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# ASIAN CARP

## A HUNGRY INVADER EATING ITS WAY TO THE GREAT LAKES

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Asian carp have migrated more than 1,000 miles from the Mississippi River watershed to the doorstep of Lake Michigan — a door that's wide open because of the Chicago Sanitary and Ship Canal. Will this invasive fish turn the Great Lakes into carp lakes?

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BY BRIAN McCOMBIE

**M**ORE THAN 100 YEARS AGO, the city of Chicago opened the Chicago Sanitary and Ship Canal. For years, city residents had been dumping their raw sewage into the Chicago River. But the river emptied into nearby Lake Michigan, tainting Chicago's source of fresh drinking water.

Quite an engineering achievement at the time, the 25-mile-long Chicago canal provided a link from Lake Michigan all the way to the Illinois River. Not only did the canal sluice away the city's sewage, it opened up Lake Michigan barge traffic to the Mississippi watershed.

Of course, the canal also left the Great Lakes wide open to anything that traveled up from the Illinois River. Enter the Asian carp.

### NORTHBOUND INVADERS

Several species of fish fall under the category "Asian carp." The two of most concern for the Great Lakes are the bighead (*Hypophthalmichthys nobilis*) and silver carp (*Hypophthalmichthys molitrix*). Imported from Asia in the early 1970s, bighead and silver carp were used by fish farmers in Arkansas, Alabama, and Mississippi to keep fish rearing ponds clean. Several municipal sewage lagoons used the fish for the same purpose.

Veritable underwater vacuum cleaners, Asian carp continuously suck up plankton, algae, and other suspended nutrients.

The bighead consumes up to 40 percent of its body weight each day. And that body can grow as large as 5 feet in length and 100 pounds. Silver carp are smaller, though still a very substantial fish, topping out at 3 feet and 60 pounds.

During the 1980s, flood waters overran some ponds and lagoons holding Asian carp and washed the fish into tributaries of the Lower Mississippi River. Carp thrived in the warm, nutrient-rich Lower Mississippi waters. They soon established reproducing populations and began spreading north up the Mississippi and its tributaries at a frightening pace, wreaking havoc in local fisheries.

Within a decade of the carp's appearance in the Missouri River, for example, commercial fishermen there had to abandon some traditional fishing sites because their catches were so heavy with Asian carp, the fishermen couldn't raise their nets.

In the Illinois River, Asian carp filter out so much plankton that other plankton feeders like native largemouth buffalo and gizzard shad are losing weight. "The river is very productive," says Kevin Irons, a large-river ecologist with the Illinois Natural History Survey, "but the carp are basically overwhelming the food system."

Over the past three decades, Asian carp have migrated more than 1,000 miles up the Mississippi River watershed into the Illinois River and right to the doorstep of Lake Michigan — a door that's actually wide open because of the Chicago canal. In

January 2010, for the first time ever, DNA testing placed Asian carp in Lake Michigan itself — at Calumet Harbor just south of downtown Chicago.

## GREAT LAKES SPAWNING?

Scientists don't know whether the carp DNA found in Lake Michigan came from live or dead carp. However, fishery experts do agree that individual Asian carp can live in the Great Lakes. The question is whether they will reproduce and, if so, at what levels.

No one knows for sure.

Phillip Moy, a fisheries and invasive species specialist at the University of Wisconsin Sea Grant Institute, says the river habitats that have served the carp so well for the past three decades are a far cry from what Lake Michigan has to offer. In the Mississippi and Illinois Rivers, Asian carp can have an eight-inch growth spurt the very first year. At that size, they're too big a mouthful for all but the largest predator fish. In cooler Lake Michigan, Moy says, the carp would take a longer time to reach that size, "meaning they'd be vulnerable to predators for a much longer time span."

In addition, Asian carp eggs need moderate-to-swift currents to keep them suspended for several days to hatch — otherwise they fall to the bottom and die, notes Dan O'Keefe, outreach educator with Michigan Sea Grant. Although many Lake Michigan tributaries have these currents, most are too cold for carp. However, at least two rivers on the Michigan side of Lake Michigan and another 15 rivers flowing into the remaining Great Lakes could provide suitable spawning habitats.

## BIG EATERS

Plankton levels in Lake Michigan are lower than in the past, thanks to two other aquatic invaders: Quagga and zebra mussels. Like Asian carp, these small mollusks live on plankton. Computer modeling suggests that Asian carp might all but starve in Lake Michigan due to the lack of plankton, says Moy.

But Duane Chapman, a fishery biologist with the U.S. Geologic Survey, notes that bighead and silver carp have done "extremely well" in another lake with relatively little plankton by eating mussel veligers instead. Veligers are fertilized mussel eggs — smaller than the period at the end of this sentence — that free float in the water for several weeks. The veligers grow, form shells, and eventually sink, attaching themselves to hard surfaces like rocks and piers. Until then, the veligers circulate in the water.

Untold billions of zebra and quagga mussels are clustered along the margins of Lake Michigan and the other Great Lakes. And they dispense billions of veligers into the water (a single zebra mussel can release a million eggs in one year). So Asian carp may well find an unexpected food source to help them take hold in the Great Lakes.

## GREAT LAKES ECONOMICS

The American Sportfishing Association (ASA) estimated in 2006 that recreational fishing on the Great Lakes had a \$7 billion economic impact across the region and accounted for 58,000 local jobs. The total economic impact of the Great Lakes fishery is even higher when commercial and tribal fishing are included in the analysis.

Great Lakes fisheries include lake trout, salmon, walleye, perch, white fish, steelhead, brown trout, and smallmouth bass.

Each lake has its own mainstay fish. If Asian carp move in, they would compete with valuable sport and commercial fish for food, says the Great Lakes Commission, and likely become a dominant species in the lakes.

If Asian carp establish a presence in the Great Lakes, they will compete for food with native species — including cisco, bloater, and yellow perch — that are fed on by predator species such as lake trout and walleye, according to Ashley Spratt, U.S. Fish and Wildlife Service–Midwest Region spokesperson. "Under the conditions found in the Great Lakes, such as water temperature and food abundance, Asian carp could outnumber all other native species

**"Under the conditions found in the Great Lakes, such as water temperature and food abundance, Asian carp could outnumber all other native species as is happening in parts of the Illinois, Mississippi, and Missouri Rivers."**

as is happening in parts of the Illinois, Mississippi, and Missouri Rivers." Reduced numbers of native fish will damage fishing opportunities and have a negative economic impact on the people whose livelihoods depend on Great Lakes sport and commercial fisheries.

"The potential impact of Asian carp on the Great Lakes sport and commercial fishing industry can be seen now along the Mississippi River basin," adds Spratt. "Just a few short years following introduction of Asian carp into an area, many commercial fishing locations have been abandoned as native fish have nearly disappeared from the catch, replaced by Asian carp."

In addition, the Fish and Wildlife Service noted in a 2004 report on Asian carp that waterfowl production areas are at risk from Asian carp too. Hunters spend more than \$2.6 billion annually on their sport in the Great Lakes, so reduction of waterfowl populations there would decrease the economic value to communities that benefit from hunting.

On the other side of the coin are the economic benefits of the Chicago canal. Illinois Attorney General Lisa Madigan notes that more than 19 million tons of materials move through the Chicago area canals via barge annually. Shutting down the canal system, she argues, would cost the area millions of dollars and thousands of jobs. Estimates of the cost of closing the canal





**Jill Wingfield, Communications and Policy Associate for the Great Lakes Fishery Commission, with a silver carp on the Illinois River near Peoria, Illinois. Silver carp can grow up to 3 feet and 60 pounds. Bigheads can grow as large as 5 feet and 100 pounds.**

system to Lake Michigan range from \$70 million to \$250 million a year.

Great Lakes advocates argue that the potential cost of losing the Great Lakes fisheries far outweighs the cost of shutting down the canal. And stopping the carp before they gain a foothold in the Great Lakes may be the only way to avoid an ecological calamity.

“Given the presence of the carp, I think there’s good reason to separate [the two watersheds] now,” says Dave Dempsey, who serves on the League’s Great Lakes Committee and is a member of the Gopher State (Minnesota) Chapter. Dempsey admits there will

be economic costs associated with closing the locks. But he adds, “You have to balance any [local monetary] losses against \$7 billion at stake across the Great Lakes. The math says to close the locks, at least for right now. Most of the goods and raw materials shipped through the canal could be off-loaded on the Lake Michigan coast and transported inland via truck or rail.” And the locks wouldn’t necessarily have to be closed forever. “If they can come up with some effective ways to block or eradicate the carp, then re-open the locks at a later date. But right now, it’s just too big of a risk to leave the canals open.”








It may look amusing on YouTube, but in-person it's downright dangerous: The sound of a boat engine makes silver carp jump out of the water. (Bigheads don't leap and are rarely seen). Boaters have been pummeled by airborne silver carp, resulting in broken noses and jaws.

T. LAWRENCE/GREAT LAKES FISHERY COMMISSION



# Chicago Waterways

-  Lock or controlling works
-  Flow direction
-  Asian carp DNA found



P. Moy

## SUPREME THREAT

In 2004, the Army Corps of Engineers started work on an electric barrier at a choke point on the Chicago canal. The Corps laid a series of electrically charged cables across the bottom of the canal. The electric barrier was originally conceived to block another invasive fish (the Eurasian round goby), but preliminary research showed the barrier should work against Asian carp. In fact, carp management is why two more electric barriers are slated to go on-line in 2010.

However, Asian carp DNA has been found at several points miles beyond the barrier, in canals between the barrier and Lake Michigan as well as in Calumet Harbor, part of Lake Michigan proper.

In December 2009, Michigan Attorney General Mike Cox filed a federal lawsuit in an attempt to force the State of Illinois, the Metropolitan Water Reclamation District of Greater Chicago, and the Army Corps of Engineers to close the Chicago canal off from Lake Michigan. Soon afterwards, all the other Great Lakes states (except Illinois) filed briefs in support of Michigan's stand.

Michigan claimed that current conditions "constitute a public nuisance" by creating a passageway through which invasive species can move. The lawsuit asked the Supreme Court to order a temporary closure of the locks and connecting channels between

**The U.S. Fish and Wildlife Service designated silver carp as an Injurious Wildlife Species in 2007, stating that "there are no potential ecological benefits for U.S. waters from the introduction of silver carp."**

the Chicago canal system and Lake Michigan and order that the link between the two ecosystems be severed permanently.

The Michigan lawsuit used data from several federal agencies to support its claims. A U.S. Fish and Wildlife Service final rule

designating silver carp to the list of “Injurious Wildlife Species” (2007) stated that “the Service finds all forms of live silver carp . . . to be injurious to wildlife and wildlife resources of the United States and to the interests of human beings.” Among the reasons listed for this finding were that silver carp “are highly likely to spread from their current established range to new water bodies in the United States; are highly likely to compete with native species, including threatened and endangered species, for food and habitat; and are likely to develop dense populations that will likely affect critical habitat for threatened and endangered species and could further imperil other native fishes and mussels.” The Fish and Wildlife Service also stated that it would be difficult “to eradicate or reduce large populations of silver carp or recover ecosystems disturbed by the species.”

Another source quoted in the lawsuit was a “Dispersal Barrier Efficacy Study” developed by the U.S. Army Corps of Engineers in December 2009: “The prevention of an interbasin transfer of bighead and silver carp from the Illinois River to Lake Michigan is paramount in avoiding ecologic and economic disaster.”

The lawsuit recognized the consequences of closing the Chicago canal. “Michigan realizes that an interim order closing the locks will impact the barge traffic and recreational boats that move between Lake Michigan and the waterways in and around Chicago. However, any such loss is relatively minor and is finite. If the Asian carp enter the Great Lakes system, the damage to the environment and economies of the Great Lakes states and Canadian provinces will be staggering, with no practical end in sight.”

The Supreme Court did not grant the preliminary injunction that would have closed two navigational locks located between the electric barrier and Lake Michigan and declined to hear the case in January 2010. Michigan re-filed the lawsuit in February. In March, the Supreme Court again denied the injunction to immediately close the locks and in April refused Michigan’s request to address the issue by reopening an ongoing case over Chicago’s use of the canal to divert Lake Michigan water.

## RACE AGAINST TIME

After the Supreme Court refused to issue a temporary injunction to close the locks in January, Senator Debbie Stabenow and Congressman Dave Camp, both from Michigan, introduced the CARP ACT (Close All Routes and Prevent Asian Carp Today). The Act directs the Army Corps of Engineers to take immediate action to keep Asian carp out of the Great Lakes. It calls for immediate closure of several Chicago-area locks until adequate preventative measures and strategies are in place. It further directs the Corps to install barriers at other potential entry points between the Mississippi River ecosystem and the Great Lakes. It also grants the Corps new authority to eliminate and prevent the spread of Asian carp through the use of fish toxicant, commercial fishing and netting, and other means necessary.

“The conservation community and most of the Great Lakes states are united on this issue,” Dempsey notes.

In the meantime, the Environmental Protection Agency (EPA) has been charged with coordinating federal efforts to control Asian carp in the Great Lakes. In early 2010, more than 40 conservation groups, including the Izaak Walton League, sent a letter to EPA requesting very specific actions to control the carp. Requested

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actions include separating the watersheds, finding ways to interrupt the spawning of any carp currently in the Great Lakes, and expanded DNA testing to more closely monitor the carp.

The Obama administration has pledged \$78.5 million for Great Lakes carp control. The funding will be used to beef up the electric barriers plus develop other means of repelling the fish. Possibilities include installing acoustics, strobe lights, and air bubble “curtains” in the canals to — hopefully — scare off the carp. The draft plan, unveiled in February 2010, also provides for the limited application of fish poison in the canals to kill off carp. Biological controls to stop or limit carp spawning will be studied too. Initial phases of the action plan are supposed to be in place by summer 2010.

But leaving the Chicago canal open while various scenarios are studied is not an option, argues Dempsey, who supports closing the locks at least temporarily. “Isolating the watersheds would stop more Asian carp from getting into Lake Michigan,” he says. “That would buy the time needed to effectively combat the carp.” Decisive action now can prevent the Great Lakes from becoming simply great carp lakes.

— Brian McCombie is a freelance writer living and working in Wisconsin. He regularly reports on conservation and environmental issues.

## **CARP ACT: IMMEDIATE PROTECTION AND LONG-TERM SOLUTIONS**

The threat posed by Asian carp requires an immediate response to safeguard the Great Lakes, one of our most important natural resources.

Contact your members of Congress today and urge them to co-sponsor and vote for the **CARP ACT** (H.R. 4472 / S. 2946). Visit the League’s Advocacy Web page ([www.iwla.org/advocacy](http://www.iwla.org/advocacy)) for a quick link to take action.