



U.S. Fish & Wildlife Service

The prolific challenge of invasive carp



Since their entry into the lower Mississippi River 50 years ago, invasive carp multiplied rapidly and gradually spread into several major tributaries.

By the 2000s it seemed possible invasive carp could someday dominate the waterscape of the whole Mississippi River basin – and eventually the Great Lakes.

Invasive carp are now a threat of international significance and one of the most urgent, wide-ranging and complex environmental challenges.

Ted Lawrence/GLFC



What is the threat?

Four kinds of invasive carp in North America are voracious feeders that grow and multiply rapidly and have no significant predators. Established populations quickly become abundant and destructive.

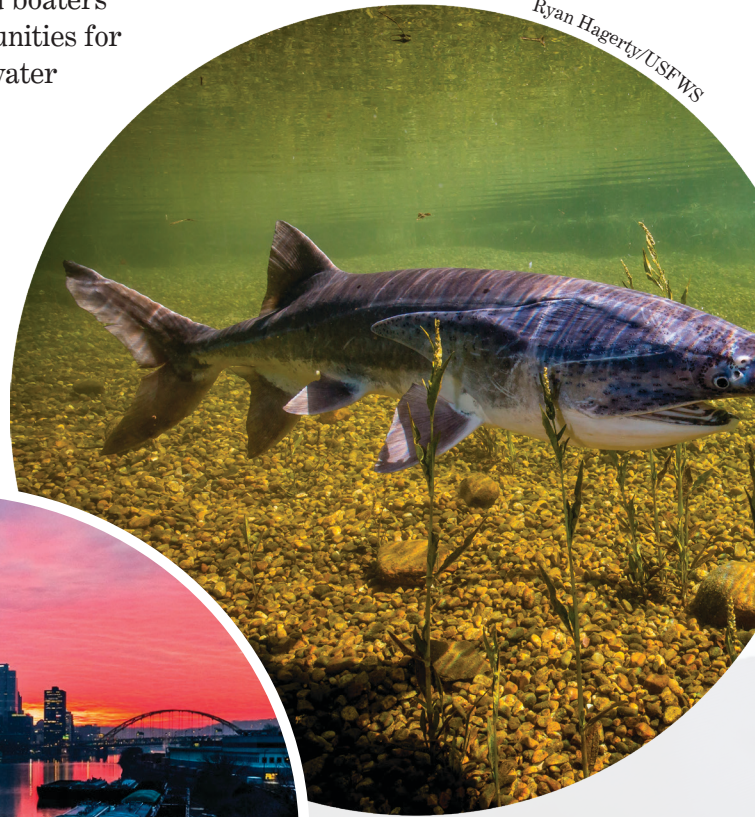
- » They thrive in nutrient-rich waters and disrupt the food web in aquatic environments. They can wipe out populations of other aquatic species – from zooplankton and vegetation to mussels and fisheries.
- » They jeopardize the safety and quality of our outdoor experiences, causing physical harm to anglers and boaters and limiting opportunities for all kinds of on-the-water recreation.
- » They can have devastating local economic impacts and threaten our broader economic stability the more they spread.

Aligning against the threat

State-led, coordinated invasive carp management has evolved into what is now an unprecedented level of state, federal and bi-national collaboration across both the Mississippi River and Great Lakes basins.

Nearly 50 partners now stand together in formalized partnerships to leverage expertise and resources across the waterscape. These are some of the largest coordinated conservation efforts in North America.

Ryan Hagerty/USFWS



Michel Sauret/USACE



***Up and down the
Mississippi River and
throughout the Great Lakes,
partners are working together
across the waterscape
to protect our environment,
our favorite pastimes and
our economic prosperity.***



Protecting American values

Communities up and down the Mississippi River and its tributaries know about the destruction invasive carp can bring. When invasive carp populations become abundant, they outcompete native fisheries and degrade aquatic habitats. In the most infested areas, families are deprived of their favorite on-the-water pastimes and popular sportfishing destinations no longer

lure anglers from afar. Commercial industries and outdoor tourism businesses can lose their means to make a living. The severity of impacts from invasive carp varies from place to place but in every location their presence means our waterways will gradually lose their vitality.

Over the last 15 years, the United States Congress has recognized invasive carp as a major threat and provided significant infusions of funding to support coordinated invasive carp management. Federal support originated as part of two broader legislative actions: the Great Lakes Restoration Initiative

starting in 2010 and the Water Resources Reform and Development Act starting in 2014. With the capacity to step up coordinated, cost-shared invasive carp management, partners are now carrying out around 80 projects across the Mississippi River and Great Lakes basins.

This is helping us hold the line against the further spread of invasive carp and reduce the harm where they are already established. As we do, we continually gain new knowledge and applications to improve our management strategy – and keep our collective commitment to conserve the exceptional natural bounty of America's wondrous waterways.

Illinois is one of several states working in partnership with commercial fishers on targeted mass removal of invasive carp.

Illinois Department of Natural Resources



Dennis McDonald

Leveraging for advantage

Invasive carp management is taking place in more than 30 states and Canadian provinces. This includes the Mississippi River basin, where invasive carp populations originally established, and the Great Lakes basin, where efforts primarily focus on preventing their entry. Invasive carp management varies by species and location, but there are three main components to our unified efforts:

- » State-led targeted mass removal for the most suppressive effect
- » Developing deterrent technologies and constructing barriers to impede movement and prevent range expansion and
- » Monitoring to inform all aspects of management and detect new spread early so we can prevent additional populations from becoming established.

Removal

State partners are working together throughout the Mississippi River basin, often with the help of commercial fishers, to reduce invasive carp populations through targeted mass removal. Some

states are offering incentivized harvest programs and working to develop a commercial market and infrastructure for removed fish. Reducing population abundance decreases the risk of spread and can inhibit reproduction. Illinois, Kentucky and Tennessee have the largest mass removal programs. Other Mississippi River basin states' removal programs are in various stages of development, with several prioritizing increased removal efforts.

Deterrents and barriers

While we prioritize additional vulnerable waters to protect from further spread, partners are testing different deterrent technologies, especially at lock and dam sites, to learn more about what discourages invasive carp passage. Deterrents in use or being evaluated include electric currents, various acoustics, air bubble curtains, strobe lights and carbon dioxide. Partners are also constructing barriers to block potential pathways, including areas that connect the Mississippi River basin and Great Lakes basin. In more open river regions of the lower Mississippi River basin, efforts



Cutting-edge deterrent technologies, such as the Bio Acoustic Fish Fence at Barkley Lock and Dam in Kentucky, are being tested and considered for future sites.

Fish Guidance Systems

include assessing existing water infrastructure's potential to serve as deterrent or barrier sites.

Monitoring

Monitoring the distribution, abundance, congregating habits and movement of invasive carp populations helps us understand the best areas to target for mass removal and prioritize potential sites for deterrents and barriers. We use a variety of monitoring methods, such as electrofishing, different kinds of netting, telemetry tracking, hydroacoustics and side-scan sonar. Other proactive, basin-wide monitoring includes areas where invasive carp could potentially reach but are not yet known to be present. We use eDNA sampling – or environmental DNA – as an early detection tool and to help prioritize where to monitor.

As we carry out all aspects of invasive carp management, we are building better processes for coordination, information-sharing and project evaluation to keep refining our approaches.

Widespread monitoring informs our overall invasive carp management strategy, which prioritizes mass removal, the use of deterrents and barriers and early intervention when we detect spread to new areas.



Monitoring waters throughout the Mississippi River and Great Lakes basins is a key part of managing invasive carp and preventing their spread.

Monica Blaser/USFWS



USFWS

Brandon Jones/USFWS



Our collective commitment

Partners have organized into geographic partnerships to most effectively manage invasive carp throughout the Mississippi River and Great Lakes basins.

Mississippi Interstate Cooperative Resource Association

Six partnerships aligned with the sub-basins of the Mississippi River are organized under the broader umbrella of the Mississippi Interstate Cooperative Resource Association, known as MICRA. Established in 1991, MICRA unites 28 states and three federal agencies.

MICRA partners originally organized to promote collaboration in managing aquatic species that inhabit shared waters or cross state boundaries, including native fisheries and mussels as well as gamefish such as bass and trout. All of MICRA's efforts, including invasive carp management, are facilitated through the sub-basin partnerships covering these areas:

- » Lower Mississippi River sub-basin
- » Arkansas, Red and White Rivers sub-basin
- » Ohio River sub-basin
- » Tennessee and Cumberland Rivers sub-basin
- » Missouri River sub-basin
- » Upper Mississippi River sub-basin

The mighty Mississippi: freshwater superhighway

Invasive carp were originally imported from Southeast Asia into the southern United States in the 1970s for controlling the growth of algae and vegetation in aquaculture ponds and wastewater treatment facilities. They entered the lower Mississippi River through flooding and accidental releases.

As invasive carp became established throughout the lower Mississippi River, they surged west into the Arkansas, Red and White

Rivers, upstream and into the Ohio, Tennessee and Cumberland Rivers reaching east and the Missouri River reaching west. As they moved further north up the Mississippi, they also spread into the Illinois River toward the Great Lakes.

For most of the five decades since invasive carp entered the Mississippi waterway, their northward migration was largely impeded by Lock and Dam No. 19 near Keokuk, Iowa. In recent years, partners have discovered invasive carp are spawning above this dam and moving upstream into new areas of the Upper Mississippi and

its tributaries in Iowa, Minnesota and Wisconsin. Unusually high water conditions in recent years have allowed more movement through lock and dam structures during open-river conditions in some areas.

Although the Mississippi River basin's broad reach extends into 31 states, invasive carp are not currently present throughout the basin. Fortunately, there are large reaches and reservoirs that do not have established invasive carp populations, and our efforts aim to keep it that way.

Invasive Carp Regional Coordinating Committee

A growing concern that invasive carp could spread into the Great Lakes spurred the establishment of the Invasive Carp Regional Coordinating Committee in 2010, which now brings together 26 partners in the United States and Canada. Efforts are focused on blocking potential pathways into the Great Lakes basin and reducing Illinois River invasive carp populations because of a connection to Lake Michigan through the Chicago area waterway. Partners also collaborate on widespread monitoring to try to detect any new spread early-on. The only existing population of invasive carp in the Great Lakes is a relatively small grass carp population in western Lake Erie.





Turning collective commitment into progress

Experiments at lock and dam sites, such as the underwater acoustic deterrent system at Lock and Dam No. 19 near Keokuk, Iowa, provide valuable information that helps us hold the line on invasive carp populations. The combination of mass removal and deterrents is helping to reduce the risk of spread. For example, on the Tennessee and Cumberland Rivers, there has been no significant range expansion in nearly a decade. Also, the Illinois River bighead and silver carp population front – about 50 miles from Lake Michigan – has not advanced in 15 years.

Mark Cornish/USACE

Reducing abundance and the risk of spread

State invasive carp removal programs began at different times and with different levels of federal supplemental funding. Efforts on the Illinois River started 15 years ago while others began over the last few years as Congress expanded the geographic scope of federal support and funding for state-led efforts.

- » On the Illinois River, a tributary of the Mississippi River where invasive carp are particularly abundant, nearly 109 million pounds have been removed over the last 25 years. The Illinois River is part of the Upper Mississippi River sub-basin, where a total of nearly 144 million pounds have been removed over that same period.
- » From 2016 to 2025, more than 82 million pounds have been removed from the Tennessee and Cumberland Rivers, tributaries of the Ohio River.
- » For the Ohio River sub-basin without the Tennessee and Cumberland Rivers, about 10 million pounds have been removed over the last 25 years.

- » From 2016 to 2025, more than 8 million pounds have been removed from the Lower Mississippi River sub-basin.
- » From 2021 to 2025, in the lower reaches of the Arkansas, Red and White Rivers, more than 285,000 pounds have been removed.
- » From 2018 to 2025, in the Missouri River sub-basin, about 645,000 pounds have been removed.

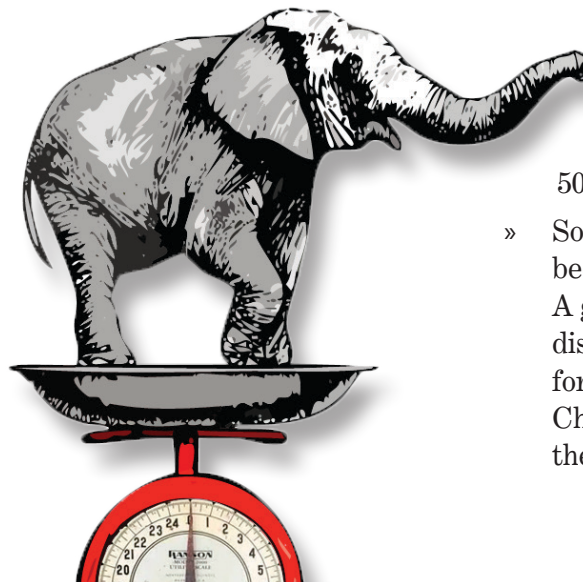
Preventing range expansion

Partners are developing a variety of technologies to deter invasive carp upstream migration, constructing barriers to block movement and identifying the highest priority areas deterrents and barriers could be applied in the future.

- » We are studying the effects of deterrent technologies in different locations and combinations. A good example is the Bio Acoustic Fish Fence at Barkley Lock and Dam on the Cumberland River, combining an air bubble curtain, strobe lights and projected sound. Another experiment is an underwater acoustic deterrent system on the Mississippi River at Lock and Dam No. 19 near Keokuk, Iowa. Both have been found to deter about 50% of invasive carp passage.
- » Some deterrent projects have been in operation for decades. A good example is an electric dispersal barrier system operated for more than 20 years in the Chicago area waterway to protect the Great Lakes. In recent years,

How much is one million pounds?

About 4 blue whales or 100 elephants... about 17 freight trains or 50 school buses.





Protecting recreational fishing opportunities is one of the main goals of invasive carp management. More anglers are returning to Kentucky and Barkley Lakes now that growing removal efforts are reducing invasive carp populations and improving conditions for sportfishing.

Jason Sealock/Current Fish LLC

In areas with sustained targeted mass removal programs, such as the Illinois River, we are starting to see encouraging signs that native fisheries are improving. For example, in parts of the river where removal has led to significant declines in silver carp abundance, we observe healthier native fish, such as bluegill, channel catfish and gizzard shad.

Ted Lawrence/GLFC



carbon dioxide has been studied as an added reinforcement. The States of Iowa and Minnesota also worked together to complete an electric barrier more than 10 years ago to protect the Iowa Great Lakes in northwestern Iowa.

- » The above projects helped inform the design of the U.S. Army Corps of Engineers' Brandon Road Interbasin Project in the Chicago area waterway, with construction commencing in 2024. A joint project with the States of Illinois and Michigan, this deterrent integrates multiple technologies to create a more robust line of defense to protect the Great Lakes. In Minnesota, partners also are applying knowledge from previous experimental deterrents to design a new one at Lock and Dam No. 5 near Winona.

- » Across the Mississippi River basin, partners are identifying priority locations to deter movement into tributary rivers. We have identified areas where dams are currently serving to impede movement as one aspect of this effort. In areas with more open river conditions, such as the lower Mississippi, we are studying the potential to use water control structures and weirs to deter movement between rivers and floodplain lakes.
- » Three barrier projects in Indiana and Ohio block potential pathways into the Great Lakes. These are places where intermittent high water could enable invasive carp to spread. The first two barriers were completed in 2016 and 2020 and the first phase of construction on the third was completed in 2025.

Staying ahead of the curve

To protect uninvaded waterways, widespread monitoring covers areas with existing invasive carp populations and other parts of the Mississippi River and Great Lakes basins that are considered most vulnerable to range expansion. This also helps us prioritize locations for targeted mass removal and placement of deterrents and barriers.

The information we gather, consolidate and analyze from multi-agency monitoring of invasive carp populations also allows us to assess our effectiveness over time. We continually apply what we learn about the life cycle and behaviors of invasive carp to guide our adaptive management, keep improving our results and research new options for managing this extraordinary environmental challenge.

Working together across the waterscape

In addition to these formal members of our invasive carp partnerships, scores of other partners at the community, state and national levels provide crucial support for invasive carp management — such as conservation groups, outdoor recreation organizations, commercial fishers, businesses and trade associations and academic institutions. Anglers and boaters also make significant contributions by notifying state natural resource agencies when they encounter invasive carp and educating others about best practices that can prevent the spread of invasive species.

State agencies

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- Alabama Department of Conservation and Natural Resources
 - Arkansas Game and Fish Commission
 - Colorado Parks and Wildlife
 - Georgia Department of Natural Resources
 - Illinois Department of Natural Resources
 - Illinois Environmental Protection Agency
 - Indiana Department of Natural Resources
 - Iowa Department of Natural Resources
 - Kansas Department of Wildlife and Parks
 - Kentucky Department of Fish and Wildlife Resources
 - Louisiana Department of Wildlife and Fish
 - Michigan Department of Environment, Great Lakes, and Energy
 - Michigan Department of Natural Resources
 - Minnesota Department of Natural Resources
 - Mississippi Department of Wildlife, Fisheries and Parks
 - Missouri Department of Conservation
 - Montana Department of Fish, Wildlife and Parks
 - Nebraska Game and Parks Commission
 - New York Department of Environmental Conservation
 - North Carolina Wildlife Resources Commission
 - North Dakota Game and Fish Department
 - Ohio Department of Natural Resources
 - Oklahoma Department of Wildlife Conservation
 - Pennsylvania Department of Environmental Protection

 Member of the Mississippi Interstate Cooperative Resource Association (Mississippi River basin)

 Member of the Invasive Carp Regional Coordinating Committee member (Great Lakes basin)



The scope of invasive carp management includes the Mississippi River basin, where invasive carp populations originally established, and the Great Lakes basin, where efforts primarily focus on preventing their entry. Our efforts involve both protecting uninvaded waters and managing abundant invasive carp populations to prevent range expansion and reduce destructive impacts as much as possible.

 Pennsylvania Fish and Boat Commission

 South Dakota Game, Fish and Parks Department

 Tennessee Wildlife Resources Agency

 Texas Parks and Wildlife Department

 Virginia Department of Game and Inland Fisheries

 West Virginia Department of Natural Resources

 Wisconsin Department of Natural Resources

 Wyoming Game and Fish Department

Tribes

 Grand Traverse Band of Ottawa and Chippewa Indians

U.S. Federal agencies

 National Oceanic and Atmospheric Administration

 National Park Service

 Tennessee Valley Authority

 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

Provincial and Canadian agencies

 Fisheries and Oceans Canada

 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

Bi-national commissions

 Great Lakes Commission

 Great Lakes Fishery Commission

Local municipalities

 Metropolitan Water Reclamation District of Greater Chicago

What are invasive carp?

We use the term “invasive carp” to refer to four species in North America: bighead carp, silver carp, grass carp and black carp. These species have different characteristics and distribution.

Bighead and silver carp occupy a similar range and are the most widespread throughout the Mississippi River basin. Most management actions for these species are similar. In areas with dense populations, they have greatly altered the food web and displaced native species. Silver carp notoriously jump out of the water when disturbed, causing injuries and boat damage. On-the-water recreation can be dangerous in areas where they are abundant.

Grass carp are the most widespread throughout the continent. Because they feed on rooted vegetation, they present an added threat to fragile wetland habitats. Grass carp have historically been detected in all of the Great Lakes except Lake Superior and this is the only one of the four species with an existing population in the Great Lakes. Partners have prioritized intensive monitoring and removal to prevent this population in western Lake Erie from becoming established.

Less is known about black carp because they are rarely captured, but efforts are underway to learn more. Unlike the others, black carp live near the riverbed and feed primarily on mussels and snails – a concern given freshwater mussels are the most imperiled group of animals in North America. Black carp primarily have been captured incidentally by commercial fishers harvesting other species. Much of what we know about black carp comes from studying specimens commercial fishers have provided to researchers as part of a bounty program.

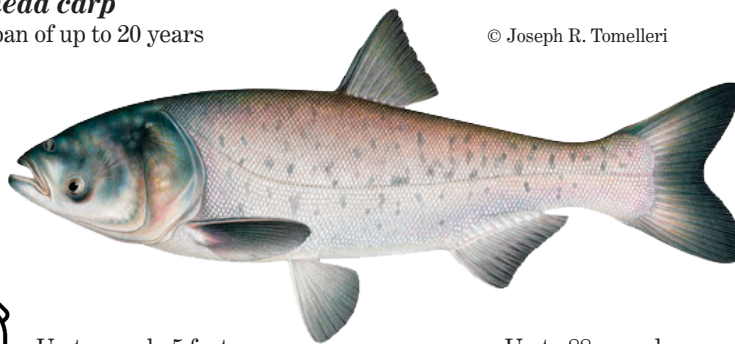
U.S. Fish & Wildlife Service
[fws.gov/invasive-carp](https://www.fws.gov/invasive-carp)

June 2026

Bighead carp

Lifespan of up to 20 years

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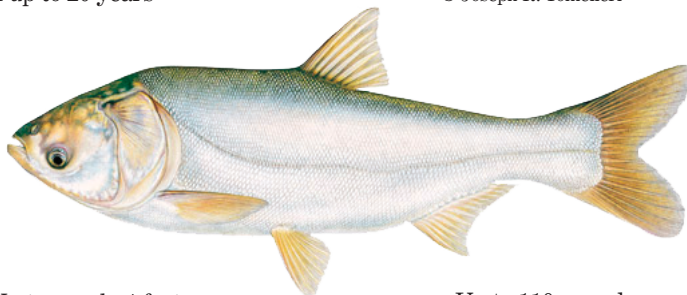
Up to nearly 5 feet

Up to 88 pounds

Silver carp

Lifespan of up to 20 years

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Up to nearly 4 feet

Up to 110 pounds

Grass carp

Lifespan of up to 21 years

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Up to nearly 5 feet

Up to 99 pounds

Black carp

Lifespan of up to 15 years

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Up to 5 feet

Up to 115 pounds