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THE INVASIVE SPECIES THREAT: PROTECTING WILDLIFE, PUBLIC HEALTH, AND INFRASTRUCTURE

HEARING

BEFORE THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS UNITED STATES SENATE

ONE HUNDRED SIXTEENTH CONGRESS

FIRST SESSION

FEBRUARY 13, 2019

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ONE HUNDRED SIXTEENTH CONGRESS
FIRST SESSION

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THE INVASIVE SPECIES THREAT: PROTECTING WILDLIFE, PUBLIC HEALTH, AND INFRASTRUCTURE

WEDNESDAY, FEBRUARY 13, 2019

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
Washington, DC.

The committee met, pursuant to notice, at 10:06 a.m. in room 406, Dirksen Senate Office Building, Hon. John Barrasso (chairman of the committee) presiding.

Present: Senators Barrasso, Carper, Cramer, Braun, Sullivan, Boozman, Ernst, Cardin, Gillibrand, and Van Hollen.

OPENING STATEMENT OF HON. JOHN BARRASSO, U.S. SENATOR FROM THE STATE OF WYOMING

Senator BARRASSO. Good morning. I call this hearing to order.

Today we will consider the scourge of invasive species, the species that threaten our communities and how we can most effectively combat them. This hearing will also continue the Committee's work to support successful efforts to conserve wildlife, build infrastructure, and protect the public health. Invasive species have significant impacts on all three of these areas.

Few issues are more bipartisan than the need to protect our communities from invasive species. Invasives are non-native species whose introduction causes harm to the local economy and the environment, and to human health. More than 5,000 invasive species exist in the United States. They cause more than $120 billion of economic damage each year.

According to the U.S. Fish and Wildlife Service, "every region of the United States has invasive species problems." "Invasive species can be found," they say, "from Alaska to Louisiana and from Maine to Texas." They go on, "They can be found in our forests, fields, and wetlands, and in our streams, rivers, and bays, and even off of our coastlines."

Each year, hundreds of millions of dollars are spent in an attempt to eradicate invasive species, and each year new threats for invasives immerge.

Like the rest of the Country, Wyoming finds itself coping with an extensive and expensive invasive species problem. Cheatgrass consumes vast amounts of water, degrades valuable soil and habitat, fuels catastrophic wildfires, and displaces vegetation, turning vibrant prairie communities into monocultures, leaving only cheatgrass as far as the eye can see.

Russian olive trees take over riparian areas across the State, absorbing massive amounts of water that would otherwise be used for wildlife and native species. The West Nile virus is transmitted by mosquitoes that infect birds and mammals, including humans. It is an invasive species according to the U.S. Department of Agriculture.

West Nile virus is the leading cause of mosquito-borne illness in humans in the United States. In 2018, 2,544 cases of West Nile virus were recorded and reported in 49 States, including Wyoming. West Nile virus affects horses, dogs, and other animals, and causes millions of dollars in losses associated with the treatment of the infection and even death.

The environmental costs of invasive species are real as well. According to the National Wildlife Federation, 42 percent of threatened or endangered species are at risk because of invasives. West Nile virus threatens species like the sage grouse, which Wyoming and many other States are working hard to protect. The problem of invasive species is rampant and requires action.

Last Congress, this Committee examined innovative solutions to control invasive species, with the goal of improving wildlife conservation efforts. We heard about cutting-edge technologies to more effectively control invasive species, from smart fish passage systems to keep invasive species out, to DNA technologies that detect invasives earlier.

Together with Ranking Member Carper and several other Committee members, I introduced the Wildlife Innovation and Longevity Driver Act, called the WILD Act, to support efforts to combat invasive species in several ways, including by reauthorizing the Partners for Fish and Wildlife Program and by requiring Federal agencies to coordinate when planning and implementing invasive species-related activities. The WILD Act also incentivizes the development of cutting-edge technologies by establishing cash prizes for technological innovation in invasive species management.

In 2017, the WILD Act passed the Senate by unanimous consent. Last month, we reintroduced the WILD Act and last week we again reported this important bill unanimously from the Committee. Yesterday this bill passed the Senate as part of the Omnibus Public Lands package. I look forward to seeing it passing in the House and being signed into law.

I look forward to hearing from our three witnesses today on what tools will be most helpful in protecting our wildlife, our infrastructure, and public health from the scourge of invasive species.

I would now like to turn to my friend and Ranking Member, Senator Carper, for his opening statement.

OPENING STATEMENT OF HON. THOMAS R. CARPER, U.S. SENATOR FROM THE STATE OF DELAWARE

Senator CARPER. Thanks, Mr. Chairman.

Before I introduce Joe Rogerson, my staff actually was kind enough to Google the Troggs, who came up with a great record called Wild Thing.

Senator BARRASSO. Wild Thing. You owe me $10. I told you he was going to talk about Wild Thing today.

[Laughter.]

Senator CARPER. And the Troggs' original name was——
Senator BARRASSO. I get $100 if you sing.
Senator CARPER [continuing]. the Beatles.
[Laughter.]
Senator CARPER. Wouldn't that be great? The Beatles. They changed their name to the Troggs. They would never get anywhere with that name.
Senator BARRASSO. We could sing together.
Senator CARPER. We could?
Senator BARRASSO. Let's not.
[Laughter.]
Senator CARPER. Never let the Nation's business get in the way of some fun.

Joe, thanks for joining us. Terry and Slade, thank you all for coming today.

I want to thank our staffs for the work that they have done in preparing for this hearing.

Mr. Chairman, since our last hearing on invasive species in March 2017, our Committee has worked across the aisle—most people think we don't work across the aisle, but we actually do it pretty well in this Committee—to try to address these challenges that these species create for our health, create for our infrastructure, create for native wildlife.

The WILD Act, which we reported out from our Committee last week, directs Federal agencies to manage proactively for invasive species and it creates a new Genius Prize, a Genius Prize to spur innovation in managing invasive species.

I am proud of our Committee's ongoing work on the WILD Act, and a lot of other things, too, and I urge its swift passage and enactment into law by this Congress.

Our 2018 Water Resources Development Act, which we enacted, the authorship of the Chairman and myself, and input from a lot of people on this panel and other places, too, affectionately known as WRDA, also included provisions to target invasive species in specific States, including the Asian carp in the Great Lakes.

Unfortunately, invasive species are still prevailing and wreaking havoc across our Nation. Delaware hosts both aquatic and terrestrial invasive species, such as catfish, crayfish, and insects. Specifically, the Delaware Department of Agriculture has recently reported Spotted lantern flies sightings. These destructive insects could harm agriculture industries throughout our region.

The emerald ash borer also made its way to Delaware in 2016, and this kind of jewel beetle—that is what it is called, a jewel beetle—is not a welcomed jewel by those of us in the Diamond State. This beetle's path of destruction is broad, already causing the rapid decline of five species of North American ash trees across 35 States.

Ash wood is a valuable commodity for many reasons. It is used in baseball bats, among other items. This week, as pitchers and catchers of major league baseball teams across America are reporting for spring training, given that many of the bats those teams will be swinging come from ash trees in the United States, if we want to strike a blow for America's national pastime, we could

start by making sure that this pesky beetle is called out on strikes and tossed out of the game for good.

Ash trees are also important in their ecosystems. Those trees filter air, mitigate stormwater runoff, sequester carbon, and they provide habitat for native moth, butterfly, and insect species.

Sadly, ash trees are not the only species that have declined significantly due to invasive species. According to the National Wildlife Federation, invasive species have contributed to the decline of over 40 percent of threatened and endangered species, over 40 percent.

We have to do more to quell the growing threat of invasive species, and that includes addressing root causes. To that end, I would be remiss if I did not mention the role of climate change in the spread of invasive species. The Fourth National Climate Assessment, issued by 13 Federal agencies just last November, recognizes that climate change is causing conditions that may favor invasive species over native species.

As warming temperatures cause native species' ranges to shift, experts believe invasive species may come to occupy many new areas. For example, the Asian tiger mosquito, which carries West Nile and Zika viruses, may well expand into the Northeast in coming years. Climate change is an existential threat to our Nation and to our World, and the spread of invasive species is just one symptom of that problem and challenge.

In addition to considering root causes, there are creative ways we can adapt to deal with invasive species. A few months ago, I visited an Agricultural Research Service unit on the campus of the University of Delaware in Newark, Delaware, where I think Joe was a student and I was a graduate. We were both graduate students there at different times. He was there before me.

Researchers at this facility study beneficial insects and are exploring options for releasing these natural predators where invasive species are present. The research takes many years to ensure that releasing new species will not have unintended consequences. When this method is successful, we can alleviate the need to eradicate invasive species in less environmentally friendly ways.

In conclusion, let me just say that each State is different. We face different challenges and hold different ideas regarding how to address invasive species, so I want to thank each of our witnesses for sharing your perspectives with us today. With your help and the help of other stakeholders and colleagues, I hope we can identify some new opportunities for bipartisan collaboration to combat invasive species.

We appreciate your leadership and interest, and I appreciate very much your leadership and interest here, Mr. Chairman.

Senator CARPER. I want to, if I could, at this time, just give a brief introduction of Joe Rogerson. Can I do that?

Senator BARRASSO. Please do.

Senator CARPER. Thank you.

This is the PG version.

Mr. ROGERSON. Oh, boy.

Senator CARPER. Joe was born in Maryland. What is it, Boonsboro?

Mr. ROGERSON. Yes, sir.

Senator CARPER. In the western end of the State?

Mr. ROGERSON. Yes.

Senator CARPER. He couldn't get into any schools in Maryland; he got wait-listed to all those schools, so he had to go to West Virginia University, where the president was Gordon Gee, who is the president again.

Gordon Gee was honored this week. He has been president of West Virginia University twice, Ohio State twice, Brown, Vanderbilt, and Colorado, and I think two nights ago, in Washington, DC, he was honored as the outstanding college president in America. He is so good at raising money, he would walk into a room full of alum and they would pull out their wallets. For that and other reasons he has received this honor, and you have been honored to go to a school where he was your president and he is again.

But I am pleased to introduce Joseph to work for the Delaware Division of Fish and Wildlife since 2005. Came to Delaware to get his master's degree and found his master, a woman named Alison, who is the mother of their two children. They are almost five and 7 years old. The 7-year-old goes to a charter school that I actually, as Governor, helped to create, so it is a small world in Delaware.

Joseph oversees the implementation of Delaware's Wildlife Action Plan. He is also active in the Northeast Association of Wildlife Agencies in the Atlantic Coast joint venture. He received his bachelor's at WVU, master's degree at the University of Delaware in wildlife ecology, and we are just grateful that you are all here, and thank you, Joseph, for joining us.

Thank you.

Senator BARRASSO. Thank you, Senator Carper.

We also have joining us Terry Steinwand, who is the Director of the North Dakota Game and Fish Department.

Senator Cramer, I invite you to introduce him, if you would like.

Senator CRAMER. Thank you, Mr. Chairman.

Thank you, Terry, for being with us today.

It is a great honor to be able to introduce Terry. I have known Terry a long time. We worked together in State government, prior to my coming here.

Terry is the truest of North Dakotans. He grew up on a grain farm near Garrison, North Dakota, in McLean County. Garrison is important for lots of reasons, not the least of which is it is the namesake of the Garrison Dam, which creates what we call Lake Sakakawea; people around here call her Sacagawea. Born in the outdoors and a fan of the outdoors, and now a protector of the outdoors.

Terry started his work at the Department of Game and Fish in North Dakota well over 30 years ago as a fisheries biologist and then eventually becoming the head of fisheries. Then, in 2006, our colleague, former Governor John Hoeven, appointed him to be the director of the agency. Since then, two more Governors thought it was such a good idea, they have appointed him. I don't know if he is going to retire or die there, but we are glad you are there, Terry.

Terry brings an important perspective as an outdoorsman, a biologist, well educated at the University of North Dakota in fish and wildlife management and biology, with a master's degree in biol-

ogy. He also brings an important perspective of how important collaboration and cooperation is among agencies and outdoorsmen and stakeholder groups.

We are grateful you are here, Terry. As you can probably tell from the earlier banter, we are a friendlier legislature than the one you have to go back in Bismarck tomorrow, shall we say. With that, I am grateful you are here. Thank you. We welcome you.

Senator BARRASSO. Thank you very much, Senator Cramer.

To the witnesses, your full written testimony will be made part of the official hearing record today, but I ask you to try to keep your statements to 5 minutes so that we have time for questions. We all do look forward to the testimony.

I would like, at this time, to introduce the witness from Wyoming who is here, Mr. Slade Franklin. He has served as the Weed and Pest State Coordinator at the Wyoming Department of Agriculture since 2004. In this role, Mr. Franklin has developed statewide invasive species management programs that have been integral to protecting the health of Wyoming's ecosystem.

He organizes, chairs, and facilitates groups concerned about invasive species, like the Wyoming Annual Grasses Task Force and the Wyoming Interagency Weed and Pest Working Group. He has chaired the Western Weed Coordinating Committee and the State Weed Coordinators Alliance.

In 2015, I was pleased that the Secretary of Interior agreed to my recommendation to appoint Mr. Franklin to serve as a member of the Invasive Species Advisory Committee. As a member of that Committee, Mr. Franklin provides information and advice on invasive species-related issues to the National Invasive Species Council, which coordinates efforts to address invasive species issues at the national level.

Mr. Franklin has represented Wyoming well as a member of the Invasive Species Advisory Committee. I know we will all benefit from hearing about his extensive experience in fighting invasive species in Wyoming and the challenges that they pose to our State's wildlife, our infrastructure, and our public health.

Mr. Franklin, it is a privilege to welcome you here today as a witness before the Environment and Public Works Committee. Thank you for traveling to Washington, as well, when the legislature is in session at home. We are delighted to have you here with us today.

Mr. Franklin, please proceed with your testimony.

STATEMENT OF SLADE FRANKLIN, WEED AND PEST STATE COORDINATOR, WYOMING DEPARTMENT OF AGRICULTURE

Mr. FRANKLIN. Chairman Barrasso, thank you for the welcome. Ranking Member Carper, as well as other members of the Committee, thank you for the opportunity to speak with you today. As mentioned, my name is Slade Franklin. I serve as the Weed and Pest Coordinator at the Wyoming Department of Ag. For the past 15 years I have been working on the issue of invasive species in the State of Wyoming, the western region, and the United States.

Through my experiences, I have gained insight to the difficult task of managing invasive species. The extent of the problem is not just limited by industry, by location, or by economic impacts. Urban

communities deal with the issue as much as the rural communities. Species like zebra and quagga mussels can impact water supplies for livestock and municipalities both. The impacts to the Country from invasive species are economically staggering.

Additionally, we are becoming more aware of the impact to our native wildlife. In the State of Wyoming and the Great Basin, invasive grasses such as cheatgrass and medusahead rye are altering critical habitat for sage grouse and mule deer by transitioning sage brush communities from a 50-year fire cycle to a 3-year fire cycle. The Bureau of Land Management reported that in the last 20 years 74 percent of Department of Interior acres burned were on range lands, and 80 percent of those 12 million acres were on cheatgrass-invaded range lands.

In 2016, the Invasive Species Advisory Committee published a paper outlining the problem invasive species presents for the Country's infrastructure. The Committee reviewed four main categories: power systems, water systems, transportation systems, and housing. The Committee identified existing potential threats to each of the categories due to invasive species that range from mussels to insects, to animals such as burrowing iguanas and nutria. ISAC concluded that Federal agencies currently lack the authority necessary to effectively prevent, eradicate, and control invasive species that impact the human-built environment.

Invasive species not only impact infrastructure, they utilize it. In 1896, U.S. Department of Agricultural botanist Lester Dewey was requested by Congress to research how western States could eradicate the invasive weed Russian thistle. Russian thistle had been introduced in South Dakota through contaminated flax seed, and it quickly established itself throughout the West and Midwest. Some of you may recognize Russian thistle as the tumbling tumbleweed costarring in every western movie ever made.

In his report back to Congress, Dr. Dewey noted, "Next to the railroad yards and the waste land in cities and villages, the roadsides are the most important avenues for the introduction of new weeds and for the propagation of old ones. They should, therefore, be watched with special care."

Roads and rail lines are still one of the primary avenues by which invasive species move. We have watched invasive weeds such as yellow star thistle, an invasive plant that has infested over 14 million acres in California, creep its way east to Wyoming by following the interstates and highways.

Introduced terrestrial pathogens and diseases, such as West Nile virus, can have a direct impact on human health. In Wyoming, the first confirmed case of West Nile virus was reported in 2002. Since then, Wyoming, Montana, North Dakota, and South Dakota have some of the highest average annual incidents of West Nile virus or neuroinvasive disease reported to the CDC. The neuroinvasive disease can lead to encephalitis and meningitis, and, in extreme cases, death. Between 1999 and 2017, over 2,000 deaths had been reported to the CDC due to the West Nile neuroinvasive disease, with an additional 137 deaths reported in 2018.

As daunting as the task of managing invasive species can be, successful management is realistic and achievable through partnerships involving Federal, State, and county agencies, nongovern-

ment organizations, land grant universities, and, critically important, the private landowner. In the same 1896 USDA bulletin, Dr. Dewey states, "In nearly all cases, the landowner can do the work at much less cost than it can be done by public authorities." Federal and State government partners contribute greatly through their jobs and are deeply appreciated, but agricultural producers are passionate and financially motivated. Their livelihoods depend on healthy ecosystems.

The U.S. Fish and Wildlife Service's Partners for Wildlife and the U.S. Forest Service's State and Private Forestry Programs are essential tools in rewarding landowners in their habitat and weed management efforts that protect critical wildlife.

We need to continue moving the dialog on invasive species forward as to what role we can play in improving success by identifying what resources are already in place and what additional resources are needed. Just less than 50 percent of Wyoming is managed by Federal agencies, and some of the most concerning infestations of terrestrial weeds occur on these public lands. When cross-jurisdictional programs are developed, local experts should be empowered by the respective Federal agencies to make critical time-sensitive decisions.

Capacity can be improved through policy and legislative changes, but it also needs to be improved through funding. Invasive species programs have often relied on grants and short-term funding sources, which are helpful for immediate or initial treatments, but do little to assist with long-term program stability. Additionally, we need to improve funding for research and development in programs such as USDA-ARS and land grant universities such as the University of Wyoming.

New funding is not the only solution. In 2017, the National Interagency Fire Center reported firefighting costs were $2.9 billion to fight fires across 10 million acres. This works out to a cost of $290 per acre. The landscape scale herbicide treatment of cheatgrass costs, at most, $60 an acre. Yet, agencies are only treating a fraction of the known infested acres. If the medical adage "prevention is better than the cure" is true, it may be time Federal agencies review how current firefighting funds are utilized and change the paradigm.

Chairman Barrasso, thank you again for the invitation to speak with your Committee. I would like to close by congratulating you on receiving the 2018 Wyoming Weed and Pest Council's Guy Haggard Award. We appreciate all the work you have done in helping bring national attention to this issue.

I look forward to your questions.

[The prepared statement of Mr. Franklin follows:]

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The Wyoming Department of Agriculture is dedicated to the promotion and enhancement of Wyoming's agriculture, natural resources and quality of life.

Prepared for the U.S. Senate Committee on Environment and Public Works

The Invasive Species Threat: Protecting Wildlife, Public Health, and Infrastructure.

Testimony of Slade Franklin

Weed and Pest Coordinator

Wyoming Department of Agriculture

February 13, 2019

Chairman Barrasso and Ranking Member Carper, as well as other members of the committee, thank you for the opportunity to speak in front of you today. My name is Slade Franklin and I serve as the Weed and Pest Coordinator for the Wyoming Department of Agriculture. For the past 15 years I have been working on the issue of invasive species in the state of the Wyoming, the western region, and the United States. My background includes serving as Chairman of the Western Weed Coordinating Committee, the State Weed Coordinators Alliance and currently I'm finishing my first term as an appointed member of the National Invasive Species Council's Invasive Species Advisory Committee as formed under the Federal Advisory Committee Act.

Through my experiences in the state of Wyoming and involvement in regional and national working groups, I've gained insight and experiences to the unique and difficult task of managing invasive species. Many see the issue of invasive species as an agricultural issue, a need to manage weeds in crop production. However, the extent of the problem is not limited by industry; by location; or by economic impacts. Urban communities deal with the issue as much as the rural communities. Species like zebra mussels can impact water supplies for livestock and municipalities. The impacts of invasive species from feral pigs, Burmese pythons; invasive weeds and pests are economically staggering. US losses alone were estimated in 2005 at $120 billion annually, a number that is likely well below the current losses.

Additionally we are becoming more and more aware of the impacts to our native wildlife. An obvious example is the brown tree snake in Guam devouring the native song bird population or feral pig predation on ground-nesting birds and sea turtles. Or, as in the state of Wyoming and the Great Basin, invasive grasses such as cheatgrass, medusahead rye and ventenata are altering critical habitat for sage grouse and mule deer by transitioning sage brush communities from a 50 year fire cycle to a 3 year fire cycle. Recently, the Western Governors Association held a series of workshops on the issue of invasive species. During one these workshops it was reported by the Bureau of Land Management that in the last 20 years, 74% of Department of Interior acres burned have been rangelands and 80% of the 12 million acres burned have been on cheatgrass invaded rangelands. Additionally they reported that cheatgrass landscapes burn four times more frequently than in native vegetation types. In 2015 through 2017 the National Interagency Fire Center reported suppression costs exceeded $7 billion dollars. If you do the rough math, that equates to a cost of $5.6 billion to manage wildlfires associated with, and likely exacerbated by invasive species.

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In 2016, the Invasive Species Advisory Committee published a white paper outlining the problem invasive species present for the country's infrastructure. The committee reviewed four main categories; power systems, water systems, transportation systems and housing. The issue of quagga and zebra mussels is one of the threats identified. A threat Wyoming has yet to discover in our water systems, but does currently exists in many states near us. Beyond quagga and zebra mussels, the ISAC white paper identifies threats such as Raspberry crazy ants to electrical equipment, and burrowing nutria and iguanas on flood control levees. Most concerning is the committee's conclusion that federal agencies currently lack the authority necessary to effectively prevent, eradicate, and control invasive species that impact the human-built environment. This lack of authority prevents rapid response to some of the most damaging invasive species and also limits the ability of agencies to prioritize and allocate resources.

Invasive species can also have a direct impact on public health such as introduced terrestrial pathogens and diseases. Zika virus and West Nile virus are both introduced mosquito-borne viruses that directly impact human health. Both viruses utilize native bird and mosquito species as hosts and vectors. In Wyoming, the first confirmed case of West Nile virus was in 2002, since then Wyoming, Montana, North Dakota and South Dakota have the highest average annual incidence of West Nile neuroinvasive disease reported to the Center for Disease Control. West Nile neuroinvasive disease can cause inflammation of the brain (encephalitis) and of the membranes surrounding the brain and spinal cord (meningitis). Between 1999 and 2017, over 2,000 deaths have been reported to the Center for Disease Control due to this invasive virus with an additional 137 deaths reported in 2018.

The task of managing such a vast, complex issue as invasive species can be staggering if not completely overwhelming. In the case of invasive weeds, the threat can sometimes be ignored due to the aesthetic value of some of these plants. This is why it is important to be strategic and intentional in how we manage these species across the landscape. An approach such Early Detection – Rapid Response to emerging threats is an example of one of these strategic actions. Wyoming has taken this approach with the recent discovery and eradication of rush skeletonweed and other species in our state. The EDRR approach is analogous to the medical field where early intervention with cancer has become a standard practice for improving the likelihood of successful treatment.

Successful management is realistic, achievable, and proven. Partnerships involving federal, state, and county agencies as well as private landowners have proven to achieve landscape scale management that is beneficial to agriculture and wildlife. In Wyoming we have been successful by ensuring all parties are actively engaged in the issue from a landscape scale to a broader state scale. For example, we have multiple groups working in partnerships across federal, state, and local agencies in conjunction with private landowners, non-governmental organizations, and the land-grant university to cooperatively reduce the impact of invasive species on the variety of ecosystem goods and services provided by our wildlands.

In 1896, US Department of Agriculture botanist Lyster Dewey was requested by Congress to research how the western states could eradicate the invasive weed Russian thistle. Russian thistle had been introduced into South Dakota through contaminated flax seed and had quickly established itself throughout the west and mid-west. Some of you may recognize Russian thistle as the tumbleweed co-starring in nearly every western movie ever made. In his report back to Congress, Dr. Dewey noted a couple important points he thought congress should consider when legislating for weed management. One of his primary recommendations was, "In nearly all cases the landowner can do this work at much less cost than it can be done by public authorities." Federal and state government partners contribute greatly through their jobs, but agricultural producers are passionate and financially motivated. Their livelihoods depend on healthy ecosystems. In other words, what is good for wildlife is typically good for agriculture. Programs such USFWS Partners for Wildlife and the USFS State and Private Forestry programs are essential tools in rewarding landowner efforts and allows them to actively contribute to improving habitat for wildlife including those recognized as species of greatest conservation need. I urge you to protect and fund these two programs accordingly and appreciate the But this not enough.

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In the same 1896 USDA bulletin Dr. Dewey states, "Next to the railroad yards and the waste land in cities and villages, the roadsides are the most important avenues for the introduction of new weeds and for the propagation of old ones. They should, therefore, be watched with special care." Dr. Dewey's comments are still as true today as they were then. Roads and rail lines are still one of the primary avenues by which invasive species move. In most cases, when a new invasive weed appears in Wyoming, we will find it near a road or rail line. We have watched invasive weeds such as yellow starthistle, an invasive plant that has infested 14 million acres in California, creep its way east by following the pathways humans have created. That is why when states such as California, Oregon, and Washington tell us they are concerned about a new invasive species, Wyoming pays attention. This also puts in perspective how difficult it is to manage the Yellowstone National Park and the Greater Yellowstone ecosystem when over 4 million visitors annually drive a car through one of the Park's five entrances.

As the issue of invasive species progresses and expands, we need to continue moving the dialogue forward as to what role we can play in improving success while identifying what resources are already in place and what additional resources are needed. Just under 50% of Wyoming is managed by federal agencies, and some of the more concerning infestations of terrestrial weeds occur on these public lands. When cross-jurisdictional programs are developed, local experts should be empowered by their respective federal agencies to make critical, time-sensitive decisions utilizing the best available information without tying their hands with excessive regulation or process-based bureaucracy. It is important for the National Invasive Species Council and their staff to identify these roadblocks and remove them, thereby increasing the effectiveness of multi-jurisdictional partnerships. Examples of these roadblocks include, the National Environmental Protection Act requirements for aerial applications of herbicides inconsistently applied across the National Forests in Wyoming. The lack of categorical exclusions for Early Detection – Rapid Response impedes our ability to treat high priority infestations in a timely manner. Inconsistent risk assessment protocols for new tools by various federal agencies alienates partners abilities to implement landscape scale management. High turnover and the overall lack of dedicated invasive species management positions in the land management agencies can leave partnerships fragile. We have to increase federal agency capacity.

Capacity can be improved through policy and legislative changes, but it also needs to be improved through funding. Invasive species programs have often relied on grants and short term funding sources which are helpful with immediate or initial treatment needs, but do little to assist with long-term program objectives or planning. Effective management programs require long-term survey, monitoring and potential re-treatments which can only occur with the knowledge that the financial resources will exist. Additionally, we need to improve funding for research and development. Programs such as USDA-ARS and land grant universities such as the University of Wyoming have programs and staff that can develop new management tools including biocontrol agents while providing assistance to local partnerships with implementing scientific sound management programs.

New funding is not the only solution. In 2017, the National Interagency Fire Center reported firefighting costs were $2.9 billion to fight fires on 10 million acres. This works out to a cost of $290 dollars per acre. A landscape scale herbicide treatment of cheatgrass cost at most $60/acre. If you apply the Department of Interior statistics that 80% of rangeland fires are related to cheatgrass to the 10 million acres, that means 8 million acres burned due to invasive annual grasses. The cost to treat those 8 million acres before they burn would roughly cost $480 million compared to the $2.3 billion it cost to fight fires on the same acreage. Yet agencies are only treating a small fraction of the infested acres, the Forest Service reported in 2015, that on average they treat 400,000 acres a year for invasive species. If the medical adage "prevention is better than the cure" is true, it may be time federal agencies look within as to how current firefighting funds are utilized and change the paradigm.

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Invasive species present a daunting task and we will only scratched the surface of the issue today. It also doesn't mean success is unachievable. In 2018 the National Invasive Species Council Secretariat's Office published a booklet called "Protecting What Matters". It includes fourteen examples of successful invasive species management programs throughout the United States and territories. Programs highlighted in the booklet range from the eradication of rats on Alaska's island ecosystems, to the management of aquatic weeds in the Erie Canal. In Wyoming, and with many of the western states, success is achievable through the leadership of state and county programs. Wyoming requires each county to have a weed and pest control district and fund them through local tax dollars. These weed and pest control districts are managed by boards consisting of local landowners and are managed by supervisors who are required by law to be pass weed and pest college courses offered through the University of Wyoming. Even our states newly elected Governor Mark Gordon stated in his first State of the State address, "I plan to work with UW's College of Agriculture and Natural Resources, our community colleges and the state's weed and pest districts to put together a program that will combine research with management. Aiming to make sure Wyoming is a leader nationally on combating invasive species." My point here is simple, if federal agencies need help; the state and county programs are willing and able. The issue is too important for western states like Wyoming to ignore.

Chairman Barrasso, thank you again for the invitation to speak with your committee. I would close by congratulating you on receiving the 2018 Wyoming Weed and Pest Council's Guy Haggard Award for your support of the organization and its purpose and goals. The Council not only appreciates all your efforts in helping bring national attention to the issue, but your efforts to address this issue through Senate File 826 the Wildlife Innovation and Longevity Driver Act also known as the WILD Act. I look forward to answering any questions the committee may have.

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The Wyoming Department of Agriculture is dedicated to the promotion and enhancement of Wyoming's agriculture, natural resources and quality of life.

Senate Committee on Environment and Public Works
Hearing entitled, *"The Invasive Species Threat: Protecting Wildlife, Public Health, and Infrastructure"*
February 13, 2019
Questions for the Record for Mr. Franklin
Responses by Slade Franklin
Submitted March 14, 2019

Chairman Barrasso:

1. **Wyoming has a complex patchwork of land management authorities. State agencies, federal agencies and private landowners often share fence lines but not management strategies. As Weed and Pest Coordinator, a large part of your job consists of organizing efforts between state, local, and federal agencies to achieve successful outcomes across the landscape. What can you tell this committee about the importance of cross-boundary management of invasive species, including partnerships with private landowners?**

Response: As mentioned in my written testimony, Wyoming is 48% federal lands (30,013,219 acres). Those federal lands are managed by a variety of federal agencies including the US Forest Service, Bureau of Land Management, Bureau of Reclamation, and Department of Defense. In states like Wyoming, invasive species management does not work unless we are capable of analyzing and addressing problems based on landscape and invasive species ecology. Management based on invisible boundaries is counter-productive and economically impractical.

This is why it is important to county weed and pest programs to create landscape scale working committees that look at the problem, not the ownership. Examples of this concept are Cooperative Weed Management Area (CWMA) or Cooperative Invasive Species Management Area (CISMA); both are fixtures in western states and an idea that is increasingly being incorporated by eastern states. CWMA and CISMA are partnership of federal, state, and local government agencies, tribes, individuals, and various interested groups that manage invasive species (or weeds) in a defined area. The North American Invasive Species Network reports there are approximately 300 of these partnerships in existence through-out the United States (https://www.naisn.org/cwmamap/). Partnerships such as CISMAs and CWMAs allow participants to collectively strategize solutions to invasive species issues that may be daunting to the individual landowner or manager. It can also decrease the per acre cost of treatment while increasing the likelihood of long-term management and control.

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The concept of CWMAs and CISMAs can also be applied to private landowner partnerships and cropping systems. USDA-APHIS reported a similar regional cooperative effort was implemented to reduce the prevalence of cotton boll weevil and stem the spread of citrus disease. It has also been suggested that the establishment of the CWMA concept by farmers and landowners may help slow the rate of herbicide resistance (https://farmdocdaily.illinois.edu/2015/04/new-approaches-to-weed-management.html).

Federal agency representatives participating in CWMAs and CISMAs need to be given the proper support and resources from their respective agencies so they can be active partners, especially in those collaborative efforts where a significant amount of federal land is present.

2. **In your oral testimony, you remarked that a rapid response is critical to controlling invasive species; do you find that federal laws encourage, or have no impact on your ability to rapidly respond to the eradication of invasive species in your state?**

Response: Although CWMAs and CISMAs try to ignore the issues of boundaries, they certainly exist when it comes to policy and implementation of best management practices (BMPs) by participating agencies. Early Detection – Rapid Response (EDRR) is not only a state approach, it is a concept that is recognized by federal agencies and has been incorporated in many of their outreach and management efforts. The Department of Interior published a coordinated set of actions to address EDRR invasive species (https://www.doi.gov/sites/doi.gov/files/National%20EDRR%20Framework.pdf) in 2016. The document mentions the need to "...strengthen, if necessary, Federal legal authorities, regulations and policies to conduct EDRR." The National Environmental Policy Act (NEPA) is a regulatory barrier that needs to be addressed in order to help federal agencies with implementing the "Rapid Response" portion of EDRR.

As an example, in Wyoming the discovery of the invasive annual grasses ventenata (*Ventenata dubia*) and medusahead rye (*Taeniatherum caput-medusae*) was made in Sheridan,WY three years ago. These two species are high priority EDRR species for agriculture and are a major concern to federal and state agencies for their fire potential. The infestation has impacted Bureau of Land Management (BLM), Department of Defense (DoD) and US Forest Service (USFS) lands. Sheridan County created a CWMA with the objective of eradicating all know medusahead rye infestations, and the local Forest Service office (Big Horn National Forest) actively participates due to infestations on their managed lands. Best management practices (BMPs) for the treatment of the annual grasses is through the landscape scale aerial application of herbicides. However, the Forest Service cannot participate in the treatments due to the lack of proper authority under NEPA.

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To complete the NEPA process, the Big Horn National Forest has estimated it will cost $300,000 and could take up to three years. There are eight (8) National Forests in Wyoming, and only two of them have completed the NEPA process for aerial herbicide applications. To complete the NEPA in the 4 remaining National Forests it could cost nearly $1.2 million dollars. If the USFS could take that $1.2 million dollars and apply it to controlling invasive species it would make a significant impact on their ability to protect National Forest System (NFS) lands.

Congress should direct the federal agencies to be more responsive to invasive species by directing them to streamline NEPA through the use of Categorical Exclusion (CE) authority so they can respond to EDRR invasive species threats in a timely manner.

Additionally, the variation in pesticide risk assessments implemented by federal agencies can be a hindrance. In 2005 the US Environmental Protection Agency (EPA) approved the registration of the new active ingredient aminopyralid (Milestone) as a herbicide. Aminopyralid (Milestone) is a reduced risk herbicide due to its reduced environmental footprint compared to other herbicides such as picloram (Tordon). The USFS was able to complete their agency risk assessment two years (2007) after the EPA approved aminopyralid (Milestone), the BLM took until 2015 to complete their risk assessment. Federal agencies need to streamline pesticide risk assessment policies and procedures to reduce the time and cost associated with getting new tools on the ground for invasive species management.

Ranking Member Carper:

3. **As you know, invasive species do not stop at state and federal boundaries. How are you or your department consulting with and/or partnering with the two tribal nations in your state to combat invasive species?**

Response: The Fremont County Weed and Pest Control District (FCWP) works very closely with the tribal nations (Eastern Shoshone & Northern Arapaho) on the Wind River reservation and with the Bureau of Indian Affairs (BIA). The FCWP has a resolution from the tribes that supports the invasive plant management programs proposed annually by the BIA. FCWP annually files a proposal with the BIA for noxious weed control. The BIA approves the plan, creates a cooperative agreement and provides funding for the district to manage invasive plants on the reservation. The BIA requires a 50% match which the FCWP provides through their county budget. FCWP provides invasive plant management on the tribal irrigation systems, roads, and idle lease lands, in addition to releasing and monitoring biological control agents. The FCWP is willing to provide their funds and services due to the proximity the tribal lands have to agricultural and federal lands within the county. Cooperative agreements between counties and federal agencies is a simple, effective way for federal agencies to improve their invasive species programs while stretching the limited resources.

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Due to climatic conditions and irrigation practices, Fremont County, WY and the Wind River Reservation, have one of the highest incident rates of West Nile virus (WNv) within the state. The State of Wyoming has an Emergency Insect Management Grant program that helps manage WNv mosquito vectors. FCWP administers the grant funds on behalf of the state and assists the tribal nations in implementing mosquito management program on reservation lands.

Senator Whitehouse:

4. **The 2017 Wyoming State Wildlife Action Plan discusses climate change's role in expanding opportunities for invasive species to overtake native species and their habitats. In the Action Plan's climate change chapter, the authors state:**

> **"As ecosystems and landscapes are altered by changing climate conditions and other disturbance, the opportunity for exotic and invasive species to establish populations in Wyoming may increase. Terrestrial habitat may be increasingly affected by invasive flora that can outcompete native flora in a warmer climate and in a landscape that is more frequently being disturbed by wildlife, insect outbreaks, and drought."**

How is the Wyoming Department of Agriculture preparing for increases in insect outbreaks as changes in our climate expand opportunities for these invasive species to overtake Wyoming's current plants and animals?

Response: The 2017 Wyoming State Wildlife Action Plan (SWAP), also identifies several recommendations that would complement or improve invasive species programs in the state. Although the emphasis on the SWAP is terrestrial and aquatic invasive species, several of the recommendations are applicable to the state's response to insect outbreaks that may impact the state's native flora and fauna.

One of those recommendations deals with the need to increase Early Detection Rapid Response capabilities. To help facilitate this, the Wyoming Department of Agriculture coordinates with the USDA-APHIS-PPQ and the University of Wyoming – College of Agriculture in the Wyoming Cooperative Agricultural Pest Survey (CAPS) program. The CAPS program was designed by USDA-APHIS to provide a framework for planning, preparedness, response, and recovery from invasive pests of regulatory significance on a national level.

The University of Wyoming – College of Agriculture also has an extension entomologist that works closely with local growers and grower groups in identifying pests and potential pest outbreaks in crops, rangelands and non-agricultural settings. The extension entomologis also participants in the Wyoming Inter-Agency Weed and Pest Working Group (WIAWPWG) meetings held quarterly during the year. This working group was created to communicate and collaborate on all issues concerning invasive species in the state and consists of representatives from both state and

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federal government agencies. The USDA – APHIS - CAPS and university extension programs play critical roles in protecting agriculture and natural resources in Wyoming and other states from the outbreak of invasive insect pests and need to be maintained.

To help compensate any management programs implemented due to invasive insect outbreaks, the Wyoming State Legislature developed the Wyoming Emergency Insect Management program under the leadership of the Wyoming Department of Agriculture. This program was developed to provide financial assistance to state agencies and political subdivisions such as cities, towns, counties, weed and pest districts and special districts. Funding provide through this program helps manage emergency outbreaks of insect pests and insect vectors of diseases for the protection of human health and safety, animal health including livestock and wildlife, agriculture and natural resources.

5. **What examples have you already seen of climate change-driven expansion or new establishment of invasive species in Wyoming?**

Response: Below are three examples of newly established invasive species in Wyoming. In all three cases, as with most terrestrial invasive species, the interstate and intrastate movement of the weeds into new areas of the state can be directly associated with human activities.

- In 2004 Viper's bugloss (*Echium vulgare*) was located 10 miles outside of Cheyenne, WY along the Union Pacific railroad. Viper's bugloss is a biennial plant that produces alkaloids poisonous to horses and cattle. The plant prefers disturbed waste areas commonly associated with railroad right-of-ways. Since its discovery near Cheyenne several other locations have been found along the Union Pacific rail line between Cheyenne, WY and Evanston, WY (499 miles). The state has been working to eradicate the noxious weed, but success has been difficult due to the rough terrain and soil conditions associated with railroad right-of-ways.

- In 2007 and 2017 localized populations of yellow starthistle (*Centaurea solstitialis*) was found in Teton County, Uinta County and Washakie County. Yellow starthistle is native to Eurasia and has infested an estimated 10 to 15 million acres in California. It forms dense infestations and rapidly depletes soil moisture, thus preventing the establishment of other species. It is also poisonous to horses, causing a nervous disorder called "chewing disease" (nigropallidal encephalomalacia), which is fatal once symptoms develop. All identified populations of yellow starthistle were treated and eradicated. The infestation in Uinta County was caused by contaminated construction equipment brought into the area from Utah. The Teton County infestation was associated with contaminated hay that was brought into the county fairgrounds.

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- In 2016 the invasive annual grasses ventenata (*Ventenata dubia*) and Medusahead rye (*Taeniatherum caput-medusae*) were identified in Sheridan County, WY. Much like cheatgrass, both of these annual invasive grasses are native to Eurasia. They are low-value forage species for livestock and wildlife due to their high silica content, and it has been estimated that the carrying capacity of rangeland for domestic livestock can be reduced by 75% after a medusahead invasion. Both species also pose a significant risk to rangeland wildfires and critical sage grouse habitat. The state and its partners have been working hard in the last three years to identify and eradicate all known populations of medusahead rye. In the summer of 2018 an additional infestation of medusahead rye was located 196 miles away from Sheridan County in Converse County. This new infestation was treated immediately after discovery. In both Sheridan County and Converse County the infestations were associated with areas utilized for recreation.

Thank you once again for the opportunity to discuss this issue with the Senate Environmental and Public Works Committee. If any member of the committee would like to continue this dialogue through additional questions, I would be happy to answer them as requested.

Sincerely,

Slade Franklin
Weed and Pest Coordinator
Wyoming Department of Agriculture

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Senator BARRASSO. Thank you for your testimony.
Mr. STEINWAND.

STATEMENT OF TERRY STEINWAND, DIRECTOR, NORTH DAKOTA GAME AND FISH DEPARTMENT

Mr. STEINWAND. Thank you, Mr. Chairman, Ranking Member Carper, and members of the Committee. I didn't write anything down; I like to adlib stuff. I will add right upfront that I am more of an expert on the aquatic side of invasives. We do deal with the terrestrial side also, but I will let the colleagues on either side of me deal with it.

I wish Ranking Member Carper were here, because he mentioned the emerald ash borer as being a devastating insect, and it absolutely is. But I just read an article last week, and I don't know if this is verifiable, if there is research, but out of Minnesota there was an article that stated once it hits 20 below, it starts affecting the larvae of emerald ash borer, which are right under the bark of the tree. Once it hits 30 below, 90 percent of the larvae are killed.

Well, being from North Dakota, we don't have emerald ash borer, and I would like to say that it is probably because we have 40 to 50 below temperatures up in North Dakota. That is not necessarily true; we have been relatively lucky.

Also, Mr. Chairman, you also mentioned about the monotypic stands, and I think you were probably referring to cheatgrass. That is also true in the aquatic world. Eurasian watermilfoil, curly leaf pond weed, we do have those in North Dakota, and they form these monotypic stands and it hurts the aquatic side of it, too. My colleague, Mr. Franklin here, mentioned about the wildfires with cheatgrass. We don't have wildfires in the aquatic ecosystem, but what happens is they take over, they become a monotypic stand; it reduces the diversity of the vegetation and therefore reduces the forage species, insects for other sports species and other potentially endangered species.

Senator Cramer mentioned I am a farm boy. I am not a boy anymore, I am a lot older than that; I qualify by Social Security, but I love what I do, so I don't plan on taking Social Security for a while. But being a farm boy analogy, my dad never planted the same crop on the same land year after year, and it was for disease issues. I think we can say the same thing. You have that monotypic stand, you lose that diversity.

On any invasive species, if it can be found early, that is when your chances of eradicating it or controlling it are absolutely the best, or certainly enhanced in most cases. This really takes aggressive and sometimes constant monitoring of the landscape, again, whether it is the aquatic or the terrestrial ecosystem. Of course, that requires people and funding.

I just want to give you some examples of what do in North Dakota. We monitor high-value, high-risk areas. Again, Senator Cramer mentioned the Lake Sakakawea and Garrison Reservoir. We monitor that frequently with our colleagues from the Corps of Engineers, local sportsmen's groups, so on and so forth.

We also contract with local college students in the eastern part of the State to have students go out and check boaters in some of these high-risk areas. It is not mandatory check in North Dakota,

but check them, tell them how to check for vegetation and drain their live wells and their bilge water; and, at the same time, educate and inform them, because that has been our attitude. Education and information is maybe the best tool we have.

I will also give you some examples of what we don't catch early. Everybody has heard of the common carp. It has been in the United States since the 1800's, and my German ancestors brought it over because they were homesick for what they had back in Europe. We have problems with that in many places. In waterfall areas it can cause problems by rooting up the vegetation in their spawning activities. It does the same for the fishery side; they tend to take up that biomass, so it is almost impossible to control. We have controlled it with rotenone applications to kill it, but it is not specific to carp, so it kills the rest of the fish species.

One we did catch in time is the Eurasian watermilfoil. It was first found in a little sidewater of the Cheyenne River, which is in east central North Dakota, and we were a little concerned, but what we did is we have done surveys on where the highest risk areas they come from, and it undoubtedly came from Minnesota at that point in time. We had found a small lake in southeastern North Dakota that was a real hotspot for Minnesota anglers to go to. Within 2 years, we had Eurasian watermilfoil there. What we did, we worked with the local water board, we drew down what was called Dead Colt Creek, trying to freeze it out because the literature said that will work. Then, the following spring we applied it with an herbicide. We did that for 2 years; it was eradicated and we have not found it there ever since.

Another issue we think we have caught in time is silver carp, a form of Asian carp. In 2011, there was a tremendous flood all across North Dakota. It actually moved up the James River from South Dakota into North Dakota and hit a dam, Jamestown Reservoir or Jamestown Dam, and we have been monitoring it very closely. We have not found any reproduction. We put some regulations in place that does not allow the public to take small fish out of there for bait to use in other waters, and, so far, we have not found it in any further places. There are big adults, but they are just getting larger.

Another one we think we have caught in time, and it is not just us, we worked with the North Dakota Department of Agriculture, is palmer amaranth. The first occurrence in North Dakota was found this last August. And if you don't know anything about palmer amaranth, it is a species of pigweed that grows very aggressively, about 2 to 3 inches a day, can have a stem about that big, and produce up to a million seeds in the seed head. We coordinated with the Department of Agriculture right around the start of hunting season in North Dakota, and we figured if we could have thousands of boots on the ground in the form of hunters looking for those areas, then they could pull them in time, figure out exactly what it was; and, to our knowledge, there have been no further occurrences of that in North Dakota.

Zebra mussel, we do have it in North Dakota. That is one that we anticipated it coming because it was coming to a tributary of the Red River, which forms the border between North Dakota and Minnesota. We had found larvae for about 4 years, just not very

many of them, the veligers, but in 2016, all of a sudden, we found adult zebra mussels. Not much you can do without very, very extensive means to take care of that, but we do know it is there, and we put some special regulations in place to ensure that water from the Red River does not move anyplace westward further into North Dakota.

I have gone over my time here, but I guess my advice is the sooner we can catch something like that, the better off you are. And if you can contain it to a general area, the better off you are. Once it gets out of control, spreads and spreads and spreads, it becomes more expensive and there is more damage.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Steinwand follows:]

TESTIMONY ON INVASIVE SPECIES MANAGEMENT AND ACTION

U.S. Senate Committee on Environment and Public Works

February 13, 2019

Submitted by:

Terry Steinwand, Director

North Dakota Game and Fish Department

Invasive species, whether they be aquatic, terrestrial, or microbial have the potential to negatively impact recreation, agriculture, human health, and infrastructure to a large degree if left unchecked. The first goal of managing for invasive species is prevention and a secondary goal is, once introduced into an area, to either eradicate or control the spread to prevent any damage, present or future.

Although I will be addressing both aquatic and terrestrial invasive species work in North Dakota, I am much more knowledgeable on the aquatic spectrum and, thus, the majority of this testimony will address how we manage aquatic invasive species.

Aquatic Invasive Species

North Dakota interchangeably uses the term 'aquatic invasive' and 'aquatic nuisance species' (ANS). The North Dakota Aquatic Nuisance Species (ANS) Program sets annual priorities based on available staff and resources. These priorities are directed by the North Dakota ANS Management Plan (Plan), which was last updated and signed by Governor Doug Burgum in December 2018. The Plan is comprised of four objectives: 1) Coordination and Communication, 2) Education and Outreach, 3) Prevention and Control, and 4) Sampling and Monitoring. Each objective has a set of corresponding strategies and actions associated to meet the overall goal of preventing the introduction and spread of ANS into and within North Dakota while mitigating ecological, economic, and social impacts of existing populations where feasible.

Coordination and Communication Priorities

Aquatic Invasive Species Committee

The Aquatic Invasive Species Committee (AISC) is an advisory committee that guides ANS work throughout North Dakota state agencies. The AISC is comprised of representatives from state, tribal, and local agencies as well as public and private interest groups. Further, AISC meetings are open to the public, and additional federal, state, and local interests are often represented. The North Dakota Game and Fish Department (Department) chairs the AISC and is thus responsible for planning meetings and keeping the group apprised of any important updates.

The AISC is convened twice annually. The spring meeting is generally held between mid-March and the end of April prior to field activities, as this meeting is geared toward generating input on

proposed work plans for the year and presenting the final report from the previous year. The fall meeting is generally held between mid-October and the end of November to discuss work that was completed throughout the season and to review the ANS list. The ANS Coordinator is the only staff required to organize and run meetings, as well as distribute any needed updates in a timely manner. These activities address Actions 1.B.2, 1.D.1, 1.D.2, 1.D.3, and 3.B.1 in the Plan as shown in Appendix A of this testimony.

In-state Coordination

There is a clear need for consistent, coordinated efforts to address ANS issues. Within North Dakota, one of the primary focus areas is promoting consistency across statewide efforts to prevent the introduction and spread of ANS. As chair of the AISC, the Department provides an ANS Coordinator to facilitate coordination of ANS efforts within North Dakota and across jurisdictional boundaries. As such, the ANS Coordinator's role is to develop and implement a statewide management plan and to coordinate efforts within the state under advisement of the AISC. In 2018, the AISC updated the Plan, which is currently in the implementation phase.

A few needs were identified for the upcoming year for in-state coordination. The first includes supporting the State Water Commission as they begin to incorporate ANS into their classroom educational efforts. Another identified need is to work with the Corps of Engineers to provide ANS information to concessionaires around Lake Sakakawea, as well as supporting their adult zebra mussel sampling efforts as needed. Several agencies, including the Department of Transportation, the State Water Commission, and the Corps of Engineers include ANS requirements as part of their permitting processes. These permit requirements should be periodically reviewed and updated as necessary, and the ANS Coordinator should be available to support permit requirements such as inspections as needed. As other needs arise, the ANS Coordinator will support and guide any efforts as appropriate. This addresses Actions 1.A.1, 1.B.1, and 4.C.2 (permitted equipment inspections) in Attachment A.

Regional Coordination

Just as there is a need for consistent, coordinated efforts within North Dakota, regional efforts are needed to address ANS issues which transcend socio-political boundaries. Although specific jurisdictional approaches can vary, the overall goal of preventing ANS introductions, spread, and impacts to the greatest extent possible is the same. By collaborating with neighboring states, federal agencies, and other stakeholders, ANS issues can be addressed through pathways and on geographical scales that are biologically or ecologically relevant.

Two main priorities stand out. The first is the involvement and engagement in the late January Western Governors' Association Invasive Mussel Forum, an extension of their Invasive Species Initiative, which focuses on strategizing across leaderships to combat the spread of zebra and quagga mussels in the Western United States. The second is to provide leadership for the Missouri River Basin states to address ANS issues within the basin by hosting a meeting of ANS Coordinators. This group, the Missouri River Basin Team of the 100th Meridian Initiative, meets annually to discuss current and upcoming ANS threats to the basin, but did not meet in 2018 due to conflicts with an Asian carp management effort. To reinvigorate the group, North Dakota has agreed to host the 2019 meeting in August.

Other ongoing regional efforts include attending the May 2019 Mississippi River Basin Panel on ANS meeting and associated Asian carp sampling workshop; engagement in the March meeting

of the Missouri River Basin Asian carp technical committee; and working with the Western Regional Panel on ANS as needed. The ANS Coordinator will engage with regional activities and attend meetings as necessary and as time allows. These activities address Actions 1.C.1 and 1.C.3.

EDUCATION AND OUTREACH PRIORITIES

Statewide outreach campaign

Outreach messaging often targets information about what ANS are, potential impacts, how to prevent their spread, and any relevant regulations. Effective messaging can inform users, change behaviors, and increase regulation compliance. Among other factors, repeated exposure is necessary for messages to be effective. In North Dakota, a statewide outreach campaign has been in effect for many years. In 2019, the Department contracted with Jason Mitchell Outdoors to supplement Department efforts of implementing a comprehensive statewide outreach campaign that provides ANS information to water users through a variety of media with repeated exposure. Ongoing Department work such as the Department website and educational efforts at the North Dakota State Fair serve as part of the outreach campaign. This campaign is evaluated somewhat through boater survey information and an annual contractor report.

The content of messages is critical to ensure effectiveness, and recognition of a message can be useful to remind the audience of repeated exposures. The Department utilizes the "Clean, Drain, Dry" message that is consistent with many other state, federal, and local agencies across the nation. This increases the understanding of audiences that have already been exposed to the message. Given recent concerns of increases in violations, the 2019 campaign will also focus on messaging that reinforces the regulation that prohibits the importation of live bait into North Dakota.

Messaging typically begins just before the boating season in mid-May and runs through the early part of waterfowl season before ice forms. The ANS Coordinator works with the Communications Section Leader and any contractors to develop and implement the statewide outreach campaign. This addresses Actions 2.A.1, 2.A.2, 2.B.1, 2.B.4, 2.B.5, and 2.D.1 as shown in Appendix A.

Targeted campaigns

Although the statewide outreach campaign is good for providing information to general audiences, there is also a need to develop materials specific to a pathway or user group. These targeted efforts can engage audiences that are less directly involved or less informed in general on aquatic or ANS issues. It can also be used for audiences that are not traditionally targeted by ANS messaging. Examples of priorities for North Dakota in 2019 include: classrooms, marinas, pet stores, and trappers.

This will be the first year of engaging classrooms and trappers on ANS issues related to their activities. Marinas and pet stores were first engaged on this issue in 2017. Pet stores are supplied with materials to hand out through their business. Marinas were not engaged in 2018, though there exists a good opportunity to work with the Corps of Engineers concessionaires to re-engage Lake Sakakawea marinas and develop additional materials for all North Dakota marinas.

Targeted campaigns can be year-round, such as supplying pet stores on demand or meeting with concessionaires in early spring with the Corps of Engineers. However, winter and late summer are targeted for outreach efforts generally to avoid conflicts with other ANS efforts. Staff needs include the ANS Coordinator, who works with any key partners on this project. This addresses Actions 2.B.1 and 2.B.2 (Appendix A).

Boater surveys

The 100th Meridian Initiative has standard boater survey forms that gather information about the current knowledge about ANS, where information is obtained, and impacts to the boaters by ANS. They also ask about preventative measures taken by the boaters, willingness to take further action, and waters in which the boat in question has been used. The 100th Meridian Initiative surveys provide valuable information to managers and are simple enough that the information collected can be primarily obtained through a friendly conversation. Surveys are often coupled with inspections to increase efficiency of boater interactions.

Surveys are conducted Memorial Day weekend through August, dependent upon seasonal availability. Staff needs include four seasonal employees (contracted through Valley City State University) and the ANS Coordinator. This would meet Actions 2.B.1 and 2.B.4 (tournaments) as shown in Appendix A.

Staff trainings

In order to set an example through agency actions on preventing the spread of ANS, it is important that Department staff understand ANS issues, ways to prevent their spread, and any relevant internal policies or procedures. In addition, game wardens enforcing ANS regulations often receive questions about ANS issues, particularly laws in other jurisdictions. To provide the best available information to Department staff, trainings will be conducted with emphasis on fisheries and law enforcement staff, who receive the most inquiries and are most directly involved in preventing the spread of ANS.

Trainings should be conducted in an efficient manner, at the annual Fisheries Division meeting and the annual Law Enforcement in-service training. The ANS Coordinator will work with appropriate administration staff to schedule and conduct trainings. This addresses Action 2.C.1 and 2.C.2 (Appendix A).

PREVENTION AND CONTROL PRIORITIES

Boat inspections

Recreational boaters pose a large threat of spreading ANS such as hydrilla, Eurasian watermilfoil, and curlyleaf pondweed. The goals of boat inspections are three-fold: 1) monitor for any ANS that may be present, 2) educate boaters about regulations and how to remain compliant (demonstrate how to inspect own boat), and 3) gather information about risk associated with recreational boaters (see boater surveys).

Boat inspections will take place at varying locations throughout the season based on boater use patterns as observed by fisheries and law enforcement staff. There will be two crews: one based out of Valley City and the other out of Devils Lake. The Valley City crew will focus on

southeast North Dakota and Lake Oahe. The Devils Lake crew will focus on Devils Lake complex, high-use waters across the northern half of North Dakota, and Lake Sakakawea.

Boat inspectors will work in crews of two and will be trained by the ANS Coordinator at the beginning of the season. Training will include proper inspection and decontamination procedures, ANS biological and regulation background information, techniques for successfully conducting surveys, and agency policies (such as proper uniform appearance, allowed and prohibited activities while working, etc.). Training materials will be provided to seasonal employees.

Boat inspections will take place concurrent with boater surveys. Staff needs include the same four seasonal employees (contracted through Valley City State University) as conduct the boater surveys, LE officers as needed, and the ANS Coordinator. Boat inspections address Actions 3.B.4. and 4.C.2 (Appendix A).

Eurasian watermilfoil control

The first report of Eurasian water milfoil was on the Sheyenne River near Valley City, North Dakota in 1999. Approximately two years later it was found in a small tributary impoundment which the Department had been monitoring due to surveys showing a larger than normal non-resident boating/fishing activity. The Department subsequently worked with the local water resource board to draw down the reservoir in an attempt to 'freeze out' the invasive vegetation since literature suggested this might be a control mechanism for the plant. Additionally, the following year, herbicide was applied to any remaining plants. It took approximately two years but the invasive plant no longer exists in that impoundment. Eurasian water milfoil is still present in its original location on the Sheyenne River, however.

Dependent upon findings in aquatic vegetation sampling efforts of the Sheyenne River, the Department may decide to weigh control options for Eurasian watermilfoil in this system. The Sheyenne River contains the only known population of Eurasian watermilfoil in North Dakota, and in previous years' surveys, only a few plants were present in a single location. Hand pulling this invasive aquatic plant may be the best option if surveys reveal a limited number of plants. However, care must be taken to prevent fragmentation, which is a means of reproduction for this species. Any control efforts would be weighed carefully after the vegetation sampling effort. Staff needs will likely require the ANS Coordinator, as well as the Jamestown Fisheries Biologist. This addresses Action 3.D.2 (Appendix A).

Update internal policies

State agencies have the responsibility of providing leadership on ANS issues within their jurisdictions. As such, it is important to periodically review and update internal actions and procedures as needed. As part of the preparation to train staff, policies and procedures internal to the Department will be reviewed and adjusted as necessary. This will be done by the ANS Coordinator, appropriate administrators, and Department staff. This addresses Actions 3.A.1 and 3.A.2 (Appendix A).

SAMPLING AND MONITORING PRIORITIES

Asian carp monitoring in the James River

Although Asian carps are notoriously difficult to sample efficiently, electrofishing appears to be the most effective method at detecting the presence of silver carp in a system. The only current known population of silver carp in North Dakota is in the James River below Jamestown Reservoir and is believed to have moved up the James River from South Dakota during the flood of 2011. In response to that occurrence the Department has instituted a new regulation on the James River where it is illegal to gather any aquatic organisms as use for fishing bait.

The James River is electro-fished annually to assess the current population of silver carp. The river is also periodically seined by fisheries staff. Seining backwaters in August would mostly target juvenile silver carp, which have not been documented in North Dakota. Any evidence of juvenile silver carp should be immediately reported and followed up with additional sampling.

The ideal time for electrofishing silver carp is September through October, though sampling in this system is generally conducted in August. Sampling is generally conducted by Jamestown fisheries staff, though the ANS Coordinator will be available to assist as needed. This addresses Action 4.B.1 (Appendix A).

Fish hatchery sampling

The U.S. Fish and Wildlife Service operates three fish hatcheries in North Dakota: Garrison Dam, Valley City, and Baldhill Dam. Although these are federal facilities, the Department works closely with these facilities on production and provides some funding for operations. These fish production facilities are sampled annually for the presence of ANS through plankton tows and visual inspections. Sampling is conducted in July during peak zebra mussel reproduction, and when most ponds are dewatered and available to inspect. The ANS Coordinator conducts this sampling. This addresses Actions 4.C.1 and 4.C.2 (Appendix A).

Fish import disease sampling

Any fish imported into North Dakota, whether through a public or private entity, is required to have been tested for viral hemorrhagic septicemia (VHS) and other federally-reportable diseases and parasites prior to importation. When deemed necessary, fish in North Dakota are also sampled by the Department veterinarian for the presence of reportable diseases and parasites. Sampling is typically conducted in the spring, when water temperature fluctuations exacerbate diseases and make test results more reliable. Staff requirements include the Production Supervisor, Department Veterinarian, and fisheries biologists and technicians as needed. This addresses Actions 3.E.2, 4.C.1, and 4.C.2 (Appendix A).

Statewide lake surveys

Given the numbers of North Dakota waters sampled by fisheries staff throughout the season, it is prudent to include ANS observations within existing surveys. During regular fisheries population sampling efforts, fisheries staff make observations and report any newly observed populations of ANS, including plants, vertebrates, or invertebrates. These observations typically also extend into special population sampling events (i.e. research), and fisheries supervisors or biologists sometimes conduct ANS-specific sampling in their waters when time allows. ANS sampling is

generally concurrent with fisheries standard adult population surveys and fall reproduction assessments. Assessments are conducted by fisheries staff. This addresses Action 4.A.1 (Attachment A).

Vegetation sampling

Vegetation sampling specific for ANS is typically conducted by Department fisheries staff during statewide lake surveys. However, in 2017, an additional effort was conducted to sample non-fishing waters for ANS. While no ANS were detected, additional sampling locations have been identified for targeted vegetation sampling at non-fishing waters.

In addition, only a few Eurasian watermilfoil plants have been documented in North Dakota, all in the Sheyenne River below Lake Ashtabula. There is potential to sample this population more thoroughly in 2019, depending upon water conditions, that involves kayaking the river and mapping any Eurasian watermilfoil plants to determine the extent of the population. Such an undertaking may result in control or eradication attempts, depending upon findings.

Vegetation sampling should be conducted in mid-June through mid-July to allow for vegetative growth prior to the senescence of curlyleaf pondweed in late summer. Given the life history of Eurasian watermilfoil, this sampling can be conducted anytime between mid-June through mid-September. The ANS Coordinator will likely be available for vegetation sampling, and the Jamestown Fisheries Biologist has offered to assist with Eurasian watermilfoil sampling. This addresses Action 4.A.2 (Attachment A).

Zebra mussel early detection

It is important to detect newly established populations of zebra mussels as soon as possible. Early detections of newly established ANS populations allow for potential management or control options at the time of discovery. Increased outreach efforts during initial discovery also aid in containment of the newly discovered population. Given concerns of potential findings in 2016 in the Missouri River system in Montana and in Dickinson Reservoir by the Bureau of Reclamation, dedicated and frequent sampling of these systems is warranted. It's important for reports of invasive species that a network of information across socio-political lines is maintained to allow for response in the form of monitoring and potential management actions.

Oblique plankton tows from shore have been documented to be more efficient at capturing zebra mussel veligers than have vertical plankton tows from a boat. Oblique tows are also less time consuming and require less equipment that may increase the potential of spreading aquatic nuisance species during sampling efforts. Oblique plankton tows will be used to sample high-risk waters. Sampling will be focused in areas with higher recreational use, especially from non-residents. Each waterbody is generally sampled once annually in the peak zebra mussel spawn window.

General early detection sampling will begin when water temperatures reach 65°F for at least a week and end when water temperatures exceed 85°F for at least a week or drop below 60°F for at least a week, with the majority conducted between late June through mid-August. For the Missouri River System and Dickinson Reservoir, monthly samples will be collected from May through September for three consecutive years (2017-2019). If all samples collected from these systems during this time are negative for the presence of veligers (larval zebra mussel) and no new potential detections arise from external sources, sampling will resume as an annual event.

Sampling will be conducted by Valley City State University personnel (through a contract with Andre DeLorme) and the ANS Coordinator. This addresses Action 4.A.2 (Attachment A).

Zebra mussel monitoring on Red River

Given that the Red River contains the first known established population of zebra mussels in North Dakota, it is beneficial to document establishment rates. Veliger density data from the first five years of establishment (2016-2020) would provide information for managers about timing of zebra mussel reproduction in North Dakota that would be useful for focusing sampling efforts across other parts of the state. Five years seems appropriate given the high variability in river systems.

Zebra mussel veliger densities will be estimated at three sites along the Red River in North Dakota from April through October. Oblique plankton tows will be conducted once a month at Drayton Dam, Grand Forks north landing, and Fargo Midtown Dam using a plankton net fitted with a flowmeter. Samples will be subsampled to estimate veliger densities at each location for each month, then a weighted average (using volume of water sampled) will be used to generate a general index of veliger density for the Red River for the month.

Monthly samples will be collected mid-month from April through October. Samples will be collected and analyzed by the ANS Coordinator. This addresses Action 4.B.1 (Attachment A).

Terrestrial Invasive Species

The North Dakota Game and Fish Department does not have authority on terrestrial invasive species across the state but, as with ANS, collaborates heavily with other agencies to combat the introduction or spread across the state. As a Department, we work regularly with local weed boards to either spray or use biological controls (e.g., flea beetles on leafy spurge) to control those invasives. An internal policy is also in place that new vegetation plantings and food plot seeds must come from a reputable, certified weed free source.

There are other species that have become synonymous with lawns in the northern plains and other areas of the country and that is Kentucky bluegrass. While a popular choice for lawns it has become invasive in many native grasslands in North Dakota. It can be an adequate forage for livestock production but its value as wildlife habitat is very low. Once established, bluegrass can out compete native grass and forbs, reducing the value as wildlife habitat and replacing pollinator habitat for bees, butterflies and other pollinating insects. If a bluegrass infestation is reported at early infestation it can be mostly restricted with managed grazing activity but once infestations reach 30% or more of the area in which it has invaded, it becomes very difficult to control further expansion. Herbicide application is not necessarily a viable control technique since the herbicide will also devastate the native vegetation.

Another species that creates challenges is smooth bromegrass. Again, it can be a popular forage supply for cattle but it's characteristic of 'clumping' has less than desirable wildlife habitat value. As with bluegrass, early grazing can control it's spread to some extent but eradication is very difficult and herbicide application is again not a viable alternative.

The North Dakota Department of Agriculture is the primary entity charged with addressing invasive terrestrial species. There are currently 12 species listed as 'noxious weeds' by the Department of Agriculture and, once reported, it is the mandated responsibility of the landowner or appropriate entity charged with management of that land to eradicate the vegetation on the land for which they are responsible. The count or city weed boards do the majority of the work and monitoring, but the ND Department of Agriculture regularly assists with financial help. North Dakota State University Extension Service provides assistance with public outreach and education. As with ANS, collaboration is necessary, if not a prerequisite, to adequately address issues associated with terrestrial invasives. An example occurred in August, 2019 when palmer amaranth was first reported in North Dakota. This is a tremendously harmful invasive that can significantly impact agriculture production as well as wildlife habitat. There are speculations as how it came to enter North Dakota; a combine bought in Ohio and came into the state uncleaned, out of state hay sources entered the state in 2017 when vast amounts of hay forage were brought into North Dakota to address a forage shortage due to a drought, and potential pathway via waterfowl. Upon notification of palmer amaranth the Game and Fish Department and Agriculture Department met to determine what both could do to help with the situation. Given that hunting seasons were near, Game and Fish offered to help disseminate information via our website and other education media and to ask help from hunters to report a possible sighting while they were out hunting, which meant thousands of individuals could be observing numerous areas during a relatively short period of time.

In conclusion, invasive species can cause great harm to the economy, human health, and infrastructure if left unchecked. The first priority should always be to prevent the introduction of the species but if it does occur, immediate response with a predetermined plan to control the spread of the invasive species and finally, if possible, eradicate the infestation with minimal or no impact to the public.

ATTACHMENT A

TABLE OF ANS PLAN OBJECTIVES, STRATEGIES, AND ACTIONS.

OBJECTIVE 1. COORDINATION AND COMMUNICATION
Strategy 1.A. Maintain dedicated ANS staff
Action 1.A.1. Hire, train, and maintain appropriate staff levels for overseeing and implementing a statewide ANS program.
Strategy 1.B. Coordinate North Dakota efforts
Action 1.B.1. Implement an adaptive statewide management plan.
Action 1.B.2. Host regular meetings of the North Dakota Aquatic Invasive Species Committee.
Action 1.B.3. Guide research within North Dakota.
Strategy 1.C. Actively participate in large-scale ANS efforts
Action 1.C.1. Actively participate in regional coordination groups.
Action 1.C.2. Participate in national and international coordination efforts.
Action 1.C.3. Attend meetings and conferences aimed at addressing ANS issues.
Strategy 1.D. Communicate ANS activities
Action 1.D.1. Develop a publicly-accessible annual report.
Action 1.D.2. Develop and distribute informational updates.
Action 1.D.3. Solicit public input on ANS activities as appropriate.
OBJECTIVE 2. EDUCATION AND OUTREACH
Strategy 2.A. Implement a statewide ANS outreach campaign
Action 2.A.1. Develop and implement statewide ANS communications strategy.
Action 2.A.2. Utilize a recognizable outreach campaign for general audiences.
Strategy 2.B. Educate stakeholders on ANS
Action 2.B.1. Provide information to high-risk individuals.
Action 2.B.2. Focus educational efforts on entities that provide ANS pathways.
Action 2.B.3. Educate decision-makers on ANS issues.
Action 2.B.4. Include ANS education in public events.
Action 2.B.5. Maintain an updated public information platform.
Strategy 2.C. Provide training to key staff and partners
Action 2.C.1. Provide ANS staff opportunities to attend trainings.
Action 2.C.2. Develop and employ a North Dakota-specific ANS training program.
Strategy 2.D. Identify and address educational gaps
Action 2.D.1. Evaluate and adjust educational efforts.
Action 2.D.2. Use research to guide educational developments.

OBJECTIVE 3. PREVENTION AND CONTROL
Strategy 3.A. Establish internal ANS prevention policies
Action 3.A.1. Establish internal ANS policies and procedures.
Action 3.A.2. Review agency activities for potential ANS impacts.
Strategy 3.B. Institute and enforce comprehensive regulations
Action 3.B.1. Maintain a list of prohibited ANS.
Action 3.B.2. Craft comprehensive statewide regulations.
Action 3.B.3. Provide staff to fully enforce regulations.
Action 3.B.4. Facilitate regulation compliance.
Strategy 3.C. Incorporate ANS preventative actions into permitting processes
Action 3.C.1. Include ANS regulatory information in permit language.
Action 3.C.2. Require preventative actions for high-risk permitted activities.
Action 3.C.3. Enforce permit ANS requirements.
Strategy 3.D. Eradicate or reduce ANS populations where feasible
Action 3.D.1. Develop a rapid response plan for new ANS populations.
Action 3.D.2. Conduct efforts to reduce or eradicate ANS populations as feasible.
Strategy 3.E. Identify and incorporate scientifically sound prevention and control methods
Action 3.E.1. Research new methods of preventing and controlling ANS.
Action 3.E.2. Develop and integrate best management practices.
OBJECTIVE 4: SAMPLING AND MONITORING
Strategy 4.A. Conduct statewide early detection sampling for ANS
Action 4.A.1. Incorporate early detection sampling into existing activities.
Action 4.A.2. Conduct targeted high-risk early detection sampling.
Strategy 4.B. Monitor existing ANS populations
Action 4.B.1. Monitor existing ANS populations and document any changes.
Strategy 4.C. Monitor high-risk pathways for signs of ANS
Action 4.C.1. Identify and monitor internal high-risk pathways.
Action 4.C.2. Identify and monitor external high-risk pathways.

Senate Committee on Environment and Public Works
Hearing entitled, *"The Invasive Species Threat: Protecting Wildlife, Public Health, and Infrastructure"*
February 13, 2019
Questions for the Record for Mr. Steinwand

Chairman Barrasso:

1. Invasive species have widespread impacts. In Wyoming, curly pondweed was found in Lake DeSmet in 2011. In 2012 it was discovered on the North Platte River between Seminoe Reservoir and Pathfinder Reservoir as well as New Fork Lake. This pondweed inhabits local marinas in your state of North Dakota damaging boat propellers and inhibiting swimming. This weed is also a serious health threat. When the invasive pondweed dies, it slows down water flows, creating stagnant water that serves as a breeding ground for disease spreading mosquitos. How is North Dakota working with state, federal and local authorities to address this threat? **Response: We have similar situations in North Dakota in that man made marinas on the Missouri River have created backwaters where water flow has been decreased and curly leafed pondweed has been able to establish. When these marinas were established the Department of Environmental Quality (DEQ), ND Game and Fish and U.S. Army Corps of Engineers collaborated on engineering that would decrease the stagnation of the water in these marinas, thus reducing the risk of over abundance of any aquatic vegetation. This usually includes flow through structure of some sort that allows water during normal flow to help circulate the water in the marinas. This has worked for the majority of time but there has been some structures that have been blocked and not allowing the structure to function as designed. The permit for the marinas are under the authority of U.S. Army Corps of Engineers and thus they are to make contacts with the permit holders to ensure compliance. This is currently being done in cooperation with Game and Fish and DEQ.**

2. In your oral testimony, you remarked that a rapid response is critical to controlling invasive species; do you find that federal laws encourage, or have no impact on your ability to rapidly respond to the eradication of invasive species in your state? **Response: At the current time there is no impact from federal laws that prevent a rapid response action in North Dakota. We depend on local support and reporting to help us respond quickly to such infestations and that has worked well to date.**

Ranking Member Carper:

3. In your testimony, you indicated that invasive species issues "transcend socio-political boundaries." How are you or your department consulting with and/or partnering with the four tribal nations in your state to combat invasive species? **Response: There is tremendous consultation with the four tribes present in North Dakota—not only on invasive species but wildlife management and hunting/fishing issues. We've made tremendous strides in the last 10 years on collaborating with the tribes. As for invasive species, we offer and provide training for combatting invasive species for**

tribal nations and other entities across the state. There is currently an Aquatic Invasive Species Committee in North Dakota that assists in planning on invasive species and tribes sit on that committee.

Senator Whitehouse:

4. In your written testimony, you focus heavily on aquatic invasive species. In the state's 2018 Aquatic Nuisance Species Management Plan, the words "climate change" are not mentioned. Yet, in the state's 2015 State Wildlife Action Plan, invasive species are repeatedly listed as concerns under "climate change and severe weather." In Addendum G to the report, which specifically covers climate change, the authors write that long-term data will be collected and be made "publicly available and invaluable for assessing climate change, land use changes, and invasive species in North Dakota." Given this previous recognition of the link between climate change and invasive species, why does the 2018 plan not further address these potential connections? **Response: This is a good question and hopefully I can provide a good answer. The State Wildlife Action Plan (SWAP) is partially funded by Congressional approved funds and, as such, is required to address climate change. The North Dakota Aquatic Nuisance Species Management Plan does not have those requirements. The invasive species commonly referred to in SWAP are primarily terrestrial and thus have more potential to become problematic under changing climate conditions. Conversely, aquatic invasive species are dependent upon water as the name implies and the issues we'd look at is risk of introduction if warmer conditions prevail and spawning time of zebra mussel, which could be earlier that currently exists (usually July).**

Senator Wicker:

5. Four non-native carp species are at large in the Mississippi River Basin. Two of these species, silver and bighead carp, are already established and have impacted major rivers like the Mississippi, Ohio, and Illinois rivers. Flooding has contributed to the spread of carp in the United States. Is the impact of flooding and other natural disasters considered when dealing with aquatic invasive species? **Response: I believe I mentioned exactly what is stated here in that silver carp had never been present in North Dakota until the flood of 2011 when they moved up the James River (a tributary of the Missouri River) and their movement was stopped by Jamestown Reservoir. We put regulations in place to reduce the risk of them moving outside the basin and it's apparently worked—at least for now. The existing population is aging and we've been unable to document any reproduction. The above doesn't answer the question posed and the only consideration of flooding in the management plan is prioritization of sampling to assess if invasive species have moved and, if so, to implement a rapid response plan. The intricacies of the response plan differ depending on the system into which the invasive has moved and where it's located.**

6. Additionally, you mentioned in your testimony the need for regional collaboration to control aquatic invasive species. What actions could a regional group take to prevent carp and other invasive species from spreading during floods and other natural disasters?

Response: This is another great question since it's something we have been promoting between upper Midwest states for years, i.e., communication when a new invasive species is found in an area where there's a high probability of transferring to another area since there is a natural water connection. While the afore mentioned communication currently exists between North Dakota, South Dakota, Minnesota and Montana there is no formal agreement or process to follow. I don't believe once an invasive organism is present and established in a river system that it is feasible to totally prevent it from moving—at least not without tremendous cost and likely at the expense of other native species in that system (e.g., total eradication).

Senator BARRASSO. Appreciate your testimony. Thank you, Mr. Steinwand.

Mr. ROGERSON.

STATEMENT OF JOE ROGERSON, PROGRAM MANAGER FOR SPECIES CONSERVATION AND RESEARCH, DELAWARE DIVISION OF FISH AND WILDLIFE

Mr. ROGERSON. Good morning. I would like to thank each of you for the opportunity to visit and meet with you to discuss a very real and significant problem that affects our entire Country and not just my home State of Delaware: invasive species. My name is Joe Rogerson, and I oversee Delaware's Species Conservation and Research Program within the Delaware Department of Natural Resources and Environmental Controls Division of Fish and Wildlife.

My comments today will focus primarily on the impacts of invasive species on native wildlife and their habitats, but I would remiss if I didn't point out that the impacts of invasive species often equal, and in some instances have more significant impacts to, public health and safety, our economy, commercial industries, agricultural producers, hunters, anglers, wildlife watchers, and many other groups. I have seen reports estimating the total impact of invasive species across our Country to exceed more than $100 billion annually, so this is a very real and significant problem, as invasive species affect many facets of our lives.

Invasive species are a leading driver of biodiversity loss and, in many instances, are one of the primary factors that result in a listing of many of the Country's threatened and endangered species. State wildlife action plans serve as the blueprints for conserving our Nation's fish and wildlife and preventing species from becoming endangered.

In 2005, each State, territory, and the District of Columbia submitted their plan for approval to the U.S. Fish and Wildlife Service as a condition for receiving funding through the State and Tribal Wildlife Grant Program. The plans were recently updated with the latest science and information to guide conservation of over 12,000 species in greatest conservation need across the Country. Along with identifying the species in greatest conservation need, each State identified threats and associated actions that could be implemented to reverse each threat.

Recently, the content of each State's wildlife action plan in the northeast region was summarized. Of the 2,918 species of greatest conservation need within the region, pollution and development were the most frequently cited threats, with invasive species closely following as one of several additional regional threats. States currently don't have sufficient resources to tackle all of the threats outlined within their wildlife action plans, so we are unable to fully address threats facing fish and wildlife populations from invasive species.

Following an Executive Order signed by then President Clinton in 1999 to establish the National Invasive Species Council, the nongovernmental Delaware Invasive Species Council was also formed that same year. The mission of the 120-member DISC is to protect Delaware's ecosystems by preventing the introduction and reducing the impact of invasive species.

DISC works closely with natural resource managers, biologists, and stakeholders to reduce invasive plants and animals, and to promote native habitats. In 2017, I was part of Delaware's Ecological Task Force, which identified many threats that contribute to the decline and, in some cases, extirpation of native fish, wildlife, and plants in Delaware. Invasive species are one of the leading threats identified by the Task Force, in addition to pollution and habitat loss.

Based on the recommendations of the Task Force, Delaware's General Assembly established the Delaware Native Species Commission in 2018 to bolster State efforts to reverse the trend of native plant and animal decline within our State. Of the more than 6,500 invasive species known to occur in the U.S., I would like to list a few invasive species that are or may become significant challenges in my home State of Delaware.

Control of invasive species in Delaware and the surrounding region has been initiated in the response to the invasion of Phragmites and nutria within our wetlands, northern snakehead fish and hydrilla plants within our waters, and Asian tiger mosquitoes that are a threat to transmit Zika and West Nile virus in our communities. More recently, efforts have been or soon will be taken in Delaware to monitor for lionfish, Spotted lanternflies, and the Asian longhorned tick, as well as bats that have been identified with a non-native fungus that causes the debilitating White-nose Syndrome which has decimated populations of some species of bats across the Country, particularly in the northeast.

Along with a written copy of my oral statement today, I have included an appendix within the written statement that includes more in-depth information on the species I just described, but I would like to talk about some of the work being done back in Delaware and a very good example of an invasive species control project that is occurring currently on the Delmarva Peninsula.

The control of Phragmites is a major priority in Delaware to reduce the impact of this highly invasive plant that outcompetes and replaces our native wetland plants, severely degrading these wetland habitats. An aggressive control program has been initiated in Delaware since 1976 and, to date, more than $6 million has been spent by my agency to control this species. While far from being eradicated, we have been successful at reducing the amount of Phragmites in Delaware, which has helped to restore the biodiversity and functions of our wetlands. Control of other invasive plant and animal species has required countless hours of agency staff time and funding, and the help of volunteers to combat invasive species across Delaware, including within our State-owned wildlife areas, forests, and parks.

From where we sit today, we don't have to travel far to see an example of a highly successful program to combat an extremely detrimental introduced invasive species. Nutria, a semi-aquatic rodent native to South America, were introduced to the Chesapeake Bay region in the mid–1900's. Prolific breeding habits and a voracious and destructive feeding behavior caused extensive destruction of wetlands which, if left unchecked, would have compromised the Chesapeake Bay. A federally supported Chesapeake Bay Nutria Eradication Project initiated in the early 2000's helped turn the

tide of this invasive and destructive rodent, effectively eliminating all known nutria populations from over a quarter million acres of wetlands on the Delmarva Peninsula, with current efforts focused on removal of residual animals.

A study completed by the Maryland Department of Natural Resources reported that, without decisive action, more than 35,000 acres of Chesapeake Bay wetlands could be destroyed by nutria in 50 years. The predicted impact of nutria destruction to Maryland's economy was dire, with losses exceeding $35 million annually. Maryland watermen would have been hit hardest from the loss of tidal wetland fish and shellfish nursery areas that help replenish important and productive Chesapeake Bay fisheries.

The study illustrated the economic costs to the citizens of Maryland and the entire Chesapeake Bay in terms of dollars lost to commercial fisheries, recreational fisheries, hunting, wildlife viewing, and related industries. Damage to the ecological services provided by healthy wetlands, such as storm protection, flood control, and water purification would have made the overall destruction even greater than the economic findings indicated.

As of 2016, all of the known nutria populations have been removed form over a quarter million acres on the Delmarva Peninsula. The project is currently implementing efforts to verify eradication and remove any residual animals. The Chesapeake Bay Nutria Eradication Project is a classic example of how an invasive species can be controlled and, in this case, potentially eradicated with adequate funding and staff resources.

Hopefully, all of us recognize that invasive species are a significant problem facing our Country. There are steps that individual States can do and have done to prevent invasive species from becoming established or spreading into new areas, but many of these species cause problems across State lines and over large geographic areas, which is where the Federal Government could further help tackle this problem.

While not referring to invasive species, Benjamin Franklin's quote "an ounce of prevention is worth a pound of cure" couldn't ring more true in terms of how we handle invasive species, since it is more costly to deal with invasive species once they become established than it is to prevent them from entering in the first place.

A couple examples of proactive species prevention include increased invasive species surveillance on the goods and imports arriving in our Country to prevent their introduction to the wild and some States restricting the possession of certain invasive fish and wildlife species to minimize the chance of their introduction into the wild. Furthermore, some States have restricted and planting of certain species of invasive ornamental trees and shrubs that have the propensity to rapidly spread in the new areas and outcompete native plants.

Another example of some prevention includes regulations in some jurisdictions that establish weed-free forage programs for agricultural producers to minimize the spread of invasive and noxious weeds.

There are many other similar programs to prevent or minimize the chance of new invasive species from entering the Country and

preventing those that are already here from spreading into new areas. Unfortunately, the invasive species genie is out of the bottle. In addition to needing an ounce of prevention to prevent further introductions, we also need a pound of cure to control these species that are already here. Dedicated funding and personnel are needed to control and, in some cases, eradicate invasive species.

I again would like to thank each of you for giving me the opportunity to meet with you today to talk about the important issue of invasive species, and I look forward to additional opportunities and actions to combat them.

With that, I would gladly take any questions you may have. Thank you.

[The prepared statement of Mr. Rogerson follows:]

STATE OF DELAWARE
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United States Senate Committee on Environment and Public Works –
Invasive Species Impacts

February 13, 2019

Joe Rogerson, Environmental Program Manager II
Delaware Department of Natural Resources and Environmental Control
Division of Fish & Wildlife
Species Conservation and Research Program

Good morning, I'd like to thank each of you for the opportunity to visit and meet with you to discuss a very real and significant problem that affects our entire country and not just my home state of Delaware, invasive species. My name is Joe Rogerson and I oversee Delaware's Species Conservation and Research Program within the Delaware Department of Natural Resources and Environmental Control's Division of Fish & Wildlife. My comments today will focus primarily on the impacts of invasive species on native wildlife and the habitats, but I'd be remiss if I didn't point out that the impacts of invasive species often have equal, and in some instances more significant impacts to public health and safety and our economy, commercial industries, agricultural producers, hunters, anglers and wildlife watchers, and many other groups. I've seen reports estimating the total impact of invasive species across our country to exceed more than $100-billion annually, so this is a very real and significant problem as invasive species affect many facets of our lives.

Invasive species are a leading driver of biodiversity loss and in many instances one of the primary factors that result in the listing of many of the country's threatened and endangered species. State Wildlife Action Plans serve as the blueprints for conserving our nation's fish and wildlife and preventing species from becoming endangered. In 2005, each state, territory, and the District Columbia submitted their plan for approval to the US Fish and Wildlife Service as a condition for receiving funding through the State and Tribal Wildlife Grants program. The plans were recently updated with the latest science and information to guide conservation of over 12,000 species in greatest conservation need across the country. Along with identifying the species in greatest conservation need, each state identified threats and associated actions that could be implemented to reverse each threat. Recently, the content of each state's wildlife action plan in the Northeast region was summarized. Of the 2,918 species of greatest conservation need identified within the region, pollution and development were the most frequently cited threats, with invasive species closely following as one of several additional regional threats. States currently don't have sufficient resources to tackle all of the threats outlined within their wildlife

action plans, so we are unable to fully address threats facing fish and wildlife populations from invasive species.

Following Executive Order (13312) signed by then President Clinton in 1999 to establish the National Invasive Species Council, the non-governmental Delaware Invasive Species Council (DISC) was also formed in 1999. The mission of the 120 member DISC is to protect Delaware's ecosystems by preventing the introduction and reducing the impacts of invasive species. DISC works closely with natural resource managers, biologists, and stakeholders to reduce invasive plants and animals and to promote native habitats. In 2017, I was part of Delaware's Ecological Task Force, which identified many threats that contribute to the decline, and in some cases extirpation, of native fish, wildlife, and plants in Delaware. Invasive species were one of the leading threats identified by the task force, in addition to pollution and habitat loss. Based on the recommendation of the task force, Delaware's General Assembly established the Delaware Native Species Commission in 2018 to bolster state efforts to reverse the trend of native plant and animal decline.

Of the more than 6,500 invasive species known to occur in the U.S., I would like to list a few invasive species that are or may become significant challenges in my home state of Delaware. Control of invasive species in Delaware and the surrounding region has been initiated in response to the invasion of *Phragmites* and nutria within our wetlands, northern snakehead fish and hydrilla plants within our waters, and Asian tiger mosquitoes that are a threat to transmit Zika and West Nile virus in our communities. More recently, efforts have been or soon will be taken in Delaware to monitor for lionfish, spotted lanternflies, and the Asian longhorned tick, as well as bats that have been infected with the non-native fungus that causes the debilitating White-nose Syndrome which has decimated populations of some bats species across the country, particularly in the Northeast. Along with a written copy of my oral statement today, I have included an appendix within the written statement that includes more in-depth information on the species I just described, but I would like to talk about some of the work being done back home in Delaware and a very good example of invasive species control that is occurring on the Delmarva Peninsula.

The control of *Phragmites* is a major priority in Delaware to reduce the impact of this highly invasive plant that outcompetes and replaces our native wetland plants, severely degrading these wetland habitats. An aggressive control program was initiated in Delaware in 1976 and to date more than $6-million has been spent by my agency to control this species. While far from being eradicated, we have been successful at reducing the amount of *Phragmites* in Delaware, which has helped to restore the biodiversity and functions of our wetlands. Control of other invasive plant and animal species has required countless hours of agency staff time and funding and the help of volunteers to combat invasive species across Delaware, including within our state-owned wildlife areas, forests, and parks.

From where we sit here today, we don't have to travel far to see an example of a highly successful program to combat an extremely detrimental introduced invasive species. Nutria, a semi-aquatic rodent native to South America, were introduced to the Chesapeake Bay Region in the mid-1900s. Prolific breeding habits and a voracious and destructive feeding behavior caused extensive destruction of wetlands, which, if left unchecked, would have compromised the Chesapeake Bay. A federally-supported Chesapeake Bay Nutria Eradication Project initiated in the early 2000s helped turn the tide on this invasive and destructive rodent, effectively

eliminating all known nutria populations from over a quarter million acres of wetlands on the Delmarva Peninsula, with current efforts focused on removal of residual animals. A study completed by the Maryland Department of Natural Resources reported that, without decisive action, more than 35,000 acres of Chesapeake Bay wetlands could be destroyed by nutria in 50 years. The predicted impact of nutria destruction to Maryland's economy was dire, with losses exceeding $35 million annually. Maryland watermen would have been hardest hit from the loss of tidal wetland fish and shellfish nursery areas that help replenish important and productive Chesapeake Bay fisheries. The study illustrated the economic costs to the citizens of Maryland and the entire Chesapeake Bay in terms of dollars lost to commercial fisheries, recreational fisheries, hunting, wildlife viewing, and related industries. Damage to the ecological services provided by healthy wetlands, such as storm protection, flood control, and water purification, would have made the overall destruction even greater than the economic findings indicated. The Chesapeake Bay Nutria Eradication Project is a classic example of how an invasive species can be controlled, in this case eradicated, with adequate funding and staff resources.

Hopefully, all of us recognize that invasive species are a significant problem facing our country. There are steps that individual states can do, and have done, to prevent invasive species from becoming established or spreading into new areas, but many of these species cause problems across state lines and over large geographic areas, which is where the federal government could further help tackle this problem. While not referring to invasive species, Benjamin Franklin's quote, "an ounce of prevention is worth a pound of cure" couldn't ring more true in terms of how we handle invasive species since it is more costly to deal with invasive species once they become established than it is to prevent them from entering in the first place. A couple examples of proactive invasive species "prevention" include increased invasive species surveillance of the goods and imports arriving in our country to prevent their introduction into the wild and some states restricting the possession of certain invasive fish and wildlife species to minimize the chance of their introduction into the wild. Furthermore, some states have restricted the sale and planting of certain species of invasive ornamental trees and shrubs that have the propensity to rapidly spread into new areas and outcompete native plants. Another example of some "prevention" includes regulations in some jurisdictions that establish weed-free forage programs for agricultural producers to minimize the spread of invasive and noxious weeds. There are many other similar programs to prevent or minimize the chance of new invasive species entering the country and preventing those that are already here from spreading into new areas. Unfortunately, the invasive species genie is out of the bottle. In addition to needing an "ounce of prevention" to prevent further introductions, we also need a "pound of cure" to control those species that are already here. Dedicated funding and personnel are needed to control, and in some cases eradicate, invasive species. The Chesapeake Bay's Nutria Eradication Project is a nearby example of what can be accomplished if we have the drive, determination, and resources. The longer we wait to tackle this problem, the more pervasive it will become and the more difficult and expensive it will be to address.

I again would like to thank each of you for giving me the opportunity to meet with you today to talk about the important issue of invasive species, and I look forward to additional opportunities and actions to combat invasive species. With that, I'll gladly take any questions that you may have. Thank you.

Appendix 1: Information concerning some of the more common invasive species and pathogens addressed and managed in Delaware.

INSECTS

Asian longhorned tick (*Haemaphysalis longicornis*)
Not normally found in the Western Hemisphere, these ticks were reported for the first time in the United States in 2017. Thus far this species has not been found in Delaware but surveys have been initiated. Asian longhorned ticks have been found on pets, livestock, wildlife, and people. The female ticks can lay eggs and reproduce without mating and thousands of ticks may be found at a time, or on an animal.

In other countries, bites from these ticks can make people and animals seriously ill. However, as of October 2018, no harmful germs have been found in the ticks collected in the United States but research is ongoing

Asian tiger mosquito (*Aedes albopictus*)
The Asian tiger mosquito, is a small black mosquito that was accidentally imported into the United States in the 1980s. It is about 1/4-inch long and has a white stripe down the center of its head and back and white bands on its legs.

The Asian tiger mosquito presents two major problems. The first problem is that these mosquitoes are a nuisance. If you live in an urban area and have a mosquito problem, Asian tiger mosquitoes are the most likely culprit. Unlike many other species of mosquitoes, Asian tiger mosquitoes are very aggressive daytime biters. The second problem is that Asian tiger mosquitoes may pose a health threat. They have been found to be a successful disease vector that is able to transmit diseases such as the West Nile and Zika viruses.

Emerald ash borer (*Agrilus planipennis*)
The emerald ash borer has been the most destructive forest pest in the history of pest introductions. In some of the most heavily infested areas, Ash trees have experienced a 99% mortality. Control options for this species include Ash tree removal or insecticidal treatment. One community in Delaware estimates that removal and replanting of Ash trees would cost their homeowners association $600 thousand. Emerald ash borer was first detected in Delaware in 2016 but a population was not found.

The Delaware Department of Agriculture coordinated work with the United States Department of Agriculture to release parasitoid wasps which are natural enemies of emerald ash borer, in an effort to control the pest. In 2018, Emerald ash borer was discovered in several other locations in New Castle County, and parasitoids will be released in the spring of 2019 to control these new populations.

Red imported fire ant (*Solenopsis invicta*)
Red Imported Fire Ants are native to South America. They were introduced to Mobile, AL during the 1930's and have since spread throughout much of the southeast US. To date, they have established in areas as far north as coastal Virginia, however, they are regularly intercepted in nursery stock transported from the southern United States into Delaware. In the past 10 years they have been intercepted five times in our state.

Imported fire ants have been estimated to cause $8 billion dollars of impact in the US and Puerto Rico. If the Red Imported Fire Ant is introduced to Delaware, economic impacts will be felt in Agriculture, as well as tourism, residential areas, golf courses, and nurseries.

Spotted lanternfly (*Lycorma delicatula*)
The spotted lanternfly is a plant hopper native to China, India, and Vietnam. The Spotted Lanternfly is an invasive insect that was introduced to the US between 5 and 9 years ago to Pennsylvania and quickly spread throughout the south-eastern portion of that sate. In 2018, live populations were found in Delaware and New Jersey. This insect is a voracious feeder on numerous species of plants, including some hardwoods, but of most concern is the impact seen on grapes and fruit trees. In the most heavily infested areas of PA, vineyards have seen a 90% reduction of harvestable grapes due to Spotted Lanternfly feeding.

Delaware has a small and growing wine grape industry and a well-established apple and peach industry. We have been coordinating with Pennsylvania as well as the USDA and other neighboring states to control the population of Spotted Lanternfly in our state with planned pesticide applications and host tree removal beginning in 2019.

PATHOGENS

Plum pox
Plum Pox is a viral disease of stone fruits first described in 1915 in Bulgaria on plums. It has since spread throughout the world, having been detected in the US in 1999. In 2006 detections were made in New York and Michigan. The Delaware Department of Agriculture has surveyed over 120 acres of orchards in Delaware susceptible to Plum Pox and have not found it in our state.

If plum pox were found, infected trees would be destroyed to prevent the spread of the disease in the orchard. Delaware's peach industry is worth approx. $1,000,000 in production.

White-nose syndrome
White-Nose syndrome (WNS) is a disease causing mass die-offs of bats at hibernation sites in the U.S. and Canada (90—100 % at some locations). The US Fish and Wildlife Service estimates 5.6-6.7 million bats have died from WNS in just six years.

The disease is caused by a fungal pathogen called *Psuedogymnoascus destructans*, which erodes the bats skin tissue. Studies show that WNS causes bats to arouse during hibernation more frequently than normal; disrupting physiological processes. Scientists are researching this disease, how it affects different bat species, and how to contain or cure it.

PLANTS

Common reed (*Phragmites australis*)
Phragmites has been present in Delaware's marshes for a long time. In fact, research shows that this species has been a part of the wetland ecosystem of North America for over 11,000 years but, in the 1950s, *Phragmites* began to become a problem in North American wetlands. A

certain non-native type of *Phragmites* that came from Europe began to wreak havoc on Delaware's marshes.

Phragmites is a member of the grass family and spreads through an underground rhizome that can extend down as much as one meter and out more than 30 feet. This enables non-native *Phragmites* to spread more quickly than the native vegetation and form a complete monoculture. Because of this, *Phragmites* cannot be controlled by mowing or burning alone -- the rhizome allows new shoots to quickly re-establish so a combination of herbicide treatment and preferably followed by burning to remove the dead, above-ground, portion of the plant is necessary to allow native wetland plants to return to the site.

Invasive aquatic plants
The top three of present concern are: Hydrilla (*Hydrilla verticillata*), Creeping water primrose (*Ludwigia peploides*) and Parrot Feather (*Myriophyllum aquaticum*)

These plants can become very dense in a short period of time. At high densities, especially Hydrilla, can impede angling and boating and impact the ability of gamefish to forage and nest. They can also successfully outcompete native plant species. These plants are difficult to control using established control methods. A tremendous amount of staff time and resources can be expended in trying to control these species in our state ponds. In the past three years, more than $600,000 has been spent to remove and control invasive aquatic plants in Delaware.

Delaware's Aquatic Invasive Species Management: Aquatic invasive species are extremely difficult to eradicate or even to control once they become established, thus prevention is key. Most efforts are directed towards this end of the spectrum and include outreach/education during interactions with the public in the field, by posting signs, making information available on the Division's webpage, disseminating information at public events, via press releases, and through the Delaware Invasive Species Council meetings and webpage. Targeted removals are conducted on a case by case basis but this requires a huge amount of staff time and resources and is not always effective or lasting.

Japanese stilt grass (*Microstegium vimineum*)
Japanese stilt grass is an annual grass native to Asia and was introduced to North America in the early 1900's. The species was likely an accidental introduction; possibly being used as packing material. Japanese stilt grass was first reported in Delaware in 1942, from New Castle Co. and has since spread to the entire state. This invasive grass is shade tolerant and is capable of completely dominating the forest floor of moist woodlands and floodplains. The species is also found in non-tidal marshes, ditches and along hiking trails.

Lesser celandine (*Ficaria verna*, synonym = *Ranunculus ficaria*)
Lesser celandine is a perennial herbaceous plant that is native to Europe. The species was first introduced to the United States as an ornamental plant, but now invades moist woods and forested floodplains. Lesser celandine is considered a spring ephemeral, blooming in late March and early April. The species has an extremely aggressive growth habit and forms dense carpets that excludes all other native vegetation. In addition to seed, the plant reproduces vegetatively and spreads by underground tubers. The species is known from every Piedmont stream valley in New Castle Co. and is spreading to the floodplains of rivers and streams in the Coastal Plain province farther south.

Norway maple (*Acer platanoides*)
The Norway maple is a deciduous tree native to Europe, reaching a height of 60 to 70 feet. It was brought to America in the mid-1700's to serve as a shade tree. It was first reported as an introduction to natural areas in Delaware in 1897 from the Piedmont province of New Castle County. This tree is now know from all three counties of the state, where it invades disturbed forests and edges. The species can out-compete native tree species and has the ability to dominate the forest canopy to the detriment of native wildlife species that dwell in the forest interior.

Winged euonymus (*Euonymus alatus*)
The winged euonymus is a deciduous shrub native to Asia. Introduced to America in the mid-19th Century, it is a popular plant in the nursery trade due to its brilliant red foliage in the fall. The species has escaped from cultivation and is now widely established in natural areas throughout the Piedmont province of New Castle County and is spreading farther south in the state. The winged euonymus is shade tolerant and forms dense thickets in moist woods, forested slopes and floodplains. The species is spread by birds who consume their fruits and disperse seeds to natural areas.

WILDLIFE

Blue catfish (*Ictalurus furcatus*)
Blue Catfish originated in Mississippi, Missouri and Ohio River drainages. Over the years, this species has been introduced in 20 states to provide recreational angling. Virginia stocked them in 1970s and 1980s and they have since spread in the region. The blue catfish was first documented in the Delaware River in 2013 and in Nanticoke River drainage 2013. The abundance of this species in the Nanticoke River system appears to have grown rapidly in the past few years.

The biggest threat of this non-native species is the ability of populations to grow rapidly and expand. They are voracious eaters and forage on a variety of food items – they can alter the food web via direct predation on important fish species and indirectly by competition for resources. They can reach very large sizes (100+lbs) in a relatively short period of time and have few natural predators once they attain these sizes.

Flathead catfish (*Pylodictis olivaris*)
The flathead catfish originated in the rivers and lakes in the lower Great Lakes and Mississippi River watersheds to the Gulf States; Introduced into the James River in Virginia in the late 1960s to provide recreational angling and have since spread within the region. In areas where this species has been introduced they have severely reduced the abundance and diversity of native fish species. Although they feed primarily on invertebrates such as worms, insects, and crustaceans when they are young, the adult diet is primarily piscivorous (i.e. consists of live fish). There is a direct effect from predation but also an indirect effect of competition with other species that depend on native fish species for prey or to fulfill other ecological functions. They grow large (with few predators) quickly and their populations have the potential to expand rather rapidly once established (one nest can contain up to 100,000 eggs).

In Delaware, the first known occurrence of this species came from an angler that reported catching one in 2010 from the Brandywine River. Thus far confirmed reports are from the

Christina River system only. This species is abundant in the DE River and Chesapeake Bay drainage in surrounding states, so may be just a matter of time before they become more abundant in DE.

Lionfish (*Pterois volitans* L.)
The lionfish is native to the South Pacific and Indian Oceans and inhabits offshore reefs, turbid inshore areas, as well as lagoons, and harbors. While lionfish have not been found in Delaware, primarily because the water temperature within the mid-Atlantic region is too cold for this species to survive, things like climate change could make conditions in our portion of the country suitable for this problematic species in the future. Lionfish are the only non-native marine fish that is known to not only survive, but reproduce along the Eastern seaboard, the Gulf of Mexico, and the Caribbean. Lionfish are very aggressive feeders and have the potential to negatively impact native reef communities and the commercial and sportfish industry due to the decline in certain species that we like to eat such as various species of snapper and grouper.

Northern snakehead (*Chana argus*)
The northern snakehead, originally from China and Russia, was brought to the US as part of the food fish market. Illegal stockings and escape from fish farms are a main source of spread. Occurrence in DE: First confirmed in the Nanticoke River watershed (established downstream so migration to DE was a matter of time) and Becks Pond in 2011 (illegal stocking). Have since spread throughout tributaries of the Nanticoke River drainage as well as tributaries of the Delaware River (Christina – White Clay, Brandywine, Red Lion Creek, Dragon Run). Also occur in numerous impoundments (private and public) in Northern DE – some illegally stocked, others through natural spread.

This species has the ability to survive in poor water quality situations and can spread throughout a stream system as long as there are no impediments (dams). There is concern that they can outcompete native species, especially those that share similar spawning habitat and foraging activities such as Largemouth Bass. More research is needed however to confirm an ecological impact. The introduction of this species into habitat that supports a rare fish species, such as state endangered Blackbanded Sunfish, may be especially damaging.

Nutria (*Myocastor coyups*)
Nutria are invasive, semi-aquatic, South American rodents first released into Dorchester County, Maryland in 1943. Nutria did not evolve in our wetland ecosystems; therefore, there are few predators or natural conditions that control their population. Since their release, nutria have destroyed thousands of acres of wetlands through their destructive feeding habitats. In the Chesapeake Bay, nutria are primarily limited to the Delmarva Peninsula, where they have been found in six Maryland counties and portions of Delaware and Virginia.

Swamp red crayfish (*Procambarus clarkia*)
The swamp red crayfish is native to Northern Mexico, southern and southeast U.S. Believed to have been introduced via anglers using live bait, release of classroom pets, escaped from aquaculture facilities, and from the live food fish market.

The swamp red crayfish was first reported in 2011 but have since become pretty widespread in private ponds, stormwater management basins, and public waterways. This species outcompetes native crayfish species and is a vector for pathogens that can affect these native species.

Senate Committee on Environment and Public Works
Hearing entitled, *"The Invasive Species Threat: Protecting Wildlife, Public Health, and Infrastructure"*
February 13, 2019
Questions for the Record for Mr. Rogerson

Chairman Barrasso:

1. In your oral testimony, you remarked that a rapid response is critical to controlling invasive species; do you find that federal laws encourage, or have no impact on your ability to rapidly respond to the eradication of invasive species in your state?

   Federal laws have made strides in providing assistance for early detection and rapid response regarding specific species, but more needs to be done as we continue to experience new invaders. The USDA provides great assistance to states to combat new and emerging invasive agricultural pests. Federally-issued quarantines have slowed the spread of several species, such as the Emerald ash borer, and Federal activities to eradicate pests have worked in some instances such as the Asian longhorn beetle. Though, over the past few years, the Federal government has been reluctant to impose new quarantines, which makes it more difficult to control the spread of species effectively. The spotted lanternfly threatens vast agricultural regions in several states, and there is no federal law or regulation to contain this pest, and it has been the onus of states to impose and enforce quarantines, often with limited authority and staffing capacity. Because of this, there are multiple quarantines imposed by several states, each with different requirements, which becomes confusing and burdensome to businesses. One standard, such as an overall federal quarantine, would be be helpful in combatting this pest and other invasive species.

   While federal laws have helped to minimize the introduction of new invasive species, existing federal laws do not facilitate the ability to rapidly respond to invasive species, especially once a species has invaded an area. There have been cases where the federal government has acted strongly to control a new invasive species such as the case with zebra mussels and Asian carp, both of which had federal Acts that were passed to combat these species. Certainly, these acts have helped to provide resources for the control of these species, but we currently lack a broader control Act that would help to facilitate a swift and efficient response so that control can be enacted more quickly than the extended time it takes to pass species-specific legislation. Enactment of new species-specific legislation is followed by a lag in implementing control measures due to the necessary time to build capacity and a plan to implement control measures. Broader authority allowing more timely response to control new invasive species and more resources and expertise in place are needed to give us the best chance at controlling invasions and reducing overall expenditures.

   Another confounding factor concerning invasive species control, particular in the east coast, is that many species occur on private property. Incentives need to be provided to

encourage private landowners to control invasive species and work with government and private-sector invasive species managers to control invasive species.

Senator Duckworth:

2. Over the next fifty years, natural resource managers will face the increasingly difficult task of managing the spread of nuisance and invasive species. Invasive species are already causing more than $1.4 trillion annually in global economic and ecological damages and more than 180 species are outcompeting native Great Lakes species. Compounding the challenge, climate change is expected to shift precipitation patterns, warm water bodies and alter fisheries; creating a pathway for invasive species to take over habitats. Once these species take a foothold in places like the Great Lakes, they are difficult and costly to remove. What tools do invasive species resource managers need to adapt to climate change?

   The same tools needed to address and respond to the spread of invasive species not caused by climate change are needed to address the spread of invasive species resulting from climate change. For example, as certain invasive species expand their range due to climate change, broader authority allowing more timely responses to control new invasive species and more staff are needed to draft management plans, raise awareness, monitor the threat, control invasions, and enforce invasive species laws. Support should also increase for interjurisdictional efforts because invasive species expanding their range in response to climate change cross multiple state boundaries, and control can be ineffective without the authority to quickly respond as a joint effort. There are interjurisdictional invasive species panels and committees, but they are often underfunded and comprised of members that participate on a secondary level because they have other job obligations.

3. As part of your testimony, you shared how Delaware implemented an aggressive control program to effectively eradicate Nutria across the Chesapeake Bay Region. This is a success we would love to replicate in the Great Lakes where Asian Carp threaten the ecosystem's health and could cost upwards of $18 billion to adequately control. When developing an invasive species control program, what are the most resource efficient methods used to manage and prevent the spread of the various common types of invasive species such as aquatic, insect, pathogenic, plant and wildlife?

   Delaware was part of the federally-funded regional effort to eradicate invasive nutria, which included removal of nutria expanding into Delaware from surrounding areas. Our experience indicates that at the onset, a clearly defined goal must be established. Is the goal to eradicate the species or is it to control/minimize its spread? There are many considerations in determining which approach to take, such as what the species is, how abundant is the species when it was first detected, how large of an area does it occupy, what are its life history traits (e.g., is it a prolific breeder), how damaging are its impacts, what are the affected industries, which control options are available, funding availability, etc. Early detection of and action to address an invasive species is

paramount to reducing overall expenditures as it is less costly to address a few individuals that are found in a small area than it is to control many individuals over a large geographic area. If eradication is the goal, expenses are likely to be higher at the onset because the intense and aggressive effort needed to meet that goal, but early eradication expenses are likely to be less overall than if perpetual control or containment of invasive species is the goal that requires long-term funding and staffing. It is difficult to predict future funding and staffing capacity, so extended control programs often suffer from reductions in allocated resources over time that allow for increased range expansion of the invasive species and large scale detrimental impacts.

Successful invasive species eradication requires meeting certain criteria: Every individual of the species must be put at risk, mortality must exceed reproduction, the re-invasion risk must be near zero, techniques must be acceptable, benefits must outweigh the costs and most importantly, institutional support must be established at the outset. Compromising on any of these criteria jeopardizes success. It is also important to involve the appropriate agencies and have clear communication on respective roles and responsibilities.

For some invasive species, there are no effective long-term control methods without continued funding/resources, and control can detrimentally impact non-target species. Prevention is key, but typically more effort is expended in reacting to invasions. A more efficient use of funds would be to expend more effort on the front end of this issue – more staff is needed to draft management plans, raise awareness, monitor the threat of invasions and enforce invasive species laws. Interjurisdictional efforts are also needed because many species cross multiple state boundaries and control can be ineffective without a joint, coordinated effort. There are interjurisdictional invasive species panels and committees, but they operate on limited budgets with members that participate on a secondary level because they have other job obligations. The spread of invasive species due to illegal stocking/introduction can be more efficiently deterred if there are comprehensive laws, higher penalties, sufficient enforcement, and prosecution of violators.

4. Climate change is causing severe economic and environmental harm. As you discussed in your testimony, "while lionfish have not been found in Delaware, primarily because the water temperature within the mid-Atlantic region is too cold for this species to survive, things like climate change could make conditions in our portion of the country suitable for this problematic species in the future." If the changing habitat conditions and ecosystems are enough for current invasive species to spread, could the changing dynamics cause native species to develop "invasive" characteristics? If native species can exhibit these characteristics, what monitoring systems are in place to identify and prevent native species from committing similar harm?

The first thing to consider regarding a native species developing "invasive" characteristics in a new portion of its range is to determine if it's range expansion is human induced. Wildlife populations and how species interact are very complex and range expansions can be due to a multitude of reasons such as changes in habitat availability (both human-induced and natural changes), loss of a species in a given area providing an

opportunity for a similar species to fill that ecological void, natural weather events such as hurricanes or flooding can push species into new areas, climate change, etc. Humans are notorious for wanting to keep things the way they used to be, but range expansion of native species has always occurred naturally and is no not necessarily detrimental even if their presence in new areas causes ecosystem changes. If range expansion is caused by climate change and the native species begins to cause undesirable impacts, the same procedures for monitoring, early detection, rapid response, education to the public, control, etc. used for a non-native species invasion should be implemented.

We typically think of range expansion due to climate change as southern species moving northward, but range expansion can occur from any direction. In the case of southern species expanding their range northward, knowing the characteristics of certain southern species would help to identify those species that may be of concern in the future as the climate continues to warm. Monitoring of existing natural areas and conducting management when needed may be the only option.

Senator Whitehouse:

5. As a fellow coastal state, we face similar risks from invasive species approaching from both land and sea. What particular challenges face coastal states in identifying, monitoring, and combatting invasive species?

   Coastal states contain areas that are highly attractive for humans to reside. As a result, development sprawl causes natural areas to become fragmented, making them susceptible to the invasion of non-native invasive species, in particular plants, which often "escape" from landscape plantings in adjacent subdivisions. Responsible land-use planning that supports sensible conservation design would help in combatting the invasion of invasive species. Coastal states, in particular areas along the immediate coast often have high human population densities and numerous examples exist where the spread of invasive species is linked to humans, whether it is direct plantings around our homes, seeds "hitch-hiking" on our clothes or pets and dropped in new areas, or people intentionally or unintentionally releasing invasive non-native pets.

   Coastal states are also vulnerable to "hitchhiker" invasive species unintentionally transported on ships through interstate and international shipping, with invasive species transported in ballast water, on ship hulls, and in cargo.

6. How is climate change exacerbating the risks invasive species pose to native plants and animals, as well as critical infrastructure?

   Many native species are stressed by climate change, whether that is due to changes in rainfall patterns, changes in temperature regimes, or salt water intrusion along our coasts due to sea level rise. Any stress on a species reduces its ability to survive and compete with the other species in the ecosystem in which it lives. Typical characteristics

of many invasive species are high reproductive potential, the ability to spread quickly and easily, and a lack of natural controls to keep population growth under control. Invasive species adapted to warmer temperatures in parts of the country can get a "jump-start" on the earlier growing seasons, allowing them to outcompete native species before they can adapt to the changing environmental conditions.

The following are several examples of critical infrastructure impacted by invasive species in Delaware.

- *Bridges – Phragmites*
- *Culverts, stormwater, and drainage management – Phragmites, invasive trees and shrubs*
- *Right-of-Ways – invasive vegetation consisting of trees, shrubs, and forbes*
- *Coastal impoundments – Phragmites*
- *State Department of Transportation mitigation sites – purple loosestrife*
- *Dams and water control structures – Phragmites*

A U.S. Army Corps of Engineers report on Invasive Species Impacts on Federal Infrastructure (2018 Vissichelli) highlighted the following infrastructure impacted by invasive species:

- *Water systems – irrigation, dams, levees, hatcheries*
- *Power systems – hydropower, power plants, transmission lines*
- *Transportation systems – roads, navigation channels, air fields, lock chambers*
- *Building systems – offices and outbuildings*

The report recommends control methods for those invasive species affecting infrastructure such as mussels, weeds, animals, and invertebrates.

Vissichelli M (2018) Invasive species impacts on federal infrastructure. National Invasive Species Council Secretariat, Washington, DC

Senator BARRASSO. Well, thank you.

I appreciate the testimony from all of you.

Since you quoted Ben Franklin, we will head to Mr. Franklin for some thoughts.

Mr. FRANKLIN. No relation.

Senator CARPER. Mr. Chairman, can I just say something?

Senator BARRASSO. Please.

Senator CARPER. I apologize to our witnesses. We all serve on a bunch of different committees, and the Homeland Security Committee has just been meeting and marking up a bunch of bills and nominated, and they needed somebody for a quorum, so I apologize for slipping out, but I read your testimony and just look forward to asking some questions.

Thank you.

Senator BARRASSO. Thank you, Senator Carper.

Mr. Franklin, like most of the west, Wyoming has serious problems with cheatgrass. You mentioned it can cause catastrophic fires. It has been aggressive in crowding out, sometimes eliminating, native grasses that are important to so many species, including the sage grouse. I think you said in your testimony it has taken the fire cycle from 50 years down to 3. It is the first to move in after a fire or other disturbance, and it is incredibly hard and difficult to get rid of. Conservative estimates indicate that it has taken over 100 million acres across the west.

Can you talk about the environmental ripple effects of when a species like this takes over an area?

Mr. FRANKLIN. The unique thing about cheatgrass and how it has been able to really take over those rangelands, is it is a winter annual, so what people don't understand sometimes in that, in the winter in Wyoming, November and December, that is when it is greening up. Then it becomes dry and dies out in June, when a lot of the other native species are just starting to green up, so it is in that process, that timeline variation with our perennial plants that causes the fire cycle.

What we find with cheatgrass, and I think you mentioned in your question, is it likes fire and it creates fire, so it takes out all those native species that sage grouse specifically deals with and creates this monoculture, and then that fire cycle is a continuing process; and with that continuous process we see the acres increase simply because that seed production in that fire is making it go farther out.

We have seen some mass effects on our sage grouse habitat, which is critical to Wyoming and to the Country, and also on our mule deer habitat, so what we really try to do is get out there after the fires as much as anything and do treatments so we can help give those perennials the opportunity to come back that those species are depending on.

Senator BARRASSO. I would also like to ask about specific economic impacts in terms of ranching in Wyoming. Canada thistle affects almost every county in our State, it degrades the quality of forage for livestock by crowding out native vegetation. Ranching is so very important to us at home. Can you talk about the economic impacts that invasive species are causing to rangelands in Wyoming?

Mr. FRANKLIN. One of the species the Director from North Dakota and I were talking about before we started this is leafy spurge. It is a species that does impact North Dakota and does impact Wyoming; impacts a lot of those Rocky Mountain States. Back, I believe, in about 1999 there was a leafy spurge task force that looked into the economic impacts of just that single weed, and what they came up with is, annually, the States of South Dakota, North Dakota, Wyoming, and Montana lose $144 million in production and for control costs just from that species alone.

The unique thing about leafy spurge, or one of the more concerning things, is it is poisonous to livestock, so there are incidents where people have been put out of business in the ag industry simply because of this weed being present on their lands.

Senator BARRASSO. I wanted to turn to West Nile virus. You mentioned it was discovered in 1937 and first detected in the United States in 1999. It is found today in every county in Wyoming. Per capita, Wyoming is among the highest number of cases of West Nile virus in the United States.

I was just visiting with Senator Cramer about a friend that I served in the Wyoming State Senate with and you were working for the Department at the time, State Senator Bob Peck. Bob Peck, multi-award-winning American politician, journalist, editor, publisher, and Wyoming State Senator; published newspapers around the State. The Riverton Rangers and The Family talks about his death. The cause of death on March 6, 2007, while I was still in the State Senate: West Nile virus. So, one of our State senators felled by West Nile virus.

Can you talk a bit about the invasive species, how they become not just an environmental or an economic threat, but also a public health threat?

Mr. FRANKLIN. Wyoming is a small State, and I think if you talk to anyone in our State, they know someone who has been impacted by West Nile virus. I know a couple people myself who had the virus back, I think, somewhere around maybe 2005, 2006, and they still have neurological effects from that virus, so it is not something that just goes away overnight, and certainly there are deaths that lead to it.

We are a little more unique in Wyoming because we don't have Aedes aegypti mosquitoes, which carry the Zika virus, we just deal with the Culex tarsalis mosquito. The program we run in our State, the Culex tarsalis is a later summer species, so we are able to, through monitoring on the local level, determine when Culex tarsalis is mostly prevalent and when the potential for West Nile virus is there, so we really try to target that species based on when it is going to be most active.

But it is always a difficult battle because public perception on mosquito control programs is, there is variation. When you see an airplane, for instance, flying over a municipality, some people just don't like that. In Wyoming, we do a lot of that with larva sighting, though, so it is a matter of, I think, with the West Nile virus program and mosquito programs, a lot of education still needs to be done in the public.

Senator BARRASSO. Thank you, Mr. Franklin.

Senator CARPER.

Senator CARPER. Again, thanks so much for joining us and for your testimony. A lot of times, here in Washington, the press tends to focus on our differences. You would think we never agree on anything and never get anything done, but actually I hope this week that we will prove them that is not always the case.

Let me just ask a question with that in mind. In listening to your testimoneys and talking to each other a little bit earlier today, what are some areas that you see agreement, common ground on these issues?

Slade Franklin, relative, descendant of Ben?

Mr. FRANKLIN. I think you heard in all three of our testimoneys the importance of early detection, rapid response, and the importance of getting on some of these new species as quickly as possible; the economics of saving the money by getting it early, compared to doing what we are doing now with cheatgrass.

At least in Wyoming, one thing that we are looking at very closely is medusahead rye, which is a big problem in Nevada. A lot of people consider it worse than cheatgrass. We found it in our State and we are trying to an early detection and rapid response program because we know the economics of doing that now makes more sense than waiting until it gets to the point with cheatgrass.

Senator CARPER. Thanks. That is a good point.

Terry?

Mr. STEINWAND. I don't think I can add anything to what Mr. Franklin said.

Senator CARPER. Oh, come on, I bet you can. We have never had a witness say that.

[Laughter.]

Mr. STEINWAND. I am never at a loss for words, I guarantee you.

Senator CARPER. Again, areas of common ground.

Mr. STEINWAND. Oh, absolutely. Absolutely.

Senator CARPER. Just go ahead and mention one or two.

Mr. STEINWAND. West Nile virus. I guess I bring that up because it is a human health issue, but it is also a wildlife issue. Our sage grouse population was doing very good until 2008, when there was a West Nile outbreak in our sage grouse population and it just crashed. We are actually trying to reestablish that population.

Senator CARPER. Are you really? Was it wiped out?

Mr. STEINWAND. Pardon me?

Senator CARPER. Was it largely wiped out?

Mr. STEINWAND. No, just drastically reduced. We went to 350 males to less than 100 within a year. Actually, through the graces of Wyoming Game and Fish Department right now, we are actually translocating some hens and some chicks and some males into North Dakota; have for 2 years and are going to for three more years, so there is more to it than that.

I think it is collaboration amongst everyone, different agencies. Wildlife and invasive species don't know political parties, they don't know sociopolitical boundaries, so I think collaboration is really the key.

Senator CARPER. All right. Thank you, sir.

Joseph?

Mr. ROGERSON. I was going to reiterate those two points.

Senator CARPER. Go ahead, reiterate them.

Mr. ROGERSON. As I concluded with, early detection is key, and a rapid response both from an effectiveness and efficiency from a funding standpoint are critical; and I think improved communication not just within individual States, but between States. Invasive species can come at us from any different direction in a whole multitude of manners; they can swim upstream, downstream, come from the air, they can come from a car, they can come from the bottom of someone's shoes as they walk in from the last time they wore them in another State.

So oftentimes these species can make great jumps geographically, and if it is a species that, in Delaware, we are not familiar with dealing with, having those improved communication lines that if that was a Nebraska kind of thing, for us to know how we should respond and that kind of thing I think is important, and I think we could all agree that we could get this pretty much anyway.

Senator CARPER. Thank you.

I think each of you, in your testimony, mentioned funding at some point. We are, as you know, wrestling with funding legislation to fund the Federal Government for the balance of the fiscal year. I hope we will make some progress on that today and tomorrow.

Do your States have the financial resources that they need to fully address invasive species? Do you believe the Federal Government has a role to play in better meeting your funding needs?

Joe, I will just go to you first.

Mr. ROGERSON. I would say, no, we do not have adequate funding needs to address all of our invasive species. It seems to be we receive more of them rather than getting rid of them faster than we are able to bring new ones in, so constant challenges even from just educational capacity and what we should be doing and looking for, so, no, we are certainly challenged from a funding standpoint.

I think the Federal Government does have a role to help with that. Many of these species cross State borders. Delaware, as you know, is a very small State, and some of these species could come from the north down the Delaware River or any way from a port from overseas or anything, so I do think the Federal Government does have a role to help States, particularly those that cross State borders and have large geographic problems.

Senator CARPER. Thank you.

Terry?

Mr. STEINWAND. Thank you. Like Mr. Rogerson said, there never seems to be adequate funding. We are actually asking for more funding through the State legislature, actually through fishing license fees in North Dakota as we speak.

In terms of does the Federal Government have a role, I would say yes, but it is primarily a State role also. The Federal nexus that I can think of right now would probably be primarily Corps of Engineers. Again, Senator Cramer mentioned Lake Sakakawea. A typical reservoir doesn't stay at a stable level, it goes up and down, and as it goes down you have noxious weeds such as Canada thistle primarily showing up on shorelines, and there never seems to be enough funding for the Corps of Engineers to handle that because it may provide some wildlife habitat, but it certainly provides more of a problem for surrounding landowners.

Senator CARPER. OK, thanks.

Mr. Franklin, I may come back to you later on the same question.

Thanks so much.

Senator BARRASSO. Senator Cramer.

Senator CRAMER. Thank you.

Thank all three of you for your testimony and being here. This is really quite fascinating. I think what I will do is I will just maybe expand a little bit on what you are talking about right now on Senator Carper's questions.

I will come to you first, Terry. With regard to the Federal Government's role, if not monetary, and clearly there is some in terms of just cleaning up our own house, although I will resist the temptation to talk about the Corps having too much land and perhaps they should give you some more of it to do the right thing with, but that aside, you talked a lot about collaboration early on, particularly in the context of the amaranth and the collaboration with the Agriculture Department obviously using the outdoorsmen as the boots on the ground, as you called them, during the hunting season and how important that was.

From a Federal perspective, obviously, you have Federal partners that do the very same things you do, or similar, are there things we could either do from a policy standpoint, in terms of guidance or rules or just behavior that the Federal Government or the Federal agencies you work with could be doing differently to be more cooperative; and, as policymakers, especially things that we should be changing to help them in that?

Mr. STEINWAND. Thank you, Senator Cramer, that is an excellent segue or excellent question. We do routinely collaborate quite extensively with State partners, Federal partners, private partners, one I will say is the U.S. Fish and Wildlife Service, for more disease issues, more than anything, at the national fish hatcheries, but also we coordinate with the Ecological Services Branch in terms of terrestrial vegetation as much as anything.

I don't think, at least in North Dakota, we need any policy changes because the collaboration is there.

In terms of the Corps of Engineers, again, on aquatic species, particularly zebra mussel monitoring, they help us tremendously. We just don't have enough people to get around and monitor all those areas, and the local Corps of Engineers office in Riverdale, North Dakota helps out. Whenever they pull out a dock or a fishing pier, which you can't leave in North Dakota because of the ice issues, they are checking those; they are going around to municipalities, areas they deal with. The same with the Bureau of Reclamation, which I know this Committee doesn't deal with, but the Bureau of Reclamation equally helps us out.

So, in terms of Federal agencies, I wouldn't say more funding helps, and I wouldn't even say policy, because the people that we work with in North Dakota are very, very good to work with.

Senator CRAMER. Thanks for that.

Mr. Franklin, anything different to add?

Mr. FRANKLIN. Collaboration is really important in Wyoming when you talk about that many acres of Federal land. We have

BLM, Forest Service, Department of Defense, Bureau of Indian Affairs, so the collaboration is important. What we find is we have good people on the ground, but sometimes they don't have the resources actually to act upon that.

There are things with NEPA that could be improved. The ability to do categorical exclusions for new insipient populations and treatments would be helpful. We also see, for instance, between the Federal agencies on their approval process or risk assessments for new herbicides or new management tools, some can do that fairly quickly, some take several years and millions of dollars to do the risk assessment.

These are some of the issues I know we are working on with Federal agencies and trying to mitigate those, but there are some places with that policy that we really could use some help to give those land managers for those agencies better ability to react.

Senator CRAMER. And is that more profound in Wyoming because I think you stated in your testimony that roughly 50 percent is Federal ownership?

I know, Terry, in North Dakota it is like less than 4 percent, I think. That is probably one of the significant differences.

Mr. FRANKLIN. Right. I would think so.

Senator CRAMER. Sir, do you have anything to add to that?

Mr. ROGERSON. I do not. I would say that, in Delaware, we are very much a private land driven State; we have not that much Federal land compared to my counterparts to the right. We do have a good relationship with our Federal and State partners. Our Delaware Invasive Species Council is a very active group.

I would say some areas where we are lacking is education and understanding from the general public, particularly of the invasive plants. It is nice to see a nice grove of Bradford pears that was an early successional field, and to think that is a native species in the spring, when it is just a monoculture of beautiful white flowers, when, in reality, you have outcompeted those species, outcompeted the native plants and shrubs that should be there.

The Spotted lanternfly is an example of a new species that came here, so efforts to improve detections of these critters that are coming in from reports and other places I think is still necessary. That has the potential to tremendously impact our orchards and peach production and grapes around the States.

So, I think there are areas that we can improve, but we are doing the best we can with the resources that we have.

Senator CRAMER. Excellent.

Thank you all.

Senator BARRASSO. Thank you.

Senator CARDIN.

Senator CARDIN. Thank you, Mr. Chairman.

Mr. Rogerson, it is always nice to have a Marylander on the panel, so thank you for being here. I know that Senator Carper is claiming you as a person from Delaware, but we will let him do that for today.

I also appreciate the fact that you brought the nutria issue and the fact that the investments we made in eradicating the nutria, there are still some signs, but basically under control, has returned greater dividends for our economy. Nutrias are interesting animals;

they were originally brought into our region because of their fur used for coats, until they recognized they were just big rats and women didn't want to wear rat coats. So, the nutrias were then released into the wild, and they multiplied and destroyed a lot of wetlands. Blackwater National Wildlife Refuge is an example of an area that was very badly damaged as a result of the nutria population.

We acted here in Congress, we passed the Nutria Eradication Act. It was also well balanced geographically, because they had the problems in some of our southern States, Louisiana, so we were able to get the right political mix to get that passed and it is a success story, so I want to take what we learned from the nutria, that if we invest in dealing with invasive species control, it cannot only help our environment, but help our economy as well.

We are having challenges in the Chesapeake Bay because of the salinity of water changing with the amount of rainfall that we have had. We find that there are catfish invasive species that are thriving much stronger than they would otherwise be able to do because we have warmer seasons. The invasive plants are much stronger that we need to deal with.

The question I have for you is what type of public investment should we be making in the Chesapeake Bay region in order to be able to duplicate the success that we had on nutria for the other invasive species. I understand there are somewhere around 200 invasive species in the Chesapeake Bay region. Clearly, we have challenges in the region on invasive species.

Mr. ROGERSON. Thank you. And if it earns me any brownie points, not only am I from Maryland, I worked on the Nutria Eradication Program before I came to Delaware Fish and Wildlife, so I was there for about a year.

I think one of the reasons the nutria project was so successful was the original folks involved didn't set out to just try and control nutria, which would then have this long-term, we are going to lower populations down, but now we are going to have to fund and address this for decades and decades in the future, because if we stop there is going to be more of them.

So, they hit it aggressively and said we are going to get rid of nutria from the Delmarva Peninsula. It is going to cost a little more money upfront initially to hit it hard with that full-frontal force, but, in the end, it is going to pay dividends because they will be gone and we don't have to have long-term monitoring teams and stuff out there in the future.

It has been a couple years since they found an animal, which is amazing. Many folks didn't think it was going to be possible. But there are still areas, leaving no stone unturned because of how prolific breeders they are.

So, I think with the number of species you talked about in terms of in the Chesapeake Bay would be prioritizing which ones do we think we can get a handle on now, which ones are most detrimental to our resources. You know, nutria impacted the environment not only from our wetland integrity to handle sea level rise and storm surges and things like that, but also our economy. If you like crab cake sandwiches, you didn't like nutria, because they

were going to impact the nursery habitats for our blue crabs and stuff like that.

So, I would say reviewing what species you have and then prioritizing where you should focus those efforts, because you are probably not going to be able to hit all 200 of them with the same force.

Senator CARDIN. Is there a mechanism in the Chesapeake Bay program for doing that with invasive species? I am not aware of a ranking as to where we should put our priorities, nor am I aware of a real effort being made collectively within the Chesapeake Bay region on invasive species. I know we do have programs to eradicate invasive species, but I am not aware of such a coordinated effort.

Mr. ROGERSON. I am familiar with our Delaware Invasive Species Council, from my State. I would presumably venture to guess that there is one in Maryland. It is an unfunded, at least regulated by the State standpoint in Delaware, so we have identified our most important things. Our challenge in Delaware comes from acquiring all the resources we need to put boots on the ground. What we try and do is educate folks to the problem so that then, perhaps, they can implement the actions and find the resources that they need to be able to handle it.

Senator CARDIN. I would just point out invasive species do not know geographic borders.

Mr. ROGERSON. Absolutely. Yes.

Senator CARDIN. Thank you. We will look at whether we can provide some guidance within the watershed on this area.

Thank you for your testimony.

Mr. ROGERSON. Thank you.

Senator BARRASSO. Thank you, Senator Cardin.

Senator BRAUN.

Senator BRAUN. A subject dear to my heart, back in the late 1980's I started investing in timber ground, and invasive species was not even mentioned up until probably 15 years ago, and then I have stuff like bush honeysuckle start showing up, stealth grass, of course, the emerald ash borer for midwestern timber, and I think that is 8 percent of all the trees in Indiana, pretty well taken them all out.

I am interested because this seems to be a problem that is so massive. Does it make sense and can you bring in natural enemies and counterpunches that come from the places where this stuff originates, or is that opening up a Pandora's box of further complications? Because, to me, unless you are kind of have an involvement in it, like I do, most people don't know the difference between a bush honeysuckle and a native plant, or stealth grass and grasses that grow here natively.

What about that idea? Then I want to get one other question. Anybody that feels comfortable, weigh in on it.

Mr. FRANKLIN. We are big supporters of biocontrol in the State of Wyoming; we think it is a great opportunity to help balance, maybe, in some cases some of these invasive species with the native vegetation. The Wyoming Weed and Pest Council actually puts money into research for new biocontrol agents in our State, so we

are putting county and State funds into that kind of research because we feel it is a great opportunity.

We were talking, just before this testimony, about leaf beetles on leafy spurge, because the herbicides available for leafy spurge are minimal and have very little effect in some cases, so the leaf beetle actually can go in and do a great job of balancing the leafy spurge within those ecosystems.

So, I would say, from Wyoming's perspective, that is one place we really could support and expand, is the biocontrol agents.

Senator BRAUN. And is that finding a native biocontrol? Is all this stuff unchecked, where it comes from? Like cheatgrass, does that dominate the landscape from wherever it originates?

Mr. FRANKLIN. It does not. So, what we do is our research, what Wyoming funds for research is actually in Switzerland, and they go out and actually look in the native landscapes where these plants are and look for native bugs that impact them or eat them. And then it is a pretty lengthy process in terms of researching whether it will work or not, and also to get those biocontrol agents approved. So, it is not simply a matter of going over, finding it, and bringing it back, you know, on a boat; there is an approval process. Speaking of the genie getting out of the bottle, there is a pretty lengthy approval process to help monitor that.

Mr Steinwand. Mr. Franklin did a tremendous job, but I would add to that that biocontrol is a preferred method over herbicides, but you have to be careful of the unintended consequences. And, again, Mr. Franklin kind of alluded to the fact that there needs to be research. Using the flea beetle and leafy spurge as an example, there was a tremendous amount of research done on that, because what happens when they control or eradicate the intended plant? What are they going to go to next, an unintended plant and get something you really don't expect? So there has to be some background and some research before we go that route totally.

Mr. ROGERSON. I agree that biocontrols do have their merits. I know the University of Delaware Ag Department does quite a bit of research on biocontrols. And to your point earlier about these species, where they come from, are they pervasive and out of control over there, if you think about the natural world that is here, and the plants and animals and insects that are all connected together, every plant has a group of insects that it supports; it also has some insects that feed on it, and everything works together.

When you take these species that aren't native to those areas and drop them in, they lack, oftentimes, those controls that keep them in check here, so then they are able to dominate our landscapes that are here, and that is why, when you see these animals moved around these great distances, you see them kind of potentially explode, given the right species and the right condition.

Senator BRAUN. Thank you.

Have you found that these species naturally climax or start to feather out, or do they just keep exploding into the local environment? And have we had many instances of where something here actually that is native starts to knock it back, or would that be the exception rather than the rule? For anybody.

Mr. FRANKLIN. I think you are specifically asking about invasive species, right?

Senator BRAUN. Yes.

Mr. FRANKLIN. So, there are invasive species that come in that have value to some degree. I think some of the non-native grasses that do have a grazing value to them, so maybe we are less likely to focus on them as we are the ones that have no value. So, there are a lot of invasive species out there and there are some that are lower priorities and should be prioritized lower than the ones that have that economic or agricultural impact.

Mr. STEINWAND. I would add that the hallmark of an invasive species is typically tremendous, tremendous growth of that population if left unchecked to begin with, and then stabilizes to some level below that somewhere in the future. I would hopefully not contradict what you are saying, but, to some extent, Kentucky bluegrass, which is a great ornamental grass for lawns across the Nation, has created a little bit of a problem in North Dakota when it invades our native prairies. We have found that if we get heavy grazing pressure when it is still less than 30 percent of that landscape, we can control it, but, if not, once it gets above 30 percent, it tends to take over that native prairie, thus reducing pollinator diversity, so on and so forth, and very little wildlife value.

Mr. ROGERSON. And I will mention that not every non-native species that comes here is invasive and causes problems. For example, where nutria were introduced in Blackwater and Cambridge area, during that same time period sika deer were brought over from Thailand I believe is where they are from, and certainly they do impact the agricultural producers and farmers over there from a crop damage standpoint. They did not have the same ecological impacts that nutria did.

So, it depends on the life history traits of that species that is brought over here and things like that that is going to determine whether it becomes an invasive species and becomes a problem for us.

Senator BRAUN. Thank you.

Senator BARRASSO. Thank you, Senator Braun.

I have one last question to Mr. Steinwand. We talked about invasive mussels and things that are happening underwater. The quagga and the zebra mussels have had enormous destructive powers, from clogging pipes and reservoirs to destroying the motors of private recreational boats. We have here a poster board of zebra mussels on a motor.

Can you share some advice that you might have to inform Wyoming in terms of our future efforts to prevent the spread of quagga and zebra mussels based on your experience in dealing with this in North Dakota?

Mr. STEINWAND. Thank you, Mr. Chairman. I believe I mentioned it in my written testimony and my oral testimony. As good as Wyoming Game and Fish Department is, I am guessing they already do this, but I don't know, again, given limited resources, first of all, try to find out where the pathways, what are the most likely high-risk pathways for that to come into Wyoming and then concentrate your forces on them. If you can prevent it from coming in, again, I think we have all said that that is the best route to go.

Senator BARRASSO. Thank you.

Senator CARPER. I have one question for Joe and then a question for our panel to close it out.

I mentioned in my opening statement, I talked a little bit about climate change. I think most people, when they think about climate change, in Delaware we think about sea level rise. We are a small State. We are sinking and the oceans around us, as Joe knows, are rising. Not too far from where I live, my neighbor here, Ben Cardin, to my left, from Maryland, one of the places he represents is Ellicott City. We saw a lot of rain in Delaware last year, probably twice as much as we normally get, and damaged our crops quite a bit. A lot of the farmers ended up just plowing their crops under because we had so much rain. They just kept planting and replanting, and finally kind of gave up and turned to crop insurance. So, we think about that.

We think about wildfires, all these wildfires out west, where one of my sons lives, wildfires bigger than Delaware. But we don't often think of invasive species and what effect, if any, climate change has on invasive species, and I would just ask Mr. Rogerson whether or not climate change is a consideration in the Department of Natural Resources and Environmental Control's management of invasive species. And, if so, would you share some thoughts with us on how Delaware might be adapting and some examples of possible implications in our State and maybe even implications for other States?

Mr. ROGERSON. Yes. At DNREC, we take climate change into a whole host of considerations that we are working on, not just invasive species, due to many of the reasons you just pointed out. Just a quick example, as I said earlier, invasive species can come at us from any different direction, not just necessarily as we think of things getting warmer and stuff. As an example, lionfish, lionfish are a tremendous problem in offshore reefs and places particularly more in the southern part of the Country. Currently, our water temperatures in the wintertime seem to be too cold for that species to persist here, but they have been found as far north as Rhode Island and north of us, so just proactive monitoring efforts, knowing that things are going to move and increased coordination with our southern counterparts.

Asian tiger mosquito, as pointed out, having the potential to carry Zika and West Nile. I can attest that I have had invasions over the years of tiger mosquitos in my neighborhood, and they are voracious predators and feeders out in the yard, and you can't play outside with the kids, so we do have a very modern and——

Senator CARPER. Do repellants work with those?

Mr. ROGERSON. Say that again?

Senator CARPER. Repellants, the kind of repellants we use for most mosquitos?

Mr. ROGERSON. They seem to, at least in my yard, when they are out and around, I am inside kind of thing, or certainly wearing long-sleeved barriers kind of thing to get through. I mean, they are much larger than our normal mosquitos, and their feeding habits and such, they are not a fun one to have around; not that any of them are.

Furthermore, with climate change, sea level rise, the host of factors that come with it, those all put stresses on our native plant

and animal communities; and you throw in invasive species on top of them, which typically the ones that we see aggressively get out of hand or be strong competitors are the ones that dominate those sites and areas that have been disturbed where our native plants don't do as well, so I think that can lend itself to being a further problem in the future.

Senator CARPER. All right, thank you.

Last question, if I could, on regional collaboration. In Delaware, we are big on the four Cs, communicate, collaborate, cooperate, and civility, in order to get us to consensus. That is what we try to do.

I was encouraged, with that in mind, by some of the regional collaboration that you all have mentioned here today to us, including the Chesapeake Bay Nutria Eradication Project and the Western Governors Association Invasive Mussel Forum.

How do you think Congress and the Federal Government could better support these regional efforts and others? Go ahead.

Mr. STEINWAND. If I might, you did mention the Western Governors Association. Of course, that is North Dakota and to the west. I think supporting the policies that that group has come up with, which is truly a bipartisan effort, supporting those policies and working together. We serve, not myself, but staff serves on a minimum of three regional invasives council to more share information such as we are doing here, to innovate to the extent possible. I don't mean this as a denigrating remark, but if we can get by with not having to spend any Federal money on this and just cooperation and policy, to me, that would be the greatest win.

Senator CARPER. OK. Thanks.

Others, please, Franklin and Joe? We will close it up. Slade?

Mr. FRANKLIN. I would reiterate the Western Governors Association just did a bunch of workshops on invasive species, and they are working on some ideas on policies, and I think there is a place maybe for Congress to look at what those ideas coming out of that are.

Certainly, ISAC, the committee I am on, works on some policy ideas that would be well work Congress looking at. ISAC has been around for, I think, 10, 15 years, and there are some great whitepapers discussing not just the funding issue, but a lot of the policy issues that may be worthwhile looking at.

Senator CARPER. OK, thank you.

Joseph, you get the last word.

Mr. ROGERSON. I agree, I think any kind of improved coordination between the States, particularly Delaware, where we are, as I said before, being small. The Spotted lanternfly is yet another example of nobody expected it to come here and it showed up, so I think the Government can help us with keeping species out through better inventory of goods and things coming into the Country, as well as the fact that these species, many of them do cross State borders and State lines and stuff, being facilitators, perhaps, between the States to work together.

Senator CARPER. All right.

Mr. Chairman, one of the issues that is dividing my staff sitting behind me is the Spotted lanternfly. The S in Spotted lanternfly is, of course, capitalized, but the question is how about that L in lanternfly. Some say capitalize; others say not. What do you say?

Mr. ROGERSON. I would have to look at my testimony to see what my Department of Agriculture folks said to me.

[Laughter.]

Senator CARPER. Well, to be continued. Those will be questions for the record.

Thank you all.

Senator BARRASSO. Well, thank you, Senator Carper.

Thank you to the witnesses.

As you had mentioned, Senator Carper, there are so many different conflicting committees going on today that some of the members weren't able to get here, so they may submit written questions, so I would ask that you please respond to those. The hearing record is going to be open for 2 weeks, but I think all of us want to just thank all of you for your time and your testimony today. It has been a tremendous hearing.

Senator CARPER. Mr. Chairman, could I ask for a unanimous consent request to ask unanimous consent to enter into the record written testimony and letters from stakeholders, as well as other supplemental materials?

Senator BARRASSO. Without objection.

Senator CARPER. Thank you.

[The referenced information follows:]

February 27, 2019

Chairman Barrasso and Ranking Member Carper
Senate Environment and Public Works Committee
410 Dirksen Senate Office Building
Washington, DC 20510

RE: Letter for the Record for the Hearing on "The Invasive Species Threat: Protecting Wildlife, Public Health, and Infrastructure"

Dear Chairman Barrasso and Ranking Member Carper:

On behalf of our millions of members and supporters, the signed organizations respectfully submit this letter for the record of the Committee's February 13, 2019, hearing on "The Invasive Species Threat: Protecting Wildlife, Public Health, and Infrastructure."

Invasive species are a serious and growing threat to our environment and our economy. We concur with the hearing witnesses that more capacity is needed to monitor and address invasive species. We also strongly agree that more must be done to address anthropogenic climate change, which can facilitate the spreading of invasive species and perpetuate unnatural ecological disturbance.

We vehemently disagree, however, with one witness's recommendation to roll back environmental review and categorically exclude certain invasive treatments from consideration under the National Environmental Policy Act (NEPA). Responses to invasive species inevitably come with risks and often have very serious side effects. Even when the invasive threat is well-established and fast-spreading, we must ensure we have a safe, reliable solution that also minimizes repercussions. NEPA serves this role. It requires federal agencies to review the best available science, consider reasonable alternatives, and inform the public of a treatment's potential impacts. In short, NEPA reviews are essential to a safe and effective invasive species program.

History is replete with examples of well-intentioned attempts to "fix" invasive species problems that only made matters worse. One notorious example is the release of mongooses in Hawai'i as a strategy to eradicate non-native and invasive rat populations. Not only did the diurnal mongoose not reduce the nocturnal rat population, but the mongooses proceeded to prey on native birds and turtle eggs on Maui, Oahu. and Molokai. A more recent example, also from Hawai'i, was the transplant of the cannibalistic rosy wolfsnail to address invasive African land snails. Unfortunately, native Hawaiian molluscs are now at a greater risk of extinction because of that invasive "treatment." As many of the witnesses testified, using biological agents requires extensive consideration before application. NEPA reviews are an important part of that process.

The risk is not just with biological responses. The aerial application of pesticides, for example, can be effective in eliminating some invasive species, but can also contaminate drinking water and crops. This risks the health and well-being of human and wildlife communities alike. It is why environmental review of the specific treatment in a specific location is so important.

Furthermore, invasive species problems often involve complicated interactions with native wildlife and human communities. One of the hearing witnesses described invasive viruses carried by native wildlife populations. This is a good example of how difficult it can be to isolate an invasive species

without harming native species and native ecosystems. NEPA reviews help to ensure that these complications are addressed rather than ignored.

In addition to its safety net role, NEPA provides important information and insights. A NEPA review can help identify contributing factors to the spread of invasive species which in turn can be helpful for both current and future upstream management (i.e., treating the cause, not just the symptom). This was the case when NEPA review helped to establish that recreational vehicle use was contributing to the spread of invasive species thereby flagging the need to address management issues in addition to physical treatment. The NEPA alternative process can help assess different combinations of responses from mechanical to chemical to management changes that might produce the best outcome with the least unintended consequences for a specific location. In addition, NEPA is instrumental to the collaborative process that multiple witnesses credited with essential work across private, local, state and federal jurisdictions. NEPA provides the forum for public comment and it provides the information on impacts and alternatives that facilitate that collaboration.

We caution that rushed responses to invasive species can prove disastrous. At the hearing, Mr. Slade Franklin described the importance of taking early action to address invasive species, using the analogy of early treatment in cancer. Certainly, early action on invasive species is important. But speed is not the only consideration. Ensuring that the response is informed, effective, targeted and mitigated is even more important. Hurried, misguided responses may only multiply the problems that must be addressed.

Mr. Franklin's subsequent suggestion that invasive treatments be categorically excluded from NEPA review, and that new herbicides be fast-tracked through approval review, is even more dangerous. To take his analogy of treating cancer, excluding a NEPA review for invasive species response would be akin to telling doctors that, in the name of expedience, they should not take the time to evaluate the size of the tumor or the relative health and condition of the patient before determining the dose or starting with chemotherapy treatment. Derailing NEPA reviews, and specifically their public information aspect, also would be akin to telling doctors to not discuss with the patient the fact that chemotherapy could endanger their lives by killing healthy tissue. NEPA helps to ensure that the application of a treatment is evaluated for a specific situation and location, that alternatives are considered and that communities are made aware of impacts.

Even actions potentially beneficial to the environment, wildlife, and people such as Habitat Conservation Plans under the Endangered Species Act are and should be benefitting from NEPA reviews. These reviews provide an essential safety check where these decisions are not easy and can come with large implications for communities and the environment.

While cutting NEPA is an unhelpful, even counterproductive, response to the need for early action on invasive species, that need is real. To help, Congress can and should improve funding for NEPA implementation so that the agencies have the staff and resources to get this important work done in a timely fashion.

In summation, we thank you for addressing the important issue of invasive species and encourage the committee and the Congress to provide for a robust invasive species program but also to ensure that it fully complies with essential environmental safeguards such as NEPA.

Thank you for your consideration.

Sincerely,

Center for Biological Diversity

Defenders of Wildlife

Environmental Law & Policy Center

League of Conservation Voters

National Parks Conservation Association

Natural Resources Defense Council

Sierra Club

Southern Environmental Law Center

Western Watersheds Project

Senator BARRASSO. The hearing is adjourned.
[Whereupon, at 11:25 a.m. the committee was adjourned.]

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