



Ecological Society of America

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Testimony for the Record
Ecological Society of America

To the Senate Committee on Appropriations
Subcommittee on Interior, Environment, and Related Agencies

Regarding the U.S. Forest Service Forest and Rangeland Research F.Y. 2023 Budget

June 10, 2022

The Ecological Society of America (ESA) appreciates the opportunity to provide testimony in support of Fiscal Year 2023 appropriations for U.S. Forest Service Research and Development. ESA is the nation's largest society of professional ecologists, representing over 9,000 members across the country. Improving the future health and sustainability of the nation's forests, grasslands and aquatic systems requires a strong investment in USDA Forest Service Research and Development (R&D), funded through the Forest and Rangeland Research budget line. We thank you for supporting a funding increase in F.Y. 2023 and **urge you to increase funding for all of Forest Service R&D (Forest and Rangeland Research) to a minimum of \$80 million and provide \$22.2 million for Forest Service Inventory and Analysis, matching the FY 2023 President's Budget Request. ESA supports \$10.8 billion in overall Forest Service appropriations, recognizing that the Forest Service's land management programs must be fully funded in order for Forest Service employees to be able to adequately use the best available science in decision-making.**

Building on a trove of over 100 years of research, Forest Service R&D programs inform policy and landmanagement decisions that improve the health and use of the nation's forests and grasslands and adjoining aquatic systems. Funding for these important activities is critical to sustaining the nation's natural resources. Showing value in this investment requires R&D leaders and scientists be attuned and responsive in providing relevant information and support in a timely manner with an ability to effectively deliver assistance to all users. The work conducted at experimental forests and ranges, regional research stations, and the Forest Products Lab, incubates progress on new products and services; tracks disturbance responses; fosters greater forest resilience; quantifies contributions to air and water quality; and drives innovation in renewable energy and product development.

Notable recent Forest Service R&D contributions include:

Avoiding Endangered Species Act Listing and Saving Taxpayer Dollars

Forest Service fish and wildlife researchers are leading scientists in their fields and specialize in providing applied research to natural resource managers and decision-makers in state and federal government and the private sector. Forest Service research informs conservation efforts that have helped to avoid Endangered Species Act listings for several forest and rangeland wildlife species. For example, Forest Service scientists used molecular techniques to determine that the Arapahoe Snowfly, a species petitioned for protection, was not actually a distinct species but rather a hybrid. This type of robust science is a perfect example of researchers providing the best available science to inform management actions.

Guiding Drought Management Response

Drought affects local and regional economies through its effects on water resources for agriculture, ranching, and forestry operations and the supply of clean drinking water. Drought also leads to more devastating wildfires, resulting in loss of life and property, reduced economic activity, degraded wildlife habitat, and greater wildlife suppression costs. Forest Service R&D has been a leader in reviewing impacts of drought on U.S. forests and rangelands to better manage for resiliency and adaptation. Agency drought assessments and guidance have helped federal, tribal, state, and private stakeholders devise and implement strategies to sustain healthy, resilient ecosystems.

Revolutionizing Monitoring for Invasive Species and Species at Risk

Land managers and regulatory agencies are using environmental DNA (eDNA), a non-invasive genetic sampling technique, to locate invasive species as well as rare and sensitive species in need of special management considerations. For example, water sampling can reveal Forest Service R&D has leveraged its own investments in this path-breaking technology to receive additional funding through partnerships with national forests and other agencies. Future research will continue to lower the cost and improve the efficiency of eDNA sampling, which is twice as likely as traditional sampling to detect species in low abundance at less than half the cost. Broad-scale implementation could save natural resources management agencies millions of dollars in sampling costs annually.

Valuing Urban Forests and Trees

Forest Service scientists have devised alternatives to grey infrastructure and helped communities calculate the economic, environmental, and social value of new and existing trees—including property value increases, energy savings, air pollutant uptake, and stormwater reduction. In addition, R&D research also encourages clean watersheds by analyzing the impacts of people, vegetation, and infrastructure on urban water, and supports urban watershed restoration projects that revitalize neighborhoods.

Utilizing Applied Forest Ecology

Silviculture research forms the scientific foundation for forest management and conservation. Forest Service silviculture researchers study how to regenerate forest trees and other plants, how trees grow over time, and how stands of trees interact with the environment, wildlife, diseases, and insects. R&D research creates, quantifies, and integrates knowledge about tree growth, soils, plant physiology, and genetics. The condition of today's forests are due, in part,

to Forest Service silviculture research in the past. Future forest conditions will depend on today's investments in silviculture research to help respond to a changing climate and other disturbances.

Balancing Fish Habitat and Resource Needs

R&D fisheries biologists are developing better approaches to managing forested landscapes that provide good habitat for native salmon and trout in high elevation lakes and streams across the Rockies. Critical to developing comprehensive restoration strategies, this science has not only helped create more resilient forests but also the habitats and prey essential for healthy, native fish populations. Recent successes include innovative protocols for monitoring fish populations and habitat quality in addition to strategies for meeting growing demands for water, energy, and other forest-based commodities while ensuring the sustainability, diversity, and integrity of aquatic species.

Quantifying the Role of Forests in Providing Clean Air and Water

Research directly linking trees to clean air and water underscores the economic value and benefits trees and forests provide to all residents and communities. Recent R&D work shows that forests, which make up 26% of U.S. land area, are the source of 46% of the U.S. water supply. Managing forested landscapes to sustain and enhance production of low-cost, clean water supplies as well as improved air quality is critically important to human health and provides a value of nearly \$7 billion every year. In particular, the recommended funding level will enable R&D to expand delivery of this science to managers of forested watersheds whose activities benefit water supply utilities in cities and towns that depends on clean surface water supplies.

Data and tools to improve wildfire management.

In February 2021, Forest Service scientists updated the national Wildland Fire Hazard Potential map using the most current vegetation data. This map informs risk reduction models of hazardous fuels treatments and supports wildland fire response systems. For example, the WildfireSAFE response tool is a web interface that integrates real-time data from multiple data sources, including fire hazard potential, drought conditions, satellite-derived vegetation conditions, and weather analysis to automatically analyze the fuels, terrain conditions, and values at risk in the surrounding area. Fire managers can view data for any active incident, compare active incidents within an area of interest, and capture observations about fire behavior. Forest Service research about pre-fire management planning processes also supports wildland fire response. For instance, recent research about potential control locations showed the extent to which forest roads are useful in fire operations response planning, accounting for 82 percent of fire holding features during a coordinated planning process.

Additional research in FY 2021 produced new information about the vulnerability of communities to wildland fire, including a new spatial dataset of wildfire risk for populated areas in the United States and a Fireshed Registry that uses information about community vulnerability as one of the datasets to inform the agency's strategic placement of fuel treatments to reduce risk.

Collaborative, participatory research with underserved communities.

During FY 2021, Forest Service R&D and USDA Climate Hubs worked together with Tribes to investigate how climate change could affect various Tribal agricultural efforts and communities, as well as to assess priorities for post-fire rehabilitation of Tribal lands.

Another recent example of collaborative research with the Stillmeadow Community PeacePark and Forest in Baltimore, Maryland demonstrates the value of working together to improve urban green spaces. In FY 2021, Forest Service R&D worked with Stillmeadow community members to transform an ecologically degraded, hazardous forest into a place of healing and resilience for the Baltimore community. Forest Service R&D provided best practices for urban reforestation, long-term monitoring and evaluation, empowering citizen stewards, and knowledge exchange through field visits, demonstrations, webinars, and multi-media content.

Insect and disease disturbances correlate with reduced carbon sequestration in forests.

In FY 2021, using FIA data, researchers found that forests damaged by insects sequestered about 70 percent less carbon than undamaged forests. Those affected by disease sequestered 28 percent less carbon. In total, the damage currently being caused by insects and diseases across the contiguous U.S. is reducing the sequestration potential of America's forests by roughly 50 million tons of carbon dioxide each year, the equivalent of emissions from more than 10 million cars. Science-based strategies to reduce the frequency and intensity of forest insects and diseases include enhancing forest health protection and preventing non-native insects and diseases from entering North America.

Advancing forest science is integral to improving the health and welfare of U.S. forests and citizens, increasing the competitiveness of U.S. products in the global marketplace, and adapting to unforeseen future challenges.