

**STATEMENT OF JAMIE K. REASER
EXECUTIVE DIRECTOR
NATIONAL INVASIVE SPECIES COUNCIL
BEFORE THE
HOUSE COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM
INTERIOR SUBCOMMITTEE
REGARDING FEDERAL AGENCY COORDINATION ON INVASIVE SPECIES
December 1, 2015**

Madam Chairman and members of the Subcommittee, thank you for the opportunity to appear before you at this oversight hearing on the threats posed by alien invasive species.

Accompanying me today is Ms. Anne Kinsinger, Associate Director of the U.S. Geological Survey's Biological Research Division. I am pleased to discuss the Department of the Interior's (Department) efforts to address this issue through the National Invasive Species Council (NISC).

As manager of 500 million acres of public lands and 1.7 billion acres on the Outer Continental Shelf, the Department is committed to preventing the introduction and spread of invasive species that threaten the nation's economy, the environment, and human health. Within DOI, the Bureau of Reclamation (BOR), the Bureau of Land Management (BLM), the U.S. Geological Survey (USGS), the Bureau of Ocean Energy Management (BOEM), the U.S. Fish and Wildlife Service (FWS), the Bureau of Indian Affairs (BIA), and the National Park Service (NPS) all have various roles in the science and management of invasive species.

BOR, BLM, FWS, and NPS are responsible for programs that control invasive species which infest water systems and lands that they manage. They also cooperate with and support efforts to control invasive species and the restoration of impacted areas. BOEM supports research concerning invasive species introduced into the Gulf of Mexico, which can affect off shore oil and gas platforms. BIA supports tribal government efforts to control invasive species. The NISC and the non-federal Invasive Species Advisory Committee (ISAC) are housed and administered, respectively, within the Department.

In Executive Order 13112, through which the NISC was created, invasive species are defined as alien (or non-native) species whose introduction does or is likely to cause economic or environmental harm or harm to human health. It defines alien species, with respect to a particular ecosystem, as any species (including its seeds, eggs, spores, or other biological material capable of propagating that species) that is not native to that ecosystem.

Invasive species pose some of the greatest threats to the ecological, economic, and cultural integrity of America's lands and waters. Invasive species are, in large proportion, responsible for the endangerment and extinction of a wide range of native species; the degradation of freshwater, marine, terrestrial ecosystems; and the alteration of biogeochemical cycles. Human, animal, and plant health are compromised by non-native pathogens and parasites, which may be brought into new ecosystems through the introduction of alien vector species.

The impacts of invasive species can drive economic hardship and social instability, consequently placing constraints on the conservation of biodiversity, food and water security, and economic growth. The globalization of trade, travel, and transport is on the rise, and along with that trend comes an increase in the number and types of invasive species that are being moved around the world and the rate at which they are moving. At the same time, changes in land use and climate are rendering some habitats, including some of the best-protected and most remote natural areas, more susceptible to biological invasion.

Unfortunately, numerous invasive plants, animals, fungi, pathogens, and parasites are already well-established within the borders of the United States (U.S.). Some of these organisms arrived hundreds of years ago, while others were introduced within the last decade. Examples of invasive species that have already had substantial impacts in the U.S. include: cheatgrass (*Bromus tectorum*), five species of Asian carp [silver carp (*Hypophthalmichthys molitrix*), largescale silver carp (*H. harmandi*), bighead carp (*H. nobilis*), black carp (*Mylopharyngodon piceus*), and grass carp (*Ctenopharyngodon idella*)], and *Dreissena* mussels, which include zebra mussels (*Dreissena polymorpha*) and quagga mussels (*Dreissena rostriformis bugensis*). Information on these species is included in the latter half of my testimony.

Unless we make a concerted effort to address the formidable challenges posed by invasive species, we will not be able to protect and preserve natural, cultural, historic, and tribal resources; safeguard American citizens and their livelihoods; facilitate new economic opportunities; and build, ecological resilience to natural disasters. The threats posed by invasive species cannot be confined by geographic boundaries; given this, Federal leadership is necessary.

The National Invasive Species Council (NISC)

The National Invasive Species Council (NISC) was created by Executive Order 13112 (the 'Invasive Species' Executive Order) on February 3, 1999. The Secretary of the Interior serves as a Co-chair of NISC, along with the Secretaries of Agriculture and Commerce, and oversees the NISC staff. At the time the Executive Order was signed, the Secretaries of State, the Treasury, Defense, and Transportation, as well as the Administrator of the U.S. Environmental Protection Agency were also named as NISC members. Since then, the Secretaries of Homeland Security and Health and Human Services, the Administrators of the U.S. Agency for International Development and the National Aeronautics and Space Administration, and the U.S. Trade Representative have joined the Council.

The Executive Order charges NISC with the following duties:

- Ensure that Federal agency activities are coordinated, complementary, cost-efficient, and effective, engaging with the Aquatic Nuisance Species Task Force (ANSTF), Federal Interagency Committee for the Management of Noxious and Exotic Weeds (FICMNEW), and Committee for Environment and Natural Resources (CENR) as appropriate;
- Prepare, coordinate implementation, and report on the achievements of the National Invasive Species Management Plan;
- Encourage planning and action at local, tribal, state, territory, regional and ecosystem-based levels to achieve goals and objectives of the National Invasive Species Management Plan;

- Provide the leadership, coordination, technical advice, and information necessary to facilitate international cooperation in addressing invasive species;
- Develop, with the White House Council on Environmental Quality (CEQ), guidance to Federal agencies pursuant to the National Environmental Policy Act (NEPA) on the prevention and control of invasive species, including procurement, use, and maintenance of native species as they affect invasive species;
- Facilitate development of a coordinated network among Federal agencies to document, evaluate, and monitor impacts of invasive species on the economy, the environment, and human health;
- Facilitate establishment of a coordinated, up-to-date, information-sharing system that enables access to and exchange of information related to invasive species;
- Develop and recommend legislative proposals through the Co-chairs to the President for necessary changes in authority; and
- Assess the effectiveness of the Executive Order and provide recommendations for improvement, as appropriate.

NISC also manages the non-Federal Invasive Species Advisory Committee (ISAC), which was also created under Executive Order 13112 to provide expert advice to NISC.

Examples of accomplishments made during the first 15 years of NISC's operation include the:

- Increase in awareness of the threats invasive species pose to national security and to the core mission of a wide range of Federal Departments and Agencies.
- Enhanced communication and cooperation to address invasive species issues throughout the Federal agencies – from field staff to senior executive level. Numerous inter-agency working groups, committees, and task teams focus on priority challenges.
- Stronger commitments between Federal agencies and states, tribes, and other stakeholders to work together to prevent, eradicate, and control invasive species.
- Provision of expert advice from the more than 100 individuals who have served on ISAC, which helped Federal agencies advance work on a wide range of complex issues, such as the use of invasive plant species as biofuels.
- Implementation of two National Invasive Species Management Plans containing more than 170 action items in total. A third Management Plan that is focused on high priority actions to further enable NISC member Departments/Agencies is expected to be completed in early 2016.
- Integration of measures to limit the spread of invasive species through use of international agreements, including environmental frameworks and trade agreements.
- International cooperation undertaken to build the capacity of neighboring countries and trading partners to address invasive species within their own borders, thus reducing the likelihood of these organisms being spread to the U.S.

The invasive species issue is dynamic and highly complex. The coordination of the activities of Federal agencies and their collaboration with non-Federal stakeholders to prevent, eradicate, and control invasive species within the United States and abroad is a substantial challenge. In the two months since I joined NISC as its Executive Director, the Department of the Interior, in conjunction with the other Co-Chair Departments, initiated a process to further build NISC's capacity and strengthen its impact. The process for administering the Invasive Species Advisory Committee (ISAC) is being streamlined to better focus on national priorities and more targeted outputs. The streamlined Management Plan focuses on a relatively short list of priorities to substantially increase the capacity of NISC member agencies to effectively implement the Executive Order. There is a considerable amount of work before us. I am committed to doing my best to ensure that NISC's leadership results in substantial, on-the-ground progress in our efforts to prevent and manage the adverse impacts of invasive species.

The remainder of my testimony focuses on the work DOI is undertaking, in cooperation with other NISC member Departments/Agencies, to address three well-known invasive species: cheatgrass, Asian carp, and zebra/quagga mussels. The invasive species prevention and management initiatives being implemented in the western sagebrush ecosystem (cheatgrass) and in the Great Lakes region and western waterways (Asian carp, zebra/quagga mussels) are inspiring highly innovative, cooperative problem solving at landscape scales.

Cheatgrass

The problem

The sagebrush ecosystem is one of the most imperiled ecosystems in North America. It spans eleven Western states, extends into Southwestern Canada, and provides essential habitat for hundreds of plant and animal species. In addition to the various species of sagebrush (*Artemisia* spp.), the greater sage-grouse (*Centrocercus urophasianus*) and pronghorn antelope (*Antilocapra americana*) are generally considered hallmarks of the sagebrush ecosystem.

A primary threat to the sagebrush ecosystem is the invasion of annual grasses, such as cheatgrass (*Bromus tectorum*). Additional threats include the expansion of native pinyon-juniper woodlands, intensified drought, and climate change. Together, these threats foster conditions that lead to increased frequency of large, intense rangeland fires, from which the sagebrush ecosystem has a difficult time recovering.

Native to much of Europe, the northern rim of Africa, and southwestern Asia, cheatgrass is now found throughout the U.S. and Canada. Cheatgrass has been accidentally introduced through multiple events, often as a contaminant of crop seed and ship ballasts from Eastern Europe and Western Asia. The first introductions in North America are believed to have been from ship ballast dumps near St. Louis, Missouri in the 1800s.

Like many invasive plants, cheatgrass thrives in highly disturbed habitats. Its spread has been especially rapid in parts of the Intermountain West, where its introduction has followed a period of excessive livestock grazing in an ecosystem comprised of native plants that, to the best of our knowledge, did not evolve with heavy grazing pressure. The sagebrush steppe and bunchgrass regions in the Great Basin, Columbia Basin, and Snake River Plains in Nevada, Utah, Washington, Oregon, and Idaho have proven particularly vulnerable to cheatgrass invasion; the number and size of infestations in these regions has increased dramatically over the last 20 years.

Because cheatgrass now drives much of the fire cycle in the western U.S., it poses a particularly difficult challenge for land managers. The plant dries early in the summer and remains highly flammable throughout the fire season. A wind-driven rangeland fire in cheatgrass can easily and quickly burn significant acreage, destroying homes, livelihoods, and habitat along the way. If left unchecked, cheatgrass often invades sagebrush habitat after rangeland fires, re-creating conditions for more frequent, intense fires in the future. The increasing frequency and intensity of rangeland fires and conversion of the sagebrush ecosystems to invasive annual grasses thus pose major threats to ranchers, local communities, outdoor recreationists, energy developers, and others who depend on these lands and resources to sustain their livelihoods and quality of life.

Intense rangeland fires also threaten the hundreds of species that rely on the unique, critically important, sagebrush ecosystem. In 2010, the FWS identified the invasion of non-native annual grasses, coupled with the loss of habitat from the increased frequency and intensity of wildfire in the Great Basin, as the primary threat to the greater sage-grouse. The threat is particularly severe in places known as Priority Habitat Management Areas (PHMAs), locations where greater sage-grouse experts have indicated that protecting existing habitat is critical to the birds' continued viability.

The FWS recently determined that protection of the greater sage-grouse under the Endangered Species Act (ESA) was not warranted. Specifically, the FWS found: "The future of the sage-grouse depends on the successful implementation of the federal and state management plans and the actions of private landowners, as well as a continuing focus on reducing invasive grasses and controlling rangeland fire. The FWS has committed to monitoring all of the continuing efforts and population trends, as well as to reevaluating the status of the species in five years."

The Department of the Interior's Response

The increased frequency and impact of rangeland fires necessitates a well-coordinated, multi-stakeholder approach to protect and restore the sagebrush ecosystem. Consistent with implementation of *An Integrated Rangeland Fire Management Strategy: Report to the Secretary of the Interior*, DOI has joined with the U.S. Department of Agriculture (USDA), tribes, other Federal, state, and local agencies, private industry, and various non-governmental organizations (NGOs) to control current cheatgrass infestations, prevent new plant invasions from occurring, and restore disturbed habitats. Examples of specific activities include:

- Action to advance the Environmental Protection Agency's (EPA) registration of a strain of bacterium (*Pseudomonas fluorescens*) commonly known as ACK-55. This bioherbicide inhibits the growth of various invasive plants, including cheatgrass. It has shown promise as a cost-effective method to treat cheatgrass-infested landscapes.
- Launching of National Seed and Pollinator Strategies to accelerate the development, storage, and distribution of native seed throughout the West so as to improve the efficiency and efficacy of efforts to restore native vegetation across western landscapes.
- A comprehensive effort to restore lands impacted by rangeland fire this past summer in eastern Oregon and western Idaho. The Soda Fire burned 283,000 acres, 37,000 of which was core habitat for the greater sage-grouse. Curbing the spread of cheatgrass and restoring areas impacted by fire with native vegetation will be essential to ensuring the restoration of sage grouse habitat in these critically-important areas.

In mid-November, Federal and state agency representatives, as well as ranchers and members of NGOs, gathered in Boise, Idaho for the Western Invasive Weed Summit. Participants overwhelmingly agreed that a unifying, compelling vision and comprehensive strategy are needed to protect and restore the sagebrush ecosystem, and that the management of invasive plants linked, in particular, to reducing the risk of rangeland fire in the Great Basin, needs to be regarded among the highest priorities.

Asian Carp Species

The problem

The term 'Asian carp' refers collectively to a group of five East Asian fish species: bighead carp, black, grass carp, and silver carp. The bighead carp has been cultured and sold in the U.S. as a live food fish product since the early 1980s. Grass carp have been stocked nationally by public and private entities since the mid 1970s as a biological control for nuisance aquatic weeds. They are also cultured and sold as a live food fish product. The black carp has been used in the U.S. since the early 1990s as a biological control agent for snail-borne parasites in commercial aquaculture production ponds. Silver carp, although cultured on a limited basis in the past, are not presently cultured in the United States. The fish are difficult to contain due to their tendency to jump. Asian carp that have escaped their holding facilities or been deliberately released into the wild have quickly spread throughout the Mississippi River basin. Once established in an ecosystem, Asian carp species have thus far proven virtually impossible to eradicate. It is, therefore, crucial to prevent Asian carp from entering their next frontier: the Great Lakes.

Asian carp species represent a primary threat to the health of freshwater ecosystems and their related economies in the U.S. Once established, Asian carp populations can grow fast; adult Asian carp have no natural predators in North America and females lay approximately half a million eggs each time they spawn. The fish can consume up to 20% of their bodyweight per day and grow to over 100 pounds.

By consuming large amounts of plankton (the foundation of the aquatic food chain), Asian carp outcompete native aquatic species in areas of Upper Mississippi River basin, and Ohio River basin and tributaries (e.g. Missouri River and Tennessee River). Asian carp species currently impact districts of the Upper Mississippi River National Wildlife and Fish Refuge administered by the FWS across multiple states. They potentially threaten areas of Mississippi National River and Recreation Area and the St. Croix National Scenic Riverway administered by the National Park Service (NPS). Prevention and early detection efforts are critical for these areas.

The huge, hard-headed silver carps also pose a threat to boaters and industries dependent on boating. When startled by boat engines, the fish will leap out of the water, often causing injuries when they collide with people.

The Department of the Interior's Response

Bighead, black and silver carp are listed as injurious wildlife under the Lacey Act (18 USC 42) and may not be imported into the U.S. or transported alive across state lines. Through the FWS, the Department enforces these prohibitions. In addition, the FWS works with federal and state agency partners to implement a national strategy and a Great Lakes-specific Asian carp strategy. *The Management and Control Plan for Bighead, Black, Grass, and Silver Carps in the United States* (National Plan), completed in 2007, serves as a plan for the eradication of Asian

carp in the wild. The *Asian Carp Control Strategy Framework* (Framework), created in 2010 and updated annually, establishes goals to reduce or extirpate existing Asian carp populations, minimize impacts of those populations, contain the expansion of such populations, prevent future introductions, educate the public, and conduct necessary research.

In keeping with the Water Resources Reform and Development Act (WRRDA) of 2014, the FWS, in coordination with the NPS, USGS and other non-DOI partners (e.g., U.S. Army Corps of Engineers; USACE), leads multi-agency actions to slow, and eventually eliminate, the spread of Asian carp in the Upper Mississippi River Basin and Ohio River Basin and tributaries. To date, collective actions to address Asian carp have included provision of technical assistance, coordination, best practices, and support to state and local governments engaged in activities to decrease and eventually eliminate that threat, and where possible leverage previous work conducted under the Asian Carp Framework.

Examples of additional activities include:

- Implementation of an environmental deoxyribonucleic acid (eDNA)-based early detection and monitoring program for Asian carp in the Great Lakes, Upper Mississippi River, and Ohio River basins.
- Distribution of funds to state partners via cooperative agreement to support state led Asian carp prevention, early detection, monitoring, and control efforts under approved State Aquatic Nuisance Species Management plans.
- Development of integrated pest management tools (e.g., barriers, fish-targeted pesticides, biological control agents, attractants), molecular tools (e.g. eDNA markers) for near real-time detection and risk assessment, models to assess risk of Asian carp spawning and to better target control efforts.

Zebra/Quagga Mussels

The problem

Zebra and quagga mussels, collectively referred to as Dreissenid mussels, are small, but formidable aquatic invaders. Although different species, they are virtually identical, both physically and behaviorally. Originally from Eastern Europe, these mussels were picked up in the ballast water of ocean-going ships and brought to the Great Lakes in the 1980s. Within just ten years, they infested all of the Great Lakes.

Zebra and quagga mussels have a wide variety of impacts. They harm native fish populations by stripping the food web of vital plankton, their shells litter beaches, and they can attach to boats, obstruct water intake pipes, and other structures. Zebra and quagga mussels promote water clarity by filter feeding; however, in doing so, enabling sunlight to penetrate to the lake bottom where it led to enhanced plant growth which in turn fosters deadly algae blooms. When algae foul beaches and dissolved oxygen levels in water drop, botulism outbreaks may occur. In the last decade, botulism has killed countless fish and tens of thousands of aquatic birds. The collective impacts cost the Great Lakes economy billions of dollars a year in damage.

Since their original introductions, quagga and zebra mussels have spread to 29 states by hitching rides on boats being transported between the Great Lakes and Mississippi River Basins. Artificial

channels, such as the Chicago Area Waterways System (CAWS), have facilitated the spread of invasive species. Thus far, these mussels have proven impossible to fully eradicate once they are established. It is difficult to identify methods to control zebra and quagga mussels that do not adversely impact native species.

Nine National Wildlife Refuges currently are known to have zebra mussels. The NPS has ten units with established Dreissenid mussels (including zebra mussel or quagga mussels) in them. The BOR experiences buildup of zebra mussels in infrastructure used to transport water. Beginning in FY2014, the NPS made \$2 million per year available for quagga / zebra mussel management in nine western parks. Two of these parks [Glen Canyon National Recreation Area (NRA) and Lake Mead NRA] are running one of the largest mussel containment programs in the country with the assistance of FWS funding. The remaining seven parks have used their portion of funds to establish mussel prevention programs.

The Department of the Interior's Response

Recognizing the threat of aquatic invasive species to U.S. waters, Congress passed the Nonindigenous Aquatic Nuisance Prevention and Control Act (NANPCA) in 1990. NANPCA listed zebra mussels as injurious wildlife under the Lacey Act (18 USC 42), and the work conducted under this act has slowed the spread of both zebra/quagga mussels. It continues to foster collaborative problem solving across the much of the U.S.

Coordination of Federal and state efforts to address aquatic invasive species is largely conducted through the Aquatic Nuisance Species Task Force (ANSTF), which was authorized through NANPCA and is co-chaired by the FWS and the National Oceanic and Atmospheric Administration (NOAA). All DOI Bureaus are Task Force members. Under the Task Force, 42 states have developed Task Force-approved state or Interstate Aquatic Nuisance Species Management Plans and a Quagga/Zebra Mussel Action Plan (Q/ZAP) has been developed to address this issue in the western states. The Department, through the FWS, provides limited funding through Federal appropriations for implementation of these plans.

Examples of additional DOI actions to prevent further impacts of these mussels in public waters and on public water infrastructure, include:

- Coordination of programs to inspect and decontaminate recreational boats, as well as to educate stakeholders on the dangers of transporting zebra mussels and ways to prevent their spread.
- Development of control technologies (*e.g.*, spawning inhibitors, microparticles), optimizing deployment of molecular detection tools, producing distribution maps, and investigating ecosystem impacts of invasive mussels.
- Leadership of the Invasive Mussel Collaborative, a cooperative initiative to facilitate information exchange, develop joint integrated pest management approaches, and coordinate communication and outreach activities.
- Preparation of the *Federal Policy Options: Addressing the Movement of Aquatic Invasive Species Onto and Off of Federal Lands and Waters* in August of this year through work of the ANSTF and NISC staff. This paper provides guidance and policy options to increase coordination among Federal government, state, and local partners in their efforts

to prevent and contain the spread of aquatic invasive species, including zebra and quagga mussels.

Invasive species are one of the most pervasive, yet least recognized, threats to national security. Executive Order 13112 has helped advance awareness of the invasive species issue, as well as concerted efforts to address it in the U.S. and beyond. Although the NISC is subject to the various challenges inherent in large, multi-institutional coordinating bodies, it has added substantial value across the Federal government and to states, tribes, and other stakeholders. A considerable amount of work remains to be done on invasive species. DOI is committed to co-chairing NISC and administering NISC staff in a manner that is cost-efficient and highly impactful. Given the ecological, economic, and cultural harm that invasive species pose to the Nation, it is imperative that the Federal government continues to partner with states, tribes, and other stakeholders to protect our natural resources and the people who depend on them. Madam Chairman, thank you for the opportunity to testify on a topic of mutual concern. This concludes my testimony. I am happy to address the Committee's questions regarding NISC.

Jamie K. Reaser, PhD

Executive Director

National Invasive Species Council (NISC)

Dr. Reaser joined NISC as its Executive Director in September 2015. For the last decade, she has worked as a senior environmental and communications consultant to non-governmental organizations, industry, and United Nations agencies on a wide range of conservation and sustainable development issues. She has nearly two decades of expertise in helping governmental and non-governmental institutions strengthen their invasive species programs.

Prior to her most recent positions, Dr. Reaser served as the Executive Director of the Global Invasive Species Programme (GISP) and NISC's first Assistant Director for International Policy, Science, and Cooperation. She has also worked as a Biodiversity and Foreign Affairs Officer for the U.S. Department of State and held multiple positions with the Smithsonian Institution, including Bird Conservation Specialist for the Smithsonian Migratory Bird Center, a program she was instrumental in establishing.

Dr. Reaser received her doctorate in Biology from Stanford University and holds a Bachelor's of Science in Field Biology from the College of William and Mary.
