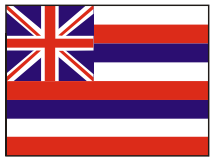

HAWAII

FOREST SERVICE RESEARCH AND DEVELOPMENT

STATE FUNDING HISTORY	Enacted FY 2003 ($)	Enacted FY 2004 ($)	Pres. Budg. FY 2005 ($)
HONOLULU			
PSW-4154 Institute of Pacific Islands Forestry	2,270,000	2,889,000	3,255,000
HAWAII TOTAL	2,270,000	2,889,000	3,255,000

RESEARCH & DEVELOPMENT, a division of the USDA Forest Service (FS R&D), strives to be the "go to" organization for information and solutions to sustain forests and rangelands and the values they provide people. FS R&D has the flexibility to address today's issues effectively and to respond to tomorrow's needs. Among the world's leaders in forest conservation research, scientists contribute to the stewardship of land, real property and society by providing research results that help create jobs and affordable homes, and improve the health of trees, forests and forest ecosystems. Innovative research products permit the Forest Service and other public and private land managers to monitor and manage forest responses to environmental change, contributing significantly to the sustainability of the nation's forests and rangelands and improving human health.

FS R&D operates six research stations, the Forest Products Laboratory, and the International Institute of Tropical Forestry located in Puerto Rico. It employs over 500 scientists and hundreds of technical and support personnel at 67 field sites throughout the nation. The FY 2005 President's Budget includes $280,654,000 for Forest and Rangeland Research.

The Pacific Southwest Research Station is responsible for research, development and applications in California and Hawaii; the Station's headquarters is in Albany, CA. Research is conducted in 13 Research Work Units, one of which is in Hawaii. The FY 2005 President's Budget for the Pacific Southwest Research Station is $22,888,000.

HONOLULU

PSW-4154, Institute of Pacific Islands Forestry.
The Pacific Southwest Research Station has responsibility for all Forest Service programs, exclusive of Fire & Aviation Management and Forest Inventory & Analysis, in Hawaii and U.S.-affiliated islands throughout the Pacific. The station's programs are conducted by the Institute of Pacific Islands Forestry, with headquarters in Honolulu and field offices in Hilo and Volcano

(Hawaii), and Yap (Federated States of Micronesia).

FY 2005 PROPOSED PROGRAM CHANGES:

- The FY 2005 President's Budget includes an increase of $331,000 which will cover fixed costs for all research units.
- The Institute's Research & Development funding in FY 2005 includes a $319,000 increase for invasive species and ecosystem restoration research. Work is conducted by four multi-disciplinary teams that include scientists funded by Research & Development and professionals funded through the State & Private Forestry and International Programs branches of the Forest Service. In addition, the Institute's three research-focused teams deal with island ecosystem restoration, forested wetlands, and on the effects of invasive species.
  - Invasive Species. Work on invasive weeds will focus on understory shrubs and overstory trees, two understudied weed groups that are extremely important because of their threats to native forests. Research will be directed at understanding the comparative ecology and impacts on ecosystem processes of invasive plants in Hawaiian habitats and their ecosystems of origin. Other work will emphasize the evaluation of pests from the native range of targeted weeds as possible biological control agents in Hawaii.
  - Ecosystem Restoration. Research with collaborators in Brazil and Costa Rica will be intensified on biological control efforts for invasive weeds; development of a system of assessing the risks posed by possible introductions of new species to Hawaii; expansion of forest restoration research from high-elevation landscapes to dry forests and high-value mid-elevation forests; and increased knowledge of forested wetland functioning and values, and delivery of those findings to the public and local policy makers.
- Watershed Research. The funding increase will be used to address resource crises affecting people, forests, rivers and estuaries. Research will be intensified on the control of invasive weeds and forest restoration, and initiated to address factors influencing watershed health, water quality, and approaches to conservation and restoration.
- Fire Research. Joint research on invasive plants and restoration habitat includes approaches to break the invasive species/wildfire cycle. On islands of Hawaii and the Pacific, wildfires are common as a result of the presence of invasive species. Invasive grasses change fuel loads such that intense wildfires are much more likely. This cycle favors the exotic weeds and must be broken in order to re-establish native forests. How exotic grasses compete with native trees, alter fire environments, and the ecosystem response when exotic grasses and/or wildfires are eliminated will be studied. Prompt reforestation may be an effective means of exotic species control.
- Wetlands Research. Mangrove forests and freshwater wetlands are keystone ecosystems on Pacific islands exerting strong influences on upland forests, freshwater ecosystems, seagrass beds, and reefs. People of the Pacific

are strongly dependent on mangroves but increasing populations and improper resource management and development threaten their sustainability. Research will be expanded on adaptive management to develop a better understanding of food web dynamics and the linkages between upland and freshwater forests, mangroves, and aquatic systems.

- Water Quality. Fresh water of high quality is among the most precious resources provided by healthy forests of the Pacific. With increasing population pressures and growing resource demands on island forests, landscape or watershed-level studies are essential to understand how resource uses affect water quality, yields, and sediment and nutrient inputs in adjacent estuaries and reef ecosystems. Long term research will be initiated on the interactions among upland forests, riparian forests, mangroves and the affect on critical island ecosystem linkages.
- Science-based Technology Transfer. Forest Service Research and Development will lead an Agency-wide effort to optimize the delivery and practical use of research findings. This is essential to successful implementation of Forest Service priorities, including the President's Healthy Forest Initiative. Opportunities have been identified that leverage current science and technology applications efforts in healthy forests applied science, watershed management, invasive species, hazardous fuels utilization and management, and community preparedness. New funds in FY 2005 will be targeted to leading-edge technical assistance on a competitive basis.

SIGNIFICANT RESEARCH PRODUCTS:

- INVASIVE SPECIES – Invasive species pose significant threats to the forests and wildlife of Hawaii and other Pacific islands. Increased funding allows scientists to intensify research on biocontrol, assess weed risk, environmental impacts of invasive species, and ways to restore native trees in a variety of forests. This information will be of great value to island land managers. Hawaii has so many different kinds of environments, it is suitable for a testing ground for new protocols of invasive species management.
- WETLAND PROCESSES AND VALUES – Hawaii and the Pacific Islands contain some of the world's most biologically diverse wetlands and coral reefs that are threatened by upland land use practices and climate change. While mangrove forests and other forested wetlands of the Pacific are keystone elements and critical resources for the livelihood of island residents, they remain among the least studied wetlands on earth. By studying the composition, hydrology, and ecosystem dynamics of mangrove and freshwater swamp forests, scientists will develop an understanding of the tenuous linkages that bind these ecosystems. The economic values of wetlands are proving to be much higher than anticipated. Our research results will be delivered to managers for their use to make informed decisions concerning forest and estuary resources.

Fresh water is a critical resource and perhaps the most valuable commodity that arises from island forests. Research objectives are to develop an understanding of the relationships among upland tropical forests, fresh water

swamps, mangroves, and water yield and quality so that the watershed may be managed and the resource developed without compromising freshwater supplies.

- FOREST MANAGEMENT – Silvicultural research emphasizing Hawaii's high-value koa tree has opened the way to sustainable management of forests on Hawaii Island. This research and demonstration effort, conducted in partnership with The Nature Conservancy, has convinced ranchers to maintain their forests for economic gain while restoring and preserving the forest cover needed for conservation of native plants and birds.
- INTERNS - Since 1995, the Hawaii program has hosted many summer interns, comprised of Native Hawaiian, American Samoan, and Micronesian college students. This effort results in more natural resource specialists and a better-informed citizenry throughout the U.S.-affiliated Pacific islands.

SOME CLIENTS AND COLLABORATORS:

Hawaii Division of Forestry and Wildlife
The Nature Conservancy
USDI, National Park Service
USGS, Biological Resource Division
Hawaii Department of Agriculture
Coordinating Group on Alien Pest Species
Hawaii Conservation Alliance
University of Hawaii
USDI, Fish and Wildlife Service
Louisiana State University
Organization for Tropical Studies, Inc.
Oregon State University
California State University, Fullerton