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The Great Lakes Environmental Law Center

Protecting the world's greatest freshwater resource and the communities that depend upon it

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In response to the significant threat that Asian carp pose to the Great Lakes, the federal government has commissioned the United States Army Corp of Engineers (USACE) to conduct the Great Lakes Mississippi River Interbasin Study (GLMRIS). The GLMRIS seeks to identify the possible pathways by which aquatic invasive species enter into and move between the Great Lakes and Mississippi River basins. There are two separate parts to the study, one focusing on the Chicago Sanitary and Shipping Canal, and the other focusing on the many different potential pathways for invasive species. The catalyst for the study is the threat of Asian carp, but GLMRIS covers all possible vectors for aquatic nuisance species (ANS) and the regulatory schemes in place to combat their spread. GLMRIS is currently open for public comment during the scoping process required under the National Environmental Policy Act. The Great Lakes Environmental Law Center (GLELC) hereby submits the following comments on the GLMRIS NEPA scoping process. The GLELC is very concerned with the current regulations regarding ANS and their inability to stop Asian carp from establishing reproducing populations in the Great Lakes. We are also concerned that the USACE has limited the standard of action under the GLMRIS to "risk reduction." Congress required the USACE to "prevent" the spread Asian carp, requiring a 100% effective solution. We recognize that short term control measures must be maintained while a permanent solution is developed, but management methods such as electric barriers, poison, and

electro fishing are risk reduction methods that do not fully address the problem. To ensure that the transfer of ANS between the basins does not continue, the natural physical separation between the Great Lakes and Mississippi River basins must be restored. Along with this physical, hydrological separation, other regulations are necessary stop the introduction of ANS into either basin. As discussed below, further regulation of ballast water, aquaculture, aquarium and ornamental fish are necessary to protect the Great Lakes and Mississippi River basins.

Invasive Species Generally

The introduction and spread of invasive species has impacted both the environment and economies of every region in the country. Invasive species have had devastating effects on the environment. Forty nine percent of the species on the endangered species list in the United States are listed because of competition from invasive species.[1] More specifically, ANS have had an incredibly detrimental effect on the health of the Great Lakes. The estimated cost of ANS on the Great Lakes region was $5-billion in 2005.[2] The economic losses are generated from observed impacts to commercial and recreational fishing, cleanup costs, and losses in recreational boating industries. Often ANS have no natural predators and reproduce rapidly putting a great burden on the natural species in the Great Lakes, resulting in native species reduction or extinction and decreased biodiversity. For example, in the mid twentieth century an invasion by sea lamprey led to the collapse of native fish populations in the Great Lakes.[3] Zebra and Quagga mussels have filtered the Great Lakes to the extent that algae growth is now possible at deeper waters, which creates environmental as well as aesthetic and odor problems[4].

[1] Daniel Simberloff, *Introduced Species: The Threat to Biodiversity & What Can be Done*, http://www.actionbioscience.org/biodiversity/simberloff.html (last visited march 10, 2011).
[2] Lake Superior Work Group, *Lake Superior Aquatic Invasive Species Complete Prevention Plan,* 19 (2010).
[3] Id at 7.
[4] *See* Lake Superior Work Group, supra at 6.

Asian Carp and the Necessity of Physical Separation of the Great Lakes and Mississippi River Basins

Asian carp were the impetus for the GLMRIS and are currently considered one of the greatest threats to the Great Lakes. They are voracious eaters that can grow up to 110 pounds and eat up to 40% of their body weight daily.[5] Because Asian carp eat plankton and other small sources of food they are in direct competition with native species on the lower end of the food chain. Native fish populations have collapsed in waters where Asian carp are present, which demonstrates the significant threat to the multibillion dollar Great Lakes fishery. Asian carp have had such a catastrophic effect on the Mississippi River that in certain areas they comprise 95% of the biomass.[6] The annual catch in the Mississippi River has seen huge increases in the number of Asian carp and large decreases in game fish.[7] The carp population, combined with the lack of a strong commercial market for Asian carp, has decimated Mississippi River fisheries. If Asian carp establish a reproducing population in the Great Lakes they would likely have similar impacts and pose a serious economic and ecological threat. Asian carp threaten the $7-billion fisheries and the $16-billion recreational boating industries on the Great Lakes.[8] The current Asian carp management actions may be somewhat effective in the short term, but they are not sustainable. The electric barriers are functioning, but carp have been found beyond the barriers. Environmental DNA evidence has shown that Asian carp may already be beyond the electronic barriers.[9] However, there are multiple scenarios by which the electric barriers could fail and then

[5] U.S Fish and Wildlife Services, *Asian Carp- Aquatic Invasive Species Issues, Program Accomplishments, and Program Needs*, available at www.asiancarp.org/Documents/AsianCarp.pdf (factsheet giving basic information on Asian Carp and updating actions taken by US Fish and Wildlife Service).
[6] AsianCarp.Org, *Asian Carp Control*, http://www.asiancarp.org/background.asp (last visited March 19, 2011).
[7] Comment, *Defending the Homeland: A Call to Action in the War Against Aquatic Invasive Species*, 21, Tul.Envtl.L.J., 412 (2008).
[8] Steve Prado, *Stabenow Urges Passage of Bill to Halt Asian Carp,* Detroit News, March 6, 2011, available at http://www.detnews.com/article/20110306/METRO/103060329/Stabenow-urges-passage-of-bill-to-halt-Asian-carp.
[9] Michigan v. United States Army Corps of Eng'rs, No. 10-CV-04457, 2010 U.S. Dist. LEXIS 85821, at 4991.

Asian carp would have a direct pathway to the Great Lakes. The barriers could fail from human error, catastrophic power loss, or natural disasters. There is also evidence that the electric barriers are not effective on fish less than five inches in length.[10] Electro fishing can reduce the number of Asian carp, but there is no way that it can completely eliminate the population. Commercial netting and other fishing options are similarly limited. Poisoning can also reduce the number of Asian carp, but it will not completely eliminate the species. Continued poisoning would also require that regulatory limits on chemical releases under the Clean Water Act (CWA) and applicable state laws to be altered.[11] Though lifting these pollution limits might be acceptable on an emergency basis, poisoning cannot be sustained over an extended period without adverse effects on native species and water quality. The current Asian carp management options all share one common thread in that though they may be useful in the short term, but they are not permanent solutions to the problem. The only feasible and permanent solution is 100% physical separation between the Great Lakes and Mississippi River Basins.

Hydrological and Physical separation will require significant political backing and federal financial support. The project would also require cooperation between state and federal agencies and local stakeholders. A comprehensive plan from USACE on physical separation would help create a barrier that effectively stops ANS and has the least impact on local stakeholders. There are multiple sites in the Chicago Water System (CWS) for a physical barrier that will allow for 100% physical separation. The CWS serves as a shipping canal and controls the water and sewage levels and any change to the system will have an impact on these purposes. There are five major factors when deciding where to place the barrier: the level of commercial shipping, recreation boating, sewage overflows, flooding and water level concerns, and the pollution

[10] Andrew Stern, *Great Lakes Barrier may be too Weak to Stop Asian Carp*, Reuters, March 25, 2011, http://www.reuters.com/article/2011/03/25/us-greatlakes-carp-idUSTRE72O7D420110325?feedType=RSS.

[11] Joel Brammeier et al., Preliminary Feasibility of Ecological Separation of the Mississippi River and the Great Lakes to Prevent the Transfer of Aquatic Invasive Species, http://www.greatlakes.org/Document.Doc?id=473.

increase for possible alternative means of shipping. Though there are raw numbers on how many commercial vessels go through locks at certain points of the CWS, their cargo and ultimate destinations have been withheld as confidential corporate information[12]. A logistics study is necessary to assess the full impacts on the cargo and destination of commercial and recreational traffic on the CWS.

Next, the study should address how the barrier would alter the flow of water within the CWS. Change in the flow of water could have a significant impact on the water levels and sewage treatment within the CWS.[13] On rare occasions water levels and flooding conditions necessitate large releases of water into Lake Michigan and down the Mississippi River. The Chicago sewage system is a combined sewage system which leads to untreated sewage discharges when the system is overburdened. Depending on the flow of water and the placement of the physical barrier, it may no longer be possible to release large amounts of untreated water down the canal to the Mississippi River, which could cause local flooding or sewage releases into Lake Michigan.[14] GLMRIS should address whether to place the barrier where this system can continue to function as is, or to modernize the Chicago sewer system along with the building of the barrier.

The creation of a physical barrier will not eliminate commercial or recreational traffic on the CWS. Lifts for both recreational boats and commercial barges are in use elsewhere under similar circumstances. Lifts for recreational boats operate quickly, but a sanitation process will have to be developed to prevent ANS transfer. There are commercially viable lifts for barges that weigh up to 1,000 tons.[15] The capacity of lifts far exceeds the weight limit of barges that travel through the CWS.[16] Further study is needed to determine whether an effective and time efficient

[12] Id at 52 & 53-54.
[13] Id at 86.
[14] Id at 88.
[15] Brammeier, supra at 76.
[16] Id at 76.

sanitation system can be put in place that both protects the environment and does not overly burden those using the lifts.

Other Vectors for Aquatic Invasive Species

Physical separation of the Great Lakes and Mississippi River is the most effective way to prevent Asian carp from entering the Great Lakes. But there are many other vectors by which ANS invade the Great Lakes and Mississippi River basins. The most common vectors for ANS introduction are ballast water, aquaculture, and aquarium releases. There are regulations in place for all three vectors, but improvements are necessary. Ballast water is the leading cause of the introduction and transfer of ANS in the Great Lakes.[17] The round goby, zebra mussel, quagga mussel, and spiny water flea were all introduced to the Great Lakes from ballast water discharges.[18] These invasive species are responsible annually for billions of dollars in damage. The zebra mussel alone cost the Great Lakes states $500 million in 2005.[19] Federal ballast water regulation has been largely ineffective. Historically the EPA has failed to regulate ballast water under the CWA. The EPA has recently released a draft rule that requires ships to obtain a discharge permit under the CWA. The rule requires ships that carry over 300 tons of cargo to obtain individual permits for the release of ballast water.[20] These permits do not require vessels to install ballast water treatment systems and commercial shippers are allowed to continue the practice of ballast water exchange as a means of ANS control. The proposed permit would also rely on self inspection for enforcement purposes.

In addition to the proposed ballast water discharge rule, regulations exist under the Indigenous Aquatic Nuisance Prevention and Control Act of 1990 (NANPCA), and the National

[17] Lake Superior Work Group, supra at 13.
[18] Id at 5.
[19] Id at 9.
[20] Martenlaw.com, *EPA General Permit for Ballast Water Goes into Effect*, February 27, 2009, http://www.martenlaw.com/newsletter/20090227-ballast-water-discharges.

Invasive Species Act (NISA).[21] These regulations have failed to set effective ballast water standards or to force the installation of ballast water treatment systems on ships. Similar to the EPA's draft rule, NANPCA and NISA have relied on ballast water exchange. Ballast water exchange does not ensure that all organisms are removed from ballast tanks and many organisms can survive the salinity levels. Also, current regulation allows for a number of exceptions to the ballast transfer requirement.

Recognizing that the federal government has not effectively regulated ballast water, states have created their own standards. The most important legislation has been passed in New York. Because of New York's location on the St. Lawrence Seaway, all ships entering the Great Lakes must meet the New York standard. The New York standard is very stringent, yet economically feasible, forcing ships to install treatment systems which reduce the threat of ANS in ballast water to almost zero.[22] GLMRIS should recommend that a federal standard be adopted similar to the New York standard. GLMRIS should also study the feasibility of ballast water treatment standards for domestic ships and Lakers. While domestic ships do not necessarily import ANS into the Great Lakes, they transfer ANS throughout the system[23].

Another vector for ANS is aquaculture, which the National Aquaculture Act defines as "the propagation and rearing of aquatic species such as fish, mollusks, and aquatic plants in controlled or selected environments."[24] Similar to ballast water, the regulatory structure in place for aquaculture is fragmented at the state level and subject to patchwork federal legislation. Federal regulation largely protects against waste released from aquaculture operations, and does little to address ANS. The Lacey Act prohibits importation and movement across state lines of

[21] Liwen A. Mah, *Sailing by Looking in the Rearview Mirror: EPA's Unreasonable Deferral of Ballast Water Regulation to now Ineffective Coast Guard*, 31, Ecg.L.Q, 665, (2004).
[22] Mark Heller, *State's Ballast Law Fought by Canada*, Watertown Daily Times, Oct. 15, 2010, available at http://www.watertowndailytimes.com/article/20101015/NEWS02/310159940/-1/news.
[23] Lake Superior Work Group, supra at 23.
[24] National Aquaculture Act of 1980 §3, 16 U.S.C. 2801 (1980).

species placed on the banned list.[25] The banned lists are a reactionary tool and do not protect against ANS introduction. Also, the Lacey Act does not prevent the continued proliferation of species within a state once they are introduced.[26] NISA concentrates on ballast water and has been ineffective in regulating aquaculture.[27] The CWA requires aquaculture farms to obtain a NPDES permit, but discharge permits are not designed to stop ANS.[28] Without strong federal regulation ANS introductions from aquaculture will continue. Even if some states pass strong regulations, they are not really protected, because once a species is released into a large system like the Great Lakes, the ANS will eventually spread across state lines.

The ineffectiveness of current regulation could be alleviated by a coherent national aquaculture policy. Federal regulations could mirror national policies already in place in other countries, such as New Zealand's Hazardous Substance and New Species Act.[29] The New Zealand act puts oversight of new species introduction under one regulator.[30] All new species are considered potentially harmful and are only permitted once it is determined that they will not be harmful to the environment[31]. Another example is Canada's National Code on Introductions and Transfers of Aquatic Organisms.[32] The Canadian code requires an application to the Introductions and Transfers Committee prior to the introduction of a new species. Applications are reviewed by the committee and either approved as low risk or sent for further study as high risk. For high risk species, the study concentrates on whether there are technologies available to mitigate the risk and then makes its recommendation accordingly. GLMRIS should investigate whether a similar federal program is appropriate for the United States.

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[25] Rosamond L. Naylor, *Aquaculture- A Gateway for Invasive Species*, 294 Science, 1655, 1657 (2001)(aquaculture as a vector for ANS and the problems with current regulation).
[26] Id at 1657.
[27] Id at 1657.
[28] Mah, 31 Ecg.L.Q, at 669.
[29] Naylor, supra at 1657.
[30] Id at 1658.
[31] Id at 1658.
[32] Food and Agriculture Organization of the United Nations, National Aquaculture Legislation Overview, www.fao.org/fishery/legalframework/nalo_canada/en.

Another vector for ANS is the aquarium and ornamental fish trade. The aquarium industry is a $25-billion a year business, with the United States being one of the largest importers.[33] Aquarium releases have become a top five vector for aquatic invasive species, but largely lack regulation or enforcement.[34] ANS are often introduced by individuals who dump their aquarium water into surface waters or into storm drains. The release of these species can be an even greater threat than those introduced by ballast water because the animals or plants are typically fully grown. At this stage in development ANS are less prone to predators and environmental hazards.[35]

Two proposed solutions to aquarium and ornamental fish ANS introductions are either blacklisting or a market based approach. Blacklisting, to date, has had little success. Enforcement is costly and blacklisting species has faced substantial opposition from the aquarium industry. Further, since the aquarium industry is now primarily an online concern, consumers are easily able to obtain ANS even where regulations are in place.[36] A better solution may be market based. This solution would allow the aquarium industry to trade in potential ANS, but forces them to post a bond equal to the projected cost of an outbreak.[37] The market solution would also necessitate a partial blacklist of those species which could not be removed from water in the event of an outbreak. The market system places the risk on the market participants and reduces the burden on government.

Global Warming Impacts

Another major concern is the effect of global warming on ecosystems and the possible proliferation of ANS. Climate models suggest that global warming will lead to a greater threat of

[33] Dianna K. Padilla & Susan L. Williams, *Beyond Ballast Water: Aquarium and Ornamental Trades as Sources of Invasive Species in Aquatic Ecosystems*, 2, Frontiers in Ecology and Environment. 131. 132 (2004) (aquarium trade as a vector for ANS and possible solutions).
[34] Id at 132.
[35] Id at 137.
[36] Id at 136.
[37] Id at 137.

ANS in the Great Lakes form increased water temperatures.[38] Increased flooding events could lead to new pathways for ANS to invade the Great Lakes.[39] Further study on the implications of global warming and ANS is needed.

Canadian Perspective

The fate of the Great Lakes is of concern to the both the United States and Canada. Canada shares in the $5 billion annual costs to the Great Lakes from ANS.[40] United States ANS policy and regulation, or the lack thereof, directly impacts Canada. Though the USACE obviously has no jurisdiction over Canadian waters, it must be recognized that the actions of both the United States and Canada have profound impacts on both sides of the border. Forty percent of the Great Lakes shoreline and thirty six percent of Great Lakes waters are Canadian.[41] History has shown that the release of ANS on either side of the border will eventually invade the whole ecosystem. Throughout the GLMRIS process so far, Canadian citizens have not been afforded the opportunity to voice their concerns. The Canadian government has requested a public hearing under section 310(a) of the CWA regarding international pollution threats.[42] Their request has been ignored. GLMRIS should honor this request and allow Canadians to voice their concerns to further inform the study.

Conclusion

GLMRIS is a step in the right direction. However, the USACE has incorrectly reduced the standard of action from prevention to risk reduction. First, GLMRIS must succeed in stopping the invasion of Asian carp from the Mississippi River basin to the Great Lakes basin as soon as possible. Waiting for decisive action on Asian carp until the end of the study period is

[38] Lake Superior Work Group, *supra* at 11.
[39] Id at 11.
[40] Lake Superior Work Group, *supra* at 19.
[41] Great Lakes United Et Al, *GLMRIS Sign On Letter,* March 15, 2011, http://www.glu.org/en/en/information_centre/glmris-sign-letter-2011.
[42] Id.

unacceptable. The Asian carp crisis requires a combination of short term and long term solutions. Interim measures, such as the continued operation of the electrical barriers, are necessary but they are only a temporary stop gap until the physical barrier separating the Great Lakes and Mississippi River basins is operational. GLMRIS should also identify comprehensive regulations to stop the introduction of ANS from ballast water, aquaculture, and the aquarium industry. All regulations must be bolstered by programs to increase public awareness as to the consequences of ANS and information as to how the public can help eliminate the introduction and transfer of aquatic invasive species.

Thank you for the opportunity to comment and for considering our views.

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