Protecting, restoring and enhancing the metro Mississippi River and its watershed since 1993.

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March 28, 2025

Tony Brough
AIS Program Coordinator
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Dear Tony,

I'm reaching out to express our gratitude for, and share a report detailing, the use and impact of Friends of the Mississippi River's 2024 Aquatic Invasive Species Prevention grant from Hennepin County.

IMPACT OF FUNDING
Hennepin County funding supported Friends of the Mississippi River's Environmental Stewardship Institute, aged 15-18, to develop aquatic invasive species prevention educational materials, attend photography and art workshops, and host an invasive carp art workshop.

The Youth Council created a slideshow and three infographics about invasive carp (appended). The slideshow was presented to 20 high school students at the 2024 Youth Climate Justice Summit, and to 20 people at FMR's ESI art workshop, including 5 youth. The infographics were shared at Waterfest to over 300 visitors, in FMR's e-newsletter Mississippi Messages with a circulation of 12,000+, and will be shared at two upcoming tabling events in Hennepin County, the Migratory Bird Festival and the Longfellow River Gorge Festival. Finally, they adapted their infographics into three Instagram posts to be posted in the next two months to FMR's 4,000 followers.

The funding also supported two workshops for ESI youth. Youth participants attended a photography workshop with photographer Lee Vue, learning about framing photos, finding good lighting, and tips for taking photos on cell phones. They also attended a workshop with artist Precious Wallace and learned about how to make their stories and ideas come to life through art. A group of four students in the summer program centered their final project around the threats posed by invasive carp and even crafted paper-mâché carp replicas for their project. This project was presented to 30 attendees on the last day of the summer program, and a photo and group statement about the project was posted on the FMR website.

"We were inspired to do a 3D model board with carp to simulate a carp jumping out of the water because in real life carp actually do jump out of the water and onto people's boats. We all worked together to show that by combining our communication skills, from researching to creating the fish to painting them."

The highlight of this project was the ESI's art workshop. The youth participants planned the entire event, from creating the event activities to purchasing supplies to managing outreach. 20 people attended the workshop, where they viewed the carp-themed art and photographs, created carp-themed art of their own, and learned about the threats posed by invasive carp through the council's slideshow and interactive quiz.

This project engaged many young people in a variety of ways around the issue of invasive carp. ESI fellow received hands-on experience educating the public on the issue of invasive species and developing an educational project from start to finish. They researched the topic, created and reviewed educational materials, planned an outing, and presented their work. They also had the opportunity to creatively engage with an environmental issue, making art pieces that were inspired by invasive carp, which was one of the favorite things they worked on all year. The youth participants who created the carp project knew very little about carp going in but learned about the origin of carp in the US and the threats they pose to our waters. They were able to complete a project where they had full control over the topic, medium, and presentation – something that is rare for high school students. Many young people also learned about the issue of invasive carp by attending a presentation by ESI students, bringing this knowledge back home to their communities.

USE OF FUNDS
Funding was used to cover project materials, staff time, and mileage reimbursements. In addition, the funds supported the contracting work of a professional photographer and an artist to lead photography and art workshops for ESI participants.

Budget distribution and allocation:

- Stewardship & Education Program Director: Overseeing deliverables, evaluation, and reporting of the program.
- Youth Program Manager: Program evaluation, facilitation, and oversight of the program.
- Program Associate: Facilitating and assisting ESI participants with their projects.
- Event Assistant: Coordinating and attending community events.
- ESI participants: Creating educational materials, researching invasive carp, and doing outreach and education at community events.

Again, thank you for the support. We're grateful for all that it made possible and look forward to future opportunities to work together.

Sincerely,

Sara DeKok
Associate Director & Development Director

Invasive Carp

What are invasive Carp?

- Invasive carp are an invasive species in the United states
- Invasive species are organisms that originate from somewhere else that were brought to other places by humans
  - Ex: Zebra mussels, buckthorn
- They are not native to the are they are brought to, and have no natural predators
  - This can lead to them taking over an ecosystem and harming native species

Are there multiple species?

All carp in North America is non-native

- There are multiple types of invasive Carp in North America right now

Black Carp

Silver Carp

Big headed Carp

Grass Carp

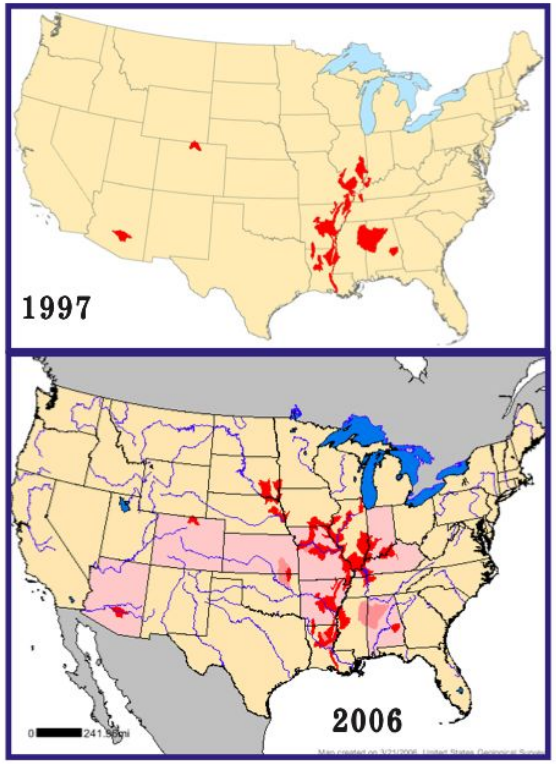
When did they get here?

- First introduced in the 1970's
- 4 Species of Carp were introduced
  - Grass Carp was introduced first
  - Other species followed after success of Grass Carp
  - Used to treat wastewater systems
- Grass Carp
  - Golf Ponds, irrigation canals, cooling systems
- Silver and Bighead
  - Catfish farms, Sewage Lagoons, wastewater

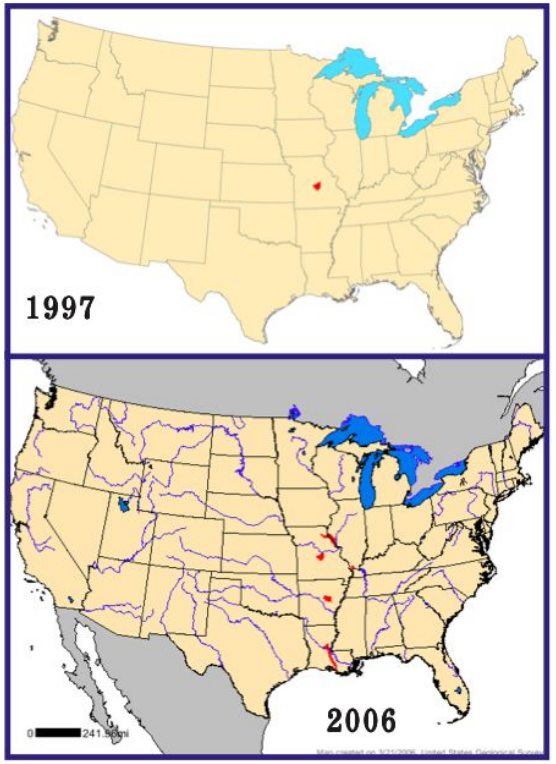
How did they get here?

- Flooding and “Accidental Release” allowed these fish to escape into the southern Mississippi River system
- Recommended by international UN agricultural representative
- Saw no issues with the species being brought over
- Population exploded
  - Carp make up 90% of the biomass in the mississippi river
- Silver and Bighead Carp were suspected of being released
  - EPA attempted to create a carp meat industry
  - Tried to feed sewage carp to small towns

How widespread is the problem?

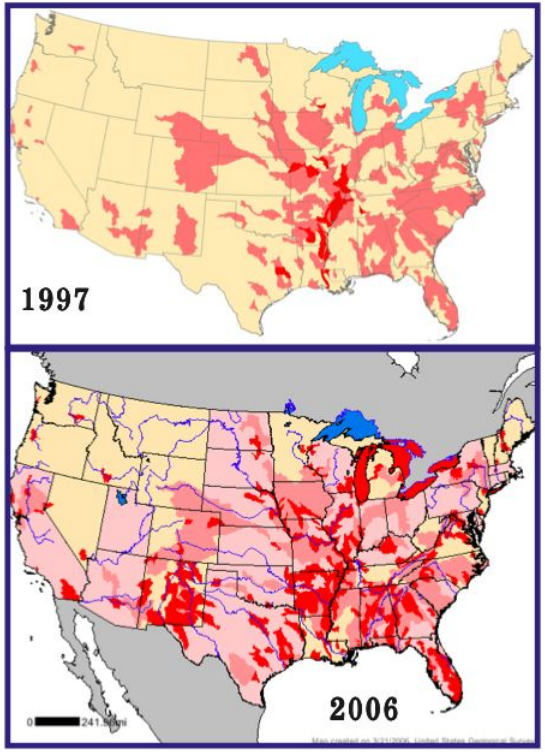


Silver Carp Distribution



Black Carp Distribution

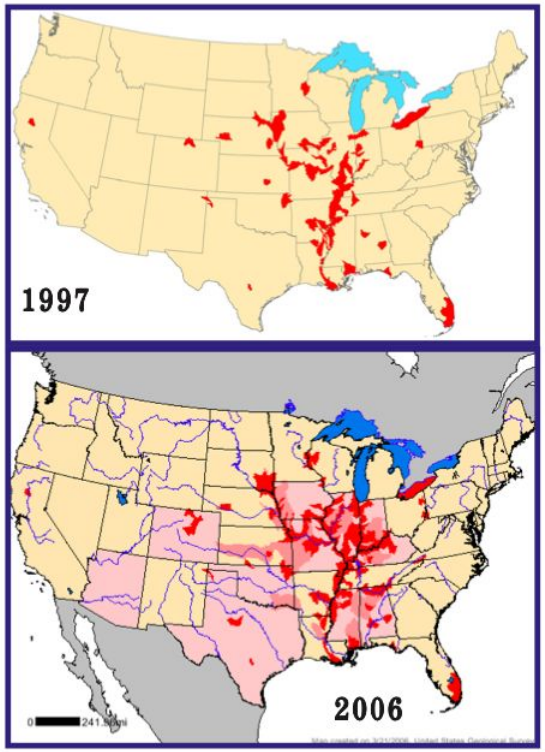
USGS images



Grass Carp Distribution

(Light red represents non-reproducing distribution)

(Dark red represents where reproduction has been documented)



Bighead Carp Distribution

How do they affect the animals in the area?

- Invasive carp are known to outcompete other animals for food and space
  - Eventually leads to complete domination
  - Video link
- Invasive Carp are also thought to lower water quality
  - Leads to killing off sensitive organisms like native freshwater mussels
- Carp can also alter the underwater environment
  - Makes it inhospitable for plants

What could happen if they get to the headwaters/great lakes?

- They could outcompete all the native fish in these vital ecosystems
  - May lead to extinctions of many if not all native species
- May also negatively affect fishing industry

BioAcoustic Fish Fence

What is a BioAcoustic Fish Fence (BAFF)?

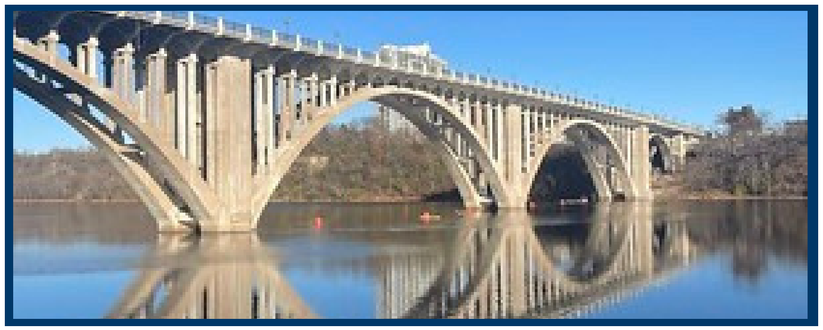
A BioAcoustic fish fence is a sound-based deterrent used to keep invasive carp from passing further upstream in the river or body of water. It uses strobe lights, bubbles, and sound. (3)

Why is this the best option?

- Since it isn't a physical barrier, it makes sure the river or waterway stays accessible
- Works with other solutions, and has high efficiency when used (2)
- Has little to no effect on native species

What about the native fish?

While considering technologies like the BAFF that help to deter invasive carp, it is also important to consider the impact the technology may have on the native fish population. There is currently a "fish elevator" plan being developed and researched. This would help the native fish populations continue to migrate upstream and reproduce, while being able to remove the carp from the mix. The elevator would work together with the fence to keep invasie carp out, and still keep our native species free. (3)



Friends of the Mississippi's role

In this year's legislative session FMR and other advocates will be working to fund preventative measures for and research on invasive carp. In order to gain funding for invasive carp prevention, there needs to be legislative support at the state and federal levels to appropriate money for these programs. Even if funding is secured, the DNR is needed to finalize the spending decision. By advocating for funding during the 2024 legislative session, we can hopefully avoid carp reaching our section of the Mississippi River.

What can you do to help?

- Email your legislators and representatives in support of invasive carp bills and funding (or send them letters)
- Research invasive carp to spread an understanding of the importance of protecting our river
- Tell your family and friends to contact their representatives
- Spread posts to share the importance of barriers and dangers of invasive species

Similar plans in action

The effects of a bioacoustic fish fence are currently being tested at the Barkley Lock and Dam on the Cumberland River in Kentucky. Since carp have previously been able to pass through the lock, the testing of the BAFF should determine whether or not their passage upstream can be greatly reduced.

Location

In recent years, more and more invasive carp have made their way up the Mississippi River, reaching into parts of Minnesota. In December of 2023, Wisconsin and Minnesota DNRs removed 408 total invasive carp from Pool 6 of the Mississippi. Currently, a hopeful location of the BAFF is Lock and Dam 5. Stopping carp below Lock and Dam 5 would allow for the protection of systems upstream of the dam. (4) The MN DNR plans to assess the practicality of installing deterrents at Lock and Dam 5.

1. From left to right images 1,2,3 Source: 1(FMR Flickr) 2(FMR Flickr) 3(Invasive Carp Regional Coordinating Committee)
2. Fish Guidance Systems (https://fgs.world/systems/baff-system/)
3. Lake Barkley BAFF Study (https://invasivecarp.us/Documents/BioAcoustic-Fish-Fence-Question-Answers-January-2022.pdf)
4. FMR (fmr.org)
5. MN Invasive Carp Action Plan https://files.dnr.state.mn.us/natural_resources/invasives/aquaticanimals/asiancarp/invasive-carp-action-plan-2024.pdf

Ecological Impacts of Carp

What are they?

Carp are an invasive species indigenous to Asia. They have no natural predators in North America, making it easier to take over environments like the Mississippi River.

Types of Carp

How did they get here?

Asiatic Carp were first introduced to the U.S. in the 1970s by UN Agricultural Systems. Four species were introduced and used in various wastewater systems as natural alternatives to chemical treatments and pesticides for combating aquatic plant species. Grass Carp were introduced first to treat golf ponds, irrigation canals, and cooling systems, while Silver and Bighead Carp were used to treat catfish farms, sewage lagoons, and other wastewater systems. Black Carp were also used in various fish farms to prevent algae blooms. Due to overpopulation, flooding, and suspected release by owners, these species escaped and began populating local waterways, making their way into the Mississippi River.

How do carp affect the environment?

Why are carp a problem? Invasive carp cause serious damage to the native fish populations in the lakes and rivers that they infest because they out-compete other fish for food and space. Carp are also thought to lower water quality, which can kill off sensitive organisms like native freshwater mussels.

In areas where invasive carp are abundant, they have harmed native fish communities and interfered with commercial and recreational fishing. Experts are extremely concerned about the consequences of invasive carp invading the Great Lakes, where the carp would negatively affect the $7 billion-a-year fishing industry.

In conclusion, in ecosystems dominated by submerged plants, common carp can negatively impact water clarity by increasing TSS concentration which increase light attenuation in the water column.Jan 18, 2019

https://www.invasivespeciesinfo.gov/aquatic/fish-and-other-vertebrates/invasive-carp
https://www.nps.gov/miss/learn/nature/ascarpover.htm
https://invasivecarp.us/Documents/FWSAsianCarp.pdf

Human Impact of Carp

Social

Recreational Activities
The presence of carp would damage recreational fishing activities in a variety of ways. If recreational catch rates were reduced by a decrease in native fish populations, there would be reduced angling (3) activity and correspondingly, less disposable income spent on this recreational activity. Anglers contribute a large amount of money to the provincial government via fishing licenses, as well as, contributing to other sectors of the economy while on fishing excursions. Reduced recreational fishing and related activities will have economic impacts on other businesses and livelihoods which depend on the continuation and development of this sector. (2)

Healthy rivers mean more fish. More fish mean more recreational fishers spending money that is a key ingredient for a healthy fishery. (page 88 on pdf 84 on paper)(1)

Carp can also alter the aesthetic value of water bodies, impacting recreational activities like boating, swimming, and birdwatching.

Health

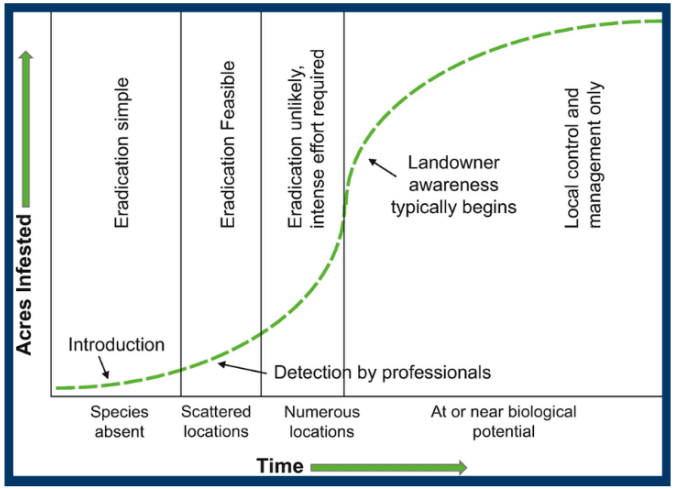
In some regions, carp may contribute to the spread of diseases and parasites that can affect both aquatic species and humans.
Carp feces and decaying carcasses can degrade water quality, potentially leading to health hazards for humans who come into contact with contaminated water.
Carp can jump into boats injuring boaters and operators.

Cultural

In areas where carp are considered invasive, they can negatively impact cultural practices such as traditional fishing methods or ceremonial practices involving native fish species.
In regions where carp have become dominant, there may be social

Economic

- Invasive carp species often outcompete native fish for resources, leading to declines in native fish populations that are important for commercial and recreational fishing.
- Carp may cause damage to fishing gear and equipment, leading to economic losses for fishermen and fishing-related businesses.
- Controlling invasive carp populations requires significant financial resources and effort.
- Various control methods such as barrier systems, harvest programs, and chemical treatments incur costs for implementation and maintenance.



Four stages of invasive plant infestation and possible treatment at each stage. For a given invasive plant species, ease of treatment declines and cost of treatment increases from left to right. (Adapted from Hobbs and Humphries (1995) and Indiana Division of Forestry (2010))

Commercial Fishing

From a demand perspective, the commercial fishing sector would also be adversely affected as the quality of native species fished would be expected to reduce as total population numbers decline. As the total number of catchable fish decline, commercial fisheries will need to adjust harvesting methods for smaller sized native fish species. This reduction in fish size and quality will decrease the demand of Great Lakes' fish as a food source all over the world. (2)

The Commercial Fishing Industry depends heavily on the health and ecological state of the Great Lakes. The total value of the Commercial Fisheries in the Great Lakes during 2011 was over $33 million dollars. The presence of Asian carp would have multiple impacts, including:

- Increased costs and decreased revenues for commercial harvesters.
- This decrease in revenue would in turn reduce the level of gross profits and thereby create a circular flow of impact. 2)

1. Fulton W and Hall K (eds) (2014). Forum proceedings: Carp management in Australia — state of knowledge. 19–20 June 2012, Melbourne. PestSmart Toolkit publication, Invasive Animals Cooperative Research Centre, Canberra, Australia.
2. (Invasive Species Centre) https://www.asiancarp.ca/impacts/risk-assessments/socio-economic-impact-of-the-presence-of-asian-carp-in-the-great-lakes-basin/
3. Angling is the sport or recreational activity of fishing with a rod and line where catching fish is the aim.