

**TESTIMONY OF
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Before
SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES
Regarding
OPPORTUNITIES FOR FEDERAL AND NON-FEDERAL PARTNERSHIPS IN INTEGRATED
WATER MANAGEMENT AND EFFORTS TO IMPROVE WATER SECURITY IN HAWAII
October 18, 2016**

Thank you for hosting this important hearing to examine the critical nexus between partnerships, watershed management, and water security. It is my privilege to represent the United States Department of Agriculture (USDA) Forest Service in describing the efforts across our agency to address the health and sustainability of our critical natural resources in partnership with local, county, state, and tribal governments, and other federal agencies in Hawaii and across the nation. My testimony will focus on key activities in specific programs in Hawaii that address forest and watershed health which contribute to the security of our water supply, and will also touch on programs of national scope, including several important programs within the Natural Resources Conservation Service (NRCS) at USDA.

Background

The Forest Service is organized into deputy areas, with cooperating roles in partnerships, water management and water security among other mission elements. Below is a brief overview of National Forest System, State and Private Forestry, and Research and Development deputy areas, as well as a note on the impact of the rising cost of wildfire on our mission.

National Forest System

The national forests were originally created to secure favorable water flows and provide a sustainable supply of goods and services. The National Forest System comprises 154 national forests and 20 national grasslands located in 44 States, Puerto Rico, and the Virgin Islands, encompassing about 193 million acres. Forested watersheds reduce storm runoff, stabilize streambanks, shade surface water, cycle nutrients, and filter pollutants. National Forest operations include: administering and managing recreation and heritage areas; preserving wilderness; restoring, conserving and enhancing fish and wildlife habitats; managing and utilizing forest, rangeland, mineral, and water resources in a sustainable manner.

State and Private Forestry

State and Private Forestry programs provide technical and financial assistance to help landowners and resource managers sustain the Nation's urban and rural forests and to protect communities and the environment from wildland fires, insects, disease, and invasive plants. State and Private Forestry program areas include Fire and Aviation Management, Forest Health Protection, Cooperative Forestry, Conservation Education, and Tribal Government Relations. These programs work collaboratively with local, county, state, and tribal governments and other federal agencies to enhance and maintain forests across watersheds and ecosystems, both on private and public lands.

Forest Service Research and Development

Research and Development provides long term research, scientific knowledge, and tools that can be used to manage, restore, and conserve forests and rangelands. As the world's largest forestry research organization, we employ approximately 500 scientists and have a presence in every state in America. Forest Service Research and Development carries out programs in Forest Inventory & Analysis, the National Forest Products Laboratory, comprehensive regional assessments, national and international programs, and a fully integrated science, development, and implementation program.

Continuing Erosion of Budget Capacity Due to Fire

The single most important step Congress can take to advance forest health and resilience is to enact a comprehensive fire budget solution—one that addresses both the growth of fire programs as a percent of the agency's budget and the compounding annual problem of transferring funds from non-fire programs to cover the cost of fire suppression. In 1995, fire made up 16 percent of the Forest Service's annual appropriated budget—this year, more than 50 percent of the Forest Service's annual budget will be dedicated to wildfire. Along with this shift in resources, there has also been a corresponding shift in staff, with a 39 percent reduction in all non-fire personnel since 1995.

As more and more of the agency's resources are spent each year to provide the necessary resources for fire suppression, fewer and fewer funds and resources are available to support other agency work. The dependence on non-fire programs to pay for the ever-increasing costs of fire has real implications, not only for the Forest Service's restoration work that would help prevent catastrophic fires, but also for the protection of watersheds and cultural resources, upkeep of programs and infrastructure that support thousands of recreation jobs and billions of dollars of economic growth in rural communities, and support for the range of multiple uses, benefits and ecosystem services, as well as research, technical assistance, and other programs that deliver value to the American public. In fact, since 1995, appropriations for the National Forest System have been reduced from 58 percent of the budget, to 29 percent in 2015.

USDA appreciates the continued interest from members of the Committee to address the way fire suppression is funded, and looks forward to working with members to find a solution to this problem that is continuing to negatively impact the ability of the Forest Service to complete non-fire work.

Introduction

Water is vitally important for many reasons, including resource stewardship, domestic use, and public recreation. Today, water from national forests and grasslands contributes to the economic and ecological vitality of rural and urban communities across the nation, and those lands supply more than 60 million Americans with clean drinking water.¹ National forests in the arid continental West typically occupy the very top of critical watersheds, where water is stored in winter snow packs and underground aquifers and slowly released through the spring and into the summer. National forests in the east also occupy critical watersheds, preserving water quality for downstream users and moderating floods to protect downstream landowners. Communities, farmers and ranchers, Native American Tribes, and the general public depend on delivery of clean water from the national forests and grasslands.

The contributions to and the benefits derived from forests do not end at the western edge of the continental United States. Rather, they span the Pacific and include over 1.7 million acres of forests in The State of Hawaii, the Territory of Guam, the Territory of American Samoa, the Commonwealth of the Northern Mariana Islands, the Republic of Marshall Islands, the Federated States of Micronesia, and the Republic of Palau. These diverse native forest ecosystems support a rich array of flora and fauna found nowhere else in the world. Island forests replenish important fresh water aquifers and river systems, protect reefs, and shelter and protect shorelines and coastal communities from the impacts of hurricanes, storm surges, tsunamis and floods. Traditional cultures depend directly on ecosystem services provided by forests including food, fiber, and clean water for their subsistence lifestyles. In the Hawai'ian Islands and the Western Pacific Islands, forests capture rain that becomes drinking water for island inhabitants. For example a recent study found that deforestation of the Ko'olau Mountains there would result in a loss to aquifers of \$4.6 to \$8.5 billion.²

The Hawai'ian Islands and Western Pacific Islands have relatively small land masses subject to high land use and development pressure, and are highly susceptible to disturbances such as invasive species, human-caused fires, storms, and changing climate patterns. As population and development pressures continue to

¹ <http://www.fs.fed.us/publications/policy-analysis/water.pdf>.

² "Environmental Evaluation and the Hawaiian Economy", University of Hawai'i Economic Research Organization, Jim Roumasset

grow, ecological restoration of tropical forests has clear and compelling environmental and public benefits. Sustainability of tropical forests is integral to maintaining resilient communities, diversifying local economies, and mediating the impacts of ever-increasing tourism industries. The economies of the Hawai’ian Islands are directly tied to the health and status of their forests.

The Forest Service supports a variety of collaborative work to restore, enhance and protect forest resources among the Pacific Islands. Congressionally appropriated funds are matched with Pacific Island partner funds to improve and maintain the health of urban and native forests, conserve native working forests through conservation easements, support development of tropical forestry management tools, and increase technical capacity of local forestry and natural resource personnel. The Forest Service continues to support local island professionals which is essential for fostering participation in collaborative efforts, increasing the number of restored acres, integrating cultural knowledge and agroforestry practices into conservation practices, and raising awareness at the community level about the increasing threats to island forests.

Partnerships in Forest and Watershed Management and Environmental Education

Partnerships are essential to carrying out this mission. They allow us to leverage our resources while providing wise management of our nation’s water resources, engaging youth in conservation stewardship, and promoting healthy, active lifestyles. The U.S. Forest Service’s partnership program is valued at nearly \$1.3 billion— in FY 2015 the agency executed over 21,000 grants and partnership agreements. Examples of important partnerships in California and Hawai’i include:

The U.S. Forest Service and the California Natural Resource Agency entered into a Memorandum of Understanding (MOU) in August 2015 to work in partnership to implement the Sierra Nevada Watershed Improvement Program (WIP). The WIP is a coordinated, integrated, collaborative program to restore the health of California’s primary Sierra Nevada watershed through increased investment and needed policy changes. The activities undertaken by the WIP benefit wildfire management, mitigation investments, restoration efforts, water and air quality, carbon storage, fish and wildlife, and community resilience.

The Forest Service Forest Stewardship Program (FSP) operates in partnership with California, Hawaii, and six US-affiliated Pacific Island jurisdictions to promote sustainable management by private landowners (family forests) as well as state forested lands. A primary focus of the program, especially in California and Hawaii, is the development of individual FSP Plans that provide landowners with the information they need to manage their forests for a variety of products and services, including freshwater conservation.

The Hawaii Forest Stewardship Program received over \$155,000 from the Forest Service for FY 2015-2016 with an equal state match to provide technical and financial assistance to non-industrial private landowners and to conduct conservation education activities.

In FY 2014 through FY2016 funds of more than \$148,000 (with an equal match) were provided to restore Hawaii state tree nurseries and create seed banks for restoration projects especially on watersheds affected by fire and disease. Over 85,400 tree seedlings have been produced as well as a comprehensive report and recommendations for state nursery programs is nearly complete.

As healthy forests are critical for clean, abundant water, the Forest Service supports the Hawaii Division of Forestry and Wildlife (DOFAW) Urban and Community Forestry through technical, financial, and educational assistance. In FY 2014 through FY2016 over \$830,000 was granted with more than \$850,000 provided in matching funds. This assistance encourages cooperative efforts to plan urban forestry programs and to plant, protect, maintain, and utilize wood from trees in open spaces, greenbelts, roadside screens, parks, woodlands, curb areas, and residential developments in urban areas. By leveraging US Forest Service resources, DOFAW supports the development of community level forest management plans, the critical training of professional forestry staff, the adoption of ordinances or policies for urban forest management, and the growth of local tree boards and planting organizations.

The nonprofit Friends of Hawaii's Urban Forest, in partnership with the Forest Service, is completing a project to improve water quality using a FY 2013 \$100,000 grant with an equal match provided. They are also conducting an urban tree canopy assessment for the island of Oahu (FY2015 funds over \$78,000) to inform city planning and larger climate change resiliency initiatives.

The Forest Service also supports the Pacific Rim Resiliency Program through a Hawai'ian nonprofit called Kupu. In FY 2016 \$20,000 was granted with an equal match provided. This program places youth and young adults from the community into partner organizations to help build capacity for climate resiliency projects, covering environmental stewardship and education.

Joint Chief's Project in Hawaii

In FY 2015, NRCS and the U.S. Forest Service invested \$37 million in 28 projects across 25 States through the Chiefs' Joint Landscape Restoration Partnership to help mitigate wildfire threats to communities and landowners, protect water quality, and supply and improve wildlife habitat for at-risk

species. This multi-year partnership between NRCS and the U.S. Forest Service is working to improve the health and resiliency of forest ecosystems where public and private lands meet across the nation.

In Hawaii, the USDA NRCS and Ko‘olau Mountains Watershed Partnership have teamed up in the Ko‘olau Mountains, Oahu, to remove invasive plants and animals from the Poamoho and Kaluanui areas of the Ko‘olau Mountains that feed the Pearl Harbor aquifer. This project will improve ground water recharge as well as improve habitat quality for at-risk native species. All activities funded with Forest Service funds are on state lands. In FY 2015 and FY 2016, the Forest Service granted \$60,500, with a \$60,500 match; NRCS made a \$208,500 one-time grant to this project.

The Threat of Invasive Species to Watershed Condition and Ecosystem Functionality

Invasive species cause billions of dollars in damage each year in the United States. Aquatic and terrestrial invasive plants, pathogens, vertebrates, invertebrates, algae, and fungi are degrading watershed condition and ecosystem functionality, reducing forest and rangeland productivity, increasing the risk of wildfire and soil erosion, causing declines in recreational use and enjoyment, negatively impacting human health and safety, endangering livestock, and threatening native fish and wildlife populations and their associated habitats, causing declines in property values, and undermining the economy at all levels.

The Forest Service continues to play an important national and international leadership role in advancing the understanding of the invasive species problem. The wide ranging authorities of the Forest Service allow us to work with federal, state, county, Tribal, and private partners to combat invasive species across all lands, public and private. We also develop methods, tools, and approaches, through which these harmful exotic species can be detected, prevented, controlled, and eradicated.

The invasion of non-native organisms into the Hawai‘ian Islands over the past two and a half centuries has reached a magnitude that now threatens to devastate native ecosystems and depress sectors of the state’s economy. The severity of the situation has become clearer over the past decade. Hawai‘i is plagued with pest invasions to a greater extent than almost any other location in the world. In response to these invasions, a number of innovative partnerships have been developed to combat invasive species such as rapid ‘ōhi‘a death, coconut rhinoceros beetle, and several others.

Rapid ‘ Ōhi‘a Death (ROD)

Stands of Hawai‘i’s keystone endemic tree, ‘ōhi‘a lehua, are experiencing alarming levels of mortality, more than 90 percent in some cases, across large areas of Hawai‘i Island. ‘ Ōhi‘a accounts for 50 percent of all trees, native or non-native, and 50 percent of the total area of Hawai‘i Island. ‘ Ōhi‘a makes up 80 to 90 percent of the trees across all of state’s native forests. Rapid ‘ōhi‘a Death (ROD) is a plant disease that

has killed millions of mature ‘ōhi‘a trees on Hawai‘i Island during the last several years, and is a high priority issue for all natural resource and agricultural agencies working in the state of Hawaii. The top priority is to continue to provide research and technology development that effectively informs management actions.

Multiple efforts are underway to address this high priority issue in Hawaii. For calendar year 2016 \$850,000 was dedicated for these efforts (40% private, 40% state, 20% federal). For FY 17, the State has appropriated \$300,000 for ROD research conducted by USDA Agriculture Research Service; the Forest Service will also provide funds.

Other Diseases, Invasive Plants, Invasive Insects

USDA Forest Service Forest Health Protection (FHP) provides technical assistance, conducts surveys, and offers financial support to National Forests, other federal agencies, universities, Tribes, non-governmental organizations (NGOs) and state & private landholders to prevent or manage native and invasive insects, diseases, and plants. FHP responds to emerging pest issues, works across state borders and the Pacific islands, collaborates with regulatory and land management agencies, and works at national, regional, and local levels to restore forest ecosystems to prevent unacceptable levels of tree mortality caused by insects and diseases and to lower the negative impacts associated with invasive plants.

The Forest Service provides funding to support invasive plant, insect and disease work in Hawaii through a grant with the Hawaii Department of Land & Natural Resources. The FY16 grant was \$450,000 with an equal match; FY15 was \$665,000 with an equal match. Funding is provided to support insect and disease pest detection and management; invasive plant survey and control; development of disease resistant koa; the Coordinating Group of Alien Pest Species; and conduct outreach and conservation education. USDA APHIS continues to support eradication of coconut rhinoceros beetle on the island of Oahu with Farm Bill funding, in cooperation with the Hawai‘i Department of Agriculture and other partners.

Landscape Scale Restoration Projects

The Forest Service Landscape Scale Restoration (LSR) program provides a means to focus on priority areas, challenges and opportunities identified by states’ Forest Action Plans. All western states and islands compete for funding through a process managed by the Western Forest Leadership Coalition (WFLC). Recent grants include:

Conserving Kauai Hardwoods

This project collects and banks the seeds of three endemic tree species (koa, ‘ōhi‘a, and koaia) from stands on the island of Kauai, with the intent to expand this program to all of the Hawai’ian Islands. The goal is to create a reliable supply of native hardwood seed and seedlings to mitigate large-scale mortality events on Kauai, such as wildfires. In addition, the emergence of ROD has provided a stark reminder of the critical need for ‘ōhi‘a seedbanks. Partners include: DOFAW, University of Hawaii, Hawaii Ag Research Center, Kaulunani UCF Program, USDA NRCS. In FY15 \$75,000 was granted, with \$75,000 in matching funds.

Koa Seed Orchard

This program will locate Fusarium wilt-resistant koa trees and collect seed from resistant trees. It will also expand and support a network of seed orchards to produce disease-resistant koa seeds, and provide cooperative extension information for landowners on using disease resistant koa. In FY 2014 \$150,000 was granted with a \$150,000 match.

Pacific Islands Research and Technological Assistance

An integral component of the Forest Service’s mission in the Pacific is the Institute of Pacific Islands Forestry (IPIF), a field unit of the Pacific Southwest Research Station established in 1967. The Institute provides scientific and technical information needed to restore, conserve, and sustain Pacific tropical forests and wetlands through an integrated and collaborative program of research and science delivery to coordinate and collaborate among all local, state, and federal partners. While IPIF’s research and technological assistance focus is Hawaii and the Western Pacific islands, its findings are applicable to many tropical and temperate ecosystems of the world, including the U.S. mainland.

Four key collaborative research and technological assistance efforts are ongoing to specifically address:

Water and Watersheds Vulnerabilities

Climate change, land use and associated degradation, and invasive species are among the growing threats to water resources in the Pacific. Demand on water resources is predicted to increase with population growth, as native ecosystems are replaced by fast growing, water demanding invasive plants, and as temperatures warm further in the future. This situation will be exacerbated where rainfall amounts decline or where total rainfall is distributed over fewer but larger rain events, with larger intervening dry periods and droughts. IPIF research is providing important information for predicting future conditions within the Pacific, which is needed to aid in watershed management strategies for state and other land owners and managers for the future.

Climate Change Vulnerabilities

Climate change is expected to influence watershed function and native species habitat in tropical island streams, yet few model systems exist to study how these aquatic ecosystems will respond to forecasted changes. Tropical island watersheds are also threatened by invasive plants that use more water and alter stand and stream hydrology; changing climate is anticipated to exacerbate these parallel threats. Results from IPIF research is being used to develop decision support tools to aid in the conservation or restoration of Pacific island watersheds, streams, and water resources vital for sustaining communities and ecosystems.

Fire Vulnerabilities

Wildfire is a frequent disturbance in Hawaii with more than one percent of the state burning annually. This percentage is greater than that burned in the fire-prone western U.S., such as California. A 108-year history shows a more-than-fourfold increase in acreage burned annually statewide. These patterns suggest that wildfire occurrence may continue to increase across the state with expected future warming and drying. The vast majority of wildfires in Hawaii are started by humans, and are exacerbated by highly invasive grasses from Africa. If natural areas are burned they are replaced by these non-native grasses. Collaborative research in the Pacific is being conducted to better assess fire risk and its impacts at landscape scales to increase the integration of pre-fire planning and prevention into existing land management/restoration plans.

Natural Resources Science Literacy

Natural resources science literacy in the Pacific is furthered by the USFS through the work of the Hawaii Experimental Tropical Forest (HETF). The HETF consists of approximately 50,000 acres of State owned tropical wet and dry forest on Hawai'i Island, co-managed by the Division of Land and Natural Resources and the US Forest Service. The Mission of the HETF is to provide landscapes, facilities, and data/information to support research and educational activities for a better understanding of how to conserve and manage the biological diversity and functioning of tropical forest and stream ecosystems, as well as to understand the human dimensions of natural resources conservation and management.

Programs within USDA Natural Resources Conservation Service

Within USDA, the Natural Resources Conservation Service helps America's farmers, ranchers and forest landowners conserve the nation's soil, water, air and other natural resources. All programs are voluntary and offer science-based solutions that benefit both the landowner and the environment. There are critical Farm Bill tools, including some programs that were newly created in the 2014 Farm Bill, that are used together and in partnership with producers, forest landowners, and other public and private partners that are making major gains in addressing locally and regionally identified priorities.

The Regional Conservation Partnership Program (RCPP), one of these new programs, is a partner-driven, locally led conservation approach. Now in its second year, RCPP has demonstrated high demand, with over 2,000 partners leading nearly 200 projects nationwide. All told, in the first two years of the program, NRCS will have invested about \$500 million while another \$900 million is being brought in by partners to address locally defined, nationally significant natural resource issues.

Other NRCS programs such as the Environmental Quality Incentives Program (EQIP), Conservation Innovation Grants (a component of EQIP), and easement programs like the Agricultural Conservation Easement Program, have been successful in helping improve soil, water, plant, animal, air and related resources. Through the EQIP National Water Quality Initiative (NWQI), NRCS is offering financial and technical assistance to farmers and ranchers to improve water quality in priority watersheds with impaired streams. Nine watersheds draining to Hilo Bay on the island of Hawaii have been selected as the Pacific Island Area NWQI focus. Through USDA Farm Bill programs over \$1.5 million of financial assistance has been provided to farmers and ranchers to apply conservation practices. Nutrient management systems, erosion control, conservation tillage, and grazing management are just some of the practices being offered through the NWQI.

Conclusion

Forested watersheds, both public and private, are essential to sustaining the Nation's freshwater supply, with more than half of this supply originating on forested lands. The Forest Service and USDA will continue to lead cooperative efforts to maintain and improve watershed health and water security for the citizens of Hawaii and for all Americans.

This concludes my testimony. I want to thank the committee for its interest, leadership, and commitment to our shared natural resources. I would be pleased to answer any questions you may have.