



Asian Carp may have breached the Electronic Barrier

Multiple Carp DNA samplings have been found in multiple locations North and East, near O'Brien Lock

During a press conference call held November 20, it was confirmed that multiple samples of carp DNA have been found substantially north and east of the existing carp barrier, and in another water body that has a direct connection to Lake Michigan.

A common map – “Calumet River Waterway” showing the location of: Calumet Harbor entrance, Calumet Harbor and the O'Brien Lock (see page 3) – reflects that direct connection, which includes the Calumet and Little Calumet Rivers and Calumet Harbor.

During the conference call, facilitated by the USEPA, there was a comment made that the O'Brien Lock is the only existing barrier remaining to prevent further migration of Asian carp into Lake Michigan. The

O'Brien Lock is not a barrier; it is only an impediment to slow down carp migration. Unless the U.S. Army Corps of Engineers commits to keeping that lock closed until an Interagency Task Force is assured no carp are in the area, Asian carp will get into Lake Michigan. Common maps show irrefutable evidence there is a direct connection between the location of confirmed carp DNA evidence (1-3 miles below O'Brien Lock) and the short distance of six river miles to Calumet Harbor and the opening to Lake Michigan.



15 minutes of DNR netting on the Illinois River

Again, the O'Brien lock is only an impediment – unless the U.S. Army Corps of Engineers keeps it closed permanently, or until the area is electro-shocked and subsequently treated with Rotenone.

In view of this new and startling announcement, it was asked would the existing plan be modified to initially electroshock the area around O'Brien then subsequently treat it with Rotenone. Illinois DNR deputy director John Rogner stated all options were open to the Task Force. They put together the present plan of shutting down all shipping and treating the immediate area around the barrier for scheduled barrier maintenance. They will proceed as planned on December 2.

Rogner reiterated the inter-agency Task Force will be taking a

hard look at the new evidence and considering further options including electro-shocking and further treatment of Rotenone in these other riverway stretches; however, he would not commit to a specific date or timeline. Ironically, the need for more Rotenone may require the Task Force to research availability in Europe, since most all North American sources will have been exhausted.

The most pressing problem is the short distance between the O'Brien Lock on the Calumet River and Calumet Harbor just six short river miles from the O'Brien Lock. “Several positive carp DNA samples were found 1-3 miles below the O'Brien Lock” according to Army Corps regional Commander Maj. General John Peabody.

Peabody added “Notre Dame field personnel found one positive DNA sample in the Des Plaines River and three at the confluence of the Cal-Sag Channel and the Sanitary Ship Canal.” That area is approximately 10-12 miles north of the existing barrier. Peabody’s reference to the Corp increasing the barrier voltage from 1 to 2” on August 17 evidently either wasn’t sufficient to prevent carp migration through the barrier or the Corp’s efforts were too little too late.

The Corps, and the U.S. Congress, must ultimately be held responsible and/or culpable for this latest and most grave threat to the nation’s Great Lakes.

Agencies on the press conference call included USEPA (Cameron Davis, Sr., Advisor to USEPA), USFWS (Charlie Wooley, Region 3 Deputy Director), USACE (Gen. John Peabody, GL Regional Commander

Carp breach Barrier

Continued on page 3

In this issue...

CSSC to close for barrier maintenance...	2
Calumet River Waterway map	3
Do Asian carp have high requirements ...	4
IJC urges action to protect Great Lakes against carp	4
Risk Assessment for Carp in Canada	5
Barrier committee notes	6-7
Real, perceived or sold out?	7
Asian carp FAQs	8-10
<i>Happy Thanksgiving</i>	11

Chicago Sanitary/Ship Canal to Close Dec 2 for Fish Barrier Maintenance

**Rotenone to be used to create five mile fish-free-zone while barrier is down
Barrier area will be closed to all traffic for 4-5 days**

CHICAGO – A section of the Chicago Sanitary and Ship Canal (CSSC) is planned to be closed to all traffic, weather permitting, beginning December 2 for a period of four to five days.

The U.S. Army Corps of Engineers is planning to perform scheduled maintenance on Barrier IIA, one of two electric barriers in operation on the Chicago Sanitary and Ship Canal. Performing scheduled maintenance is required in order to maintain reliability of the structures and minimize the risk of unplanned outages due to inadequate maintenance.

During the maintenance shutdown, Barrier I will remain active. However, because of late summer detection of Asian carp near the barrier system and concern that Barrier I may not be effective in deterring juvenile fish, Rotenone will be applied to the canal between the barrier and the Lockport Lock and Dam, a section approximately 5 miles long. The application will allow for the removal of Asian carp and other fish to keep them from advancing past the barrier toward Lake Michigan. Illinois EPA water quality experts will be monitoring downstream of the application zone to ensure that the waters of the state are protected, and the chemicals do not move beyond the designated application area.

“The barrier is currently the only protection against Asian carp for the Great Lakes and the maintenance shutdown may present an opportunity for these fish to advance up the canal toward Lake Michigan,” said DNR Assistant Director John Rogner.

During this process, the U.S. Coast Guard will be enforcing a safety zone and the Sanitary and Ship Canal (CSSC) will be closed to all commercial and recreational vessel traffic between Mile Markers 291 and 298. The waterway is planned to be closed beginning December 2 and last for the duration of operations. The

waterway will reopen as soon as operations permit.

Asian carp have been detected using DNA testing below the barrier, and there is consensus among federal, state, and local agencies along with other partners that actions must be taken to prevent these invasive species from reaching Lake Michigan while Barrier IIA is shut down.

The Illinois DNR, in coordination with the multi-agency Asian Carp Rapid Response Workgroup along with the Great Lakes Interagency Task Force, will manage the application of Rotenone in the CSSC. While the toxicant will eradicate Asian carp and other fish in the canal, Rotenone does not present a risk to people or other wildlife when used properly.

The application of Rotenone is planned for December 3, and crews from the IDNR and other agencies will remove fish from the canal and dispose of them. Fish habitat in the area scheduled for treatment is made up of mostly non-sport fish with the most common species being common carp, goldfish, and gizzard shad. Before the application of Rotenone, an electro-fishing operation will be conducted to relocate as many sport fish as possible. Rotenone dissipates quickly on its own, but to accelerate that process a neutralizing agent known as potassium permanganate will be used following the application.

If Asian carp become established in the Great Lakes, they could cause a catastrophic decline in native fish species and severely damage the Great Lakes sport fishing industry,

valued at \$7 billion.

The Asian Carp Rapid Response Workgroup consists of many state and federal agencies including Illinois DNR, USACE, USEPA, USFWS, USCG, USDA, Chicago and regional agencies and commissions, and Wisconsin Sea Grant. All eight Great Lakes State Fisheries management agencies are providing support for the project.

However the process will not be without interruptions and negative economic impacts. While most all of recreational boaters heading south

will have already passed through the barrier area, some 35 commercial carriers and their crews will be idled for four to five days. The Rapid Response Workgroup is requiring suspension of all boat traffic in a five-mile area to

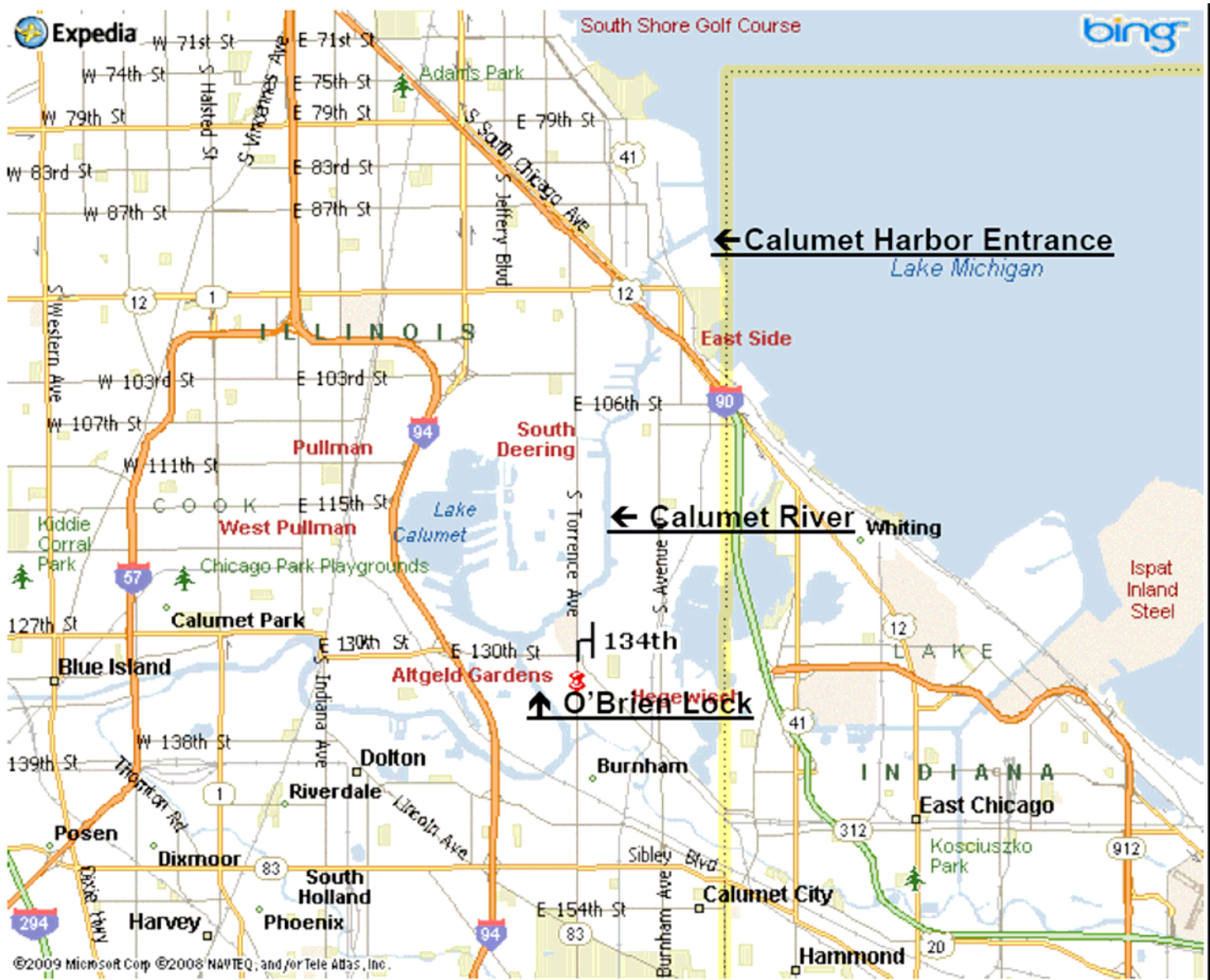
prevent colliding with the many vessels involved in the Rotenone dispersal/monitoring process. That means commodity products to coal burning power plants and sand and gravel products to Material Service will be impacted during this time and over 300 folks will be out of work for that time period. Some 7,000 boats were idled this past August when the Coast Guard temporarily closed down the barrier while increased voltage testing took place.

With Barrier IIB not scheduled for completion until the fall of 2010, the six-month periodic maintenance requirement of our new electronic barriers means this shut down could occur again next summer. That is just one more reason to light a fire under the U.S. Army Corps of Engineers – and the U.S. Congress – to expedite the construction process. ✧



Commercial harvest of Asian carp regularly removed from the Illinois, Missouri and Mississippi River s

Map #1 Calumet River Waterway



Carp breach Barrier

Continued from page 1

and Col Vince Quarles, Chicago District Commander), U.S. Coast Guard (Rear Adm. John Neffinger, District 9 Commander), IL DNR (Assistant Director John Rogner) and Dr David Lodge, Research director University of Notre Dame Research Lab.

Lodge informed us approximately 43 DNA samples were taken between September 23 and October 1 by University of Notre Dame researchers, and at least 29 samples proved positive. Lodge also said process time of these samples takes 14 days, which means that positive information was available to the U.S. Corps of Engineers on or shortly after October 15.

There were at least four barrier committee or sub-committee meetings and two conference calls held between October 15 and November 20, with hundreds of vitally interested parties, agencies and businesses, yet this information was not made available to anybody until November 20.

Why? Why the delay?

Why the continued, obvious lack of a sense of urgency by federal authorities and Congressional legislators to fund and build this relatively inexpensive barrier?? ✧

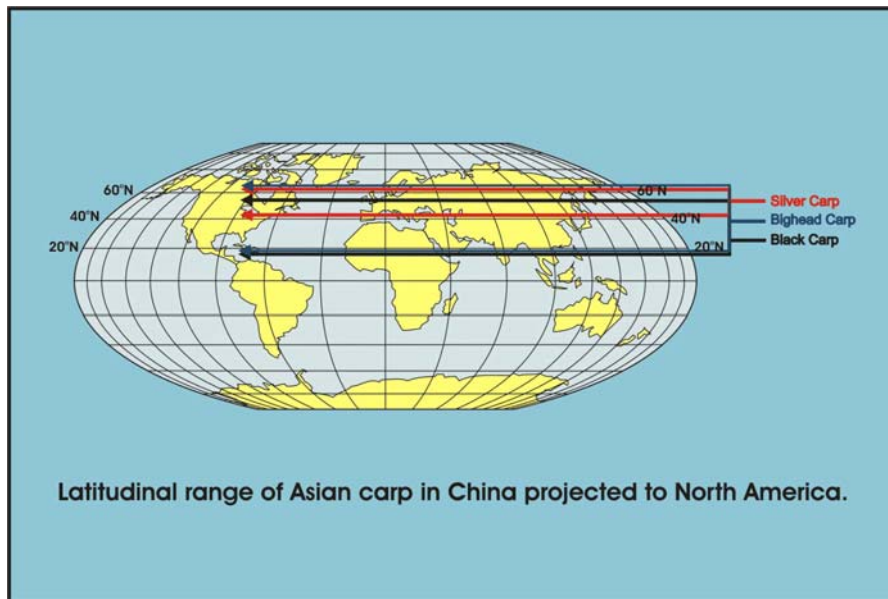
Do Asian Carp have high requirements?

Dr. Phil Moy, Wisconsin Sea Grant

Asian carp DNA has been discovered some 25 miles above the dispersal barriers. The DNA was found in samples that were collected in September and October and were only recently analyzed. The samples that tested positive were collected at the junction of the Cal-Sag Channel and San-Ship Canal about 9 miles above the barrier and at a point about a mile below O'Brien Lock which is about 30 miles above the barrier.

Plaines. If the fish were in the Des Plaines River for the last two years, they could have spread overland into the Canal during this storm event. Recall, we did not begin the eDNA monitoring until August of 2009.

These fish have spawning requirements met by less than a dozen tributaries in the Great Lakes. Their abundance, based on sampling effort, is likely very low even in the areas upstream of the barriers. They will



Given that Barrier IIA has been operating at a voltage and pulse rate sufficient to stun even small fish since September, I suspect the fish did not swim through the barriers but instead were not detected prior to the October 2008 Barrier I maintenance event and swam through at that time or at other times when the barrier was not operating at full capacity. The other possibility is that the fish spread from the Des Plaines River during the flood event of 2008.

In September 2008, the Chicago region suffered a 50-year storm event that sent the waters of the Des Plaines River tumbling over the narrow strip of land between it and the Sanitary and Ship Canal at several locations above the barrier site. This fall Asian carp DNA was found in the Des

still have to find the spawning habitat and each other to fertilize the eggs and the young need quiet backwater in which to develop. Though a few fish may have gotten past the barriers there is no need to resign ourselves to the end of the Great Lakes ecosystem. We must continue to strive to keep the numbers of fish spreading through the canal low and increase our efforts to create the long-term physical separation necessary to protect these two great national drainage basins. ✧

Dr Phil Moy is Chair of the Barrier Advisory Panel and a fisheries biologist with the Wisconsin Sea Grant College Program, headquartered in Manitowoc, Wisconsin. He can be reached via e-mail at pmoy@uwc.edu.

IJC urges action to protect the Great Lakes against Asian carp

In letters sent to the Governor of Illinois, the U.S. Army Corps of Engineers, the USEPA and the Council on Environmental Quality, the International Joint Commission (IJC) expressed its concerns that Asian carp could invade the Great Lakes by way of the Chicago Sanitary and Ship Canal.

The IJC supports the Barrier Advisory Panel's recommendation to construct a physical separation between the Des Plaines River and the Chicago Sanitary Ship Canal. The IJC also supports action to close off the canal and Deep Run Creek in a manner that would permit storm water discharge while precluding the passage of Asian Carp.

Further, a rapid response effort must be undertaken as soon as possible to push back the Asian carp and allow the Army Corps of Engineers to conduct scheduled maintenance of the electric barrier and complete the construction of a second electric barrier.

"We must stop Asian carp and other species before they use the Chicago Sanitary Canal to invade the entire Great Lakes system that is shared by Canada and the United States," stated Herb Gray, Canadian Section chair of the International Joint Commission.

"Invasive species such as Asian carp are the foremost threat to the biological integrity of the Great Lakes basin ecosystem. The impact of invasive species already in the system, from the sea lamprey to the zebra mussel, serve as harbingers of the economic and environmental costs to come if this crucial threat is not controlled" said Irene Brooks, U.S. Section chair of the International Joint Commission. ✧

Risk Assessment for Asian Carp in Canada

From Fisheries and Oceans Canada, *Published in 2004*

Four species of Asian Carp (grass carp, bighead carp, silver carp, and black carp) have been imported alive into Canada for the live fish food markets in urban centres or, in the case of grass carp, for control of aquatic vegetation. Reporting of live importation is mandatory, but compliance is low. Hence, the total number or weight of live fishes imported annually is not known accurately, although grass carp and bighead carp are certainly the dominant species in recent years.

A risk analysis was conducted of the threat posed by each of the four species were they to escape into Canadian waters. The risk analysis addressed both risk of establishment (survival, reproduction, spread) were the species to be introduced in the wild, and risk of ecological and genetic consequences for native biodiversity were the species to become established. A risk analysis was also conducted of the threat posed by these species as vectors for diseases and parasites.

Risk of survivorship, reproduction, and spread was considered high and reasonably certain or very certain for all four species. Risk of introducing new parasites or diseases was considered moderate but only moderately certain to moderately uncertain in all cases.



Bighead carp

The risk assessment concluded that it is reasonably certain to very certain that the ecological consequences of establishment of all four species would be high. The risk of detrimental genetic consequences would be low for all four species.

Bighead Carp

Bighead carp are voracious predators, eating a wide range of zooplankton and small invertebrates.

They mature in 3-4 years, and reach a maximum size of up to 40 kg (89 lbs). Their native range is from southern China to southern Russia, where mean annual air temperatures range from +22 to -20C. They are found in rivers, reservoirs and lakes and spawning can take place in many water bodies including moderate to large rivers and lakes with areas of slow current.

Compared to grass carp, bighead carp have a somewhat warmer temperature preference. However, there are still many water bodies of suitable temperature in the Great Lakes basin and southern Prairie waterways. Compared to grass carp, bighead carp occur in a much wider range of habitats and spend more time in open waters, indicating that there is a great deal of suitable habitat in Canada, particularly in the Great Lakes.

Bighead carp feed on a wide range of phytoplankton and zooplankton and feed throughout the year rather than only seasonally. All these factors increase the potential to acquire sufficient energy over a year to mature and produce eggs.

Successful reproduction of bighead carp in the wild has been documented at least as far north in the U.S. as for grass carp, suggesting that reproduction would be possible in, at least, southwestern Ontario.

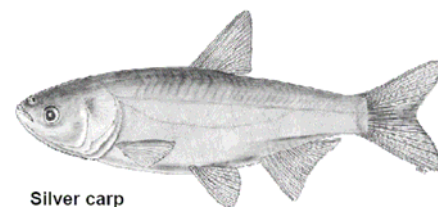
The likelihood of expansion could be extensive due to wider habitat preferences and documented extensive movements of individual bighead carp in American waters. Where bighead carp have become established elsewhere, they often have resulted directly in substantial changes to the species composition and reduction in abundance of the larger phytoplankton and zooplankton communities, and sometimes changed water quality.

Silver Carp

Silver carp feed primarily on phytoplankton but do take small zooplankton as well, and can

compete intensively with juveniles of many native fishes. They mature in 3-5 years, and reach a maximum size of up to 40 kg (89 lbs). Their native range is from southern China to southern Russia, where mean annual air temperatures range from +24 to -60C. Their preferred habitat is the standing waters of rivers, canals and lakes, and escaped established populations have reached high densities in some parts of the upper Mississippi drainage.

There are extensive areas in



Silver carp

Canada with suitable temperature regime for silver carp and utilize large water bodies, which are numerous in Canada. Silver carp are able to jump barriers and have tolerance for colder temperatures, so likelihood of expansion can only be higher than for the other Asian carp species.

Where silver carp have become established elsewhere, they often have resulted directly in substantial changes to the species composition and reduction in abundance of the larger phytoplankton and zooplankton communities, and sometimes changed water quality.

Leaping behaviour poses a safety threat to boaters in areas where silver carp occur in the wild in the U.S., and this threat would require mitigation were silver carp to become established in Canada.

Fisheries and Oceans Canada has serious concerns for the northern migration of these fish. There are strong feelings amongst most of their biologists that many, if not all, of their tributaries offer prime habitat for Asian carp and are therefore at risk. ✧

Barrier committee notes

Wasn't the barrier supposed to be 100% effective?

The barrier, though often touted as a 100% effective technology, was never considered to be 100% effective when the Barrier Advisory Panel first recommended the approach. At the time (1997) an electric barrier was considered to be the best approach with the least number of drawbacks. The members of the Panel also recognized that no approach that relied on animal behavior or a technological approach, as opposed to a physical separation could be one hundred percent effective in stopping the movement of aquatic invasive species through the canal. Achieving 95 or 99% effectiveness was much better than nothing.

How could the fish get through the barrier?

The greatest likelihood on how the fish got through the barriers is that they swam through when the barrier was not operating or got washed in from the Des Plaines River. Recent modeling on the rate of upstream spread of the Asian carp by the Lodge Lab at the University of Notre Dame suggests the fish could have been at the barrier site for about two years. If this is the case, the fish would have been present when Barrier I was shut down for maintenance in October of last year and could have simply swam upstream when the barrier was shut off. At that time, the only effort to remove carp from the area below the barrier was electro fishing. We know that when the abundance of these fish is low, electro fishing is not an effective way to collect these fish.

How about closing the locks or are there other accesses?

While closing the locks could impede movement of the fish towards the lake it would also close navigation access between the lake and the canal. This may be under consideration as a short-term option but is not likely to be implemented for the long term. We must keep in mind too that the fish

have been there for at least six weeks and could already have passed through the lock with barges or other boats. Also the Chicago River, North Shore Channel and Calumet River are not the only access routes to the lake from the current known location of the fish. The Grand Calumet River and Little Calumet River form a confluence with the Calumet River below the O'Brien Lock and connect with Lake Michigan in Indiana. There are no control structures on these rivers to stop the lakeward movement of the fish

What about capturing or poisoning the fish upstream?

Asian carp are very good at avoiding nets and seem to be able to elude electro fishing boats particularly when the fish are not abundant. Poisoning the fish will be done below the barrier in conjunction with the maintenance of Barrier IIA. Fish in that six-mile reach are contained by the Lockport Lock on the lower end of the treatment zone and the barrier on the upper end. The fish above the barrier are not contained, nor do we really have a good idea of their current location. It will cost about \$2 million for the fish kill operation in the six-mile reach below the barrier; about 40% of that cost is for the chemical. There are numerous slips and tributaries along the Cal-Sag that also would be affected or would form refuges for the carp. Poisoning out the canal upstream of the barrier is not really a feasible option.

Does this spell doom for the Great Lakes?

If the fish become established in the lakes and are present in large numbers the ecological effect could be devastating. On the other hand, if a few fish get into the lakes, as have been present in Lake Erie, and are not able to become established this is a population level we can and will need to live with.

Should the barriers keep operating?

Even though a few fish have made their way upstream continued operation of the barriers will prevent thousands more from gaining access to the upper portion of the canal and entering Lake Michigan. Separating the Des Plaines River flood flows from the San-Ship Canal is also a critical step in preventing the upstream spread of Asian carp. By keeping the number of Asian carp low that gain access to the Great Lakes we reduce the chance that they may find one another and suitable spawning habitat in tributaries.

There are only about eleven tributaries to the Great Lakes that offer suitable spawning habitat for Asian carp. Carp require about 63 miles of open flowing channel for the eggs to hatch and the young to develop. The young must then be able to find quiet backwater areas to feed. The Illinois River is the perfect habitat for these fish. The eleven Great Lakes tributaries may provide the open channel but may not all have the suitable backwater areas for the young carp to thrive. Like most other fish, Asian carp have external fertilization; the females do not carry fertilized eggs, she must find a male who will fertilize her eggs when she sheds them into the river. So when these fish make their way into Lake Michigan, they must find an adequate tributary, both males and females must be present in adequate numbers to ensure fertilization of the eggs. The Tributary must have suitable spawning habitat as well as habitat for the young.

Separation, the long term solution

The presence of Asian carp, or at least their DNA, above the barrier underscores the need for a long term, permanent separation of the Great Lakes and Mississippi River basins in order to effectively stop the inter-basin spread of aquatic nuisance

species. The electric barrier or acoustic bubble barriers or any other option that relies on technology and a behavioral response from the target organism for effectiveness has the potential to fail. We can begin with Chicago and the Sanitary and Ship Canal but in order to protect the Great Lakes and other external drainage basins, we must redouble our efforts to identify and implement an ecological or hydrologic separation of the Great Lakes and other formerly separate drainage basins that are currently connected by man-made canals. ✧

A silver carp ... close call, huh?

Real, perceived, sold out *continued*



stocks and their food basket. It wasn't until after the physical breach that we have begun to hear about the benign policies and philosophies of these critters, their critically requiring habitat, peculiar spawning tendencies, stream requirements (only 11 region wide?), etc. Which is it? Are they the perceived threat, or are they an overblown invasive?

Today bighead carp are reproducing in populations all along the Mississippi, Missouri and Ohio Rivers. Specimens have been reported in states as far reaching as California, Minnesota, and Florida. ✧

Real, perceived or sold out?

Our Great Lakes Fishery is not in imminent danger of collapse, yet. First, Asian carp have not been found in Lake Michigan, the 29 DNA samples do not constitute huge colonies, they are not located in an area where they cannot be controlled and/or eliminated, and we have hundreds of dedicated people planning to work on this process in early December who have the same concerns as do you and I. They have as much at stake. It is a situation that must be reckoned with and dealt with forthrightly and in a forceful manner.

It's important to remember that amongst the Barrier Advisory Committee members, our best guess

is and has been the barrier is only a 95% guarantee to hold these critters back. The only sure 100% guarantee to prevent any invasives from getting into the Great Lakes via this partially man-made waterway is to create a hydrologic break.

A 2004 Invasives Species Summit, hosted by the Chicago Department of Environment garnered consensus for a hydrologic separation in the Illinois Waterway system. There were scientists in attendance from four countries and from across the nation who were engaged in these issues. The goal was to understand, analyze and recommend potential solutions for thorough protection from invasive species passage through the "revolving door" of the Sanitary and Ship Canal.

Paradoxically, prior to the barrier breach, all we heard about the presence of Asian carps – specifically silver and bigheads – were doomsday promises of the tragic demise of Great Lakes native and naturalized fish



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Position Statement

Representing a major interest in the aquatic resources of the Great Lakes states and the province of Ontario, the Great Lakes Sport Fishing Council is a confederation of organizations and individuals with a concern for the present and future of sport fishing, our natural resources and the ecosystem in which we live. We encourage the wise use of our resources and a search for the truth about the issues confronting us.

Inland Seas Angler

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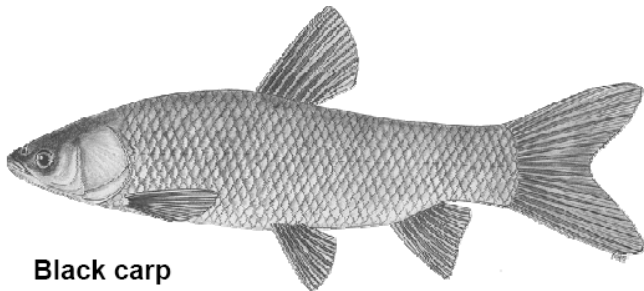
Asian carp FAQs

What are Asian carp?

There are three species of Asian carp that are considered invasive and a threat to the Great Lakes, the bighead, silver and black carp. Silver and bighead carp are filter-feeding fish and consume plant and animal plankton at an alarming rate. Bighead carp can grow to very large sizes of over five feet in length and can weigh 100 pounds or more. Black carp differ in that they consume primarily mollusks, and threaten native mussel and sturgeon populations. They can grow to seven feet in length and 150 pounds.

Where did Asian carp come from?

Asian carp were originally imported to the southern United States in the 1970s to help aquaculture and wastewater treatment facilities keep retention ponds clean. Flooding throughout the 1990s allowed these fish to escape into the Mississippi and migrate into the Missouri and Illinois rivers.



Black carp

Why are they a problem in Illinois?

Asian carp are a problem because of their feeding and spawning habits. Bighead carp are capable of consuming 40% of their own body weight in food each day. Silver carp are smaller, but pose a greater danger to recreational users because of their tendency to jump out of the water when disturbed by boat motors. They have severely impacted fishing and recreation on the Illinois River. They can spawn multiple times during each season and quickly out-compete native species by disrupting the food chain everywhere they go.

Click the link to see how they have devastated the Illinois River.

<http://www.youtube.com/watch?v=yS7zkTnQVaM>

What happens if Asian carp enter the Great Lakes?

Asian carp could have a devastating effect on the Great Lakes ecosystem and a significant economic impact on the \$7 billion fishery. Once in Lake Michigan, this invasive species could access many new tributaries connected to the Great Lakes. These fish aggressively compete with native commercial and sport fish for food. They are well suited to the water temperature, food supply, and lack of predators of the Great Lakes and could quickly become the dominant species. Once in the lake, it would be very difficult to control them.

Where are the Asian carp now?

During 2002 monitoring efforts, Asian carp were detected in the upper Illinois River, just 60 miles from Lake Michigan. In 2009, by using a new method called eDNA testing, silver carp were detected considerably closer, within the Lockport Pool (Des Plaines River, and I&M Canal).

What is eDNA testing/How does it work?

Environmental DNA testing (eDNA) was developed at the University of Notre Dame to improve monitoring of invasive species. All fish, including Asian carp, release DNA into the environment. The presence of individual species can be detected by filtering water samples, and then extracting and amplifying short fragments of the shed DNA.

The objective is to use eDNA testing as an early detection tool to identify Asian carp locations. For more information on eDNA testing click the link below.

http://www.lrc.usace.army.mil/pao/eDNA_FactSheet_20090918.pdf

Why have no actual Asian carp been found in the areas where eDNA testing has identified them?

Asian carp are still below a threshold of detection using traditional fishing gear. Electro-fishing is successful in detecting bighead and silver carp when they are in high abundance. The Chicago Sanitary and Ship Canal is, in some places, nearly 30 feet deep, which is another disadvantage to using traditional sampling methods. In the early spring and late fall, the water is cooler and produces less algae (a main food source of bighead and silver carp diets), and the fish tend to reside a bit deeper than they would during warmer months. With decreased metabolism (not as much food), they are also less active and therefore harder to detect.

How would the fish enter Lake Michigan?

The Chicago Sanitary and Ship Canal (CSSC) is a manmade waterway that provides a direct connection between the Mississippi River system and Lake Michigan. eDNA sampling suggests that the carp are already about a mile from the electric barrier located within the CSSC that is designed to deter them from advancing through the canal to Lake Michigan.

Are there other navigation points for fish to swim around the electric barrier?

Other points of possible entry to the CSSC above the electric barrier are the low lying areas of land positioned between the Des Plaines River, the Illinois and Michigan (I&M) Canal and the Chicago Sanitary and Ship Canal. During heavy rainfall events, these areas are prone to flooding. A significant rain could flood the banks, joining the Des Plaines with the CSSC or the I & M canal with the

CSSC, and allowing these fish to bypass the barrier and advance toward Lake Michigan. The U.S. Army Corps of Engineers and others are currently investigating potential solutions to these bypass issues.

Why are you taking this maintenance action now?

Like all mechanical devices, the barrier system requires periodic maintenance. Barrier IIA is scheduled to undergo routine maintenance every four to six months. The last maintenance was done in April 2009 when Barrier IIA was put into full time operation.

How can the public help prevent the spread of Asian carp?

- Don't move live fish from one location to another. Illinois state law prohibits the transport of live Asian carp.
- Never use wild-caught baitfish in waters other than where they came from.
- Know the difference between juvenile Asian carp and Juvenile Gizzard Shad which look nearly identical.
- Drain lake or river water from live wells and bilges before leaving any body of water.

What steps are being taken to prevent them from entering the Great Lakes?

- A group of biologist and response professionals including representatives of the U.S. Army Corp of Engineers, U.S. Fish and Wildlife Service, U.S. Coast Guard, U.S. Environmental Protection Agency, the Illinois Environmental Protection Agency and the Illinois Department of Natural Resources are finalizing a response plan to address the potential immediate threat as well as more permanent long term solutions.
- The U.S. Army Corps of Engineers (USACE) has installed two electric barriers in the CSSC to help repel the carp. A third barrier is scheduled to be complete in 2010.
- Asian Carp eDNA monitoring has been conducted by the University of Notre Dame and the U.S. Army Corps of Engineers on the Des Plaines River, CSSC, I&M Channel and the Chicago River.
- Fisheries biologists from state and federal agencies have increased their efforts to locate the fish using traditional fishing gear and electro-fishing methods.
- Rotenone, a fish toxicant will be applied to the CSSC while the Electric Barrier is down for routine maintenance in early December.
- The Rapid Response Team is analyzing where the low water spots on the Des Plaines and I & M canal are located and where the bypasses to the electric barrier occur.

What is rotenone?

Rotenone is a natural substance derived from the roots of several tropical and subtropical plants in the bean family. Use of this toxicant in North America began in the 1930s in

ponds and lakes as a tool to sample fish populations or to completely eradicate undesirable fish populations. Rotenone is approved for fishery uses by the USEPA.

a. How does it work?

Rotenone affects all species of fish, although susceptibility to the chemical varies between species. The chemical inhibits a biochemical process at the cellular level making it impossible for fish to use oxygen in the release of energy needed for body processes. Rotenone is non-persistent, so there is no accumulation in the water, soil, plants or surviving animals. The breakdown process is very rapid. Ultimately, rotenone breaks down into carbon dioxide and water, two common substances.

b. What are the benefits to using rotenone?

There are many reasons why using rotenone is the logical choice to prevent the movement of Asian carp.

- The use of Rotenone provides the highest level of certainty that Asian carp will not advance past the electric barrier while it is shut down temporarily for routine maintenance.
- Traditional fishing gear may not work. Silver carp are very good at avoiding nets and the extensive navigational traffic in the canal makes using nets for bighead carp ineffective.
- Nets would not remove all the fish and may miss the juveniles, which are of particular concern.
- The International Joint Commission funded an Asian carp sensitivity project at the U.S. Geological Survey Laboratory in Columbia, Missouri. Researchers determined that Asian carp are more sensitive to rotenone than to other chemicals that were tested.
- The overall quality of the fishery in the canal will improve by eliminating many undesirable species of fish and restocking in the future will improve the fishery.



Bighead carp courtesy of Ontario Ministry of Natural Resources

c. What does recent research say about the use of Rotenone in fisheries management?

In 2007 the U.S. EPA completed a thorough evaluation of the human health and ecological risks associated with rotenone. In that evaluation, EPA concluded that rotenone could be used safely for fish management if used properly.

- In situations where treated water is likely to move outside of the direct area of application, rotenone must be deactivated with a chemical agent (typically potassium permanganate) to ensure that fish and aquatic life outside the treatment area will not be adversely affected.
- Applicators must post signs at access points to the affected area to prohibit recreational access during treatment, prohibit swimming for at least three days following treatment, and prohibit consumption of dead fish taken from the treated area.

For more information on the EPA evaluation, visit the following website.

http://www.epa.gov/oppsrrd1/REDS/rotenone_red.pdf.

What other options were considered besides rotenone?

Many options have been considered including heating the water, capturing the fish with nets, herding the fish with noise or lights and trapping them, using explosives, removing oxygen from the water, increasing the flow at the lock, and sonic disruption. It was determined that the most effective option to control the spread of Asian carp is the use of rotenone in a 5.7 mile section of the canal between Lockport and Romeoville (where the electric barrier is located). The rotenone will eradicate Asian carp and other fish, only in that confined section of the canal. The treatment area is an optimal location because there are no tributaries and it is below the confluence of the Cal-Sag Channel and Sanitary and Ship Canal.

What are the risks of rotenone to people working on or living near the river?

The treatment will not pose any short or long term risk to people or pets. It is safe for other animals, except swine, to consume the fish. Scavengers and birds that eat any floating fish will not be adversely affected. The Canal will be closed during and after the application period to ensure the safety of workers applying the chemical and to avoid potential hazards posed by collision with any of the vessels used to apply the toxicant.

Have similar rotenone applications been successful?

Yes. Rotenone is commonly used for fish management purposes in Illinois and many other states. The Illinois Department of Natural Resources has more than 40 years

experience using rotenone in lakes and streams. It is used annually in Illinois on an average of 65 lakes totaling 475 acres of water.

If Rotenone is used, will it kill other living things besides Asian carp?

Yes. Rotenone affects all gill-breathing organisms. In general, most common aquatic invertebrates are less sensitive to rotenone than fish. There are currently no toxicants that affect only Asian Carp. If used correctly rotenone does not pose human health hazards or significant detrimental effects to domestic animals, other wildlife, and aquatic or terrestrial vegetation.

What is being done to mitigate effects on wildlife?

- While the majority of fish in the treatment area are mainly considered rough, undesirable fish. The Illinois Department of Natural Resources (IDNR) will conduct electro-fishing operations prior to the rotenone application to remove sport fish that may be present before application. Any desirable fish caught will be relocated outside the treatment area.
- The IDNR will accelerate the detoxification process by adding potassium permanganate to the water once treatment is complete.
- The area will be restocked with more desirable fish in the future, improving the overall quality of fish in the area.

Is rotenone harmful to humans?

If used correctly rotenone does not pose human health hazards.

a. Can the chemical get into public drinking water systems?

No. The nearest public drinking water system downstream is 125 miles from the CSSC.

b. Is it safe to eat fish affected by rotenone?

USEPA recommends collecting and burying fish killed by rotenone. The label specifically prohibits the consumption of treated fish.

c. When will it be safe to eat fish from the river again?

As soon as the canal has been detoxified fish will be safe to eat. Rotenone detoxifies at a rapid rate. Potassium permanganate will also be added to the treated water to accelerate the detoxification process.

When will the Chicago Sanitary and Ship Canal (CSSC) be closed, and for how long?

The CSSC will be closed to all traffic beginning on December 2, 2009 (weather permitting) and will stay closed until the operation is completed. ✧

In the midst of all our crises, challenges and economic woes, we still live in the greatest country in the world.

Our prayer for each of us is to be filled with the peace surpasses all understanding and to also be filled with the strength of conviction of our faith and that it will motivate us to take charge of our world.

God bless America



*Happy
Thanksgiving*