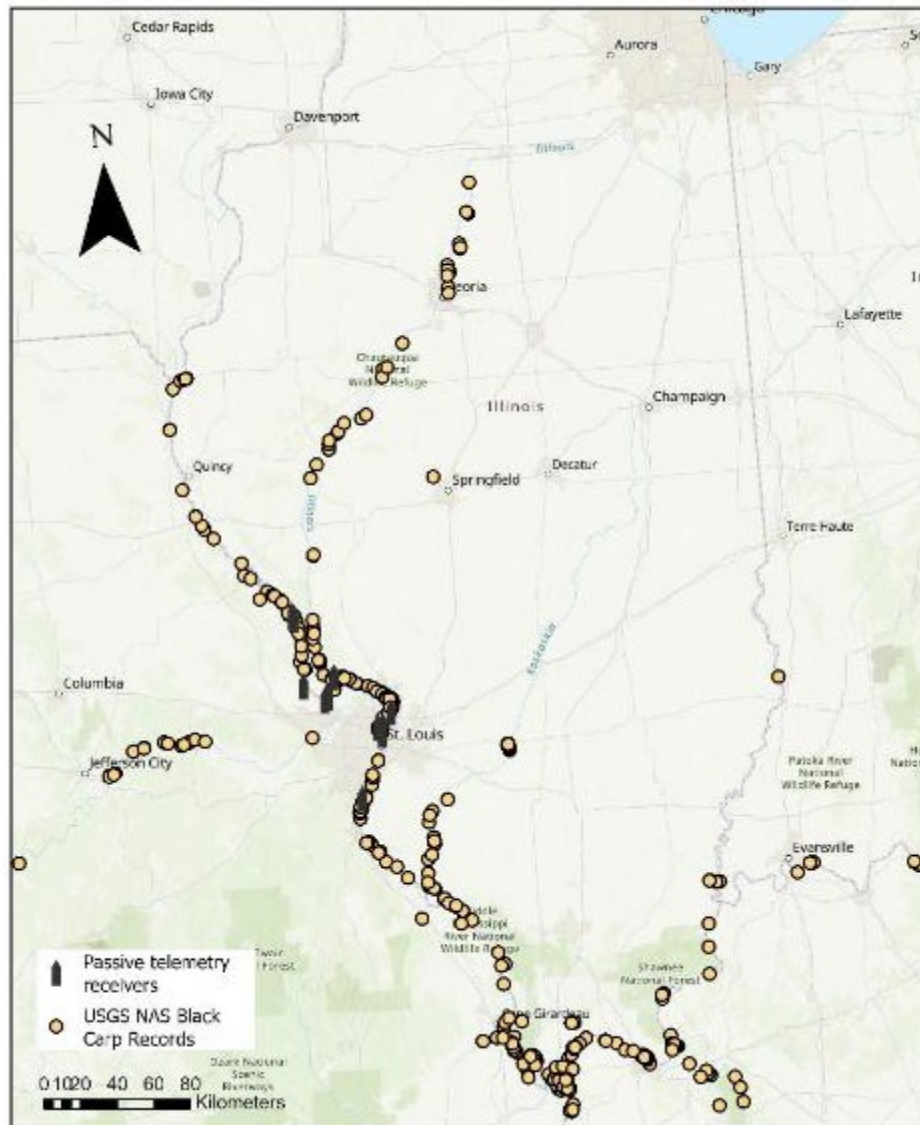


USGS Columbia Environmental Research Center scientists captured a Black Carp and implanted with telemetry transmitters in the Upper Mississippi River. Photo credit: USGS

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effort is in collaboration with state and federal biologists to identify gear design and habitat characteristics for sampling. This funding will also improve methods to support the use of demographic data in Black Carp management.

Figure 77 — Area of Black Carp Monitoring and Research



The distribution of Black Carp records in the USGS Non-indigenous Aquatic Species Database from commercial fisher catches in the vicinity of the Illinois River through November 20, 2025 and relative location of USGS passive telemetry receivers in the vicinity of the confluence of the Mississippi and Illinois rivers which supplement the extensive array present in the Illinois River. Source: USGS

UNDERSTANDING BLACK CARP POPULATION DYNAMICS TO INFORM MANAGEMENT STRATEGIES

BC4-26: Support for Black Carp Monitoring and Interagency Coordination

- **Lead Agency:** USFWS
- **Agency Collaboration:** Black Carp Work Group (Over 70 contacts from 15 U.S. agencies), USGS
- **GLRI Funding:** \$91,000
- **Agency Funding:** \$10,000

Project Summary

This project provides coordination support to the Black Carp Work Group, develops electrified sampling gears to improve agency captures of Black Carp, and assists partners with monitoring changes in distribution and demographic trends of Black Carp in the Mississippi River basin under the Black Carp Bounty Program. These efforts will result in better coordination and identification of management actions, research, and monitoring needs to protect the Great Lakes from Black Carp. This funding will be used to produce approximately six coordination meetings, test a prototype electrified trawl sampling approach to address the limitations identified with current gears, and coordinate the receipt of age structures to provide age assignments for captured Black Carp from across the range, prioritizing fish captured in the Illinois River.

Project Description

The USFWS coordinates the multi-jurisdictional Black Carp Work Group, which meets every 2 months to present results, provide project updates, discuss challenges and solutions to collective issues, consider future direction of Black Carp management and research, and coordinate projects for consideration of GLRI or other funding. These efforts are designed to identify and improve Black Carp management, control, and monitoring efforts.

Understanding Black Carp population dynamics to inform management strategies relies on effective capture of target fish from across the range. Electrofishing is currently deployed for invasive carp, yet certain Black Carp preferred habitats remain unsampled due to depths, ranges,

Figure 78 — Invasive Carp Age Assignments



Member of the Columbia FWCO fish aging team providing invasive carp age assignments. Source: USFWS

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or dangerous and unpredictable water flow exceeding gear capability. To overcome these limitations and address a broader range of habitats, continued development and testing of the deepwater beam trawl will occur in areas where a low abundance of Black Carp exists for its ability to be deployed in target habitats and for its efficacy for Black Carp and surrogate species capture.

The coordinated receipt and consistent processing of Black Carp demographic data is necessary for basinwide population monitoring and informing decision-making. Staff will coordinate the receipt of demographic data and age structures to assign ages to captured Black Carp provided to management and research partners through a national invasive carp database. This effort will inform managers of spawning and recruitment locations for small fish captures, fish condition and growth rates through length and age, and changes in age distribution.

Figure 79 — Primary Focus Areas for Potential Black Carp Captures



Map identifying the primary focus area of the Illinois River and tertiary areas for potential Black Carp captures, the location of the fish aging lab in Columbia, Missouri, and the USFWS Midwest Regional Office for coordination support. Source: USFWS

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ICRCC COMMUNICATIONS AND SUPPORT

MS-1: ICRCC Strategic Communications with Partners and Stakeholders

- **Lead Agency:** USFWS
- **Agency Collaboration:** All member agencies
- **GLRI Funding:** \$175,000
- **Agency Funding:** \$100,000

Project Summary

This project will support the development of strategic communications for the ICRCC, resulting in better information sharing and coordination among ICRCC member agencies and effective communications on ICRCC activities. This funding enables the development of multi-purpose content and progress reporting to address the ICRCC's priority communications needs.

Project Description

This project prioritizes ensuring timely communications about population status, control efforts, and technological advancements due to the high level of interest and investment in protecting the Great Lakes from invasive carp. In coordination with ICRCC members, this project prioritizes the continued development of the ICRCC website (<https://icrcc.fws.gov/>) as the main platform for consolidated information about the partnership and its most significant activities. News and other content development for the website will also be tailored for progress reporting to help continue to fulfill our commitment to transparency and accountability. The project will also ensure communications efforts are coordinated with members involved with rapid response management actions that might occur, as described in the Upper Illinois Waterway Contingency Response Plan.

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ICRCC COMMUNICATIONS AND SUPPORT

MS-2: ICRCC Mission Support

- **Lead Agency:** USFWS
- **Agency Collaboration:** All member agencies
- **GLRI Funding:** \$175,000
- **Agency Funding:** \$0

Project Summary

This project will provide staffing and logistical assistance to support the day-to-day operations of the ICRCC. This effort supports the coordinated and timely development and delivery of ICRCC planning and coordination products in partnership with ICRCC member agencies.

Project Description

This project provides key staffing to support the effective operation of the ICRCC. Staffing provided through this project supports the development of the annual Invasive Carp Action Plan and other strategies and planning documents, the scheduling and convening of regular partnership meetings/communications (in-person and virtual), and other activities led by the ICRCC co-chair team for the effective operation of the ICRCC partnership.

This funding will provide support on ICRCC activities, including:

- The development and release of the ICRCC's Invasive Carp Action Plan.
- The convening of video teleconferences once a month (or as needed) for interagency discussion of relevant updates on invasive carp management.
- Assistance in developing informational materials to support interagency congressional briefings as needed and as directed by the ICRCC co-chairs.
- Assistance in convening public updates with agencies and stakeholders across the Great Lakes as directed by the ICRCC co-chairs.



Invasive Carp Regional Coordinating Committee *Principles of Coordination* June 2026

*Note: In this document “invasive carp” refers to four species: Silver Carp (*Hypophthalmichthys molitrix*), Bighead Carp (*H. nobilis*), Grass Carp (*Ctenopharyngodon idella*), and Black Carp (*Mylopharyngodon piceus*).*

PURPOSE OF THE ICRCC: The Invasive Carp Regional Coordinating Committee (ICRCC) is convened by U.S. Fish and Wildlife Service (USFWS) and U.S. Environmental Protection Agency (USEPA) for the purpose of assisting ICRCC members in implementing their authorities to reduce and/or eliminate the threats posed by invasive carp to the Great Lakes.

ICRCC MEMBERSHIP: Agencies eligible for membership in the ICRCC will: (1) have legal authority or mandate to coordinate and/or implement measures to prevent, control, monitor or assess movement of invasive carp in connection with the Great Lakes and associated water bodies; and (2) must be a federal, state, provincial, local, or federally-recognized tribal governmental agency or organization of tribal governmental agencies. A complete list of member agencies is provided in Attachment 1.

AUTHORITIES: To achieve its purpose, the ICRCC relies on the coordination of activities conducted under the existing authorities of its member agencies. Nothing in this document shall be interpreted to alter existing agency missions or authorities.

ACTIVITIES OF THE ICRCC: The central activity of the ICRCC is the annual development and publication of an Invasive Carp Action Plan (Action Plan) that summarizes planned activities of ICRCC member agencies that address the threats posed by invasive carp to the Great Lakes. The development of the Action Plan helps the ICRCC accomplish its purpose through information sharing, planning and budgeting discussions, and coordination of future implementation activities. Action Plan development is initiated in early fall of each year, which coincides with the end of the field season and the beginning of the U.S. federal fiscal year. This allows agencies to consider the most recent field data and projected available funding levels into the development of the Action Plan. The Action Plan is typically released in the first quarter of the calendar year or when relevant annual Congressional budgetary actions have been completed.

The majority of activities conducted by the ICRCC under the Action Plan are geographically focused on mitigating the most significant threats of invasive carp introduction and/or spread. In addition, technology development, communication, and support for ICRCC coordination and operations are also included in the Action Plan. A brief summary of the main activities follows:

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Principles of Coordination

Blocking invasive carp movement through the Illinois Waterway (IWW), with a focus on efforts conducted by the State of Illinois and its partners to reduce overall populations within the Illinois River and the U.S. Army Corps of Engineers and its partners' efforts to maintain the Electric Dispersal Barrier System and implement the Brandon Road Interbasin Project.

The U.S. Army Corps of Engineers' Great Lakes and Mississippi River Interbasin Study (GLMRIS) identified the IWW as the highest risk potential pathway for invasive carp introduction. The IWW includes the Illinois River and the Chicago Area Waterway System (CAWS). The Action Plan identifies the Monitoring and Response Work Group (MRWG) as the principal body that supports the extensive coordination needed for work in the IWW. The MRWG is co-chaired by the Illinois Department of Natural Resources (ILDNR) and the Great Lakes Fishery Commission (GLFC).

The USACE's Electric Dispersal Barrier System (EDBS) in Romeoville, Illinois uses several electrical fields to prevent the upstream migration of invasive carp through the IWW to the Great Lakes. The MRWG co-chairs are regularly updated on operation and status of the EDBS. The MRWG supports USACE's operations of the EDBS by conducting regularly scheduled monitoring for invasive carp in the IWW. In the event of disruptions to the EDBS, the MRWG co-chairs are consulted on the need for any additional monitoring and/or control activities.

The USACE's Brandon Road Interbasin Project at the Brandon Road Lock and Dam near Joliet, Illinois, in partnership with the States of Illinois and Michigan, is using layered technologies to prevent upstream movement of invasive carp and other aquatic nuisance species from the IWW into the Great Lakes. The USACE and its partners coordinate regularly in the design and construction of the project. As implementation proceeds, the ICRCC's annual Action Plan will be informed by the observed effects of this project.

The MRWG implements coordinated invasive carp monitoring, response, control, and management efforts in the IWW and CAWS. Significant removal efforts downstream of the EDBS suppress the number of invasive carp potentially swimming upstream towards the barrier system. The MRWG performs Seasonal Intensive Monitoring upstream of the EDBS during the spring and fall to detect and remove any invasive carp in the Upper IWW. The MRWG also ensures preparedness to implement effective contingency actions through its Contingency Response Plan for the Upper IWW.

Should there be any detections of invasive carp in nearshore waters or open waters of Lake Michigan, the ICRCC relies on the GLFC and its Lake Michigan Committee members to coordinate actions and strategies to address fisheries management and invasive carp in Lake Michigan.

Installing hydrologic barriers to prevent invasive carp movement through intermittent waterways to the Great Lakes

GLMRIS also identified three medium risk locations where flood conditions can temporarily create direct hydraulic connections between the Great Lakes and Mississippi River watershed, thereby providing a potential pathway for invasive carp introduction. Previous state-led work has reduced the pathway risk at two of these locations: Eagle Marsh (Fort Wayne, Indiana) and Ohio & Erie Canal (Akron, Ohio). Work is ongoing at the remaining site at Little Killbuck Creek (near Wooster, Ohio).

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Principles of Coordination

Preventing the establishment of Grass Carp in the Great Lakes, with a focus on efforts conducted by the State of Ohio and the State of Michigan and their partners within the western basin of Lake Erie and its tributaries, and supplemented by early detection surveillance in the Great Lakes

The Action Plan notes that Grass Carp have been captured in low numbers in all of the Great Lakes except Lake Superior; however, Grass Carp in the Western Basin of Lake Erie show periodic evidence of spawning and the population of Grass Carp is posing the greatest threat to the Great Lakes. The Action Plan identifies the GLFC Lake Erie Committee (LEC) as the principal body that supports the coordination to prevent the establishment of Grass Carp in Lake Erie. The LEC is comprised of jurisdictional agency fishery managers from Michigan, Ohio, Pennsylvania, New York, and Ontario, and supported by Canadian and U.S. federal agencies. Their work is guided by the *Lake Erie Grass Carp Adaptive Response Strategy 2024- 2028*. The Adaptive Response Strategy was developed to reduce the threat of Grass Carp to Lake Erie through common and coordinated efforts.

The Action Plan is also informed by the GLFC's Grass Carp Advisory Committee (GCAC) and its Task Groups that "undertake and coordinate special focused activities needed to achieve GCAC and individual Lake Committees' objectives." These activities include collecting information from commercial fishers and additional reconnaissance monitoring outside of Lake Erie by State agencies and their federal partners to better understand the distribution of Grass Carp.

Should there be any significant range expansion of Grass Carp within the Great Lakes, the ICRCC relies on the GLFC, its individual Lake Committees, and the GCAC to coordinate actions and strategies to address any such expansion.

Better understanding Black Carp populations to inform management strategies, with a focus on better understanding capture methods and the population within the lower Illinois River.

Activities of the ICRCC are focused on evaluating and tracking the status of populations of Black Carp in the Illinois River, including its confluence with the Mississippi River. To learn more about capture methods, agencies also offer a bounty program to more broadly engage commercial fishers in collecting black carp. The middle Illinois River represents the current location of the Black Carp population closest to the Great Lakes. In recognition of the need to develop and share monitoring and management techniques for this species, the Action Plan identifies the Black Carp Working Group as a primary interagency body to help inform and coordinate future activities.

Development of Control Management Technologies

The Action Plan includes projects which relate to the development, refinement, and evaluation of new technologies for invasive carp prevention and control. The goal is to test and identify proven technologies that could further enhance the effectiveness of Great Lakes protection strategies.

Multi-Agency Communications

The ICRCC's communication support staff facilitates discussion of key issues among ICRCC members and to stakeholders. The support staff facilitates the development and dissemination of communication materials to external audiences, including the media and public, and the maintenance of the U.S. website (<https://icrcc.fws.gov>) in coordination with the Canadian website (www.asiancarp.ca).

Invasive Carp Action Plan: Fiscal Year 2026

Principles of Coordination

Ongoing ICRCC Coordination

In addition to the coordination work that occurs as part of developing the annual Action Plan, the ICRCC promotes ongoing coordination of member agency activities through monthly calls and occasional in-person meetings.

FUNDING: ICRCC member agencies are funded through their respective agency budgeting processes, subject to any legislative direction provided as part of appropriations. Enhanced funding of Action Plan activities through the Great Lakes Restoration Initiative (GLRI) is coordinated by USEPA and USFWS, subject to any Congressional direction provided as part of appropriations. Nothing in this document shall be interpreted to alter existing agency or GLRI budgeting processes, nor alter legislative/Congressional direction. The mention of activities in this document should not be interpreted as a commitment to future funding nor any specific funding level. Discussions of the ICRCC will help inform, but will not direct, agency decisions on how they allocate their respective funding or resources.

WORKING METHOD: To accomplish its Purpose, the ICRCC member agencies will coordinate and work collaboratively. Consistent with their authorities, policies, and available resources, member agencies will:

- Work to develop the annual Action Plan.
- Participate in virtual meetings of the full ICRCC membership to provide for an exchange of relevant information between all member agencies, review progress, and develop recommendations for future ICRCC efforts.
- Attend ICRCC meetings and workgroup meetings, as appropriate. It is acknowledged that member agency participation may be limited due to travel budgets and/or workload.
- Share data and information (including planning documents, monitoring results, response actions, control activities and research) within the course of relevant discussions, consistent with applicable laws and regulations. Members will respect that some information or data may be provisional and should be used only to help inform agency activities.
- Strive to provide other ICRCC member agencies at least 10 business days to review and comment on documents/deliverables of ICRCC-wide relevance prior to publication/release.

ROLES OF THE ICRCC CO-CHAIRS: The ICRCC is co-chaired by a representative of the USFWS and the USEPA.

The roles of the ICRCC Co-chairs include:

- Facilitate, in collaboration with member agencies, the development of the annual Action Plan.
- Convene regular virtual meetings of the ICRCC to support Action Plan development and implementation and to provide an opportunity for agencies to share other relevant information.
- Coordinate and lead face-to-face ICRCC partnership meetings, as needed.
- Provide *ad hoc* coordination and communication on invasive carp-related issues, as requested and appropriate, to assist ICRCC member agencies' efforts.
- Coordinate and lead Congressional briefings on the Action Plan, as requested.
- Seek opportunities to leverage invasive carp efforts and to share lessons learned with other jurisdictions working on invasive carp, including initiatives under the national *Management and Control Plan for Bighead, Black, Grass, and Silver Carps in the United States*.

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Principles of Coordination

Attachment 1 – Invasive Carp Regional Coordinating Committee Member Agencies

- Illinois Department of Natural Resources
- Illinois Environmental Protection Agency
- Indiana Department of Natural Resources
- Michigan Department of Natural Resources
- Michigan Department of Environmental, Great Lakes and Energy
- Minnesota Department of Natural Resources
- New York Department of Environmental Conservation
- Ohio Department of Natural Resources
- Pennsylvania Department of Environmental Protection
- Pennsylvania Fish and Boat Commission
- Wisconsin Department of Natural Resources
- Grand Traverse Band of Ottawa and Chippewa Indians
- Ontario Ministry of Natural Resources
- Quebec Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs
- National Oceanic and Atmospheric Administration
- U.S. Army Corps of Engineers
- U.S. Coast Guard
- U.S. Department of Transportation
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- U.S. Geological Survey
- National Park Service
- Fisheries and Oceans – Canada
- Great Lakes Fishery Commission
- Great Lakes Commission
- Metropolitan Water and Reclamation District of Greater Chicago