Asian Carp Action Plan

A plan to assess the threat posed by Asian carp and actions needed to minimize their impact in Minnesota

Ad Hoc Asian Carp Task Force
11/2/2011

This plan lays out a step-wise approach to assess the threat posed by Asian carp and describes efforts to try and minimize their impact in Minnesota. It focuses on the Mississippi, St. Croix, and Minnesota Rivers and builds upon existing State and National Asian carp plans.

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This plan lays out a step-wise approach to assess the threat posed by Asian carp and describes efforts to try and minimize their impact in Minnesota. It was developed by an informal Task Force that includes state and federal agencies, local governments, NGO's, and other interests (see Appendix A for a list of participants and organizational statements of support). It builds upon national and regional plans and is consistent with the overall goals of the Asian Carp Regional Coordinating Committee.

Current technologies are not yet available to easily determine the abundance (number and size) of Asian carp, nor are there technologies that have proven 100% effective in stopping their upstream migration. Preventing them from entering Minnesota via the Mississippi River is nearly impossible. Locks and dams further downstream, with the exception of Lock and Dam #19 near Keokuk, IA, are operated such that the gates are pulled out of the water during flood events. Combine this with numerous potential sites where water overtops dikes and other structures, and the strong swimming ability and tendency for Asian carp to migrate, and we have few options to prevent them from entering Minnesota via the Mississippi River.

Accordingly, we must focus our attention on those actions we can take to slow their spread and minimize their impact. This plan focuses on those actions and is considered a working document that addresses immediate needs over the next few years and will be updated as needed to reflect new technologies and scientific advancements.

Plan elements include: 1) early detection and response; 2) prevention and deterrence; 3) mitigation and control; and 4) outreach and communication.

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1) Early Detection and response

Individual Asian carp (silvers [*Hypophthalmichthys molitrix]*, bigheads *Hypophthalmichthys nobilis]*, and grass [*Ctenopharyngodon idella**]***) have been caught occasionally by commercial fishermen along the Minnesota and Wisconsin border in the Mississippi and St. Croix Rivers since the early 1990's (See Appendix B for a list of past captures). While present, Asian carp are not known to be in this area in large numbers, and we have seen no evidence of natural reproduction. There are no known captures upstream of Lock and Dam #2 (near Hastings, MN); however environmental Deoxyribonucleic Acid (eDNA) sampling in July and September, 2011 has suggested the need for new urgency as 22 out of 50 water samples from the St Croix River near St. Croix Falls (50 miles upstream of the confluence with the Mississippi) and 14 of 49 samples downstream of Lock and Dam #1 (Ford Dam) tested positive for Silver carp. While detecting Silver carp DNA, these tests do not currently provide quantifiable estimates on carp abundance

or confirm their absence. Early detection is necessary to know if and when Asian Carp numbers increase or their range expands. A response plan is needed to identify specific actions should Asian carp be detected.

Detection is planned through an intensive program of ongoing fisheries surveys, monitoring commercial harvests, investigating public sightings, and sampling for Asian carp DNA (Actions 1.1-1.6). The objective is to determine if there is evidence of Asian carp and their abundance in key locations that are of concern. It is important to recognize that these techniques cannot yet provide population size estimates and there is need for further research in this area.

1.1 Continue annual fisheries monitoring programs in Pools 2-9. These surveys include annual electrofishing, gill netting, seining, trammel netting, and hoop netting completed by the Wisconsin and Minnesota Department's of Natural Resources (DNR's), United States Fish and Wildlife Service (USFWS), and the Long Term Resource Monitoring Program (see Appendix C for details on these programs). A standard protocol will be established for data collection, recording, and processing of collected Asian carp. This sampling is especially important because it is the only effort that may successfully capture juveniles (natural reproduction is an especially serious concern).

1.2 Monitor commercial fishing catch in Pools 2-9. Wisconsin, Minnesota, and Iowa DNR's continue to closely monitor commercial fishing effort and harvest. Commercial operators are required to report their catch monthly. In Minnesota and Iowa operators are required to notify the DNR if they capture any Asian carp, and are strongly encouraged to do so in Wisconsin.

1.3 Collate and update existing information on fisheries surveys, Asian carp captures, and prevention efforts within Upper Mississippi River states. Complete a report that compiles existing information from Iowa, Minnesota, Wisconsin, and Illinois on the location and movements of Asian carp, sampling programs, and efforts to minimize Asian carp impacts. Update report annually or as needed.

1.4 Request public to report potential sightings. Increasing awareness and requesting public assistance in reporting potential Asian carp sightings (i.e. jumping fish) could help identify Asian carp presence. A formal reporting process including points of contact, data recording, data storage, and validation is being developed.

1.5 Conduct environmental DNA (eDNA) testing. Asian carp DNA can be detected in water samples. This technology has been used successfully in the Illinois River to identify potential presence of Asian carp, and most recently was used in the Upper Mississippi and St. Croix

Rivers. Systematic sampling at locations where there is less standardized fisheries monitoring, and based upon previous eDNA results will improve Asian carp detection capabilities. Additional testing should be considered at the mouth of major tributaries to the Minnesota, Mississippi, and St. Croix Rivers. In addition, controlled studies are needed to better relate DNA detection results to abundance and distribution of live fish.

1.6 Targeted commercial fishing gear to capture Asian carp. Commercial fishermen on the MN or WI boundary waters of the Mississippi River have the knowledge and equipment needed to collect Asian carp. A contracting process is being established whereby qualified commercial operators can be deployed as directed by DNR staff to sample for Asian carp.

1.7 Support research that can quantify the abundance and population dynamics of Asian carp. Asian carp are difficult to capture using existing sampling methods, especially for providing quantifiable numbers. At present, eDNA is also unable to provide quantifiable estimates. Research exploring new techniques or methods, such as behavioral attractants to increase sampling efficiencies, are needed. In addition, research to better understand Asian carp population dynamics (recruitment, mortality, immigration/emigration) will help in the development of management control tools.

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2) Prevention and Deterrence

Prevention and deterrence includes permanent or temporary barriers and structures that prevent or slow the upstream movement of Asian carp. Mississippi River dams from Hastings to the Iowa border (Lock and Dam 2-9) are constructed and operated such that the gates are removed from the water during high flows, allowing Asian carp to pass. Exceptions are Upper St. Anthony Falls and Lock and Dam #1. These are high dams, and the only way fish can migrate past is through the lock chambers.

Alternative deterrent technologies could restrict or slow Asian carp, and in combination with permanent barriers and other removal techniques could help reduce impacts. These technologies are unproven in large river systems, and research is needed to test their effectiveness. Additionally, research on the threat posed by only a few adult carp is needed to adequately assess risk as it relates to the cost of deterrent barriers.

Opportunities may also exist to reduce or prevent passage of invasive fish species not currently found above Lock and Dam #19 near Keokuk, IA, such as Black carp. This dam is constructed and operated such that fish can pass only through the locks, and alternative technology barriers may be effective. Actions here will require working closely with downstream partners.

2.1 Complete feasibility study for a permanent fish barrier at Upper St. Anthony Falls and other potential locations. The feasibility study must evaluate alternatives and associated impacts. Technologies that allow navigation, but are 100% effective in preventing Asian carp from swimming through the barriers are preferred. A comprehensive evaluation of ecological, economic, recreational, commercial and other impacts of Asian carp spreading upstream must be part of the study.

2.2 Create back-up barrier at the Coon Rapids Dam. In 2011, the Minnesota Legislature and Governor approved repairing the Coon Rapids Dam as a fish barrier. While not 100% effective, the dam adds redundancy to Action 2.1 by creating additional protection.

2.3 Evaluate and if feasible install deterrent barriers (acoustic, bubble, light, etc) to slow Asian carp movement at strategic locations. Alternative technologies, while untested in large river systems, offer potential solutions to slow passage. Acoustic, sound, light, and electric barriers, as well as new technologies currently being developed (ie. hydroguns) could deter Asian carp. These technologies, alone or in combination, should be considered at key sites as follows: mouth of the St. Croix River at Prescott, WI; Lock chambers at Locks and dams #1, #2, #5, and #19. These locations can help slow movement into the Upper Mississippi River, Minnesota River, St. Croix River, and Lake Pepin, respectively. Barriers at Lock and Dam #19 could still prevent the spread of Black Carp and other potential invasive species into the Upper Mississippi. Other potential sites, such as near Mankato on the Minnesota River where flood control projects have confined the channel, and at the mouth of key tributaries, should also be considered.

2.4 Explore options to voluntarily limit lock usage. Voluntarily reducing the number of lockages, while long term solutions to prevent fish from moving through the locks are being developed, will reduce the chances of Asian Carp passing through the lock.

2.5 Support research on new technologies to selectively deter upstream movement of invasive fish. A comprehensive approach that includes testing multiple technologies at different scales (tributaries , main stem) may provide the best opportunity to develop the most effective and least costly systems over the long-term.

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3) Mitigation and Control

Mitigating and controlling populations of Asian carp is a critical element of this plan. Despite barriers and other technologies, there are pathways that may result in movement of Asian carp, including illegal or unintentional transport by bait dealers, anglers, and others. Developing new approaches and tools to control Asian carp populations and improving water quality and

habitat for native species so they can compete with Asian carp are important long-term strategies.

3.1 Support and accelerate research on behavioral and long term control methods. Research is ongoing regarding Asian carp physiological and behavioral controls, such as attractants, toxicants, and deterrents. Supporting this work through funding, permitting, evaluation and other measures necessary to complete studies and implement projects is needed.

3.2 Physically remove Asian carp. If warranted, utilize commercial fishing, intensive sampling by MN and WI DNR and USFWS, and other potential control methods to remove Asian carp.

3.3 Improve water quality and habitat so native species can better compete with Asian carp and other invasive species. A list of potential habitat and water quality projects and their anticipated benefits is provided in Appendix D.

3.4 Evaluate more restrictive harvest regulations for some species of commercial and sport fish. Restrictive harvest regulations may improve the size and age structure of some native fishes and increase predation on Asian carp, along with improving the health of commercial species that compete directly with Asian carp for food. A study evaluating the recreational, ecological, and economic impact of more restrictive harvest regulations should be completed.

4) Outreach and Communication

Communication between agencies and outreach to the general public, commercial and recreational users of the Mississippi River and other connected waters, media, legislators, and local officials is critical to the success of this action plan. An informed public will improve our chances for preventing or minimizing impacts of Asian carp. Outreach and communication actions focus on establishing primary contacts, web links, news releases, and media events.

4.1 Establish and maintain a contact list of agency staff for media access.

4.2 Link agency websites. The Asian Carp Regional Coordinating Committee and the National Asian Carp Task Force have excellent web sites that are updated frequently with information about Asian carp. Providing links to these websites will prevent duplication of effort and provide access to the best available information.

4.3 Provide regular news releases and conduct media events. These actions will bring attention to Asian carp issues and highlight the activities of the Task Force. MN DNR and National Park Service (Mississippi National River and Recreation Area and St. Croix National

Scenic Riverway) will take the lead on preparing and distributing these releases and scheduling media events.

4.4 Provide a network to distribute scientific literature on carp in the Upper Mississippi watershed. Sharing scientific research results will improve our understanding of Asian carp populations and control methods and improve our ability to implement the actions in this and future plans.

The following action was discussed; however there was no consensus agreement. Organization/agency perspectives are provided in Appendix E.

Emergency closure of Upper St. Anthony Falls and/or Lock and Dam #1. Upper St. Anthony Falls and Lock and Dam #1 (Ford Dam) are high-head dams that block fish passage except through the lock chamber. Current law does not allow the Corps to close the locks to navigation as a barrier to invasive species. Congress has only given the Corps authority to operate the locks and dams for the benefit of navigation. Such action would likely have ecological, social, and economic effects that have not been evaluated.

Actions

Action	Lead organization	Estimated cost	timeframe
Detection and Response			
1.1 – Continue annual fisheries monitoring	MN, WI DNR	Existing funding	ongoing
1.2 – Monitor commercial fishing	MN, WI DNR	Existing funding	ongoing
1.3 – Collate and update existing information	NPS	Existing funding	1st Report by 1/1/2012
1.4 – Request public to report sightings	MN DNR	Existing funding	ongoing
1.5 – Conduct eDNA testing	NPS, MN DNR, USFWS	$35,000/year	Annually
1.6 – Targeted commercial fishing	MN DNR	$6000/week	When triggered in response plan
1.7 – Support research on abundance and population dynamics	USGS, U of MN		ongoing
Prevention			
2.1 – Complete feasibility study for a permanent fish barrier at Upper St. Anthony Falls (requires specific Congressional study appropriation)	Corps, USFWS	Yet to be determined	Feasibility study completed 18 months after funds are appropriated
2.2 – Create backup barrier at Coon Rapids dam	MN DNR, Three Rivers Park District	$16 million – funded through bonding bill	2014
2.3 – Evaluate and if feasible install deterrent barriers	USGS, USFWS, MN DNR, U of M	$10 million	2013
2.4 - Explore options to voluntarily limit lock usage	Corps, navigation industry, local gov'ts	Existing funding	Ongoing
2.5 - Support research on new technologies to deter upstream movement	USGS, U of MN		Dependent upon funding
Mitigation and Control			
3.1 – Support and accelerate research on behavioral and long-term controls	USGS, U of MN		ongoing

3.2 – Physically remove Asian carp	MN, WI DNR, USFWS	$50,000/year	When triggered in response plan
3.3 – Improve water quality and habitat for native species	see Appendix D		
3.4 – Evaluate more restrictive harvest regulations	MN DNR	Existing funding	After feasibility analysis
Outreach and Communication			
4.1 – Establish and maintain contact list	NPS	Existing funding	Sept 2011
4.2 – Link to websites	Each partner organization on Task Force	Existing funding	January 2012
4.3 - News releases and media events	DNR, NPS	Existing funding	As needed
4.4 - Provide a network to distribute scientific literature	USGS, U of MN	Existing funding	As soon as possible

Appendix A – Informal Task Force participants providing input into the Action Plan.

Official agency or organizational statements of support are included.

Participants

- National Park Service (co-chair)
    - Mississippi National River and Recreation Area
    - St. Croix National Scenic Riverway
- Minnesota Department of Natural Resources (co-chair)
- US Fish and Wildlife Service
- US Geological Survey
- Minnesota Department of Transportation
- Wisconsin Department of Natural Resources
- City of Minneapolis
- City of St. Paul
- City of Hastings
- Prairie Island Indian Community
- Shakopee Mdewakanton Sioux Community
- Saint Paul Port Authority
- Three Rivers Park District

Technical Advisors

- University of Minnesota
- US Army Corps of Engineers, St. Paul District
- Mississippi River Fund
- St. Croix Valley Foundation

Observers

- Friends of the Mississippi
- Upper Mississippi River Waterways Association
- St. Croix River Association

Co-Chairs:

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Appendix B – history of Asian Carp captures, Twin Cities to Lock and Dam #9

Location	Species	Date	Number caught	Type of gear
St. Croix River	Bighead adult	10/17/1996	1	commercial
Lake Pepin – near Camp Lacupolis	Bighead adult	10/23/2003	1	commercial
Lake Pepin – near Frontenac	Bighead adult	10/3/2007	1	commercial
Miss River Pool 8 – gravel pit - WI	Bighead adult	11/1/2008	3	commercial
Miss River Pool 8 – Running Slough	Silver adult	11/1/2008	1	commercial
Miss River Pool 5a – Polander Lake	Bighead adult	1/1/2009	1	commercial
Miss River Pool 9 – Ferryville (WI/IA)	Bighead adult	1/30/2009	1	commercial
Miss River Pool 8 – WI side	Silver adult	3/10/2009	1	commercial
Miss River Pool 9 – Winneshiek Slough (WI/IA)	Silver adult	2/14/2011	1	commercial
St. Croix River - near Prescott	Bighead adult	4/18/2011	1	commercial

Appendix C – ongoing fisheries monitoring programs

Long Term Resource Monitoring Program (LTRMP)

The LTRMP is part of the federal Environmental Management Program which is administered by the US Geological Survey with oversight from the Corps of Engineers. Funding is passed to field offices in the upper river states, including Wisconsin and Minnesota, to conduct long term resource monitoring. Field stations are located in LaCrosse, WI with a focus on Pool 8, and in Lake City, MN with a focus on Pool 4. Fisheries surveys include:

- 3 sampling periods from June-October using the following gears in Pool 4 and Pool 8:
    - Baited hoop nets (large and small)
    - Fyke nets
    - Mini-fyke nets
    - Electrofishing
    - Trawling (tailwaters only)

Minnesota Department of Natural Resources

Monitoring is completed annually on the Mississippi River from Pool 2 to the Iowa border, and on the St. Croix River. Field office in St. Paul conducts surveys in Pool 2 and the St. Croix River, and the field office in Lake City conducts surveys from Pool 3-9 (Hastings to the Iowa border).

Annual effort by program is as follows:

<u>Lake Pepin Large Lake Program:</u>

- Seining – July
- Trawling – August
- Adult fish shoreline electrofishing – September
- Gill netting – October
- Juvenile fish shoreline electrofishing – October

<u>Major River Survey Program:</u>

- Pool 3-9, excluding Pool 4 and Pool 8
- Backwater seining – July
- Backwater and side channel electrofishing – October

<u>Metro Area – St. Croix River and Mississippi River</u>

- Main channel and backwater electrofishing – spring – fall
- Gill netting – Lake St. Croix
- Trap netting – Lake St. Croix
- Hoop netting

Wisconsin Department of Natural Resources

Following gears are used in various pools and locations throughout the open water season:

- Fyke netting
- Hoop netting
- Electrofishing
- Trammel netting

United States Fish and Wildlife Service

Conducts annual fish collections by electrofishing in Pools 3, 4, and 7 for the National Fish Health Survey. In addition, fyke and hoop netting is conducted in Pool 9 backwaters and the main channel during the spring.

Appendix D – Water quality and habitat improvement projects

Improving water quality and habitat will benefit native species and increase their ability to compete with Asian carp. For example, in Mississippi River pools with good water quality and healthy aquatic vegetation, common carp comprise less of the fish community than in other pools with poor water quality and little or no aquatic vegetation. Locations on the Illinois and Mississippi River where Asian carp are currently abundant are generally those with turbid water, little or no aquatic vegetation, and poor overall habitat.

Habitat restoration has been successful on Mississippi River pools downstream of Lake Pepin. Island construction projects and dredging have rebuilt the physical structure that has been lost due to wave erosion and sedimentation and increased depth for native fish. Water level management, especially summer water level drawdowns, have reestablished aquatic vegetation for emergent species like arrowhead and provided critical habitat for fish and wildlife.

Water quality improvements through Total Maximum Daily Load (TMDL) implementation plans could improve water clarity and result in increases in aquatic vegetation.

Island construction and water level management projects have been proposed on the Mississippi River from the Twin Cities to Lake Pepin in upper Pool 4, but have not been funded. Funding for projects further downstream has come primarily through the Environmental Management Program (EMP), managed by the Corps of Engineers. This program provides 100% federal funding for projects on federal land, but requires a non-federal cost share on non-federal lands. Most of the Mississippi River and floodplain from the Twin Cities to Lake Pepin is on state, tribal, or private land. EMP is authorized for $33 million annually, but typically receives appropriations of $16-$20 million. Funding EMP at the authorized level would provide additional resources that could be targeted to this reach.

Projects that have been discussed for the Mississippi River from the Twin Cities to Lake Pepin include:

- Construct islands in Spring Lake and Lower Pool 2 (near Hastings)
    - Estimated cost $8 million
- Construct islands in North and Sturgeon Lakes in Pool 3 (upstream of Red Wing)
    - Estimated cost $8 million
- Water level drawdowns in Pool 2 and Pool 3
    - Estimated cost $2 million

Appendix E – Perspectives on emergency closure of Upper St. Anthony Falls and/or Lock and Dam #1

MN Department of Natural Resources: Lock and Dam #1 (Ford Dam) and Upper St. Anthony Falls are the only locations on the commercially navigable portion of the Upper Mississippi River in Minnesota where it is possible to establish 100% effective barriers to fish passage. Other locks and dams are managed such that the gates are pulled out of the water during high flows, allowing fish to pass. Deterrent barriers (bubble/sound) at lock chambers and other sites can help slow passage and we support their use; however, they will not eliminate the migration of Asian carp upstream. Authority for the Corps of Engineers to close these locks under emergency conditions if Asian carp are detected close by is needed immediately. In addition, a feasibility study that addresses the economic, recreational, legal, ecological, and operational impacts of an emergency and permanent lock closure at Upper St. Anthony Falls, and how those impacts can be mitigated, should be completed. Until a feasibility study is completed and a 100% effective barrier is installed, however, the locks should be closed if there is an imminent threat from Asian carp. This is the best option currently available for protecting aquatic resources and the recreational and tourism industries of central and northern Minnesota."

City of Minneapolis: "From the City of Minneapolis: At the April 1, 2011 Minneapolis City Council Meeting passage of the following motions were taken:

1) Request to State and Federal Governments and Amendments to Minneapolis' State and Federal Legislative Agendas:

The Minneapolis City Council urges the U.S. Congress to direct and allocate necessary funding to the appropriate federal agencies, and Minnesota Governor Dayton to direct the Department of Natural Resources, to make absolutely every effort to protect the upper Mississippi River at and downstream of Minneapolis from the spread of Asian carp species. And further, that the City's state and federal agendas be amended to include such direction.

Specifically, the City Council request that appropriate federal and state agencies take immediate action to:

Implement an ongoing monitoring and detection program to determine the extent of Asian carp breeding populations within the Mississippi, St. Croix, and Minnesota Rivers.

Prevent movements of Asian carp populations into the upper Mississippi River by implementing strategies outlined in the Minnesota and National Plans to control Asian carp species and to develop additional effective behavioral or other methods to stop the spread of Asian carps.

-and-

2) The City Council requests that the State of Minnesota establish an Asian Carps Task Force for the Mississippi River and its watershed and with the U.S. Fish and Wildlife Service formalize a plan

for mitigating the impacts of potential Asian carp infestation of the Mississippi River in Minnesota."

No specific City Council directive has been given regarding the potential closure of Lock and Dam #1 and the Upper St. Anthony Falls prior to the September 1, 2011 deadline of this Action Plan. It is suggested and encouraged that further study on this matter continue and that specific City Council directives with regards to Lock and Dam #1 and the Upper St. Anthony Falls could be secured at a later date.

USACE, St. Paul District Position Statement – Closure of L&D 1 or USAF L&D for control of Invasive Species

The Corps does not currently have the discretion to close the UMRS locks to control invasive species. The laws under which the Corps operates provide authorization and appropriations to maintain and operate the locks. Current law does not allow the Corps to close the locks to navigation as a barrier to invasive species. To date Congress has only given the Corps authority to operate the locks and dams for the benefit of navigation. The Corps may only close the locks to prevent the migration of invasive species if Congress gives authorization to do so. Further, the regulations only provide for temporary closure to facilitate construction or performance of other work in the waterway. The regulation requires that any such closure be genuinely "temporary," i.e. the closure must be of limited duration at a time when it will least interfere with navigation. 33 C.F.R. § 209.180. Therefore the Corps can not recommend an action without the authority and the required assessment/study that allows full compliance with other existing laws such as NEPA.

The Corps will continue within the limits of our authorities to exercise any discretion we have to the fullest extent in working with other agencies to inhibit the migration of Asian Carp.
