

INVASIVE SPECIES MANAGEMENT ON FEDERAL LANDS

OVERSIGHT HEARING

BEFORE THE

SUBCOMMITTEE ON PUBLIC LANDS
AND ENVIRONMENTAL REGULATION

OF THE

COMMITTEE ON NATURAL RESOURCES
U.S. HOUSE OF REPRESENTATIVES

ONE HUNDRED THIRTEENTH CONGRESS

FIRST SESSION

Thursday, May 16, 2013

Serial No. 113-18

Printed for the use of the Committee on Natural Resources



Available via the World Wide Web: <http://www.fdsys.gov>

or

Committee address: <http://naturalresources.house.gov>

U.S. GOVERNMENT PRINTING OFFICE

80-982 PDF

WASHINGTON : 2014

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512-1800; DC area (202) 512-1800
Fax: (202) 512-2104 Mail: Stop IDCC, Washington, DC 20402-0001

COMMITTEE ON NATURAL RESOURCES

DOC HASTINGS, WA, *Chairman*
EDWARD J. MARKEY, MA, *Ranking Democratic Member*

Don Young, AK	Peter A. DeFazio, OR
Louie Gohmert, TX	Eni F. H. Faleomavaega, AS
Rob Bishop, UT	Frank Pallone, Jr., NJ
Doug Lamborn, CO	Grace F. Napolitano, CA
Robert J. Wittman, VA	Rush Holt, NJ
Paul C. Broun, GA	Raúl M. Grijalva, AZ
John Fleming, LA	Madeleine Z. Bordallo, GU
Tom McClintock, CA	Jim Costa, CA
Glenn Thompson, PA	Gregorio Kilili Camacho Sablan, CNMI
Cynthia M. Lummis, WY	Niki Tsongas, MA
Dan Benishek, MI	Pedro R. Pierluisi, PR
Jeff Duncan, SC	Colleen W. Hanabusa, HI
Scott R. Tipton, CO	Tony Cardenas, CA
Paul A. Gosar, AZ	Steven A. Horsford, NV
Raúl R. Labrador, ID	Jared Huffman, CA
Steve Southerland, II, FL	Raul Ruiz, CA
Bill Flores, TX	Carol Shea-Porter, NH
Jon Runyan, NJ	Alan S. Lowenthal, CA
Mark E. Amodei, NV	Joe Garcia, FL
Markwayne Mullin, OK	Matt Cartwright, PA
Chris Stewart, UT	
Steve Daines, MT	
Kevin Cramer, ND	
Doug LaMalfa, CA	
<i>Vacancy</i>	

Todd Young, *Chief of Staff*
Lisa Pittman, *Chief Legislative Counsel*
Jeffrey Duncan, *Democratic Staff Director*
David Watkins, *Democratic Chief Counsel*

SUBCOMMITTEE ON PUBLIC LANDS AND ENVIRONMENTAL REGULATION

ROB BISHOP, UT, *Chairman*
RAÚL M. GRIJALVA, AZ, *Ranking Democratic Member*

Don Young, AK	Peter A. DeFazio, OR
Louie Gohmert, TX	Niki Tsongas, MA
Doug Lamborn, CO	Rush Holt, NJ
Paul C. Broun, GA	Madeleine Z. Bordallo, GU
Tom McClintock, CA	Gregorio Kilili Camacho Sablan, CNMI
Cynthia M. Lummis, WY	Pedro R. Pierluisi, PR
Scott R. Tipton, CO	Colleen W. Hanabusa, HI
Raúl R. Labrador, ID	Steven A. Horsford, NV
Mark E. Amodei, NV	Carol Shea-Porter, NH
Chris Stewart, UT	Joe Garcia, FL
Steve Daines, MT	Matt Cartwright, PA
Kevin Cramer, ND	Edward J. Markey, MA, <i>ex officio</i>
Doug LaMalfa, CA	
Doc Hastings, WA, <i>ex officio</i>	

CONTENTS

	Page
Hearing held on Thursday, May 16, 2013	1
Statement of Members:	
Bishop, Hon. Rob, a Representative in Congress from the State of Utah ...	1
Prepared statement of	2
Horsford, Hon. Steven A., a Representative in Congress from the State of Nevada	2
Prepared statement of	3
Statement of Witnesses:	
Beck, Dr. K. George, Professor of Weed Science, Colorado State University	10
Prepared statement of	12
Questions submitted to	25
Dye, Randy C., West Virginia State Forester, President, National Association of State Foresters	28
Prepared statement of	29
Questions submitted to	32
Fearneyhough, Jason, Director, State of Wyoming, Department of Agriculture	34
Prepared statement of	36
Questions submitted to	38
Hughes, Debra, Executive Director, New Mexico Association of Conservation Districts	40
Prepared statement of	42
Ogsbury, James D., Executive Director, Western Governors' Association ..	43
Prepared statement of	45
Ries, Paul, Associate Deputy Chief, State and Private Forestry, U.S. Forest Service, U.S. Department of Agriculture	4
Prepared statement of	6
Additional materials submitted for the record:	
FY09 National Invasive Species Council Invasive Species Expenditures Compilation	16
The Idaho Invasive Species Strategic Plan 2012–2016	50
The Nature Conservancy, Letter Submitted for the Record	64
Western Governors' Association Policy Resolution 10–4	48

OVERSIGHT HEARING ON “INVASIVE SPECIES MANAGEMENT ON FEDERAL LANDS”

**Thursday, May 16, 2013
U.S. House of Representatives
Subcommittee on Public Lands and Environmental Regulation
Committee on Natural Resources
Washington, D.C.**

The Subcommittee met, pursuant to notice, at 10:05 a.m., in room 1334, Longworth House Office Building, Hon. Rob Bishop [Chairman of the Subcommittee] presiding.

Present: Representatives Bishop, Lummis, Stewart, Cramer, Holt, Horsford, and Garcia.

Mr. BISHOP. Noticing that there is a presence of a quorum, the Subcommittee on Public Lands and Environmental Regulation is meeting today to hear testimony on the invasive species management on Federal lands.

So, under the rules, only the Ranking Member and the Chairman are allowed opening statements, but I ask unanimous consent to include any Member's opening statement in the hearing record if submitted to the clerk by the close of business today. And hearing no objections, it will be so ordered.

STATEMENT OF THE HON. ROB BISHOP, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF UTAH

Mr. BISHOP. This morning the Subcommittee is exercising its role in good government by taking a look at a growing issue facing our Federal lands. The proliferation of invasive species on our public lands is impacting the health, the landscape, and it is increasing the risk of wildfire, affecting wildlife habitat, impacting the viability of land for multiple use, and perhaps most troubling, it is undermining the efforts of their neighboring land owners, who, unlike the Federal Government, are often taking proactive steps to reduce the threat of invasive species on their lands.

This hearing is intended to take a first look at this issue. We are going to hear from the Forest Service about their efforts to tackle the growing threats to the 193 million acres that it manages. The Department of the Interior, unfortunately, chose not to talk to us about the 400 million acres that they manage.

We will also hear from other stakeholders about what they think is and is not working, and how scarce public resources can be better utilized.

Invasive species management is a complex and difficult issue. And, from my perspective, there are certainly more questions than answers as to what is being done, and what could be done better. Many, who will be represented by our panel, have raised concerns with Federal funds actually reaching the on-ground effort to eradicate the invasive species, and have asserted a fact that became a common theme with land management, that actually State and

local and private entities are superior to their Federal counterparts when it comes to managing lands and resources.

Therefore, this hearing is a much-needed fact-finding mission to hear from experts on how the Federal Government can operate more effectively to work with those who are willing and able partners to start catching up with the invasive species that have invaded our land since the late 1700s and are impacting State and private property at the same time.

We thank our witnesses for being here. We look forward to hearing about their efforts to try and make sure that the money that we are spending on invasive species actually gets on the ground so it does what it was intended to do. And I look forward to your testimony.

[The prepared statement of Mr. Bishop follows:]

PREPARED STATEMENT OF THE HONORABLE ROB BISHOP, CHAIRMAN, SUBCOMMITTEE
ON PUBLIC LANDS AND ENVIRONMENTAL REGULATION

This morning the Subcommittee is exercising its role in good government by taking a look at a growing issue facing our Federal lands. The proliferation of invasive species on our public lands is impacting the health of the landscape, increasing the risk of wildfire, affecting wildlife habitat, impacting the viability of the land for multiple-use, and finally—perhaps most troubling—undermining the efforts of neighboring landowners who, unlike the Federal Government, are often taking proactive steps to reduce the threat of invasive species on their land.

This hearing is intended to take a first look at this issue. We will hear from the Forest Service about their efforts to tackle the growing threats to the 193 million acres it manages, the Department of the Interior unfortunately could not join us to talk about the other 400 million acres. We will also hear from other stakeholders about what they think is and is not working, and how scarce public resources can be better utilized.

Invasive species management is a complex and difficult issue, and from my perspective there are certainly more questions than answers as to what is being done and what can be done better. Many—represented by our panel—have raised concerns with Federal funds actually reaching the on-the-ground efforts to eradicate invasive species, and have also asserted a fact that has been frequently heard by this Subcommittee that States are better situated to utilize funding to implement more effective control measures.

Therefore, this hearing is a much-needed fact finding mission to hear from experts on how the Federal Government can operate more efficiently and work with these willing and able partners to start catching up with the invasive species that are invading Federal lands and impacting State and private property.

Mr. BISHOP. So I would now like to recognize the Ranking Member, Mr. Horsford, for 5 minutes for any opening statement he wishes to give. Actually, you've got as much time as you want for an opening statement.

STATEMENT OF THE HON. STEVEN A. HORSFORD, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEVADA

Mr. HORSFORD. Thank you, Mr. Chairman, members of the Committee, and witnesses. I am pleased to be standing in for Mr. Grijalva today, and I thank you all for participating in this hearing.

I think we can agree on a number of things. Invasive species are a growing problem across millions of acres of Federal land. The spread of invasive species costs billions of dollars and negatively impacts agriculture, commerce, water quality, and wildlife habitat. Invasive species monitoring control and eradication is time-con-

suming and expensive. And we can probably use our resources better.

In my home State of Nevada, we have a massive invasive species issue. My congressional district, covering both a rural part of the State, one of our worst is the invasion of the Quagga Mussel, cheatgrass, and other noxious weeds, are increasing fire risk and impacting sage grouse habitat. So this has been our experience in Nevada, my experience in our congressional district. And I look forward to hearing from the Healthy Habitat Coalition, which, unfortunately, does not include any Nevada representation, but I hope to learn more about how your efforts on noxious weed might help translate to some of our concerns, as well.

Thank you, Mr. Chairman, and I look forward to hearing from our expert panel this morning.

[The prepared statement of Mr. Horsford follows:]

PREPARED STATEMENT OF THE HONORABLE STEVEN A. HORSFORD, A REPRESENTATIVE
IN CONGRESS FROM THE STATE OF NEVADA

Mr. Chairman, Members of the Committee, and witnesses. Thank you for participating in this hearing today.

I think we can agree on a number of things.

- Invasive species are a growing problem across millions of acres of Federal land.
- The spread of invasive species is costing billions of dollars and negatively impacts agriculture, commerce, water quality, and wildlife habitat.
- Invasive species monitoring, control, and eradication is time consuming and expensive.
- We can probably use our resources better.

In my home State of Nevada, we have massive invasive species issues, the worst being the invasion of the quagga mussel. Cheatgrass and other noxious weeds are also increasing fire risk and impacting sage grouse habitat.

This is my experience. I look forward to hearing from the Healthy Habitat Coalition, which unfortunately does not include any Nevada representation, to learn more about how their efforts on noxious weeds might translate to our concerns.

Thank you again.

Mr. BISHOP. Thank you. We welcome the panel that we have up here in front of us. Let me introduce just—I hope from left to right—Mr. Paul Ries, who is the Associate Deputy Chief from the Forest Service and the Agriculture Department; Dr. George Beck from Colorado State University, part of the Healthy Habitats Coalition; Randy Dye, who is President of the National Association of State Foresters; Jason Fearneyhough—I hope I said that right—who is the Director of the Wyoming Department of Agriculture; Debra Hughes, the Executive Director of the New Mexico Association of Conservation Districts; and James Ogsbury, who is the Executive Director of the Western Governors' Association.

Before we ask you to testify, I would like to ask Mrs. Lummis if she would have a desire to introduce Mr. Fearneyhough, who happens to be one of her constituents.

Mrs. LUMMIS. I definitely would, Mr. Chairman. Thank you. And thank you, Ranking Member, for holding this hearing.

Director Fearneyhough has been the director of Wyoming's Department of Agriculture for the past 4 years, which means as an appointee, and a political appointee at that, he has served both for a Democrat Governor and a Republican Governor. And I think that speaks volumes to how he is received and thought of. He is very,

very well respected in Wyoming—not only in Wyoming, but also among his fellow directors of agriculture, because he is also the current Chairman for the National Association of State Departments of Agriculture.

We have known each other for a long time. He is a committed partner with Federal agencies in tackling invasive species. And as we all know in our Western States, the Federal presence is so significant, so commingled with private and State land, that we have to have these partnerships in order to make things work. He knows their policies, he knows what works well, and he knows what doesn't work well. And he has got an extensive pool of experience.

Invasive species, like cheatgrass, have great implications for wild fires and Wyoming's efforts to prevent the listing of the sage grouse, a huge issue for us right now. So, any solution in a State like Wyoming, and more so with yours, Mr. Chairman and Mr. Ranking Member, because of the tremendous amount of Federal land ownership, has to involve an effective Federal commitment, which we need more of.

So thank you very much, Mr. Chairman, Mr. Ranking Member. And welcome, Mr. Fearneyhough; we are delighted to have you here.

Mr. BISHOP. Thank you, Representative. To all the others, we would have equal kind of introductions, but you are not from Nevada or Utah.

[Laughter.]

Mr. BISHOP. So screw it, you know, you are just real people. But I appreciate it.

I am assuming—many of you have been here before—you understand the system. Your written testimony is already part of the record. We would ask you to add to it in your oral testimony. The clock you see in front of you starts ticking down at 5 minutes. When it goes yellow, that means you have a minute left, so please hurry up. And when it is red, we wish you to stop, even in mid-sentence.

So, you each have 5 minutes. Let me turn, first of all, to Mr. Ries. We thank you for being here. Make sure you pull the mic as close to you—and have it on. And we would recognize you for 5 minutes for your testimony, please.

That is why you need to have it really closer to you.

Mr. RIES. Is that better?

Mr. BISHOP. A little bit.

Mr. RIES. How is that?

Mr. BISHOP. Good enough for government work, yes. Go ahead.

**STATEMENT OF PAUL RIES, ASSOCIATE DEPUTY CHIEF, U.S.
FOREST SERVICE, U.S. DEPARTMENT OF AGRICULTURE**

Mr. RIES. Thank you, Mr. Chairman and members of the Subcommittee, thank you for the opportunity to testify before you today on the role of the Forest Service in protecting forest and grasslands from invasive species. The work that we do is accomplished with and through partners. Those partners include States, counties, communities, conservation districts, and weed boards. They also include our Federal agencies, colleges and universities, and non-profits. We, the collective we, together, deliver a com-

prehensive, integrated program across the land, in our waterways, from the air, and even overseas. We, together, implement that program across Federal, State, private, and tribal lands.

Our program, like all comprehensive invasives programs today, includes four universal components of invasive species management. One is prevention. Two is early detection and rapid response. Three is control and management. Four is restoration. So I will talk briefly about each one of those and provide an example or two.

First, prevention. The most cost-effective action that any of us can take in invasive species management is to prevent species from ever getting here. We are heavily involved in prevention. We use our research branch, our international program authorities, and our relationships to work with foreign countries to stop invasives at their source. As an example, we have been successful in establishing science-based treatment of wood-based packing materials to avoid them becoming a vector for invasive species introductions.

We have also been successful working with foreign countries such as Korea and even China, and having those standards implemented to eliminate invasives before they leave their countries of origin. Prevention has kept the Asian Gypsy Moth out of the Western United States. Prevention has kept Sudden Oak Death out of the Eastern Hardwood Forest.

Number two is early detection combined with a rapid response. When prevention fails, early detection and a rapid response is the second most cost-effective action you can take to control invasive species. We are continually looking for more effective ways to detect invasives early, when populations are small, so that they can be effectively eliminated through a rapid response.

Since most invasives do not initially become established on Federal lands, we use our State and private forestry authorities to implement successful early detection rapid response programs on private lands. Early detection with rapid response eliminated Asian Longhorn Beetle in Chicago, and Sacramento, and, as was announced yesterday, in Manhattan. An early effort in Maryland successfully eradicated one of the first Emerald Ash Borer populations found on the east coast. We are currently working with the Nature Conservancy in Chattanooga, Los Angeles, and New York, to jointly develop better systems for early detection. We want to find new pests in the United States and detect known pests in new locations.

When prevention and early detection/rapid response fail us, then we move into the third program element: control and management. Again, we use our collected researchers, entomologists and pathologists, to develop the most effective control and management measures. In some cases, we even license and pay for the manufacturing costs of pesticides in order to make them available for use across all ownerships. One such agent, BT, *Bacillus Thuringiensis*, has been extremely effective in slowing the spread of gypsy moth in the East. We estimate 100 million acres have been kept free of gypsy moth, as a result of Slow the Spread.

We work to locate and introduce biological control agents, often by bringing them from their home countries of origin. Bio-control agents, for example, have been very effective and significant in reducing the stranglehold that Musk Thistle and Knapweed have on many of our range lands. We have been successful enough in some

cases that we can spend our funds on restoration, rather than on control. We are currently working on bio-control agents for cheatgrass, Emerald Ash Borer, Rush Skeletonweed, and a host of other invasives.

Education and science are a big part of each of these elements. We work to educate boat owners about the dangers of Quagga and Zebra Mussels to our waterways. Our scientists work to determine the right cleansing agents and hot water temperatures that are needed to keep mussels from being transported. We have helped fund washing stations and boat inspections. We have worked to develop policies around weed-free hay, and we have helped develop dozens of cooperative weed management areas across the West. And that is why it is not uncommon to see county trucks spraying weeds on national forests, or Forest Service crews spraying weeds along State and county roads.

In closing, I will say that I realize I am out of time. Thank you for letting me join you.

[The prepared statement of Mr. Ries follows:]

PREPARED STATEMENT OF PAUL RIES, ASSOCIATE DEPUTY CHIEF, STATE AND PRIVATE FORESTRY, U.S. FOREST SERVICE, U.S. DEPARTMENT OF AGRICULTURE

Mr. Chairman and members of the Subcommittee, thank you for the opportunity to testify before you today on the role of the Forest Service in protecting forests and grasslands from invasive species. The Forest Service is committed to the prevention, detection, control, management and eradication of invasive species, and to restoring the structure and function of affected aquatic and terrestrial ecosystems on all lands.

Background

Invasive species are among the most significant environmental and economic threats facing our Nation. Aquatic and terrestrial invasive plants, pathogens, vertebrates, invertebrates, algae, and fungi have become established on millions of acres across North America. These infestations are degrading watershed condition and ecosystem functionality, reducing forest and rangeland productivity, increasing the risk of wildfire and soil erosion, causing declines in recreational use and enjoyment, negatively impacting human health and safety, threatening native fish and wildlife populations and their associated habitats, causing declines in property values, and undermining the economy at all levels. Invasive species cause billions of dollars in damage each year in the United States. Pimentel et al. (2001) estimated damage from invasive species world-wide totaled at more than \$1.4 trillion per year.

Burgeoning global trade and transportation have facilitated the spread of many species among continents well beyond their native range. With the number of people living in, enjoying, and using forests, grasslands, and water resources continually increasing, the likelihood of invasive species spreading through transportation and recreational activities is also rising. As a result, many species of invasive plants, pathogens, vertebrates, invertebrates, and other harmful exotic species have been introduced to our Nation's aquatic and terrestrial ecosystems. Many of these have become established within these ecosystems.

Responsibilities and Capabilities of the Forest Service

The Forest Service plays an important role in the Nation's efforts to address the threat of invasive species across the landscape through our National Forest System, State and Private Forestry, Research and Development, and International program areas. In this testimony we will explore how individually and collectively these programs work together to address invasive species threats.

With internationally recognized land management and scientific expertise, the Forest Service is well suited to address the many challenges of invasive species. The Forest Service continues to play an important national and international leadership role in advancing the understanding of the invasive species problem. The wide ranging authorities of the Forest Service allow us to work with partners to combat invasive species across all lands, public and private. We also develop methods, tools, and approaches, through which these harmful exotic species can be detected, prevented, controlled, and eradicated.

At the national, regional, State and local levels the Forest Service works extensively with county, State, tribal, Federal, and private stakeholders to proactively implement invasive species management activities across the broader landscape. Through an “all lands approach” the Forest Service provides a wide range of technical and financial assistance to help manage invasive species. The Forest Service works closely with State forestry agencies to implement State Forest Action Plans to protect forest from threats.

The Forest Service has also been a major financial supporter for the establishment of Cooperative Weed Management Areas (CWMAs) and Cooperative Invasive Species Management Areas (CISMAs) for nearly two decades, under the National Fish and Wildlife Foundation’s “Pulling Together Initiative” grant program. This Federal grant program lead to the establishment and sustainability of dozens of CWMA and CISMA areas across the Nation to expand public and private partnerships against invasive species.

In each region of the country, the Forest Service is also a partner in implementing priority invasive species management actions identified in State invasive species management plans, supporting the implementation of the invasive species components of State Wildlife Action Plans, helping to develop local and regional invasive species management strategies, and providing local support to prevent the spread of invasive species. As an example, the Forest Service plays several important roles in implementing the USDA obligations and priorities under the national Quagga-Zebra Mussel Action Plan (QZAP), developed through the interagency Aquatic Nuisance Species Task Force to prevent and control the spread of these high-risk invasive mussels across the United States. These partnerships help achieve our agency watershed restoration and protection goals.

The Forest Service also provides interagency leadership and support as a member of the Federal Interagency Committee for the Management of Noxious and Exotic Weeds (FICMNEW), and the Federal Interagency Committee for the Management of Invasive Terrestrial Animals and Pathogens (ITAP). In addition, the Forest Service serves as an active member of the Invasive Species Committee of the Association of Fish and Wildlife Agencies (AFWA). Through these partnerships the Forest Service continues to expand national and State efforts to address the invasive species threat.

FOREST SERVICE INVASIVE SPECIES MANAGEMENT ACTIVITIES

As one of the largest Federal land management agencies in the country, the Forest Service has the responsibility for the stewardship of over 193 million acres of public lands within the **National Forest System**. This vast and nationally significant system extends from Alaska to the Caribbean, and includes examples of nearly every type of aquatic and terrestrial ecosystem in North America. These lands and waters are under tremendous pressures from aquatic and terrestrial invasive plants, algae, pathogens, fungi, vertebrates, and invertebrates. Effective management of these harmful exotic species which threaten the National Forest System and all lands is a critical part of the agency’s land stewardship responsibility.

The recognition that national forests and grasslands play a key role in the local, regional, and national battle against aquatic and terrestrial invasive species is reflected by the annual expansion of on-the-ground management efforts to address a wide range of invasive species challenges. To accelerate this expansion, a new national Invasive Species Management Policy for the National Forest System was issued to the field in late 2011. It is viewed as a comprehensive national policy for invasive species management in the Federal land management sector. The new policy defines and clarifies the authorities, scope, roles, and responsibilities associated with National Forest System management activities against aquatic and terrestrial invasive species.

Forest Service invasive species management performance is outcome driven, with a focus on treating and restoring priority areas to improve watershed condition and reduce the long-term impacts of invasive species. To achieve this, national forests and grasslands typically treat nearly 400,000 acres of priority aquatic and terrestrial invasive species infestations annually using an integrated management approach. Since 2007, more than 2 million acres of lands and waters have been restored to protect against aquatic and terrestrial invasive species across National Forest System lands and waters.

Forest Service **State and Private Forestry** programs provide a wide range of assistance to States, tribes, and others to better manage private and other public natural resources. The Forest Service provides technical and financial assistance to State natural resource and agricultural agencies, tribal governments, and other Federal land management agencies to respond to and manage forest pests that threaten the Nation’s 851 million acres of rural and urban forests of all ownerships. The

Urban and Community Forestry Program works with community partners in the detection, monitoring, containment, and when possible, eradication of invasive species and provides funding and technical assistance to States to support canopy restoration and management.

We also work closely with sister USDA agencies to coordinate prevention and management of invasive species across all lands. USDA has the largest Federal role in invasive species management because of its responsibility to (1) conduct port-of-entry inspections and offer technical assistance to responsible agencies who quarantine goods coming into the country, (2) manage more than 192 million acres of national forests and grasslands, (3) conduct research, and (4) provide technical assistance to the private sector and in large agricultural pest control projects.

The U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS) conducts research in extremely diverse areas involving prevention, control and management of invasive species. For example, ARS provides research in support of action agencies such as the Animal and Plant Health Inspection Service (APHIS), to reduce the rate of introduction of invasive species, and to rapidly detect, identify and eradicate incipient species.

The Animal and Plant Health Inspection Service (APHIS) is a multi-faceted Agency with a broad mission area that includes protecting and promoting U.S. agricultural health, regulating genetically engineered organisms, administering the Animal Welfare Act and carrying out wildlife damage management activities. APHIS' mission has expanded over the years to include protection of public health and safety as well as natural resources that are vulnerable to invasive pests and pathogens.

The Natural Resource Conservation Service (NRCS) has become a conservation leader for all natural resources, ensuring private lands are conserved, restored, and more resilient to environmental challenge. NRCS helps private landowners tackle invasive species problems in four major ways: (1) technical and financial assistance to manage invasive species and pests; (2) conservation initiatives that work at a landscape scale to address natural resource concerns, including invasive species; (3) Conservation Innovation Grants with partner entities to support development and implementation of innovative approaches and strategies to address invasive species; and (4) Plant Materials Center research geared toward invasive species management and restoring areas where invasive species have been removed.

The Forest Service Forest Health Protection programs direct and implement measures to prevent, detect, contain, and suppress unwanted native and invasive insects, pathogens, and plants affecting trees and forests. In FY 2012, State and Private Forestry programs provided \$1.4 million in essential matching funds and technical assistance to State governments to combat economically significant weed threats to State and private forest lands.

Forest Health Protection and partners from cooperating States conduct an annual collaborative forest pest survey on over 400 million acres of forest land. We recently completed high resolution maps for over 250 forest tree species in the United States that will be used to guide these surveys in the future. Additionally, we have developed a program called the "Forest Disturbance Mapper," a near real-time web portal that uses remote sensing to detect disturbances caused by forest pests, and an inter-agency database to detect and track thousand cankers disease of walnut and other pests.

In FY 2012, Forest Service **Research and Development** delivered 169 invasive species tools including the identification of key pathways for invasion by new forest pests; methods for detecting, monitoring, and controlling the walnut twig beetle; release and recovery guidelines for biological control agents for emerald ash borer; and an assessment of the potential impacts of hemlock woolly adelgid predators.

The Forest Service **International Programs** also work to protect our forests from invasive species damage. For example, the program works with Chinese counterparts who have partnered with us to address one of the most destructive invasive forest pests, the emerald ash borer (EAB). The Forest Service continues to work with the USDA Agricultural Research Service (ARS) to better understand why the borer is so resilient and pervasive. This will help predict and prevent potential future outbreaks by related wood boring beetles. With an aim of identifying biocontrol mechanisms, a partnership was formed between the Forest Service's Northern Research Station, the ARS and counterparts in China. With support from International Programs, the team is working to find natural enemies of EAB in its native range.

Strategic Approach to Invasive Species Management

To ensure the continued production of needed goods, services, and values from our Nation's terrestrial and aquatic ecosystems, the Forest Service takes a strategic approach for managing invasive species across all program areas. This approach in-

cludes four main elements: **(1) prevention, (2) detection, (3) control and management, and (4) restoration and rehabilitation.**

Prevention

The most effective strategy to protect forests, waterways, and grasslands from invasive species is to prevent invasive species introduction and establishment. Containing known infestations is also important for blocking the spread of invasive species from infested lands to surrounding areas. We coordinate with Federal and State regulatory agencies to understand pathways for introductions, implement quarantine regulations, survey for invasive species, and educate the public about invasive pest threats and how to prevent the spread of invasive species.

Forest Service researchers in partnership with APHIS are working with industry partners to reduce the introduction of invasives into the United States through shipments of wood products and packaging and the live plant trade. Additionally, Forest Service scientists and managers at the Eastern and Western Threat Centers are working closely with domestic and international partners to develop a comprehensive database for prediction, prevention, and proactive management of invasive plants. A public education campaign developed by the Forest Service in partnership with Wildlife Forever recruits hunters, anglers, and recreational boaters to help prevent the spread of aquatic invasive species such as quagga and zebra mussels and Eurasian milfoil.

Detection

The Forest Service develops and implements efficient survey and monitoring tools and technologies to facilitate early detection of invasive species, including in urban areas, and rapidly assess their potential impact on forest and grassland health. As necessary and appropriate, the Forest Service coordinates these activities with Federal and non-Federal cooperators across all lands.

The Forest Service has supported development of a mapping system used nationally by cooperating agencies and weed management organizations to document distribution of invasive weeds. Additionally, Forest Service scientists developed a test capable of detecting the fungal pathogen that causes white-nose syndrome (WNS) in bats. The test is being used to identify infested caves, so that Forest Service and other land managers might selectively restrict access to those caves and mines to help slow the spread of WNS.

Control and Management

The Forest Service directly intervenes to manage populations of invasive species that threaten forest and grassland health and sustainability. Rapid response following early detection is used to eradicate new infestations. If eradication is not feasible, Integrated Pest Management (IPM) and adaptive management techniques are implemented to help maintain ecosystem function. This includes research and management to increase the resilience of threatened ecosystems to mitigate the impacts of pests. In cooperation with external stakeholders, the Forest Service conducts research to characterize infestations, to identify factors conducive to infestations, and to develop tools and techniques to cost-effectively eradicate or manage priority invasive species.

For example, the Jackson and Buffalo Ranger Districts of the Bridger-Teton National Forest in Wyoming include the majority of the land within the Jackson Hole Weed Management Association, where the Forest Service identified approximately 7,000 priority acres for detection and immediate eradication efforts. In total, the Forest Service successfully eradicated 15 priority species from those 7,000 acres. Since 2000, the Forest Service, working in partnership with States and other Federal agencies, has implemented a national Slow the Spread (STS) strategy to minimize the rate at which gypsy moth spreads into uninfested areas. The STS program has reduced the spread of gypsy moth more than 60 percent from the historical level of 13 miles per year. In only 12 years, this program has prevented impacts on more than 100 million acres. When oak trees started dying in the San Francisco Bay Region, the Forest Service Pacific Southwest Research Station developed a collaborative research response that helped identify the cause—a water mold previously unknown to science. The combined efforts of the Forest Service with APHIS and numerous partners via the California Oak Mortality Task Force have reduced the human-assisted spread of Sudden Oak Death and helped communities in the 14 infested coastal counties in California and Oregon deal with the infestation.

Restoration and Rehabilitation

Restoring landscapes that have been impacted by invasive species or associated management activities is necessary for improving ecosystem integrity and function and may reduce vulnerability to invasive species establishment in the future. Re-

storing and maintaining the health, functions, and productivity of areas affected by invasive species is consistent with management guidance on restoring national forests and the effective use of native species.

For example, In order to restore cutthroat trout populations to streams, non-native trout are replaced with genetically pure cutthroat populations. After a decade of restoration efforts, Cherry Creek, on the Gallatin National Forest, now contains the largest genetically pure population of this cutthroat trout subspecies in the upper Missouri River drainage area.

Conclusion

In conclusion, the invasive species issue is considered a high priority by all program areas of the U.S. Forest Service. We believe the Forest Service collaborative approach to invasive species management enhances our ability to work together by building on each other's strengths and authorities. In addition, our Forest Service personnel works with local, county, and State governments; Cooperative Weed Management Areas; Cooperative Invasive Species Management Areas; our departmental partners NRCS, ARS and APHIS; and other organizations in the public and private sectors to promote a collaborative approach to mitigate, manage, and if necessary, adapt to invasive species threats across the landscape.

I would like to thank the committee members for their interest in invasive species management, and I welcome any questions you may have for me at this time.

Mr. BISHOP. No, thank you. I appreciate your testimony, looking forward to asking questions. And how you managed to get the bagpipes as background music was truly—that was a master stroke. I don't know how you did it, but congratulations.

[Laughter.]

Mr. BISHOP. Next to Dr. George Beck from the Colorado State University on the Healthy something Habitat.

Dr. BECK. Coalition.

Mr. BISHOP. Whatever it is. Happy to have you here, and you are recognized for 5 minutes.

STATEMENT OF DR. K. GEORGE BECK, PROFESSOR OF WEED SCIENCE, COLORADO STATE UNIVERSITY, HEALTHY HABITATS COALITION

Dr. BECK. Thank you, Mr. Chairman. Chairman Bishop, Ranking Member Horsford, members of the Subcommittee, thank you for the opportunity to testify before you today. My name is Dr. George Beck, and I am a professor of weed science at Colorado State University. Today I represent the Healthy Habitats Coalition. We are a diverse coalition dedicated to improving invasive species management in our country.

In spite of almost three decades of effort by many organizations working to persuade the Federal Government to do a better job controlling and managing invasive species, little progress has been made. The list of invasive species is long, but quite manageable.

The Healthy Habitats Coalition collective experience is with invasive weeds, and I will focus on them to show the need for substantial improvement by the Federal Government.

The data on this particular slide show the number of infested acres in 2009, acreage treated and restored and the increase of infested acres for six Federal agencies that have a responsibility to manage invasive species. Only 3.2 percent of existing infested acres were treated and restored in 2009. Weed scientists indicate that invasive weeds typically spread at a rate of 12 to 16 percent annually. Treating and restoring only 3.2 percent of infested acres annually, coupled with a 12 percent increase, indicates that Federal in-

fested acres will double by 2017 and will surpass 100 million acres at that time.

Federal agencies are acquiring about three-and-a-half times more acres of invasive weeds annually than they are treating and restoring. This plan decidedly will never be successful and will continuously produce more and more infested acres, thus preventing realization of land management goals and objectives. Just as importantly, however, these ever-expanding acres of invasive weeds on federally managed lands will serve as a constant source of propagules to disperse to new locations.

These data show the National Invasive Species Council budget, which is assembled by asking the agencies for what they have done, and putting those figures into one of these seven budget categories. The Federal Government spent \$1.563 billion in fiscal year 2009 on invasive species management, stating that \$642 million was spent on control and management. HHC members have years of experience designing weed management plans, and our calculations differ substantially from the Federal data.

Agencies indicated they treated and restored 1,603,805 acres in 2009. Our calculations suggest the following when early detection/rapid response is budgeted at \$1,000 per acre, restoration at \$300 per acre, and controlled herbicide at \$100 per acre. As you can see, our calculations indicate that far less appears to have been spent on control and management than that stated by the Federal agencies.

This figure shows our recalculated budget, and there remains about \$305 million that cannot be readily placed into one of the next budget categories. It appears, then, that agencies are spending more money per acre to control invasive weeds than is necessary.

The Healthy Habitat Coalition recommends that Federal agencies must treat and restore at least 15 percent of infested acres annually to overcome this management deficit. The data in this table show that within 10 years, 19.2 million acres would be treated and restored using this plan, which represents a 39 percent decrease of infested acres, as opposed to over 120 percent increase using their current approach over the same time period.

In addition to treating and restoring many more acres annually than Federal agencies currently do, they also must be more efficient and effective with taxpayer dollars. Many university extension professors have spent considerable effort over the past 25 years educating and training Federal personnel about invasive weeds and their management. The inadequate Federal performance in spite of this extensive educational effort by so many also suggests, then, that their efforts are likely insufficient. We, as a Nation, are digressing, rather than progressing, on invasive species management.

Chairman Bishop, Ranking Member Horsford, and members of the Subcommittee, thank you again for the opportunity to testify at today's hearing and presenting the facts related to invasive species. I will be happy to answer any questions.

[The prepared statement of Dr. Beck follows:]

PREPARED STATEMENT OF DR. K. GEORGE BECK, PROFESSOR OF WEED SCIENCE,
COLORADO STATE UNIVERSITY

Chairman Bishop, Ranking Member Grijalva, members of the Subcommittee, thank you for the opportunity to testify before you today. My name is Dr. George Beck and I am a professor of weed science at Colorado State University. I am appearing before you today representing the Healthy Habitats Coalition, a diverse coalition of land managers, conservation organizations, private companies, and academics such as myself, focused on how local management is the best practice for natural resources management including invasive species. I would like to walk you through the growing problem related to invasive species as well as some of the research HHC has conducted on dollars spent to control and manage invasive species.

Invasive Species Overview and Situation to Date

Invasive species is an insidious and occasionally sinister economic and environmental issue—it is not new. Canada thistle, for example, was first declared noxious in the United States in 1795 in Vermont. A little overgrazing by one user, in this instance, opened the door for invasion of the common area by Canada thistle, which in turn decreased everyone else's ability to raise the sustenance needed to survive. It was the tragedy of the commons where one person's use of the environment influenced the next person's use and invasive species continue to plague us in this fashion to this day.

In the 1980s, many Western States public and private land managers were highly dissatisfied with how Federal land management agencies were managing noxious and invasive weeds. The Intermountain Noxious Weed Advisory Council (INWAC) was formed in 1987. INWAC was a grass roots organization whose goal was to educate Federal agency decision makers and Congress about the problems associated with noxious and invasive weeds and the need for much enhanced management by Federal agencies in particular. In 1990, INWAC helped write and secure passage of section 2814 of the Federal Noxious Weed Act, which requires all Federal agencies to manage noxious weeds in cooperation with State and local governments. Furthermore, the law specifically requires that any National Environmental Policy Act (NEPA) assessment that must be produced be completed within 1 year and section 2814 presently remains the law of the land. Some Federal agencies have not yet complied with section 2814.

In 1996, INWAC along with several noted invasive species scientists from across the United States met with President Bill Clinton's Science Advisors to voice their dissatisfaction with the management of invasive species by Federal agencies. The Administration at that time disagreed but a letter of protest about invasive species management in the United States signed by 500 scientists was an outcome of that meeting and found its way to the highest Administrative offices. As a result, Executive Order 13112 was issued by President Clinton in 1999. The National Invasive Species Council (NISC) was formed, which was comprised of eight of the President's Cabinet Secretaries and co-chaired by the Secretaries of Agriculture, Commerce, and Interior. E.O. 13112 created the Invasive Species Advisory Committee (ISAC) which along with NISC staff created all the National Invasive Species Management Plans over the past 13 years. ISAC also wrote and published a guidance paper for all Federal agencies clearly defining what constitutes an invasive species—i.e., what is, and just as importantly, what is not an invasive species (see Addendum).

The National Invasive Weed Awareness week in Washington, D.C. started in 2001 and evolved recently into the National Invasive Species Awareness Week. The goal was to heighten the awareness about invasive species among Federal agency decision makers and Members of Congress. We were successful and our elected leaders in particular understand that invasive species indeed is an insidious issue albeit, a competing priority that has fallen short of the action that is clearly needed.

Current Status and Necessary Steps To Take

In spite almost three decades of work with the Federal Government to control and manage invasive species, little progress has been made and what progress that has occurred is grossly insufficient on a national scale. A multitude of taxa require our immediate management attention; zebra and quagga mussels, New Zealand mudsnails, Burmese pythons, feral hogs, emerald ash borers, gypsy moths, Asian carp, snakehead fish—the list of invasive species is long but manageable. The Healthy Habitat Coalition's collective experience, however, is with invasive weeds and we will focus on the continued growth of various weed species and the need for better control and management measures on lands and waterways throughout the country. The data in Table 1 outline the amount of infested acres, the amount of acres treated, and the increase of infested acres for the six major Federal Agencies who have jurisdiction over invasive species.

Table 1.—Magnitude of Federal Agency Invasive Weed Management Fiscal Year 2009

(Data provided to Healthy Habitats Coalition directly from Federal Agencies)

Agency (Big 6)	Infested Acres	Treated & restored acres	Percent T&R	New Acres Annually * *	Total Net Infested Acres
BLM	35,000,000	375,000	1.1%	4,155,000	38,780,555
USFS	7,000,000	390,000	5.6%	793,200	7,403,200
NPS	2,600,000	66,000	2.5%	304,080	2,838,080
DOD *	2,500,000	200,000	8%	276,000	2,576,000
APHIS	81,709	27,805	34%	6,469	60,372
FWS	2,300,000	345,000	15%	234,600	2,189,600
Others	Not available	200,000	Not available	Not available	-
Totals	49,481,709	1,603,805	3.2%	5,769,349	53,847,807

These data clearly show that only 3.2 percent of existing acres infested with invasive weeds were treated and restored in 2009. Weed scientists indicate that a typical rate of spread for weeds is 12 to 16 percent annually (Duncan and Clark 2005). Treating and restoring only 3.2 percent of infested acres annually coupled with a 12 percent increase indicates that the FY09 infested acres on Federally managed lands will double by 2017 and will surpass 100 million acres by 2018 (Table 2). Because the rate of invasive weed spread apparently is not recognized or at least accounted for, Federal agencies are acquiring 3.5 times more acres of invasive weeds annually than they are treating and restoring. This is a plan that decidedly will never be successful and will continuously produce more and more infested acres thus, preventing realization of land management goals and objectives. Just as importantly, these ever-expanding acres of invasive weeds on federally managed lands will serve as a constant source of propagules to disperse to neighboring lands and those distant to the infested site! HHC recommends that Federal agencies treat and restore at least 15 percent of their infested acres annually to successfully decrease acres of invasive weeds on lands they manage on behalf of the American public. Additionally, our Nation must create a borderless collaboration among Federal agencies, States and their land management agencies, private enterprise, and private land owners and land managers for invasive species management. Invasive species do not recognize political borders and we must overcome the barriers that prevent borderless collaboration to be successful.

Table 2.—Performance Assessment of Invasive Weed Management by Federal Agencies Over a 10-Year Period

Year	Elapsed Years	Beginning Infested Acres	Acres Treated & Restored (3.2 percent of Begin)	Infested Acres After Treatment	12 Percent Annual Increase	Year End Infested Acres
2009	1	49.48	-1.60	=47.88	+5.75	=53.63
2010	2	53.63	-1.74	=51.89	+6.23	=58.12
2011	3	58.12	-1.89	=56.23	+6.75	=62.98
2012	4	62.98	-2.04	=60.94	+7.31	=68.25
2013	5	68.25	-2.21	=66.04	+7.92	=73.96
2014	6	73.96	-2.40	=71.56	+8.59	=80.15
2015	7	80.15	-2.60	=77.55	+9.31	=86.86
2016	8	86.86	-2.81	=84.05	+10.09	=94.14
2017	9	94.14	-3.05	=91.09	+10.93	=102.02
2018	10	102.02	-3.31	=98.71	+11.85	=110.56

FY09 NISC Budget

The National Invasive Species Council staff assembled an annual “invasive species budget” by collecting data from Federal agencies and placing that information into one of seven categories that are associated with the National Invasive Species Management Plan. In FY09, the Federal Government spent \$1.563 billion (Figure 1) on invasive species stating that \$642 million was spent on control and management, which is one of the NISC budget categories. HHC members have years of experience helping to design weed management strategies and systems and our calculations differ substantially from the Federal data. From Table 1, Federal Agencies indicate they treated and restored 1,603,805 acres infested with invasive weeds in FY09. Our calculations suggest the following when Early Detection and Rapid Re-

sponse (EDRR) is budgeted at \$1,000/acre, restoration at \$300/acre, and control with a herbicide at \$100/acre:

\$291,000,000 spent on EDRR ÷ \$1000/acre = 291,000 acres EDRR treated;
 \$50,520,000 spent on restoration ÷ \$300/acre = 168,400 acres restored;
 1,603,805 acres—291,000 EDRR treated-acres—168,400 acres restored = 1,143,505 acres remaining for direct weed control. Calculating at \$100/acre to control invasive weeds with a herbicide equates to \$114,350,500 spent by Federal agencies to decrease their population abundance, which is the first logical step in any weed management system. Based on HHC calculations, far less appears to have been spent on control and management than the data stated by the Federal agencies (Figure 2).

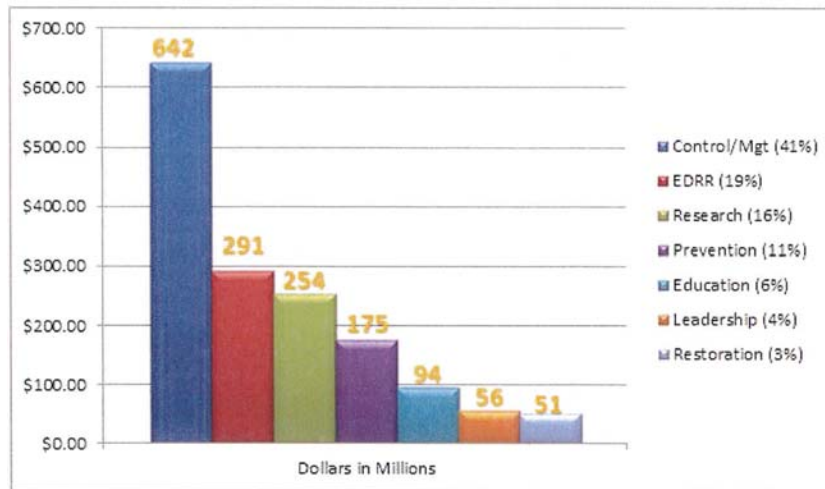


Figure 1. NISC FY09 invasive species budget.

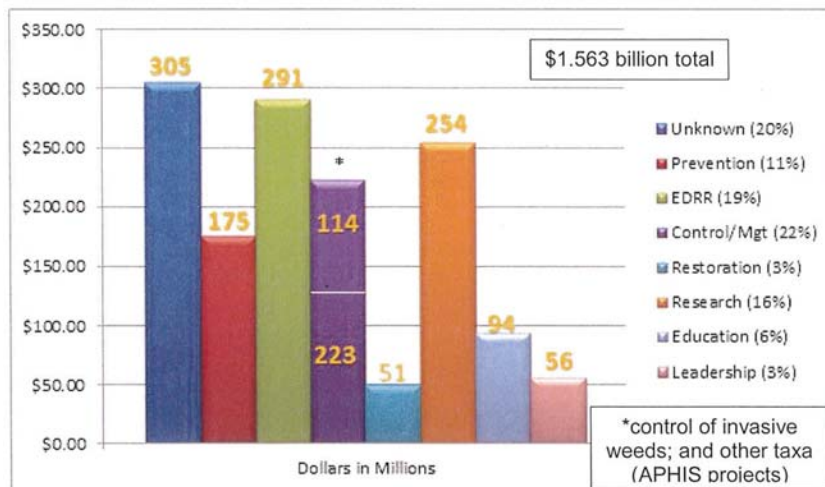


Figure 2. HHC's recalculated NISC budget impacts based on average cost analysis.

APHIS projects to control invasive insects and taxa other than invasive weeds comprise about two-thirds of the control and management budget categories. There remains about \$305 million that cannot be readily placed into one of the NISC budget categories and it is highly likely that Federal agencies are spending more per

acre to control invasive weeds than is necessary because they are not using the most cost-efficient tools and have high labor expenses.

Solution to Federal Agency Performance Managing Invasive Weeds

Table 3.—A Positive Outcome if Federal Agencies Treat and Restore at Least 15 Percent of Acres Infested With Invasive Weeds Annually

Year	Elapsed Years	Beginning Infested Acres	Acres Treated & Restored (15 percent of Begin)	Infested Acres After Treatment	12 Percent Annual Increase	Year End Infested Acres
2009	1	49.48	− 7.42	= 42.06	+ 5.1	= 47.16
2010	2	47.16	− 7.07	= 40.09	+ 4.81	= 44.90
2011	3	44.90	− 6.73	= 38.17	+ 4.57	+ 42.74
2012	4	42.74	− 6.40	= 36.34	+ 4.35	= 40.69
2013	5	40.69	− 6.10	= 34.59	+ 4.15	= 38.74
2014	6	38.74	− 5.80	= 32.94	+ 3.95	= 36.89
2015	7	36.89	− 5.53	= 31.36	+ 3.76	= 35.12
2016	8	35.12	− 5.26	= 29.86	+ 3.58	= 33.44
2017	9	33.44	− 5.01	= 28.42	+ 3.41	= 31.83
2018	10	31.83	− 4.77	= 27.06	+ 3.25	+ 30.30

Federal Agencies must treat and restore at least 15 percent of existing infested acres in any given year to overcome their management deficit to date (Table 3). Table 3 is similar to Table 2 but is based upon treating and restoring 15 percent of infested acres annually. Within 10 years, 19.2 million acres would be treated and restored, which represents a 39 percent decrease of acres infested with invasive weeds on federally managed lands as opposed to their current thrust where over 100 million new acres would be infested (Table 2) over the same time period! In addition to treating and restoring many more acres annually than Federal agencies currently do, they also must be more efficient and effective with taxpayer dollars. A paper addressing this issue is included in the addendum.

Invasive Species Management by Federal Agencies

It is abundantly clear that the management of invasive species by Federal agencies is not sufficient to slow the growing problem. The very nature of invasive species is to increase their populations in their new home seemingly without bounds until habitats are saturated (Figure 3). Invasive species management is not an option.

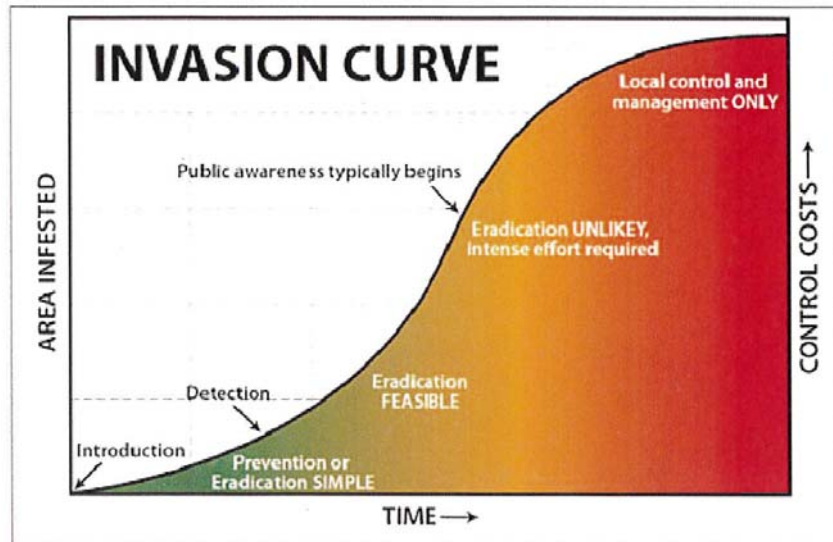


Figure 3. Typical population growth curve for invasive species.

Many university professors with extension appointments have spent considerable time over the past 25 years educating and training the Federal land management workforce about invasive weeds and their management. To be sure, there are some shining lights within the Federal system with regard to invasive species management. For example, The U.S. Fish and Wildlife Service spent about 42 percent of their FY09 “invasive species budget” to control and manage invasive species and the National Park Service spent 100 percent of their FY09 “invasive species budget” on control and management, and the majority of these monies were spent on invasive weeds. So it is clear that if an agency or department desires to manage all taxa associated with this insidious problem, they can do so! The Healthy Habitats Coalition has a proposed solution to our national invasive species problem, but it will take Congress, the States, local governments, Federal land managers, private enterprise, and private landowners working together to implement a solution. The time for action is upon us—we must stop kicking this can down the road!

Chairman Bishop, Ranking Member Grijalva, thank you again for the opportunity to testify at today’s hearing and present the facts related to invasive species. I am happy to answer any questions.

FY09 NATIONAL INVASIVE SPECIES COUNCIL INVASIVE SPECIES EXPENDITURES
COMPILATION

Economics of Invasive Weed Control: Chemical, Manual/Physical/fire,
Biological, Doing Nothing
K. George Beck
Professor of Weed Science
Colorado State University

Financial Costs/Acre and Impacts to Budgets

Regardless of whether working for private enterprise or government, land management personnel must stretch limited budgets yet be effective simultaneously. Labor most often is the most expensive portion of any weed management project. It is incumbent upon land managers to use methods that minimize labor costs and this is especially so with public land managers because they are dependent upon tax dollars to execute their programs.

Using herbicides or biological control agents to decrease the population abundance of a target invasive weed represent those approaches that utilize the least labor to effect initial/continued reduction of target species. Biocontrol is developed with public funds and this is the primary reason that it seems inexpensive to the end user, including Federal agencies. Biocontrol is a very attractive and highly useful approach to control invasive weed species but success has been inconsistent in space and time. There are numerous successful biocontrol endeavors and the literature has many examples. The Fire Effects Information System Web site managed by USDA-Forest Service is one of the best and most complete information sources for the biology and management of many invasive weed species (<http://www.fs.fed.us/database/feis/>). Another outstanding source of information on managing invasive weeds recently became available—Weed Control in Natural Areas in too describes where and upon what species biocontrol has been successful and extensively outlines all management options. If biocontrol is the method of choice, land managers must carefully research choices for their effectiveness. The spatial and temporal variation associated with biocontrol performance can be due to many genetic and environmental reasons from habitat preference by the biocontrol agent to the production of new genotypes from previously geographically separated genotypes now growing in proximity to one another, and many as yet to be discovered reasons.

Fire too can be a good tool to decrease populations (DiTomaso et al. 2006) of some invasive weeds, most notably annual grasses and forbs such as cheatgrass (*Bromus tectorum*) or medusahead (*Taeniatherum caput-medusae*) and yellow starthistle (*Centaurea solstitialis*). As with other integrated management systems for weeds, use of fire to manage invasive weeds must be integrated with other tools such as seeding to provide competition to ward off recovering weed species and allow completion of land management goals and objectives. Burning mixed brush-cheatgrass stands destroys some to many weed seeds and allows for about one season to establish desirable vegetation before cheatgrass re-establishes and dominates the site again (Evans and Young 1978; Young and Evans 1978; Young 2000). Establishing competitive perennial grass species may successfully keep cheatgrass from re-establishing. If, however, the system is left alone after burning, cheatgrass or medusahead will re-invade. Burning stands of yellow starthistle also will provide excellent population control if combined with herbicide treatment and seeding

(DiTomaso et al. 2006b). Burning stands of perennial weeds such as Canada thistle, leafy spurge, Russian and other knapweeds, or tamarisk rarely is effective because of the plants' capability to re-grow from its root system and dominate a site again. These and other similar invasive weeds may recover soon enough after a prescribed burn to preclude establishment of seeded species. If fire is used to control perennial forbs or grasses, herbicides likely will have to be integrated into the management system to allow sufficient suppression of the target weed for a long enough time to give seeded species the opportunity to establish.

Of all the methods used to decrease weed population abundance, herbicides are the most researched and arguably the best understood. In the course of their development, consistent performance in space and time is an extremely important consideration for a product to reach the consumer. Because of known performance developed from extensive research and the decreased labor associated with their use, herbicides often represent the most cost-effective means to use taxpayer dollars to decrease invasive weed populations so land restoration or rehabilitation may proceed.

The decision to do nothing seems inexpensive and harmless on the surface but nothing could be farther from reality. The problem with invasive species is their populations always seem to expand and cause harm, albeit, a species can be problematic in one location or setting and not another (Beck et al. 2008). Most invasive species and certainly invasive weed populations develop in a sigmoid curve pattern and after a lag time following introduction, their populations increase exponentially until site saturation when their populations are limited by resource availability (Figure 1).

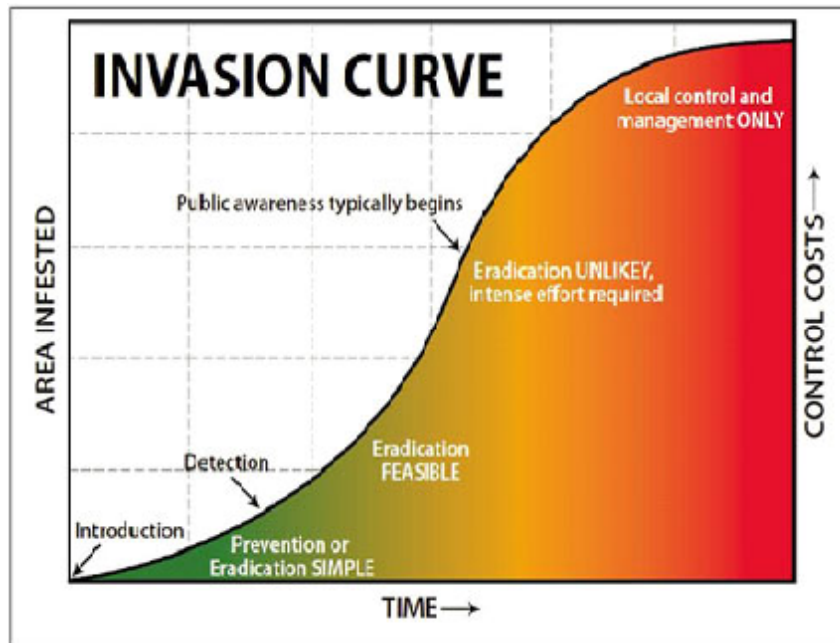


Figure 1.

The problem is one never knows where on the curve the population at any given population lies. Even with cheatgrass, the invaded location/site might be new and at the bottom of the curve when population control is most easily obtained or it could be at beginning of the exponential phase but it is difficult at best to make such a determination. The best response is to **NEVER DO NOTHING** because doing nothing can be the most expensive decision one can make due to the subsequent population growth by the invasive weed and the resulting havoc it wreaks upon the native plant community and the animals it supports! Doing nothing simply yields the site to the invasive species.

Importance of Prevention, Early Detection and Rapid Response/Eradication

Prevention often is thought of as the most powerful form of weed management and indeed, the least expensive weed to control is the one that is not present—however, prevention is not free. The perception that prevention is simply steps taken to keep stuff out that currently does not exist in a particular location is accurate for certain and possibly represents the greatest cost savings to taxpayers. Cleaning equipment between uses and locations seems a logical prevention approach along with using certified weed seed-free hay, forage, mulch or gravel, and careful screening of ornamental and agricultural introductions can be of tremendous benefit in the battle against invasive species. Prevention, however, can be expensive when it arbitrarily impedes trade and benefit: risk assessment is an important if not an essential component to screening programs so decisions that impact trade are transparent, logical, and acceptable.

Prevention also means decreasing population abundance of existing weed infestations so they are not a source for new ones to develop some distance—close or far—from the infested site. It is quite appropriate to think of extending prevention as a management strategy to efforts that decrease target populations in an infestation that is part of a project area. In fact, this may be the best “first light” under which to examine prevention efforts; i.e., how to keep current infestations from serving as sources for others. The silo or stovepipe approach to any weed management project is dangerous and invasive species management always should be thought of as a continuum among the strategies and methods used to manage such species. All this must be kept in mind because prevention and EDRR are the first lines of defense against invasive species.

Economics and Pest Expansion Models Can Help Set Program Priorities

Almost every person recognizes that it is much simpler to pull a single, newly found noxious weed than let it go and try to eradicate the large infestation that undoubtedly will occur over time. It is puzzling then that people tend to wait because “that weed is not causing me a problem . . . now” knowing well that it inevitably will do so. The sooner an incipient patch of an invasive weed is controlled, regardless of proximity to the source, the less expensive it is to control, the greater the success will be, and most likely one will have eradicated a new or small, dispersed population. Data in Table 1 shows the increasing control cost associated with waiting in a hypothetical example of a newly found patch of spotted knapweed. The data also compare the decision to control manually vs. using an herbicide and both include seeding costs.

Table 1.—Cost Comparison of Controlling Spotted or Diffuse Knapweed Physically or Chemically, Demonstrating the Importance of Early Detection and Rapid Response

Initial patch size	Herbicide cost ^a	Application cost ^a	Time for handpull or dig ^a	Handpull or dig cost	Seed cost	Total cost herbicide + seeding	Total cost handpull/dig + seeding
10 ft ² ^b	\$0.003	\$0.20	0.25 h	\$3.00	\$0	\$0.20	\$3.00
100 ft ²	\$0.03	\$0.40	0.5 h	\$6.00	\$0.46	\$0.89	\$6.46
1 acre	\$14	\$20	145 h	\$1,742	\$200	\$218	\$1,742
10 acres	\$140	\$200	1,450 h	\$17,420	\$2,000	\$2,340	\$19,420
100 acres	\$1,400	\$2,000			\$20,000	\$23,400	

^a Cost comparisons based upon: Milestone herbicide \$300/gal; \$20/A application cost; labor \$12/h; seed cost \$200/A.

^b For 10 and 100 ft² initial patch size, application method spot spray; only labor calculated.

These data clearly show that the decision to wait to respond to a new weed infestation can be very costly. Regardless of the method, the cost of management increases several thousand times but the cost of manual control exceeds the cost of using an herbicide by 800 to 1,500 percent! This example shows the value of monitoring to find incipient invasive weed populations so they can be effectively controlled or eradicated at a fraction of the expense compared to waiting for impact and havoc to occur. These data also show the dramatic fiscal savings associated with using an herbicide compared to handpulling or similar manual methods of control. The decisions to act quickly when new or small infestations are found and to use

an herbicide to affect target weed population decrease represent efficient and responsible use of taxpayer dollars and the stretching of limited budgets.

While this example is hypothetical, Tables 2 and 3 present data comparing the costs (late 90s) associated with different methods to decrease target weed populations on Colorado and Montana rangeland. Diffuse knapweed (*Centaurea diffusa*) was targeted in Colorado where handpulling twice annually was compared to mowing three times annually, to mowing twice followed by herbicide in fall, to herbicide application alone. Control of diffuse knapweed rosettes and bolted plants was best 1 year after treatments were exerted where a herbicide was used alone or in combination with mowing compared to mowing alone or handpulling. Herbicides alone were about 1 percent of the total cost of handpulling and the latter was completely ineffective.

Table 2. Cost of Different Control Methods for Diffuse Knapweed on Colorado Rangeland in 1997 and Subsequent Control 1 year After Original Treatments Were Applied

(Sebastian and Beck 1999)

Treatment	Rate	Percent Control rosettes ¹	Percent Control bolted ¹	Hours	Rate/hr or acre ²	Cost/acre	Total cost/acre
Handpull	2 times/year	0 c	0 d	8.2	\$9/Hr	\$2,643	\$2,643
Mow	3 times/year	0 c	0 d	1.6	\$50/A	\$150	\$150
Mow + Tordon	2 times + 1 pt/A	84 a	100 a	1.1 + 0.4	\$50 + 31/A	\$100 + 31	\$131
Mow + Transline	2 times + 1 pt	43 b	100 a	1.1 + 0.4	\$50 + 22/A	\$100 + 22	\$122
Tordon	1 pt	74 a	96 b	0.4	\$31/A	\$31	\$31
Transline	1.3 pt	8 c	94 bc	0.4	\$23/A	\$23	\$23
Banvel + 2,4-D	1 + 2 pt	0 c	89 c	0.4	\$22/A	\$22	\$22
Control	0	0	0	0	0	\$0	\$0

¹ Compare means within a column; means followed by the same letter are similar ($\alpha=0.05$).

² Rates/costs based upon the following: \$9/hr labor; mowing \$50/A; Tordon \$86/gal; Transline \$31/gal; Banvel + 2,4-D \$90/gal; \$20/acre all ground herbicide applications (each plot 300 ft², 4 reps=1,200 ft² total/treatment).

The second experiment (Table 3) was conducted in Montana on spotted knapweed and was similar to the Colorado experiment except biocontrol also was evaluated and the treatments were exerted for 2 years and data collected shortly (1 to 2 months) thereafter. Handpulling kept 100 percent of plants from going to seed (bolted plants were targeted for pulling), but controlled only about one-half of spotted knapweed plants. Herbicides alone kept 93 to 100 percent of plants from going to seed and controlled 79 to 100 percent of spotted knapweed plants. Mowing in combination with herbicides or handpulling combined with herbicide use produced similar results to herbicides alone. Biocontrol was ineffective but insufficient time had passed to allow their successful establishment much less spotted knapweed population decrease. As with the Colorado study, the use of herbicides alone was less than 1 percent of the cost associated with handpulling and controlled almost twice as much knapweed.

Both of these experiments show the strong monetary and weed control advantages associated with using herbicides to decrease target weed populations. All government land managers, regardless of the level of government, must demonstrate fiscal responsibility to taxpayers and that not only translates into total dollars spent but also what benefit or return was realized from the expenditures.

Table 3. Cost of Different Control Methods Invoked for 2 Consecutive Years for Spotted Knapweed in Montana and Subsequent Control 1 Year After Initial Treatments Applied and 1 Month After Final Treatments

(Brown et al. 1999)

Treatment	Rate	Plant growth stage	Application 1997	Dates 1998	8/4/98 ¹ per-cent decrease in flowering	8/4/98 ¹ per-cent control of plants	Cost/acre ² for 2 years
Handpull (bolted plants)	Twice	Early & late bud	6/20 & 7/20	6/20 & 7/22	100 a	56 d	\$13,900.00
Tordon + handpull (rosettes + ma-ture)	0.5 pt + once	Bolt late bud	6/2	--- & 7/21	100 a	98 ab	\$97.50
Mow	Twice	Early & late bud	6/20 & 7/20	6/19 & 7/17	99 a	0 f	\$200.00
Mow + Tordon	Once + 0.5 pt	Late bud Fall regrowth	7/20 9/29	--- ---	100 a	100 a	\$75.37
Mow + Curtail	Once + 1 qt	Late bud Fall regrowth	7/16 9/29	--- ---	100 a	93 a	\$77.67
Tordon	0.5 pt	Fall regrowth	9/29	---	100 a	96 ab	\$25.37
Curtail	1 qt	Fall regrowth	9/29	---	100 a	79 c	\$27.67
Tordon	1 pt	Bolting	6/2	---	99 a	98 ab	\$30.75
Curtail	2 qt	Bolting	6/2	---	93 b	93 b	\$35.37
Cyphocleonus achates	30/plot	Flowering	8/27	---	0 d	0 d	\$90.00
Tordon + Cyphocleonus achates	0.5 pt + 30/plot	Bolt Flowering	6/2 8/27	--- ---	46 c	46 e	\$113.58
Untreated					0 d	0 d	\$0.00

¹ Compare means within a column; means followed by the same letter are similar ($p=0.05$).² Costs based upon the following: handpulling \$9.00/hr; Cyphocleonus achates \$1.00/weevil; mowing \$50/acre; Tordon \$86/gal; Curtail \$30.70/gal; ground application \$20.00/acre.*Control Risks v Harm Caused by Invasive Weeds*

Duncan and Clark (2005) cite numerous examples of the environmental and economic impacts caused by invasive weeds. Pimentel et al. (2005) calculated that invasive species impact the U.S. economy by more than \$120 billion annually and \$36 billion of this was caused by invasive weeds. The problems associated with invasive weeds are very clear and very expensive. The harm, real or potential, from invasive species is always a much greater risk than the tools used to control any invasive taxa but especially invasive weeds. If this was not the case, the species in question would not be considered invasive. Invasive species alter evolved relationships among organisms that share a habitat or ecosystem, which is highly significant biologically, ecologically, and economically!

Herbicides are the most efficacious, most economical, and most consistent means of decreasing the population abundance of invasive weeds. A common theme is readily apparent when attempting to recover an infested habitat; i.e., a land manager must first decrease the population of the invasive weed before beginning any seeding operation or the latter effort will fail. Other site characteristics also may be in need of attention to fully realize restoration and these too should be addressed before expecting establishment of seeded species. Many of these characteristics could be very expensive to repair and thus, all the more reason to use the most economi-

cally viable tool to decrease invasive weed populations to use taxpayer dollars to the greatest extent possible.

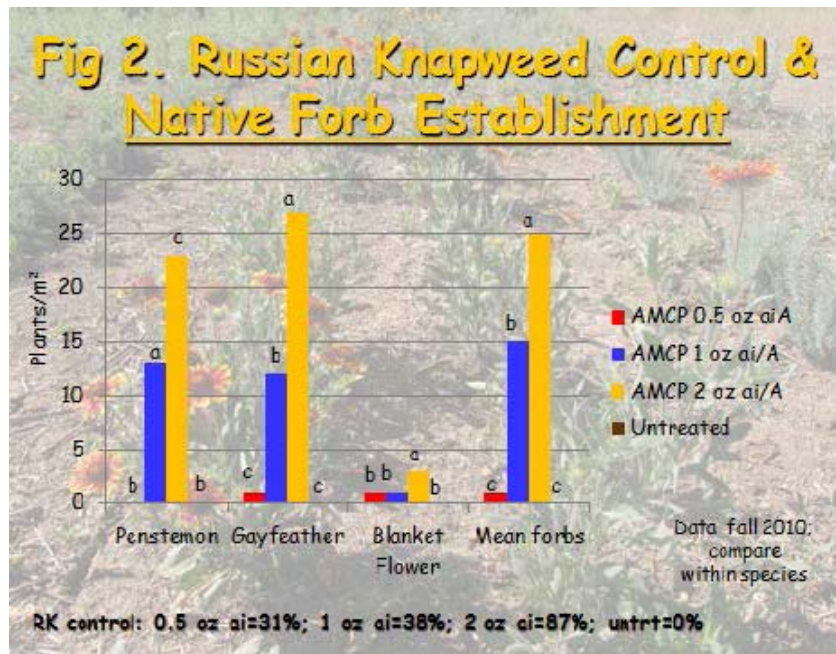
One serious concern about using herbicides to decrease target invasive weed populations is their effect on native plants, especially native forbs and shrubs. Many people believe that using an herbicide that will control invasive weedy forbs will strongly select for grasses and eliminate native forbs and shrubs, which are essential components of any native plant community. This is in fact not the case and the weed research community is developing databases to define the injury to native grasses, forbs, and shrubs caused by herbicides used to control invasive weeds. Erickson et al. (2006) sprayed Paramount (quinclorac) or Plateau (imazapic) directly onto the western fringed prairie orchid (*Platanthera praeclara*) in fall when it was senescing to mimic when these herbicides would be used to control leafy spurge (*Euphorbia esula*) and data were collected on orchid survival and fecundity 10 and 22 months after treatments (MAT) were applied. Neither herbicide influenced orchid survival. Plateau decreased orchid height by 43 percent at 10 MAT but this effect was no longer apparent at 22 MAT. Plateau also decreased raceme length by 58 percent and flower number by 70 percent 22 MAT. Quinclorac, however, had no such effects on the orchid and the researchers concluded that it was safe to use Paramount to control leafy spurge in the presence of the western fringed prairie orchid and while Plateau caused temporary stunting and decreased fecundity of the orchid, most of these symptoms disappeared the second year following treatment.

Rice et al. (1997) studied the effects of plant growth regulator herbicides (picloram, clopyralid, and clopyralid + 2,4-D) on native grasses, forbs, and shrubs applied to control spotted knapweed (*Centaurea maculosa*; *C. stoebe*) in Montana over an 8-year period at four sites. Herbicides were applied once in either spring or fall to control spotted knapweed in 1989 and re-treated again in 1992 to control the recovering invasive weed. Plant community data were collected annually over the 8-year period and compared back to the floristic composition of each study site determined before initiation of the experiments. Herbicides controlled spotted knapweed very well (98–99 percent control) and shifted the plant community to dominance by grasses but the depression on plant community diversity was small and transient. By the end of the 3rd year after initial treatment, there were no differences in species diversity among treatments and some herbicide-treated plots began to surpass untreated plots in plant community diversity measurements. They also found that late-season herbicide application after forbs had entered summer-drought induced dormancy minimized the impact on plant community diversity. The effects of the pyridine herbicides (picloram and clopyralid) on the native plant community diversity were small and temporary and minimal compared to the reported impacts caused by spotted knapweed on the plant community (Tyser and Key 1988; Tyser 1992).

University researchers worked with Dow AgroSciences to test a new pyridine herbicide, Milestone (aminopyralid), effects on native grasses, forbs and shrubs (<http://techlinenews.com/ForbShrubTolerancetoMilestone.pdf>) at 14 locations throughout the Western United States. Individual tolerance rankings were established for 90 native forb and 19 native shrub species to Milestone applied at 5 or 7 fl oz/acre in spring, late summer, or fall. Of the 90 forb species studied in this experiment, 23, 14, 19, and 34 were ranked as susceptible (more than 75 percent stand reduction), moderately susceptible (51–75 percent stand reduction), moderately tolerant (15–50 percent stand reduction), and tolerant (less than 15 percent stand reduction) 1 year following application. Many of these forbs recovered by the end of the second year following application and only 19 of the 90 forbs were ranked either as moderately susceptible or susceptible at that time. Interestingly, shrubs generally were more tolerant of Milestone than were forbs. Of the 19 shrubs in the study, 74 percent were ranked as moderately tolerant or tolerant 2 years after herbicides were applied and Rosaceae shrubs were generally the most susceptible species. These data also demonstrate the transitory nature of injury to native forbs and shrubs caused by herbicides used to decrease the populations of invasive weeds.

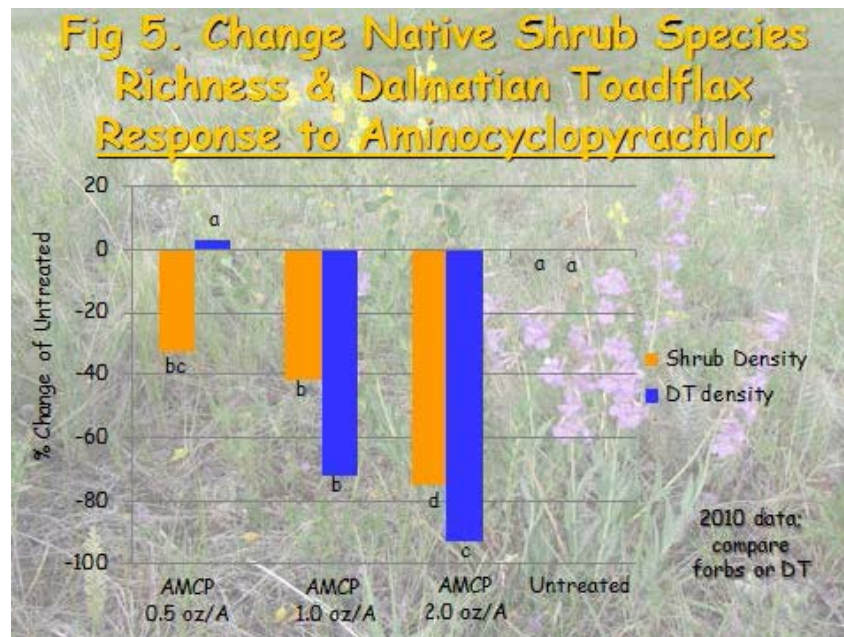
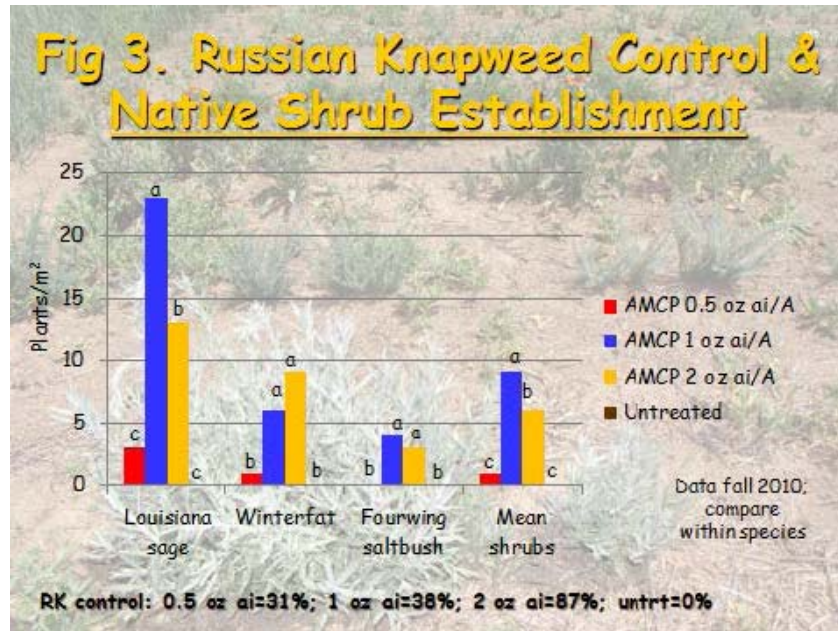
Aminocyclopyrachlor is a new herbicide developed by DuPont and can be used to control susceptible invasive weedy forbs and woody species. It is a reduced-rate herbicide (typical maximum rate for selective weed control is 2 oz active ingredient/acre) that was placed on a fast-track registration by U.S.–EPA. An experiment was conducted on a rangeland site north of Denver, CO (Sebastian et al. 2011) to assess the establishment of native forbs and shrubs after using aminocyclopyrachlor (AMCP) to decrease the population abundance of Russian knapweed (*Acroptilon repens*). The herbicide was applied at 0.0, 0.5, 1.0, and 2.0 a.i./a on May 14, 2009 and 10 native forbs, 4 native shrubs, and 2 native, cool-season perennial grass species were drill-seeded in April 2010 and data were collected in fall 2010. Data for a penstemon species, gayfeather (*Liatris punctata*), and blanketflower (*Gaillardia*

pulchella) showed the highest establishment at the highest herbicide rate where Russian knapweed control was greatest (Figure 2) and the same effect was observed for the average of all forbs; blanketflower, however, appeared more susceptible to the herbicide residue than did the penstemon species and gayfeather. Shrubs in general seemed to be more susceptible than forbs to AMCP soil residues (Figure 3). Greatest establishment of all seeded shrubs was realized at the 1 oz ai/a rate of AMCP. Louisiana sage (*Artemisia ludoviciana*) established best at the 1 oz rate of AMCP but winterfat (*Krascheninnikovia lanata*) and fourwing saltbush (*Atriplex canescens*) established similarly at the 1 and 2 oz rates of AMCP and all three species established better than in plots where the Russian knapweed was not controlled. The latter is a key response and our research results are very clear regardless of the target species and herbicides used to decrease its populations—the target weed species populations must be decreased to give seeded species the opportunity to establish or failure of the latter will ensue! Overall summary of this experiment showed that 50 percent of grasses, 8 percent of forbs, and no shrubs established in the untreated controls whereas 100 percent of grasses, 93 percent of forbs, and 88 percent of shrubs established in plots treated with 2 oz ai/a of aminocyclopyrachlor where Russian knapweed control was maximized.



A similar study was conducted at a foothills location west of Longmont, CO but on an established plant community (Sebastian et al. 2012). It is a harsh site with thin topsoils and a very robust native plant community that was invaded by Dalmatian toadflax (*Linaria dalmatica*). Aminocyclopyrachlor was applied at 0.0, 0.5, 1.0, and 2.0 oz ai/a in May 2009 and data were collected in fall 2010. Dalmatian toadflax adults were controlled well at 1.0 and 2.0 oz/a (Figures 4 and 5) but a flush of toadflax seedlings was apparent suggesting that the herbicide residue was insufficient to control these germinants (data not shown). The mean density of all native forbs (Figure 4) decreased 22, 18, and 40 percent at the 0.5, 1.0, and 2.0 oz/a AMCP rates, respectively. Native shrubs appeared more sensitive to Aminocyclopyrachlor than forbs; mean shrub densities decreased 33, 42, and 75 percent at the 0.5, 1.0, and 2.0 oz/a rates (Figure 5). Overall, native forb richness by species decreased 22–44 percent and shrubs decreased 33–75 percent but neither native functional group was eliminated by Aminocyclopyrachlor. Warm season grass abundance increased 227 percent (data not shown) over the course of the experiment likely in response to increased summer precipitation that occurred in 2010. The harsh conditions at this site, i.e., thin soils and typically dry climatic conditions replaced by abundant summer precipitation—appeared to have influenced results and this experiment is

currently being repeated at three additional sites nearby and we will continue to monitor changes at all four sites for at least 4 years following herbicide application to detect temporary and permanent shifts in the native plant community.



Continual monitoring for incipient patches or introductions is of critical importance for successful invasive species management. Bear in mind that invasive species have earned such declaration and their populations almost always increase and

often exponentially so. New ecological relationships vary drastically from their points of origin—there are over 20 hypotheses associated with invasion success but they all share the common theme that the invasive species populations, regardless of species, increase dramatically in new homes. Invasive weed populations throughout the United States should be managed assertively by all land managers but especially by public land managers that are managing large tracts of land for the benefit of the American public. Management systems developed to help restore or reclaim infested habitats should be effective and efficient and one of the most important aspects associated with being effective and efficient is the decrease in the population abundance of invasive weeds that must occur before seeded species can successfully establish. Herbicides represent the most effective and fiscally efficient means to decrease target invasive weed populations. Databases are under development that carefully define the injury to native grasses, forbs, and shrubs caused by herbicides used to control invasive weeds to provide all land managers with the appropriate information to design ecologically-based, IPM systems that include herbicides yet allow recovery of productive native plant communities so land management goals and objectives can be realized.

LITERATURE CITED

- Beck, K. George, Kenneth Zimmerman, Jeffrey D. Schardt, Jeffrey Stone, Ronald, R. Lukens, Sarah Reichard, John Randall, Allegra A. Cangelosi, and John Peter Thompson. 2008. Invasive Species Defined in a Policy Context: Recommendations from the Federal Invasive Species Advisory Committee. *Invasive Plant Science and Management* 1:414–421.
- Brown, Melissa L., Celestine A. Duncan, and Mary B. Halstvedt. 1999. Spotted knapweed management with integrated methods. *Proc. Wes. Soc. Weed Sci.* 52:68–70.
- DiTomaso, J. M., G. B. Kyser, J. R. Miller, S. Garcia, R. F. Smith, G. Nader, J. M. Connor, and S. B. Orloff. 2006b. Integrating prescribed burning and clopyralid for the management of yellow starthistle (*Centaurea solstitialis*). *Weed Sci.* 54:757–767.
- DiTomaso, Joseph M., Matthew L. Brooks, Edith B. Allen, Ralph Minnich, Peter M. Rice, and Guy B. Kyser. 2006. Control of invasive weeds with prescribed burning. *Weed Technol.* 20:535–548.
- DiTomaso, J.M., G.B. Kyser, S.R. Oneto, R.G. Wilson, S.B. Orloff, L.W. Anderson, S.D. Wright, J.A. Roncoroni, T.L. Miller, T.S. Prather, C. Ransom, K.G. Beck, C. Duncan, K. A. Wilson, and J.J. Mann. 2013. *Weed Control in Natural Areas in the Western United States*. Weed Research and Information Center, University of California. 544 pp. ISBN 978–0–692–01922–1.
- Duncan, Celestine L. and Janet K. Clark, eds. *Invasive Plants of Range and Wildlands and Their Environmental, Economic, and Societal Impacts*. 2005. Weed Science Society of America, Lawrence, KS. 222 pp.
- Erickson, Ann M., Rodney G. Lym, and Don Kirby. 2006. Effect of herbicides for leafy spurge control on the Western Prairie Fringed Orchid. *Rangeland Ecol. Manag.* 59:462–467.
- Evans, Raymond A. and James A. Young. 1978. Effectiveness of rehabilitation practices following wildfire in a degraded big sagebrush-downy brome community. *Journal of Range Management*. 31(3): 185–188.
- Pimental, David, Rodolfo Zuniga, and Doug Morrison. 2005. Update on the environmental and economic costs associated with alien-invasive species in the United States. *Ecol. Econ.* 52:273–288.
- <http://techlinenews.com/ForbShrubTolerancetoMilestone.pdf>.
- Rice, Peter M., J. Christopher Toney, Donald J. Bedunah, and Clinton E. Carlson. 1997. Plant community diversity and growth form response to herbicide applications for control of *Centaurea maculosa*. *J. App. Ecol.* 34:1397–1412.
- Sebastian, James R. and K. George Beck. 1999. The influence of various control methods on diffuse knapweed on Colorado rangeland. *Proc. Wes. Soc. Weed Sci.* 52:41–43.
- Sebastian, James R., K. George Beck, Scott Nissen, Derek Sebastian, and Sam Rodgers. 2011. Native species establishment on Russian knapweed infested rangeland following pre-plant herbicide applications. *Proc. Wes. Soc. Weed Sci.* 64:16–17.
- Sebastian, James R., George Beck, and Derek Sebastian. 2012. Using aminocyclopyrachlor to control Dalmatian toadflax and promote native plant community recovery and diversity. *Proc. Wes. Soc. Weed Sci.* 65:51–52.
- Tyser, R.W. 1992. Vegetation associated with two alien plant species in a fescue grassland in Glacier National Park, Montana. *Great Basin Naturalist* 52:189–193.

- Tyser, R.W. and C.W. Key. 1988. Spotted knapweed in natural area fescue grasslands: an ecological assessment. *Northwest Science* 62:151–160.
- Young, James A.; Evans, Raymond A. 1978. Population dynamics after wildfires in sagebrush grasslands. *Journal of Range Management*. 31(4): 283–289.
- Young, Jim. 2000. *Bromus tectorum* L. In: Bossard, Carla C.; Randall, John M.; Hoshovsky, Marc C., eds. *Invasive plants of California's wildlands*. Berkeley, CA: University of California Press: 76–80.

QUESTIONS SUBMITTED FOR THE RECORD TO DR. K. GEORGE BECK

Question. Please share some examples of plants and plant pests that move in interstate and foreign commerce that have become problems for State inspection, quarantine, agriculture, and natural resource authorities.

Answer. *Arundo donax*; common name giant reed; imported as an ornamental in many U.S. States and now being considered for biofuel production.

Pennisetum setaceu; fountain grass; imported as an ornamental and now one of Hawaii's most damaging invasive plant species.

Imperata cylindrica; cogongrass; used as packing material and imported for forage and erosion control. Now an aggressive invasive species problem in the Southern and Eastern United States as far north as Michigan.

Anoplophora glabripennis; Asian longhorned beetle; accidentally introduced in wood packing materials; destructive wood boring pest expanding its range in the United States.

Agrilus planipennis; emerald ash borer; arrived accidentally in cargo from Asia; first discovered in Michigan in 2002 and since spread to 17 other States in upper Midwest and Northeast.

Lythrum salicaria; purple loosestrife; introduced as an ornamental but now prohibited in most States. Considered by some to be the poster child for invasive species.

Sturnus vulgaris; European starlings; introduced into New York 1890s and have since spread across continental United States and may even be helping to spread other invasive species such as Russian olive (*Elaeagnus angustifolia*).

Question. What are some examples of associated costs to States for invasive species that have arrived via interstate and foreign commerce and then become established in States?

Answer. Emerald ash borer in Ohio projected costs for landscape value losses, tree removal and replacement range from \$1.8 to \$7.6 billion (in Ohio alone) (Sydnor et al. 2007). Data from nine U.S. cities (Atlanta, GA; Baltimore, MD; Boston, MA; Chicago, IL; Jersey City, NJ; New York, NY; Oakland, CA; Philadelphia, PA; and Syracuse, NY) indicates maximum economic impact potential of losing 1.2 billion trees from attack by Asian longhorned beetle is \$669 billion. Estimates were based upon losses accrued to date. (Nowak et al. 2001). Economic impact by purple loosestrife in 19 Eastern and Northcentral States was estimated to be \$229 million annually because of decreased value of wetlands, hay and pasture, fur harvest, migratory bird hunting, and wildlife observation and photography. (Duncan et al. 2004).

Question. What limitations and opportunities are there for State agriculture and natural resource authorities to guard against new pest introductions at borders and other entry points?

Answer. States are limited by authority when managing pathways of invasive species introductions, particularly those pathways that involve foreign commerce. The Federal Government (Homeland Security/Customs and Borders and USDA-APHIS) possess the authority to inspect cargo/shipments for the occurrence of invasive species whereas States do not have this authority. Therefore, States are limited by Federal involvement and further limited by the inadequacy of Federal involvement. Documentation in this questionnaire indicates that Hawaii State inspectors intercepted numerous (16 pages of reports) incidences of ants in cargo between 2002–2013 whereas Federal agents did not intercept a single case over that same period.

An opportunity exists to use funding made available to States through the proposed Healthy Habitats Coalition (HHC) legislation that would redirect \$200 million annually to all 50 States and territories for invasive species management. In our legislation, prevention is part of management including management of introduction pathways (e.g. intercepting invasive species unintentionally included in cargo). It is critically important to manage introduction pathways but this must be balanced with managing existing problems so the latter do not continue to serve as sources to disperse to new locations. States like Hawaii could form a partnership with Federal authorities and use some of the funds provided through HHC's proposed legisla-

tion allowing State and Federal personnel to work together cooperatively to dramatically enhance inspections at ports of entry.

Question. Are there opportunities and limitations on the ability of Federal and State agriculture inspection and natural resource authorities to share real time data at ports of entry on potential high-risk pests, products and pathways moving between and into States?

Answer. There apparently is a fundamental problem with communication among levels of government concerning inspection of cargo at ports of entry and the reporting of intercepted invasive species. The preamble that accompanied these questions implies that Federal and State personnel that inspect cargo do not communicate their findings and this is a clear limitation. Whether the Federal Government has the sole authority to intercept and hold cargo that harbors invasive species is irrelevant if the intercepted problem is not reported to appropriate States (and appropriate entities within any State). It would be a fairly simple chore to create a communication network among State and Federal authorities at ports of entry and then to appropriate natural resource authorities in a State using smart phones and other computer technology that enhances simultaneous and instant communication. This is a human problem that can be corrected by stimulating cooperation.

The opportunity to overcome this apparent problem resides in the proposed Healthy Habitats Coalition legislation. Re-directed funds to a State could be used to create a communication network among Federal and State authorities such that information on tainted cargo could be shared immediately via this network so State authorities can maintain a watch on susceptible habitats for the occurrence of the new interloper. Additionally, Federal port of inspection authorities can apply for funds re-directed to States so to augment their efforts at ports of entry, which is yet another route that can be exploited to improve interception of high-risk or other invasive species.

Question. Please provide examples, opportunities and limitations to Federal and State agriculture inspection and natural resource authorities engaging in real-time sharing of information and even being co-located at ports of entry.

Answer. I am not aware of any examples of Federal and State inspectors engaging in real-time sharing of information or being co-located at ports of entry. The problem seems obvious and relatively easy to cure by taking advantage of language in the Healthy Habitats Coalition proposed invasive species legislation that encourages partnerships between State and local governments to manage invasive species including preventing new species from arriving in our country. Invasive species is a borderless issue because only humans respect political boundaries so it seems most logical to create a borderless approach to resolving importation of new invasive species by forming partnerships between Federal and State governments so each body is helping the other do the job of preventing new species from establishing in our country . . . State by State. MOUs and Cooperative Agreements are required in our proposed legislation to carefully spell out roles and responsibilities of all parties involved in the venture and re-directed funds to States will help stimulate such partnerships.

Question. What are some examples of impacts to invasive species control anticipated due to reductions in Federal funds made available through the U.S. Forest Service's State and Private Forest Health Program?

Answer. There should be no impacts to invasive species control programs regardless of funding cuts to the State and Private Forest Health Program. Invasive species tend to be a competing interest for some decision makers and HHC's proposed legislation to create a borderless and gap-free invasive species management program throughout all 50 States and U.S. territories will solve this apparent problem. States will have greater opportunity for shared responsibility to manage invasive species and the ability of Federal agencies to be more directly involved with States will stimulate Federal decision makers to prioritize invasive species management over other competing priorities because of funding made available through HHC's legislation.

Question. Can there be opportunities to utilize funds from the State and Private Forest Health Program to control ungulates that impact forest health?

Answer. I am not certain whether State and Private Forest Health funds could be used to control ungulates that damage forests but the funds associated with HHC's proposed legislation certainly could be used for that purpose. Our proposed legislation clearly places the Governor of each State in charge of that State's invasive species program and the desire to manage feral goats, hogs, or any other species that damage forests or any other habitat is a decision that will be made at the State level. Our legislation also will stimulate improved Federal agency cooperation and coordination with States as they will prepare a strategic plan for their

invasive species management responsibilities in any State or region. They also will have to demonstrate measurable outcomes associated with the use of public money.

Question. Different regions across the Nation face different invasive species challenges due to factors such as climate, elevation, etc.; this is particularly the case for the tropical, isolated, island State of Hawaii. Biocontrol development for the highest priority pests nationally is not likely to benefit the unique challenges faced by individual regions. Are there any examples of efforts to account for the unique conditions of various regions in developing biocontrol priorities?

Answer. USDA-ARS is the primary agency charged with developing biocontrol for the United States and ARS has installations throughout our country and almost all States, including Hawaii, have such installations. I have had the opportunity to evaluate ARS invasive species programs on several occasions as an ad hoc reviewer and member of evaluation teams and it was quite clear that their charge is to interact locally to help resolve local issues. Perhaps all that is necessary is to meet with ARS scientists to explain the control/management—biocontrol in particular—needs for the specific invasive species problems in Hawaii.

USDA-Forest Service also has a substantial research group and agenda including developing biocontrol around local needs. This may be yet another opportunity to meet with Forest Service scientists to acquire their expertise to help on this important issue for Hawaii. Again, jointly prioritizing issues and working across agencies and States will lead to a shared effort with better outcome.

Question. The Hawaii Invasive Species Council was modeled after the National Invasive Species Council (NISC) to recognize the importance of cabinet-level leadership and interagency coordination, planning, and prioritization in effectively addressing invasive species. A Hawaii representative from the State Department of Agriculture also serves on the national Invasive Species Advisory Committee (ISAC). When was the last time Council members of NISC or ISAC met and how often do they meet to fulfill the intent of Executive Order 13112 and support improved Federal, State, and regional coordination?

Answer. I served on ISAC for 6 years (2002–2008) including serving as vice-chair and chair of the committee. Once during that time, Secretary of Interior Norton visited with ISAC during a scheduled meeting and no other cabinet-level members ever visited with ISAC from 2002–2008. Clearly, this was one of my deepest concerns while serving on ISAC, i.e., a lack of strong leadership for the Federal agencies and it seems that this deficiency stood in the way of getting agencies to cooperate and work together to create a borderless, gap-free approach to managing invasive species. In fact, the opposite seems to remain the case today—agencies work in isolation and have a piecemeal approach to resolving the invasive species issue in our country. NISC staff worked diligently to breakdown barriers to agency cooperation during my term on ISAC but they had no authority to foster such cooperation. The three NISC co-chairs should not only meet regularly to develop a coordinated and cooperative approach to managing invasive species within the Federal system, their leadership to foster the same strategy to coordinate Federal, State, and local government efforts with private landowners and land managers is absolutely necessary to demonstrate the necessity to effectively contend with this insidious issue.

I cannot comment as to when, if ever, one or more of the NISC cabinet-level co-chairs attended an ISAC meeting or engaged with the advisory committee since 2008, much less provide strong directives to agencies so they coordinate and cooperate with State and local governments and private landowners to effectively manage invasive species across the United States.

HHC's proposed legislation will stimulate greater leadership from the co-chairs because at least one of the Secretaries will be leading the funds re-direction effort to States and evaluate Federal agency overall progress on this issue as well. While the NISC/ISAC concept seems plausible, given the lack of authority, insufficient leadership, and annual cost, one must ask what is the actual benefit for the effort to manage invasive species.

LITERATURE CITED

Duncan, Celestine A., John J. Jachetta, Melissa L. Brown, Vanelle F. Carrithers, Janet K. Clark, Joseph M. DiTomaso, Rodney G. Lym, Kirk C. McDaniel, Mark J. Renz, and Peter M. Rice. 2004. Assessing the Economic, Environmental, and Societal Losses from Invasive Plants on Rangeland and Wildlands. *Weed Technology* 18:1411–1416.

Nowak, David J., Judith E. Pasek, Ronaldo A. Sequeira, Daniel E. Crane, and Victor C. Mastro. 2001. Potential Effect of *Anoplophora glabripennis* (Coleoptera: Cerambycidae) on Urban Trees in the United States. *J. Economic Entomology* 94(1): 116–122.)

Sydnor, T.Davis, Matthew Bumgardner, and Andrew Todd. 2007. The Potential Economic Impacts of Emerald Ash Borer (*Agrilus planipennis*) on Ohio, U.S., Communities. *Arboriculture & Urban Forestry* 2007. 33(1):48–54.

Mr. BISHOP. Thank you. I appreciate your testimony.

We will now turn to Mr. Dye, who is representing the State Foresters.

Mr. Dye?

STATEMENT OF RANDY C. DYE, WEST VIRGINIA STATE FORESTER, PRESIDENT, NATIONAL ASSOCIATION OF STATE FORESTERS

Mr. DYE. Thank you, Chairman Bishop, Ranking Member Horsford, and members of the Committee. Thank you for the opportunity to appear here today on behalf of the National Association of State Foresters.

Programs delivered by State forestry agencies are on the front lines of eradicating, slowing the spread, and addressing the enormous collateral damage of invasive species. My comments this morning highlight recommendations for the 2012 farm bill endorsed by State Foresters that support the conservation and management of the Nation's forests.

Invasive species know no boundaries. They span landscapes, land ownerships, and jurisdictions. Their consequence costs the American public an estimated \$138 billion each year and, therefore, are a significant drain on the national economy. The Federal Government has a direct authority to manage over 200 million acres of national forest, parks, and grasslands, many of which harbor invasive species. It also has the authority to provide technical and financial assistance for all the Nation's 731 million acres of forest land, including urban, State, private, and tribal lands.

In 1999, Executive Order 13112 established the National Invasive Species Council, chaired by the Secretaries of Interior, Agriculture, and Commerce, and includes six other Federal agencies. This Committee was charged with providing coordination, planning, and overall leadership for the Federal invasive species program and reaching out to States, tribal, local, and private partners. Coordination is not only critical between agencies of the Federal Government, but also with State and local entities. Recent efforts to create national management framework have helped coordinate U.S. Forest Service, APHIS, NASF, and the National Plant Board and their missions, expertise, and available resources, to effectively respond to three priority invasive species: Sudden Oak Death; Emerald Ash Borer, and Thousand Cankers Disease.

NASF recommends the following strategies to be considered in any comprehensive invasive species legislation. Number one, Federal agencies such as APHIS should coordinate with appropriate State agencies, as well as their traditional State agricultural agency partners, in addressing forest invasive pests. State agencies should be provided the option to have a lead role in deciding what programs, regulations, and initiatives are needed and best suited to protect forest resources within their respective States. In most cases, State agencies have better knowledge and contacts with local

stakeholders and community-based organizations at the Federal level.

Number two, where Federal forests dominate ownership at a local or regional level, Federal agencies should partner strategically with State forestry agencies to minimize the potential of spread between adjoining private or State forest land, and identify opportunities for cost-effective treatment.

Support efforts to enhance forest-invasive species response, management, and restoration in areas and communities that have been impacted by harmful, non-native forest insects and disease. Development of procedures that resolve jurisdictional and other disputes in an effort to improve coordination of Federal agencies, as well as Federal and State agencies.

Increase research capacity in efforts to quickly assess impacts of potential invasive species. Identify tests and deploy bio-control agents. Develop management tools for mitigation and suppression and genetic and breeding programs designed to enhance resistance of high-priority tree species.

I thank you for the opportunity to testify here today, and stand ready to answer any questions or provide any further information. Thank you.

[The prepared statement of Mr. Dye follows:]

PREPARED STATEMENT OF RANDY C. DYE, WEST VIRGINIA STATE FORESTER,
PRESIDENT, NATIONAL ASSOCIATION OF STATE FORESTERS

On behalf of the National Association of State Foresters, I thank Chairman Bishop and Ranking Member Grijalva for the opportunity to appear before the Subcommittee today. The National Association of State Foresters (NASF) represents the directors of the State forestry agencies of all 50 States, 8 territories, and the District of Columbia. State Foresters manage and protect State and private forests across the United States., which make up two-thirds of the Nation's forests, and work closely with our Federal partners to respond to invasive species issues.

The impacts of invasive forest insect and disease species on our Nation's forests have become an increasing concern for the National Association of State Foresters (NASF). NASF's programs and stewardship actions are on the front lines of eradicating, slowing the spread, and addressing the enormous collateral damage of invasive species.

Forested landscapes cover approximately one-third of the total land area of the United States, including 100 million acres in urban environments. Every American benefits from forests, whether in the form of wood products for construction or paper, neighborhood amenities, wildlife habitat, carbon sequestration, clean water and air, and even our spiritual well-being. Many Americans' jobs are linked to trees. The U.S. forest products industry employs nearly 900,000 people; it is among the top 10 manufacturing sector employers in 47 States. Jobs associated with production of non-wood forest products are estimated to be in the tens of thousands.

Invasive species know no boundaries; they span landscapes, land ownerships, and jurisdictions. The damage they cause costs the American public an estimated \$138 billion each year, which makes them a significant drain on the national economy.

- Private landowners and small communities are some of the hardest hit by invasive species infestations.
- Invasive species can be exceptionally damaging in urban environments where ecological systems are already stressed. Invasive species threaten the quality of life and the property values of millions of metropolitan residents across the country.
- Currently, 42 percent—400 of 958—of the plant and animal species listed by the Federal Government as threatened or endangered have been negatively affected by invasive species.
- Invasive species populations have depleted water supplies, poisoned wildlife and livestock, and directly impacted thousands of acres of native forests and rangelands.

- Public recreational opportunities and experiences have become severely degraded by rapid infestations of invasive species, in many cases hampering access, reducing recreational quality and enjoyment, and decreasing the aesthetic values of public lands

Some of the most damaging Invasive species include Asian Long-horned Beetle, Emerald Ash Borer, Gypsy Moth, Sudden Oak Death, Hemlock Woolly Adelgid, and Cogon grass. Municipal governments across the country are spending more than \$1.7 billion each year to remove trees on city property killed by these pests. Homeowners are spending \$1 billion to remove and replace trees on their property and they are absorbing an additional \$1.5 billion in reduced property values. The scope of the impacts of these pests is demonstrated by a brief description of the threats they pose:

- The Asian Longhorned Beetle kills trees in 15 botanical families—especially maple and birch which constitute much of the forest reaching from Maine to Minnesota and urban trees worth an estimated \$600 billion.
- Emerald Ash Borer occupies more than 200,000 square miles in 18 States. More than 200 million ash trees in the Plains States and additional trees in the South are at risk to this pest. Homeowners and municipalities collectively will pay more than \$10 billion over the next 10 years to remove dead ash trees that would otherwise fall and could cause property damage or even loss of life.
- Hemlock Woolly Adelgid has killed up to 90 percent of hemlock trees in the Appalachians from Georgia to Massachusetts. Loss of hemlock groves threatens unique ecosystems and watersheds.
- Goldspotted Oak Borer has killed up to 80,000 California live oak and black oak trees in San Diego County in less than 15 years. The insect threatens oaks throughout California, including close to 300,000 oak trees growing in greater Los Angeles and Yosemite Valley.
- Sudden Oak Death affects 143 different plant species and continues to spread in California's 14 impacted counties as well as Curry County, Oregon. In 2012 alone, nearly 400,000 trees were lost to Sudden Oak Death in California.

The Federal Government has several unique characteristics that compel it to play a primary role in the fight against invasive species. It has the direct authority to manage over 200 million acres of national parks, forests and grasslands, many of which harbor infestations of invasive species. It also has the authority to provide technical and financial assistance (primarily for insect, disease, and invasive plant suppression) for all the Nation's 731 million acres of forest lands, including urban, State, private, and tribal lands.

In 1999, Executive Order (EO) 13112 established the National Invasive Species Council (NISC), co-chaired by the Secretaries of the Interior, Agriculture, and Commerce. NISC members include the Secretaries of Transportation, State, Defense, Homeland Security, Treasury, and Health and Human Services; the Administrators of the Environmental Protection Agency and the National Aeronautics and Space Administration; as well as the Director of the U.S. Agency for International Development and the U.S. Trade Representative. NISC was charged with providing coordination, planning and overall leadership for Federal invasive species programs and reaching out to State, tribal, local and private partners.

Coordination is not only critical between agencies of the Federal Government, but also with State and local entities. Recent efforts to create national management frameworks have helped coordinate U.S. Forest Service (USFS), Animal Plant Health Inspection Service (APHIS), National Association of State Foresters (NASF), National Plant Board (NPB), and their missions, expertise and available resources to effectively respond to three priority invasive species threats: Sudden Oak Death, Emerald Ash Borer, and Thousand Canker Disease.

Actions at the local level are also critical. I'd like to highlight some efforts in my home State of West Virginia. The Potomac Highlands Cooperative Weed and Pest Management Area (CWPMA) is a partnership between Federal, State, and local agencies, community associations, non-profit organizations, and private land owners aimed at coordinating efforts and programs for addressing the threat of invasive species. The mission of Potomac Highlands CWPMA is the prevention and management of invasive species in the headwaters region of the South Branch of the Potomac River in West Virginia and Virginia. They are dedicated to decreasing the impacts of invasive species on native plant and animal communities, public and private forests, private and agricultural lands, and local economies through public awareness, education, professional improvement and environmental awareness. Projects include volunteer work days, landowner education, and youth events at schools.

Other efforts like those in Georgia are essential in the fight against invasive species such as Cogon grass. The Georgia “Cogon grass Task Force” has provided training to resource professionals throughout the State, and its educational campaign continues to help landowners identify and remove the plant. The Georgia Forestry Commission spearheaded an effort to bring a total of 23 State, Federal and private partners to establish the entire State of Georgia as a Cooperative Weed Management Area for Cogon grass in May 2008. The combined effort of this group should have far reaching impacts to help educate the public about Cogon grass as well as help locate all infested sites.

Legislation and program implementation is needed to increase the Nation’s current protection system for invasive species, which is currently piecemeal and lacks adequate rigor and comprehensiveness, virtually ensuring that invasive species will continue to arrive and spread. Federal Government involvement with States is critical as specific Federal legislation (e.g. interstate commerce, plant protection) limit certain State actions. A successful forest invasive species prevention and control program must address the complexity and wide-ranging agency and community needs at the regional, State, and local level. The National Association of State Foresters believes that:

- Federal agencies (e.g., USDA Animal and Plant Health Inspection Service) should coordinate with appropriate State agencies as well as their traditional State agricultural agency partners in addressing forest invasive pests. If desired, State agencies should be provided the option to have a lead role in deciding what programs, regulations and initiatives are needed and best suited to protect forest resources within their respective States. In most cases State agencies have better knowledge and contacts with local stakeholders and community-based organizations that have developed tactics and programs to combat invasive species at the local level (e.g., county representatives, utilities).
- Where Federal forests dominate ownership at a local or regional level, Federal agencies should partner strategically with State forestry agencies to minimize the spread of invasives between adjoining private or State forest land and identify opportunities for cost-effective treatment.
- A Federal program should include initiatives that are non-regulatory and incentive driven, support and build capacity at the State, regional, and community level, and encourage voluntary cooperation of affected private entities and communities.
- Investments to support local, State, and regional partnerships, which are prepared to take immediate action against known priority invasive species, will provide valuable lessons for others and promote innovations and efficiencies in protection and public outreach strategies. By sharing their progress, these partnerships will, in turn, help identify the policy and legal obstacles to success as well as build a constituency for more effective invasive species prevention and control programs in other areas.

NASF recommends the following strategies to be considered in any comprehensive invasive species legislation:

- Establishment of a State-level rapid response capacity that can quickly eradicate priority forest invasive species.
- Non-regulatory and incentive-driven national programs, with specific focus on encouraging voluntary cooperation.
- Adoption and enforcement of workable national regulatory programs to address key pathways such as firewood movement where non-regulatory approaches are not in place, effective or, simply, to serve as a “backstop” for those voluntary approaches.
- Support efforts to enhance forest invasive species response, management and restoration in areas and communities that have been impacted by harmful non-native forest insects and diseases.
- Development of procedures that resolve jurisdictional and other disputes in an effort to improve coordination of Federal agencies, and between Federal and State agencies. A network of partners is needed with agreed upon authorities, responsibilities, and roles.
- Increase research capacity in efforts to quickly assess impacts of potential invasive species; identify, test, and deploy bio-control agents, develop management tools for mitigation and suppression, and genetic and breeding programs designed to enhance resistance of high priority tree species; and
- An increased percentage of funds delegated to the States and their cooperating entities. In most cases, State agencies have better knowledge and contacts with local stakeholders and community-based organizations.

I appreciate the opportunity to appear before the Subcommittee today to offer perspectives shared by State foresters regarding the impacts of invasive species on the Nation's forests. I would like to thank the Subcommittee for its continued leadership and support of active, sustainable management of all forest lands.

QUESTIONS SUBMITTED FOR THE RECORD TO RANDY C. DYE

Question. Please share some examples of plants and plant pests that move in interstate and foreign commerce that have become problems for State inspection, quarantine, agriculture and natural resource authorities.

Answer. There are numerous examples of high priority pests arriving via foreign commerce through airport and harbor hubs. Wooden pallets, used in transporting goods have been especially problematic in introducing wood borer insects (e.g. Asian Long-horned Beetle, Emerald Ash Borer). These pests are now being spread through a variety of local pathways, with firewood as a major vector. The National Association of State Foresters (NASF) has encouraged the U.S. Department of Agriculture (USDA) to move expeditiously to provide a standardized treatment and certification procedure for the interstate movement of all firewood. The firewood industry is largely unregulated, with little or no national regulatory guidelines outside of pest-specific quarantine areas and states. This lack of Federal regulation has led many States to seek or pass their own firewood regulations for specific pests.

Cogon grass, a noxious weed infesting pastures and forests first appeared in Alabama as an escape from orange crate packing in 1912. It was intentionally introduced from the Philippines into Mississippi as a possible forage in 1921 and then introduced into Florida in the 1930s and 1940s as a potential forage and for soil stabilization purposes. It now extends as far north as South Carolina and west to Texas.

The devastating example of the Brown Tree Snake, introduced to Guam during military operations in WWII in Guam is internationally known. Accidental introductions of Brown Tree Snakes continue to threaten Hawaii, and if established would result in major economic and environmental damage.

Question. What are some examples of the associated costs to States for invasive species that have arrived via interstate and foreign commerce and then become established in States?

Answer. The Asian Long-horned Beetle kills trees in 15 botanical families—especially maples and birches which constitute much of the forest reaching from Maine to Minnesota and urban trees worth an estimated \$600 billion. Emerald Ash Borer occupies more than 200,000 square miles in 18 States. More than 200 million ash trees in the Plains States and additional trees in the South are at risk to this pest. Homeowners and municipalities collectively will pay more than \$10 billion over the next 10 years to remove dead ash trees that would otherwise fall and cause property damage or even loss of life.

Question. What limitations and opportunities are there for State agriculture and natural resource authorities to guard against new pest introductions at borders and other entry points?

Answer. Budget reductions are a key limitation, especially State agency capacities due to lay-offs and attrition. New State findings of invasive species bring about additional duties with no or diminished response resources. Federal sequester cuts present additional limitations.

The opportunities for State agriculture and natural resource authorities to guard against new pest introductions at borders and other entry points are based on the degree that there is: (1) Coordination among Federal agencies; (2) communication with relevant State agencies; and (3) public leadership roles in identifying and committing to action.

Coordination and information sharing between Federal and State inspection agencies can be improved by: (1) Sharing of import manifests and interception data between Federal (USDA and Border Patrol) and State regulatory agencies and (2) promoting and committing to joint inspection facilities for cargo at airports and harbors.

In certain cases, States are hampered in their ability to effectively address State-specific invasive species threats due to Federal laws (i.e. U.S. Commerce Clause and Plant Protection Act). These laws deal with the Federal preemption, where States cannot establish regulations stricter than existing Federal statutes. For examples Federal preemption limits a State's ability to establish rules on incoming plants and animals, prevent species that are not on a Federal actionable list, and receive notification from Federal inspection agencies.

Under section 436 of the Plant Protection Act, which is administered by the Animal and Plant Health Inspection Service (APHIS) **no State may regulate the movement in interstate commerce of any plant product** in order (1) to control a plant pest (2) to eradicate a plant pest; or (3) to prevent the introduction or dissemination of a plant pest. The only exceptions to this prohibition are when a State imposes regulations which are consistent with and do not exceed the regulations or orders issued by the Secretary of Agriculture, or when the State demonstrates to the Secretary, and the Secretary finds, that there is a special need for additional prohibitions or restrictions based on sound scientific data or a thorough risk assessment.

Question. Are there opportunities and limitations on the ability of Federal and State agriculture inspection and natural resource authorities to share real time data at ports of entry on potential high-risk pests, products and pathways moving between and into States?

Answer. The opportunity to build joint inspection facilities at both airports and harbors represents the most cost effective approach to increase the capacity of Federal and State agriculture inspection and natural resource authorities to share real time data at ports of entry on potential high-risk pests, products and pathways moving between and into States

One limitation is that even though airports pose a serious biosecurity risk through the movement of passengers and cargo, the FAA does not recognize inspections as a core airport function, and there is no responsibility for mitigation or requirements to provide inspection space and support.

Question. Please provide examples, opportunities and limitations related to Federal and State agriculture inspection and natural resource authorities engaging in real-time sharing of information and even being co-located at ports of entry.

Answer. A joint inspection facility was constructed at Kahalui Airport on the island of Maui, Hawaii. A joint facility is being planned for the Honolulu airport as part of a public/private partnership. Cargo services have found that joint inspection facilities have reduced the time of inspection as well as costs incurred from spoilage of fresh produce.

Question. What are some examples of impacts to invasive species control anticipated due to reductions in Federal funds made available through the U.S. Forest Service's State and Private Forest Health Program?

Answer. Reductions in Federal funds made available through the U.S. Forest Service's State and Private Forest Health Program could impact the Gypsy Moth Slow-the-Spread Program. This program has reduced the spread rate of gypsy moth by 60 percent along a 1,000 mile long project area from North Carolina to Minnesota, and has delayed the need for increased expenditures by Federal, State, and local governments as well as landowners. In 2012, this program treated more than 526,000 acres in eight States. Without the Slow-the-Spread about 50 million more acres would be infested. Reduced Federal funds (both USDA APHIS and USFS) could impact the ongoing eradication of Asian Long-horned Beetle in Massachusetts as efforts to ongoing management efforts to address the spread of emerald ash borer, sudden oak death, oak wilt, thousand cankers disease, and Hemlock Woolly Adelgid.

Oak wilt is the single most important disease affecting oaks in the eastern half of the Nation. The Forest Health program supports suppression efforts in the Great Lakes and Texas, including root graft disruption and spore tree removal. The Hemlock Woolly Adelgid remains a significant threat to the health of hemlock forests in the Eastern United States, and the Forest Service has contributed to an integrated multi-agency effort focused on management of high value hemlocks (using biological and chemical controls) and continued research and methods development to better manage hemlocks across their range.

Question. Can there be opportunities to utilize funds from the State and Private Forest Health program to control ungulates that impact forest health?

Answer. We defer to the USFS, but believe that funds can be used for certain components of an ungulate control program (e.g./fencing).

Question. Different regions across the Nation face different invasive species challenges due to factors such as climate, elevation, etc; this is particularly the case for the tropical, isolated, island State of Hawaii. Biocontrol development for the highest priority pests nationally is not likely to benefit the unique challenges faced by individual regions. Are there any examples of efforts to account for the unique conditions of various regions in developing biocontrol priorities?

Answer. Biological control is one of the few tools proven effective in controlling widespread invasive plants. Successful biological control agents can provide continuing and expanding control while reducing dependence on pesticides. However, because ecosystems are complex it is important to consider the effects on all the

other organisms within the community, not just the pest and biological control agent. This necessitates that specific regional aspects are considered. Work on biological control agents for important rangeland weeds, such as *cheatgrass*, *leafy spurge* and *dalmatian toadflax* are being undertaken in the West—*Chinese privet*, an important riparian weed in the South, and—*strawberry guava*, an invasive forest pest in Hawaii.

Insect pest biological control is currently focused on priority pests, such as *emerald ash borer*, *hemlock wooly adelgid*, *asian gypsy moth*, and *Douglas-fir tussock moth*.

Question. The Hawaii Invasive Species Council was modeled after the National Invasive Species Council (NISC) to recognize the importance of cabinet-level leadership and interagency coordination, planning, and prioritization in effectively addressing invasive species. A Hawaii representative from the State Department of Agriculture also serves on the national Invasive Species Advisory Council (ISAC). When was the last time the Council members of NISC or ISAC met and how often do they meet to fulfill the intent of Executive Order 13112 and support improved Federal, State and regional coordination?

Answer. The Invasive Species Advisory Council (ISAC) usually meets twice a year. Unfortunately, the National Invasive Species Council (NISC) has not met for the past 3 years. While the many Federal agencies within the six Federal departments set their own budget and program priorities, the National Invasive Species Council can encourage a coordinated and cost-effective Federal investment to ensure that the various agency efforts are collaborative, rather than being overlapping or insufficient. They could also develop procedures that resolve jurisdictional and other disputes in an effort to improve coordination of Federal agencies, and between Federal and State agencies as well cooperative sharing of information through a centralized web-based system.

Mr. BISHOP. Thank you very much.

Mr. Fearneyhough from the Department of Ag in Wyoming, please.

STATEMENT OF JASON FEARNEYHOUGH, DIRECTOR, STATE OF WYOMING, DEPARTMENT OF AGRICULTURE

Mr. FEARNEYHOUGH. Chairman Bishop, Ranking Member Horsford, and members of the Subcommittee, thank you for the opportunity to speak today. Again, I am Jason Fearneyhough. I am the Director of the Wyoming Department of Agriculture. Along with this, as Congresswoman Lummis stated, I currently serve as the Chair of the Natural Resource Committee for the National Association of State Departments of Agriculture, and I am the immediate past chair of the Western Association of the State Departments of Agriculture.

Wyoming initiated its first noxious weed law in 1895, targeting Russian thistle, commonly recognized as tumbleweed. Today, each Wyoming county has a weed and pest control district that assists land owners and managers with local workshops, cost share incentives, and coordinated landscape-scale planning. Because of these programs, the State has eradicated Yellow starthistle, a toxic plant that covers over 12 million acres in California. Additionally, we have kept our waterways clear of Eurasian watermilfoil and quagga mussels, a species that are extremely harmful to our water resource.

Many Western States have similar invasive species programs. Keys to the successes of these programs include prevention and educational programs, coupled with control and management effort. In addition, many States have university and/or USDA ARS experiment stations to improve the understanding of invasive species and improve understanding of cost-effective ways we can manage them.

Natural resource managers have a broad understanding of the negative impacts invasive species play on our ecological systems, communities, agriculture interests, recreation, and human health. The economic impact, by some estimates, is in excess of \$120 billion annually, up to \$138 billion annually. This recognition has created multi-faceted efforts. It has brought together local agriculture producers, natural resource agencies, and non-government representatives to work collectively on short and long-term management goals. It has also created the Consolidated USDA APHIS Plant Protection Act, protecting the national and international pathways from invasive species, and some on-the-ground successes such as the recent eradication of Asian Longhorn Beetle from New Jersey.

In Wyoming, the Federal Government manages 48 percent of our land. Like many Western States, our invasive species program success is heavily influenced by cooperation with Federal agencies. Local Federal representatives typically understand and share the same concerns, as do the regional and national offices. The U.S. Forest Service lists the introduction and spread of invasive species as a Top Four threat to the national forests and grasslands. The Bureau of Land Management Web site states that the rapid expansion of weeds across public lands is one of the greatest obstacles to achieving ecosystem health. Even the Department of Defense has a Web site to address the growing ecological and economic damage caused by invasive species.

In many cases, local, State, and Federal agencies have the right knowledge, information, and people to make a positive difference. However, we lack the ability to fully implement management projects. We are subject to short-term grants, limited local and State funding sources. We are confined to detection and planning while strapped with unsuccessful management control and follow-through. Where various Federal agencies manage adjoining land masses, the problem can be compounded by the variation in agency funding, policy, and priorities.

For example, in Teton County, Wyoming, which is situated in the northwest corner of the State, and is approximately 3 million acres in size, or slightly smaller than the State of Connecticut, the majority of land is managed by Yellowstone National Park, Grand Teton National Park, the National Elk Refuge, and Bridger-Teton National Forest. This natural resource draws in millions of tourists annually to hike, take horses into the back country, or simply drive through America's first national park to see its majestic beauty. Visitors come from all corners of the world, potentially bringing weeds and non-native insects with them. To protect the natural resources from invasive weeds, Teton County organized the Jackson Hole Weed Management Association.

This association is implemented through an agreement with the Federal, State, and local agencies, in addition to nonprofit organizations. The association has identified invasive weeds as the greatest threat to the ecosystem, and has identified the high-priority areas. Each partner is willing to participate, but when it is time to put things on the ground we have a problem, due to lack of funding.

Each State has its own set of invasive species issues management needs. I have heard countless examples from my fellow directors and commissioners of the invasive species issues in their States. These concerns have resulted in WASDA and NASDA recently—recent actions in policy to address this national issue. There simply needs to be more on-the-ground implementation of control and management in the effort.

Thank you for the opportunity to speak, Mr. Chairman.
[The prepared statement of Mr. Fearneyhough follows:]

PREPARED STATEMENT OF JASON FEARNEYHOUGH, DIRECTOR, STATE OF WYOMING,
DEPARTMENT OF AGRICULTURE

Chairman Bishop and Ranking Member Grijalva, as well as other members of the Subcommittee, thank you for the opportunity to speak today. My name is Jason Fearneyhough and I have served as Director of the Wyoming Department of Agriculture for the past 4 years and as Deputy Director of the Department before that. Along with this, I currently serve as the chairman for the National Association of State Departments of Agriculture—Natural Resource Committee, and I am the past chairman of the Western Association of State Departments of Agriculture. I'm pleased to appear before you today to discuss the impacts invasive species have on our Nation's natural resources and the challenges we face with their management.

Wyoming began its battle with invasive species in 1895 with its first noxious weed law targeting Russian thistle, or what many of you may recognize as the western tumbleweed. At that time, homeowners were limited in their ability to identify the plant and lacked the resources to control the spread of the species. This made it easy for Russian thistle to establish itself throughout the State and the West in spite of the legislature's well intended efforts. While the law didn't stop the Russian thistle, it created the foundation for the State's current weed and pest program. Today, we are able to assist land owners and managers with locally funded educational workshops, cost-share incentives, and coordinated landscape based planning through the efforts of the State's weed and pest control districts. Because of these programs, the State has eradicated Yellow starthistle (a toxic plant that covers more than 12 million acre in California) and we have kept our waterway clear of Eurasian watermilfoil and the invasive quagga mussel.

Many of the Western States have similar invasive species programs to Wyoming that match, or surpass our own, in their preventative, educational and management efforts, and funding. In addition to these programs, many of the Western States have Universities and USDA—ARS experiment stations that are continually improving our understanding of the invasive species issue and the cost effective ways we can manage them. This is no longer just an agricultural issue. We have a broader understanding of the impacts these species play on our ecological systems, communities, recreation, and human health. This broader recognition has created multifaceted efforts with a unified call for action and has brought together local agriculture producers, natural resource agencies, and non-government representatives to work collectively on short and long-term management goals. It has also created the consolidated USDA—APHIS Plant Protection Act, education programs such as the National Firewood Task Force, and have made on the ground successes like the recent eradication of Asian longhorn beetle from New Jersey possible.

In Wyoming, the Federal Government manages more than 48 percent of the lands in our borders. Like many Western States, our invasive species program success is heavily influenced by the cooperation of the Federal agencies. The local Federal representatives, along with regional and national offices, typically understand and share the same concerns on invasive species. The USFS lists "the introduction and spread of invasive species" as a top four threat to the national forests and grasslands. The Bureau of Land Management Web site states that the "rapid expansion of weeds across public lands" is one of the greatest obstacles to achieving ecosystem health. The Department of Defense has a Web site that addresses the growing ecological and economic damage caused by invasive species on defense installations. Along with this, a National Invasive Species Council was created by Executive order and the Federal Interagency Committee for the Management of Noxious and Exotic Weeds to assist Federal agencies in the collaborative invasive species efforts.

In most cases, the local, State, and Federal agencies have the right knowledge, information, and people in place to make a positive difference on invasive species. While we have this positive situation, we lack the ability to fully implement what they know. We rely on short term grants, limited local or State funding sources, or

intra-agency generosity and simply do not have the fiscal resources to implement long-term, landscape scale control. Consequently, we are confined to successful detection and planning but fall short on implementation. In the West, where various Federal agencies may manage adjoining land masses, the problem can be compounded by the variation in agency funding, policy, and/or priorities.

For example, Teton County Wyoming is situated in the northwest corner of the State and it is approximately 3 million acres in size. Within its boundaries, the majority of land is managed by Federal agencies who oversee Yellowstone National Park and Grand Teton National Park, the National Elk Refuge, and the Bridger-Teton National Forest. The county's natural resources draw in millions of tourists annually with visitors from all corners of the world who are potentially bringing noxious weed seeds or non-native insects in their luggage, as hitchhikers on their cars, or as food. To protect the natural resources from invasive weeds, Teton County organized The Jackson Hole Weed Management Association in 1998 through an agreement with non-profit organizations and the Federal, State, and local government agencies. The association has identified the invasive weeds that pose the greatest threat to the ecosystem, and have prioritized treatment areas based on the threat. Many of those high priority areas are highways, wildlife corridors, and public access points located on Federal lands. The Association attempts to pool resources to mitigate the threat in these areas and strengthen each agency's response to their respective lands through the collective approach. While each party was a willing participant on paper, the Federal agencies' response is limited or fragmented due to lack of funding and resources when the window of opportunity for treatment is open. Without the proper resources to manage the invasive species threat, the Association can only hope to slow the spread of invasive weeds through selective control rather than reducing the impacted acres through prioritized management.

A good regional example of insufficient on the ground support is cheatgrass. Wyoming and many Western States have been working diligently to avoid the listing of the sage-grouse as an endangered species and a primary threat to the species is sage brush degradation due to invasive grasses. Cheatgrass matures quicker than native grasses, is highly susceptible to fire and recovers from fire quicker than native grasses. Sage brush communities historically experience wildfires on a 50 year or more cycle, but cheatgrass can reduce that cycle to 5 years or less which makes it difficult for native sagebrush to re-establish. Simply stated, with no sagebrush there is no sage-grouse. In 2007, the Governors of Wyoming, Nevada, Idaho and Utah signed an agreement to coordinate efforts on cheatgrass and other wildfire issues. The agreement looked for cooperative efforts on management of cheatgrass beyond jurisdictional State boundaries. Unfortunately, the agreement has served very little purpose. The participating States were ready to act, but their best intentions were hampered by the inability to manage invasive species beyond the agency or State boundaries.

These examples are based on my experiences as Director of the Wyoming Department of Agriculture, but the issue of lacking resources for invasive species is not limited to my State or the West. Each State has its own set of invasive species issues and management needs. In the Southeast it may be giant African snail or Burmese python; in the Midwest it may be Asian carp or Asian longhorn beetle; in the Southwest it may be feral pigs or fire ants. Looking at these few examples, it's easy to see how invasive species are costing the United States nearly \$120 billion in losses annually. This includes the litany of new invasive plants, insects, and animals USDA-APHIS works to stave off at our harbors and ports each year. I've heard countless examples from my fellow directors and commissioners of the invasive species issues their States face. These concerns have resulted in NASDA's current invasive species policy which requests the Federal Government to, "assert primary jurisdiction and assume a more dynamic leadership role in the interdiction and eradication of destructive invasive species."

I would like to close by respectfully offering some recommendations for your committee to consider as they look towards national solutions to invasive species. First, review and improve Federal agency funding for invasive species management. Look at what is being allocated in each agency budget for invasive species, track where that funding is going, and evaluate if the funds are used effectively.

Secondly, support localized, State, and regional programs with funding to meet short-term and long-term management needs. The technical knowledge of these groups is superior in their ability to decide what should be done and what is practical. Along with this, centralize a funding source that is easily understood and accessible but demands results. Emphasize direct mitigation, without discounting the need for education, administration, and research. Make the rate of compensation sufficient to do the job properly, especially on incipient populations. It should also support a "color blind" approach to agency land management boundaries.

Finally, hold Federal, State, and private entities fiscally responsible for any and all Federal dollars spent. Review the successes and failures of the programs and disseminate that information to other professionals in the field so they might learn and adapt their programs based on the data. Use those reports to help determine when costs exceed the benefits.

I appreciate the opportunity your Committee has provided today and look forward to answering any questions you might have.

QUESTIONS SUBMITTED FOR THE RECORD TO JASON FEARNEYHOUGH

Question. Please share some examples of plants and plant pests that move in interstate and foreign commerce that have become problems for State inspection, quarantine, agriculture and natural resource authorities.

Answer. Many of the invasive species Wyoming deals with were introduced through intra-State or foreign commerce. Wyoming lists 25 plant species as State priority weeds. Some of these plants such as Dalmatian toadflax and Russian olive were deliberately introduced as ornamental plants or trees and have escaped cultivation. Some weeds and pests such as Hoary cress, cheatgrass and emerald ash borer were introduced through packing materials. Other weeds such Russian knapweed and quackgrass likely made their way into the United States through contaminated seed. Many of the aquatic invasive species such as quagga mussels and Eurasian watermilfoil were likely introduced through ballast water discharge or through the aquarium trade.

According to the Hawaii Department of Agriculture they share some similar invasive species issues, in addition to some State specific concerns. They noted varroa mites which were accidentally introduced on the island of Oahu in 2007 from California. The varroa mites have been a significant issue for the contiguous United States since 1987. The introduction to Hawaii is notable as prior to 2007 the State represented a unique location within the United States to produce honey bees without the threat of varroa mites. Some of the more State-specific issues Hawaii deals with include little fire ants and coqui frogs introduced through imported plants, and siam weed and fireweed that were likely introduced through contaminated seed. Little fire ants and coqui frogs are also present in Florida, but are not currently found throughout the contiguous States.

Question. What are some examples of the associated costs to States for invasive species that have arrived via interstate and foreign commerce and then become established in States?

Answer. The costs of invasive species are staggering from the impacts side. The following is a small collection of the economic impacts from various invasive species.

- Leafy spurge costs producers and taxpayers an estimated \$144 million/year in just four States alone (MT, WY, ND and SD).
- It is estimated that \$16–\$44 million dollars of hydropower generation is lost annually due to the salt cedar invasion in the United States.
- Purple loosestrife is responsible for \$45 million/year in agricultural losses for the United States.
- Colorado wheat farmers estimate losses from cheat grass and jointed goatgrass to be near \$24 million annually.
- U.S. agriculture loses \$13 billion annually in crops from invasive insects, such as vine mealybugs.
- An aquatic invasive plant, Eurasian watermilfoil, reduced Vermont lakefront property values up to 16 percent and Wisconsin lakefront property values by 13 percent.

In Wyoming, the local Weed and Pest Control Districts collectively spend over \$15 million annually for the management of invasive species. Besides direct management, this includes salaries, equipment and other administrative costs. The State of Wyoming also allocates an additional \$350,000 for the management of invasive weeds and another \$1.5 million annually for the management of the invasive vector-borne disease West Nile virus. The Wyoming Game and Fish spends \$426,000 annually on the inspection of boats for aquatic invasive species. None of these figures include the costs associated with State quarantines, nursery stock inspection and seed inspection programs that assist in preventing the introduction of new invasive species in Wyoming.

Question. What limitations and opportunities are there for State agriculture and natural resource authorities to guard against new pest introductions at borders and other entry points?

Answer. Borders and entry points not only play a significant role in the international movement of weeds and pests, but as important of a role in minimizing the

interstate movement as well. States bordering Wyoming such as Utah, Idaho and Colorado have invasive plant infestations that are not yet established in Wyoming. These species include Yellow starthistle, Medusahead grass and quagga and zebra mussels. To help protect Wyoming's borders we utilize quarantines on non-certified hay and much, and utilize boat inspections at our interstate port-of-entries. Neighboring States such as Montana, Colorado and Idaho utilized boat inspection programs also to help stop the spread of the aquatic nuisance species. As successful as these programs are, there are often difficulties in funding staff at the interstate port-of-entries, and getting all vehicles to stop as required by law. The Rocky Mountain State Department of Agriculture's have created a system of communication to help track and report boats that have not been inspected as they travel across the regional States. Several infested boats have been stopped from launching into uninfested waters due the cooperative efforts of the States.

Question. Are there opportunities and limitations on the ability of Federal and State agriculture inspection and natural resource authorities to share real time data at ports of entry on potential high-risk pests, products and pathways moving between and into States?

Answer. Currently there are restrictions on information sharing between Federal and State agricultural inspectors resulting from the Federal preemption clause of the Plant Protection Act of 2000. Because States may not regulate foreign commerce and may not create restrictions on plants or plant pests that are not regulated by the U.S. Department of Agriculture, Federal agricultural inspectors are not prohibited to alert State agriculture inspectors of the discovery in foreign or interstate commerce plants or plant pests that may be of State concern but are not federally regulated. Encouraging joint inspection facilities that house both Federal and State agricultural inspectors, allowing information sharing between Federal and State agricultural inspections, and providing more flexibility in Federal preemption would provide opportunities for enhanced biosecurity.

Question. Please provide examples, opportunities and limitations related to Federal and State agriculture inspection and natural resource authorities engaging in real-time sharing of information and even being co-located at ports of entry.

Answer. A joint inspection facility was built at an airport in Kahului, Maui as part of a required mitigation effort.

Question. What are some examples of impacts to invasive species control anticipated due to reductions in Federal funds made available through the U.S. Forest Service's State and Private Forest Health Program?

Answer. Wyoming has received State and Private Forestry funds from the U.S. Forest Service for an Invasive Plant Management grant annually for 10 years. The program has been very successful for the State and its partners for the simplicity with which it is administered. In our case, the State of Wyoming has minimized their administration costs associated with the grant to no more than 2 percent. That means 98 percent of the Federal funds allocated to the State are used for actual "on the ground" invasive weed management. This program is a model for how States can adequately administer and implement programs through partnerships with Federal agencies and get funds on the ground. In most cases, Wyoming has utilized the funds from the program for State or private forests lands that neighbor Forest Service lands, thereby providing the National Forests an invasive weed buffer.

In 2004 Wyoming received \$173,000 from the program which we matched with \$486,000 of local, State and private funds in managing over 20,000 acres for invasive weeds. Wyoming, and most of the participating Western States, have watched the amount provided through the State and Private Forestry program decrease annually. This year Wyoming will only receive \$49,250 from the program and the result will be a significant reduction in the amount of acres we can treat.

Question. Can there be opportunities to utilize funds from the State and Private Forest Health program to control ungulates that impact forest health?

Answer. Our agency has been told that the funds provided to the Wyoming Department of Agriculture through the USFS—State and Private Forestry Health program are intended for the management of invasive plants. I am not aware if this is a Regional or National policy within the U.S. Forest Service, nor am I aware if any other State program is utilizing these funds for ungulate control.

Question. Different regions across the Nation face different invasive species challenges due to factors such as climate, elevation, etc; this is particularly the case for the tropical, isolated, island State of Hawaii. Biocontrol development for the highest priority pests nationally is not likely to benefit the unique challenges faced by individual regions. Are there any examples of efforts to account for the unique conditions of various regions in developing biocontrol priorities?

Answer. Wyoming recognizes the value bio-control provides for the long-term success of invasive species management and that high value crops receive precedence

in the research of new bio-control agents. Therefore the Wyoming Weed and Pest Council created a Wyoming Bio-control Steering committee that supports research into bio-control agents that meet the unique needs of our State. The committee allocates over \$250,000 annually of State and county funding into regional, national and international bio-control research. The committee allocates the funding using invasive specie specific grants for research into bio-control agents targeting those species the committee and State see as priorities. The prioritized species the committee target are often independent to those USDA-APHIS and other States might have. The committee and their funding played a significant role in supporting the research of two bio-control agents (*Aulacidea acroptilonicats* and *Jaapiella ivannikovi*) which were approved in 2011 by USDA-APHIS for the management of Russian knapweed.

After conferring with the Hawaii Department of Agriculture personnel, the Hawaii Department of Agriculture has a biocontrol program under its Plant Pest Control Branch that develops regionally specific biocontrol projects. This includes exploratory biocontrol efforts for which staff travel to similar tropical climates to search for appropriate biocontrol agents that can be tested for specificity on the invasive species in question.

Question. The Hawaii Invasive Species Council was modeled after the National Invasive Species Council (NISC) to recognize the importance of cabinet—level leadership and interagency coordination, planning, and prioritization in effectively addressing invasive species. A Hawaii representative from the State Department of Agriculture also serves on the national Invasive Species Advisory Council (ISAC). When was the last time the Council members of NISC or ISAC met and how often do they meet to fulfill the intent of Executive Order 13112 and support improved Federal, State and regional coordination?

Answer. I am aware of both the National Invasive Species Council (NISC) and the Invasive Species Advisory Council (ISAC). Wyoming does not have a representative on ISAC, but there are two individuals currently representing the Rocky Mountain region on ISAC. According to NISC staff the NISC Policy Liaisons meet on a monthly basis; the most recent meeting of the NISC Policy Liaisons occurred on June 6, 2013. The last full meeting of NISC was August 8, 2008, to approve the 2008–2012 National Invasive Species Management Plan. The two most recent meetings of ISAC were cancelled due to administrative and budget constraints; therefore the last actual meeting of ISAC was May 22–24, 2012 in Portland, Oregon. When discussing the current status of ISAC with a current committee member, they indicated they are willing to meet by teleconference if needed to fulfill their advisory duties.

The success of NISC and ISAC in supporting improved Federal, State and regional coordination is difficult to gage. Although NISC staff runs a supportive Web site, it's difficult to determine current activities or objectives of either committee. I would recommend a re-structuring of their current Web site to make the recommendations of ISAC, and the NISC responses easier to follow.

Please feel free to contact with any further questions or clarification needed. The State of Wyoming and the Wyoming Department of Agriculture looks forward to working with Congress on a solution to the invasive species issue.

Mr. BISHOP. Thank you for being here.

We will next turn to Ms. Debra Hughes. Now, your sign says you are the Association of Conservative Districts. “Conservative” is a good word. I realize you are actually “Conservation.” But, regardless, we are happy to have you here. You have 5 minutes, please.
[Laughter.]

STATEMENT OF DEBRA HUGHES, EXECUTIVE DIRECTOR, NEW MEXICO ASSOCIATION OF CONSERVATION DISTRICTS

Ms. HUGHES. Thank you very much. Chairman Bishop, Ranking Member Horsford, and members of the Committee, I do want to thank you for the opportunity. And, as was stated, I am the Executive Director of the New Mexico Association of Conservation Districts. But, in addition to being the director of NMACD, my husband and I also own and operate a ranch and hunting business in the Guadalupe Mountains near Carlsbad, New Mexico. And we

have been putting best management practices on the ground on our ranch for almost 40 years.

NMACD is a nonprofit organization and it is made up of the 47 soil and water conservation districts in New Mexico. Soil and water districts have a very unique opportunity nationwide, because they are the only local government entity that actually can work on any type of land ownership, be it private, State, Federal, or even tribal. Through different agreements and also through our statutory authority.

New Mexico is the Land of Enchantment. We have diverse ownership. And 40 percent of New Mexico is owned by the Federal Government, with 33 percent being owned by private land owners. Most ranches in the West include ownership and management of all these different types of land ownership. We have a diverse wildlife population, we have deserts, we have mountains. But we also have several prominent candidate species, such as the Dune Sand Lizard and the Lesser Prairie Chicken.

But since 2005, NMACD, with Federal, State, and private partners have worked together to create what we call Restore New Mexico. Prior to Restore New Mexico, our BLM was treating 10 to 15,000 acres of any type of land—restoring that in New Mexico. Restore New Mexico is this very aggressive partnership. We are working on woodlands, grasslands, riparian areas, to try to get it to a healthy, productive condition. As most of you are aware, when we had this fragmentation in the different land ownerships, it makes that very hard to work on a landscape scale. But we are doing it in New Mexico, regardless of the ownership. We strive to be color-blind, when it comes to the ownership and management of these State, Federal, and private lands.

Restore New Mexico represents this broad partnership, and the key players are our association, NMACD, BLM, NRCS, our Department of Game and Fish, the State university, and numerous other partners. And both BLM and NRCS of New Mexico both have the same visions for trying to just restore the health of the land.

Furthermore, we are working—I think what is making it work is they work with the local managers and the local ranchers to determine the most pressing projects, the best applications to accomplish these goals. This locally led process has enabled great success. And let me tell you about it.

Since the program's inception just less than 8 years ago, 2.1 million acres in New Mexico have—they were impaired habitat, and they have been treated, and now we have started that transition to a healthy ecological state. This expansive effort has been possible due to a strong relationship between NMACD, BLM, NRCS, and all our other partners. The way we have done it is NMACD has a cooperative agreement with BLM and the conservation districts, and we serve as the contracting agent, or have served, for over \$14.4 million from BLM. Since that same time, the NRCS has contributed \$11 million. And then other funds coming from private and all kinds of partners have been \$17.8 million.

The part I am probably the most proud of, while treating over 2 million acres, is that we function at a very high efficiency rate. The Restore New Mexico has placed over 93 percent of all of these dollars on the ground. This is possible because we have a very low

overhead to administer it, and we have figured out that when you do landscape-scale treatments, the economies of scale, you can treat more acres, you can lower that cost, and you can get it done much cheaper and much more efficiently.

Our proactive partnership improved enough habitat to keep the Dune Sand Lizard from getting listed. This is unprecedented success. It doesn't happen. But it has happened, and we have done it. We went from 10,000 acres to 2 million acres in under 8 years. And we have some slides with pictures.

But, Chairman Bishop and Ranking Member Horsford, I just want to thank you for this opportunity to be able to present our wonderful success story in New Mexico. We are very proud of it. And we appreciate your time, and I will be glad to try to answer any questions. Thank you.

[The prepared statement of Ms. Hughes follows:]

PREPARED STATEMENT OF DEBRA HUGHES, EXECUTIVE DIRECTOR, NEW MEXICO
ASSOCIATION OF CONSERVATION DISTRICTS

Chairman Bishop, Ranking Member Grijalva, members of the Subcommittee, thank you for the opportunity to testify today. I am Debra Hughes, Executive Director of the New Mexico Association of Conservation Districts. In addition to serving as NMACD's executive director, my husband and I operate Hughes Brothers Ranch & Hunting business in the Guadalupe Mountains near Carlsbad, NM. We have installed best management practices on our land for the past 40 years.

NMACD is a non-profit association whose members include the 47 New Mexico Soil and Water Conservation Districts (SWCD's). NMACD provides support to the local SWCD's on State and national issues, and works with the New Mexico Legislature, Congressional Delegations, and related governmental agencies. Conservation districts in New Mexico and nationwide are focused on empowering those at the local level to determine what is best for the natural resource concerns in a specific area. It is our belief that the local leadership has the best understanding and can have the greatest impact with the least expense. *Soil and Water Districts are the "only governmental agency" that has the ability to work on private, State, Federal and tribal lands through agreements and our statutory authority!*

New Mexico is the Land of Enchantment with diverse ownership and uses. Forty percent of our land is owned by the Federal Government—predominately by U.S. Forest Service (USFS) at 20 percent and the Bureau of Land Management (BLM) at 17 percent; 17 percent is owned by the State; 10 percent by the tribes; and 33 percent by private landowners, but most ranches in the West include ownership and management of private, State and Federal land. NM land uses include ranching and agriculture, oil and gas, and recreation, to name a few. We have diverse wildlife habitat from deserts to mountains; home to deer and elk and much more, including several prominent candidate species such as the Dune Sage Lizard and the Lesser Prairie Chicken.

Conservation districts are very concerned with the health of our State's beautiful landscape. Conservation districts work on threatened and endangered species, insect and disease concerns, wildfire prevention and rehabilitation, drought and water concerns, and, of course, invasive species. Since 2005, NMACD, along with Federal, State, private partners, and fellow non-governmental organizations have worked to create *Restore New Mexico*.

Restore New Mexico is an aggressive partnership to restore woodlands, grasslands, and riparian areas to a healthy and productive condition. In the West, as many of you are aware, the fragmentation of the landscape due to checkerboard land ownership and jurisdiction makes landscape level restoration efforts difficult. Restore New Mexico works to overcome those boundaries and have a positive impact on the land on a landscape level, regardless of ownership—Federal, State, tribal, or private. We strive to be "colorblind" when it comes to land restoration efforts and treatments across multiple jurisdictions and ownerships.

Restore New Mexico represents a broad partnership—the key players include NMACD, BLM, and Natural Resources Conservation Service (NRCS), along with the New Mexico Department of Game and Fish, and the New Mexico State University Jornada Experimental Range. Both BLM and NRCS have matching visions for improving the health of the land, lending significant strength and credibility to the

success of Restore New Mexico. Furthermore, Restore New Mexico works with the local land managers—conservation districts supervisors, BLM field staff, NRCS conservationists, and State officials to determine the most pressing projects and the best applications to accomplish those goals. This locally led process has enabled great success.

Since the program's inception, more than 2.1 million acres of impaired habitat have been treated, starting the transition to healthy ecological States. This expansive restoration effort has been possible due to the strong relationship between the BLM and NMACD. NMACD has a Cooperative Agreement with BLM, enabling us, the conservation districts, to serve as the contracting agent for over \$14.4 million in BLM dollars to distribute on the ground. Since 2008, BLM's contributions to Restore New Mexico have made up between 12 and 19 percent of the overall habitat treatments conducted by the BLM nationwide. Additionally, NRCS has made over \$11 million available for conservation projects. The resources provided by BLM and NRCS, coupled with \$17.8 million from other partners, have enabled Restore New Mexico to thrive to the successes we have seen today.

The part I am most proud of is that while treating over 2 million acres, we function at a very high efficiency level. Restore New Mexico places over 93 percent of the dollars on the ground for treatment. This is possible given that there is only a small overhead needed to administer the program. We also believe landscape restoration is efficient because of economies of scale; treating more acres per project lowers the cost per acre of treatments.

Thanks to our partners and relationships throughout the State, we have been able to monitor results on grasslands, thanks to the Jornada Experiment Station; soil moisture, thanks to the National Fish and Wildlife Foundation; conduct forest inventories, thanks to New Mexico Highlands University; photos for all treatment sites, post-monitoring to rereading the initial plots, and other post-treatment monitoring as necessary, all thanks to the BLM.

On a local conservation district level, 10 conservation districts have financial assistance agreements with the BLM for noxious and invasive weed treatments and weed education programs. The conservation districts include Otero, Socorro, San Juan, Upper Hondo, East Rio Arriba, Sierra, East Torrance, Cuba, Carlsbad, and Chaves.

Specific projects Restore New Mexico has been responsible for include Salt Cedar restoration work along the Delaware River, Creosote Restoration in Last Chance Canyon, Sagebrush and Juniper treatment south of Cuba, New Mexico, reclamation of the Sulimar Oil Field, Henery Tank Mesquite treatments, and Sagebrush shaving adjacent to the Taos Field Office. These are just a few of the examples of the capabilities of Restore New Mexico and the significant impact that is capable of local land management.

Chairman Bishop, Ranking Member Grijalva, thank you again for the opportunity to present the successes we have had in New Mexico locally managing natural resources concerns, including invasive species. I am happy to answer any questions you may have.

Mr. BISHOP. Thank you. I appreciate that. And our final witness is Mr. Ogsbury, right?

Mr. OGSBURY. Yes, sir.

Mr. BISHOP. From the Western Governors' Association.

**STATEMENT OF JAMES D. OGSBURY, EXECUTIVE DIRECTOR,
WESTERN GOVERNORS' ASSOCIATION**

Mr. OGSBURY. Thank you. Mr. Chairman, Mr. Ranking Member, members of the Committee, my name is James D. Ogsbury, I am the Executive Director of the Western Governors' Association, and I felt that the plaintive bagpipe hums provided the perfect background for this somber topic. So, Mr. Chairman, if you are inclined to turn them back on, I would be obliged.

The WGA represents the Governors of 19 Western States and 3 U.S. flag islands. Our association is strictly bipartisan, and I am honored to appear before you today to briefly summarize my written testimony. I will necessarily defer to the very impressive subject matter experts that you have assembled on this panel when it

comes to technical aspects of invasive species or the efficacy of overall operation of the current Federal programs.

I can, however, confidently represent on behalf of the Western Governors that, one, the problem with invasive species is substantial and growing in the Western United States; two, the issue is, on a bipartisan basis, a top priority of Western Governors; three, Western Governors are prepared to work with the Federal Government in an authentic partnership to develop and execute a more successful strategy to control, eradicate, and prevent introduction and proliferation of invasive species; four, the Western States have considerable competence and expertise with respect to addressing invasive species, and the application of their ability and their local knowledge must be a part of any effective solution; and, five, despite their expertise and skill, the States cannot adequately tackle this massive problem on their own. For one thing, invasive species do not respect the political/jurisdictional boundaries separating the States. For another, States lack the kind of resources that the Federal Government commands to implement on-the-ground solutions.

Governors are well aware of the negative impacts of invasive species, including threats to native plants, birds, reptiles, and mammals, many of which are endangered; electrical power outages; interference with water supply systems; increased wild fire vulnerability, especially from non-native grasses; and economic damages to lands and communities.

A couple of examples will illustrate the case. In Guam, an invasion of Brown Tree Snakes introduced to the island by U.S. Army Jeeps during World War II has resulted in the extinction of 12 native bird species. Non-native feral pigs introduced from the Philippines and rats continue to pose a health hazard to human residents of the island. Zebra and quagga mussels are spreading into more western water bodies each year. These organisms often settle in massive colonies that can block water intake and threaten water supply, agriculture, and power production. Western utilities and their customers are spending millions of dollars annually to clean out zebra mussels from intake facilities and then additional funds to retrofit those facilities to prevent future invasions.

Cheatgrass is an aggressive invader of western range land and forest areas. It grows and reproduces rapidly, overtaking native grasses, reducing available forage, degrading wildlife habitat, and increasing wild fire risks.

Western States and Pacific Islands are responding as best they can to the threat of invasive species. Colorado, for example, has launched the "Lend a Hand for Your Lakes and Lands" project, which is raising awareness about the problem of invasive weeds, such as Tamarisk, and engaging volunteers in control solutions.

Governor Bullock and the Montana Legislature took action this year to strengthen State laws regarding the control of aquatic invasive species, and committed a substantial boost in funding to support those efforts.

Idaho has long been at the vanguard of invasive species management, and has published a 5-year invasive species strategic plan. I respectfully request that a copy of the plan be included with our written testimony in the hearing record.

Pursuant to WGA policy resolution 10-4, "Combating Invasive Species," Western Governors are on the record calling for a better coordinated nationwide effort to control and manage invasive species. The Governors support a more focused and streamlined Federal approach to the invasive species problem, implementation of aggressive Federal invasive species control programs that result in more on-the-ground prevention, management, and eradication of invasive species, and improved governmental coordination, communication, transparency, and accountability with respect to invasive species programs and the expenditure of available taxpayer resources.

I will conclude by emphasizing the willingness of the Western States to engage in meaningful partnerships with the Federal Government to attack the problem. The Restore New Mexico partnership illustrates the potential of just such collaboration and Ms. Hughes has described the program and suggested its promise for other areas of the West.

Mr. Chairman, Mr. Ranking Member, members of the Committee, the WGA applauds you and the Subcommittee for your examination of this critical problem, and we would be pleased and honored to serve as a resource and a partner as you develop legislative solutions. Thank you.

[The prepared statement of Mr. Ogsbury follows:]

PREPARED STATEMENT OF JAMES D. OGSBURY, EXECUTIVE DIRECTOR, WESTERN GOVERNORS' ASSOCIATION

Mr. Chairman and members of the Subcommittee, thank you for providing the opportunity for the Western Governors' Association (WGA) to testify today. My name is James D. Ogsbury and I am the Executive Director of the WGA. WGA is an independent, non-partisan organization representing the Governors of 19 Western States and 3 U.S.-flag islands.

Western Governors are encouraged that the Subcommittee is focusing this oversight hearing on the insidious problem of invasive species, which poses a serious and growing threat to our region. Over the years, the Federal Government has invested substantial taxpayer resources to address this problem. Nevertheless, invasive species continue to proliferate.

Aquatic and terrestrial invasive species are causing extensive damage across western landscapes, coastal areas and Pacific Islands—and have been doing so for some time. In California alone, over 1,000 non-native species have been identified. All over the region, invasive species are harming natural environments and habitat, recreational uses, shore and marine uses, industrial and municipal uses, grazing, and timber harvests.

Invasions of non-native species are resulting in:

- Decreased biodiversity of native plants, birds, reptiles, and mammals;
- Increased vulnerability of native species, some of which are endangered and threatened species;
- Electrical power outages and disruptions;
- Physical disruption of water supply systems and increased flood damage;
- Increased wildfire severity (especially from non-native grass);
- Reduced value of Federal, State and private lands; and
- Economic harm to communities.

Let me illustrate the Governors' concerns with several specific examples of invasive species that are now creating challenges for the West:

Aquatic Mussels

Aquatic invasive species (such as zebra and quagga mussels) are spreading into more western water bodies each year. Western States are on high alert to contain, control, and prevent their proliferation. The most common sources for the introduction of these species are recreational watercraft and materials sold by aquatic plant and animal suppliers.

Invasion of these mussels result in impairments to water supplies for drinking, energy production, and irrigation. The economic consequences are severe. For example, the operators and customers of large power plants and water users are spending millions of dollars to clean out zebra mussels from water facilities and additional funds to retrofit those facilities to prevent future invasions. In addition, native fish and wildlife habitat are negatively impacted when these species become established in streams, lakes, estuaries and other water bodies.

Western States have committed significant resources to man watercraft inspection and decontamination stations for invasive species, but this tactic cannot be the only line of defense. California currently dedicates over \$7 million annually to prevent the spread of quagga and zebra mussels into and within State. Decontaminating quagga/zebra mussel fouled watercraft at their source, especially federally managed water bodies, such as Lake Mead National Recreation Area, is essential, or we will continue to witness the spread of quagga and zebra mussel to new areas in the Western United States.

These growing costs do not include local reservoir prevention program or control expenses for water agencies in southern California, including the Metropolitan Water District, which currently spends millions of dollars annually to treat infested Colorado River water. Interception—whether at the source or at the borders—is critical for California, where water project control costs can run as high as \$40 million dollars annually if mussels infest the system.

Cheatgrass

Cheatgrass is an aggressive invader of ponderosa pine, mountain brush, and other rangeland and forest areas in the West. Its ability to rapidly grow, reproduce and overtake native grasses makes it especially troublesome on ranges, croplands, and pastures. Where it becomes dense and dominant, cheatgrass can make wildfires even more severe because they burn easily. After a wildfire, cheatgrass thrives and out-competes native shrubby seedlings such as antelope bitterbrush.

Cheatgrass can also diminish recreational opportunities, reduce available forage, degrade wildlife diversity and habitat, and decrease land values. It is important to note that managed grazing practices have historically helped to reduce large, high-intensity range fires and, consequently, the spread of invasive species like cheatgrass. As grazing has become less prevalent on Federal lands, cheatgrass has had more opportunity to thrive.

Western States and Pacific Islands are responding as best they can at the local and State levels. For example:

- New Mexico's "Restore New Mexico Partnership"—working with the State of New Mexico, USDA–NRCS, and BLM—has now treated over 2 million acres of invasive species, including Russian Olive and Salt Cedar (Tamarisk) in the past 8 years.
- Colorado is piloting a collaborative effort between State, county and municipal governments to tackle land-based invasive weeds, such as tamarisk. The "Lend a Hand for Your Lakes and Lands" project is raising awareness about this significant natural resource challenge while engaging youth and other volunteers in management solutions.
- Island ecosystems and economies are particularly vulnerable to invasive species impacts. For example, Brown Tree snakes brought to Guam in U.S. Army Jeeps during the World War II have resulted in the extinction of 12 native bird species. The Pacific Invasives Partnership promotes coordinated planning and assistance from regional and international agencies to meet the invasive species management needs of countries and territories of the Pacific.
- Montana Governor Bullock and the 2013 Montana legislature strengthened State laws regarding the control of aquatic invasive species (AIS) and provided a substantial boost in funding to support those efforts. The new law establishes a statewide management area to prevent new AIS introductions through watercraft and equipment inspection stations at State borders. The Montana Department of Fish, Wildlife and Parks is the lead agency, with the Montana Departments of Transportation and Natural, Resources and Conservation also tasked with major responsibilities. The agencies are currently providing training for watercraft inspectors and establishing 20 highway watercraft inspection stations.
- In California, invasive aquatic plants, such as water hyacinth and other invasive plants have proliferated to the point that they: obstruct navigation and create hazards for boats and other watercraft; impair recreational uses such as swimming, fishing, and hunting; damage water delivery and flood control systems; alter water quality; and degrade the physical and chemical characteristics

of fish and wildlife habitat. California's aquatic weed control activities cost over \$6 million annually.

- The 100th Meridian Initiative is a cooperative effort among local, State, provincial, regional and Federal agencies to prevent the westward spread of zebra and quagga mussels and other aquatic nuisance species in North America, as well as to monitor, contain, eradicate and control zebra mussels and other aquatic nuisance species if detected.
- Idaho has long been at the forefront of invasive species management. Most recently, the State released the *Idaho Invasive Species Strategic Plan, 2012–2016*. WGA respectfully requests that the plan be included with our written testimony in the hearing record.

Despite best efforts, Western States and territories cannot adequately prevent or reduce the spread of invasive species on their own. Federal agencies own and manage more than 40 percent of the land in the West.

In 2010, Western Governors called for a better coordinated, nationwide effort to control and manage invasive species. WGA urged that available Federal funding be focused on the worst problems, regardless of land ownership, and targeted at the ground level on Federal and non-Federal lands to reduce invasive species. I am providing a copy of WGA policy resolution 10–4, *Combating Invasive Species*, as part of my testimony today.

Unfortunately, it seems little progress has been made at the Federal and regional level since 2010. Western Governors sent a letter to the leadership of House and Senate natural resources committees supporting new invasive species management legislation. The Governors urged the legislation to ensure:

- A more focused and streamlined Federal approach to the invasive species problem;
- Implementation of aggressive Federal invasive species control programs that result in more on-the-ground prevention, management, and eradication of invasive species;
- Opportunities for collaboration with States and Pacific Islands to prevent the spread of invasive species populations, avert new unauthorized introductions, and work together to set priorities for invasive species management;
- Improved intergovernmental coordination and communication regarding invasive species infestations in order to facilitate the most effective, cooperative and rapid response; and
- Increased transparency and accountability regarding how Federal funds are allocated and used for the prevention, control and management of invasive species.

We believe that those Federal agencies that have jurisdictional responsibility for land and water resources (i.e., Bureau of Land Management, Bureau of Reclamation, Office of Insular Affairs, U.S. Forest Service, and Army Corps of Engineers) must work with the States and territories to: implement aggressive invasive species control programs; provide grant resources for monitoring, intrastate interdiction and containment; and establish a rapid response to early detection of invasive species.

New Mexico's partnership program provides a great example of how effective this kind of Federal-State-local coordination can be when treating invasive species on public and private lands. The New Mexico Association of Conservation Districts has administered the funds for the BLM and has completed coordinated management plans for over 143 private ranchers. The NMACD has also executed and managed contracts for very large landscape scale treatment projects. The ability to do landscape scale treatment projects (with matching Federal, State, and private dollars) has resulted in lower per-acre cost of treatment.

Western Governors are keenly aware of the fiscal constraints under which Congress and the Federal agencies are currently operating. We believe, however, that an effective response to the economic and ecological devastation caused by invasive species can be achieved, if existing resources are deployed more wisely and efficiently.

As the Committee begins its work to draft invasive species legislation, Western Governors urge you to concentrate your efforts on what can make a difference where it matters: on the ground. States, in partnership with Federal agencies, have the expertise to run effective invasive species eradication programs.

Again, Western Governors urge the Subcommittee to pursue and champion invasive species legislation during the 113th Congress. Thank you for the opportunity to be a part of today's hearing on an issue of great importance to the Western States and Pacific Islands.

Western Governors' Association Policy Resolution 10-4

COMBATING INVASIVE SPECIES

A. BACKGROUND

1. The National Invasive Species Council (Executive Order 13112) defines an *invasive species* as “an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health.” The rapid spread of invasive species remains one of our country’s biggest environmental problems, a situation complicated by the sheer number of invasive species, lack of a coordinated and comprehensive effort to prevent introductions, monitor and survey for new introductions, and the remarkable ability of invasive species to adapt, reproduce and ultimately overtake entire ecosystems.

2. Invasive species are a global problem. The annual cost of impacts and control efforts equals 5 percent of the world’s economy. The U.S. Environmental Protection Agency estimates the country spends at least \$138 billion per year to fight and control invasive plant and animal species, such as the emerald ash borer beetles that have destroyed millions of trees in the East and Midwest. Invasive species influence the productivity, value, and management of a broad range of land and water resources in the West, ultimately limiting the direct and indirect goods and services these ecosystems are capable of producing. Over 100 million acres (an area roughly the size of California) in the United States are suffering from invasive plant infestations.

3. On a scale of biodiversity destruction, the EPA reports that invasive species rank second only to urban development. In addition, invasive species have been identified by the Chief of the U.S. Department of Agriculture Forest Service as one of the four significant threats to our Nation’s forest and rangeland ecosystems.

4. The Western Governors recognize that the spread of invasive species results from a combination of human behavior, susceptibility of invaded environments, and biology of the invading species. These characteristics are not dictated by geopolitical boundaries, but rather by ecosystem-level factors, including climate change, which often cross State borders. Scientists and land managers across the West have expressed the need to develop a strategy for more aggressive invasive species prevention, early detection, and management.

5. Invasive species have significant negative economic, social, and ecological impacts which include, but are not limited to:

- a. Reduction of the value of streams, lakes, reservoirs, oceans, and estuaries for native fish and wildlife habitat;
- b. Degradation of water resources for human uses including drinking water, energy production, irrigation systems and other water uses;
- c. Decreased real estate property value and increased costs of property development;
- d. Detraction from the aesthetics and recreational value of wildlands, parklands, and other areas;
- e. Degradation of ecosystem functions and values, including populations of desirable species;
- f. Reduction of the yield and quality of desirable crop and forage plants that are important in production of our food supply;
- g. Reduction of native biodiversity, resulting in a growing number of threatened, endangered and extinct species (Note: invasive species have contributed directly to the decline of 42 percent of the threatened and endangered species in the United States);
- h. High cost of control; and
- i. Reduction of preferred native vegetation important to native fish and wildlife as well as livestock.

6. Aquatic invasive species such as the zebra mussel, quagga mussel, and Eurasian water milfoil are spreading into more western water bodies each year. The most common sources for the introduction of these species in the West are recreational watercraft and materials sold by aquatic plant and animal suppliers. This is a regional, interstate issue and no Western State can independently implement programs to adequately prevent or reduce the spread of invasive species. The economic and environmental damage from aquatic invasive species will continue to rise in Western States without a well-organized and adequately funded effort to survey and monitor for invasive species as well as implement prevention, control, and eradication programs in each State to complement coordinated multi-State efforts.

7. Many of these invasive species were introduced, or their distribution was expanded, due to inadequate implementation of Federal regulations dealing with international trade and/or interstate commerce.

B. GOVERNORS' POLICY STATEMENT

1. Western Governors support coordinated, multi-State management and eradication actions to limit or eliminate intentional and unintentional introductions and improve control of invasive species. The principal objectives should be to maintain properly functioning natural systems and their associated native fish and wildlife populations, ensure agricultural productivity, enhance resource and environmental protection, and protect human health. Control programs should be economically practical in relationship to the long-term impacts an invasive species will cause.

2. Programs for the control and/or eradication of invasive species must incorporate education, prevention, and early detection and rapid response techniques.

3. Western Governors strongly encourage all natural resource management agencies, local governments, universities, nonprofit organizations and the private sector to collaborate and form partnerships with States to prevent the spread of invasive species, avert new unauthorized introductions, and work together to find creative new approaches for protecting and restoring natural, agriculture, and recreational resources.

4. Western Governors urge full funding support for invasive species management programs on Federal lands as well as financial assistance for state invasive species management, including the National Invasive Species Act and programs administered by the U.S. Department of Agriculture, Animal, Plant, and Health Inspection Service (APHIS) and U.S. Fish and Wildlife Service, and funding support for State invasive species councils. These programs provide valuable services in the detection and elimination of invasive species as well as coordination and communication, and their participation is essential for States relying on these services to maintain strong trade and export functions.

5. Western Governors encourage the federal government to:

- a. Assume responsibility and a direct partnership role with States in interstate interdiction of invasive species;
- b. Substantially increase grant funding to the States for monitoring, intrastate interdiction and containment; and
- c. Implement aggressive invasive species control programs within the Federal agencies (e.g., Bureau of Land Management, Bureau of Reclamation, U.S. Forest Service, Army Corps of Engineers) who have jurisdictional responsibility for land and water resources.
- d. Establish rapid response spending authorization for States responding to early detection of invasive species.

6. Western Governors support a coordinated regional approach to invasive species management. Of particular importance will be: a. Developing scientifically based and coordinated species lists between the States;

b. Developing efficient coordination and communication mechanisms to share information promptly with each other and the Federal Government to allow for the most effective cooperative and rapid response;

c. Establishing consistent and effective policies and procedures to prevent transport, sale and dispersal of undesirable species, particularly those under eradication in specific states; and

d. Increasing awareness and support for effective public outreach and education throughout the Western States.

C. GOVERNORS' MANAGEMENT DIRECTIVE

1. This resolution shall be posted on the Western Governors' Association Web site and shall be referenced and used as appropriate by Governors and staff.

2. Western Governors' Association staff shall coordinate within existing WGA committees, such as the Climate Adaptation Workgroup and the Forest Health Advisory Committee, to promote coordination and cooperation of invasive species management across agencies.

3. The Western Governors' Association shall seek financial and human resources to work with appropriate partners to facilitate the development and coordination of strategies to prevent the introduction and spread of invasive aquatic, riparian, and terrestrial species.

4. WGA shall support increased pass-through funding for invasive species management to States including funding for the Federal Highway Administration to support of State Department of Transportation invasive species management efforts.

Mr. BISHOP. Thank you, sir. And if you provide us with an Idaho plan we will add that as part of the record.

Mr. OGSBURY. Thank you, sir.

[The Idaho Invasive Species Strategic Plan 2012–2016, provided for the record by Mr. Ogsbury, has been retained in the Committee's Official files and can also be found at <http://www.agri.state.id.us/Categories/PlantsInsects/NoxiousWeeds/Documents/Idaho%20Invasive%20Species%20Strategy%202012-2016.pdf>.]

Mr. BISHOP. With that, we will turn to questions of our panel. Let me turn first to Representative Lummis, if you have any questions of these witnesses.

Mrs. LUMMIS. I do. Thank you very much, Mr. Chairman.

Mr. BISHOP. Thank you.

Mrs. LUMMIS. Before I begin, I have a confession to make to Dr. Beck. When I was a student at the University of Wyoming College of Agriculture. I was involved in a vast right wing conspiracy that did spirit the CSU ram from his pen and placed him in a pen at the University of Wyoming with Cowboy Joe, our pony. I was subsequently dragged into the President's office, along with some other ag students, and we did return the ram to CSU, unharmed. But I do have that history with regard to CSU. We are happy to have you here today, by the way.

My questions, first, are for Director Fearneyhough. Now, you are in charge of invasive species control in the State of Wyoming, is that correct?

Mr. FEARNEYHOUGH. That is correct.

Mrs. LUMMIS. And you testified briefly before about the variety of Federal agencies that you have to deal with in Wyoming. It is not just the BLM or just the Forest Service. It is multiple Federal agencies, is that correct?

Mr. FEARNEYHOUGH. That is correct.

Mrs. LUMMIS. When you are trying to respond to invasive species threats on a statewide basis, what kind of challenges arise when you are dealing with these separate agencies with separate budgets, separate species management philosophies?

Mr. FEARNEYHOUGH. Congresswoman Lummis, we work very closely with our Federal partners, and I want to make that clear.

However, Ms. Hughes talked about the color-blind approach and seeing the different colors on the map. The biggest challenge that we have, from my perspective, is exactly that. You mentioned policies and budgets and all of those things. We need a consistent way to act on lands as if they are just lands. We have heard today that invasive species do not recognize political boundaries, they don't recognize any of those budgets, any of those policies. They go where they want to go. We need to be able to be nimble and get on to the ground as quickly as we can to stop the threats that we have.

So, those are the challenges that you laid out right there, are that, that we have different sets of policies, different budgets that we are working with all the time, and the species just keeps promulgating itself.

Mrs. LUMMIS. There have been some regional approaches that have been discussed at this hearing. Could you elaborate on that, and how that is working?

Mr. FEARNEYHOUGH. Yes, Congresswoman. I can give you two examples, one of an invasive species—and this one isn't working—and one that—or hasn't worked very well—and one that is not an invasive species, but a threat to Wyoming that is. And I will start with the one that is working on the cheatgrass.

We have four States. I am in the western part of the United States, where the Governors had come together and they had signed an MOU to work together to stop cheatgrass because of the issues that we have with sage grouse. Because of what we just talked about a moment ago, the different budgets, policies, the problems that we encounter there, that MOU, that plan, is sitting on a shelf. It is not being able to be implemented. And the opportunity still lies there. We need, I guess, a mechanism to get it off the shelf and on to the ground. So there is a problem that isn't working.

On the Eastern side of Wyoming, we have the beetles, the Pine Beetles. We have the issue that is in two States, multiple counties, we are dealing with the BLM, with the Forest Service, the State of South Dakota, the State of Wyoming, and several counties. We have been able to utilize the Wyoming Department of Agriculture through the generosity of the State legislature in Wyoming, and also like members in South Dakota, with partnership with the Federal Government to get on the ground and start taking care of that problem. So——

Mrs. LUMMIS. You have talked, then, about prioritizing direct mitigation of these species, but you also mentioned research funding to be valuable. What type of research programs have helped you make a difference on the ground?

Mr. FEARNEYHOUGH. Congresswoman, again, I think all of that is important, all of the things that we have talked about. It is not just research, it is not just on the ground. It is a combination of doing it all. Because we have to use the research, though, to be applied. We have to get to a point where we can take what we are learning in the academic world and get it on the ground to deal with the species. This problem is broad-ranging, and we need to—I can't give just specifics from Wyoming because, as I mentioned, we have the different problems in different States throughout the country. But we need to make sure that research goes to the next step, where we have application, and get things on the ground.

Mrs. LUMMIS. I will defer now back to you, Mr. Chairman. So—will we have a second round? Excellent. Thank you very much.

Mr. BISHOP. OK. Ask questions—do you have any Ram stories?

Mr. HORSFORD. I actually do.

Mr. BISHOP. Oh, great.

Mr. HORSFORD. Not Thelonious, but——

Mr. BISHOP. Well, see, CSU and Wyoming are in different conferences now, so I don't care. But go ahead. I recognize Mr. Horsford for questions.

Mr. HORSFORD. Thank you, Mr. Chairman. My wife actually got her undergrad from CSU. And having attended the University of Nevada Reno, whenever there is a big game I always let her know that we often beat the Rams. So go Wolfpack.

[Laughter.]

Mr. HORSFORD. I never stole a ram, though.

[Laughter.]

Mr. HORSFORD. I appreciate very much the panel. And as I said, this is a very important topic. The Healthy Habitats Coalition and some of the testimony seems focused on noxious weeds. But as we indicated, we have a problem with cheatgrass in Nevada. We also have a problem with quagga mussels.

So, does it make a difference whether it is an aquatic species or a noxious weed, when we talk about funding for prevention versus control for the various panel members, if you could respond?

Mr. RIES. I can speak for the Forest Service and say that it does not. The big issues for us is identifying the various invasives that are out there, taking a look at the threats that they pose, evaluating our treatment options. What are the possible ways we can control that? And how effective might they be?

And then, in every situation I am aware of, we are working with our partners, both at the State and local level, to set priorities together so that we can move forward on those. So in some parts of the country we are involved in cheatgrass. And we are also involved in developing biological controls for it. In other parts of the country we have been very active and aggressive with our partners in looking at quagga mussels, as well as zebra mussels and other aquatic invaders.

Dr. BECK. All of the organisms are problematic and important. They all need to be dealt with. And we need a balanced approach to do so. We shouldn't favor one over another, maybe—unless it is something brand new and arrived, then that should be taken care of immediately. But otherwise, they are all bad. It is not just noxious weeds, and it is not just the mussels, it is not just the Burmese Python, it is all of them together.

Mr. HORSFORD. Thank you. One other area that you talked about, obviously, is effectively eradicating an invasive species, and particularly having a rapid response when it is first detected.

State agencies often view the new invader from the perspective of their own boundaries. How would you suggest that State and Federal agencies coordinate their responses to a new invader, when the ultimate impact might be widespread, but the initial responsibility to respond falls only to one State? Often times States have inadequate resources.

Dr. BECK. To make that, the system, work, early detection and rapid response, you obviously need a local set of eyes keeping track, because they are familiar with the area, and they live there, they are out, looking around. But ultimately, it needs to be borderless, it needs to be collaborative. We need everybody communicating, open lines of communication to address this very issue, just as you suggest.

Mr. FEARNEYHOUGH. Congressman Horsford, I would agree with that. I think that it is important that we work together. We have opportunities. And, of course, in Wyoming, our biggest issues tend to be insects and weeds. We do have some of the—we are trying to keep quagga mussels out.

But I think if you have the opportunity to even work with another State to keep a weed, for instance, or an invasive species that is in that State from coming into your State, it ultimately reduces

the pathway of that invasive species to move across the country. I think that prevention is done through rapid response.

Mr. HORSFORD. Anyone else?

[No response.]

Mr. HORSFORD. Governors' Association, maybe?

Mr. OGSBURY. I think that we should develop a model where the State governments, the Federal Government, the conservation districts, private interests, are all at the table to develop broad-scale strategies, kind of on a landscape-basis, much like what they have done in New Mexico.

So, when the rapid response is required, people have already kind of talked that through and they are on the same page, and there is a much more—a better common-sense of the problem, and a more collaborative solution that has already been kind of deliberated upon.

Mr. BISHOP. Thank you. Mr. Stewart, according to theme here, is it going to be a Utah State story? In fact, I don't even know where you went. If you say BYU, you don't even get to ask questions, but—

Mr. STEWART. OK. Well, I am going to excuse myself at this time, then.

[Laughter.]

Mr. BISHOP. You are recognized for 5 minutes.

Mr. STEWART. I went there for a year, until I almost got kicked out, but it wasn't for ram-stealing. I would like to make that clear.

I am assuming, Mr. Chairman, that it is my time, then? Thank you.

Like many of us here, I am from a Western State, and I appreciate this hearing, Mr. Chairman. I appreciate your expertise. And for those of you, service to your Nation, service to your States, and your expertise. And I would like to use this opportunity to actually educate myself, rather than pretend that I am an expert in this, because I am not, and ask some questions that some of you may think, well, those are silly, or maybe I should know that. But I really would appreciate some clarification.

Invasive species are alien species that can cause economic or environmental damage. I understand that. But I am wondering, are you concerned about native species, as well, that can also cause economic or environmental concern? Do you spend any efforts on what we would, I guess, scientifically consider a native species?

Some of you are nodding your head, I guess. Would you mind jumping in and say yes, you do? Or where is that on your priorities?

Mr. RIES. And I can start that, speaking from the perspective of the Forest Service.

Mr. STEWART. OK.

Mr. RIES. And a really good example that we see throughout the West is with Mountain Pine Beetle.

Mr. STEWART. Is what?

Mr. RIES. Mountain Pine Beetle.

Mr. STEWART. Yes, OK. Yes, absolutely, yes.

Mr. RIES. And we have had instances, significant losses of spruce to Spruce Beetle in Utah.

Mr. STEWART. Right, right.

Mr. RIES. And those are natives. And we do spend a significant amount of resources, really, along the same lines as we do for invasives. We look for an early detection of a new outbreak of a native species when it begins to do harm, and gets out of the background. We apply direct control measures. We work on biological control measures, and we also look at restoration work once—

Mr. STEWART. Many of the same things, then.

Mr. RIES. Yes, sir.

Mr. STEWART. And so, I am noticing again many of you shook your heads. I recognize this hearing is on invasive species, but that is not the only problem. You also have to deal with the natives, as well. And you deal with them, I am assuming, in much the same way, as far as mitigating the harm, the processes are much the same. Is that true? Yes, OK. Thank you.

Then again, we have heard a number of examples. You have talked about the aquatic mussels or the cheatgrasses or some of the native species, the Bark Beetle, which many of us are concerned about. And I think, from a visual perspective, it is one of the more obvious ones. The mussels, for example, you may not be as aware of because of that.

But recognizing that these are very different species, very different economic or environmental remedies to them, that they concern different constituents or different groups for different reasons, are there any that seem to rise to this is the number-one priority, or this is the greatest danger that we face right now? Is there any consensus among you at all that this is our primary concern? Or maybe two, top one or two.

Dr. BECK. Well, Representative Stewart, I actually was asked that question earlier this week, and it is very difficult to pin down a top one, top two, or top three. But every State and every county within the State will have a priority group that they will work on.

Typically, when something is new, then that receives priority immediately through early detection and rapid response for the obvious reason. We do not want it to become a cheatgrass, or something of that nature. So it is not a moving target, but the priorities are adjusted as necessary.

Mr. STEWART. OK. So among you, maybe those who haven't responded—yes, I am sorry, Ms. Hughes? Yes. You seem to want to answer that. If you would.

Ms. HUGHES. Well, Mr. Chairman, Congressman Stewart, it really depends on the location, and it depends—I mean because we have done a large amount of just Mesquite treatment, which is a native, but it was invading so bad, and it was affecting the habitat area of the Dune Sand Lizard and Lesser Prairie Chicken. So, therefore, it was a priority, even though it—so it is going to depend on the location and what all the other species are.

I mean Pinyon-Juniper invasion, even though they are native, is a huge factor because of wild fire and drought issues. Salt Cedar is a huge problem because of water issues. So every State and every locale—

Mr. STEWART. Has its own challenge.

Ms. HUGHES [continuing]. Is going to have its own challenges.

Mr. STEWART. So, I think if you were to ask most people in my State, for example, most of them would think of the Bark Beetle,

because it is most visual. But the reality is, A, it is not invasive, it is native. Same problem, have to deal with it. And, B, it doesn't seem to be the most worrisome to you at all. There are many others that you are at least equally concerned with. Is that true?

Mr. FEARNEYHOUGH. Congressman, if I may?

Mr. STEWART. Yes.

Mr. FEARNEYHOUGH. I believe that, yes, it depends, as Ms. Hughes just stated, the issues that face Florida and California are very different than the issues that face Wyoming, and those are different than the issues that even face my neighbor, Utah, in many cases.

Mr. STEWART. Yes.

Mr. FEARNEYHOUGH. So it is a very location-based problem.

Mr. STEWART. OK. And I view that as being good news and bad news. I mean the good news is there is not one major problem that seems so overwhelming that everyone has agreed this is the priority for us now. The bad news is that there is a wide range of other problems that are so different, there is no real concerted effort to take care of it. And it is going to take the efforts of a lot of people from a lot of different backgrounds to do that. OK. Thank you for your questions and your responses.

Mr. Chairman, having run out of time, I yield back.

Mr. BISHOP. I appreciate it. Let me ask a couple question in here. And there will be another round for everybody if there are more questions.

Mr. Ries, first of all, you cited several different acronyms of invasive species partners and efforts under which you work. So, my question is, who is in charge, as far as the Federal Government's agencies, to coordinate these efforts to address this issue? Who actually is in charge?

Mr. RIES. There is an Invasive Species Council composed of Federal agencies that oversees the work that all of us do. It helps us set priorities and assures that we are operating consistently.

Beyond that, as we move into individual locations, we in the Forest Service are responsible for the National Forest System and BLM, of course—

Mr. BISHOP. Let me just take one step further. The council to which you refer has been there for quite a while, a couple administrations, at least. And it is made up of multi-agencies and districts. Do they—does that Council, though, have authority to make decisions, or do they generally try to coordinate and make recommendations?

Mr. RIES. They coordinate, they make recommendations.

Mr. BISHOP. All right.

Mr. RIES. They—

Mr. BISHOP. We still have a diffuse authority that is out there. What authorities does your agency have to let State and local entities manage invasive species on national forest land?

Mr. RIES. We operate under a couple of different authorities, but primarily through cooperative agreements, my experience is with cooperative weed management areas in Idaho. When we all got together in an area similar to what Ms. Hughes describes in New Mexico, that group determines what their priority invasives are—

Mr. BISHOP. I understand cooperative agreements. Do you have the authority to let State and local governments take lead and take charge of this program?

Mr. RIES. Not that I am aware of.

Mr. BISHOP. How much does it cost the Forest Service per acre to do invasive species treatment?

Mr. RIES. Our costs vary significantly, depending on the species and the location. In remote wilderness areas in Idaho and Montana, where we are packing herbicide in on horseback, costs can be as high as \$1,000 an acre.

Mr. BISHOP. All right.

Mr. RIES. And if we are spraying for Gypsy Moth, costs can be as low as \$25 to \$35 an acre.

Mr. BISHOP. OK. Mr. Beck, if I could ask you a couple of questions now. Ms. Hughes said 93 percent of their revenue actually gets on the ground. Your coalition, I understand, has made some estimates of what the Federal money actually gets on the ground. And I understand it is as low as 7 percent. Is that a ballpark figure?

Dr. BECK. For weed control, yes, Mr. Chairman, that is a close ballpark figure. If you put in the other monies from, like, APHIS, for example, it does go up.

Mr. BISHOP. How effective has the invasive species management plans produced by this National Invasive Species Council been?

Dr. BECK. Sadly, I would have to say that it has not had the effect that we would desire. When I served on the Invasive Species Advisory Committee, that was one of the frustrations.

Mr. BISHOP. All right, thank you. Let me ask Mr. Dye a couple of questions, if I could, then.

Your testimony mentioned the billions of dollars being spent by municipalities and private property owners to address invasive species. Can you talk about their success rate in curbing invasive species?

Mr. DYE. As we have heard here today, it is a very challenging problem. It requires the effort of many agencies. And to say that we have been totally successful, we would be hard-pressed, except for those relating to the Asian Longhorn Beetle that you heard reference to earlier.

The important thing is that we work closely together. And most importantly is to stop the invasive species at our shores, before they arrive. That is the most cost-effective method to address the problem.

Mr. BISHOP. I thank you. Let me turn to Ms. Hughes for a second, if I could.

You said that 40 percent of New Mexico is Federal land. I wish ours was that low. I will trade you 27 percent, if you would like it. How much of that is infested by the invasive species, relative to State and privately owned land, the 33 percent you were talking about?

Ms. HUGHES. Mr. Chairman, I don't have an exact number. But in working with the BLM, before we started the Restore, they estimated that 5 million acres of just BLM land needed some kind of treatment. And we have done 2.1 million. So just the BLM, I would estimate at least another 3 million acres. I don't have numbers for

the Forest Service; I would expect it to probably be even higher. But I do think on the private land we have probably done a lot better job, because we have been working with them for years through the farm bill.

Mr. BISHOP. Right.

Ms. HUGHES. And there is less on the private land.

Mr. BISHOP. I am out of time, I apologize. But you did say that the BLM was treating, like, 10 to 15,000 acres. You are now doing 2.1 million acres. Thank you.

There will be another round. Mr. Horsford, do you have other questions?

Mr. HORSFORD. I do. Thank you, Mr. Chairman. Just briefly, each of you quickly, if you could, tell me. In your experience, is a focus on pathways or vectors of introduction a more effective approach in trying to prevent introductions of a particular species?

[No response.]

Mr. HORSFORD. Quickly, because I have only got 5 minutes.

[Laughter.]

Mr. RIES. Yes, it is the most cost-effective thing we can do.

Dr. BECK. Pathways management is very powerful, but we need a balanced approach for the whole problem.

Mr. DYE. I totally agree that we must address the pathway. It is the most cost-effective way to do that, and stop the invasion.

Mr. FEARNEYHOUGH. I am in agreement that the pathways are important. But we also have to remember, Congressman, that we have these invasive species here, in many instances, already. So, they have come down the pathway in many places, so we need to address them where they are, as well.

Ms. HUGHES. I think we have got to pay attention to the fact that a lot of these are coming off of our Federal lands and affecting our private land owners. So the pathway is—they are already in our State and they are coming off our Federal lands. If we don't work together, we have more problems.

Mr. OGSBURY. The Western Governors have not endorsed any specific strategies for invasive species control, but they have enacted broad principles to address the problem.

Mr. HORSFORD. If I can get a copy, maybe, of those broad principles separately, or through the Committee.

The USDA Forest Service adopted in December 2011 an internal directive to Forest Service Manual 2900 for invasive species management: "The final invasive species directive will provide foundational comprehensive guidance for the management of invasive species on aquatic and terrestrial areas of the National Forest System." Have each of you reviewed how this policy will address some of the problems that you have identified? And specifically, how this could be part of the coordination among our local, State, and Federal partners?

[No response.]

Mr. HORSFORD. Just jump in there Mr. Dye or someone. When you—it counts against my time when you are not responding.

[Laughter.]

Mr. DYE. Excuse me, sir, but I am not totally familiar with the manual that you mentioned. I am sorry.

Mr. RIES. And, of course, I have reviewed it. And it is really designed to better coordinate our efforts internally and set the tone for working with partners externally.

Mr. HORSFORD. So how is that shared, then? He is the State Association of State Foresters. How are they not informed about a manual that is supposed to improve coordination, when they don't know about it?

Mr. RIES. And that manual is the direction to our forest supervisors and district rangers, our folks in the field. So we don't routinely provide a copy of our internal policy to State Foresters. But my hope is that all of our partners will notice the difference.

Mr. HORSFORD. OK. So, regarding how to get agencies to work better together, I mean we hear about this all the time in this Committee in particular, and some of you have some demonstrated successes. How can the land-managing agencies effectively manage the many pathways of introduction by which new invasive species are introduced to lands and waters under their management? Any suggestions? Ms. Hughes?

Ms. HUGHES. Mr. Chairman and Congressman Horsford, I just think it is all about partnerships. When you work together, you have got more people out there, we are working across different landscapes. We actually are in the process of doing a master service agreement with the Forest Service, so that we can do the same kind of thing as we are with the BLM, because the local people on the ground are the ones that know this and see these things. And I think that is part of the answer: more partnerships at the local level.

Mr. FEARNEYHOUGH. Mr. Chairman, Congressman, I would agree with that. I think that some of the examples that I gave, where we had some successes were based in partnership. But in that partnership you need an avenue to get everybody to work together. So partnerships are key.

Mr. HORSFORD. Thank you, Mr. Chairman. I think one of the questions I will just ask—maybe if you can all respond to separately at some other point—is the sustainability of partnerships. It is one thing to get them going, but how do you sustain them over time, particularly when we are talking about different types of species that happen at different points? And while there might be an interest today, how do you sustain that in a future process?

Mr. BISHOP. Thank you. Mr. Stewart, do you have more questions?

Mr. STEWART. Yes. Maybe I will just do this briefly. And we will go down the row, if we could. Are there Federal policies in place right now that make what you are trying to do more difficult?

Mr. RIES. From our perspective, no.

Mr. STEWART. No?

Mr. RIES. We believe we have what we need, and—

Mr. STEWART. OK. You don't feel like there is any Federal policies or laws that tie your hands in trying to respond to these invasive species in an appropriate way.

Mr. RIES. Well, in terms of forming partnerships to do that, and establish local priorities, and work together, no.

Mr. STEWART. OK. Any others? Do you feel like your hands are tied, or it is made harder because of some Federal policies?

Mr. FEARNEYHOUGH. Mr. Chairman, Congressman, I think that a specific policy is probably not the obstacle that we see, from a State perspective, it is often that there are several conflicting policies or, for instance, Forest Service operates one way, BLM operates another, Department of Defense operates another. Trying to work through that often times is the obstacle.

Mr. STEWART. OK. Yes, Ms. Hughes?

Ms. HUGHES. Mr. Chairman, Congressman Stewart, the whole NEPA process can be an obstacle. But what we have learned to do is do bigger, and include everybody at one time, instead of going out there and doing a clearance on private land, a separate one on State, and a separate one on BLM. We do it together. And it is much more cost-effective, and it helps us get through that very difficult process much more economically.

Mr. STEWART. OK. Does the NEPA process frustrate you sometimes in trying to deal with these things?

Ms. HUGHES. Mr. Chairman, Congressman Stewart, yes, it does. But we have learned to work within it, and we know it is a requirement, and we just make it happen together.

Mr. STEWART. OK. Anyone else want to respond to that?

[No response.]

Mr. STEWART. Oh, you cowards. You may be the only people in America who would look at that question about does Federal policy make my life more difficult or what I am trying to do more challenging and not want to answer that question.

Let me ask it in a slightly different way, then. Other than asking for more money, which, of course, is, in some perspectives, the answer to everything, what is it that we could do to help you? What would you ask Federal regulators—which isn't us, necessarily—or those who have some input on that? What could we do to help you in your goal to contain or to mitigate the impacts of some of these invasive species? Any thoughts or suggestions? Again, Ms. Hughes.

Ms. HUGHES. Mr. Chairman, Congressman Stewart, I just think if more of the funds could be directed—if the Federal agencies could be directed to work more locally with the States and the local governments. I mean, yes, they are required to do it in NEPA, but they don't necessarily always do it.

We have found out that we can actually take part of our farm bill dollars, spend it on Federal land, we can spend some of the Federal dollars on private land through the Wyden Amendment. There are ways, there are avenues to do it if you really want to. But just a little carrot, a little incentive to every State, all 50 States and territories, to take some of this invasive money and get it down to that local level, I think, brings people together.

Mr. STEWART. OK.

Ms. HUGHES. Those incentives—

Mr. STEWART. I appreciate your response on that. I think that is probably right. Anyone else, as far as what we could do to help you? Yes?

Mr. DYE. I would like to point out a partnership that we have in the State of West Virginia, the Potomac Highlands Weed and Pest Management Area. We cooperate with all of our Federal partners, NRCS, U.S. Forest Service, National Park Service, and then the State Department of Agriculture the Division of Forestry, and

we bring in the Nature Conservancy. We do not stop at the West Virginia State line. It extends into Virginia. That has been one of the best programs, bringing everyone together on the ground at the ground level. The program was initiated by the U.S. Forest Service. I applaud the step they took to bring the group together. And I am amazed at how it functions as a team together to address the issues as they come. I see that as a wave of the future in the Eastern portion of the Nation.

Mr. STEWART. Thank you, Mr. Dye. Yes, Mr. Beck?

Dr. BECK. Representative Stewart, I think strong leadership also would be helpful. Therefore, what I am saying, we need someone saying, "You need to do this," the you being the Federal agencies. And I will use a case that happened in Colorado a couple of years ago, where an invasive species coordinator for one of the forests at a State—a Noxious Weed Advisory Committee meeting suggested—well, he didn't suggest, he said that invasive species simply weren't a priority for the forest.

Mr. STEWART. Yes, OK. Thank you. Mr. Chairman, I yield back.

Mr. BISHOP. Mr. Ogsbury, if I could ask a simple question. The impact of the spread of invasive species on Federal land, how does that impact efforts on State and local management?

Mr. OGSBURY. Thank you, Mr. Chairman. If one neighbor, whether it is the State or the Federal Government or a private land owner, treats for an invasive species and an adjoining neighbor does not, then the chances are really good that the treatment dollars will be wasted because of the spread of the species from the non-managed area. An entity can spend an enormous amount of money treating invasive species on its land, only to have that species travel from nearby lands—through air or human or vehicle transport—back to the previously treated area.

So, I think the problem is particularly acute in the West, given the large amount of land that is in a checkerboard pattern. And it really calls, again, for more cooperative management on a larger landscape scale, much as they have done in New Mexico.

Mr. BISHOP. I appreciate that. So, Dr. Beck, you were saying that the issue, then, is we are growing the infestation area at three-and-a-half times what we are solving. Was that the slide that I saw?

Dr. BECK. Yes, Chairman Bishop. We are acquiring many, many more acres than we are treating and restoring, correct.

Mr. BISHOP. So we are in the wrong trajectory with this issue. We are just going in the wrong direction in this issue.

Dr. BECK. That is correct.

Mr. BISHOP. So, Ms. Hughes, how did you get 93 percent of your funding to get on the ground? And why are you able to do this when obviously the Federal Government is not putting that high of a percentage of the money dedicated to this issue on the ground?

Ms. HUGHES. Mr. Chairman, it probably includes several things. One is working through the local soil and water conservation districts. They are elected officials, but they are not paid. So we have some of that administration happening there. We are doing such large landscape-scale projects that it is taking the cost down per acre. We have been hiring retired Federal employees as contractors, which also helps take the cost down. So it is a whole various amount of things that are going on, and the private land owners

are matching the dollars, oil and gas companies are matching the dollars. Just a lot of people are coming together because we all have the same goal.

Mr. BISHOP. And you are doing it with—didn't you say it was a ground-up—locally led process was the word that you used.

Ms. HUGHES. Yes, sir.

Mr. BISHOP. Mr. Fearneyhough? I am still mispronouncing that, aren't I?

Mr. FEARNEYHOUGH. You are fine.

Mr. BISHOP. All right. Can you just talk about the success of your State invasive species management program, versus your experience with the Forest Service and BLM in Wyoming?

Mr. FEARNEYHOUGH. Mr. Chairman, again, we work with them very closely. I think that the dollars that we are afforded that come through the Federal system, we are far more efficient with. Now, we receive funding through the Department of Agriculture. There are also monies that go straight to the counties. But for similar reasons to what you just heard, when we get those monies we are able to put them on the ground at a greater rate of efficiency. I would say that we do that as well with our State funds that we have.

Mr. BISHOP. Well, there are several States—Wyoming is one, Utah, others—that have devoted considerable State resources to improve habitat, so you can avoid the onus of the Federal—actually, my staff said Federal U.S. Fish and Wildlife. I had a different adjective in front of that one, but we will go with “Federal.”

So they won't be listing the sage grouse under the Endangered Species Act. Do you feel the efforts to improve sage grouse habitat by getting rid of or eradicating cheatgrass is being undermined by the lack of a similar action on the Federal lands in Wyoming?

Mr. FEARNEYHOUGH. I think in trying to control cheatgrass, I think—as I spoke to earlier—the issue is the variety of policies that you end up having to deal with. Now we are throwing U.S. Fish and Wildlife Service into the mix, along with the actual land management agencies. The policies that you deal with there are very hard to overcome. And that is whether you are dealing with just the NEPA, or if you are dealing with the actual trying to get something applied on the ground. It is very difficult to overcome those—

Mr. BISHOP. Well, then let me follow up with that—with the last question that Representative Lummis wanted to ask you, and did not have time to do it. She wrote, “I understand that there were several layers of approval for the use of pesticides on public lands, starting with the EPA and then going through the different processes employed by each agency. Do you think streamlining that process is something Congress should be looking”—she ended in a preposition; I can't do that. We should be looking at that?

Mr. FEARNEYHOUGH. Mr. Chairman, yes. I think that you should be looking at it. The example, as I understand it, in that instance, where we are talking about pesticides specifically, you have a pesticide that is approved by EPA. Then it also has to go through an approval process through BLM. Then it has to go through an approval process for the Forest Service, and on down the line.

So, it would be great if we had an opportunity that, once something is approved by a Federal agency that should be concerned with those pesticides, that everyone else accepts that, and we can get it on the ground.

Mr. BISHOP. Thank you. Mr. Horsford, do you have other questions?

Mr. HORSFORD. If I could just follow up to the last question you asked, Mr. Chairman.

So, your last response to the Chairman's question. What happens when the approval only deals with one type of species, and then a different Federal agency has a interest or a scope or responsibility in another. When you say just to approve something, you could be closing off the opportunity to address another invasive species. Correct?

Mr. FEARNEYHOUGH. Ranking Member Horsford, I understand the question. I think that possibility does exist. But in the examples that we are seeing, we are seeing it is approved for Plant X on BLM—or through the EPA. So BLM then has to go through a process to approve it for the same plant, or the same insect, and then on down the line.

Certainly I think when you have that approval process, it should be very robust. You should make sure that the chemical or whatever the agent is that you are using is a viable and safe agent. However, once it gets approved for a species, I believe that it should be accepted by others.

Mr. HORSFORD. So just to clarify, then, your response is that the approval among different Federal agencies should be based on addressing an invasive species, not to mitigate other factors which may need different approval processes. Correct?

Mr. FEARNEYHOUGH. Ranking Member Horsford, yes, that is correct.

Mr. HORSFORD. OK. And then, Mr. Hughes, I really appreciated your perspective and the work that you are doing with Restore New Mexico. And I think it comes down to leadership. It sounds like you have a can-do attitude and you bring the stakeholders to the table. And that probably helps push that envelope. And it sounds like you are being very creative about how to deploy those resources.

I am interested in knowing how much Federal land is there in New Mexico, as a percentage?

Ms. HUGHES. Congressman Horsford, we have 40 percent Federal land—

Mr. HORSFORD. OK.

Ms. HUGHES [continuing]. In New Mexico.

Mr. HORSFORD. So most of this is being done with State and private land activity. In my State of Nevada, we are over 80 percent Federal land. So—

Ms. HUGHES. Yes, sir. With this Restore New Mexico, it has been all types of land included: State, Federal, private, all together.

Mr. HORSFORD. And I completely agree with your approach, bringing everybody together, regardless if they are State, private, Federal, to work on projects in an inclusive manner. Even though it may not be a particular area's interest today, it will be tomorrow.

So the more that you can keep them engaged in understanding the big picture—but I do think, Mr. Chairman, there is a bit of a disconnect sometimes because in some States the ability to act or react, like in New Mexico, is very different than in a State like Nevada, or another State that has so much Federal land, to where we are reliant on those Federal agencies doing their job, because we can't do that on our own. And I think that has to be taken into account with these Federal policies.

Let me just end by asking—all of you talked about the need to work together better and to create comprehensive solutions to invasive species. And it is not new, right? And we have heard this many times, and we continue to hear similar concerns. Why has there been limited progress in national efforts to work together and to take on the bigger problem? And what is the one thing that you would recommend to help improve that?

Ms. HUGHES. Congressman Horsford, the BLM, after they started working with us, they told us themselves that their contracting process was their worst enemy. In other words, it took them forever to actually just get an RFP out and get money on the ground. And once they signed the overall agreement with us, that the money could go to the local level, and we could do the RFP, we actually are getting those same Federal dollars on the ground within a couple of months, where it might take them a year to 2 years.

Mr. HORSFORD. OK.

Ms. HUGHES. So—

Mr. HORSFORD. Contracting? If everybody else could quickly answer that, just one recommendation that would help improve the process.

Mr. OGSBURY. Well, one recommendation I might offer is to look for other models where this kind of collaboration has been successful. And the one that I would cite would be the Western Region Cohesive Wild Land Fire Management Strategy, which brings together a diverse array of Federal, State, and private partners. Everybody is at the table developing common goals and strategies and objectives for the prevention and control of wild fires.

Mr. DYE. I wouldn't give up on the National Invasive Species Council. There is a framework there with coordination, communication, just a continued emphasis among those Federal agencies. And for them to focus on partnerships at the ground level, like I described in the Potomac Highlands Cooperative, it can be very effective.

Mr. FEARNEYHOUGH. Mr. Chairman, with permission, I think that making sure—again, we have heard the word “partnership” a lot today. But I think that we need those partnerships. We also need a mechanism to make sure that the people that are in different locations have the opportunity to say, “This is where we need to focus our resources today.”

And as I mentioned earlier, the east coast is different than it is in Wyoming and in California. So I think that we need to have a very strong local input, wherever that is.

Dr. BECK. Mr. Chairman and Representative Horsford, I think, again, very strong leadership beginning back here in Washington, D.C. is very important. But that leadership, the voice of leadership,

has to be felt through the entire system, all the way down to the ground, to assure that we work together.

Mr. RIES. Mr. Chairman and Ranking Member Horsford, two parts to your question. One was why haven't we made more progress on this. And I think we continue to learn. But as Dr. Beck described, this is a huge problem. This is significant all across the country. And I think the common theme toward solution is one that you have heard around this table over and over again, and that is that we need to work together. We need to partner up. And we need to cooperate locally to identify priorities and work together to deal with them.

Mr. BISHOP. I appreciate all of you being here. I appreciate your testimony, as well. There may be other questions that Members have that we would submit to you, and the record will be held open for 10 days for those responses, if possible.

I think today is one of the first times I know this Committee has actually looked on this particular issue. And I think there is a couple of things that are very clear from the testimony that you have given. One is we are spending a great deal of money on an issue but we are not necessarily getting the money on the ground to the problem that has to be there, and solving that problem.

The second is we are doing all sorts of coordination efforts, but sometimes those are too many and too complex and at differing approaches to it. We have a structural problem in actually going after this in a reasonable way over several different kinds of jurisdiction lines. And I think the positive aspect is we have seen how some local entities have been able to actually solve this problem and deal with it very effectively, if we change the structural issues and we also change some of the spending habits that we have. And this is a problem that is not going to go away.

And, as Dr. Beck indicated, this is a problem that is growing, even though we are spending more money at it. We are not solving it. So we have to start having a basic paradigm shift here, that we have to look at this in a different way, because it's not working in what we are doing. As much as we would like to work together in a wonderful way and coordinate our efforts, we are not doing it. We have to do something drastically different. And I appreciate your testimonies and your input.

If there is nothing else—I guess it is just us. If there is nothing else, right? This Subcommittee will stand adjourned, and I appreciate, once again, your willingness to be here.

[Whereupon, at 11:33 a.m., the Subcommittee was adjourned.]

[Additional Material Submitted for the Record]

LETTER SUBMITTED FOR THE RECORD BY THE NATURE CONSERVANCY

4245 N. FAIRFAX DRIVE,
SUITE 100, ARLINGTON VA,
22203-1606, MAY 16, 2013.

The Honorable ROB BISHOP, *Chairman*,
 The Honorable RAUL GRIJALVA, *Ranking Member*,
Subcommittee on Public Lands and Environmental Regulation,
U.S. House of Representatives,
Washington, D.C. 20515.

DEAR REPRESENTATIVES BISHOP AND GRIJALVA,

The Nature Conservancy (The Conservancy) appreciates the attention that the Subcommittee on Public Lands and Environmental Regulation is devoting to the important threat posed by invasive species. We would like to take this opportunity to add our thoughts to your deliberations. We hope thus to contribute to thoughtful innovations aimed at improving the efficacy of programs intended to reduce the damage caused by invasive species.

The Healthy Habitats Coalition (the Coalition) has identified serious shortcomings in our Nation's response to the damage caused by invasive species and brought Congressional attention to the important task of managing invasive species on Federal lands. The Conservancy applauds the Coalition for achieving this progress. However, the Conservancy feels that the language provided by the Coalition stops short of addressing the pathways by which additional invasives enter the country. Until these pathways are closed, managing established populations will be a never-ending burden due to constant new introductions. The Conservancy would like to offer our suggestions on the structure of an effective, comprehensive invasive species program.

Our Recommendations

(1) Implement a mechanism for coordinating federal invasive species programs and ensuring that priorities and strategies are aligned across agencies.

(2) Grant appropriate agencies authority to manage invasive species that currently fall outside any agency's jurisdiction.

(3) Where agency authority is inadequate to managing invasive species or pathways of introduction, enact strengthening amendments; e.g., the Lacey Act.

(4) Provide sufficient resources to agencies to enable them to carry out their responsibilities for preventing introduction and spread and managing established populations of invasive species.

(5) Support research and outreach programs essential to improving programs' efficacy.

(6) Adopt metrics for gauging program efficacy that measure success in preventing introduction and spread, closing off pathways of species movement, and resulting in long-term control or removal of invasive species.

Background

The Problem

The Conservancy agrees with the Healthy Habitats Coalition that:

(1) Invasive species impose huge costs on our resources and our economy;

(2) The Federal Government effort has increased compared to 20 years ago, but agencies still have too little capacity and authority. Nor are efforts sufficiently coordinated;

(3) There is a need to increase agencies' accountability, improve measurements of programs' efficacy—and make changes where programs are not effective;

(4) It is helpful to build support and capacity at the State, regional, and community level, and encourage voluntary cooperation of affected private entities and communities.

The problem is not new; the Office of Technology Assessment 20 years ago observed U.S. Government programs that address invasive species are scattered among a myriad of agencies and authorized by numerous statutes. It would be beneficial if all these programs applied the same principles.

Coordination

Currently, the responsibility for coordinating Federal agencies' programs and encouraging action by other parties falls to the National Invasive Species Council. The Council has lacked sufficient authority to ensure coordination across the member agencies. The Conservancy supports efforts to re-invigorate programs aimed at coordinating invasive species strategies and activities, while we remain open to ideas on how best to achieve this goal.

Preventing Introduction and Spread

Several Federal agencies have responsibility for prevention programs targeting various types of species, based on the agencies' legislatively mandated responsibilities:

- USDA Animal and Plant Health Inspection Service (APHIS)—invasive plants; plant pests; parasites & diseases of livestock and poultry.
- USDI Fish and Wildlife Service (FWS)—invasive vertebrate animals and some invertebrates.
- Coast Guard and Environmental Protection Agency—organisms transported in ballast water.
- Centers for Disease Control—human health threats.
- DHS Customs and Border Protection—general authority over all incoming people, goods, and vehicles; has formal collaborative agreements with some agencies, e.g., APHIS.

Authority for regulating introduction and spread of some types of potentially invasive organisms is unclear. These include:

- Diseases of wildlife that don't attack livestock or poultry, *e.g.*, whitenose syndrome of bats; chytrid fungus of amphibians.
- Invertebrates that are not plant pests and that are not currently listed under the Lacey Act, *e.g.* horseshoe crabs.
- Pests that attack only dead plants, *e.g.*, termites.
- Pests that are nuisances to humans but do not spread disease or attack agricultural plants; for example, APHIS originally classified the brown marmorated stinkbug as a nuisance species and therefore declined to attempt to contain its spread.
- Invasive marine animals and plants.
- Hull-fouling organisms.

None of the existing "prevention" programs is succeeding in preventing introductions of damaging invasives. APHIS has strong and broad authorities under the Plant Protection Act, and has the most resources of any agency with invasive species responsibilities. Nevertheless, APHIS staffing and funding are still inadequate to implement fully programs for which the agency is responsible. The FWS Lacey Act program is an example of a program hampered by weak legislative authority and completely inadequate resources.

A Comprehensive Approach

Regarding invasive species program components and priorities, the Nature Conservancy continues to emphasize policies and actions intended to prevent introductions of additional non-native species to the United States or to North America more broadly. We include under this umbrella actions that enable early detection of new invaders and rapid response to eradicate or contain them. Our experience has led us to focus on pathways or vectors of introduction as a more effective approach than trying to prevent introductions of particular species. Once a species has been detected inside the United States or in North America, eradication and control methods need to combine measures addressing both pathways of movement (*e.g.*, firewood, boat trailers) and species-specific attributes (*e.g.*, detection methods; biocontrol agents).

To create strong and effective invasive species programs, the Congress should ensure that agencies tasked with preventing introductions or eradicating or containing early-stage invasions have adequate funding and the following attributes:

Prevention Programs:

(a) Statutory authority to regulate both potentially invasive organisms and the pathways or vectors by which they are moved. This authority should include the power to set conditions for importation, inspect incoming articles, detain or destroy non-compliant articles, and inspect and quarantine premises that receive imports. It is best if the agency is also authorized to regulate interstate movement.

(b) Sufficient resources to enable timely completion of the following tasks:

- (i) Evaluate potential introductions and pathways;
- (ii) Conduct risk assessments and other analyses;
- (iii) Adopt appropriate actions to prevent those introductions or close those pathways;
- (iv) Promulgate regulations and comply with the National Environmental Policy Act;
- (v) Carry out other program responsibilities, *e.g.*, inspection of shipments, interactions with affected businesses and stakeholders to identify practical

approaches, enforcement (including investigations, preparation of cases, holding hearings, legal prosecutions, etc.);
 (vi) Conduct outreach and extension programs in support of the program (e.g., to encourage compliance);
 (vii) Carry out research needed to improve risk analysis, prediction, detection, and control measures;

Early Detection and Rapid Response programs:

- (a) Research capacity to develop
 - (i) Detection and control tools (e.g., pheromone traps);
 - (ii) Understanding of principal pathways and vectors so as to target detection and enforcement efforts where they will provide the greatest return on investment;
- (b) Detection networks deploying appropriate tools and targeting appropriate pathways or vectors. This must include engagement by
 - (i) Entities engaged in moving articles that can transport the pest of concern (e.g., shippers using crates, pallets, or other packaging made of wood);
 - (ii) Concerned public;
- (c) Official reporting and communicating capacity; outreach capacity;
- (d) Lead agency with clear authority for responding to incursion and a command structure to manage the response; working relationships with collaborators (Federal, State, local, non-governmental). Over the years, several models for such programs have been suggested, including the Interagency Fire program, Centers for Disease Control, and oil spill emergency response.

Most introductions of new species to the United States occur in cities and suburbs—where imported goods arrive and are disseminated; or at ports, estuaries, and the Great Lakes. Federal land-managing agencies (e.g. USDA Forest Service, Bureau of Land Management) do not have jurisdiction over either these geographic areas or the pathways of introduction. Congressional support for invasive species programs will be most effective when it is focused on agencies (e.g. National Oceanic and Atmospheric Administration, Coast Guard, APHIS, FWS) with jurisdiction over pathways and authority to operate in these geographies.

Role of Land Management Agencies

While the Conservancy believes the highest priority is to prevent additional introductions, we agree that it is important to establish and fund programs aimed at minimizing damage caused by the thousands of invasive species already in the country. Numerous entities implement such programs, including a half dozen or more Federal land-managing agencies, State agencies, county weed districts, and private property owners. *Effective invasive species control programs* should aim to:

1. Prevent introduction to lands or waters¹ under their jurisdiction of new potentially invasive species;
2. Detect presence of and respond rapidly to control new potentially invasive species;
3. Prevent spread of invasive species on lands or waters under their jurisdiction;
4. Prevent spread of invasive species *from* lands or waters under their jurisdiction to others' properties;
5. Reduce or eradicate invasive species populations while encouraging recovery of native species and maintaining or restoring the utility of the lands or waters for intended purposes;
6. Educate people associated with the lands or waters about invasive species to gain their cooperation (and possibly enhance their invasive species control and stewardship efforts more generally).

Components of *effective invasive species containment programs* operated by land-managing agencies should include:

1. Prevention (see relevant sections above; statutory or regulatory authority is usually limited to the lands or waters under the agency's jurisdiction);
2. Early detection programs and rapid response powers (see relevant sections above; include appropriate staffing and funding);
3. Staff and funding dedicated to management of established invasive species to conceive, plan, and oversee actions; sometimes, to carry out those actions;
4. Research and development (in-house or external) focused on understanding the invasion process, developing detection and management tools, monitoring, etc. ap-

¹It is unclear to us whether the Healthy Habitats Coalition proposal now addresses aquatic organisms and waters under Federal jurisdiction. The Conservancy supports a comprehensive approach.

propriate to the invasive species that threaten the lands or waters under the agency's jurisdiction.

It is to the advantage of resource and land-managing agencies that agencies charged with preventing introductions are as effective as possible. Therefore it is appropriate that land-managing agencies assist or support prevention agencies' efforts. For example, the USDA Forest Service has conducted research into Asian longhorned beetle biology and provided staff (smoke jumpers) to carry out tree canopy searches for the beetle.

Need for Sustained Effort

Management of any specific invasive species or group of species requires a long-term effort. Management of pathways or vectors of introduction and spread requires a perpetual program. Long-term programs function most efficiently when they enjoy long-term stability of funding and are guided by expert staff. Research and outreach to stakeholders are vitally important components of effective invasive species prevention and control programs. The Conservancy is therefore concerned that the Coalition's proposal to restrict funding to these activities (set at 5 percent each) will undermine programs' efficacy. Funding should be driven by priorities and program effectiveness based on performance metrics, rather than by a percentage allocation.

Metrics

The Conservancy agrees that programs should be held accountable for performance. Developing appropriate metrics will be difficult. "Acres treated" is easy to understand, but is not very meaningful and, in a comprehensive program insufficient because:

1. It does not enable assessment of the most important activity—preventing species' introduction and spread;
2. It does not measure activities that target pathways or vectors rather than invaded areas;
3. It does not measure whether the treatment was effective in eradicating or reducing the target invasive species.

The Conservancy proposes some alternative metrics—although we recognize difficulties in applying all of them:

- Rate of new invasions; possibly categorized by type of invader or geography;
- Acres infested and change over time (e.g., range expansion or contraction of targeted species);
- Economic impact of invasive species;
- Number of species intercepted.

Moving Forward

The Conservancy is interested in innovative suggestions for improving invasive species efforts at all levels of government. In this paper we describe some of our ideas for a comprehensive invasive species program. We think that the Healthy Habitats Coalition has started a discussion that should be pursued in the context of addressing the whole invasive species problem. Even if everything cannot be accomplished immediately, the entire system can be envisioned, priorities set, and strategic progress made. There may be better uses for the existing resources, but these should be carefully evaluated with the goal of improving overall program effectiveness.

