TESTIMONY OF
ALLAN BROWN, ASSISTANT REGIONAL DIRECTOR, SOUTHEAST REGION,
U.S. FISH AND WILDLIFE SERVICE, DEPARTMENT OF THE INTERIOR,
BEFORE THE COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM,
SUBCOMMITTEE ON INTERIOR, ENERGY & ENVIRONMENT ON
"PROTECTING OUR WATERWAYS: EXAMINING FEDERAL EFFORTS TO CONTROL ASIAN CARP IN KENTUCKY"

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Good afternoon Chairman Gianforte, Ranking Member Plaskett, and members of the Subcommittee. I am Allan Brown, Assistant Regional Director for Fish and Aquatic Conservation for the Southeast Region of the U.S. Fish and Wildlife Service (Service) within the Department of the Interior. I provide leadership and oversight for the Service's national fish hatcheries and aquatic species conservation work across the 10 southeastern states, Puerto Rico, and the U.S. Virgin Islands.

The Service works with diverse partners to conserve, restore, and maintain the nation's fishery resources and aquatic ecosystems for the benefit of the American people. Additionally, the Service supports fishing in public waters by producing millions of fish at its 72 national fish hatcheries across the country. The Wolf Creek National Fish Hatchery in Jamestown, Kentucky, raises 1 million rainbow, brook, and brown trout annually that are stocked in over 120 public fishing waters throughout the Commonwealth of Kentucky.

I appreciate the opportunity to discuss the Service's involvement in managing and controlling four species of large carp—bighead, black, grass, and silver—native to Asia. The spread of these voracious invasive species in the nation's river systems is threatening the conservation efforts conducted by our agency, our state partners, and other stakeholders, to promote self-sustaining aquatic resources and healthy aquatic ecosystems. In the Southeast, these destructive fish are putting the region's renowned aquatic biodiversity at risk. Asian carp not only out-compete native sport fish like crappie and largemouth bass, but some species feed on the freshwater mussels that help keep our aquatic systems healthy by providing good fishing and good water quality for people, waterfowl and other wildlife species.

The Service plays an important role in combating invasive species like Asian carp. Under the authority of the Lacey Act, the Service listed bighead, black, and silver carp species as injurious wildlife to protect humans, native wildlife, and wildlife resources from the purposeful or accidental introduction of Asian carp into the nation's aquatic ecosystems. The Service takes part in a broad, partner-driven approach to strategically control Asian carp found in the waters of the Mississippi and Ohio River basins and to prevent them from continuing their migration upstream.

Impacts of Aquatic Invasive Species

Aquatic invasive species, including Asian carp, pose significant challenges to the health of aquatic ecosystems. In addition to widespread and longstanding ecological consequences, aquatic invasive species often result in significant economic losses and cost our nation's economy billions of dollars per year. These prolific invaders have resilient and adaptive characteristics, including the ability to

reproduce rapidly or tolerate a wide range of environmental conditions, which afford them competitive advantages over native species allowing them to establish self-sustaining populations in areas with few or no natural predators.

In the 1970s, Asian carp were introduced to aquaculture ponds and wastewater treatment facilities in the Southeast to help keep them clear of weeds and parasites. Flood waters caused these exotic fish to spread into local rivers, streams, and lakes. Large portions of America's interior river systems are now occupied by one or more Asian carp species, with populations of at least one species established in 45 states. In recent years, the established invaders have expanded their distribution and abundance.

Here in Kentucky, Asian carp have been observed for decades. The grass carp was the first species to arrive in Kentucky waters with its earliest observation dating back to 1974. The most recent arrival to Kentucky is the voracious black carp, which was captured in Lake Barkley in 2017. Silver and bighead carp have traveled up the Ohio River and into the Tennessee and Cumberland rivers landing en masse in Kentucky and Barkley lakes more than a decade ago.

When large populations of Asian carp become established in the wild, the cumulative effects of the species may include: risk to human safety; reductions of native plants that provide spawning and nursery areas for native fish species; reduced food for native fishes and waterfowl; and, negative economic impacts on communities that rely on fishing, boating, and waterfowl hunting.

Collaborative Approach to Controlling Asian Carp

The Service, in cooperation with a wide variety of federal, state, local and non-governmental partners, implements the *Management and Control Plan for Bighead, Black, Grass, and Silver Carps in the United States* (Plan), which is national in scope. Its goal is eradication of all carp species, besides "triploid" grass carp, in the wild. The Plan was developed by the Asian Carp Working Group of the Aquatic Nuisance Species Task Force and is built around seven core goals that are operationalized through 48 step-down strategies and 131 recommendations to manage and control Asian carp.

To be effective, Asian carp prevention and control efforts require the use of focused, but comprehensive, strategies implemented through multi-jurisdictional partnerships. Leveraging scientific expertise, data, technological developments, and strategic planning across the various basin partnerships is a key operating principle for extending the collective ability to contain and control Asian carp and maximize the return on investment.

An example of effective collaboration and partnership efforts can be seen within the Mississippi Interstate Cooperative Resource Association (MICRA). MICRA is a partnership of 28 state agencies organized in 1991 to improve management of interjurisdictional fish and other aquatic resources in the Mississippi River Basin. MICRA formed an Asian Carp Advisory Committee that includes state agency representatives from each of the major sub-basin partnerships, including the Upper Mississippi River, Lower Mississippi River, Ohio River, Missouri River, Tennessee and Cumberland rivers, and Arkansas and Red rivers. Representatives within MICRA also include several key federal agency partners including the Service, which serves as the coordinator. MICRA and the Asian Carp Advisory Committee work to develop a basin-wide perspective on Asian carp management and control, annually identifying priority needs for the Mississippi River Basin.

Funding Asian Carp Control Efforts

Since Fiscal Year (FY) 2015, funding provided to the Service through agency base appropriations has been used to support Asian carp control efforts in the Upper Mississippi and Ohio river basins, including monitoring and control technologies to better understand the establishment of Asian carp populations and where to apply the appropriate tools to prevent and control their spread. Projects are developed cooperatively with state agencies and multijurisdictional resource organizations to address key needs that support goals of basin-wide management of Asian carp management. The collaborative projects developed and implemented through this process augment ongoing activities conducted by state and federal partners to address the threat of Asian carp.

In FY 2018, the Service has allocated $10.4 million in agency funding to Asian carp efforts, with $5.6 million spent within the Great Lakes region and $4.8 million within the Ohio and Upper Mississippi river basins. Of the $4.8 million spent in the Ohio and Upper Mississippi river basins, the Service has dedicated $2.21 million of agency funding this fiscal year in support of partnership projects, funding that goes directly to the states, that are aimed at controlling established populations to limit the spread and impacts of Asian carp. This funding is roughly split evenly between the two river basins, with $707,039 going to the Kentucky Department of Fish and Wildlife Resources (KDFWR).

In addition to the portion received from the Service's base appropriations, KDFWR finances efforts to control Asian carp with funds provided through the Wildlife and Sport Fish Restoration program, which is administered by the Service. This program has been an effective vehicle for partnerships to control the spread of invasive species like Asian carp at the local level. Kentucky has elected to use a portion of its Sport Fish Restoration funds towards a statewide Asian carp research and monitoring program intended to limit the continued spread of Asian carp as well as their negative impacts on recreationally important sport fish species. The Commonwealth has dedicated a total of $455,000 from the apportionments received over the last five years to Asian carp efforts.

Lastly, the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 (as amended by the National Invasive Species Act of 1996) authorized the development of State and Interstate Aquatic Nuisance Species (ANS) Management Plans and cost-share funding for plan implementation through the Service. These plans identify cost-effective measures to be undertaken by States and cooperating entities to manage aquatic invasive species. Kentucky's ANS Management Plan was approved in 2008 and received $47,695 from the Service in fiscal year 2018 to partially support the nine full-time staff they have dedicated to addressing invasive species priorities within the Commonwealth.

Combatting the Spread of Asian Carp in the Southeast

Southern waters are teeming with aquatic life, including sport fish, imperiled fish and mollusks needing federal protection, and dozens of at-risk aquatic species. Asian carp jeopardizes this rich biodiversity and the abundance of native species found in its freshwater rivers and streams. As filter feeders, Asian carp have the potential to remove a significant amount of productivity from the waters they inhabit. Carp out-compete native young fish, called fry, and eat plankton that serve as the basic food source for native fish. Some carp species prey upon snails and mussels, some of which are federally listed as threatened or endangered. The consumption of fish hosts by Asian

carp may compound the negative impacts of these invasive fish on native freshwater mussels and interfere with the recovery of those species at risk of extinction. Carp may consume the eggs and larvae of known or potential fish hosts, reducing their populations and potentially interfering with the reproduction processes of endangered mussels like the pink mucket and orangefoot pimpleback, both of which have been found in waters of Kentucky and Barkley lakes.

The steadily increasing range of carp in the Southeast poses not only a threat to its rich aquatic biodiversity but the related economies. The expansion of Asian carp populations in the Ohio River basin threaten billion dollar industries, including recreation, tourism, and sportfishing, that are vital to local and regional economies in the Southeast. A 2017 economic analysis conducted independently by the American Sportfishing Association estimates that the annual economic impact from recreational fishing in Kentucky as approximately $763 million in retail expenditures and $320 million in job income, supporting more than 10,500 jobs[1].

Service biologists and their counterparts at other federal and state agencies are the front line of the response to Asian carp in the southern waters. Staff at Private John Allen National Fish Hatchery in Tupelo, Mississippi, plays an important role in monitoring, eradicating and assessing the spread of aquatic nuisance species like Asian carp throughout the Southeast's river systems. For example, fish biologists are actively tracking the upstream movement of carp through acoustic transmitters and an array of receivers throughout Ohio and Tennessee river basins. This monitoring effort provides information about Asian carp distribution and movement patterns needed to predict range expansion and facilitate efforts to slow the progression.

Service biologists also are using next-generation technologies to identify range expansion and to establish the leading edge of the carp invasion in various waterways, including the Tennessee River basin. Environmental DNA (eDNA), a sensitive surveillance tool used to monitor for the genetic presence of an aquatic species, has shown significant promise in detecting invasive species early in the invasion process. The Service has been the lead federal agency for eDNA monitoring for invasive Asian carp since 2013. Currently, eDNA is used to detect low populations of bighead and silver carp to stay ahead of the species establishing in an area. By sampling waters that could potentially be invaded by these species, the detection of their DNA can indicate the potential presence of the fish itself. This allows for more area to be covered with minimal effort compared to labor and equipment intensive traditional monitoring. Water samples are tested for the presence of Asian carp eDNA at the Service's state-of-the-art Whitney Genetics Lab in Onalaska, Wisconsin. The eDNA results are given to affected state partners to provide a basis for management actions, including the selection of high priority sites for future surveillance.

The Service also supports a wide variety of management and control projects through technical assistance provided by biologists in its Fish and Wildlife Conservation Offices. Technical assistance supports inter-basin coordination and carries out collaborative assessment, control, and containment of Asian carp. Examples of projects include:

- Catch more carp through experimental gear development and deployment;

[1] Southwick Associates (2017, February). Economic Contributions of Recreational Fishing: U.S. Congressional Districts. Retrieved from https://asafishing.org/wp-content/uploads/ASA-Congressional-District-Fishing-Impacts-Report-115th-Congress.pdf

- Early detection at or near the leading edge and population monitoring through the implementation of technologies such as eDNA, telemetry, hydroacoustics, and traditional gear sampling;
- Containment through coordination and support for the development and application of deterrent technologies; and,
- Development of population models as a decision support tool to maximize return on investment for adult harvest and deterrent technology.

Control Efforts in Kentucky

Here in Kentucky, the Service is working collaboratively with its federal and state partners to implement strategic detection, prevention, and control actions to reduce the risk from Asian carp populations in the Ohio, Tennessee, and Cumberland rivers. Much of our work in Kentucky focuses on providing technical assistance, detection and removal efforts, and funding to KDFWR to implement carp management strategies and projects. For example, the Service has provided funding to KDFWR for catching and removing Asian carp to suppress established populations in the Cannelton and McAlpine pools of the Ohio River. Previous efforts have removed approximately 20,000 pounds of carp each year in these pools with high carp densities. Service biologists facilitate these targeted removal efforts by using hydroacoustics and side-scan sonar to help locate areas where removal has the greatest effect on population suppression. The Service coordinates this work with KDFWR and other state partners.

Physical removal of Asian carp may be effective, but it also is expensive. The Service is exploring ways to maximize the return on its limited funds by working closely with federal and state partners on innovative strategies to increase the efficiency and capacity efforts to control Asian carp. An example of this collaborative approach is the testing of a large-scale sound deterrent system at Barkley Lock and Dam. Sound has shown promise as a potential barrier to Asian carp passage, but it has not been tested at lock and dam structures on large rivers where Asian carp are abundant. The Service is coordinating with the U.S. Army Corps of Engineers, with the support of U.S. Geological Survey, KDFWR, Tennessee Wildlife Resources Agency, and other partners to implement a large-scale sound deterrent field trial at Barkley Lock and Dam. The goal of this experiment is to reduce the use of the locks by Asian carp, thus protecting hundreds of river miles that remain relatively untouched by carp in the Tennessee and Cumberland rivers. Deployment of the sound barrier will occur later this year, and the field trial will continue for a three-year period.

Conclusion

The challenge of controlling Asian carp in our nation's waters demands that the Service and its partners remain focused, effective, and innovative. The Service has remained flexible and strategic in its control efforts by: collaborating with others and leveraging resources through partnerships; using the best available science to inform and adapt management approaches; and employing innovative technologies aimed at stopping the spread of these destructive fish.

I thank the Subcommittee for its interest in the Service's work to combat the spread of Asian carp in river and lakes of Kentucky and throughout the Southeast. I appreciate the opportunity to testify here today in Eddyville and would be pleased to answer any questions that you may have.