AUTHENTICATED
U.S. GOVERNMENT
INFORMATION
GPO

SAFEGUARDING AMERICAN AGRICULTURE FROM WILD, INVASIVE, AND NON-NATIVE SPECIES

HEARING

BEFORE THE

SUBCOMMITTEE ON LIVESTOCK AND FOREIGN AGRICULTURE

OF THE

COMMITTEE ON AGRICULTURE
HOUSE OF REPRESENTATIVES

ONE HUNDRED SIXTEENTH CONGRESS

FIRST SESSION

NOVEMBER 14, 2019

Serial No. 116–23

Printed for the use of the Committee on Agriculture
agriculture.house.gov

U.S. GOVERNMENT PUBLISHING OFFICE
40–283 PDF WASHINGTON : 2020

COMMITTEE ON AGRICULTURE

COLLIN C. PETERSON, Minnesota, *Chairman*

DAVID SCOTT, Georgia
JIM COSTA, California
MARCIA L. FUDGE, Ohio
JAMES P. McGOVERN, Massachusetts
FILEMON VELA, Texas
STACEY E. PLASKETT, Virgin Islands
ALMA S. ADAMS, North Carolina
Vice Chair
ABIGAIL DAVIS SPANBERGER, Virginia
JAHANA HAYES, Connecticut
ANTONIO DELGADO, New York
TJ COX, California
ANGIE CRAIG, Minnesota
ANTHONY BRINDISI, New York
JEFFERSON VAN DREW, New Jersey
JOSH HARDER, California
KIM SCHRIER, Washington
CHELLIE PINGREE, Maine
CHERI BUSTOS, Illinois
SEAN PATRICK MALONEY, New York
SALUD O. CARBAJAL, California
AL LAWSON, Jr., Florida
TOM O'HALLERAN, Arizona
JIMMY PANETTA, California
ANN KIRKPATRICK, Arizona
CYNTHIA AXNE, Iowa

K. MICHAEL CONAWAY, Texas, *Ranking Minority Member*
GLENN THOMPSON, Pennsylvania
AUSTIN SCOTT, Georgia
ERIC A. "RICK" CRAWFORD, Arkansas
SCOTT DESJARLAIS, Tennessee
VICKY HARTZLER, Missouri
DOUG LAMALFA, California
RODNEY DAVIS, Illinois
TED S. YOHO, Florida
RICK W. ALLEN, Georgia
MIKE BOST, Illinois
DAVID ROUZER, North Carolina
RALPH LEE ABRAHAM, Louisiana
TRENT KELLY, Mississippi
JAMES COMER, Kentucky
ROGER W. MARSHALL, Kansas
DON BACON, Nebraska
NEAL P. DUNN, Florida
DUSTY JOHNSON, South Dakota
JAMES R. BAIRD, Indiana
JIM HAGEDORN, Minnesota

ANNE SIMMONS, *Staff Director*
MATTHEW S. SCHERTZ, *Minority Staff Director*

SUBCOMMITTEE ON LIVESTOCK AND FOREIGN AGRICULTURE

JIM COSTA, California, *Chairman*

ANTHONY BRINDISI, New York
JAHANA HAYES, Connecticut
TJ COX, California
ANGIE CRAIG, Minnesota
JOSH HARDER, California
FILEMON VELA, Texas
STACEY E. PLASKETT, Virgin Islands
SALUD O. CARBAJAL, California
CHERI BUSTOS, Illinois
JIMMY PANETTA, California

DAVID ROUZER, North Carolina, *Ranking Minority Member*
GLENN THOMPSON, Pennsylvania
SCOTT DESJARLAIS, Tennessee
VICKY HARTZLER, Missouri
TRENT KELLY, Mississippi
JAMES COMER, Kentucky
ROGER W. MARSHALL, Kansas
DON BACON, Nebraska
JIM HAGEDORN, Minnesota

KATIE ZENK, *Subcommittee Staff Director*

CONTENTS

	Page
Conaway, Hon. K. Michael, a Representative in Congress from Texas, opening statement	3
Costa, Hon. Jim, a Representative in Congress from California, opening statement	1
Prepared statement	3
Submitted letter on behalf of James D. Ogsbury, Executive Director, Western Governors' Association	43
Harder, Hon. Josh, a Representative in Congress from California, submitted chart	86
Peterson, Hon. Collin C., a Representative in Congress from Minnesota, opening statement	27
Rouzer, Hon. David, a Representative in Congress from North Carolina, opening statement	4

WITNESSES

Ortega, Ricardo, General Manager, Grassland Water District, Los Banos, CA	6
Prepared statement	7
Submitted questions	86
Thompson, J.D., D.V.M., Beth S., State Veterinarian, Executive Director, Minnesota Board of Animal Health, Saint Paul, MN	8
Prepared statement	10
Erickson, Bret, Senior Vice President for Business Affairs, J&D Produce Inc., Edinburg, TX	13
Prepared statement	15
Reichert, Kurt, Director of Fumigation, Western Industries—North, LLC; d/b/a Western Fumigation, Lester, PA	18
Prepared statement	19
Gaskamp, Joshua A., Technical Consultation Manager and Wildlife and Range Consultant, Noble Research Institute, LLC, Ardmore, OK	21
Prepared statement	23

SAFEGUARDING AMERICAN AGRICULTURE FROM WILD, INVASIVE, AND NON-NATIVE SPECIES

THURSDAY, NOVEMBER 14, 2019

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON LIVESTOCK AND FOREIGN AGRICULTURE,
COMMITTEE ON AGRICULTURE,
Washington, D.C.

The Subcommittee met, pursuant to call, at 10:03 a.m., in Room 1300 of the Longworth House Office Building, Hon. Jim Costa [Chairman of the Subcommittee] presiding.

Members present: Representatives Costa, Brindisi, Hayes, Cox, Craig, Harder, Plaskett, Carbajal, Peterson (*ex officio*), Rouzer, DesJarlais, Hartzler, Comer, Marshall, Hagedorn, and Conaway (*ex officio*).

Staff present: Malikha Daniels, Prescott Martin III, Katie Zenk, Ricki Schroeder, Patricia Straughn, Jeremy Witte, Dana Sandman, and Jennifer Yezak.

OPENING STATEMENT OF HON. JIM COSTA, A REPRESENTATIVE IN CONGRESS FROM CALIFORNIA

The CHAIRMAN. The Subcommittee on Livestock and Foreign Agriculture's hearing will now come to order.

The topic of this morning's hearing is safeguarding American agriculture from wild, invasive, and non-native species, a challenge that has plagued American agriculture throughout the various regions of our country historically, and one that American agriculture has to contend with and we hope to have a balanced group of witnesses to testify here today as to those challenges.

And obviously, while the Subcommittee's jurisdiction is on livestock and foreign agriculture, a lot of our focus as it relates to these issues of wild, invasive, and non-native species relate to the foreign agricultural part of the jurisdiction of this Subcommittee, because as we know, so much of American agriculture is exported and oftentimes we have to contend with issues on our ability to market our products abroad with regards to issues of invasive species that are non-native species that other parts of the world argue that may not meet phytosanitary standards, and it is a part of our challenge and a part of our effort.

I welcome the attendees here today, the Members of the Subcommittee, and we look to hold a good hearing with the witnesses that we have before us.

I want to thank everybody for being here. Obviously, the impacts of invasive and non-native species impact agricultural supply chains. We have a group of witnesses here that deal with these issues regularly, and how we in fact deal with steps on importers and exporters that we attempt to try to keep invasive species from impacting the various commodities that we produce so that trade can continue.

The Subcommittee oversees key parts of the U.S. Department of Agriculture's functions that addresses Wildlife Services at the Animal and Plant Health Inspection Service as well as the Department of Agriculture trade promotion efforts.

Recently, I had an intervention with USDA working on a problem that we had with China on tomato seeds, for example.

Our discussion is going to complement the good work of our colleagues on the Biotechnology, Horticulture, and Research Subcommittee, of which we have some Members here this morning who serve on that Subcommittee as well, as well as the Conservation and Forestry Subcommittee. And so the hope is to, while there is overlap, to complement our efforts with the other two Subcommittees.

Specifically for my own background, I can tell you in California that we have a host of these issues both in invasive and non-native species. Examples of those is the nutria populations that have damaged wetlands and farmlands, but they have also taken hold in Maryland and they have taken hold in Louisiana as well.

We also have wild birds that have played a role in introducing virulent Newcastle Disease in poultry flocks, and while in other states these animals have also been linked to similar damage and disease that has taken place. It is an issue that affects the entire country, region to region.

In the 2018 Farm Bill that we all worked on together, we started a pilot project to address the issue of feral swine in the Southeast. I look forward to hearing more about how the initial implementation of this program is going. If the pilot project is working well, I would suggest to Members here, the Subcommittee and the full Committee, that this might be a model to address invasive species issues in the future. And so we need to look at that.

Along our southern border and our ocean ports, the seasonal nature of the specialty crop industry means trucks and barges carrying fruits and vegetables from outside the U.S. are potential vectors for dangerous pests that have not yet been established in this country. And I have been at the border both through California all the way to Texas and I have seen the concern and the attempt to address that from ensuring that it doesn't happen.

For all these reasons and more I think many of our colleagues today here are joined with the agriculture inspector resources at our ports and other points of entry. We can't expect Customs and Border Protection or the Department of Agriculture to evolve its capabilities to match these evolving threats in my view without the resources to do so, and I think that is one of the things we want to hear about here today is whether or not we are actually providing the necessary resources to do that.

[The prepared statement of Mr. Costa follows:]

PREPARED STATEMENT OF HON. JIM COSTA, A REPRESENTATIVE IN CONGRESS FROM CALIFORNIA

Thank you all for joining us today as we hold this hearing to examine the persistent challenges posed to our agricultural supply chains by wild, non-native, and invasive species.

I am happy to host these witnesses and to discuss the ways U.S. farmers and ranchers are controlling key invasive species domestically as well as the steps importers and exporters are taking to keep invasive species out. These are important steps so that agricultural trade can continue to flow.

This Subcommittee oversees key U.S. Department of Agriculture functions that partner with industry to address these issues, including Wildlife Services at the Animal and Plant Health Inspection Service as well as the U.S. Department of Agriculture's trade promotion efforts. Our discussion will complement the good work of our colleagues on the Biotechnology, Horticulture, and Research Subcommittee as well as the Conservation and Forestry Subcommittee as we work on different aspects of these pressing concerns.

In California, expanding nutria populations damage wetlands and farmlands, and wild birds have played a role in introducing virulent Newcastle Disease into poultry flocks, while in other states, these animals have been linked to similar damage and disease.

The 2018 Farm Bill also started a new pilot to address the issue of feral swine in the Southeast, and I look forward to hearing more about how the initial implementation of this program is going and to consider if this pilot program could be a model to address other invasive species issues in the future.

Along our southern border and at our ocean ports, the seasonal nature of our specialty crop industry means trucks and barges carrying fruits and vegetables from outside of the U.S. are potential vectors for dangerous pests that have not yet established in this country.

For all these reasons and more, I, and many of my colleagues have joined a bill to increase agriculture inspector resources at our ports and other points of entry. We can't expect Customs and Border Protection or the Department of Agriculture to evolve its capabilities to match these evolving threats without the resources to do so.

With that, I want to welcome our witnesses and recognize my esteemed Ranking Member, Mr. Rouzer of North Carolina, for any remarks he would like to make.

The CHAIRMAN. With that said, I want to make sure that all Members understand that in consultation with the Ranking Member pursuant to Rule XI(e) to make sure that Members of the Subcommittee are aware that other Members of the full Committee may join with us today. Obviously we welcome that participation.

I want to welcome our witnesses and recognize my esteemed Ranking Member, Mr. Rouzer, from North Carolina for any remarks.

Mr. ROUZER. Do you want to recognize Conaway?

The CHAIRMAN. Sure. We have former Chairman, Ranking Member Conaway here. Would you like to open?

OPENING STATEMENT OF HON. K. MICHAEL CONAWAY, A REPRESENTATIVE IN CONGRESS FROM TEXAS

Mr. CONAWAY. Well, sure. Thank you. Thank you, Mr. Chairman, I appreciate that.

I want to thank Chairman Costa and Ranking Member Rouzer for having me here today.

I would like to touch on one of the more devastating examples of invasive species that is currently affecting Texas in addition to the Southeast, much of our country, is called feral swine. Farmers, ranchers and landowners have been dealing with the destruction caused by wild pigs for decades. Most estimate that feral swine cause over $1.5 billion of damages each year, with at least $800 million of that amount attributed directly to agriculture. But the

problem is growing so much that it is not just affecting those in rural areas.

In 2017, the Dallas City Council authorized a 3 year service contract for control and abatement of feral hogs on city property. Feral swine are capable of breeding at just 6 months and have a gestation period of 115 days. They reproduce at such a high rate that you would have to remove more than ⅔ of the feral swine population every year just to keep the population stable.

These hogs can be vectors for several diseases, including foot-and-mouth and African Swine Fever. Feral swine have also had an unbelievable impact on native species and ecosystems. According to USDA, feral swine have played a role in the decline of nearly 300 native plants and animals in the U.S. alone.

I am proud that in the 2018 Farm Bill we established the Feral Swine Eradication and Control pilot program, directing APHIS and NRCS to coordinate the removal of feral swine, restore habitat, and provide assistance to producers for feral swine control. We funded the program with about $75 million, and in June USDA announced funding availability for projects in nine states including Texas.

I am glad we are holding this hearing to review the impact of non-native species on American agriculture, and want to thank all the witnesses for being here today and sharing your perspectives with us. I look forward to your testimony.

Mr. Chairman, I yield back. Thank you.

The CHAIRMAN. Thank you very much, Congressman Conaway.

I will now defer to the Ranking Member of the Subcommittee, Representative Rouzer from North Carolina.

OPENING STATEMENT OF HON. DAVID ROUZER, A REPRESENTATIVE IN CONGRESS FROM NORTH CAROLINA

Mr. ROUZER. Well, thank you, Mr. Chairman. I look forward to today's hearing to consider how we are currently safeguarding American agriculture from wild, invasive, and non-native species, and to discuss what steps we can take to improve these efforts.

Invasive species pose a significant threat to the success of production agriculture and environmental stewardship, and it is important that we continue to improve the coordinated national strategy to both prevent the introduction of invasive species and to eradicate the ones that we already have.

In the 2018 Farm Bill we made significant strides in safeguarding American agriculture from invasive pests. Mirrored after the successful Plant, Pest, and Disease Prevention Program, we created a National Animal Disease Preparedness and Response Program, providing funding for USDA to enter into partnerships with states, universities, and others to fund targeted prevention, preparedness, detection, and response activities.

The farm bill also provided funding, as has been mentioned already, for a Feral Swine Eradication Program, which as of today has made funding available for projects in nine states.

While our trading relationships continue to benefit American farmers and ranchers, increasing levels of imports come with additional pest and disease threats, and as I have said at nearly every hearing, in fact almost everyone probably on this Committee has said it at one time or another, it is so critically imperative that we

ratify USMCA. In addition to increased market access and the numerous protections and economic benefits that will stem from ratification of this agreement across the agricultural industry, USMCA will foster further opportunities between the three countries to monitor, prevent, detect, and eradicate invasive species.

I want to thank our witnesses for being here today. Each of you play an important role in safeguarding American agriculture, and we thank you for it.

Mr. Chairman, I yield back.

The CHAIRMAN. Thank you very much. The chair would request that other Members submit their opening statements for the record so we may begin with our witnesses and their testimony to ensure that there is ample time for questions.

I would like to welcome all of our witnesses and introduce you collectively before we begin.

First, Mr. Ric Ortega, who I have worked with over the years. General Manager and Director of Policy and Governmental Affairs for Grassland Water District in Los Banos. Congressman Cox and I share the kind of overlap of the entirety of Grassland Water District. It is the largest wetlands, contiguous wetlands, in the United States, which is a fairly interesting effort and it really is a key part of the Pacific Flyway from Canada all the way to Mexico. We are glad to have you here and talk about your efforts to fight feral nutria and we welcome you to the Agriculture Committee.

We have a second witness here that I am going to defer to Representative Craig who would like to introduce the second witness.

Ms. CRAIG. Thank you so much, Mr. Chairman. It is an honor to introduce Dr. Beth Thompson. Thank you so much for being here.

As Executive Director of the Minnesota Board of Animal Health, Dr. Thompson also serves as the Minnesota State Veterinarian. In this role she oversees the planning and implementation of statewide programs for the detection, control, and eradication of animal diseases.

Her work also includes working closely with the Minnesota Department of Agriculture, the Minnesota Department of Natural Resources, the University of Minnesota undefeated Golden Gophers, 9 and 0, and the United States Department of Agriculture.

Dr. Thompson, we are glad to have you here today, and I look forward to your testimony.

The CHAIRMAN. Thank you very much, Representative Craig. Minnesota has a great team. Fresno State almost beat them in the first game of the season, but we fell a little bit short.

Our third witness is Mr. Bret Erickson, a Senior Vice President for Business Affairs of J&D Produce in Edinburg, Texas. He tells me they are busy harvesting right now a host of important specialty crops, and Mr. Erickson is involved in those specialty crop production efforts and the Rio Grande Valley. Prior to his current role, he served as President/CEO of Texas International Produce Association.

Bret, we thank you for being here.

In addition to that, we have Mr. Kurt Reichert, Fumigation Director from the Western Fumigation in Lester, Pennsylvania.

Mr. Reichert works with both importers and exporters at the Ports of Delaware and elsewhere to manage the transmission risks,

which is part of what we want to understand better here with your testimony today. He also serves as the Western Compliance Officer.

Mr. Reichert, we also look forward to hearing your testimony.

And our final witness is Mr. Josh Gaskamp. I hope I pronounced that properly. Technical Consultation Manager and Wildlife and Range Consultant for Noble Research Institute in Ardmore, Oklahoma.

Mr. Gaskamp works closely with farmers and ranchers on tools and methods for addressing feral swine.

And we thank you all for joining us today and your willingness to share your perspectives with the Subcommittee.

We will now proceed with hearing from our witnesses. Each of you will have 5 minutes. I hope you understand the, you have those lights in front of you. For the first 4 minutes it is green, and then at the 5th minute it turns yellow, and then at the end of 5 it turns red, and you are on your own. We know most of you are familiar with it.

Mr. Ortega, why don't we begin with you today, and we thank you for being here and we look forward to your testimony.

Ric Ortega, Los Banos, California.

STATEMENT OF RICARDO ORTEGA, GENERAL MANAGER, GRASSLAND WATER DISTRICT, LOS BANOS, CA

Mr. ORTEGA. Thank you. Thank you, Chairman Costa, Ranking Member Rouzer, Members of the Committee.

My name is Ric Ortega, and I am the General Manager of the Grassland Water District in California. Located in Merced County, we are a Federal water contractor that conveys water to wetland habitat on state, Federal, and private wildlife refuges in the grassland ecological area.

The wetlands in the ecological area make up the largest remaining block of freshwater wetlands in the West. Encompassing over 300^2 miles, this habitat and surrounding wildlife-beneficial agriculture, such as alfalfa, cotton, corn, wheat, and irrigated pasture, support hundreds of wildlife species and millions of migratory birds each year. With less than ten percent of historical wetlands remaining in California, the ecological area is recognized by international treaty as one of the most important wetland ecosystems in the Americas.

The ecological area is also the epicenter of California's nutria epidemic. Since their rediscovery in 2017, nearly 800 nutria have been taken, and many more documented at more than 200 sites across the San Joaquin Valley. The vast majority of nutria to date have been taken within my district's boundaries, but now they have expanded to four other counties in the San Joaquin Valley, and threaten to spread further.

Nutrias reach sexual maturity at 4 months of age and can have 40 offspring each year. They consume ¼ of their body weight per day, but destroy ten times the plant biomass by foraging almost exclusively on the fleshy bases of vegetation, reversing hundreds of millions of dollars in restoration efforts and also agricultural revenue.

The ecological area shares a water conveyance system with agricultural water districts through vulnerable earthen-lined canals.

Nutria burrows are extensive, can extend hundreds of feet, and cause levy failure and loss of scarce water supplies. These water supplies are the lifeline of our precious remaining ecosystems and agricultural economy.

Merced County alone is a $3.2 billion ag economy with over 100 types of crops grown over a million acres. Water and wildlife agencies in California fear nutria expansion could devastate the Sacramento-San Joaquin Delta system.

In Louisiana, nutria convert 2,000 acres of marshland into open water each year, and have compromised their water infrastructure. This would not only impact the ecosystem, but the hub of the state's flood control and water delivery system, which also supplies water to over 25 million people.

We must act now to prevent catastrophic outcomes in California. The California Department of Fish and Wildlife has taken lead on eradicating nutria in California. The Department's emergency response has made great strides in slowing the growth of nutria populations, while long-term resources are pursued for a formal dedicated eradication effort.

For a one-time state appropriation, they established a nutria eradication program that is now expanding to 45 staff, including five contracted specialists through the U.S. Department of Agriculture's Wildlife Services. This effort also seeks to evaluate and utilize all effective detection tools including the use of scent-detection dogs, eDNA, and telemetered Judas nutria.

Eradication campaigns are inherently long-term and require adequate and reliable funding to ensure a successful outcome. A full-scale campaign in California is estimated to cost around $5 million per year for at least 7 years before significant progress is made. The Department estimates a total eradication campaign will take decades to complete, based on successful efforts in other parts of the country and the network of suitable habitat in California.

The Department currently feels it has adequate operational funding, but only through Fall of 2022 where they will experience a significant budget deficit if no other funds are identified.

Thank you for the opportunity to provide testimony to the Committee today. We look forward to working with you on solutions to this very real problem.

[The prepared statement of Mr. Ortega follows:]

PREPARED STATEMENT OF RICARDO ORTEGA, GENERAL MANAGER, GRASSLAND WATER DISTRICT, LOS BANOS, CA

Chairman Costa, Ranking Member Rouzer, Members of the Committee[:]

My name is Ricardo Ortega, and I am the General Manager of the [Grassland] Water District in California. Located in Merced County, we are a Federal contractor that conveys water to wetland habitat on state, Federal and private wildlife refuges in the Grassland Ecological Area. The wetlands in the Ecological Area make up the largest remaining block of freshwater wetlands in the West. Encompassing over 300^2 miles, this habitat and surrounding wildlife-beneficial agriculture such as alfalfa, cotton, corn, wheat and irrigated pasture support hundreds of wildlife species and millions of migratory birds each year. With less than 10% of historical wetlands remaining in California, the Ecological Area is recognized by international treaty as one of the most important wetland ecosystems in the Americas.

The Ecological Area is also the epicenter of California's nutria epidemic. Since their rediscovery in 2017, 758 nutria have been taken, with many more documented, at 200 sites across the San Joaquin Valley. The vast majority of nutria taken to date

have been from within my District's service area, but they have now expanded to four counties, and threaten to spread further.

Nutria reach sexual maturity at 4 months of age and can have 40 offspring each year. They consume ¼ of their body weight per day but destroy ten times the plant biomass by foraging exclusively on the fleshy bases of vegetation, reversing hundreds of millions of dollars in restoration efforts and potentially impacting agricultural revenue.

The Ecological Area shares a water conveyance system with agricultural districts through vulnerable earthen-lined canals. Nutria burrows extend hundreds of feet causing levee failure and the loss of scarce water supplies, the lifeline of our precious remaining ecosystems and agricultural economy. Merced County alone is a $3.2 billion ag economy, with over 100 types of crops grown on over 1.1 million acres, and nutria threaten its very existence.

Water and wildlife agencies in California fear nutria expansion north could devastate the Sacramento[-]San Joaquin Delta system. In Louisiana, nutria convert 2,000 acres of marshland into open water each year and have compromised the water conveyance infrastructure. This would not only impact the ecosystem, but the hub of the state's flood control and water delivery system which also supplies water to 25 million people. We must act now to prevent catastrophic outcomes in California.

In 2018, the California Department of Fish and Wildlife has taken the lead on eradicating nutria in California. The Department's emergency response has made great strides in slowing the growth of the nutria population while long-term resources are pursued for a formal, dedicated eradication effort. Through a one-time state appropriation and grants, they established a Nutria Eradication Program that is expanding to 45 staff, including five contracted specialists through U.S. Department of Agriculture's Wildlife Services. This effort also seeks to evaluate and utilize all effective detection tools, including the use of scent-detection dogs, eDNA, and telemetered Judas nutria.

Eradication campaigns are inherently long-term and require adequate and reliable funding to ensure a successful outcome. A full-scale campaign in California is estimated to cost more than $5 million per year for at least of 7 years before significant progress is made. The Department estimates a total eradication campaign will take at least 20 years to complete, based on successful efforts in other parts of the country and the network of suitable habitat in California. The Department currently feels it has adequate operational funding through fall 2022 but will then experience a significant budget deficit if no other funds are identified.

Thank you for the opportunity to provide testimony [to the] Committee today. We look forward to working with you on solutions to this very real problem.

The CHAIRMAN. Well, we thank you, Mr. Ortega for your succinct and concise testimony in under 4 minutes. But it is a serious problem and of course I personally have seen the challenges that you are dealing with there.

Our next witness is Dr. Thompson from Minnesota. Would you please proceed.

STATEMENT OF BETH S. THOMPSON, J.D., D.V.M., STATE VETERINARIAN, EXECUTIVE DIRECTOR, MINNESOTA BOARD OF ANIMAL HEALTH, SAINT PAUL, MN

Dr. THOMPSON. Good morning, Members. My name is Beth Thompson. I am the State Veterinarian in the great State of Minnesota, and also the Executive Director of the Minnesota Board of Animal Health.

Thank you for this opportunity to speak with you today about the importance of safeguarding American agriculture. It is an honor to be here today.

Minnesota is one of the nation's leaders in poultry production. We are ranked number one in turkey production, and also have strong broiler and egg production in our state. Many of our poultry farms are multi-generational and have supported the ag and state economy directly through jobs on farms, related businesses, and in

our communities. I am very proud to be part of agriculture in Minnesota and in the Midwest.

In every aspect of agriculture there is a component of risk. In livestock agriculture, a risk that is faced by all farmers is the introduction of disease. I provided written testimony for you on poultry diseases which can be introduced via wild waterfowl and other birds. I am going to focus my talk on avian influenza, as Minnesota has had recent experience with this disease.

Certain species of wild waterfowl and shore birds are considered to be natural reservoirs for avian influenza. There is little or no disease sign in these birds. Back in 2014 and 2015, the virus that was found in domestic and commercial poultry here in the United States, that dreaded H5N2, likely started in Asia and then spread to the North American wild birds via commingling of wild waterfowl, because the migratory pathways of these birds overlap in the far Northern Hemisphere.

The North American wild birds then brought the virus down into the continental United States and there was a spillover into our commercial flocks. In other words, the Eurasian H5N8 mixed with the North American Low-Path Avian Influenza Virus and we had the outbreak of 2015.

One hundred and ten farms in Minnesota were affected and over nine million birds either died or were depopulated because of this disease. It was estimated that the economic damage to Minnesota alone was $650 million and at least 2,500 jobs were affected.

Epidemiological studies conducted revealed that there was initial independent point-source introduction of the virus directly into these farms, while the farms that were infected later on during the outbreak, it was more than likely truck traffic, workers' clothing, and the virus being carried in by other methods.

This outbreak highlights the importance of many areas, but briefly to three. First, surveillance, surveillance of both wild and commercial birds. The information from all of this surveillance must be shared. Wildlife researchers must share this information with state and Federal livestock agencies and *vice versa.* This is true in peacetime and it is also true during an outbreak. And just as a note, I just received from our USDA partners, the National Wildlife Disease Update just before this hearing started, so that communication is going on, but it must continue.

Second, response planning: This is also critical. During the summer of 2015, Minnesota had at times over 500 responders working per day on High-Path Avian Influenza, and that number does not include the number of turkey farmers, other farmers, veterinarians, and community members that have come together to fight this disease. It was the work that was done in the months and years before the response that assisted our producers and regulatory responders, but again, that work must continue.

Last, and third, biosecurity: This is a day-to-day process for our poultry farmers. Post High-Path Avian Influenza in 2015, researchers looked at the different types of introduction of diseases into our flocks. It is very apparent that we need to keep the disease out of the barns. All poultry sectors have recognized this need for increased biosecurity and the National Poultry Improvement Plan has adopted minimum standards for our farmers to follow.

In closing, the U.S. poultry industry in cooperation with state and Federal agencies has been very proactive post-2015 with efforts to fight foreign animal diseases. And a nod to our comrades in California right now that are working very hard on virulent Newcastle Disease in that state.

We can't stop the movement of wild waterfowl. However, if ag and wildlife agencies continue to work together, we will have communication, collaboration, and this will benefit our international trade.

During a response, states know their farmers, their veterinarians, their communities, but we can be overwhelmed, and therefore, it is imperative that we have our Federal partners well prepared.

Thank you.

[The prepared statement of Dr. Thompson follows:]

PREPARED STATEMENT OF BETH S. THOMPSON, J.D., D.V.M., STATE VETERINARIAN, EXECUTIVE DIRECTOR, MINNESOTA BOARD OF ANIMAL HEALTH, SAINT PAUL, MN

What diseases are spread by wild birds to domestic/commercial poultry flocks?

Diseases that have been detected in wild birds with possible implications for commercial poultry flocks include Avian Influenza, West Nile Virus, Newcastle Disease, Eastern Equine Encephalitis and Avian Pox Virus; Avian Influenza and Newcastle Disease receive the most attention. While it is possible for domestic or commercial poultry flocks to become infected with viral diseases like avian influenza or Newcastle Disease from direct contact with wild birds, it is more likely these viruses are spread indirectly to poultry via contaminated feed, clothing, and equipment. Producers are encouraged to prevent wild birds and other wildlife from coming into direct contact with their poultry flocks, and to avoid transporting wild bird fecal material and secretions to poultry via boots, equipment and feed. These management practices are part of biosecurity programs that will be discussed later.

Avian Influenza

Avian Influenza (AI) is a viral infection that occurs naturally in wild birds, especially waterfowl, gulls, and shorebirds without any signs of illness. The viral infection is caused by type A influenza viruses that may give rise to 144 possible virus subtypes. Influenza viruses vary widely in their ability to cause disease and spread among birds. Many strains of influenza viruses can infect commercial poultry, but generally the viruses can be classified into two categories. Low-Pathogenicity Avian Influenza (LPAI) viruses typically cause little or no clinical signs in poultry. With LPAI, the clinical signs in poultry are variable; they may appear depressed, have ruffled feathers and may be off-feed. Signs of illness may also only be expressed as reduced egg production or mild respiratory symptoms. Highly-Pathogenic Avian Influenza (HPAI) can cause severe clinical signs and/or high mortality in poultry. With HPAI, clinical signs may include quietness, extreme depression and sudden drop in egg production. A few deaths may occur over several days, followed by rapid spread and a mortality rate able to approach 100% within 48 hours. H5N2 HPAI was the strain of avian influenza present in 2014–15 during the largest foreign animal disease event in U.S. history.

Newcastle Disease

Newcastle Disease (ND) is a viral infection of domestic poultry and other bird species. It is a worldwide problem that presents primarily as an acute respiratory disease, but depression, nervous manifestations, or diarrhea may be the predominant clinical form. Severity depends on the strain of the infecting virus and host susceptibility. Occurrence of the virulent form of the disease is reportable to state and Federal animal health officials and may result in trade restrictions. Clinical manifestations vary from high morbidity and mortality to asymptomatic infections. Severity of infection depends on virus virulence, as well as the age, immune status, and susceptibility of the host species. Chickens are the most susceptible and waterfowl the least susceptible of domestic poultry.

Virulent ND (vND) strains are endemic in poultry in most of Asia, Africa, and some countries of North and South America. Other countries, including the U.S. and Canada, are free of those strains in poultry and maintain their status by enforcing

strict import restrictions and eradicating the disease by destroying infected poultry. In the U.S., vND is considered a Foreign Animal Disease (FAD). Occasionally, introductions of vND occur in backyard or commercial poultry flocks, such as the current situation in California in 2018–19. Smuggled poultry and psittacine species or resident cormorants or pigeons are a potential source of Newcastle Disease infections in poultry. Movement of infected domestic birds and movement of people and contaminated equipment or litter are the main methods of virus spread between poultry flocks. Besides cormorants and possibly pigeons, wild birds have not been indicated as a major threat for introduction of ND in the United States.

Vaccines for ND are available for chickens, turkeys, and pigeons, so vaccinated birds must be exposed to a larger dose of vND virus to be infected. Unfortunately, ND vaccines do not prevent all infections. In many areas of the world, vaccines are used to prevent losses from sickness and death, meaning vaccinated birds are still susceptible to vND but at a lower death rate than unvaccinated birds. Minnesota has never had a case of vND in poultry. However, a less serious form of the disease has been identified in wild waterfowl (cormorants) in the state in past years. Waterfowl have the ability to spread disease to poultry through fecal droppings and secretions of the nose, mouth and eye. As a result, poultry producers have taken additional steps to keep their birds healthy by increasing biosecurity and implementing vaccination programs. Among other measures, one of the most effective ways to protect poultry is by making sure they are separated from wild birds.

Some ND viruses can produce a transitory conjunctivitis in people, but the condition has been limited primarily to laboratory workers and vaccination teams exposed to large quantities of virus. Poultry and egg products are safe to consume.

What type of surveillance is conducted for each of these diseases in commercial poultry and wild birds, and how do agencies collaborate? How does the poultry industry, and state and Federal agencies respond?

Surveillance for diseases in wildlife is usually passive, meaning state and Federal wildlife agencies respond to reports of mortality events involving either dead or sick birds. For dead bird events more attention is paid to multiple birds (>5) dead at the same time and location. When wild bird mortality events occur, diagnostic testing may be pursued depending on the species involved, time of year, circumstances of the event and clinical signs observed. For the health of Minnesota poultry and wildlife, it is important that relevant government agencies maintain close communications on potential disease events. The Minnesota Department of Natural Resources (MN–DNR) staff hold positions on the Board of Animal Health's Emergency Disease Management Committee, and regularly attend quarterly Board of Animal Health meetings to collaborate on current disease events. USDA-Wildlife Services will also be involved with meetings on disease issues. Outside of those routine meetings, both agencies are at the top of emergency notifications to one another if and when diseases are detected. Because disease knows no barriers, a harmonized preparedness and response effort is Minnesota's best strategy to protect our wild and commercial populations. For example, when the MN–DNR are tracking disease in cormorants, updates on sampling and diagnostic test results are shared with animal health officials.

No active surveillance programs exist for ND in the U.S.; however, the commercial poultry industry closely monitors the effectiveness of their vaccination programs and investigates potential field exposures through diagnostic testing.

There are two surveillance programs for avian influenza with USDA oversight: the Live Bird Marketing System (LBMS) and the National Poultry Improvement Plan (NPIP)

A Live Bird Market is any facility (including botanica, poultry store, or custom slaughter) that sells live poultry for onsite slaughter or for offsite ritual use. LPAI viruses have repeatedly been isolated from the LBMS in the U.S. In order to track an introduction into the LBMS a cooperative State-Federal-Industry surveillance program was created. Details are contained in the USDA "Prevention and Control of H5 and H7 Avian Influenza in the Live Bird Marketing System—Uniform Standards for a State-Federal-Industry Cooperative Program" publication.

The National Poultry Improvement Plan (NPIP) is how much of the surveillance for avian influenza in commercial and backyard poultry is conducted. Surveillance is a cooperative, collaborative effort between the poultry industry, State Animal Health Officials (SAHO) and the Federal Government. The NPIP is an agency within the USDA, Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS). The NPIP is the Federal Government's poultry disease control program administered in cooperation with state animal health officials and poultry producers. The General Conference Committee (GCC) of the NPIP is the Official Federal Advisory Committee to the Secretary of Agriculture on matters pertaining to

poultry health and includes individuals representing the U.S. poultry industry and state agencies.

The push for a national avian influenza surveillance program began in 2002 when H7N2 Low-Pathogenic Avian Influenza (LPAI) was identified in North Carolina, Virginia, and West Virginia; costing producers hundreds of millions of dollars. At that time, a surveillance program was not in place to detect the potential spread of Avian Influenza (AI). In response, an LPAI program was created within the NPIP to provide an incentive for regular AI surveillance and to protect poultry producers through indemnification and compensation should H5/H7 LPAI be found. Avian Influenza remains a concern for poultry producers in the U.S. The NPIP is the only Federal program responsible for H5/H7 LPAI surveillance, response, and containment activities.

Flocks identified with HPAI are fully indemnified and compensated by USDA–APHIS–VS; however, indemnity and compensation funding for H5/H7 LPAI flocks by USDA–APHIS–VS is often not certain. Disruption of this funding for H5/H7 LPAI response can result in loss of confidence and trust by the poultry industry and could potentially create a harmful impact on future responses to H5/H7 LPAI. This loss of confidence and trust discourages poultry producers (commercial, independent growers, and small flocks) from fully complying with NPIP testing programs and cooperating with state and Federal regulatory authorities, potentially risking the poultry industry's significant international trade. Without dedicated funding for LPAI indemnity and compensation, there is no incentive for producers to participate in the highly successful voluntary NPIP programs.

Surveillance for influenza in poultry in the U.S. occurs on a number of different levels. All flock owners are expected to monitor their flocks for development of clinical signs suggestive of any reportable disease. In Minnesota, as in most states, influenza in poultry is a disease that is reportable to the State Animal Health Official (SAHO) or State Veterinarian. This is the first level of awareness and surveillance. When contacted, the SAHO, in conjunction with the attending poultry veterinarian or other responsible party, determines the next steps to arrive at an official flock status and response activities. Active surveillance activities for influenza are outlined in the NPIP Provisions and requires that commercial poultry flocks are tested on a routine surveillance schedule to ensure that no poultry, eggs or egg products from infected birds enter the food chain. All testing for influenza must occur at an authorized laboratory that is approved by the state and the NPIP. Many of these laboratories are members of the National Animal Health Laboratory Network (NAHLN), which is a nationally coordinated network and partnership of Federal, state, and university-associated animal health laboratories. They provide the diagnostic services to detect high-consequence livestock pathogens.

How does biosecurity work to keep diseases out of poultry flocks?

Biosecurity is a critical component of poultry health programs designed to prevent disease transmission into or out of a poultry flock. Biosecurity programs can not only reduce the possibility of a disease introduction but can also help prevent disease transmission and spread once an introduction is identified. According to the USDA *Report on the 2014–2015 Outbreak of Highly Pathogenic Avian Influenza (HPAI) in the United States,* biosecurity can play an important role in stopping the spread of avian influenza in domestic poultry. The report states, "In December 2014, highly pathogenic avian influenza (HPAI) was detected in the United States for the first time in 10 years. In total, during the 2014–2015 outbreak, there were 211 detections on commercial operations and 21 detections on backyard premises (including those premises designated as a Dangerous Contact Premises). Approximately 7.4 million turkeys and 43 million egg-layers/pullet chickens, as well as a limited number of mixed poultry flocks, were affected by HPAI and died from the disease or were depopulated as part of the response. This outbreak was the largest HPAI outbreak ever recorded in the United States and arguably the most significant animal health event in U.S. history."

The USDA report continues, "One of the greatest concerns and a probable contributing factor to the spread of HPAI was the lack of effective farm biosecurity measures. Stringent biosecurity, especially during a large-scale response, remained one of the most challenging aspects of the response effort."

As a result of the 2014–2015 outbreak, many new biosecurity materials were developed for the poultry industry to support implementation of revised biosecurity recommendations. Expectations for preventing or reducing future introductions require increased biosecurity measures from those used prior to the outbreak in most operations. To standardize biosecurity practices and expectations, USDA APHIS published a rule: "Conditions for Payment of Highly Pathogenic Avian Influenza Indemnity Claims." This rule clarifies an existing policy for the payment of indemnity

of eggs and provides a formula for the split of indemnity between poultry/egg owners and parties with which the owners enter into contracts to raise or care for the eggs or poultry. It also requires large owners and contractors to certify that at the time of detection of HPAI in their facilities, they had in place and were following a biosecurity plan that would prevent the spread of avian influenza.

All sectors of the poultry industry recognized the need to incorporate basic biosecurity principles, and thus the National Poultry Improvement Plan (NPIP) adopted minimum management practices that all producers should be able to follow. Biosecurity measures adopted at the 2016 NPIP Biennial Conference are intended to be the basic management practices needed to prevent the introduction and spread of infectious diseases. The 14 Biosecurity Principles require poultry producers and companies to have a written biosecurity plan and a person designated as the biosecurity coordinator. Auditing of the biosecurity principles is based on flock size as outlined in 9 CFR 53.10. Audits shall be conducted at least once every 2 years or a sufficient number of times during that period by the Official State Agency to ensure the participant is compliant. Each audit shall evaluate the biosecurity plan's training materials, documentation of implementation of the NPIP Biosecurity Principles and the biosecurity coordinator's annual review for completeness and compliance with the NPIP Biosecurity Principles.

Conclusion

- The U.S. poultry industry, in cooperation with state and Federal agencies, has been proactive with its efforts to prevent another foreign animal disease (FAD) event. These activities include on-going surveillance efforts in all poultry sectors, response planning, and implementation of biosecurity programs to prevent another FAD, such as HPAI or vND. Congress should be aware that current funding has helped support these proactive steps.
- Congressional funding to support avian disease surveillance programs, response activities and implementation of farm-level biosecurity programs at the state level is crucial to provide on-going program support.
- Maintaining appropriate staffing within the United States Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services (USDA–APHIS–VS) is essential. Currently two leadership positions within the National Poultry Improvement Plan are vacant.
- Adequate USDA resources and personnel are critical to move quickly and immediately to support SAHO efforts when a FAD such as HPAI or vND is identified.
- Funding is needed to support the USDA–APHIS–VS effort to provide a stable indemnity and compensation program for H5/H7 LPAI flocks. Congressional appropriation of new, no-year, mandatory fiscal appropriations dedicated for LPAI indemnity and compensation to ensure continued participation in NPIP H5/H7 LPAI programs is fundamental to the entire program.

The CHAIRMAN. Thank you very much, Doctor. We appreciate your testimony.

And we will now go to Mr. Erickson. Please begin with your testimony from Texas.

STATEMENT OF BRET ERICKSON, SENIOR VICE PRESIDENT FOR BUSINESS AFFAIRS, J&D PRODUCE INC., EDINBURG, TX

Mr. ERICKSON. Hello and good morning, Chairman Costa, Ranking Member Rouzer, and Committee Members. My name is Bret Erickson and I am Senior Vice President at J&D Produce. I have worked in agriculture my entire career. Prior to joining J&D I was President and CEO of the Texas International Produce Association for 6 years, and am quite familiar with the challenges you are exploring here today, specifically as it relates to the fresh produce industry.

We are a family-owned business based in Edinburg, Texas in the Rio Grande Valley. We are a grower, packer, shipper, and we produce almost 40 different types of greens, such as kale, chards, collards, beets, and herbs, just to name a few, as well as sweet onions, cabbage, and melons.

We farm approximately 6,000 acres in the Rio Grande Valley, with growing and packing operations also in Deming, New Mexico, Vidalia, Georgia, Vineland, New Jersey, Peru and Mexico. We are a year-round operation and we employee approximately 180 full-time employees in the U.S. That number swells to over 500 seasonal employees in full production as we are now, and up to 750 when you include the harvest crews that are managed by farm labor contractors.

Our business is quite complex and we have several serious challenges that prevent us from growing the business as quickly as we would like to. Labor being number one. I would be remiss if I did not mention how badly we need labor reforms, and I must take this opportunity to ask you all to support the Farm Workforce Modernization Act. We desperately need these changes, as our business and many others like us are suffering from a severe labor crisis that threatens our ability to maintain let alone grow a sustainable farming business in the United States.

Our customers include wholesalers and food service companies, but our primary business is dealing with retailers who sell direct to you, the U.S. consumer. Some of our customers include HEB, Wegmans, Publix, Meijer, Kroger, Albertsons, and Wal-Mart.

We utilize imports to complement our overall business to supply our customers with product year-round and when we are not in production in our domestic locations. We are truly an international farming and packing operation, and because of that, the flow of our product and consequently the quality and freshness of our perishable commodities are in the hands of the Federal agencies who are responsible for inspecting product as it crosses the border.

Additionally, the security of our domestic farms, particularly in Texas on the border, are at risk of being attacked by invasive pests and diseases. In Texas, we have seen double-digit increases year over year for the last decade for volumes of fresh fruits and vegetables. In the last 12 years, we have increased the volumes coming from Mexico 143 percent.

The increase in imports creates a positive economic impact for our country, and means that consumers can purchase whatever item they want every day of the year. The downside is that ports are overloaded with product. Volumes have exploded and new products coming from Mexico and other parts of the world bring with them new pests and diseases.

While this exponential growth in import volumes has occurred, Federal agency staffing levels have not, creating bottlenecks and delays that range from a few hours to several days, at times rendering entire loads of product useless because the quality has deteriorated to the point that we can no longer send it to our customers.

Today I am here to ask the Committee to secure additional resources that will put more manpower at our ports-of-entry. Specifically, we need more USDA APHIS insect identifiers and CBP ag specialists. Furthermore, I request that more time and attention from USDA APHIS be directed towards training CBP ag specialists on insect identifications, and that USDA grant more authority to well-trained CBP ag specialists to make identifications and make a determination if an insect is good or bad.

The challenges detailed above are just some of the reasons I and the produce industry strongly support the Protecting America's Food and Agriculture Act of 2019. This legislation, sponsored by Representative Filemon Vela, has the support of Chairman Costa, Chairman Peterson, Senate Chairman Roberts, and Ranking Member Stabenow, and it recognizes the challenge the fresh produce industry faces.

As a domestic-based grower/shipper, I am here to ask for your help to be a part of the solution to help keep American fruit and vegetable growers in business, and to ensure that American agricultural interests are protected from the threat of invasive pests and diseases.

Thank you.

[The prepared statement of Mr. Erickson follows:]

PREPARED STATEMENT OF BRET ERICKSON, SENIOR VICE PRESIDENT FOR BUSINESS AFFAIRS, J&D PRODUCE INC., EDINBURG, TX

Hello and good morning Chairman Costa, Ranking Member Rouzer, and Committee Members. My name is Bret Erickson and I am Senior Vice President at J&D Produce Inc. I have worked in agriculture my entire career. Prior to joining J&D, I was President & CEO of the Texas International Produce Association for almost 6 years and I am quite familiar with the challenges you are exploring here today, specifically as it relates to the fresh produce industry.

We are a family owned business headquartered in Edinburg, Texas in the Rio Grande Valley. Our owners, Jimmy & Diane Bassetti moved from Vineland, New Jersey to Texas to start the business in 1986. J&D is truly an American Dream story. We are a grower/packer/shipper of fresh greens, sweet onions, cabbage, and melons. To give you an idea of the diversity of crops we grow, we produce almost 40 different types of greens such as kale, chards, collards, beets and herbs to name a few.

We farm approximately 6,000 acres in the Rio Grande Valley. We also have growing and packing operations in Deming, New Mexico, Vidalia, Georgia, Vineland, New Jersey, Peru, and Mexico. We are a year-round operation and we employ approximately 180 full time employees in the U.S. That number will swell to over 500 when you include our seasonal employees when we are in full production, as we are right now. This number is closer to 750 when you include the harvest crews that are managed by Farm Labor Contractors.

Our business is quite complex, and we have several serious challenges that prevent us from growing the business as quickly as we would like to, labor being number one, but trade, water, food safety, and transportation are not far behind. I would be remiss if I did not mention how badly we need labor reforms and I must take this opportunity to ask you all to support the "American Farm Workforce Modernization Act." We desperately need these changes as our business and many others like us are suffering from a severe labor crisis that threatens our ability to maintain let alone grow a sustainable farming business.

As I mentioned, we have growing and packing operations in Peru and Mexico. We own farms in Peru and we have grower partners in both Peru and Mexico who we provide seed, supplies, and funding to grow some of our crops when our domestic operations are not in production. This is an important distinction, as we use imports to complement our overall business to supply our customers with product year-round when we are not in production in our domestic locations.

Our customers include wholesalers and foodservice companies, but our primary business is dealing with retailers who sell direct to you, the U.S. consumer. Some of our customers include HEB, Wegmans, Publix, Meijer, Kroger, Albertsons and Wal-Mart to name a few.

We also export a fair amount of business to some Canadian retailers, such as Loblaw and Sobeys. We are truly an international farming and packing operation and because of that, the flow of our product, and consequently the quality and freshness of our perishable commodities are in the hands of the Federal agencies who are responsible for inspecting product as it crosses the border. Additionally, the security of our domestic farms, particularly in Texas, are at risk of being attacked by invasive pests and diseases.

In Texas, we have seen double digit increases year over year for the last decade for volumes of fresh fruits and vegetables. This is a bittersweet figure. J&D has increased the volumes of our own imported products for several reasons. One, that our business is growing and demand for fresh fruits and vegetables continues to grow, why? Simply because the population is growing and there are more mouths to feed. But we also have to import more product because we don't have the labor to harvest the volumes that are demanded by our customers.

The increase in imports does create a positive economic impact for our country. It also means that U.S. consumers are able to purchase whatever item they want, be it strawberries, celery, cilantro, or cantaloupes every single day of the year. The downside is that the ports are overloaded with product, which has grown by leaps and bounds. Not only have the volumes exploded, but the variety of products, new exciting items that we have not seen before, which are coming from new regions of Mexico and other parts of the world bring with them new pests and diseases that we have never seen.

And while this exponential growth in import volumes has occurred, Federal agency staffing levels have not grown accordingly, creating bottlenecks and delays that can range from a few hours to 4–5 days, at times rendering entire loads of product useless or headed to the food bank as a donation because the quality has deteriorated to the point we can no longer send it to our customers without it being rejected.

With respect to this hearing today, I am here to ask the Committee to find a way to secure additional resources that will put more manpower at our ports-of-entry. Specifically, we need more USDA APHIS Insect Identifiers and CBP Ag Specialists. Furthermore, I would like to request that more time and attention from USDA APHIS be directed towards training [CBP] Ag Specialists on insect identifications **and** that USDA grant more authority to well-trained CBP Ag Specialists to make identifications and make a determination if an insect is "good" or "bad".

There have been some improvements over the years as USDA has trained and authorized CBP Ag Specialists to make identifications, but we need more of this, and we need more insect identifiers and more CBP Ag Specialists. Trade volumes will continue to grow at fast pace because the demand for food will continue to grow as the population grows. And as the population grows, that means that farms turn into subdivisions and shopping malls, not to mention the struggles we as growers face to find labor and remaining cost competitive in a global market place where we pay $12 an hour *versus* our competitors in other countries, who pay $12 or less per day.

The challenges I detailed above are just some of the reasons I and the produce industry strongly support the Protecting America's Food and Agriculture Act of 2019. This legislation (H.R. 4482/S. 2107) sponsored by Rep. Filemon Vela (D–TX), has the support of Chairman Costa, Chairman Peterson, Senate Chairman Roberts and Ranking Member Stabenow and it recognizes the challenge the fresh produce industry faces. As you may know, the bill authorizes U.S. Customs and Border Protection to hire, train, and assign 240 new agricultural specialists a year until they meet the requirements established by the Agriculture Resource Allocation Model. The bill ensures that the assignment of such specialists be done based off need and the predictable surges that occur at certain ports-of-entry during certain times of the year. This legislation represents a significant step in the right direction.

As a domestic based grower shipper, it is unfortunate, but it is a fact that our ability to grow the business is limited to some degree by what happens here in Washington DC. I am here to ask for your help to be part of a solution to help keep American fruit and vegetable growers in business and to ensure that American agricultural interests are protected from the threat of invasive pests and diseases.

Thank you.

ATTACHMENT

Table 1. U.S. Imports of Fresh Fruits and Vegetables from Mexico by Truck, 2007–2018

40,000 Lb. Units

	Texas	Arizona	California	New Mexico	Total
2007	101,025	112,327	43,264	4,378	260,992
2008	105,522	115,609	45,713	4,304	271,147
2009	123,777	113,495	49,417	6,938	293,627
2010	133,039	136,031	53,849	6,462	329,381
2011	148,331	118,389	54,479	6,496	327,694
2012	158,968	130,019	60,006	10,154	359,147
2013	171,064	134,168	58,638	10,355	374,224

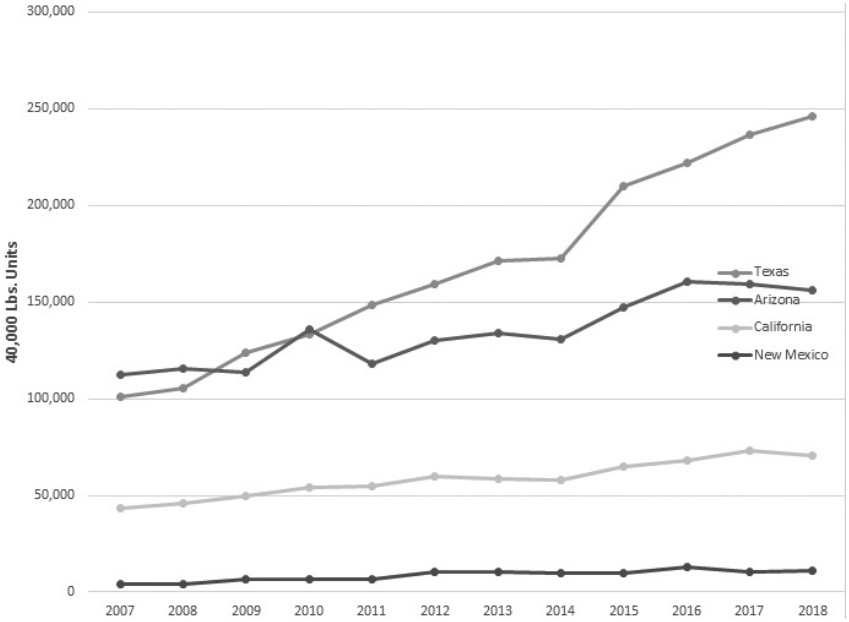
Table 1. U.S. Imports of Fresh Fruits and Vegetables from Mexico by Truck, 2007–2018—Continued

40,000 Lb. Units

	Texas	Arizona	California	New Mexico	Total
2014	172,648	130,549	57,989	9,594	370,779
2015	209,817	147,191	64,882	9,484	431,373
2016	221,662	160,602	68,237	13,254	461,505
2017	236,397	159,355	73,166	10,581	479,499
2018	246,143	156,380	70,490	11,008	484,021
1 Year Growth Rates					
2018/2017	4.1%	−1.9%	−3.7%	4.0%	0.9%
12 Year Growth Rates					
2007–2018 Growth	143.6%	39.2%	62.9%	151.5%	85.5%
Average Annual Growth Rate	12.0%	3.3%	5.2%	12.6%	7.1%

Source: Agricultural Marketing Service, USDA.

U.S. Imports of Fresh Fruits and Vegetables from Mexico by Truck, 2007–2018



Source: Agricultural Marketing Service, USDA.

The CHAIRMAN. Thank you very much, Mr. Erickson, and thank you for making reference to the legislation that we are trying to move forward with. It is important for the produce industry in the country, and also a shout out to the Bipartisan Agricultural Labor Reform Act. I think we are off to a good start there as well.

I believe, Mr. Reichert, you are next. Please proceed with your testimony.

STATEMENT OF KURT REICHERT, DIRECTOR OF FUMIGATION, WESTERN INDUSTRIES—NORTH, LLC; D/B/A WESTERN FUMIGATION, LESTER, PA

Mr. REICHERT. Good morning, Chairman Costa, Ranking Member Rouzer, and Members of the Committee. Thank you for the invitation to testify before the Committee today.

My name is Kurt Reichert and I am the Fumigation Director at Western Fumigation. I have worked for Western for over 28 years and I have been a multi-state licensed professional applicator since 1991.

I oversee the activities, which I will talk about here today, on a daily basis. I also work closely with many of the state and Federal regulatory agencies which govern the manufacture, transportation, and use of the fumigants which are available to our industry.

Quarantine inspections are a critical tool in our nation's efforts for protecting U.S. agriculture from invasive and non-native species, a program critical to the American economy.

Western Fumigation works closely with both the United States Customs and Border Protection and the United States Department of Agriculture's Animal and Plant Health Inspection Service, plant protection, quarantine inspectors to help safeguard United States agriculture against the introduction of pests of significance.

With regards to imports, we fumigate perishable commodities to eliminate invasive species which may have been hidden in the shipment. We also fumigate non-perishable cargo such as imported tile, machinery, military equipment, and cocoa beans. Export treatments are frequently used for logs destined for Europe or Asia, and cars and machinery en route to Australia and New Zealand, and citrus and broccoli exported from California.

Fumigation is often the only treatment method which can effectively eliminate these pests without damaging the cargo. Once an invasive species makes it into the U.S., its further spread can be devastating, costly, and unstoppable.

Over the years, the United States has seen several invasive species gain a foothold, causing widespread economic damage to domestic agriculture. Most recently we have seen the introduction and establishment of the Asian Longhorn Beetle, the Brown Marmorated Stink Bug, and the Spotted Lantern Fly. These pests have caused immense damage and hardship by damaging crops and at times entire farms.

APHIS, CBP and the various fumigation companies which operate at our ports-of-entry are literally on the frontlines with respect to stopping invasive species. All invasive pests can be tracked back to a port-of-entry where it must have slipped by undetected, possibly due to the limited number of inspectors being unable to keep up with their core mission with the volume of goods entering the port. CBP and APHIS personnel are true professionals that are dedicated to their core missions, but they are human and can be over-tasked at times.

CBP and APHIS agriculture inspectors have two powerful tools to use in the defense against invasive species. The first is by direct inspection of goods and commodities. Direct inspection is a targeted physical examination of the specified portion of cargo which might be targeted due to the possible presence of an invasive species from

the exporting country, or a hitchhiking pest which may have been inadvertently picked up during transit to the United States. But inspectors can only examine so many containers or vessels in a single day, and inspectors can often not physically examine every single piece of cargo in a shipment.

The second tool is to require mandatory treatments for high-risk shipments. Mandatory treatments are required for imports from certain countries or regions where a known invasive pest is established and prevalent, or if a commodity is imported in such a volume as to make a thorough inspection impractical.

Both of these tools require a minimum number of CBP and APHIS personnel at each port-of-entry. Proper staffing must be in place for inspections during the day, as well as for fumigation treatments which occur after normal business hours. The increased cost of staffing will often be only a fraction of the cost of an effective eradication effort after an invasive species has become established.

We urge Congress to support our land and water ports in places like Texas, North Carolina, California, Pennsylvania, and New Jersey, which stand as our nation's first and only line of defense against invasive species. Current staffing cannot reasonably be expected to be able to examine the amount of cargo they handle in a thorough manner.

Treatments can be applied to cargoes from questionable regions *in lieu of* requiring physical inspections by APHIS or CBP personnel. This allows APHIS and CBP to be more efficient and targeted in their inspection programs until staffing is brought up to full strength.

For these reasons, Western and our partner fumigation companies around the U.S. support increased APHIS and CBP staffing efforts such as House Resolutions 4482 and 3244, which will appropriate funding to better staff our ports-of-entry and guard American agriculture against invasive species.

I want to again thank the Committee for the opportunity to testify here. I have additional remarks which have been submitted for the record, and I will be happy to answer any questions which you may have.

[The prepared statement of Mr. Reichert follows:]

PREPARED STATEMENT OF KURT REICHERT, DIRECTOR OF FUMIGATION, WESTERN INDUSTRIES—NORTH, LLC; D/B/A WESTERN FUMIGATION, LESTER, PA

Good morning, and thank you for the invitation to testify before the Subcommittee today. My name is Kurt Reichert and I am the Fumigation Director for Western Fumigation. I have worked for Western for over 28 years, starting as a fumigation technician and working my way up through the company to become a Director. I have been a multi-state licensed professional applicator since 1991. I oversee the activities I will talk about here today on a daily basis. I also work closely with many of the state and Federal regulatory agencies which govern the manufacture, transportation and use of the fumigants which are available to our industry today.

Western Fumigation is a Division of Western Pest Services, which is a full-service Pest Control company based in Parsippany, New Jersey. Western was founded in 1928 as a family business, and has deep roots in the East Coast from Virginia to New England. Our Fumigation Division was spun off in the 1980s to be a standalone Division better suited to the unique process and regulatory requirements of import/export quarantine treatments.

Quarantine inspections are a critical tool in our nation's efforts for protecting U.S. agriculture from invasive and non-native species, a program critical to the American

economy. Western Fumigation works closely with both the United States Customs and Border Protection (CBP) and the United States Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) Plant Protection and Quarantine Inspectors to help safeguard United States agriculture against the introduction of pests of significance.

With regard to imports, we fumigate perishable commodities such as grapes, citrus, blueberries, asparagus, kiwi, pineapples and bananas to eliminate invasive species which may be hidden within the shipment. We also fumigate non-perishable cargo such as imported tile, machinery, military equipment and cocoa beans. Some of these items require mandatory fumigation, and some require fumigation if an actionable pest is found. Export treatments are frequently required for logs destined for Europe or Asia, cars and machinery en route to Australia and New Zealand, and citrus and broccoli exported from California.

Fumigation is often the only treatment method which can effectively eliminate these pests without damaging the cargo. Without fumigation, the availability of certain imported fruits and vegetables grown in South America would be significantly reduced during the winter, potentially leading to shortages and high prices for American families.

Once an invasive species makes it into the U.S., its further spread can be devastating, costly and unstoppable. Over the years, the United States has seen several invasive species gain a foothold, causing widespread economic damage to domestic agriculture. Most recently, we have seen the introduction and establishment of the Asian Longhorn Beetle, the Brown Marmorated Stink Bug and the Spotted Lanternfly. First, these pests have caused immense damage and hardship by damaging crops and at times, entire farms. And, even when crops can be salvaged, these species have increased costs and reduced the competitiveness of U.S. agriculture and industry because foreign countries now require us to fumigate U.S. exports to prevent the further world-wide spread of these pests.

APHIS, CBP and the various fumigation companies which operate at our U.S. ports-of-entry are literally on the front lines with regards to stopping invasive species. All invasive pests can be traced back to a port-of-entry where it must have slipped by undetected, possibly due to the limited number of inspectors being unable to keep up with the volume of goods entering the port. CBP and APHIS personnel are true professionals and are dedicated to their core missions, but they are human and can be over tasked at times. For example, APHIS Inspectors regularly work their day shifts at their home ports and then work as late as midnight supervising fumigation operations.

CBP and APHIS Agricultural Inspectors have two powerful tools to use in the defense against invasive species. The first is by direct inspection of goods and commodities. Direct inspection is a targeted physical examination of a specified portion of a cargo which might be targeted due to the possible presence of an invasive species from the exporting country, or a hitchhiking pest which may have been inadvertently picked up during transit to the United States. But inspectors can only examine so many containers or vessels in a single day, and inspectors can often not physically examine every single piece of cargo in a shipment. The second tool is to require mandatory treatments for high risk shipments. Mandatory treatments are required for imports from certain countries or regions where a known invasive pest is established and prevalent, or if a commodity is imported in such a volume as to make thorough inspections impractical.

Both of these tools require a minimum number of CBP and APHIS personnel at each port-of-entry. Proper staffing must be in place for inspections during the day, as well as for fumigation treatments which occur after normal business hours. The increased cost of staffing will often be a fraction of the cost of an effective eradication effort after an invasive species becomes established.

We urge Congress to support our land and water ports in places like Texas, North Carolina, California, Pennsylvania and New Jersey which stand as our nation's first and only line of defense against invasive species. Many of these ports are understaffed to handle the growing amount of imported goods which pass through them. Current staffing cannot reasonably be expected to be able to examine the amount of cargo they handle in a thorough manner. The ever increasing amount of goods imported from China are of particular concern, as most of the recent invasive species have originated from there.

Treatments such as fumigation are an important tool in safeguarding U.S. agriculture from invasive species, as well as protecting U.S. trade with our partners around the world. Treatments can be applied to cargoes from questionable regions in lieu of requiring physical inspections by APHIS or CBP personnel. This allows APHIS and CBP to be more efficient and targeted with their inspection programs until staffing is brought up to full strength.

For these reasons, Western and our partner fumigation companies around the U.S. support increased APHIS and CBP staffing efforts such as House Resolutions 4482 and 3244 which will appropriate funding to better staff our ports-of-entry and guard American agriculture against invasive species.

I again want to thank the Subcommittee for the opportunity to testify here today. I have additional remarks which have been submitted to the record, but I will be happy to answer any questions which you may have at this time.

The CHAIRMAN. We thank you very much, Mr. Reichert, for your timely testimony.

And our last witness before we begin the question period with Members of the Subcommittee is with Mr. Gaskamp. Please begin.

STATEMENT OF JOSHUA A. GASKAMP, TECHNICAL CONSULTATION MANAGER AND WILDLIFE AND RANGE CONSULTANT, NOBLE RESEARCH INSTITUTE, LLC, ARDMORE, OK

Mr. GASKAMP. Chairman Costa, Ranking Member Rouzer, Members of the Committee, thank you for this opportunity to provide testimony on behalf on Noble Research Institute.

Swine are not a species native to the United States. When they were introduced as livestock for human consumption, they were bred for high fertility and accelerated meat production. Unfortunately, if swine were intentionally and unintentionally released to live in a feral state, these same traits contributed to an uncontrolled population growth and the devastating ecological and economic impacts that I will address later in my comments.

Land use changes and transportation and stocking for hunting have also contributed to population growth and geographic expansion. In the south-central U.S. feral swine populations are estimated to grow at a rate of 21 percent per year. Feral swine are now present in at least 37 states, including the vast majority of states represented by this Committee. And the total population is estimated to be more than seven million animals.

Damage caused by feral swine comes in many forms. It is widespread and extensive but rarely rigorously quantified. Feral swine damage to U.S. agriculture is estimated to be more than $1.5 billion annually. However, this commonly cited estimate does not include many ecological damages and threats to human health. As such, it is likely the true economic damage caused by feral swine far exceeds $1.5 billion.

Examples of impacts on cultivated crops appear regularly, including the 2006 *E. coli* outbreak in California's spinach, in which feral swine were responsible. It was estimated that spinach farms in California lost as much as $75 million due to public fears of consuming spinach.

Other crops commonly impacted by feral swine include small grains, fruits, beans, potatoes, and nuts. Feral swine also regularly mingle with cattle, utilizing common water sources and feed stations, and rooting and defecating in cattle enclosures. The interact with domestic swine in non-confinement pork facilities. These interactions result in livestock exposure to more than 60 infectious diseases that cause weight loss, abortions, and death in domestic livestock.

Specifically, feral swine commonly harbor Brucellosis, Pseudorabies, and African Swine Fever, or ASF. To maintain Bru-

cellosis free status for cattle in the global market, any time a cow tests positive for *Brucella,* an epidemiologic investigation is required at considerable government expense. Similarly, an occurrence of ASF in U.S. livestock would result in substantial losses to the industry from international markets.

Feral swine also threaten native wildlife populations, including numerous endangered species that compete for food, destroy habitat, and predate on these species.

Entire native ecosystems are impacted by the presence of feral swine. Rooting accelerates the establishment and spread of invasive plants, decreasing diversity and resilience of these ecosystems.

Feral swine must be controlled to protect our nation's agricultural resources. Studies have shown that 70 percent of the feral swine population must be removed annually to halt population growth. Unfortunately, most conventional trap methods remove less than 50 percent of the population. Moreover, research suggests that conventional traps may actually be responsible for creating what is commonly known today as trap-shy pigs.

Noble Research Institute has investigated strategies to capture trap-shy pigs. The result of this research is a fully-suspended trap that functions much differently than conventional traps. Our research demonstrates that the suspended trap design has an 88 percent capture rate and it is now commercially available under the BoarBuster® product name. Innovative techniques like the BoarBuster will be essential to controlling feral swine populations as they become more trap shy.

Education on best management practices that utilize the most effective technologies in a strategic manner is vital to successfully reducing feral swine populations. State and Federal funding has extended the reach of producer education on feral swine, but more educational programs are needed as feral swine populations expand.

Funding for continued research is also vital to future success in feral swine control. Stimulated by the USDA funded grant in 2015, the National Water Research Center and Nobel Research Institute partnered to develop performance and monitoring tools for the management of feral swine. We anticipate that USDA's new Feral Swine Control Pilot will result in additional innovative ideas for educating producers in increasing control efforts.

Feral swine populations continue to grow at the expense of ag production and native ecosystems. If left unchecked, feral swine could have devastating impacts on our nation's food supply, ag industry sustainability, and environment.

Continued support for developing advanced control strategies, conducting feral swine research, and educating producers on strategic effects and control practices is essential if we hope to prevail over this invasive and prolific species.

Thank you for the opportunity to speak today.

[The prepared statement of Mr. Gaskamp follows:]

PREPARED STATEMENT OF JOSHUA A. GASKAMP, TECHNICAL CONSULTATION MANAGER AND WILDLIFE AND RANGE CONSULTANT, NOBLE RESEARCH INSTITUTE, LLC, ARDMORE, OK

Chairman Costa, Ranking Member Rouzer, Members of the Committee, thank you for this opportunity to submit a written statement on behalf of Noble Research Institute, LLC.

Lloyd Noble, an oilman and philanthropist, founded Noble Research Institute in 1945 to help revitalize agriculture following the Dust Bowl. Mr. Noble was a visionary in land stewardship and conservation, recognizing that ". . . the land must continue to provide for our food, clothing and shelter long after the oil is gone." Today, Noble Research Institute is the largest, nonprofit independent agricultural research organization in the United States. Among our efforts, we conduct agricultural consultation, education for youth and adult, and research focused on delivering solutions to great agricultural challenges. One of the greatest challenges facing farmers and ranchers ("Producers") today is the negative ecological and economic impact caused by wild, invasive and non-native species, including feral swine. Noble Research Institute has conducted extensive research on various methods for controlling feral swine populations. This research will be the focus of my testimony.

Introduction to Feral Swine

Swine are a non-native species in the United States. The species was introduced to North America during the European colonial period in the 1600s. Swine eventually became a common form of livestock production in the United States. As domesticated livestock, they were bred for traits such as high fecundity (*i.e.,* fertility) and accelerated meat production. These traits significantly increased the quality and quantity of pork available for human consumption.

Through accidental and, in some cases, intentional release of once-domesticated animals, combined with the introduction of swine as a game species for hunters, populations of feral swine began to develop. The same traits that were bred into domesticated swine for increased production have led to devastating ecological and economic impacts on ecosystems when this species is allowed to live in a feral state.

Feral swine are the most prolific large mammal in the United States. They have an early age of sexual maturity (6–8 months), short gestation period (115 days), and the ability for year round breeding and farrowing. Feral swine are a highly adaptable species that flourishes in a wide range of environments. They are opportunistic omnivores that consume an endless variety of plants and animals.

In addition to their genetic capacity for prolific reproduction, certain human interventions over time have also facilitated increased populations. Farm programs, such as the Conservation Reserve Program, reduced acreage in active agricultural production. This reduced the need for crop damage protection programs so feral swine populations in those areas were no longer trapped or hunted. At the same time, land ownership patterns began to shift with more people becoming absentee land owners of acreage not utilized as their primary means of income. These unmanaged acres are ideal habitat for feral swine populations. Practices intended to increase feral swine populations for recreational hunting since the 1930s have also facilitated the spread of feral swine in the United States. Intensive management for other game species such as deer, including production of food plots and provision of supplemental feeding, further favored establishment and growth of feral swine populations.

In the south central region of the United States, specifically Texas and Oklahoma, feral swine populations have experienced enormous growth in the last decade, increasing at an estimated average annual rate of 21% per year. While land use changes impacted population increases for feral swine, their geographical expansion has primarily been the result of feral swine transportation and stocking facilitated by humans for hunting. Feral swine populations now exist in at least 37 states, including the vast majority of states represented by this Committee. The total population in the United States is estimated to be more than seven million animals.

Impacts on Agriculture and Natural Resources

Generally

Feral swine act like rototillers turning soil over in search of roots, tubers, insects, and anything else with caloric value. Damage caused by feral swine is widespread and extensive but rarely rigorously quantified. The most commonly cited estimate of feral swine damages to U.S. agriculture is $1.5 billion annually. This estimate includes direct removal of crops, destruction through rooting of pastureland, damage to fences and harvest equipment, depredation on livestock, and livestock loss to disease from feral swine contact. However, this estimate did not include altered habitat

for native wildlife, competition for food sources with livestock and wildlife, water contamination, soil degradation and loss, unaccounted disease impacts, vehicle collisions, and opportunity costs associated with non-production due to the likelihood of crop or livestock damage. Examples of significant impacts to agriculture appear regularly, including the 2006 *E. coli* outbreak in California spinach. Though contaminated spinach was only linked to one farm, the source was determined to be feral swine. Three people died, 60 contracted a unique type of kidney failure and several hundred were sickened. It was estimated that spinach farms in California lost as much as $75 million due to public fears of consuming spinach. For all these reasons, it is likely that the $1.5 billion damage estimate is grossly underestimated.

Crop Damage

Crops commonly impacted by feral swine include corn, cotton, milo, wheat, oats, rice, peanuts, soybeans, potatoes, melons, and pecans. Producers in areas with abundant feral swine populations are regularly forced to replant portions of their crop after feral swine consume seed or otherwise disrupt its establishment within days of planting. Mature crops are also commonly impacted. Yield loss regularly occurs in various crop species due to direct consumption by feral swine or unsuitable harvest conditions caused by feral swine rooting. At Noble Research Institute, researchers found pecan harvest in areas rooted by feral pigs was 33.7% lower compared to unrooted areas.

Disease

Livestock exposure to diseases and parasites carried by feral swine poses a significant risk for Producers. Feral swine regularly mingle with cattle, utilizing common water sources and feeding stations, and rooting and defecating in cattle enclosures. Similarly, the social behavior of swine results in contact and interaction among feral populations and domesticated swine in non-confinement pork production facilities.

Feral swine carry more than 60 infectious diseases that can infect humans and/or domestic livestock. Many of these diseases cause weight loss, abortions, or death in domestic animals despite having little to no impact on feral swine. Specifically, feral swine commonly harbor swine brucellosis and pseudorabies virus, both of which can be transmitted to domestic pigs. A recent study in Oklahoma and Texas found that feral swine tested positive for *Brucella* spp. antibodies in 12% of the samples tested. *Brucella* from feral swine has been identified in domestic cattle resulting in false positives in testing and additional testing at additional expense in order to maintain brucellosis-free status.

Pseudorabies commonly affects canids (*i.e.,* domestic dogs, wolves, coyotes, foxes, *etc.*) in areas where feral swine prevalence is high. A separate study in Oklahoma found that feral swine tested positive for pseudorabies antibodies in 24% of the samples tested. Multiple deaths from pseudorabies in companion animals have been reported.

In addition to direct losses to domestic livestock and companion animals, disease transmission from feral swine poses significant trade risks with the potential to depress livestock markets in the event of a widespread outbreak. To maintain brucellosis-free status for cattle in the global marketplace, any time a cow tests positive for *Brucella,* an epidemiologic investigation at considerable governmental expense must be initiated.

Similarly, an occurrence of foreign animal diseases such as foot-and-mouth disease or African swine fever ("ASF") in U.S. livestock would result in substantial losses to the industry from international markets. Although ASF would have a small impact on feral swine numbers, it could have a devastating impact on domestic pork production. U.S. pork exports in 2018 totaled approximately $6.4 billion. If ASF is found in U.S. domestic pork, exports could suffer and result in catastrophic losses for U.S. pork Producers. Because feral swine are reliable reservoirs for many infectious diseases that could harm U.S. agriculture, they pose a serious risk to our biosecurity and economic sustainability.

Wildlife and Native Ecosystems

Feral swine negatively affect native wildlife populations by competing for food, habitat manipulation, and predation. Though predation on livestock species (primarily sheep, goats, and poultry) does occur, feral swine are more detrimental to a variety of wildlife species. This is due to the fact that wildlife species lack the protections that common animal husbandry practices provide for livestock. Threatened and endangered species including whooping cranes (*Grus americana*), Kemp's Ridley sea turtles (*Lepidochelys kempii*), interior least terns (*Sterna antillarum athalassos*) and Attwatter's prairie chickens (*Tympanuchus cupido attwateri*) are all negatively impacted by the presence of feral swine. Ground nesting birds, amphibians, and reptiles are most susceptible to predation, but many small and large mam-

mals are also affected in other ways. Feral swine disrupt, destroy and otherwise alter native plant communities. These changes to plant community structure and plant species composition displaces or destroys the wildlife species that evolved with and depend on them.

In native ecosystems, the disturbance created by feral swine rooting accelerates the establishment and spread of invasive plant species, while decreasing diversity and resilience of the native plant community. Feral swine degrade wetlands by wallowing and reducing vegetation along riparian corridors. They are especially attracted to wetlands as a means of thermoregulation and parasite control. Research in Texas demonstrated that feral swine remain within 25 meters of water 24% of the time and within 100 meters of water 48% of the time. These wetland ecosystems are among the most fragile and imperiled in the country, but extremely important biological filters for our nation's water supply.

The extent to which feral swine damage soils is not fully known, but, at a minimum, they have impacts comparable to dragging a plow through the soil without the subsequent benefit of planting a crop. This contributes to erosion, especially on seepage slopes, and leaves behind a number of pathogens that may persist in the environment for extended periods of time.

Urban Areas

Due to high densities of feral swine in some regions of the U.S., populations are increasingly encroaching on urban areas, negatively impacting these environments and increasing potential contact with humans. Environmental impacts include rooting damage to golf courses, public parks, green spaces, lawns and other landscaped areas. Vehicle collisions with feral swine are also becoming more frequent threats to human safety. From 2007 to 2017, at least two fatalities occurred in Texas due to vehicle collisions with feral swine in the roadway.

Population Cont[r]ol Methods

Various public policy positions regarding feral swine population management have created a complex suite of challenges, strategies, and opportunities. Generally, Producers favor eradication of feral swine to reduce damages to their respective agricultural enterprises and maintain healthy and functioning ecosystems. However, some Producers have elected to benefit financially from recreational opportunities provided by feral swine on the landscape, *e.g.,* guided and unguided hunts. These incentives, in whatever form, for having feral swine on the landscape perpetuate their existence and population spread. Due to the overwhelmingly high financial and environmental cost of damage caused by feral swine, population control strategies are vital to protection of landscapes, native ecosystems, domestic animal populations and other important agricultural production.

Trapping

Many techniques that were once effective for removing feral swine from the landscape are now obsolete. Research studies have shown that more than 70% of the feral swine population must be removed annually to actually reduce overall population numbers. The only available techniques capable of this level of control are trapping and Wildlife Services administered shooting from helicopter.

Unfortunately, most conventional trapping mechanisms, such as a simple box trap or a larger corral trap, can only remove 50% of the feral swine population, but typically far less. Moreover, research suggests that the conventional do-it-yourself traps that were suggested by resource professionals in the past may actually be responsible for what Producers and professional trappers today call "trap-shy" pigs.

Feral swine are highly intelligent. They travel in social groups referred to as "sounders." When a portion of a sounder is captured in a conventional box trap or corral trap, it is commonly the most naïve feral swine that are captured. The more wary animals remain on the landscape. These "survivor" animals then breed and contribute to future generations of feral swine that have the advantage of maternal guidance and are genetically wary. This natural selection for more wary populations has resulted in the need for development of more effective control systems and novel techniques to increase effectiveness and longevity of control.

Noble Research Institute spent years investigating strategies to catch trap-shy feral swine. The current result of this research is a fully suspended trap that functions much differently than conventional box traps and corral traps. This fully suspended trap design has been commercialized and made available to Producers and other customers under BoarBuster® product name. Multiple years of research has shown that the fully suspended BoarBuster trap is capable of capturing 88% of feral swine in a population. BoarBuster trap-related research also revealed a higher capture rate than any other trap available on the market. Real-time trap monitoring and activation from a smart phone also saves Producers time and enhances the suc-

cess rate for capturing entire sounders. This negates the problem of creating more trap-shy feral swine in the breeding population.

While the BoarBuster trap system has proven to be a very effective control mechanism, Producers have a wide variety of control techniques to deploy at varying costs. There is no silver bullet to the feral swine problem. Agricultural resource professionals have previously urged Producers to employ an integrated approach to feral swine control, using multiple techniques in unison to achieve a cumulative effect. Unfortunately, Producers are not likely to have extensive experience with feral swine control when they first encounter damage on their farms and ranches. As a result, Producers often gravitate to the cheapest and easiest option first and not necessarily the most effective option. Education on area-specific best management practices that utilize the most effective technologies first is vital to successfully controlling the feral swine population. Producers must have access to the newest, proven technologies for feral swine control, and they must be strategic and adaptive in their practices, not simply apply an integrated approach.

Education

Feral swine experts from research organizations, universities, state and Federal wildlife departments and other governmental agencies across the nation often collaborate to educate the public about feral swine biology, management, and control. This is accomplished primarily through county-wide or regional presentations, workshops, demonstrations, consultation, publications distributed to landowners, and more recently through videos, social media, and websites. State and Federal grants have extended the reach of Producer education on feral swine, but more coordinated educational programs and delivery are needed. As feral swine populations expand, it will be increasingly important to ensure Producers are fully educated on the proper management and control of this invasive species. Further, as Producers shrink in numbers across the United States, non-traditional educational methodologies will be necessary to reach land owners that are not necessarily connected to agricultural production.

The continued collaboration and connection among feral swine experts is critically important to encourage new ideas and the dissemination of information across the U.S. Feral swine experts convene annually at the International Wild Pig Conference (even years) and the Wildlife Damage Management Conference (odd years) to educate one another on the emerging issues in feral swine control. The experts share information on the effectiveness of management strategies in each state. Some states have successfully halted or slowed feral swine population growth because of strategies they adopted or avoided based on experiences shared by colleagues in other areas of the country.

Continued Research

Funding for continued research is also vital to future success in feral swine control. As the recipient of a USDA grant in 2015 that funded a collaboration between Noble Research Institute and the National Wildlife Research Center ("NWRC"), I can personally attest to the benefit of Federal funding for feral swine research. Through our work, we ultimately developed feral swine abundance estimates for measuring performance of management activities using catch per unit of effort data. Results of this study are now being used to evaluate the performance of feral swine control efforts around the U.S. and to monitor population levels in several states. Following the completion of this USDA-funded research, the collaborative relationship between Noble Research Institute and NWRC continued, allowing our organizations to collectively build educational and management tools for Producers.

Federal funding is also contributing to research on introduction of a safe and effective toxicant for feral swine. Toxicants, which are already being utilized in other countries to combat feral swine, will be yet another tool for feral swine management. But again, they will not be a silver bullet to the feral swine problem.

We anticipate that new funding available through the USDA's Feral Swine Control Pilot will result in truly innovative programs designed to educate Producers and increase efforts to control feral swine. Ideas that achieve marked success will be amplified across other areas of the country to further combat the exponential growth of feral swine populations. The Feral Swine Control Pilot further stands to benefit feral swine control professionals and the general public.

Conclusion

Despite improved knowledge and innovative solutions being brought to the market, feral swine populations continue to grow at the expense of agricultural production, wildlife populations and native ecosystems. If left unchecked, feral swine could have devastating impacts on our nation's food supply, agricultural industry, and environment. Continued support for developing advanced feral swine control tools and

strategies, conducting additional feral swine control research, and educating Producers on the most effective strategic and adaptive control practices is essential if the United States hopes to prevail over this invasive and prolific species.

The CHAIRMAN. We thank you, Mr. Gaskamp for your important testimony.

I notice that we have been joined by the Chairman of the House Agriculture Committee, and appropriately so we will defer to him for any comments or questions he may want to make at this time.

OPENING STATEMENT OF HON. COLLIN C. PETERSON, A REPRESENTATIVE IN CONGRESS FROM MINNESOTA

Mr. PETERSON. Thank you, Chairman Costa.

Dr. Thompson, welcome. I haven't had a chance to interact with you directly in this position. I have had a lot of experience with your predecessors who did outstanding jobs, and I am told that you are going to be better than they are, so we will see how that goes.

Minnesota has been a leader in a lot of different areas. The poultry situation, as you mentioned, we learned a lot of lessons. And I guess you were the head of the Willmar Lab at one point, were you?

Dr. THOMPSON. Yes, Members, Minnesota has two labs.

Mr. PETERSON. Yes.

Dr. THOMPSON. One is located in Saint Paul and one in Willmar, which was well funded after avian influenza.

Mr. PETERSON. Yes. And that was because we learned our lesson and we had people taking turkeys to South Dakota to get them tested because they couldn't deal with it all, the distances and all that. We made a lot of progress and we learned a lot about biosecurity that we thought we had a pretty good system and it turned out we didn't. We had people working at six different turkey farms that were staying together at night and not showering and whatever and spreading this stuff. We learned a lot of things, and I think the industry is pretty much on top of it now as best as we can be.

The one question I have is, as I understand it, the hog industry is kind of learning from what turkeys went through and our upgrading their biosecurity to make sure we don't have the same kind of things going on within the hog industry. Am I right about that?

Dr. THOMPSON. Yes. Mr. Chairman, Members, that is very correct. In Minnesota we have stood up additional committees, taking a look at—and the disease of interest right now is African Swine Fever, but it could be foot-and-mouth disease, it could be any of a number of diseases. But yes, they are taking a look at all the things that have been learned from avian influenza. Specifically biosecurity but also surveillance, also some of those other things that need to be in place.

Mr. PETERSON. Right. As I understand it, the avian influenza thing went pretty fast. As I understand, the African Swine Fever is a slower moving virus, so I guess it has the potential to get ahead of it, easier than avian influenza? Am I correct about that?

Dr. THOMPSON. That is a correct statement, Mr. Chairman, Members. The unfortunate thing about the way our hog production happens in the United States, though, is there is much more movement of hogs than there is turkeys, chickens, eggs. If it is slow

moving and there aren't clinical signs, there might be movement of the disease prior to knowing about it.

Mr. PETERSON. Yes. Well, they are trying to do everything they can to get on top of it.

A lot of people aren't aware, we had a TB outbreak up north that got transferred from deer to cattle, and we had to go in and do a quarantine and we basically took a 30[2] mile area. Your predecessor, the State Veterinarian and the Federal Vet were involved and a bunch of us, and we made a decision to eradicate all the deer within 30 miles. We put helicopters in there and killed every deer and we got it under control and we eradicated it. And I don't know how long it took, a couple, 3 years. Michigan didn't do that and they still have TB because they didn't do what needed to be done at the time when it broke out, and now they can't get ahead of it. So that is another example of why you have to be on the ball with this stuff.

The only thing that troubles me about your testimony here, you say that there are two leadership positions that are vacant at USDA APHIS, and we put extra money into this in the farm bill. Why are these positions vacant? Do you have any idea?

Dr. THOMPSON. Mr. Chairman, Members, I am not sure why those two positions are currently vacant. There has been some switch up in positions in Veterinary Services. As you all may know, Dr. Shere has moved into a different position. We know have Dr. Burke Healey heading up Veterinary Services, so there has been some movement, but the states are looking at those two positions and we would like to have those filled as soon as possible.

Mr. PETERSON. Can you see, at this point, any outcome out of this $300 million that we put in there? Do you see any upgrade in what is going on with APHIS from your position?

Dr. THOMPSON. Mr. Chairman, Members, if you are speaking specifically of the farm bill funding, there was a call for proposals for training and exercise for this first year, and all state-related agencies, some universities, and some private groups have put in proposals for that money. We are waiting to hear back from USDA at this point in time. We are very excited about this opportunity.

Mr. PETERSON. And Mr. Gaskamp, is it? Over in Denmark they are building a wall. We are into walls in this world. But they are building a wall between Denmark and Germany. I actually saw the video of it. Because the feral hogs in Germany apparently have African Swine Fever and the industry in Denmark is scared to death that they are going to transfer these. They are actually building a double wall so that these hogs can't interact face to face.

I don't know that we have any indication that we have African Swine Fever within the feral hog population in the United States. I guess one question, if you are aware of that? And the second thing is, how would the feral hog population acquire African Swine Fever? Do you have any information about that? Do any of you have any information, I guess?

Mr. GASKAMP. Thank you for the question.

African Swine Fever in countries where African Swine Fever is endemic, it persists in native populations of wild pigs as well as feral swine that are in those areas.

Here in the United States, until we can really get a hold of actually controlling feral swine populations, we won't be able to have a good way to control African Swine Fever if it gets into feral swine populations. I am not an epidemiologist, so I don't know exactly how feral swine would get the disease, but they definitely can contract it from domestic livestock and *vice versa.*

Mr. PETERSON. Does anybody on the panel know how that would, could possibly happen if it could get transferred into the wild population?

Dr. THOMPSON. Mr. Chairman, Members, one of the pathways that I can think of is African Swine Fever virus is very hardy, so if you think you are cooking it with salamis and different dried meats or cured meats, you might not actually be killing the virus. And if somebody throws out a sandwich that has some African Swine Fever infected meat in it and feral swine get a hold of it, that would be one pathway.

Mr. PETERSON. But we don't have African Swine Fever in the United States at this point that we know of, right?

Dr. THOMPSON. Correct. That is correct, Mr. Chairman.

Mr. PETERSON. I know we have upped the things at the border and so forth trying to stop the stuff from China, but how would it—I guess that is one way. I guess it would have to get almost into the domestic population first before it got into the feral swine population, I would guess, right?

Dr. THOMPSON. Mr. Chairman, Members, yes. That is probably the most——

Mr. PETERSON. Well, I have taken more time than I should, but thank you very much. Thank you all for your testimony, and I yield back.

The CHAIRMAN. All right. We thank Chairman Peterson for your focus and always your insight as to the challenges we are facing on these issues and others.

I would like to begin with the witness from California, Mr. Ortega.

You noted in your testimony about the challenges you are facing with this invasive, non-native species called nutria that has also been a problem in other parts of the country.

My understanding is you have funding for eradication for 2 years, but what happens after that?

Mr. ORTEGA. A serious deficit. No long-term funding has been secured. We think the effort will require about $5 million annually. Five million dollars currently will support 45 staff at the California Department of Fish and Wildlife.

The CHAIRMAN. And the source of that funding is?

Mr. ORTEGA. The San Joaquin Delta Conservancy has issued a one-time appropriation in the amount of $10 million. CDFW is also reallocating staff, biologists, to this effort, so those folks should be doing their normal day-to-day jobs, but yes, I figure that if we don't secure some long-term funding, we are going to have a real hard time controlling this outbreak.

The CHAIRMAN. And are you aware of the experiences in Maryland and Louisiana and their eradication efforts and what sources of funding that they were able to bring together?

Mr. ORTEGA. Yes, there was actually Federal funding available here in the East that currently do not extend to California through the eradication program.

The CHAIRMAN. Well, that is something we ought to look at in terms of a comprehensive effort. If it is applicable in Maryland and Louisiana, obviously we think it would be appropriate in California. A lot of these efforts are a result of cost-sharing anyway, local, state and Federal, so we should work on that.

You noted in your testimony again the impacts on waterways and levies and the importance of those waterways to deliver water to agriculture and urban water users. Could you talk more specifically. Have you had any cost analysis on potential impacts on agriculture?

Mr. ORTEGA. No specific cost analyses have been conducted. The Central Valley is a very flat area and most of the water is wheeled through earthen-lined canals. And so the extensive burrowing that can occur can really compromise——

The CHAIRMAN. I understand that is hundreds of feet and they establish these caves within these levies in which you will have colonies of nutria that begin breeding. And as you noted, after 4 months and 40 offspring, the propagation of this species obviously is very problematic.

Mr. ORTEGA. That is right. Absolutely, yes. The burrowing is extensive and because of the density in these colonies, one example is they pulled a hundred nutria out of a 10 acre pond. They are very gregarious and they can attack specific infrastructure. If we don't start to get control of these and they do migrate into the Sacramento-San Joaquin Delta, I think that is the biggest threat that agriculture faces. The Delta is a highly managed system to provide water throughout the state.

The CHAIRMAN. Well, Mr. Harder has legislation on that effort of which I am a cosponsor and I will continue to work with him. Hopefully he will get back here before the Committee finishes its hearing.

Mr. Erickson and Mr. Reichert, you talked about the importance of the impact of trade, and I noted that in my opening comments. We all here on the Subcommittee believe that that is absolutely critical and to ensure that we have enough resources in our ports so that inspections are done thoroughly. That was part of the problem I had with this tomato seed issue in China where we had to try to provide some alternative support. And that is why, as you all noted, that Mr. Vela's legislation that many of us are cosponsoring to introduce Protecting America's Food and Agriculture Act to make sure that we can hire more ag inspectors at our ports-of-entry.

What kind of backlog are you folks seeing due to the lack of inspectors, and what impact does that have on specialty crop growers and consumers?

Mr. ERICKSON. It is not uncommon for—so we are a domestic producer but we do import product to complement our business, and we, I would say once a month on average perhaps, a couple times a month, we run into issues where a load of cilantro or broccoli crowns or something coming out of Mexico gets held up at the port-of-entry because of insect identification, and the local inspec-

tors may not have the authority to identify that insect. Then the insect needs to be sent up to Washington, D.C., so it takes maybe, occasionally we see shipments that may take 3 to 4 to 5 days to receive an insect identification when it is something that is out of the ordinary, at which time we typically would have to dump the load or send it to the food bank. It would no longer be salvageable for us. It is not——

The CHAIRMAN. More examples of that will be important as we try to move this legislation forward.

Mr. Reichert, briefly do you have anything you would like to add?

Mr. REICHERT. Well, to follow up on Mr. Erickson's experiences we see about the same in the Port of Philadelphia. Generally we handle more of the imported commodities. Our CBP inspector staff is down by I believe four inspectors. Our APHIS inspector count is generally at six. We understand they are losing two of their people through a vertical integration. They have offers out there now for additional inspectors. Two would be the minimal. As Mr. Erickson said, the identifiers are also in need. Certain commodities if they cannot be inspected or identified locally must be sent down to Baltimore area, and that can in the——

The CHAIRMAN. Bottom line is we need more help?

Mr. REICHERT. Yes, we do.

The CHAIRMAN. Okay. I have exceeded my time and I would like to defer now to the Ranking Member of the Subcommittee, Mr. Rouzer, from North Carolina.

Mr. ROUZER. Thank you, Mr. Chairman. Again, I thank each of you for being here today.

We are talking about feral swine and their ability to harbor any number of diseases. Do we know exactly how many different diseases they can harbor? Is it thousands, hundreds of thousands, ten, 20?

Mr. GASKAMP. That is a great question, Ranking Member Rouzer.

We don't know exactly how many diseases swine can actually harbor. We know there are about 66 that are important to agriculture here in the U.S. That doesn't include some of the foreign animal diseases like foot-and-mouth and African Swine Fever, a funny story is that we work with a colleague out in western Texas at the Texas Institute for Environmental and Human Health. He has been very good at exploring new diseases that may be harbored in our swine populations, and every time he sends us some advice, "Hey, maybe we ought to start testing for this," it seems that we find some prevalence of every disease we have tested for in feral swine. They are a huge reservoir for diseases that could harm U.S. agriculture.

Mr. ROUZER. Following up on that, there is a great movement in the country, free range chickens, free range hogs, whatever you want to call it. In this case feral. I have a huge population center on the coast and then further inland it is all agriculture and I have a tremendous number of hogs, turkeys, and chickens that are produced in my district. And invariably every single week when I am back home I have two or three folks who will come up to me and say, "I just really don't like the way that American agriculture, these factory farms, all these hogs put together, all these chickens put together, all these turkeys put together, how inhumane it is

and everything else." It seems to me that we need to do a better job of talking about the risk with this movement out there to move to backyard production agriculture. There is after all a reason why we moved away from it. Economics is part of it, and sophistication and new techniques and new developments, *et cetera.* But in your circles, is anybody talking about this movement and the potential impact in terms of promoting and having an environment where you have even more infectious diseases that are much more difficult to control?

Mr. GASKAMP. Absolutely, Ranking Member Rouzer. We have in the domestication process of many of these livestock species we incorporate these proper animal husbandry practices, and we haven't spoken a lot on wildlife species. Those wildlife species don't have those animal husbandry practices that protect them. When you take livestock species and move them out into more free range type scenarios you are putting them more at risk just like those wildlife species that are out there.

Mr. ROUZER. From my education and to my knowledge, swine fever has no impact on human health. Is that correct?

Dr. THOMPSON. Yes, that is correct. It affects only species of swine. There are no other species infected, including humans.

Mr. ROUZER. Can the human body be a carrier of it, I assume, like all of us I assume have some type of dormant virus that we carry, although it may not show up?

Dr. THOMPSON. That is an excellent question. No, the human body wouldn't be a carrier itself other than if there is some sort of virus that is picked up on clothing, on shoes, on things like that. But the body itself, no, the human body would not accept that virus.

Mr. ROUZER. Okay. When you mentioned earlier today in the hearing where you throw out food that may be contaminated with swine fever, assuming that food is digested or ingested by the human body, it has no effect?

Dr. THOMPSON. Mr. Chairman, yes, thanks for that clarification. No, it wouldn't be the humans eating the African Swine Fever. It would be a human having a sandwich that contains some of the virus and not eating the sandwich and throwing it out to the pigs.

Mr. ROUZER. Right. But in terms of that portion of the sandwich the human ate, no, it does not stay in the human body?

Dr. THOMPSON. Correct.

Mr. ROUZER. Okay. Thank you for that clarification.

One quick last thing, Mr. Reichert, there is a bill in Congress, as you may know, to ban the use of Chlorpyrifos, and if I am pronouncing that correctly, but it is a common, obviously a common insecticide that is used. There are 115 cosponsors including some Members of this Committee that are on that bill. Is there a real problem with the EPA in terms of risk assessment, *et cetera* as it relates to that insecticide?

Mr. REICHERT. Ranking Member Rouzer, unfortunately I do not know the answer to that. My division specifies fumigation only. We do have a pest control division, so I could get than answer, but I do not know that.

Mr. ROUZER. Okay, thank you. I yield back.

The CHAIRMAN. Thank you, Ranking Member.

And the next Member on our list here is Congressman Harder from just north of me in the great San Joaquin Valley, and he has a piece of legislation that deals with one of these issues that we were talking about earlier on non-native invasive species. Congressman Harder.

Mr. HARDER. Thank you, Chairman Costa and Ranking Member Rouzer.

I appreciate the opportunity to testify about the threat nutria poses to the California Central Valley and I especially want to thank Congressman Costs for identifying ways USDA and the California Fish and Wildlife Service can work together to contain and eradicate these swamp rats.

For folks who have no idea what a nutria is, all you need to know is this is a giant swamp rat which can destroy vital, vitally important parts of our agriculture, everything from crops, including almond trees, irrigation canals, they can even cause flooding by burrowing into water control systems and threatening our water infrastructure. And if we don't take action now, there could be 250,000 nutria just in California within 5 years, because one female can lead to 200 offspring in a year, 200. That is why I have introduced a bill that invests $7 million now to help our community and our country get ahead of this issue before it is too late.

And to illustrate this, I brought this fantastic prop, which is called the *Invasion Curve,* thanks to the California Fish and Wildlife Service. I call it the nutria curve. We can also call it the feral hog curve. We will talk about that. And essentially what you see here is you see the exponential growth of an invasive species. You see that at the beginning you have the introduction of an invasive species. You see the first detection, then you see when folks are aware, and then when public awareness begins, and then finally when eradication is all but impossible when all you can do is have local control and management. And this is the cost of containment, obviously also exponential as the population grows.

[The chart referred to is located on p. 86.]

Mr. HARDER. This is where we are right now on nutria. We are right here. We have detected the problem but eradication is still feasible. If we don't combat this problem quickly, pretty soon we are going to be right here. By the time the public awareness really begins, by the time you see these nutria all up in your farm, it is already too late to eradicate the problem completely.

And you see the exact same thing, by the way, with what has happened in feral hogs. Feral hogs are actually an example of not taking this as seriously as we should have at the beginning. In the 1980s, wild pigs were where nutria is today, only found in a handful of states. But today they are found in 35 states, costing $2.5 billion in damage annually. Some farmers in southern states lose up to 50 percent of their yield just from these pigs, and folks have to worry about 30 to 50 feral hogs in their backyard attacking their kids.

And so the farm bill has set aside $75 million over 5 years to address this crisis, but I wish what we would have done is actually addressed it years earlier, decades earlier, when it was still easier to eradicate it.

And so my goal is to make nutria not the next feral hog infestation. We come from a state where there is a lot of droughts, floods, wildfires. We need to be able to get ahead of disasters, and invasive species are just the next one.

And I hear a lot of my colleagues talk about fiscal responsibility and I couldn't agree more. By getting ahead of this problem now when it is still manageable, we are spending $7 million to eradicate this problem instead of spending $2.5 billion every single year like we are on feral hogs. We actually end up saving a whole lot of money in the long run before they actually get out of control.

And I want to thank the Administration for taking this issue very seriously, working with my office to identify a bipartisan bill that addresses the serious problem. And I also want to thank the Agriculture Committee for holding this hearing on this vitally important issue. We need to make sure, because the challenge here, just the last point I make is that by the time public awareness begins, eradication is very unlikely. And by the time folks really understand the depth of this problem, eradication is actually all but impossible. And so we have to get started now when we are seeing these invasive swamp rats all over. I mean, these things can get up to 30, 40, 50 pounds. They are huge. And one female, 200 offspring, we have to be able to nip it in the bud.

With that I yield back my time. Thank you so much, Mr. Chairman, and Ranking Member, and I look forward to hopefully getting our bill across the finish line.

The CHAIRMAN. Well, we look forward to working with you. Before, I asked questions of Mr. Ortega who is dealing specifically with the problem in our area, and the example of the infestation in Maryland and in Louisiana resulted in Federal funding to match state and local, and so it is appropriate there is a precedent there. And I intend to work with you, and I hope other Committee Members, to move on this legislation working with the Department of Agriculture, because it is a very serious issue, as you noted.

Okay. Our next Member is Mr. DesJarlais. No, it is, put my glasses on.

Mr. ROUZER. Comer.

The CHAIRMAN. Comer. I am sorry. Mr. Comer is from Kentucky.

Mr. COMER. Thank you.

The CHAIRMAN. Thank you.

Mr. COMER. Thank you, Chairman.

And I wanted to begin with talking about the feral hogs as well. I represent southern Kentucky and western Kentucky along the Mississippi River, and the mind-set in Kentucky is those feral hogs are just concentrated along the Mississippi River area. My farms are about 4 hours east of there and my brother killed one on his farm last year.

I also wanted to note that just this week the—there was an announcement that the Kentucky Division of Fish and Wildlife will join the Forest Service in an attempt to kill the feral hogs from helicopters, and there was a picture of the—I know they had done that before in Kentucky, so Kentucky is serious about it. I was Commissioner of Agriculture and this was a big issue in several counties along the Mississippi and Ohio River parts of Kentucky.

I was just curious, I will ask Mr. Gaskamp, is that something that other states are doing, working with the Fish and Wildlife to try to eradicate the feral hog population, and does that prove to be a good relationship in every state?

Mr. GASKAMP. Thank you for the question. Absolutely, collaboration is key. When dealing with feral swine collaboration is key to get ahead of the problem.

Aerial gunning is that practice that we refer to is, is basically Wildlife Services, USDA Wildlife Services getting in helicopters and administering control, lethal control via helicopters. That is happening in a lot of states in the South. Texas and Oklahoma, Kansas, have very active programs where Wildlife Services is flying and working on eradication in that regard.

Mr. COMER. Yes.

Mr. GASKAMP. In a couple of those states, in Texas and Oklahoma, we actually have commercial operators that are also selling hunts from helicopters and that sort of thing for the public to engage in.

Aerial gunning has been proven to be one of those more effective techniques for removing swine, but those techniques need to be strategic in nature, designed for control and not for recreation.

Mr. COMER. Right. Thank you.

Dr. Thompson, I wanted to ask you, in my district we have five poultry processors and ours is the biggest poultry dependent district as any in America, in Kentucky. What is the status of programs to safeguard the health of poultry to prevent any type of livestock disease outbreak? How successful are we right now? I know there have been instances even in Kentucky and other states where you have had an outbreak of West Nile and different things like that.

Dr. THOMPSON. And thank you for the question. Mr. Chairman, Members, there is a lot of work going on within our poultry industries right now. I am most familiar with what is going on in Minnesota, of course, but on the level of biosecurity, the lessons learned from High-Path Avian Influenza in the past years. In addition to that all poultry processors are working together with their producers on biosecurity audits.

Mr. COMER. Yes.

Dr. THOMPSON. And as an official state agency we are reviewing the audits of individual farms. On many different levels there is a lot of work going on right now.

Mr. COMER. My last question I wanted to ask you, Dr. Thompson, pertained to black vultures. This has been a huge issue in Kentucky with my cattlemen. Of course, that was a protected species. We changed that. I assume we changed that in the farm bill. It was supposed to be changed in the farm bill last year. What success has Minnesota had. Very quickly, what success has Minnesota had with dealing with black vultures?

Dr. THOMPSON. And I am afraid I would have to look into that. I am not aware of any issues with black vultures in Minnesota.

Mr. COMER. All right.

Okay. All right. Well, I will just conclude with a statement here.

One concern that I hear from constituents and agencies overseeing the vulture issue in Kentucky, which is a huge issue with

livestock producers, is that the Federal Government is not the most helpful when it comes to this. I know that that may come as a surprise to many of my farmer friends. I hear from several cattle producers that Fish and Wildlife Services keeps USDA and landowners from being able to manage this problem independently from the government. This is a classic example of government getting in its own way, and I believe this is an issue with a simple solution. I hope we can resolve it in a fast way, but I believe that farmers would be the best people to be able to resolve this issue on their farms, and I hope that is something that we can talk about as we move forward in trying to eradicate predatory species, especially the black vultures.

But, Mr. Chairman, my time is out. I yield back.

The CHAIRMAN. All right. I thank the gentleman, and I will now refer to the gentlewoman from the wonderful State of Connecticut, Representative Hayes.

Mrs. HAYES. Thank you, Chairman Costa, for holding this important hearing, and thank you to all the witnesses for being here today.

I don't have a visual, but I look forward to working with my colleagues on both sides of the aisle to get ahead of eradicating these species that are damaging many of our agricultural sectors.

In Connecticut, my district in particular, it is home to a variety of greenhouses and poultry farms. According to the USDA, the greenhouse industry is the fastest growing agricultural sector in my state. The value of this sector to Connecticut's economy is estimated at $3.5 billion, according to the University of Connecticut.

There are roughly 10.5 million square feet of greenhouse space in Connecticut that is used to cultivate climate-controlled food crops, bedding plants, seasonal plants, vegetables, and herb plants.

When it comes to poultry, Connecticut always leads the way. Henry Saglio, a pioneer in the poultry industry, hailed from Connecticut. He is a global leader in the industry and owner of Arbor Acres Chicken Farms. At Arbor Acres he developed breeding chickens for the world and played a pivotal role in making chicken America's most-consumed meat. His chickens would go on to be associated with products ranging from Campbell's Soup to Perdue. Not surprisingly, for a time chickens were the state's main export.

In keeping in line with our rich history in poultry, the College of Agriculture, Health and Natural Resources at the University of Connecticut has a poultry farm and resource unit within their School of Animal Health.

For these reasons, it is particularly important to me to work diligently to help farmers protect their poultry and greenhouses against wild, invasive, and non-native species. With that in mind, I would like to discuss greenhouses and then shift to poultry.

Mr. Reichert, my district is a major producer of nursery, greenhouse, and floriculture products. At Western Fumigation, how do you address pest risks for imports and are they handled in the same way for fruits and other products? And then finally, are there any special considerations given to food *versus* non-food products?

Mr. REICHERT. Yes, thank you, Representative Hayes.

As far as the pest risk assessment, those are generally handled through the USDA. Any time a new product or country wants to

bring a new product into the U.S., they do have to apply for clearance. USDA will issue a pest risk assessment which will be put out to industry for comment, after which they will assign certain treatments based on the risk of an imported product. And it can be edible commodity or not edible commodity. Generally we just deal with the edible commodities. Most of the non-commodities are inspected prior to admission.

Mrs. HAYES. Thank you.

Dr. Thompson, your state has a vibrant poultry sector as well. We are located east of you, and as you discussed earlier, diseases spread by migratory birds. They tend to go west to east. How do you coordinate with other State Veterinarians, in say New England, so that those of us on the Atlantic Flyway can stay up to date and prepare for what is heading our way?

Dr. THOMPSON. Thank you for that question. Mr. Chairman, Members, there are a variety of different ways that we communicate across states. Most importantly, I would bring up United States Animal Health Association. It is an association of all state regulatory officials, and specifically animal health officials. As part of that organization, we also have the National Assembly which is made up of only state animal health officials.

Certainly, in my view, the best way to communicate with each other is picking up the telephone and calling somebody.

Mrs. HAYES. Imagine that. Do you see the USDA taking a leadership role in convening some sort of discussions around those, like communication, best practices to make sure that we are ahead of any potential outbreaks or spreads?

Dr. THOMPSON. Yes. That is a very good question. USDA does convene meetings on an ongoing basis depending on the disease and depending on the species.

Mrs. HAYES. Thank you. That is all I have, Chairman Costa. I yield back. Thank you.

The CHAIRMAN. Yes. All right, thank you very much, Representative Hayes.

Our next Member is the gentleman from Minnesota, Mr. Hagedorn.

Mr. HAGEDORN. Thank you, Mr. Chairman, Ranking Member Rouzer. It is a pleasure to be here. I thank the witnesses for their testimony.

First I would like to associate myself with Ranking Member Rouzer's comments about everything that you are doing is very important, but the number one important thing for agriculture right now is to get the United States-Mexico-Canada Free Trade Agreement through. It is very critical. It is going to help us build momentum for other deals with China and others. I say if we can't get a deal done with our best friends to the north and south, who expects the President and others to get something done with China? To my thinking that has to be the focus of this Committee and everyone else as we move out of here.

Mr. Gaskamp, so we have had people from agriculture and others come up and talk with us about African Swine Fever, and I have always impressed upon them we should probably be doing more like they do in other countries, like Taiwan, to try to keep products out of their country coming from China. We even have a situation

now where people check the box with customs and border security to say they have been on hog farms in China. They fly into our country. They are not even sometimes talked to, let alone investigated to see if they have any products or anything that would cause harm to us.

Chairman Peterson brought up the point, though, about how would it get in the country, and we have talked about that. But I have said, it is one thing to try to protect the United States from African Swine Fever, but what about Mexico and Canada, particularly Mexico? We have a bit of a porous border there. Is it possible that we could get it just from these feral hogs being infected in Mexico, running over the border? I take it that they don't really pay attention to our borders, correct?

Mr. GASKAMP. Thank you for the question. That is correct. We have done research just in, I mean, Oklahoma-Texas border is not the same border as the U.S.-Mexico border, but feral swine do not pay attention to boundaries, especially water boundaries.

Feral swine, unfortunately they do, contrary to a lot of popular belief, feral swine do have home ranges. They don't just—they are not nomadic, roaming the landscape endlessly. Most of their geographic expansion has been the product of recreational hunting, increasing populations in areas for recreational hunting, and so fortunately an effort like that to keep, if African Swine Fever were to get into Mexico, for example, we could focus efforts along that border in order to keep it from moving. Now, you still have the issue of transportation on shoes and in bologna and all those things.

Mr. HAGEDORN. Sure.

That is good to know. Thank you.

Dr. Thompson, nice to see you today. Thank you for being here. If we ended up with a case of African Swine Fever in the State of Minnesota, which we hope never happens, it would be pretty devastating, right? It wouldn't just be our hog farmers, but it would be our crop farmers, our grain farmers, implement dealer, seed corn, everybody. It would be devastating to our economy. If that happened, though, I take it you have a plan or you have been working with people that have a plan on how to contain it? Can you share a little bit about that and who you might be working with in other states or the Federal Government in order to implement that?

Dr. THOMPSON. Yes, thank you for that question. Members, for that I could go on for a long time to talk about how much planning we have been going through, Representative——

Mr. HAGEDORN. We only have a minute, 38.

Dr. THOMPSON. Certainly, we have a variety of different committees that we have set up within the state, and very importantly when you talk about hog production, it is not only about production within the state but our systems that our hog systems that are located in Minnesota have connections and move pigs and move feed and move sows and move all sorts of things with other states.

What we are looking at this as is a regional approach. We have pulled in, importantly, Iowa, but also other states within our region to start talking about and continuing to work on our plans of what is going to happen.

In addition to that, very recently there was a nationwide ASF exercise, which I believe was 15 states highly involved with hog production we are involved with. It was a 3 day exercise. We looked at things like what does a stop-movement mean, how are we going to permit things from state to state, and some of those important issues. But I can tell you at any point in time during the week there is something going on within the Minnesota Board of Animal Health related to African Swine Fever.

Mr. HAGEDORN. Okay. Thank very much. With that I yield back.

The CHAIRMAN. Gentleman yields back, and the next Member on the list is Mrs. Hartzler from Missouri, right?

Mrs. HARTZLER. Yes, absolutely.

The CHAIRMAN. The "Show Me State."

Mrs. HARTZLER. That is right. Thank you, Mr. Chairman, and thank you, Mr. Gaskamp and all of you for being here.

I grew up on a hog farm and so I am very, very supportive of pork production and very concerned about the feral swine issue that is all across our country, even in my district and part of south Missouri there. I am very interested in your testimony. You talked about the effectiveness of the BoarBuster suspended trap system. I have had a chance to see that. The Missouri Department of Conservation is recommending that as the eradication method. They are opposed to the hunting that some people are doing.

What is your opinion about hunting?

Mr. GASKAMP. Thank you for the question. Specific to feral swine, I am a hunter and feral pigs are fun to hunt.

Mrs. HARTZLER. Yes.

Mr. GASKAMP. They really are and, however, the cultural mindset around hunting for that particular species, for feral swine in particular, has increased its abundance, just like conservation efforts for native wildlife species. We promote populations from hunting. That mentality that has gone into feral swine management where, why would I travel 8 hours across the country to go on a pig hunt when I can own them right here in my back yard, or hunt them right here in my back yard. That mentality has increased populations across the country.

Hunting still proves to be an effective control strategy in very limited cases where populations are very small, but in general we do not consider hunting a population control method.

Mrs. HARTZLER. Yes. Okay. You mentioned that toxicants are being used in other countries, but yet you say that we need more Federal funding to contribute to research on toxicants, so how come we can't just use the toxicants that other countries are using?

Mr. GASKAMP. Well, so right now Australia is using toxicants for feral swine. They have about as many feral swine as they have people on the continent. There are a number of toxicants that we have been testing here in the United States. The primary challenges associated with toxicants are making those safe for humans to use, but more importantly, making them species specific so they don't affect other species, including humans. If a toxicant is administered, we can't be impacting native populations of wildlife.

Mrs. HARTZLER. You would say that the ones being used in Australia aren't really researched enough to make sure that they are safe for humans and other species?

Mr. GASKAMP. Sure. Differences in Australia are they don't have a lot of omnivorous species. In the United States we do. The omnivorous species that Australia has are also other invasive species.

Mrs. HARTZLER. Okay.

Mr. GASKAMP. In the U.S. we have black bears that could be impacted as well as others.

Mrs. HARTZLER. Last question with the feral swine. As you mentioned in your testimony, they are the most prolific large animal in the United States, early age of sexual maturity 6 to 8 months, short gestation period, only 115 days for year-round breeding and farrowing. I have heard there has been some efforts trying to look at sterilization, and can you talk to those efforts in trying to stop——

Mr. GASKAMP. I am not aware of any particular *reproductive inhibitors,* is the terminology we use in that space. I am not familiar with any reproductive inhibitors that are available or close to being available. They pose a lot of the same risks or challenges that toxicants do, making them specific to feral swine only. And there is—but there is work being done in several universities across the South trying to identify and develop those reproductive inhibitors.

Mrs. HARTZLER. Great. Well, thank you so much.

Mr. Reichert, I was interested in your testimony about the fumigants and the testing that is important as we come into the ports. I was just wondering from a practical standpoint, can something be considered organic if it has been fumigated?

Mr. REICHERT. Thank you for the question, but no, there are no fumigants that are approved for use on organics.

Mrs. HARTZLER. Is that an issue with the growing demand for organics? Are we exposing ourselves to risk bringing in fruits and vegetables from other countries not fumigating them and bringing them in?

Mr. REICHERT. That certainly is a risk. The USDA does tend to focus on those for inspection when they come in, but again, they only inspect a certain amount of each lot of produce that is brought in, so they are not inspecting every single piece and things can be missed.

Mrs. HARTZLER. Just how much does it cost to fumigate one container?

Mr. REICHERT. It is generally between the $500 to $1,000 range for our charges and then there are additional charges for the USDA.

Mrs. HARTZLER. Okay, great. Thank you very much for the information.

I yield back.

The CHAIRMAN. The gentlewoman yields back.

And our next Member is Mr. Marshall from Kansas.

Mr. MARSHALL. Thank you, Mr. Chairman. And my question is going to be directed to Mr. Gaskamp and Mr. Ortega, I am guessing.

My concern is about a different invasive species. It is a plant invasive species. And I see you both have some grassland expertise.

In Kansas our major rivers are lined with salt cedars. At least, that is what we locals call them. Salt cedars soak up hundreds, maybe thousands of gallons of water per day. I think of Rattle-

snake Creek which flows into the Quivira Wildlife Refuge, and we are having some flow issues in that particular creek. I think of the Arkansas River. Some people call it the Arkansas River, but we call it the Arkansas River. It flows out of Colorado and across Kansas, and large portions of that river typically doesn't have water in it anymore, and it is also lined with salts cedars.

Throughout the prairies now, grasslands, traditional red cedars have taken over many, many areas. I have talked to farmers who have mowed down cedars, and creeks that have never ran before started running again.

Any experience on the impact of these on the water and long-term solutions? We mow the salt cedars down. It is real expensive to do. They grow back.

Josh, Mr. Gaskamp, any experience with salt cedars and red cedars?

Mr. GASKAMP. Thank you for the question. I have limited experience. I have more experience with the eastern red cedar. It is a native plant that is encroaching on rangelands across the southern Great Plains. We consider it invasive because it was, back in history it was relegated to steep drainages and things like that.

Mr. MARSHALL. Right.

Mr. GASKAMP. The suppression of prescribed fire has brought on that species, has grown the potential for it to invade grasslands. And so there is movement in a lot of the rangeland areas to re-implement prescribed fire back in our landscape. It is a process that our rangelands evolved with, fire and grazing, and so that is one way to deal with invasive red cedar.

As far as the salt cedars, I have less experience with those. I do know that they establish from just clippings, so mowing them actually spreads them even more, and it is a very serious issue. There has been work done. I am not sure who has done the work, but to identify biological solutions of pests that does hinder its growth.

Mr. MARSHALL. Thank you. Mr. Ortega, any experience with either of those?

Mr. ORTEGA. Not specifically, but we do deal with invasive species of plants very regularly and I agree with the gentleman. You have to hit it hard with mechanically, chemically, and fire is probably the most cost-effective strategy.

Mr. MARSHALL. Okay. Any other in the panel with experience with the plants? Okay.

All right. Thank you so much, Mr. Chairman, and I yield back.

The CHAIRMAN. All right. Everyone who wanted to participate this morning has had that opportunity to do so, and I will allow the Ranking Member to make any closing remarks before I close the hearing.

Mr. ROUZER. Well, thank you, Mr. Chairman. I want to thank all of our witnesses for being here today. It was very helpful and instructive for me, and I appreciate you taking the time to share your expertise.

Mr. Chairman, I will yield back.

The CHAIRMAN. All right. I thank the Ranking Member Rouzer for your cooperation, and your staff always along with our staff, who did a very good job this morning.

The witnesses came well prepared and focused on areas that normally the Subcommittee doesn't always get an opportunity to really weigh in on, and that is the impacts that invasive species, both native and non-native species, have on agriculture economy throughout the country, and as it relates to the foreign markets that we obviously are actively engaged in and have to deal with as it relates to phytosanitary standards and with our efforts to export. Of course we also import and it is a two-way street. I think the takeaways besides the specific comments that members, those of you who testified this morning, are—I would urge this Committee and the full Committee, if they are not cosponsors of Mr. Vela's legislation that focuses on improving staffing within the inspection services and also within the USDA, to look at that legislation carefully. It is worth supporting and it has a lot of merit.

And in addition, while Mr. Harder's legislation deals with the invasive species of nutria, and specifically right now in California, we know with the invasions in Maryland and Louisiana that this very aggressive swamp rat, as Mr. Harder likes to refer to it, can in fact be a real problem in other areas of the country. And it deserves support as well, and we will be working with both authors on those pieces of legislation.

Having said that, I want to thank again those who testified this morning and your cooperation with the Committee and we will look forward to continue to work with you. And if there are any follow up questions by Members of the Subcommittee, obviously we will forward them to you for your response.

Under the Rules of the Committee, the record of today's hearing will remain open for 10 calendar days to receive additional material and supplemental written responses from witnesses to any question posed by a Member.

And, so at this point in time, hearing no objection, this hearing of the Subcommittee on Livestock and Foreign Agriculture is adjourned.

[Whereupon, at 11:35 a.m., the Subcommittee was adjourned.]

[Material submitted for inclusion in the record follows:]

SUBMITTED LETTER BY HON. JIM COSTA, A REPRESENTATIVE IN CONGRESS FROM CALIFORNIA; ON BEHALF OF JAMES D. OGSBURY, EXECUTIVE DIRECTOR, WESTERN GOVERNORS' ASSOCIATION

November 12, 2019

Hon. JIM COSTA,
Chairman,
Subcommittee on Livestock and Foreign Agriculture,
House Committee on Agriculture,
Washington, D.C.;

Hon. DAVID ROUZER,
Ranking Minority Member,
Subcommittee on Livestock and Foreign Agriculture,
House Committee on Agriculture,
Washington, D.C.

Dear Chairman Costa and Ranking Member Rouzer:

In advance of the Subcommittee's November 14 hearing on "Safeguarding American Agriculture from Wild, Invasive, and Non-Native Species," attached please find two Western Governors' items related to biosecurity and invasive species management:

- Western Governors' Association Policy Resolution *2019–06* (*http://www.westgov.org/images/editor/WGA_PR_2019-06_Biosecurity_and_Invasive_Species.pdf*), *Biosecurity and Invasive Species Management; and*
- the Western Governors' *Biosecurity and Invasive Species Initiative* ***Special Report*** (*http://westgov.org/images/editor/2019_WGA_BISI_REPORTvF.pdf*).

I request that you include these documents in the permanent record of the hearing, as they articulate Western Governors' policy positions and recommendations on this important issue.

Please contact me if you have any questions or require further information. In the meantime, with warm regards and best wishes, I am

Respectfully,

JAMES D. OGSBURY,
Executive Director.

ATTACHMENT 1

Policy Resolution 2019–06

Biosecurity and Invasive Species Management

A. Background

1. Per Executive Order 13751, "invasive species" means "with regard to a particular ecosystem, a non-native organism whose introduction causes or is likely to cause economic or environmental harm or harm to human, animal, or plant health." This definition can include aquatic and terrestrial plants and animals, forest and agricultural pests, and pathogens.
2. The 2017–2027 Hawai'i Interagency Biosecurity Plan defines biosecurity as "the set of measures taken to manage the risk from invasive species to the economy, environment, and health and lifestyle of the people." This includes pre-border measures, border measures, post-border measures, and measures that increase public awareness about invasive species.
3. The Plant Protection Act of 2000 (Pub. L. 106–224) defines "biological control" (biocontrol) as the use of biological control organisms as an "enemy, antagonist, or competitor used to control a plant pest or noxious weed." When used properly, biocontrol can be an effective tool in efforts to manage and eradicate invasive species.
4. States have different definitions of biosecurity, biological control and invasive species. They also may use regulatory and non-regulatory terms that are related to, but not synonymous with, the term invasive species, including pest, nuisance species, noxious weed, and injurious wildlife.
5. Invasive species have substantial negative effects on ecosystems, economies, and communities in the West. Studies have found that invasive species cost the U.S. more than $120 billion ever year, and the National Wildlife Federa-

tion estimates that 42 percent of threatened or endangered species are at risk due to invasive species. Invasive annual grasses such as cheatgrass, medusahead, fountain grass, and ventenata pose a major threat to western rangelands by increasing the risk of wildfire, outcompeting native grasses, and diminishing soil and water quality. Aquatic nuisance species, including invasive quagga and zebra mussels, decrease water quantity and quality, impair native wildlife, harm hydroelectric and irrigation systems, and can impede maritime transport by fouling vessel hulls. Invasive pathogens affect human health and welfare, and invasive species, such as mosquitoes, can vector human diseases. Invasive species damage multiple types of environments, from virgin forests to urban tree canopies. Invasive species harm a wide variety of economies dependent on natural resources, including agriculture, ranching, tourism, energy production and transmission, and forest products. Invasive species threaten many native plants central to western life and the cultures of Native Americans, Native Hawai'ians, Alaska Natives, and other indigenous peoples.

6. The spread of invasive species results from a combination of human activities, susceptibility of invaded environments, climate change, biology of the invading species, and dispersal. These characteristics are not dictated by geopolitical boundaries, but rather by ecosystem-level factors, which cross state and national borders. Scientists, private landowners, and state and Federal land managers across the West have expressed the need to develop a more aggressive and cohesive strategy for invasive species management that includes prevention, monitoring, control, and eradication.
7. The impacts of invasive species on natural resources and human health and welfare are similar in scope and intensity to the threats posed by wildfire. Wildfire management on Federal, state, Tribal, and local land is coordinated through a sophisticated planning and response network, which includes the National Interagency Fire Center (NIFC).
8. Many invasive species were introduced, or their distribution was expanded, due to inadequate Federal and state regulations dealing with interstate transport, international trade and interstate commerce, and a lack of communication and coordination between land management agencies.
9. Early Detection and Rapid Response (EDRR) is a coordinated set of actions to find and eradicate potential invasive species in a specific location before they spread and cause harm. The Incident Command System (ICS) is a management system designed to enable effective and efficient incident management, including invasive species rapid response, by integrating a combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure.
10. In the West, biosecurity and invasive species management is the responsibility of a wide network of state, Federal, and local agencies. Federal agencies manage invasive species on Federal lands and waters under a complex system of mandates and authorities.
11. Cooperative agreements, grants, and procurement contracts between Federal agencies and state and local invasive species management authorities are effective in establishing structured partnerships for collaborative invasive species management. The use of cooperative agreements lessens the burden on local Federal land managers, while increasing the efficiency of invasive species management programs utilizing local collaborative goal setting. Additionally, cooperative agreements simplify project-based contracting utilizing the authorities of state and local government agencies. This can be extremely useful, especially where infestations extend across multiple landownerships or EDRR is the management objective.
12. Good Neighbor Authority (GNA) allows states to enter into agreements with the U.S. Forest Service (USFS) or Bureau of Land Management (BLM) permitting them to perform various land management activities on Federal lands. These tools have been successfully used by forest and rangeland managers to achieve various land management objectives across Federal, state and local government, and privately-owned lands
13. U.S. Department of Agriculture (USDA) regulation of interstate movement of commodities via airlines is focused on the protection of agricultural industries in the contiguous United States. This is particularly evident in Hawai'i, where baggage destined for the U.S. mainland is subject to Federal inspection, while baggage moving from the mainland to Hawai'i is not.

14. Environmental DNA (eDNA) is DNA present in an environmental sample, as differentiated from traditional sampling of DNA directly from an intact organism. eDNA frequently is thought of as DNA in tissue and cells that have been shed by an organism but can also refer to DNA within an intact organism, if that organism is collected in the environmental sample. eDNA can be used to detect a wide range of organisms, including those that are endangered or invasive, and be used for both research and monitoring purposes.
15. The West includes a number of highly important seaports on the U.S. mainland and across the Pacific region. Maritime vessels represent a primary pathway for the movement of aquatic invasive species. With the passage of the Vessel Incidental Discharge Act in 2018, regulations regarding ballast water and other discharges are centralized under Section 312 of the Clean Water Act with the Environmental Protection Agency setting environmental standards, the U.S. Coast Guard (USCG) setting vessel requirements to meet those standards, and the USCG and interested states enforcing those requirements.
16. State invasive species councils and invasive plant councils provide policy level direction, planning, and coordination for state-level biosecurity and invasive species prevention and management actions in the West. Councils are led by state agencies, nonprofit organizations, industry, private landowners, and public-private partnerships. These groups empower those engaged in the prevention, detection, and eradication of invasive species, and serve as forums for invasive species education, communication, and strategic planning. Invasive species councils can collaborate on regional-level issues and benefit from mechanisms that help them to coordinate and solve cross-boundary, cross-jurisdictional challenges.

B. Governors' Policy Statement

1. Western Governors support the creation of a Western Invasive Species Council (WISC) to help enhance coordination between existing state invasive species councils, improve communication and collaboration on regional biosecurity and invasive species control efforts, and to advocate for regional needs at the Federal level. The WISC should be initially coordinated through the Western Governors' Association and should work to address cross-boundary and cross-jurisdictional challenges identified in this resolution.
2. Western Governors urge Congress and the Administration to support state, territorial, and Tribal invasive species prevention, control and management programs and redouble efforts on Federal lands. This should be accomplished through accountability and oversight of programs administered by the USDA, the U.S. Department of the Interior, the U.S. Department of Defense, the USCG, and the National Oceanic and Atmospheric Administration. These programs provide valuable services in the detection and elimination of invasive species, as well as coordination, public outreach, and communication.
3. Western Governors support research as needed to provide understanding of invasive species life potential range distribution, and to develop geographically-appropriate control measures. Western Governors urge Congress and the Administration to support much-needed research on biosecurity and invasive species, including programs under the National Institute of Food and Agriculture and to facilitate funding mechanisms that enable land grant universities to conduct research and development of new pesticides. Institutions conducting research on biosecurity, biocontrol and invasive species control methods should look for opportunities to pool funding resources and exchange information across administrative lines. Invasive species managers and policymakers should be encouraged to develop new decision-making tools and economic analyses, as well as build and improve upon the decision-making tools and analyses currently in use. Invasive species managers should strive to incorporate economic analyses and regional-level, science-based decision-making tools into management decisions.
4. Western Governors strongly encourage expansion and creation of partnerships—such as invasive species councils with representation from local weed and pest districts, conservation districts, county governments, nonprofit and industry organizations, local stakeholders, state, island, Tribal, Federal, regional and international agencies—committed to preventing the spread of invasive species, averting new unauthorized introductions, responding rapidly to new introductions, and working together to find creative regional approaches for protecting and restoring natural, agriculture, power and water conveyance infrastructure, and recreational resources. Federal agencies

should build a more sophisticated and centralized biosecurity and invasive species management network, including a National Biosecurity and Invasive Species Management Center based on the model of the NIFC.

5. Congress and the Federal Government should ensure that invasive species funding, including support for emergency response, is sustainable, flexible and able to be maximized by Federal, state and local agencies with pooled resources and collaborative funding mechanisms. Federal funding, cooperative agreements grants, and procurement contracts for state and local biosecurity and invasive species management should be structured in a deliberate and transparent way that allows for the greatest amount of flexibility and long-term planning. When possible, Federal agencies should look for collaborative projects and funding opportunities that multiply state resources and support state-led biosecurity and invasive species management projects.
6. Western Governors call upon Congress to promote state-directed programs to combat invasive species. Regional leadership and state-directed programs provide place-based solutions tailored to unique regional or local conditions in land and aquatic ecosystems. The Federal role should be one of partnership and policy-making that strengthen states' on-the-ground efforts and mitigates risks associated with the movement of invasive species between states.
7. Federal agencies are encouraged to expand the use of cooperative agreements with state and local governments and should ensure that they are approved in a timely manner and in collaboration with implementing state agencies. Federal agencies can also support invasive species management efforts by encouraging contract recipients to coordinate with state and local invasive species management agencies, regulatory programs, and cooperative weed and invasive species management areas. State invasive species managers should consider using Good Neighbor Authority on USFS and BLM lands for cross-boundary collaborative invasive species control, management and eradication programs.
8. Federal actions should support state biosecurity and invasive species management efforts by ensuring the timely approval of state permits for biosecurity, quarantine, biocontrol, and rapid response actions. Federal agencies should consult with Governors early and substantively regarding biosecurity or invasive species management decisions that affect state resources and state actions.
9. Federal agencies should identify individuals within district and region offices that can be contacted and assist in the planning and implementation of local cross-boundary invasive species management programs.
10. The threats that invasive species pose to western landscapes and communities are serious and should be met with a sophisticated and coordinated response commensurate with the level of their impacts.
11. Prevention is the most efficient and cost-effective method of invasive species management. Effective biosecurity, prevention, and containment methods can mitigate the need for more expensive and burdensome control and eradication programs. Prevention strategies should be coordinated across state, national, and international lines. Federal and state agencies should increase the use of innovative biosecurity prevention and detection programs, including increased use of electronic manifesting in interstate shipments for the purposes of inspection, and the use of canine detection resources.
12. Western Governors support the EDRR framework as a method to limit or eliminate new introductions and existing species expansion. Programs for the control and/or eradication of invasive species must result in more on-the-ground prevention, management and eradication. The ICS should be evaluated for use in instances of fast-spreading invasives and used as part of EDRR; state, Federal, and local agencies can opt to practice and implement the ICS as part of rapid response. The Federal Emergency Management Agency can support these efforts by working with western states to create an ICS training module for invasive species rapid response. The Executive Branch can support state-led rapid response programs by: (1) increasing Federal funding for state-led aquatic invasive species rapid response programs, including those that provide mechanisms for flexible, long-term support of state early detection rapid response efforts; (2) streamlining Federal permitting and approval processes for treatment and management actions for new mussel detections; (3) creating a single Federal authority for aquatic invasive species treatment permitting and approval in freshwater systems; and (4)

simplifying reporting on new invasive mussel infestations by creating a single Federal point of contact for new mussel detections.

13. Federal agencies should support states' effort to identify, study and approve the use of biological control organisms. Federal permitting models should be structured to ensure biocontrol can be utilized by states in a safe and timely manner. Biocontrol research is encouraged at a regional level, with biocontrol research information being encouraged to move freely between institutions and across state lines. Invasive species managers in the West would benefit from the creation of a new, state-of-the-art biological control facility, as well as a collaborative, multi-agency plan for maintaining and staffing new biocontrol facilities at a level that more adequately meets the expanding needs of the region. Furthermore, effective biocontrol, biosecurity, and invasive species research depends upon a highly-skilled workforce. State and Federal agencies should collaborate with universities to support programs essential to biosecurity and invasive species management, such as botany, zoology, plant pathology, taxonomy, systematics, and related fields.
14. The containment of invasive quagga and zebra mussels at infested waters in the West depends upon the collaboration and mutual effort of Federal, state and local agencies. Many state-led containment programs benefit from Federal cooperation and funding, and state and Federal agencies should be encouraged to sustain and expand these effective partnerships as necessary. However, to adequately protect the West from the movement of aquatic invasive species, Federal agencies must be able to act as full partners in invasive species containment efforts and must have the funding and authorities necessary to contain invasive species within lands and waters under their jurisdiction. To this end, Federal agencies, including the National Park Service and BLM, should be vested with clear authority to manage watercraft upon their departure from infested waterbodies under Federal jurisdiction.
15. Integrated pest management, biocontrol, outcome-based grazing, and targeted grazing can be effective tools to control the spread of invasive annual grasses. Federal, state, and local agencies should view invasive annual grasses as a regional threat and strive to identify and implement cross-boundary projects to control invasive annual grasses at a regional level. Such projects should include those utilizing alternative management techniques such as outcome-based grazing.
16. Agricultural industries in the Pacific Islands need to be similarly protected from the risk of interstate movement of invasive species as the contiguous U.S. mainland. USDA quarantines and commodity inspections should incorporate the priorities of the West, including noncontiguous states and territorial islands in the western region. This includes maintaining Federal quarantines on pests that have not yet reached the West, like the emerald ash borer, and adopting policies that adequately protect Pacific states and territories, such as inspection of baggage moving from the contiguous U.S. to noncontiguous areas.
17. State, Federal and local agencies and regional coordinating groups should develop and implement a set of best practices for conducting eDNA monitoring and incorporating positive detection results into rapid response strategies.
18. To effectively prevent, contain, and control invasive species, Federal, state and local invasive species managers need Federal laws that support on-the-ground action. Western Governors support a states-led review of Federal biosecurity and invasive species statutes, including the Lacey Act and the National Invasive Species Act, to evaluate how they support on-the-ground management, identify any gaps in their application, and ensure that their structure and implementation are able to address 21st century biosecurity and invasive species challenges. Of particular interest are opportunities to expand the taxonomic scope of the Lacey Act to benefit U.S. biosecurity.
19. As directed by the Vessel Incidental Discharge Act, the U.S. Coast Guard and the Environmental Protection Agency should consult with Western Governors and work closely and collaboratively with states on the implementation of that act to ensure that state and regional aquatic resource protection needs are met across the West and the Pacific. Federal and state partners should collaborate on the development of evidence-based risk assessments and should work together to assess the efficacy of policies and tools that may be used in mitigating the impact of various types of discharges, including hull biofouling. Western Governors believe that protecting the diversity of marine habitats in western states and Pacific territories is best accomplished by working with

states that have the greatest knowledge of their ecosystems and invasive risks.

20. Accurate, standardized, and accessible geospatial data is essential to biosecurity and invasive species management in the West. Western Governors support efforts to standardize and centralize invasive species occurrence data, streamline the exchange of data between the nation's major invasive species data aggregators, and increase the accessibility of data to Federal, state, and local land and resource managers.

C. Governors' Management Directive

1. The Governors direct WGA staff to work with Congressional committees of jurisdiction, the Executive Branch, and other entities, where appropriate, to achieve the objectives of this resolution.
2. Furthermore, the Governors direct WGA staff to consult with the Staff Advisory Council regarding its efforts to realize the objectives of this resolution and to keep the Governors apprised of its progress in this regard.

Western Governors enact new policy resolutions and amend existing resolutions on a bi-annual basis. Please consult ***westgov.org/resolutions*** *for the most current copy of a resolution and a list of all current WGA policy resolutions.*

ATTACHMENT 2

Special Report

Biosecurity and Invasive Species Initiative

The Chairman's Initiative of Hawai'i Governor David Ige

2019

Dear Friends and Colleagues,

Life in the West is built on our unique landscapes: our natural resources, our agricultural production, and our communities. The West is a region of great diversity, from the dense rainforests of the Pacific Islands to the sprawling sagebrush sea of the Great Basin and beyond. A respect for, and reliance on, our natural environment gives meaning to western life and shape to the western character. The diversity of these resources forms the breadth of western culture and fuels some of our most important economic sectors, such as agriculture, ranching, recreation, and tourism.

But the natural resources that define life in the West are under attack: Invasive species, including plants, animals, and pathogens, pose a significant threat to the western experience. Every day, populations of invasive species such as fire ants,

fire-prone grasses, saltcedar, and tree-boring beetles expand into new territory, damaging and degrading native ecosystems. New invasive species are transported across borders daily, with each invader bringing the potential for permanent harm to the region.

The damage done by invasive species is real, and their impacts on western ecosystems, economies and communities can be staggering. According to the National Wildlife Federation, approximately 42 percent of threatened or endangered species are at risk due to invasive species. The West has more federally-listed threatened and endangered species than any other region of the U.S. One study estimates that invasive species costs the U.S. more than $120 billion every year. A single species, the red imported fire ant (*Solenopsis invicta*), costs the mainland U.S. billions of dollars in economic damage each year and would cost Hawai'i hundreds of millions of dollars annually if it were to be introduced into the state.

These invaders also threaten our culture. Here in Hawai'i, Rapid 'Ōhi'a Death, an invasive forest pathogen, continues to diminish populations of the native 'Ōhi'a, a tree at the heart of Hawai'i's culture and a foundational species of our native forests. This is a story familiar throughout the West, as multi-generational ranching communities face pressure from non-native annual grasses and Native American communities reliant on native salmon are negatively affected by aquatic nuisance species.

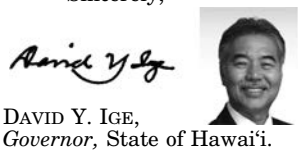
We are not helpless in the face of these invasions. Biosecurity—measures taken to manage the risk from invasive species to economies, environments, health and lifestyles—is an essential element in the fight against invasive species. Throughout the West, a network of state, Federal, Tribal and local biosecurity agencies strive to protect resources from new invading species. Simultaneously, a broad coalition of stakeholders work to monitor, control and eradicate invasive species once they have been established.

My goal in launching the *Western Governors' Biosecurity and Invasive Species Initiative* was to examine the efforts of the West's dedicated biosecurity and invasive species professionals and to identify areas where Western Governors could support and enhance their work. To accomplish this goal, the Western Governors' Association hosted a series of workshops throughout the West, which brought regional leaders together to discuss how invasive species affect life in the region, how established species can be better managed, and how biosecurity practices can be improved to limit new introductions. These workshops were followed by webinars focusing on discrete issues arising from the workshops.

This report's findings, recommendations, best practices and case studies are the culmination of that process. I encourage you to use this document as a bipartisan policy roadmap on the issue and to work with Western Governors as they implement the recommendations through the WGA Working Lands Roundtable and the Western Invasive Species Council.

Thank you for joining me on this journey over the last year. I am grateful for all the hard work and investments made by our state and Federal partners, industry, private landowners and non-governmental organizations. I look forward to collaborating on the solutions to one of the most pressing environmental issues of our time.

Sincerely,



DAVID Y. IGE,
Governor, State of Hawai'i.

Dear Friend of the West,

As national politics have become more polarized—as our Federal Government has become more dysfunctional—people throughout the country (and of all political stripes) have increasingly looked to states and their governors for bipartisan leadership and solutions to problems facing our nation and region.

Western Governors have risen to that challenge in a big way.

Through the Western Governors' Association, the Governors have developed deliberative policy and generated creative ideas to sustain and develop the economies and environments of the great American West. I commend your attention to their detailed, substantive and policy-rich resolutions on energy, water, forest fires, species conservation, public lands management and a host of other critical resource issues. Though these detailed resolutions articulate measured and thoughtful principles, Western Governors are men and women of action. As valuable as their policy pronouncements are, the Governors prefer to get things done.

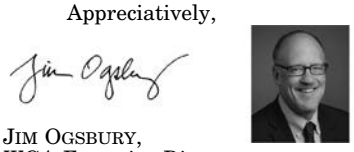
It was with this mentality that WGA Chair and Hawai'i **Governor David Ige** launched the *Western Governors' Biosecurity and Invasive Species Initiative.* The Initiative has mobilized Western Governors to leverage their influence and resources to more aggressively confront the scourge of invasive species. The impacts of invasive species in the West are as pervasive as they are under-reported. The spread of noxious weeds threatens ranching communities and fuels wildfires. Invasive species can radically alter habitat, compounding threats to wildlife and endangering species. The competition that non-native species pose to native game impacts hunting and fishing. Industries across the West—including agriculture, forestry and tourism—are struggling to eradicate, contain and mitigate the insidious impacts of these invaders.

Governor Ige's Initiative builds on a significant body of work executed by the Association in recent years. In 2016, for example, Western Governors formed the WGA Invasive Species Advisory Group, which provides technical assistance to inform our work on this critical issue. In the last year, the Association conducted the WGA Invasive Species Data Management Workshop, which produced new regional guidance for the interagency exchange of invasive species occurrence data. In 2018, WGA published a compendium of the *Top 50 Invasive Species in the West,* a first-of-its-kind regional invasive species prioritization tool. And we continue to work collaboratively with the Department of the Interior to combat the spread of invasive quagga and zebra mussels in the West.

The Western Governors' Biosecurity and Invasive Species Initiative represents an even greater commitment of resources and attention to this issue and these ongoing efforts. This report—which communicates specific recommendations and distills information generated by Initiative workshops, webinars and other channels—will help guide WGA's work on invasive species for years to come.

Thank you for your consideration of the report's findings and for your interest in the work of Western Governors.

Appreciatively,



JIM OGSBURY,
WGA Executive Director.

Executive Summary

The spread of invasive and non-native species affects nearly every aspect of life in the West. As invading species replace native plants and wildlife, the ecosystems, economies and communities that depend on the West's natural resources are damaged and diminished, sometimes permanently. Improving biosecurity and invasive species management practices is essential to protecting the West from new invading species, reducing the effects of established species, and restoring the region's working lands and native ecosystems.

Hawai'i Governor David Ige launched the *Biosecurity and Invasive Species Initiative* as his central policy effort as WGA Chair.

Hawai'i Governor **David Ige,** Chair of the Western Governors' Association, launched the *Biosecurity and Invasive Species Initiative* in July 2018 in response to this challenge. The Initiative focuses on the impacts that nuisance species, pests and pathogens have on ecosystems, forests, rangelands, watersheds and infrastructure in the West, and examines the role that biosecurity plays in addressing these risks.

The *Biosecurity and Invasive Species Initiative* commenced with an exploration of these issues through workshops hosted by Western Governors **Brian Sandoval** in Nevada, Matt Mead in Wyoming, **Steve Bullock** in Montana, and **David Ige** in Hawai'i. The workshops, which were live-streamed to reach the widest possible audience, assembled leaders in biosecurity and invasive species management to discuss the challenges that invasive species pose to the West and identify opportunities for Western Governors to address those challenges.

The workshops were followed by webinars that examined discrete issues surrounding invasive species management and control. Webinars examined several topics, including the effects of invasive species on fisheries, the role of conservation districts in invasive species management, and impacts of invasive species on Pacific Islands forests and ecosystems.

This report presents the findings of the Initiative and recommends actions Governors can take to achieve the following goals:

Protect the West from the introduction of new invasive species through enhanced biosecurity practices, preparedness, and planning. State and Federal agencies should develop state and regional level biosecurity plans and utilize new and emerging biosecurity technologies. A regional biocontrol research center should be established, and interagency collaboration on biocontrol research, permitting, and utilization should be improved and streamlined.

Improve cross-boundary collaboration and coordination for the management of established and emerging invasive species. State, Federal and local agencies should strengthen existing invasive species coordination mechanisms and build new collaborative structures to improve invasive species management at a regional scale, including a new Western Invasive Species Council. Rapid response practices can be enhanced by expanding the use of the Incident Command System, conducting regular practice exercises, and establishing a Federal center dedicated to biosecurity and invasive species management.

Empower state and Federal agencies to manage invasive species by aligning Federal laws, regulations, and funding mechanisms with states' needs. State and Federal agencies should have the funding and authorities necessary to effectively manage established and emerging species. Federal statutes and regulations should be structured to provide states greater flexibility with respect to invasive species funding, permitting, and rapid response. Federal regulations should reflect the broad diversity of habitat types and uses in the West. Where necessary, Federal law should make provisions to effectively protect all states, whether their habitats include arctic tundra, rangeland, or tropical forests.

Support and utilize biosecurity research, technology and planning tools. Research and innovation are essential components of invasive species management in the West. State and Federal agencies should identify and seize opportunities to pool research funds, coordinate the employment of new technology, and develop new monitoring, analytical, and decision-making tools. Enhanced use of electronic manifesting for commodity shipments, detector dogs, in-water vessel cleaning, and other tools can increase our effectiveness in mitigating invasive species impacts.

Standardize and mobilize invasive species data. Invasive species managers need access to accurate regional invasive species occurrence data to address invasive species at a landscape scale. However, technological barriers often prevent large amounts of useful invasive species occurrence data from being shared. As part of the Initiative, Western Governors will lead an effort to improve the mechanisms by which interagency invasive species data are standardized, stored and exchanged in the West.

The *Western Governors' Biosecurity and Invasive Species Initiative* has provided a valuable regional forum to examine one of the most pressing natural resource issues in the West. The following report describes WGA's invasive species work in greater detail and will guide the Association's ongoing efforts.

Initiative workshops were hosted by, from top, Western Governors Brian Sandoval of Nevada, Matt Mead of Wyoming and Steve Bullock of Montana.

Background

The effects of invasive species on life in the West are as broad and diverse as the region itself. Nearly every acre of land and body of water is either host to an invading pest or pathogen or at risk of being invaded. The impacts of these invaders are sometimes easily overlooked; at other times they are clear, inescapable and devastating. Invasive species cause substantial cumulative harm to the West's natural and built environments, as well as to the communities and economies that depend upon those environments.

Global economic losses caused by biological invaders were estimated at more than $1.4 trillion as far back as 2002.[1] Another study highlighted that, in the U.S., nearly 50,000 foreign species were responsible for $120 billion in major environmental damages and losses annually.[2] This estimate represents economic losses from environmental damages only; it does not capture substantial control costs or public health impacts. As much as ¼ of the U.S. agricultural gross national product is lost due to foreign pests[3] and as much as 42 percent of the species on threatened or endangered species lists are at risk primarily because of alien invasive species.[4]

These estimates, however, may not fully reflect the toll of invasive species. Quantifying the effects of invasive species can be challenging because of the complexities of modern economies and the difficulty of monetizing biodiversity and ecosystem service benefits. Not only do invasive species impact local resources, they can combine with other environmental stressors, such as drought or climate change, to further diminish native ecosystems. These factors contribute to a lack of up-to-date regional-level economic impact studies and risk assessments, an information gap that can hamper land managers' ability to incorporate invasive species impacts into management decisions.

Some invasive species infestations have grown to such an extent that they fundamentally change the landscape. For more than a century, for example, invasive cheatgrass has spread throughout the West. It is now present in every western state and, in some places, has permanently altered ecosystems. As little as one percent of cheatgrass groundcover can double the wildfire risk in an area; by some estimates cheatgrass covers more than 15 percent of the ground in 31 percent of the Great Basin.[5] These conditions contributed to the 2018 Martin Fire, which, at more than 435,000 acres, was the largest wildfire in Nevada's history. In addition to increasing wildfire risk, cheatgrass reduces forage, outcompetes native vegetation, and diminishes habitat for native wildlife, including the greater sage-grouse. In Hawai'i, watershed forests are threatened by plants including Himalayan ginger, strawberry guava, and miconia. Miconia alone is estimated to cause roughly $700M in damage annually to Hawai'i's forests.[6]

Aquatic invasive species, such as quagga and zebra mussels, can pose similar landscape-level threats. These invasive mussels arrived in North America in the 1980s, and have since spread to nearly every major waterway in the U.S. They have caused substantial damage to water delivery systems, hydroelectric facilities, agriculture, recreational boating and fishing, and native wildlife. Once established in a waterbody the mussels are expensive to control and virtually impossible to eradicate. The damage to North American power plants and municipal drinking water systems can reach as high as $1 billion per year.[7] If the mussels spread to the Co-

---

[1] Pimentel, D., McNair, S., Janecka, J., Wightman, J., Simmonds, C., O'Connell, C., . . . & Tsomondo, T. (2001). *Economic and environmental threats of alien plant, animal, and microbe invasions.* AGRICULTURE, ECOSYSTEMS & ENVIRONMENT, 84(1), 1–20.

[2] Pimentel, D., Zuniga, R., & Morrison, D. (2005). *Update on the environmental and economic costs associated with alien-invasive species in the United States.* ECOLOGICAL ECONOMICS, 52(3), 273–288.

[3] Simberloff, D. (1996). *Impacts of introduced species in the United States.* CONSEQUENCES, 2(2), 13–22.

[4] Wilcove, D.S., Rothstein, D., Dubow, J., Phillips, A., & Losos, E. (1998). *Quantifying threats to imperiled species in the United States.* BIOSCIENCE, 48(8), 607–615.

[5] Bradley, B.A., Curtis, C.A., Fusco, E.J., Abatzoglou, J.T., Balch, J.K., Dadashi, S., & Tuanmu, M.N. (2018). *Cheatgrass (**Bromus tectorum**) distribution in the intermountain Western United States and its relationship to fire frequency, seasonality, and ignitions.* BIOLOGICAL INVASIONS, 20(6), 1493–1506.

[6] Burnett, K., Kaiser, B., & Roumasset, J. (2007). *Economic lessons from control efforts for an invasive species: **Miconia calvescens** in Hawaii.* JOURNAL OF FOREST ECONOMICS, 13(2–3), 151–167.

[7] Connelly, N.A., O'Neill, C.R., Knuth, B.A., & Brown, T.L. (2007). *Economic impacts of zebra mussels on drinking water treatment and electric power generation facilities.* ENVIRONMENTAL MANAGEMENT, 40(1), 105–112; Pimentel, D. (2005). *Aquatic nuisance species in the New York State Canal and Hudson River systems and the Great Lakes Basin: an economic and environmental assessment.* ENVIRONMENTAL MANAGEMENT, 35(5), 692–702.

lumbia River Basin—the last major uninfested water system in the continental U.S.—the control costs in the Basin alone could reach $500 million annually.[8]

Many other pests and pathogens continue to harm western communities.

A shoe encrusted with invasive mussels vividly illustrates the impact of the rapidly spreading invasive species.

Since it first emerged in the U.S. in 1999, West Nile virus has infected at least 17,737 people and caused 1,654 deaths.[9] Chronic wasting disease, an emerging infectious disease that is fatal to free-ranging and captive deer and elk, has been discovered in 24 states and continues to spread.[10] In Hawai'i, invasive fungal pathogens are resulting in Rapid 'Ohi'a Death, a vast die-off of endemic 'Ohi'a trees that are crucial to Hawai'i's ecosystems and culture. The emerald ash borer has killed hundreds of millions of ash trees in North America and has caused lasting damage to native and urban forests since 2002.[11] In Guam, the coconut rhinoceros beetle caused the native fadang tree, once the most abundant tree in Guam's forest, to be placed on the endangered species list in 2015.[12] The beetle was detected in Hawai'i in 2013 in the area around Pearl Harbor and has been contained to that area thus far. The beetle is now threatening the native coconut palm, a tree central to the environment, economy, and culture of Guam, Hawai'i and other Pacific Islands.

This short list is merely illustrative of the harm that invasive species are causing in the region.

In the West, biosecurity and invasive species management are the responsibility of a large network of state and Federal agencies, as well as stakeholders that include industry, nonprofit organizations and conservation groups, private landowners and private citizens. Each of these entities operates under a different set of laws, regulations, and authorities. Their capacities vary, as do their incentives, interests and objectives. Such a diverse network offers opportunities to implement creative and flexible biosecurity and invasive species management practices, but its decentralized nature creates challenges in developing and implementing sophisticated regional management strategies.

It is with these challenges in mind that WGA Chairman Hawai'i **Governor David Ige** launched the *Biosecurity and Invasive Species Initiative.* Hawai'i is often called "the invasive species capital of the world," not only because of the threats

---

[8] *https://www.nwcouncil.org/fish-and-wildlife/fw-independent-advisory-committees/independent-economic-advisory-board/economic-risk-associated-with-the-potential-establishment-of-zebra-and-quagga-mussels-in-the-columbia-river-basin*.

[9] Barrett, A.D. (2014). *Economic burden of West Nile virus in the United States.* THE AMERICAN JOURNAL OF TROPICAL MEDICINE AND HYGIENE, 90(3), 389.

[10] Carlson, C.M., Hopkins, M.C., Nguyen, N.T., Richards, B.J., Walsh, D.P., & Walter, W.D. (2018). *Chronic Wasting Disease: Status, Science, and Management Support by the U.S. Geological Survey.* U.S. Department of the Interior, U.S. Geological Survey.

[11] *http://www.emeraldashborer.info/*.

[12] *https://cnas-re.uog.edu/crb/*.

that invasive species pose to its native ecosystems, but also due to the groundbreaking and innovative work the state is undertaking to confront these threats. With the Initiative, WGA has drawn on Hawai'i's experience and harnessed Western Governors' unique ability to assemble state and Federal experts and a broad group of stakeholders to foster a bipartisan dialogue to improve regional coordination and collaboration to protect the West from invasive species.

Through workshops, webinars, surveys and ongoing dialogue with stakeholders, Western Governors have made genuine progress on this formidable challenge. The Initiative has produced a new set of recommendations, best practices, technical tools, and collaborative frameworks to confront this pressing environmental issue and help preserve the West's natural heritage and resource economies for generations to come.

Findings and Recommendations

The *Western Governors' Biosecurity and Invasive Species Initiative* assembled a wide variety of stakeholders over the past year to find new solutions to one of the oldest and most challenging environmental issues in the West. Surveys, workshops and a webinar series elicited a diverse set of perspectives from Federal, state, local and Tribal governments, researchers, higher education, industry, non-governmental organizations (NGOs) and conservation groups, private landowners and citizens.

The comments, perspectives and opinions expressed by these stakeholders have been synthesized into these findings and recommendations, which are organized into key recommendations. Each recommendation includes steps that Governors, Congress, Federal agencies, and regional coordinating groups might take to improve biosecurity and invasive species management practices in the West. Also included are case studies highlighting specific invasive species and their associated management challenges and opportunities.

***Recommendation:* Protect the West from the introduction of new invasive species through enhanced biosecurity practices, preparedness and planning.**

Biosecurity is the most cost-effective method of invasive species control. Stopping new invading species before they are introduced not only prevents any impacts on economic activities, it also protects natural resources and human health. Federal, state, Tribal and local agencies, as well as industry and private landowners, work diligently throughout the West to prevent the introduction of new invasive species. While many of these biosecurity programs work effectively, there is often a lack of communication between state, Federal, and local program managers, as well as a lack of regional interagency coordination. Biosecurity managers in the West should develop state and regional biosecurity plans, improve coordination and increase collaborative funding on biosecurity and biocontrol research projects, and increase the development and implementation of new biosecurity technologies.

Biosecurity

The set of measures taken to manage the risk from invasive species to economies, environments, and health and quality of life for citizens.

Improve regional biosecurity planning. In January 2017, the Hawai'i Invasive Species Council adopted the Hawai'i Interagency Biosecurity Plan: 2017–2027. This plan provides state agencies in Hawai'i with a coordinated path forward to increase support for local agriculture, protect the state's environment, and provide safeguards for the health and lifestyle of Hawai'i's people.

Other western states should consider following the Hawai'i model by developing state-level biosecurity plans. These plans could be used as the foundation to develop a first-of-its-kind biosecurity plan for the western region. Such a plan could help further prevent movement of invasive species by standardizing and regularizing biosecurity practices between state, Federal and local governments in the West.

Increase international collaboration. The Initiative demonstrated that effective communication and collaboration of biosecurity and invasive species management across administrative boundaries is an evolving process. Cross-boundary communication presents a challenge to Federal, state and local agencies, but the challenge is even greater for international collaboration to address invasive species.

State and Federal agencies should examine how they collaborate internationally on biosecurity and invasive species management issues and, when possible, consider developing formal and enduring agreements and communication structures with other countries. Improved international coordination on biosecurity and invasive

species management has the potential to increase the effectiveness of monitoring, early detection and rapid response, and control and eradication programs.

Create regional reciprocity between states for U.S. Department of Agriculture (USDA) baggage inspections. USDA regulation of interstate movement of airline baggage is focused on the protection of agricultural industries in the contiguous United States. This is particularly evident in Hawai'i, where baggage destined for the U.S. mainland is subject to Federal inspection, while baggage moving from the mainland to Hawai'i is not. Agricultural industries in the Pacific Islands need to be similarly protected from the risk of interstate movement of invasive species. USDA quarantines and airline baggage inspections should incorporate the priorities of non-contiguous states and territorial islands in the western region. This includes maintaining Federal quarantines on pests (such as the emerald ash borer) that have not yet reached the West, and adopting policies that adequately protect Pacific states and territories, such as inspection of baggage moving from the contiguous U.S. to noncontiguous areas.

Workshop

The Prevention, Control, and Management of Established Species

Lake Tahoe, Nevada (Sept. 17–18, 2018)

Nevada Gov. Brian Sandoval noted in his keynote that invasive species "can interrupt the very social fabric of the West."

The *Biosecurity and Invasive Species Initiative* workshop series kicked off on the shores of Lake Tahoe in Stateline, Nevada. The workshop focused on cross-boundary collaboration and efforts to control, manage, and eradicate established invasive species in Lake Tahoe and throughout the region.

Nevada Governor Brian Sandoval delivered a keynote in which he reminded the audience of what is at stake in the fight against invasive species, asserting that "Invasive species impact nearly every economic sector that depends upon western working lands, and by doing so they can interrupt the very social fabric of the West." The Governor added that "invasive species are an underlying cause of many challenges in the West, including the record 2018 wildfire in Nevada that swept across 439,000 acres, in many cases fueled by invasive cheatgrass. That area will now be an area where invasive species will flourish again."

WGA Executive Director Jim Ogsbury also spoke and highlighted how "Western Governors are using their convening power and energy to confront the scourge of invasive species. The impacts of invasive species in the West are as pervasive as they are underreported."

The keynotes were augmented by a series of roundtables over 2 days moderated by California Secretary for Natural Resources John Laird. Panelists from state and Federal agencies, nonprofits, industry, and academia discussed issues such as: the relationship between invasive species, wildfire, and vegetation management; the economic impacts of invasive species and tourism; and the implementation of new research and technology in invasive species management.

Increase use of innovative biosecurity prevention and detection programs. Western states should invest in tools and technology that increase the likelihood of interception and bolster the efforts of limited personnel. The use of electronic manifesting for imported goods allows agricultural inspectors to focus on those commodities designated as high-risk for carrying invasive species. Similarly, the use of detection dogs can greatly enhance interdiction efforts. A pre-departure detection dog program for brown tree snakes on Guam, managed by USDA Wildlife Services, has saved Hawai'i and the mainland U.S. billions of dollars in damages and can serve as a model for the interdiction of other invasive species.

Enhance regional biocontrol coordination. Biological control (biocontrol) can be an important component of invasive species control and integrated pest management strategies. Effective biological control is only possible through thorough and deliberate research, as well as effective interstate and Federal-state communication and collaboration. Federal decisions related to the use of biocontrol should only be made after Federal agencies engage in substantive consultation with implementing state agencies. The effectiveness and utilization of this important management tool could be improved by:

> ***Biological Control*** *(biocontrol) is the reduction of pest populations by natural enemies (predators, parasites or diseases).*

- ***Creating a regional biocontrol research center.*** For invasive species that have established beyond land managers' ability to conduct manual removal, biological control represents the most cost-effective, and often only, option for large-scale mitigation of invasive species. Invasive species do not recognize state boundaries, and neither should research and control efforts. Invasive species managers in the West would benefit from the creation of a new, state-of-the-art biological control facility, as well as a collaborative, multi-agency plan for maintaining and staffing new biocontrol facilities at a level that more adequately meets the expanding needs of the region.
- ***Establishing an interagency working group to improve coordination and increase information exchange for biocontrol research, permitting and utilization.*** As part of the Western Invasive Species Council (see below), Western Governors will convene a working group to explore the status of biological control research, permitting and utilization in the West. This working group comprised of representatives from state and Federal agencies, academia, and private industry will examine how stakeholders can better work together to promote the development and utilization of safe and effective biocontrol methods. The working group will also examine how biological control actions are permitted by Federal agencies and how states can exercise a more active role in permitting decisions.

Recommendation: **Improve cross-boundary collaboration and coordination for the management of established and emerging invasive species in the West.**

The management of emerging and established invasive species is conducted by a large network of public agencies, industry, private entities and NGOs. These entities often work to manage, control or eradicate invasive species for the benefit of specific resources such as wildlife, grazing, water, or hazardous fuel reduction. Many invasive species managers are also restricted, either by statute or by habit, to only implementing invasive species management at the level of their districts, management units, or specific area of geographic responsibility.

> ***Executive Order 13112*** *"invasive species" means "with regard to a particular ecosystem, a non-native organism whose introduction causes or is likely to cause economic or environmental harm or harm to human, animal, or plant health. States may have different definitions, as well as regulatory and non-regulatory terms that are related to but not synonymous with the term, including pests, noxious weeds and injurious wildlife."*

Invasive species are often not viewed as the cross-cutting, interdisciplinary resource threat that they truly are. States, Federal agencies, regional coordinating groups, and local invasive species managers should manage invasive species at a regional level by improving formal invasive species management coordination mechanisms and developing new and innovative ways to address key aquatic and terres-

trial species. They also should utilize existing innovative tools for cross boundary management, such as Good Neighbor Authority and the Incident Command System.

State and Federal invasive species managers would benefit from the creation of new coordination mechanisms for invasive species policy development, as well as the planning, implementation, and monitoring of regional management actions. To this end, the following coordination instruments should be created:

Western Invasive Species Council: State invasive species councils and invasive plant councils provide policy level direction, planning and coordination for state-level biosecurity and invasive species prevention and management actions in the West. Councils are led by state agencies, nonprofit organizations, industry, private landowners, and public-private partnerships. These groups empower those engaged in the prevention, detection, and eradication of invasive species, and serve as forums for invasive species education, communication, and strategic planning. Invasive species councils collaborate on regional-level issues and benefit from mechanisms that help coordinate and solve cross-boundary, cross-jurisdictional challenges.

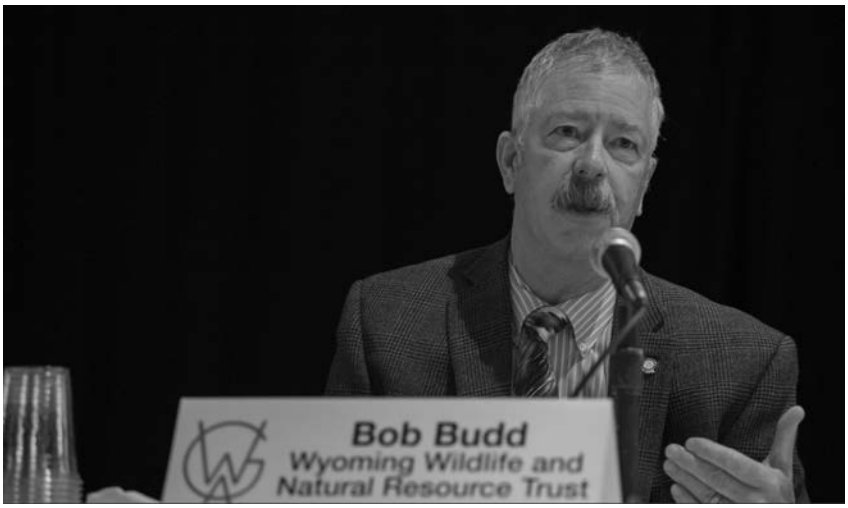
Western Governors support the creation of a **Western Invasive Species Council** (WISC) to enhance coordination among existing state invasive species councils, improve communication and collaboration on regional biosecurity and invasive species control efforts, and to advocate for regional needs at the Federal level. The Council should initially be coordinated through the WGA and work to address cross-boundary and cross-jurisdictional challenges identified through the Initiative.

A National Biosecurity and Invasive Species Management Center to streamline and centralize Federal invasive species management: Throughout the Initiative, stakeholders often compared the threats posed by invasive species to the threats posed by wildfire. Like wildfire, invasive species move rapidly once established, can have devastating effects on landscapes and communities, negatively affect public health, and require a sophisticated response from a wide variety of Federal, state and local agencies. Although invasive species present a landscape-level threat comparable to wildfire in terms of scope, scale and economic impact, Federal coordination mechanisms for biosecurity and invasive species management receive only a fraction of the Federal funding of wildfire coordination.

Workshop

WGA Working Lands Roundtable: Invasive Species and Restoration

Cheyenne, Wyoming (Oct. 11–12, 2018)



The *Working Lands Roundtable* attracted regional experts such as Bob Budd of the Wyoming Wildlife and Natural Resource Trust.

The Initiative's second workshop was conducted as part of WGA's Working Lands Roundtable, an effort to examine crosscutting policy issues and engage a broad coalition of stakeholders to advance WGA Chair Initiatives and other policy priorities. The focus of the event in Cheyenne, Wyoming was on efforts

to restore western lands after invasive species infestations have been controlled and eradicated.

In his opening remarks, Wyoming Governor Matt Mead encouraged participants to work within the WGA framework, which "is sincere about finding solutions and doing it in a bipartisan way." He reminded attendees "you are sitting here today involved in a process that will work through the Western Governors and have potential for change in Congress. Time here is well spent because it can make a difference. This is a place where answers can be found. This is not a place where bipartisanship is just a talking point."

USDA Under Secretary for Natural Resources and Environment Jim Hubbard participated in a panel on Restoration Challenges in Fire-affected Landscapes. Hubbard observed how collaboration with states is a central component of the new USDA Shared Stewardship Initiative. "The Shared Stewardship notion is that the Forest Service is going to sit down with states through Governors' offices and see what our shared priorities are." The goal "is to have a discussion about where to make investments and, as much as possible, have mutual priorities" for active management of western forests and rangelands.

The event also included a discussion on best practices and policy tools to help restore native western ecosystems and working lands after invasive species infestations. Additional panels examined rangeland restoration, post-fire restoration, and livestock and wildlife disease management.

The National Interagency Fire Center (NIFC) in Boise, Idaho, coordinates wildfire response throughout the U.S. Through NIFC, Federal, state and local agencies develop regional wildfire preparedness strategies, coordinate wildfire response actions, and pool intelligence gathering and predictive services.

To improve national interagency communication and collaboration on biosecurity and invasive species management, a National Interagency Biosecurity and Invasive Species Management Center should be created on the model of NIFC. Such a center should act as a nerve center for coordinating invasive species prevention, early detection and rapid response, and eradication efforts. The center should house representatives from all relevant Federal land management agencies, as well as interested states, local, and Tribal agency representatives.

Develop new approaches to regional species. The spread of cheatgrass and other invasive annual grasses has become a critical threat to healthy western rangelands. These invaders fuel uncharacteristic wildfire, harm watersheds, outcompete native vegetation, and diminish wildlife habitat on a large scale. Similarly, invasive quagga and zebra mussels fundamentally alter infested waterbodies, diminishing water quality and quantity, imperiling native species, and driving up the cost of boating, irrigation and hydroelectric power generation. As an outcome of this initiative, WGA will work with the Western Invasive Species Council to:

- ***Work with state, Federal and private entities to identify and implement cross-boundary projects to control invasive annual grasses at a regional level.*** Such projects should include those using alternative management techniques such as outcome-based grazing.
- ***Continue efforts to improve the interagency management of invasive quagga and zebra mussels in the West by hosting a WGA Invasive Mussels Leadership Forum.*** The goal of the forum will be to collectively determine common interagency priorities for the prevention and containment of invasive mussels in the West and identify a shared interagency strategy to address these priorities.

Utilize and expand the Incident Command System. The Incident Command System (ICS) can be a powerful tool for rapid response to new invasive species introductions. Federal, state and local agencies have increasingly been using ICS for rapid response efforts. Utilization of the system could be improved by the following practices:

- ***Increasing state, Federal and local interagency preparedness training exercises.*** The effective use of ICS depends upon practice and preparedness training by emergency responders in advance of incidents. State, Federal, local and Tribal agencies can opt to practice and implement the ICS as part of rapid response and strive to prepare for these responses through increased interagency training and preparedness exercises.
- ***Creating an aquatic invasive species (AIS) ICS module.*** To improve and standardize interagency response to new invasive species introductions, the Federal Emergency Management Agency (FEMA) should work with states to develop a new ICS training module for AIS rapid response.

Identify and expand use of Good Neighbor Authority. Good Neighbor Authority (GNA) allows states to enter into cooperative agreements with certain Federal agencies permitting them to perform various land management activities on Federal lands. These tools have been successfully used by forest and rangeland managers to achieve various management objectives across Federal, state and local government, and privately-owned lands. State and Federal invasive species managers should learn from these successes and consider using GNA for cross-boundary collaborative invasive species control, management and eradication programs.

Utilize effective partnerships. Regional interagency stakeholder groups are key to the success of biosecurity and invasive species management in the West. When possible, policy-makers and invasive species managers should rely on these groups' expertise and collaborative frameworks.

Hawai'i Gov. David Ige described his state's battle against invasive species as not only the "right thing" to do but work that makes "economic sense."

Recommendation: **Empower state and Federal agencies to manage invasive species.**

State and local agencies—including conservation districts, collaborative weed management areas, and collaborative invasive species management areas—are key players in the fight against invasive species. These institutions are the tip of the invasive species response spear, providing the resources, local expertise, and on-the-ground results necessary to control the spread of invasive species in the West. These agencies not only manage invasive species on lands and waters under their own jurisdiction, but also often provide direct and indirect support to Federal invasive species management programs.

Whenever possible, Congress and the Executive Branch should support the efforts of state and local groups. Federal agencies should recognize the role these groups play in protecting Federal resources, and Federal funding mechanisms should be structured so that these groups have sustainable, predictable and flexible long-term funding for invasive species management actions. Congress and the Executive Branch should engage in early and substantive consultation on biosecurity and invasive species management decisions that affect state resources.

Workshop

Early Detection and Rapid Response

Helena, Montana (Nov. 14, 2018)

Rayola Jacobsen took part in the Montana workshop, which included a focus on rapid respond to new infestations.

The third Initiative workshop focused on efforts to monitor for the introduction of new invasive species and rapidly respond once new infestations are detected. Panels at the event in Helena, Montana, moderated by Invasive Species Action Network Executive Director Leah Elwell, also examined topics like regional collaborative groups for invasive mussel containment, international coordination on feral swine management, and the use of emerging environmental DNA technologies.

In his keynote, Montana Governor Steve Bullock identified invasive species and their associated impacts as one of the "great environmental and economic threats to western landscapes."

"This is not a local problem, but a global problem, one that can impact virtually every facet of natural resource management," said Gov. Bullock. "Fortunately, I think that view is starting to change and it's one that we can continue to broaden through WGA. Land managers, policy makers, and the general public are really working to discuss the broad implications of invasive species on the western landscape."

WGA Executive Director Jim Ogsbury opened the workshop by saying "we are here to drive towards affirmative, positive action. We are here to devise and lay the groundwork for implementation of on-the-ground solutions to the scourge of invasive species in the West. Because, as we have seen time and again, no one is more capable than Western Governors to approach land management challenges in a methodical, practical, effective and bipartisan way."

Examples of effective collaborative and cooperative invasive species management programs include: *the National Fish and Wildlife Foundation's Pulling Together Initiative; the Natural Resources Conservation Service's Working Lands for Wildlife Program; the U.S. Fish and Wildlife Service's Partners for Fish and Wildlife Program; and interagency collaborative programs under the U.S. Forest Service (USFS) State and Private Forestry Program.*

Federal agencies should also be provided with the full suite of authorities necessary to control and contain the movement of invasive species in lands and waters under their jurisdiction.

Provide necessary Federal authorities. The containment of invasive quagga and zebra mussels at infested waters in the West depends on the mutual effort of Federal, state and local agencies. Many state-led containment programs benefit from Federal cooperation and funding; state and Federal agencies should be encouraged to sustain and expand these effective partnerships. However, to adequately protect the West from the movement of aquatic invasive species, Federal agencies must act as full partners in invasive species containment efforts and have the funding and authorities necessary to contain invasive species within lands and waters under their jurisdiction. To this end, Federal agencies, including the National Park Service and the Bureau of Land Management, should be vested with clear authority to manage watercraft upon their departure from infested waterbodies under Federal jurisdiction.

Consult with states on biosecurity decisions. Congress and Federal agencies must ensure early and substantive consultation with states regarding biosecurity and invasive species management decisions that affect state resources, including:

- Federal pest quarantine decisions can affect state ecosystems, economies and public health. USDA's Animal and Plant Health Inspection Service should consider effects on state resources and strive to engage with states in early and substantive consultation when making pest quarantine decisions.
- State and local agencies are leaders in on-the-ground biosecurity and invasive species management. Federal funding, cooperative agreements, grants, and procurement contracts for state and local biosecurity and invasive species management should be structured in a deliberate and transparent way that provides for the greatest amount of flexibility and long-term planning.

Review Federal biosecurity and invasive species statutes. Federal, state and local invasive species managers need Federal laws that support on-the-ground action to prevent, contain and control invasive species. Western Governors encourage the Western Invasive Species Council to lead a state review of Federal biosecurity and invasive species statutes—including the Lacey Act, the National Invasive Species Act, and the Nonindigenous Aquatic Nuisance Prevention and Control Act—to evaluate how they support on-the-ground management, identify gaps in their application, and ensure their structure and implementation addresses 21st century biosecurity and invasive species challenges. Of particular interest: opportunities to expand the taxonomic scope of the Lacey Act to benefit U.S. biosecurity.

Utilize cooperative agreements. Cooperative agreements, grants and procurement contracts between Federal agencies and state and local invasive species management authorities establish structured partnerships for collaborative invasive species management. Cooperative agreements lessen the burden on local Federal land managers, while increasing the efficiency of invasive species management programs and enabling local collaborative goal setting. Additionally, these agreements simplify project-based contracting by using the authorities of state and local government agencies. This can be extremely useful where infestations extend across multiple landownerships or the management objective is early detection and rapid response.

Springer Kaye of the Big Island Invasive Species Committee makes a point during a panel on Integrated Pest Management.

Federal agencies should be encouraged to expand the use of cooperative agreements with state and local governments and ensure that they are approved in a timely manner and in collaboration with implementing agencies. Federal agencies can also support invasive species management efforts by encouraging contract recipients to coordinate with state and local invasive species management agencies, regulatory programs, and cooperative weed and invasive species management areas.

Provide collaborative and flexible funding. Formal and informal collaborative efforts involving Federal, state, local and Tribal governments, researchers, higher education, industry, NGOs, conservation groups, and private landowners are a source of place-based expertise and responsive invasive species management actions. Invasive species managers should participate in inter-agency programs and collaborations that include private landowners and implement cross-boundary biosecurity invasive species management actions. Congress and the Executive Branch should support these programs and ensure that they benefit from long-term, stable and flexible funding that bolsters state, local and private invasive species management efforts.

The Bureau of Reclamation defines ***environmental DNA (eDNA)*** *as "DNA present in an environmental sample, as differentiated from traditional sampling of DNA directly from an intact organism. eDNA frequently is thought of as DNA in tissue and cells that have been shed by an organism but can also refer to DNA within an intact organism (usually microscopic), if that organism is collected in the environmental sample. For eDNA analysis, samples are collected from the environment and DNA is then extracted from the full sample or some fraction of it.*

eDNA assays allow surveillance for the presence of an organism in an environment without having to collect the whole organism itself . . . Because the purified eDNA is a mixture representing multiple species and individuals present in the environment, this technique can be used to detect a wide range of organisms, including those that are endangered or invasive, and be used for both research and monitoring purposes." (source: ***https://www.usbr.gov/mussels/docs/eDNA.pdf****)*

Workshop

Biosecurity and Agriculture

Kohala Coast, Hawai'i (Dec. 9–10, 2018)

Jules Kuo of the Hawai'i Department of Natural Resources took part in the panel "Pre-Border Detection and Prevention Strategies."

The Initiative's final workshop was held on the Kohala Coast of Hawai'i. The event began with a field trip to the Pu'u Wa'awa'a Forest Reserve, where participants learned about the detrimental impacts that invasive species have on watersheds as well as some of the ways that the Hawai'i Department of Lands and Natural Resource is reducing those impacts through invasive species removal, hazard fuel control, and native tree planting.

Hawai'i Gov. David Ige opened the workshop the next day by highlighting his state's significant work to battle invasive species as not only the "right thing," but work that makes "economic sense."

The Governor observed that "too often, we focus on managing and eradicating invasive species once they are established. However, it is more effective and cost-efficient to prevent these harmful invaders from entering our lands in the first place. That is why enhancing border biosecurity is a key component to invasive species management."

Panelists then participated in a discussion of pressing issues related to biosecurity and invasive species management in agriculture, with panels on pre-border prevention and detection strategies, the economic impacts of invasive species on agriculture, and the use of biocontrols.

Moderator John Laird, California Secretary for Natural Resources, offered closing remarks reflecting on the Initiative workshop series. "One goal of the workshops has been to broaden the conversation about invasive species, their impacts, and the work being done to prevent their movement. By that measure, I feel that these workshops have been an outstanding success." Laird added: "The work of preventing, controlling, and eradicating invasive species will never end, and neither will the work of improving the way that agencies collaborate to address these risks."

Coordinate state and Federal aquatic invasive species inspection, decontamination and quarantine programs. Aquatic invasive species coordination groups have worked with the National Sea Grant Law Center (See [*Case Study*]) to develop a set of best practices for aquatic invasive species containment. These efforts have improved interagency communication and coordination on such containment in the West. Federal agencies should work to promote and implement these best practices in invasive species response efforts.

Support state-led rapid response programs. Prevention and containment are the most effective methods to control the spread of invasive species, particularly invasive quagga and zebra mussels. Once a species is no longer contained, however, state-led rapid response programs represent key efforts to control their spread. Congress and the Executive Branch can support state-led rapid response programs by taking the following steps:

- Increasing Federal funding for state-led aquatic invasive species rapid response programs, including those that provide for flexible, long-term support of state early detection rapid response efforts;
- Streamlining Federal permitting and approval processes for treatment and management actions for new mussel detections;
- Creating a single Federal authority for aquatic invasive species treatment permitting and approval in freshwater systems;
- Simplifying reporting on new invasive mussel infestations in states by creating a single Federal point of contact for new mussel detections.

Case Study

National Sea Grant Law Center

nsglc.olemiss.edu/.

The National Sea Grant Law Center at the University of Mississippi School of Law is a nationally-recognized resource for information on aquatic invasive species (AIS) laws and policies. The Law Center has undertaken extensive research on ballast water management in the Great Lakes and published articles related to genetic biocontrol of invasive species and the impact of climate change on marine invasions.

The Law Center began conducting *dreissenid* mussel law and policy work in 2012. That year, Oregon Sea Grant, in partnership with the Law Center, U.S. Fish and Wildlife Service, and the Western Regional Panel on Aquatic Nuisance Species, secured funding from the National Sea Grant College Program to support a "Collaborative Learning Workshop for Assistant Attorneys General, Aquatic Invasive Species Coordinators, and Law Enforcement Officials" in Phoenix, Arizona.

To enhance collaborative learning during the Phoenix workshop, and to answer questions state agencies and AIS Coordinators had about authorities for watercraft inspections, decontaminations and quarantine, a team of Law Center staff and law students identified key legal issues that needed to be addressed in the region. Background papers were drafted for workshop attendees, which were further developed into five articles published in the *Arizona Journal of*

Environmental Law and Policy. The law review articles covered a range of topics including the Lacey Act, 4th Amendment search and seizure issues, and state privacy laws.

Following the Phoenix workshop, the Law Center, in collaboration with the Association of Fish and Wildlife Agencies (AFWA), led efforts to develop a model legal framework for watercraft inspection and decontamination (WID) programs. In April 2014, the Law Center and the AFWA released "Preventing the Spread of Aquatic Invasive Species by Recreational Boats: Model Legislative Provisions & Guidance to Promote Reciprocity among State Watercraft Inspection and Decontamination Programs." The "Model Regulation for State Watercraft and Inspection Programs" was released in December 2016 and the "Model Memorandum of Understanding [MOU] for Watercraft Inspection and Decontamination Programs" in December 2018. With the publication of the Model MOU, policymakers and regulators now have access to a model legal framework identifying model WID provisions from legislation through implementation.

To assist state natural resource managers and policy-makers in identifying commonalties, differences, and gaps among states, the Law Center undertook a review of each state's WID laws and regulations to see how each state's program compared to the authorities set forth in the Model State Legislative Provisions and Model Regulation. This companion report, updated in December 2018, contains a summary of the Law Center findings for all 50 states and detailed state-by-state comparisons for the 19 states with WID programs. This analysis has provided crucial information in support of state legal reform efforts to address identified gaps. In 2017, for example, 12 states and the Tahoe Regional Planning Commission engaged in legal reform efforts related to their WID programs.

To support this policy work, the Law Center conducts extensive legal research and provides technical assistance to western state partners. The Law Center maintains a compilation of AIS laws and regulations relevant to WID programs in the western United States. The Law Center prepares summary documents to inform legal reform efforts upon request. For example, in July 2016, the Law Center prepared a memo on state "Clean, Drain, and Dry" provisions and related requirements to inform discussions of the Western Association of Fish and Wildlife Agencies (WAFWA), which subsequently led to WAFWA adopting a resolution on drain plugs and vegetation removal.

The Law Center also conducts and publishes scholarly research related to invasive species. In addition to the law review articles mentioned above, in 2016, Law Center attorneys authored a law review article entitled "Working Together to Combat Invasive Species Threats: Strategies for Facilitating Cooperation between the National Park Service and the States." This article was included in a special issue of the *Natural Resources Journal* commemorating the 50th Anniversary of the National Park Service. In 2014, the Law Center director contributed a chapter in Climate Change Impacts on Ocean and Coastal Law: U.S. and International Perspectives entitled "Confronting the Marine Invasive Species Threat: Practical and Legal Challenges."

Work collaboratively with states to implement the Vessel Incidental Discharge Act. The U.S. Coast Guard and the Environmental Protection Agency should consult with Western Governors and states on implementation of the Vessel Incidental Discharge Act to ensure aquatic resource protection needs are met across the West and the Pacific. Federal and state partners should collaborate on the development of evidence-based risk assessments and assess the efficacy of policies and tools to mitigate the impact of various discharges, including hull biofouling. Protecting marine habitats in western states and Pacific territories is best accomplished by working with states that have the greatest knowledge of their ecosystems and invasive risks.

WGA Executive Director Jim Ogsbury highlighted the Western Governors' collaboration to "confront the scourge of invasive species."

Recommendation: **Support and utilize new biosecurity research, technology and planning tools.**

Research and technology development are essential components of biosecurity and invasive species management. Emerging technologies may lead to solutions for some of the West's most intractable challenges. By utilizing new research, technology and planning tools, invasive species managers can dramatically increase the effectiveness and cost-efficiency of invasive species management actions.

State and Federal agencies can support biosecurity and invasive species research by encouraging invasive species workforce development, pooling research funding, and improving biocontrol information exchange. Invasive species managers can implement new research and technology by encouraging the development of modeling, risk-assessment and decision-making tools, as well as improved regional invasive species economic impact analyses.

Improve and utilize environmental DNA monitoring. Monitoring environmental DNA (eDNA) can be an effective tool to assess new aquatic invasive species introductions. State, Federal and local agencies and regional coordinating groups should develop and implement a set of best practices for conducting eDNA monitoring and incorporating positive detection results into rapid response strategies.

Encourage biosecurity and invasive species education and workforce development. Effective biosecurity and invasive species management depends on a dedicated and highly-skilled workforce. State and Federal agencies should collaborate with universities to support programs essential to biosecurity and invasive species management, such as botany, zoology, plant pathology, taxonomy, and systematics.

Take advantage of new research and technology. Emerging research and technology can dramatically increase the efficiency and effectiveness of biosecurity and invasive species management actions. When possible, state and Federal agencies should evaluate and utilize emerging technologies in areas such as remote sensing and monitoring, unmanned aircraft, use of artificial intelligence for species iden-

tification, and the use of innovative targeted grazing practices. Congress should continue to support research as a fundamental component of effective invasive species management.

Pool research funding. Institutions conducting research on biosecurity, biocontrol and invasive species control methods should look for opportunities to pool funding resources and exchange information across administrative lines. By pooling resources, state, Federal and private researchers can decrease redundancy and increase the efficiency of research funding. Pests and pathogens that affect wildlife at a regional scale, such as chronic wasting disease and elk hoof disease, present unique threats to western resources that would benefit from pooled resources and collaborative research efforts.

Encourage the development and use of decision-making tools. Biosecurity and invasive species decision-making tools help land managers examine invasive species management issues at a regional level and make sound, science-based decisions. Examples of these tools include risk-assessments, modeling programs, and prioritization tools such as the *WGA Top 50 Invasive Species in the West.*

> ***WGA Top 50 Invasive Species in the West.*** *Individual states have developed invasive species risk assessments within their boundaries, but previously no such list existed for the entire western region. WGA surveyed invasive species coordinators in its member states and territories to develop the "Top 50 Invasive Species in the West," a first-ever regional prioritization tool.*

Invasive species managers and policymakers should be encouraged to develop new decision-making tools, as well as build and improve upon the decision-making tools now in use. Invasive species managers should strive to incorporate regional-level, science-based decision-making tools into management decisions.

Develop and utilize economic assessments. The costs associated with invasive species management, both in terms of lost economic activity and control costs, are substantial but often poorly understood. Biosecurity and invasive species managers need to understand these costs in order to develop effective prevention and control strategies. Too few regional-level biosecurity and invasive species economic impact studies exist, however, and existing analyses are often too infrequently updated to reflect changing conditions.

State and Federal land managers should be encouraged to develop new biosecurity and invasive species economic analysis tools and implement these tools into management decisions. When possible, state and Federal agencies should pool resources to develop regional-level invasive species economic impact assessments.

Support National Institute of Food and Agriculture programs. The USDA National Institute of Food and Agriculture (NIFA) operates several agricultural, biosecurity and biocontrol research programs that facilitate state efforts to prevent the introduction of new invasive species. The programs are focused on detection and diagnostics, regulatory systems support, and development and deployment of new pest management systems and protection technologies.

Among these programs are the Tactical Sciences Initiative, which develops and deploys tools to protect food and agriculture production systems against threats from pests, diseases, contaminants and disasters. Congress and the Executive Branch should continue to support and expand needed research on biosecurity and invasive species, including work accomplished under NIFA such as the Tactical Sciences Initiative.

Recommendation: **Standardize and mobilize invasive species data.**

High-quality information is essential in the fight against invasive species in the West. Land managers, conservation groups, industry and private landowners need access to accurate, up-to-date regional invasive species occurrence data. Technological barriers often prevent large amounts of useful invasive species occurrence data from being shared. Western Governors are leading an effort to improve how interagency invasive species data is standardized, stored and exchanged in the West.

Standardize Invasive Species Data. On March 14–15, 2018, WGA held a workshop that focused on the interagency management and exchange of invasive species occurrence data in the West. The WGA Invasive Species Data Management Workshop in Denver, Colorado, convened 27 representatives from state and Federal agencies, NGOs, industry, and other groups. The goal of the workshop was to develop a set of agreements to improve the reporting, exchange and utilization of invasive species occurrence data by state and Federal agencies, invasive species data

aggregators, private landowners, industry, and other stakeholders. The workshop outcomes were memorialized in the workshop's Findings and Recommendations document.

Western Governors encourage all public and private invasive species data managers to consider the findings and recommendations developed at the WGA Invasive Species Data Management Workshop, and to record, store, and exchange invasive species occurrence data using common regional standards and formats whenever possible.

Mobilize Invasive Species Data. As an outcome of the Initiative, Western Governors will lead a new "Invasive Species Data Mobilization Campaign" to increase the availability of invasive species occurrence data to all land managers in the West. Through the campaign, WGA will work with Federal, state, local and Tribal governments, researchers, higher education, industry, NGOs and conservation groups, private landowners and citizens. The goal will be to encourage stakeholders to enter data that is not recorded using a common standard or is not shared or recorded using a common data aggregating platform into existing invasive species data management platforms as described in the Findings and Recommendations document.

Webinars

Giant Salvinia.

Webinar: **Biosecurity and Invasive Species Initiative Launch.**

WGA Chair and Hawai'i **Governor David Ige** highlighted the importance of invasive species management in the West and the Initiative's goals and deliverables. WGA Policy Advisor Bill Whitacre then moderated a discussion with leaders in invasive species data management that showcased the outcomes of the WGA Invasive Species Data Management Workshop, an effort to improve the interagency exchange of invasive species occurrence data in the West.

Moderator: **Bill Whitacre,** WGA Policy Advisor. ***Panelists:*** **Chuck Bargeron,** Associate Director for Invasive Species and Information Technology, University of Georgia; **Pam Fuller,** Program Leader, Nonindigenous Aquatic Species Database, USGS; **Stinger Guala,** Director of Biodiversity Information Serving Our Nation, USGS; **Jamie Reaser,** Executive Director, National Invasive Species Council; **Lori Scott,** Interim President & CEO, NatureServe.

Comments included:

> *"We've developed the Hawai'i Interagency Biosecurity Plan to establish a path forward to a more secure future where Hawai'i is better protected from new invasive species threats, and to better mitigate our current threats."*
>
> Governor DAVID IGE.

> *"All invasive species management is local. When you start telling the story about these problems, you need to make sure that the data is available at*

a larger level in order to paint an accurate picture of what the problem is and what the next one might be."

CHUCK BARGERON.

"We try to provide the national view of aquatic species: where they are, where they have been, and where they're moving. We also keep track of pathway information. We are trying to serve land managers with this information."

PAM FULLER.

"BISON (Biodiversity Information Serving Our Nation) is the place to go for a geographically and taxonomically comprehensive overview. That's why the data management piece is important to us; we're trying to do national-scale views of where the deepest problems are in invasive species."

STINGER GUALA.

"There's a step beyond just sharing the data. There's a necessary collaboration around the development and open access to the decision support tools that move the data in a direction needed by decision-makers, whether in policy or land management."

JAMIE REASER.

"In building this integrated system, we're thinking about data standards not only for moving data back and forth, but moving data in a way that doesn't end up ballooning on itself."

LORI SCOTT.

Native salmon.

***Webinar:* Invasive Species Impacts on Fisheries.**

Land managers and invasive species experts discussed the impacts of invasive species on fisheries in the Pacific Northwest. Speakers from Washington highlighted the management challenges related to northern pike in the Columbia River Basin. Panelists also discussed the effects of non-native predation of salmon in Alaska.

***Moderator:* Justin Bush,** Executive Coordinator with the Washington Invasive Species Council. ***Panelists:* Joe Maroney,** Director of Fishery and Water Resources, Kalispel Tribe of Indians; **Parker Bradley,** Invasive Species Research Biologist, Alaska Department of Fish & Game; **Laura Robinson,** Program Liaison Coordinator, Northwest Power & Conservation Council.

Comments included:

"Predation of northern pike has really wide-reaching impacts. In the Columbia River Basin, over $1 billion has been invested in salmon recovery over the last 2 decades. This investment and the progress made towards recovery of those species are directly threatened if northern pike continue to spread downstream of the Columbia River and they begin to prey on salmon and steelhead."

JUSTIN BUSH.

"Managers local to the Columbia River Basin need to be concerned about what they're going to do (about northern pike). It's better to do something now than to do something later because the costs associated will be significantly less."

JOE MARONEY.

"We have evidence that pike specifically target salmon. When pike are introduced to a new area that also have salmon, often they will target salmonids, and when those populations become depleted or extirpated then they'll shift their diet over to other species of fish . . . finally they'll move on to invertebrates because that is all that is left."

PARKER BRADLEY.

"Working across jurisdictions allows for really wonderful things like coordination and collaboration, but it can also make reaching an agreement difficult. An invasive species in one state could be a game fish in another."

LAURA ROBINSON.

***Webinar:* Conservation Districts and Invasive Species Management.**

Representatives from conservation districts in Hawai'i, Oregon and New Mexico discussed innovative, cross-boundary efforts to manage invasive species. Panelists also highlighted how Natural Resources Conservation Service (NRCS) programs and funding can facilitate invasive species management on private land.

***Moderator:* Travis Thomason,** Director Pacific Islands Area, NRCS. ***Panelists:* Mae Nakahata,** Director, Maui County Soil and Water Conservation District; **Michelle Delepine,** Invasive Species Program Manager, West Multnomah Soil and Water Conservation District; **Lindsey Karr,** WeedWise Specialist, Clackamas Soil and Water Conservation District; **Debbie Hughes,** Executive Director, New Mexico Association of Conservation Districts.

Comments included:

"I learned from experience that if I wanted to be successful with any conservation program, whether it be Federal, state, or local, it needed to be done hand-in-hand with conservation districts."

TRAVIS THOMASON.

"Conservation districts help provide immediate boots on the ground who are aware of local risks. It is important to be able to take immediate action when circumstances change."

MAE NAKAHATA.

"Garlic mustard is considered an ecosystem modifier. It has been documented to cause ecosystem imbalance where it becomes established. It is a highly elastic plant that adapts easily to different growing conditions and climate."

MICHELLE DELEPINE.

"Conservation district partnerships can help address gaps in management. Invasive weeds don't pay attention to property lines. Public land managers will often treat a weed only for it to be re-infested by a neighboring property on private land. Conservation districts can step in and work with private landowners to address this challenge."

LINDSEY KARR.

"Many of the ranches we work on are checkerboard ranches of private, state and Federal land. Being able to use farm bill funding on BLM and USFS land has made a huge difference in being able to leverage resources and form partnerships."

DEBBIE HUGHES.

Coconut Rhinoceros Beetle.

Webinar: **Innovative Approaches to Addressing Forest Health & Invasive Species in the Pacific Islands.**

Invasive species can have particularly devastating effects on specialized island ecosystems and economies. Panelists discussed the unique challenges related to invasive species prevention and control in the U.S. Pacific Islands.

Moderator: **Bill Whitacre,** WGA Policy Advisor. ***Panelists:*** **Susan Cordell,** Director, Institute of Pacific Islands Forestry, U.S. Forest Service; **Pua Michael,** Head Forester, Division of Forestry, Palau Bureau of Agriculture; **DJ Sene,** American Samoa Community College, Agriculture, Community and Natural Resources Division; **Chelsa Muna-Brecht,** Director, Guam Department of Agriculture.

Comments included:

"Many island species are highly endemic and have lost their ability to compete with invasive species. These systems are more vulnerable to invasion from the get-go. Once an invasive species becomes established, it can create cascading effects system-wide."

SUSAN CORDELL.

"Our Congress passed a 'Green Fee,' which is a tax built into the ticket price to come to Palau. The fund helps support marine and terrestrial environments. The funds are working really well, and we are now looking at ways to expand outside of protected areas to prevent invasive species from entering sensitive areas."

PUA MICHAEL.

"Increased funding would be a great help not just for more personnel, but for additional training and workshops with our sister islands and the U.S. mainland. Having other managers or researchers visit American Samoa or other islands to share knowledge and resources would help us to better tackle issues together."

DJ SENE.

"Our top three forest species from 2002 are now facing annihilation from the Coconut Rhinoceros Beetle and Asian Cycad Scale, two invasive species. You need to think about what losing your top three species will do to your landscape, let alone your ecosystem."

CHELSA MUNA-BRECHT.

Emerald Ash Borer.

Webinar: **Exploring the State-APHIS Relationship.**

Panelists focused on how the Animal and Plant Health Inspection Service (APHIS) collaborates with western states to prevent the spread of invasive species. Participants from Hawai'i highlighted the role of state authority in regulating the movement of pests and plants and explored strategies to improve coordination between Federal and state regulations. The discussion also included regulations affecting the movement of forest pests in the West.

Moderator: **Bill Whitacre,** WGA Policy Advisor. ***Panelists:*** **Andrea Huberty,** Director, Plant Health Programs, Plant Protection and Quarantine, APHIS; **Rob Hauff,** State Protection Forester, Hawaii Dept. of Land & Natural Resources; **Jonathan Ho,** Acting Manager, Plant Quarantine Branch, Hawaii Dept. of Agriculture; **Bob Simpson,** President, Greenwood Global Consulting.

Comments included:

"Through increased conversations between states and APHIS, agencies have the opportunity to share what their capacities and challenges are in managing biosecurity and pests, and model an example for future efforts."

BILL WHITACRE.

"Our actions need to be based on risk, and we can only implement the least drastic action that is feasible and adequate to address that risk. We want to make sure we are only stepping into states' issues when there is an extraordinary emergency in front of us."

ANDREA HUBERTY.

"The preemption issue we have with the Plant Protection Act is that it requires us to act at both the state and Federal level if we are going to protect Hawaii from additional invasions of this pest. Both require information to demonstrate the potential damage caused by additional introductions. This is an especially difficult issue when you're trying to protect an endemic species that only exists on a remote archipelago."

ROB HAUFF.

"We are preempted from inspecting foreign commerce. Hawaii has gotten a few pests that were not invasive in their native range, but upon entering Hawai'i they became a pest. The state has the ability to regulate things that aren't necessarily a pest yet, but not necessarily through the Plant Protection Act."

JONATHAN HO.

"From European colonization to 1930, over 300 years, America lost only two tree species to invasive species: the American Chestnut and the American Elm. Loss of the Chestnut almost decimated eastern forests. This led to near extinction of the eastern black bear, turkey, and white-tailed deer. Today, 25% of all trees greater than 1" in diameter have a great chance of expiring by 2027 due to invasive species. This means that over the next 50 years we are expected to lose over 20 tree species."

BOB SIMPSON.

Webinar: **Species Distribution Modeling and Scenario Planning.**

Decision support tools and scenario planning strategies can help land managers plan for and react to uncertain future conditions. Panelists discussed a collaborative

effort between the U.S. Geological Survey and National Park Service to develop species distribution models for high-priority invasive plants. Panelists also reported on a research project that pairs scenario planning with quantitative modeling to explore potential effects of climate scenarios and management alternatives on rangelands in South Dakota.

Moderator: **Jeff Morisette,** Science Coordinator with the National Invasive Species Council Secretariat. ***Panelists:*** **Terri Hogan,** Invasive Plant Program Manager, National Park Service; **Catherine Jarnevich,** Ecologist, U.S. Geological Survey; **Greg Haubrich,** Noxious Weed Coordinator, Washington Department of Agriculture; and **Brian Miller,** Research Ecologist, U.S. Geological Survey.

Comments included:

> *"I want to look at the issue of private, state, and Federal collaboration. People focus on where their mandate mission takes them, which makes a lot of sense, but one of the opportunities that WGA brings through these webinars and future work is to leverage the work that is being done across those various jurisdictions."*
>
> JEFF MORISETTE.

> *"Land managers need tools to help make strategic decisions about where to focus their limited resources to best address invasive plant control."*
>
> TERRI HOGAN.

> *"We used modeling to create maps where cheatgrass may actually be on the landscape. The Forest Service was then able to use the maps to first get funding, and then to guide aerial herbicide application to try to control cheatgrass in the post-burn landscape."*
>
> CATHERINE JARNEVICH.

> *"With the 23 major invasive species in Washington, if we had let them expand to their potential, we would be looking at $1.3 billion in losses per year and loss of up to 8,000 jobs."*
>
> GREG HAUBRICH.

> *"Something we're able to find with quantitative ecological modeling is being able to identify some tradeoffs. For example, having a lower density of livestock on a landscape may provide a buffer in forage for dry years, but allows for increased growth of cool-season exotic grasses."*
>
> BRIAN MILLER.

State Programs

Zebra Mussels. USFWS photo.

Colorado

Colorado has the largest mandatory watercraft inspection and decontamination station network in the nation. The network prevents the introduction of zebra and quagga mussels, as well as other aquatic invasive species, into the nation's headwaters to protect natural resources and the critical water storage and supply infrastructure necessary for municipal, agricultural and industrial uses.

Following the detection of quagga mussels in Lake Mead more than a decade ago, Colorado quickly implemented a multi-jurisdictional network focused on halting the single largest pathway of invasive mussel spread—recreational watercraft. Education is a cornerstone of the invasive species program, but the state also requires professional inspection and decontamination of all motorized or trailered watercraft entering the state, and those that launch on high-risk waters.

Colorado's robust lake and reservoir sampling and monitoring program exceeds regional standards for early detection monitoring. While states without these kinds of networks continue to detect new invasions of zebra or quagga mussels, Colorado has remained negative for invasive mussel infestations.

The state also developed the Regional WID Data Sharing System, now the main method of communication among inspection stations and managers. The system is now performing watercraft inspection and decontamination in ten western states, as well as for numerous local governments, national parks, and private industry. It consists of a mobile application for field personnel, a website for managers and a shared database. The system, which sends out real time alerts when infested watercraft are moving into uninfested waters, has directly resulted in more interceptions preventing new invasions.

Colorado has additionally provided leadership by chairing the Western Regional Panel on Aquatic Nuisance Species, the main coordinating body for western aquatic invasive species programs and is focused on the multi-state implementation of the Quagga Zebra Action Plan for Western Waters.

Hawai'i

The State of Hawai'i adopted its first interagency biosecurity plan in 2017, presenting a comprehensive gap analysis of biosecurity policies, personnel, and infrastructure alongside a 10 year implementation plan of 147 action items to address gaps identified. The Hawai'i model takes a broad view of biosecurity, examining needs in pre-border risk mitigation, border interception, and post-border detection and response.

Interagency Scope: The Hawai'i Interagency Biosecurity Plan (HIBP) recognizes that dealing with invasive species is a team effort. Plan development was led by the Hawai'i Department of Agriculture (HDOA) and the Hawai'i Invasive Species Council (HISC), with input from the Department of Land and Natural Resources (DLNR), Department of Health (DOH), University of Hawai'i (UH), Department of Transportation (DOT) and Department of Business, Economic Development, and Tourism (DBEDT). Critically, plan development included several workshops for industry representatives and members of the public, including farmers, nurseries, air and sea transportation companies, and commodity consolidators.

Gap Analysis: The HIBP identified a number of critical policy, infrastructure, and capacity gaps in Hawai'i, including:

- A need for new biocontrol research facilities for both pathogens and insects;
- A need for modern databases for import manifests, ballast water inspections, and data collection to inform risk assessments;
- Policy gaps regarding the regulation of biofouling on vessel hulls;
- Adequate funds and standardized policies for emergency response; [and]
- The need for increased operating funds and staffing. While Hawai'i's economy and visitor industry rebounded from the 2008 economic downturn, staff numbers at HDOA, DOH, and other important agencies had not similarly rebounded from a reduction in force.

Long-term Goals: The 2027 biosecurity vision described in the HIBP would effectively protect Hawai'i's agriculture, natural resources, economy, and way of life from the risks associated with invasive species. Key components of biosecurity in 2027 include:

- New state and Federal biocontrol laboratories, capable of serving regional biocontrol needs;
- Fully implemented electronic manifesting for incoming cargo, allowing for commodity and pathway risk analyses built on interception databases;
- Transitional inspection facilities to allow biosecure agricultural inspections away from busy port areas;
- State policies on ballast water and biofouling allowing for in-water cleaning and standardized reporting;
- Emergency response plans and training based on Incident Command Systems; [and]
- Fully restored DOH Vector Control Branch, doubled capacity for agricultural inspection and pest response.

Paper manifests for incoming cargo will soon be replaced with electronic manifesting that speeds up import while more effectively directing limited inspection resources. (photo: HDOA).

Progress to Date: Agency staff provide status updates every 6 months on each of the 147 action items in the HIBP. By January of 2019 half of the action items

in the plan had been initiated, primarily those actions that could be completed with existing staff and funding. Remaining years in the implementation window will focus on increasing staff and enhancing facilities. To date:

- DOH Vector Control Branch has been restored;
- Additional positions provided to HDOA for import risk assessments;
- Electronic manifest and import database development in final stages at HDOA;
- UH has added a number of extension agents focusing on the nursery industry;
- Funds provided for biocontrol facility planning, detector dog program restoration, and construction of ungulate exclusion fences; [and]
- Increased funding provided to HISC for interagency project support. The HIBP and biannual progress reports are available online at *http://dlnr.hawaii.gov/hisc/plans/hibp/*.

Montana

The Montana Invasive Species Council (MISC) identifies and coordinates independent science advisory panels to inform state efforts based on the current status, trends, and emerging technology related to invasive species management.

Environmental DNA (eDNA) was identified as the first area for further exploration, specific to invasive *dreissenid* mussels. The use of eDNA to detect the presence of invasive mussel DNA in the environment holds both promise and uncertainty. eDNA technology is evolving rapidly and may in the future surpass traditional methods for efficiency and confidence. However, natural resource managers across the West have struggled with how best to utilize information provided from eDNA results in real-time management applications as well as having confidence in the method and results.

An international panel of six technical experts was assembled to evaluate the value of eDNA for *dreissenid* mussel early detection and provide guidance to managers regarding its use. The panel also responded to questions related to the state of the science, sampling in the field, lab analysis, interpreting results, and management implications. A workshop attended by MISC members, stakeholders, and partners provided an opportunity for discussion of those questions and answers and for panelists to identify the challenges and formulate recommendations for the use of eDNA.

Panelists agreed on a set of nine recommendations spanning areas such as communications planning, confirmation of results, and appropriate applications of eDNA. WRP has since formed a subcommittee to address the panel recommendations.

Utah

The Utah Division of Wildlife Resources is working with the Arizona Game and Fish Department and the National Park Service at Lake Powell.

The Utah Division of Wildlife Resources (UDWR) has worked cooperatively with Arizona Game and Fish Department and the National Park Service since 2013 to conduct watercraft inspection and decontamination activities as part of a containment program for invasive quagga mussels at Lake Powell.

The agencies reported in 2018 that they had inspected nearly 70,000 watercraft destined for other waterbodies, decontaminating nearly 4,500 boats. Lower lake levels and an expanding mussel population resulted in floating adult mussels in the water column—something not observed previously.

Upon inspection, adult mussels were frequently found in sea strainer devices aboard watercraft, necessitating the quarantine of dozens of boats in Utah and surrounding states. Through collective knowledge and creativity, UDWR was able to rapidly modify and adapt standard inspection and decontamination protocols used throughout the West to combat these new developments.

The changes quickly resulted in improved inspections and decontaminations, a significant decrease in the number of boats found with mussels aboard upon subsequent inspections, and spawned a partnership between UDWR, the Bureau of Reclamation, and the National Park Service to conduct research studies examining the viability of both larval and adult mussels passing through different types of ballast pumps. Study results indicated that adult mussels can easily survive passage through ballast pumps, spurring further research studies and critical analysis of current decontamination protocols.

Washington

Washington's approach to invasive species has five key aspects. The state focuses on collaboration and works with many groups, including tribes, agencies, industry and academia.

Education: The state created Washington Pest Watch—a citizen science initiative led by agencies and universities that enables citizens to report sightings, which are delivered immediately to responders.

Prevention: There are state boat inspection stations at two Ports-of-Entry. Increased funding enables the state to keep stations open longer and add a mussel-sniffing dog. To further increase protection, the state created agreements with the National Park Service and a county sheriff's office to give officers the state's authority to inspect boats; arrest drivers for not stopping at the inspection stations; enforce clean, drain, dry requirements; and issue decontamination orders.

Early Detection and Rapid Response: The state has created a collaborative to improve readiness for urban forest pests. This collaborative is developing a plan that will clarify response roles between cities and state and Federal agencies in protecting Washington's more than 200 cities from invasive insects and infectious diseases that could decimate forests.

Containment: To prepare for invasive mussels, Washington is holding a first-in-the-West field exercise with on-the-ground response, containment, watercraft inspection & decontamination, rapid monitoring and assessment, and mock treatment.

Long-Term Management: Washington State and Canada created an action plan for European green crab that delivers a coordinated response in the Salish Sea and guides research and management in both jurisdictions. In addition, Washington created a collaborative to address flowering rush by sharing best practices and developing an action plan for basin-wide management.

On the Web: **Find Initiative resources and join the conversation at *westgov.org*.**

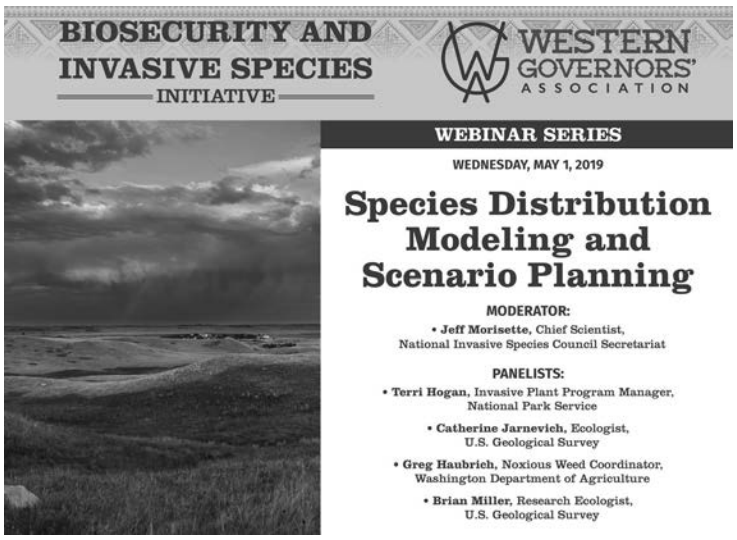
The work of the *Western Governors' Biosecurity and Invasive Species Initiative* focused on the impacts that nuisance species, pests and pathogens have on ecosystems, forests, rangelands, watersheds and infrastructure in the West. The Initiative examined the role that biosecurity plays in addressing these risks and identified emerging issues to develop policy recommendations, best practices and technical tools to address those challenges. To ensure the conversation reached the widest possible audience, WGA launched an online resource that includes videos of all workshops and webinars. We've also created the Initiative Appendix, a document that delivers expanded detail on the conversations at each workshop and webinar.

Workshops.

WGA hosted four regional Initiative workshops that attracted nearly 300 attendees combined. The workshops were live-streamed via YouTube and Facebook, amassing more than 7,300 views during the Initiative's first year. Workshops were hosted by Western Governors **Brian Sandoval** in Nevada, **Matt Mead** in Wyoming, **Steve Bullock** in Montana and **David Ige** in Hawai'i.

All workshops may be viewed on WGA's website or YouTube Channel.

Webinars.



The Initiative was launched with a webinar, hosted by WGA Chair and Hawaii Gov. David Ige, that featured a discussion on how to improve the interagency exchange of invasive species occurrence data. Additional webinars included topics such as "Invasive Species Impacts on Fisheries," "Conservation Districts and Invasive Species Management," "Exploring the State-[APHIS] Relationship," "Species Distribution Modeling and Scenario Planning," and "Innovative Approaches to Addressing Forest Health and Invasive Species in the Pacific Islands."

All webinars may be viewed on WGA's website or YouTube Channel.

The Western Governors' Association would like to thank the following for their support of the Biosecurity and Invasive Species Initiative.

Initiative Sponsor

Workshop Signature Sponsor

Federal Partners

Participants

WGA appreciates the time and effort that workshop panelists provided to the Initiative.

Panelists and Speakers

Lake Tahoe, Nevada Workshop, September 17–18, 2018

The Honorable Brian Sandoval, Governor, State of Nevada

John Laird, California Secretary for Natural Resources, California
Amy Berry, Chief Executive Officer, Tahoe Fund
Meghan Brown, Deputy Administrator-Plant Industry, Nevada Department of Agriculture
Nicole Cartwright, Executive Director, Tahoe Resource Conservation District
Sudeep Chandra, Associate Professor, University of Nevada Reno
Cindy Gustafson, Chief Executive Officer, North Lake Tahoe Resort Association
Lisa Heki, Project Leader, Lahontan National Fish Hatchery Complex, U.S. Fish and Wildlife Service
Karen Jetter, Research Economist, University of California Davis, Agricultural Issues Center
Doug Johnson, Executive Director, California Invasive Plant Council
John Kabashima, University of California Cooperative Extension, Emeritus
Kacey K.C., State Forester, State of Nevada
Elizabeth Leger, Associate Professor, University of Nevada Reno
Jeff Marsolais, Forest Supervisor, Lake Tahoe Basin Management Unit, U.S. Forest Service
Ken Mayer, Fire and Invasive Initiative Coordinator, Western Association of Fish and Wildlife Agencies
Laura Megill, Aquatic Invasive Species Coordinator, Nevada Department of Wildlife
Don Neal, Director of Environmental Services, Southern California Edison
Heath Packard, Director of Government & Public Relations, Island Conservation
Jesse Patterson, Chief Strategy Officer, League to Save Lake Tahoe
Paul Petersen, Fire Management Officer, Nevada Bureau of Land Management Office
Roland Quitugua, Extension Biosecurity Associate, University of Guam Extension and Outreach
Julie Regan, External Affairs Chief, Tahoe Regional Planning Agency
Jon C. Sjöberg, Chief of Fisheries, Nevada Department of Wildlife
Sheri Smith, Regional Entomologist, Pacific Southwest Region, U.S. Forest Service
Katie Steiger-Meister, Public Affairs Specialist, U.S. Fish and Wildlife Service
Martha Volkoff, Environmental Program Manager, California Department of Fish and Wildlife
Dennis Zabaglo, Aquatic Resources Program Manager, Tahoe Regional Planning Agency Cheyenne, Wyoming,

WGA Working Lands Roundtable, October 11–12, 2018

The Honorable Matt Mead, Governor of Wyoming
Jim Hubbard, Under Secretary for Natural Resources and Environment, U.S. Department of Agriculture
Doug Miyamoto, Director, Wyoming Department of Agriculture
Willow Bish, Wildlife Biologist, Wyoming Game and Fish Department
Bob Budd, Executive Director, Wyoming Wildlife and Natural Resource Trust
Bill Crapser, State Forester, State of Wyoming
Jessica Crowder, Policy Director, Western Landowners Alliance
Randy Crowl, Manager, Colorado Seed Lab, Colorado State University
Daniel Denipah, Forest Development Restoration Manager, Santa Clara Pueblo
Curtis Elke, Idaho State Conservationist, Natural Resources Conservation Service
Colleen Faber, Environmental Health & Safety Supervisor, Anadarko
Mary Farnsworth, Deputy Regional Forester, Intermountain Region, U.S. Forest Service
Bobbie Frank, Executive Director, Wyoming Association of Conservation Districts
Garth Fuller, Eastern Oregon Manager, The Nature Conservancy
Don Hijar, Owner, Pawnee Buttes Seed Inc. Matt Holloran, Principal, Operational Conservation LLC
Camille Hopkins, Wildlife Disease Coordinator, Ecosystems Mission Area, U.S. Geological Survey
Shara Howie, Program Manager, NatureServe
Gwyn McKee, President, Great Plains Wildlife Consulting
Peggy Olwell, Plant Conservation Program Lead, Bureau of Land Management
Dave Pellatz, Executive Director, Thunder Basin Grassland Prairie Ecosystem Association
Barry Perryman, Professor, University of Nevada—Reno
Jolie Pollet, Division Chief, Fire Planning and Fuels Management, Bureau of Land Management
Lisa Reynolds, Assistant Attorney General, State of Colorado
Brenda Richards, Coordinator, Idaho Rangeland Conservation Partnership
John Ruhs, Assistant Director, Fire and Aviation, Bureau of Land Management
Derek Sebastian, Western Area Sales Manager—Vegetation Management, Bayer U.S.
Scott Smith, Deputy Director of External Operations, Wyoming Game and Fish Department
Tom Spezze, Senior Director of Conservation—Western U.S., National Wild Turkey Federation
Peter Stahl, Professor of Soil Ecology, University of Wyoming
Scott Talbott, Director, Wyoming Game and Fish Department
Jeremy Maestas, Sagebrush Ecosystem Specialist, Natural Resources Conservation Service
Michael Miller, Senior Wildlife Veterinarian, Colorado Department of Wildlife
Kurt VerCauteren, Feral Swine and Ungulate Project Leader, National Wildlife Research Center
Noreen Walsh, Director, Mountain-Prairie Region, U.S. Fish and Wildlife Service
Jeff Whitney, State Forester, State of Arizona

Helena, Montana Workshop, November 14, 2018

The Honorable Steve Bullock, Governor, State of Montana
Leah Elwell, Executive Director, Invasive Species Action Network
Gary Adams, Montana State Plant Health Director, U.S. Department of Agriculture, Animal and Plant Health Inspection Service
Jon Amberg, Fish Biologist Researcher, U.S. Geological Survey
Josh Atwood, Invasive Species Coordinator, Hawai'i Invasive Species Council
Hans Bodenhamer, Northern Rocky Mountain Grotto
Ryan Brook, Associate Professor, University of Saskatchewan
Elizabeth Brown, Invasive Species Coordinator, Colorado Parks & Wildlife
Dave Burch, State Weed Coordinator, Montana Department of Agriculture
Justin Bush, Executive Coordinator, Washington Invasive Species Council
Leigh Greenwood, Forest Health Program Director, The Nature Conservancy
Justin Hossfeld, President, Sunlight Ranches
Mike Ielmini, National Invasive Species Program Leader, U.S. Forest Service
Rayola Jacobsen, Invasive Species Coordinator, Bruneau River & Soil Conservation District
Chuck Laudner, Senior Advisor for Congressional and Legislative Affairs, National Park Service
Jane Mangold, Associate Professor and Extension Invasive Plant Specialist, Montana State University
Christy Martin, Program Manager & Public Information Officer, University of Hawaii-Pacific Cooperative Studies Unit, Coordinating Group on Alien Pest Species
Brian Mealor, Director and Associate Professor, Sheridan Research and Extension Center
Dale Nolte, National Feral Swine Program Manager, U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services
John Steuber, Montana State Director, U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services
Tahnee Szymanski, Assistant State Veterinarian, Montana Department of Livestock
Erin Raney, Aquatic Invasive Species Coordinator, Arizona Game and Fish Department
Helmuth Rogg, Director of Plant Program Area, Oregon Department of Agriculture

Steve Tyrrel, Central & Eastern Montana Invasive Species Team
John Vore, Game Management Bureau Chief, Montana Fish, Wildlife & Parks
Germaine White, Information and Education Program Manager, Confederated Salish & Kootenai Tribes
Tom Woolf, Aquatic Invasive Species Bureau Chief, Montana Fish, Wildlife & Parks

Kohala Coast, Hawai'i, December 9–10, 2018

The Honorable David Ige, Governor of Hawai'i
John Laird, Secretary for Natural Resources, State of California
Josh Atwood, Program Supervisor, Hawai'i Invasive Species Council
Patty Baiao, U.S. Program Manager, Island Conservation
Matt Baur, Associate Director, Western Integrated Pest Management Center
Kimberly Burnett, Associate Specialist, University of Hawai'i Economic Research Organization
Suzanne Case, Chair, Hawai'i Department of Land and Natural Resources
Scott Enright, Chair, Hawai'i Department of Agriculture
Josh Fisher, Invasive Species Biologist, U.S. Fish & Wildlife Service
Mark Fox, Director of External Affairs, The Nature Conservancy, Hawai'i Program
Vernon Harrington, State Plant Health Director, U.S. Department of Agriculture, Animal and Plant Health Inspection Service
Robert Hauff, State Protection Forester, Hawai'i Department of Land & Natural Resources
Jonathan Ho, Plant Quarantine Branch Manager, Hawai'i Department of Agriculture
Flint Hughes, Ecologist, Institute of Pacific Island Forestry, U.S. Forest Service
Tracy Johnson, Research Entomologist, Pacific Southwest Research Station, U.S. Forest Service
Springer Kaye, Program Manager, Big Island Invasive Species Committee
Jules Kuo, Ballast Water and Biofouling Coordinator, Division of Aquatic Resources, Hawai'i Department of Land & Natural Resources
Chris Manfredi, President, Hawai'i Coffee Association
Christy Martin, Program Manager & Public Information Officer, University of Hawai'i-Pacific Cooperative Studies Unit, Coordinating Group on Alien Pest Species
Michelle Montgomery, Program Specialist, Hawai'i Ant Lab
Darcy Oishi, Biocontrol Section Chief, Hawai'i Department of Agriculture
Roland Quitugua, Extension Biosecurity Associate, University of Guam Extension and Outreach
Joel Price, Biological Control Entomologist, Oregon Department of Agriculture
David Smith, Administrator, Division of Forestry and Wildlife, Hawai'i Department of Land & Natural Resources
Cas Vanderwoude, Research Manager, Hawai'i Ant Lab
Warren Watanabe, Executive Director, Maui County Farm Bureau

We would also like to thank the groups and organizations who participated in workshops, webinars, and initiative surveys over the past year:

3 Quarter Circle Land & Water Co. Inc.
A&B Diversified
Ag Association Management Services, Inc.
Alaska Department of Fish and Game
Altar Valley Conservation Alliance
American Samoa Community College
American Samoa Department of Agriculture
Anadarko Petroleum Corporation
Ann Walker Consulting
Aquatic Nuisance Species Task Force
Arizona Department of Forestry and Fire Management
Arizona Game and Fish Department
Bayer U.S.
Bear Lake Watch
Big Island Invasive Species Committee
Bonneville Power Administration
Boone and Crockett Club
California Department of Fish and Wildlife
California Invasive Plant Council
California Natural Resources Agency
California State Lands Commission
California State Parks
Cardno
Clackamas Soil and Water Conservation District
Colorado Attorney General's Office
Colorado Department of Agriculture
Colorado Department of Wildlife
Colorado Parks and Wildlife
Colorado State University
Confederated Salish & Kootenai Tribes
Council of Western State Foresters/
Western Forestry Leadership Coalition
Eastern Nevada Landscape Coalition
East-West Center
Ecosystem Research Group, LLC
Edison International
ESRI
Fort Belknap Indian Community
Great Plains Wildlife Consulting
Greenwood Global Consulting
Guam Department of Agriculture
Hawai'i Ant Lab
Hawai'i Coffee Association
Hawai'i Department of Agriculture
Hawai'i Department of Land and Natural Resources
Hawai'i Invasive Species Council
Idaho Office of Species Conservation
Idaho Rangeland Conservation Partnership
Idaho State Department of Agriculture
Integrated Ag Services
Intermountain West Joint Venture
Invasive Species Action Network
Island Conservation

Kauai Invasive Species Committee
Laramie County Conservation District
League to Save Lake Tahoe
Lonesome Pines Land & Cattle Co.
Maui County Farm Bureau
Maui County Soil and Water Conservation District
Maui Invasive Species Committee
Montana Department of Agriculture
Montana Department of Livestock
Montana Department of Natural Resources and Conservation
Montana Department of Transportation
Montana Fish Wildlife and Parks
Montana Invasive Species Council
Montana State University
Montana Trout Unlimited
National Association of Conservation Districts
National Interagency Fire Center
National Invasive Species Council Secretariat
National Oceanic and Atmospheric Administration
National States Geographic Information Council
National Wild Turkey Federation
National Wildlife Research Center
NatureServe
Nevada Department of Agriculture
Nevada Department of Conservation and Natural Resources
Nevada Department of Wildlife
Nevada Division of Forestry
Nevada Division of State Lands
Nevada Tahoe Conservation District
New Mexico Association of Conservation Districts
New Mexico State University
NIC Inc.
North Dakota Game and Fish Department
North Lake Tahoe Resort Association
Northern Rocky Mountain Grotto/Bigfork High School Cave Club
Northwest Power & Conservation Council
Oahu Invasive Species Committee
Off-Road Business Association
Operational Conservation LLC
Oregon Department of Agriculture
Oregon Department of Fish and Wildlife
Oregon Invasive Species Council
Palau Bureau of Agriculture
Partners for Conservation
Pawnee Buttes Seed
Placer County
Research Corporation of the University of Hawai'i
RiversEdge West
Rosebud County Weed District
Ruckelshaus Institute, University of Wyoming
Santa Clara Pueblo Forestry
Sonoma Water
Southern California Edison
Sunlight Ranch
Sustainable Rangelands Roundtable
Tahoe Chamber of Commerce
Tahoe Fund
Tahoe Regional Planning Agency
Tahoe Resource Conservation District
The National Audubon Society
The Nature Conservancy
Thunder Basin Grasslands Prairie Ecosystem Association
U.S. Air Force, Colorado State University—Center for Environmental Management of Military Lands
U.S. Department of Agriculture

- Agricultural Research Service
- Animal and Plant Health Inspection Service
- Natural Resources Conservation Service
- U.S. Forest Service

U.S. Department of the Interior

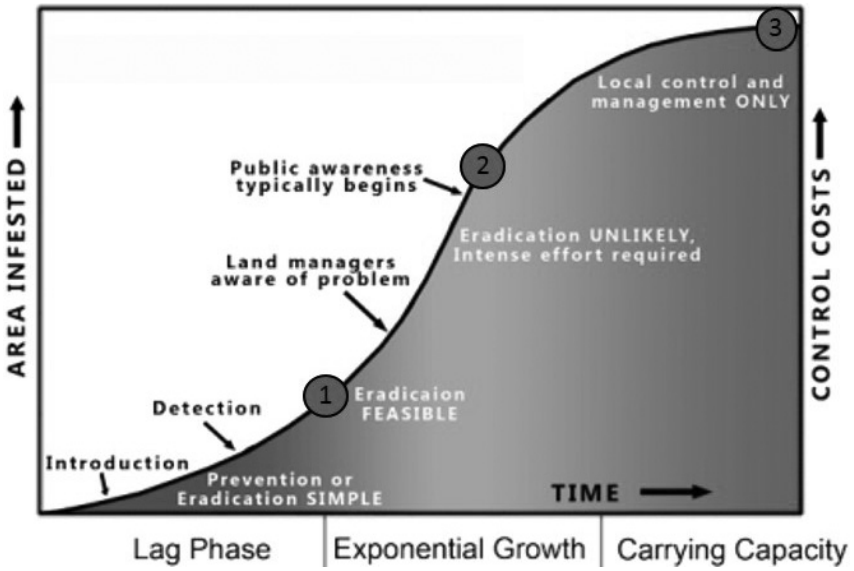
- Bureau of Land Management
- Bureau of Reclamation
- Fish and Wildlife Service
- National Park Service
- U.S. Geological Survey

University of California Agricultural Issues Center
University of California Cooperative Extension
University of Georgia Center for Invasive Species and Ecosystem Health
University of Guam
University of Guam Cooperative Extension and Outreach
University of Hawai'i
University of Hawai'i at Mānoa
University of Hawai'i Economic Research Organization
University of Hawai'i—Pacific Cooperative Studies Unit, Coordinating Group on Alien Pest Species
University of Nevada—Reno
University of Saskatchewan
University of Wyoming

Utah State University Extension
Washington Invasive Species Council
Washington Recreation and Conservation Office
Waterweed Solutions
West Multnomah Soil and Water Conservation District
Western Integrated Pest Management Center
Western Association of Agriculture Experiment Station Directors
Western Association of Fish and Wildlife Agencies
Western Landowners Alliance
Working Dogs for Conservation
Wyoming Association of Conservation Districts
Wyoming Department of Agriculture
Wyoming Game and Fish Department
Wyoming Reclamation and Restoration Center
Wyoming State Forestry Division
Wyoming Stock Growers Association
Wyoming Wildlife and Natural Resource Trust
Wyoming Wildlife Federation

SUBMITTED CHART BY HON. JOSH HARDER, A REPRESENTATIVE IN CONGRESS FROM CALIFORNIA

Invasion Curve



Source: *https://www.wildlife.ca.gov/Conservation/Invasives/Species/Nutria/Infestation*.

SUBMITTED QUESTIONS

Questions Submitted by Hon. Jim Costa, a Representative in Congress from California

Response from Ricardo Ortega, General Manager, Grassland Water District, Los Banos, CA

Question 1. Can you please elaborate on the need for funding to combat invasive nutria?

Answer. In 2018, the California Department of Fish and Wildlife took the lead on eradicating nutria in California. Through a one-time state appropriation and grants, they established a Nutria Eradication Program that is expanding to 45 staff, including five contracted specialists through U.S. Department of Agriculture's Wildlife Services. Eradication campaigns are inherently long-term and require adequate and reliable funding to ensure a successful outcome. A full-scale campaign in California is estimated to cost ($5,000,000) per year for at least of 7 years ($35,000,000) before significant progress is made. The Department estimates a total eradication campaign will take at least 20 years to complete ($100,000,000), based on successful ef-

forts in other parts of the country and the expansive network of suitable habitat in California. The Department currently feels it has adequate operational funding through fall 2022 but no other funding has been identified.

Question 2. Can you discuss what would happen if the nutria were to reach and establish habitat in the Sacramento-San Joaquin Delta?

Answer. Nutria burrows extend hundreds of feet causing levee failure and the loss of scarce water supplies, the lifeline of our precious remaining wetland and riverine ecosystems, drinking and industrial water supply and our vibrant agricultural economy. Water and wildlife agencies in California fear nutria population expansion north could devastate the Sacramento[-]San Joaquin Delta system which is a complex network of channels and earthen levees. Nutria would not only impact the delta ecosystem, but the hub of California's flood control and water delivery system which also supplies water to 25 million people in the bay area and southern California. In

Question 3. Can you elaborate on the impacts or potential impacts to agriculture of invasive nutria?

Answer. The San Joaquin Valley which is largely dependent on water exports from the Delta and supports more agricultural jobs than any other sector in California, providing over 200,000 jobs. The top four counties for agricultural sales in California are located in the San Joaquin which generates over $20 billion in agricultural sales annually. Nutria's destructive behavior especially on water supply delivery infrastructure threaten the very existence of agriculture in the San Joaquin Valley. Congress must act now to ensure a successful nutria eradication program is implemented and sustained.

○