Senate Report 114–281 (FY 2017) Invasive Species.—The Committee recognizes the critical importance of early detection and rapid response [EDRR] of invasive species as a strategy to mitigate the threats and impacts of invasive species and expects the Department of the Interior and the U.S. Department of Agriculture's (USDA) Forest Service to prioritize EDRR and control of invasive species that imperil endangered, threatened, or candidate species. In particular, the Committee supports efforts to prioritize EDRR in areas with large populations of invasive species. Within 180 days of the date of enactment of this act, the agencies shall provide the Committee with a report on their efforts to prioritize EDRR as part of their expected program of work for fiscal year (FY) 2017, including detail on how the agencies plan to protect specific native species and natural resource values on public lands across the Nation.

Introduction

Non-native, invasive species pose one of the greatest threats to the health, diversity, and productivity of forests and grasslands in North America. Preventing the introduction of non-native species is the most effective strategy and first line of defense in invasive species management. However, some species inevitably escape detection and become established. The Forest Service *National Strategic Framework for Invasive Species Management* (Framework) prioritizes and guides the prevention, detection, and control of invasive insects, pathogens, plants, wildlife, and fish that threaten our Nation's terrestrial and aquatic ecosystems. The Framework recognizes EDRR as the greatest opportunity for eradication and cost effective management of newly established invasive species.

Early Detection and Rapid Response

Sometimes considered the "second line of defense" after prevention, EDRR is a critical component of any effective invasive species management program. When new invasive species infestations are detected, a prompt and coordinated containment and eradication response can reduce environmental and economic impacts. This action results in lower cost and less resource damage than implementing a long-term control program after the species is established.

EDRR techniques help the Forest Service rapidly detect and manage aquatic and terrestrial invasive species, including plants, pathogens, vertebrates, invertebrates, fungi, and algae across the landscape on state, private, and Federal lands. For species that are federally regulated, the Forest Service works closely with the USDA's Animal and Plant Health Inspection Service (APHIS) to coordinate detection, quarantine, and management activities. Our work spans all landownerships–local units of government, state, tribal, Federal, and private. When a new invasive species is found in the United States we use EDRR approaches to rapidly identify the new invader, assess the risk of the species/infestation, and work closely with local, state, tribal, and Federal partners to quickly respond to the threat.

Examples of U.S. Forest Service Priority EDRR Activities in 2017

In FY 2017, the Forest Service continued to prioritize EDRR activities for emerging invasive forest insects and pathogens, as well as other high-risk species of invasive vertebrates, invertebrates, and plants. Specifically, we funded projects for the detection and management of Asian longhorned beetle, emerald ash borer, sudden oak death, gypsy moth, invasive bark beetles, hemlock woolly adelgid, rapid o'hia' death, and thousand cankers disease. Additionally, the Forest Service has an important role in national threats from feral swine and implementing

prevention and emergency EDRR against high-risk invasive zebra and quagga mussels threatening major watersheds across the Western U.S., including waters within the Columbia River Basin.

Forest Service research and development activities advance EDRR strategies, tools, and technologies. Containment and eradication responses, economic investment, and prioritization require risk and impact assessments. Risk and impacts from invasion are difficult to reliably forecast, which complicates the ability to prioritize responses. Researchers at the Forest Service are actively working to refine and improve forecast models, and enhanced tools detect and survey invasive plants. Remote sensing applications (e.g., Modis and Landsat) are being used to locate plants and eDNA and molecular diagnostic tools to detect aquatic invasive species. Creating more cost-effective control methods for invasive species is a priority. During 2017, scientists and staff from the Forest Service worked with partners (Federal agencies, universities and others) to conduct a National Assessment of Invasive Species. This sector-wide scientific assessment of the current state of invasive species science and research in the U.S. is currently in review.

Sudden Oak Death

The Forest Service works closely with APHIS on sudden oak death, a forest disease that has resulted in widespread dieback of several tree species in California and Oregon forests. In 2017, the Forest Service, working with state partners, APHIS, and the Bureau of Land Management, used EDRR techniques to detect the sudden oak death pathogen in streams before it is evident in forest trees. Although U.S. infestations are found only in California and Oregon, it is of great concern to land managers in the Eastern United States where, in 2017, nine states participated in surveying multiple locations along 57 high risk streams. Addressing sudden oak death is critical to protect specific native species and natural resource values on public lands across the nation,

Invasive Bark Beetles

EDRR helps the Forest Service detect new infestations of invasive bark beetles. For example, the redbay ambrosia beetle in the Southeastern U.S. has killed nearly all redbay trees over one inch in diameter on Hilton Head Island. This beetle now ranges from North Carolina to the southern tip of Florida. The shot hole borer in California targets a variety of tree types, and it is estimated that nearly 38 percent of all trees in Southern California are at risk. These are just two examples of the damage invasive bark beetles can cause when they become established in the United States. The Forest Service works closely with state partners to identify sites at high risk for the introduction and establishment of these potentially damaging pests. In 2017, the Forest Service worked with nine states to use EDRR techniques in more than 100 high risk locations to search for new infestations of potentially damaging species.

Invasive Plants

The Forest Service is one of the primary federal land management agencies working in collaboration with partners to address invasive plants and regulated noxious-weeds under state and federal statutes. The Forest Service provides technical and financial support to state agencies to help implement invasive plant EDRR and control programs nationwide. We have been instrumental in establishing and sustaining Cooperative Weed Management Areas (CWMAs) and EDRR programs to address high-risk invasive plants that threaten local

economies, the environment, and human health. The Forest Service funds the National Pulling Together Initiative—a national grant program designed to establish and expand CWMAs nationwide. The Forest Service also works closely with states and local communities to build CWMA capacity for EDRR against high-risk invasive plants. A key component of these efforts involves mapping new invasive plant detections and compiling findings into standardized databases such as The Early Detection and Distribution Mapping System—EDDMapS for rapid and widespread dissemination.

Recent controversial and high-risk invasive species issues, such as the impact of invasive plants on the survival of the Greater Sage-grouse across the West, have accelerated the Forest Service's efforts to expand cooperative EDRR efforts with state, tribal, federal, and local partners against high-risk invasive annual grasses and perennial forbs that increase the frequency and intensity of wildfires and impact the entire sagebrush biome. The Forest Service is actively involved with the Department of Interior's Integrated Rangeland Fire Management Strategy, including development of the Science Framework. These and other Forest Service efforts against invasive plants impacting terrestrial and aquatic ecosystems will continue to be a major component of the agency's efforts against invasive species.

Gypsy Moth

EDRR is an important part of the Forest Service's fight against gypsy moths. Working closely with APHIS and states, the Forest Service uses traps to detect new infestations in uninfested states to allow quick and efficient eradication. These efforts continued in FY 2017. The Forest Service and APHIS also use EDRR to find new infestations of the Asian gypsy moth, a potentially more damaging relative of the gypsy moth already established in the U.S. In 2015, both USDA agencies cooperated with the states of Washington and Oregon to quickly detect and eradicate infestations around Seattle and Portland. This quick response saved millions of dollars and protected native forests and natural resource values by preventing the spread of the infestations.

White-Nose Syndrome

The Forest Service, state, and other federal partners work collaboratively to address the threat of the invasive fungal pathogens, known as "White-nose Syndrome" or "WNS", that causes nearly 100 percent mortality in native bats that become infected. Bat populations infected with this invasive fungal pathogen are experiencing the most precipitous decline in any wildlife population in recorded history, resulting in a major loss of the ecosystem services provided by bats. In 2017, the Forest Service collaborated with partners on EDRR efforts to map and quantify the extent of new WNS detections across the landscape. Agency scientists are helping to find potential treatment or prevention options to curb the disease by rapidly responding to new detections across the landscape.

Feral Swine

As a major federal landowner in the United States, the Forest Service partners with APHIS in the nationwide effort to curb the exponential spread of invasive feral swine (invasive pigs). These prolific vertebrate invaders pose a significant risk and degradation to the environment, human and livestock health, and to the economy wherever they invade. Rural areas of all ownerships—federal, state/local, and private—are vulnerable. In 2017, the Forest Service partnered with

APHIS and others to concentrate on the detection and management of feral and invasive vertebrates impacting National Forest System lands. The Forest Service also participates on an on-going National Feral Swine Task Force.

Invasive Zebra Mussels

The recent *Zebra* mussel invasion in western Montana poses a significant danger to all waters in the state, including waters on eight National Forests, and other important lakes, rivers, and streams in Montana. This new invasion represents a significant westward spread of these aquatic invasive species into the upper Missouri River watershed and is potentially poised to invade the entire Columbia River Basin and other major river systems in the West. In FY 2017, the Forest Service continued to provide financial and technical support to local, state, and federal partners to implement prevention and EDRR activities against these invaders. The Forest Service serves on the national federal interagency Aquatic Nuisance Species Task Force (ANSTF) and is represented on six ANSTF Regional Panels working on EDRR for invasive mussels.