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Subcommittee on Water and Power
Oversight Hearing on Federal Response to the Discovery of Asian Carp in Lake Calumet
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Chairwoman Stabenow and Members of the Subcommittee, my name is Leon Carl, and I am the Regional Executive of the U.S. Geological Survey (USGS) Midwest Area. Thank you for the opportunity to testify about efforts in support of the Federal Asian Carp Control Strategy Framework (Framework) to prevent the establishment of Asian carp in the Great Lakes. I am accompanied by Charles Wooley, Region 3 Deputy Regional Director of the U.S. Fish and Wildlife Service (FWS).

The USGS, a bureau of the Department of the Interior, conducts research to understand the interrelationships among ecological and biological systems, Earth processes, and human activities. Our role is to provide biological and hydrological scientific expertise and new research to assist in the management and control of Asian carp and to support activities under the auspices of the multi-agency Asian Carp Regional Coordinating Committee (RCC). I will discuss the USGS role in more detail later in my testimony.

On June 22, 2010, a bighead carp was caught in Lake Calumet during a strategic sampling effort coordinated by the RCC under the Framework. The spread of Asian carp into the Great Lakes poses a very serious ecological and economic threat to that ecosystem. The RCC is committed to strategically utilizing all available resources and knowledge to prevent Asian carp from becoming established in the Great Lakes.

In light of this recent finding, my testimony today will provide information on the RCC collaboration and the Framework. I will also highlight the RCC response to the capture of an invasive Asian carp in Lake Calumet as well as important progress made by the USGS, the FWS, and other RCC agencies on Asian carp research and control projects under the Framework since the February 2010 Senate Energy Subcommittee on Water and Power hearing on Asian carp.

Framework Background and Strategy

At this point I would like to speak to the Federal Asian Carp Control Strategy Framework. One of the major strengths of the Framework is the collaboration behind it. This collaboration builds upon the broader partnership of the Great Lakes Restoration Initiative (GLRI). The GLRI Action Plan incorporates the recommendations of hundreds of Great Lakes stakeholders. It targets the most significant environmental problems in the Great Lakes, including invasive species. It is because of this coordinated multi-agency effort and the funding to support it that the RCC was able to act immediately when the Asian carp threat to the Great Lakes became increasingly evident.

Federal, State, and local agencies, working together as the RCC, developed the Framework to outline the actions that are being implemented to prevent Asian carp from becoming established in the Great Lakes. The agencies are united in this singular goal and the Framework establishes this as the official policy of the participating agencies. The Framework is a multi-tiered, multi-dimensional strategy that provides a strong defense against invasive Asian carp and includes both short and long-term strategies to stop the movement of Asian carp into the Great Lakes. No single line of defense (structural, chemical, biological, etc.) is adequate to keep Asian carps from becoming established in the Great Lakes; therefore the Framework strategy supports a comprehensive array of projects to more effectively address this critical issue. Funded in FY 2010 through the GLRI and through Agency base programs, the Framework is a dynamic document, reflecting an ever-increasing body of knowledge gathered from ongoing research and monitoring. The flexibility of the Framework enables us to be adaptive so that we can build on what we learn and adjust the strategy accordingly. For example, comments and suggestions from Federal and State partners, other organizations and groups, and the public were incorporated into a revised Framework released in May 2010. The revised Framework updates milestones on previous projects and adds several new research projects to address identified science and information gaps.

Current participants in the Framework include the City of Chicago, Great Lakes Fishery Commission, Illinois Department of Natural Resources, Metropolitan Water Reclamation District of Greater Chicago, the University of Notre Dame, U.S. Army Corps of Engineers, U.S. Coast Guard, U.S. Environmental Protection Agency, FWS, USGS, and the White House Council on Environmental Quality. To better coordinate the activities of the RCC and the Framework projects and to be as effective as possible, the RCC formed three workgroups that were tasked to address specific Asian carp control issues—Monitoring and Rapid Response, Invasion Prevention, and Communication and Outreach. As a member of the RCC, I would like to personally state that the partners involved in this collaboration realize the seriousness of the Asian carp threat and are committed to preventing them from becoming established in the Great Lakes through the implementation of the Framework and other appropriate actions.

Current Issues

The recent capture of a single bighead carp in Lake Calumet has understandably caused great concern in the Great Lakes region. The RCC and other stakeholders recognize the urgency of this situation and, based on the Framework, are taking steps to address it. It is prudent that we continue on a carefully planned path that, based on foundational knowledge of all of the agencies and stakeholders, will guide and direct our actions and ultimately help us to achieve our goal of preventing Asian carp from becoming established in the Great Lakes. It is important to note that the finding of a single Asian carp in Lake Calumet does not indicate an imminent threat of establishment of a sustainable population either in the Chicago Area Waterway System (CAWS) or Lake Michigan.

The bighead carp found in the northwest corner of Lake Calumet was 34.6 inches long and weighed 19.6 pounds. It was caught by a commercial fisherman contracted to conduct more intensive Asian carp sampling efforts in the area. It represents the first Asian carp physically collected above the aquatic invasive species electric barrier dispersal system, although DNA

from both bighead and silver carps has been collected above the barriers. The RCC agencies are enacting immediate measures to capture and remove any possible additional Asian carp through ongoing sampling efforts. Commercial fishing nets and electrofishing gear will continue to be used in Lake Calumet and additional resources will be deployed to begin sampling up the Calumet River leading to Lake Michigan. Electrofishing and sampling efforts in Lake Calumet and the Calumet River will continue throughout the next several weeks. The sampling effort is an identified component within the Framework, and is recognized as an important tool for monitoring for Asian carp within the CAWS and surrounding waters.

In addition, the RCC is considering other possible vectors for Asian carp introduction into the Great Lakes, including the movement of fish through inhabited waters such as the Wabash River in Indiana to waters connecting directly to the Great Lakes, such as the Maumee River watershed in Ohio, particularly during high-water or flood events. Over the past six years, localized flooding has been high enough to connect the watersheds on four occaisions. The CAWS is only one potential Asian carp entry point to the Great Lakes. Hydraulic connections between the Great Lakes and Mississippi River Basins could also provide access points for carp eggs, larvae, juvenile fish and adults. The Great Lakes and Mississippi River Interbasin Study, a feasibility study being undertaken by the U.S. Army Corps of Engineers in collaboration with other Federal, State, and local agencies, as well as nongovernmental entities is examining this issue.

Progress on Framework Efforts

As requested, I will now provide key highlights on the progress of Framework actions since the February 2010 Senate subcommittee hearing. I will include some broader RCC and FWS updates, as well as a more detailed description of the USGS Asian carp control research efforts.

As part of the multi-agency effort, a second rotenone application took place the week of May 17, 2010 (the first was in December 2009). It was very well-coordinated with numerous agencies and stakeholders contributing to the effort. The FWS contributed significant resources toward this activity. A media event was also organized in conjunction with the rotenone application activity and was well attended by media and other stakeholders.

Extensive fish sampling of five sites in the CAWS began in June 2010 which resulted in the capture of the bighead carp in Lake Calumet. Sampling will continue for 3 more weeks and scientists will determine if using rotenone may be used as a viable sampling tool for Asian carp in this area. Electrofishing and commercial fishing will be expanded between Lake Calumet and Lake Michigan. Environmental DNA (eDNA) processing and sampling is continuing.

The FWS, as part of the Monitoring and Rapid Response Work Group of the RCC, helped produce a draft “Plan for Monitoring and Rapid Response Plan for Asian Carp in the Upper Illinois River and Chicago Area Waterway System” (Plan), which incorporates many of the short and long-term sampling actions identified in the Framework. The Plan uses an adaptive management approach, building upon the growing body of knowledge on Asian carp detection, monitoring, behavior, and ecology.

From February through June 2010, FWS staff from Wisconsin, Illinois, and Missouri led and assisted partner agencies with netting and electrofishing efforts in the CAWS. This included sampling warm water discharges and other effluent locations, areas which may attract Asian carp based on nutrient and thermal availability; sampling routine fixed sites and reach wide monitoring as prescribed by the Plan; intensive sampling in localized areas in response to positive eDNA results; and intensive localized sampling in response to the finding of the bighead carp in Lake Calumet.

USGS Asian Carp Control Science and Support

The USGS has a number of Asian carp control research projects in the Framework with funding of over $3 million. Our strategy for this research is to employ the same integrated, comprehensive, and systematic approach that the USGS uses for all of its invasive species research. We are working on development of species specific chemical controls and investigating the best methodologies to deliver those chemicals into invasive species such as Asian carp. As a result of our extensive experience in Asian carp biology, we are able to look at whether the Asian carp could maintain a population in the Great Lakes based on their feeding habits, their preferred spawning habitats, and other aspects of their life history. Our expertise in water resources research enables us to examine the potential for inter-basin transfer of Asian carp into the Great Lakes through, for example, overland flow during flood events. In addition, we provided support for the RCC rotenone applications by conducting dye studies that helped determine water flow and where the rotenone should be applied. We are also conducting experiments on Asian carp eradication and herding strategies using seismic technology. I will now describe specific progress on some of these projects.

USGS Science Progress

Feasibility Assessment of Inter-Basin transfer of AIS (Long-term Action 2.2.7)-- The USGS Illinois Water Science Center completed geophysical surveys during the weeks of June 14 and 21 along the Chicago Sanitary and Ship Canal and the Des Plaines River. These resistivity and ground-penetrating radar surveys, along with other information being collected, will be used to site monitoring wells to assess the movement of Asian carp eggs and small fry through the fractured carbonate bedrock. This pathway may be a transport vector not protected by the electric fish barrier.

In addition, the USGS Illinois and Ohio Water Science Centers provided support for the December 2009 and May 2010 rotenone treatments using a dye tracer to define the boundaries of the treatment, surface-water flow monitoring using acoustic doppler current profilers to define the flow conditions for adequate dispersion of the fish toxin and associated neutralization upon completion of the treatment, as well as some groundwater monitoring by nearby wetlands.

Understanding Asian Carp and Bluegreen Algae Dynamics (Long-term Action 2.2.17)— Bluegreen algae are common in freshwaters, including Great Lakes. Bluegreen algae are rarely consumed by native species and noxious blooms of these algae can have negative ecosystem impacts. Asian carp, however, are known to consume these algae, but the extent to which they do so remains unknown. If they readily utilize bluegreen algae, however, Asian carp may be able to survive in waters such as the Great Lakes that have fewer plankton resources available

than currently believed to be required for these fishes. Scientists are currently culturing algae and rearing larval Asian carp from the Missouri River in research ponds in order to determine the extent to which Asian carp consume bluegreen algae. Either pond-reared or wild-caught juvenile Asian carp will be used when those recently spawned have grown to sufficient sizes.

Use of Seismic Technology to Divert or Eradicate Invasive Asian Carp (Long-term Action 2.2.8)— In this project, USGS is working with the U.S. Navy to test the efficacy of using seismic technology to control nonnative fishes. In these experiments, Navy personnel are exposing caged fish to seismic waves using hydro-guns. The exposure is monitored using hydrophones and the effects of the exposure are monitored in the test animals. Initial experimental trials were conducted in Colorado during the past few weeks. Results from these trials resulted in direct mortality in some fish exposed to seismic blasts. Necropsies of dead fish indicated punctured swim bladders, damage to other organs, and spinal and brain injuries.

Characterization of Organism-Level Target Delivery Sites in Native Aquatic Animals (Long-term Action 2.2.22)— Scientists have identified native fishes with similar feeding strategies to those of Asian carp that would have the greatest risk of being affected by control methods that target the filtering ability of Asian carp. Knowing the identity of these native fishes will allow development and testing of Asian carp control methods to minimize non-target effects.

Great Lakes Tributary Assessment for Asian Carp Habitat Suitability (Long-term Action 2.2.23)—In this project, USGS scientists are conducting research to better estimate the minimum river length and water temperature needed for successful spawning of Asian carp. This information will be used to determine whether any rivers in the Great Lakes watershed meet these requirements. Bighead carp have been spawned in the laboratory and their young were raised at two different water temperatures to document the time needed for development and the swimming behavior of larval fish.

Technologies Using Oral Delivery Platforms for Species-Specific Control (Long-term Action 2.2.25)—Methods of orally delivering doses of toxins to Asian carp are being developed. Scientists are currently working on methods to orally deliver specific doses of rotenone or antimycin (registered toxins) to different sizes of Asian carps. This information is needed to properly dose the oral delivery system with encapsulated toxins. Another application of this technology that would exploit the immune response of Asian carp is being explored to increase species-specificity. Early juvenile Asian carp have been collected and are being reared in the laboratory for this research.

Conclusion

In conclusion, keeping Asian carp from becoming established in the Great Lakes is the primary goal of the RCC through the implementation of the Framework. RCC partner agencies will continue to work together and in concert with the broader GLRI collaboration, to do everything within our authorities to meet this goal and wisely use the funds entrusted to us. The USGS will continue to provide the science support required for this vital effort in collaboration with other agencies and stakeholders in the Great Lakes.

Thank you, Chairwoman Stabenow, for the opportunity to submit this testimony on progress being made on implementing the Federal Asian Carp Control Strategy. I will be pleased to answer questions from you or other Members of the Subcommittee.