



## ARIZONA

### FOREST SERVICE RESEARCH AND DEVELOPMENT

STATE FUNDING HISTORY	Enacted FY 2003 (\$)	Enacted FY 2004 (\$)	Pres. Budg. FY 2005 (\$)
<b>FLAGSTAFF</b>			
RMRS-4152 Ecol Roles Insects/ Pathogens	707,000	0	0
RMRS-4156 SW Wildland/Urban Interface			
Forest Health Restoration	1,646,000	2,327,000	2,327,000
RMRS-4251 SW Terrestrial Ecosystems	1,814,000	1,786,000	1,786,000
RMRS-4302 Sustaining Riparian Systems	854,000	841,000	1,041,000
RMRS-4651 Borderlands Ecosys Research	413,000	407,000	407,000
<b>ARIZONA TOTAL</b>	<b>5,434,000</b>	<b>5,361,000</b>	<b>5,561,000</b>

**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 **Rocky Mountain Research Station (RMRS)**, headquartered in Fort Collins, Colorado, maintains forest and rangeland research and development programs and facilities in 10 states of the Interior West (AZ, CO, ID, MT, NE, NV, NM, SD, UT, and WY) and covers ND and KS. The FY 2005 President's Budget includes \$43,082,000 for the Rocky Mountain Research Station.

The Station currently maintains four research work units in Flagstaff that employ 13 scientists, 26 other professionals and support personnel.

## FLAGSTAFF

**RMRS-4152 Ecological Roles of Insects and Pathogens in Coniferous Forest of the Interior West.** The unit mission is to understand the roles of insects and pathogens as agents of disturbance and regulators of ecosystem processes in western coniferous forests. Scientists are developing methods to assess and predict insect and pathogen effects for use in the decision support and planning processes used by forest managers, silviculturists, and forest health protection specialists. **In late FY 2003, this unit was merged with RMRS-4156.**

**RMRS-4156, Wildland-Urban Interface Fuels Management and Forest Health Restoration in the Southwest.** The unit mission is to investigate ways to reduce the risk of catastrophic wildfires in the wildland-urban interface areas and restore and sustain the health and productivity of southwestern forest ecosystems.

**RMRS-4251, Ecology and Conservation of Terrestrial Wildlife and Habitats in the Interior West.** The unit mission is to acquire, develop and provide reliable information on wildlife populations and habitats in terrestrial ecosystems to support science-based decisions for natural resource management.

**RMRS-4302, Watersheds and Riparian Ecosystem of Forests and Woodlands in the Semi-Arid West.** The unit mission is to create, develop, and apply knowledge on fluvial, geomorphological, hydrologic, edaphic, biologic and ecologic functions, processes, and dynamics needed to sustain watershed integrity and diverse, healthy, and productive biotic populations within watersheds and riparian ecosystems of forests and woodlands in the semi-arid states of the interior western United States and Mexico.

**RMRS-4651, Ecosystem Management in the Borderlands of the Southwestern United States.** The unit mission is to contribute to the scientific basis for developing and implementing a comprehensive ecosystem management plan to restore natural processes, improve the productivity and biological diversity of grasslands and woodlands, and sustain an open landscape with a viable rural economy and social structure in the southwestern borderlands area.

**FIRE RESEARCH IN ARIZONA SUPPORTS THE NATIONAL FIRE PLAN.** National Fire Plan funding continues the long tradition of Forest Service Research and Development building and leading federal, state, and local partnerships (the guiding principle of the 10-year Comprehensive Strategy) to develop and deliver the scientific foundation of modern management practices.

National Fire Plan funding for research in Arizona has already produced the following results:

- Wildfires are rapidly emerging as a primary fisheries management concern in forested southwestern landscapes. Scientists worked cooperatively with land managers in investigating the relationships of land management activities on water quality and aquatic habitats. Results provided important information to successfully recover native fish species and their habitats.
- A synthesis of the effects of prescribed fire and wildfire on water yield, flood flows, and erosion in southwestern vegetation types was completed to help guide restoration efforts, ensure the integrity of municipal water supplies, and protect human health and safety.
- Insect and/or disease outbreaks are killing large areas of trees, thus increasing fuel loads and

the risk of future catastrophic wildfires. Scientists are helping managers choose fuel management and post-fire rehabilitation treatments to minimize the threat of insects and disease.

- Investigations to study interactions among drought, fire, and bark beetles are underway, looking at how stand density, tree age, drought stress, and prescribed fire influence susceptibility of ponderosa pine to bark beetles.
- Researchers, working on the effects of wildland fire and fuel treatments on terrestrial vertebrates, continue to consult with and provide technical assistance to at least 10 national forests.

#### **FY 2005 PROGRAM CHANGES:**

- The President's budget maintains the Station ongoing program of research focused on sustaining healthy forests and rangelands in the Interior West. In response to the President's Healthy Forest Initiative, an additional \$1,725,000 is focused on improving watershed conditions to provide clean and abundant water from western forests and rangelands and funding is provided for addressing the threat invasive species pose to our native ecosystems.
- 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:**

- A decade long relationship with NFS has determined habitat needs and trends for Mexican spotted owl and northern goshawk. This work provides a scientific basis for land management, and is critical to helping guide the development of regional standards and guidelines for vegetation management.
- The FIRETEC wildfire behavior mode, recognized in 2003 as one of the 100 most technologically significant new products and processes, is the first physics-based, three dimensional model designed for firefighters to simulate the changing, interactive relationship between fire and the environment.
- Reviewed the Four Corners Sustainable Forest Partnership to develop strategies for strengthening partnerships and building capacity in communities.
- A recent book, titled "*Riparian Areas of the Southwestern United States*" explains interactions between the processes, attributes, and relationships to help land managers develop a balance among competing land use demands.
- Scientists contributed exercises to a McGraw Hill workbook of practical exercises in conservation biology and a chapter on exotic and noxious plants to a restoration handbook for southwestern Ponderosa Pine forests.

**SOME CLIENTS/COLLABORATORS:**

Animas Foundation

Arizona and New Mexico, Game and Fish  
Departments

Arizona State University

Ecological Restoration Institute

Four Corners Sustainable Forests Partnership

Grand Canyon National Park

Grand Canyon Trust

Greater Flagstaff Forest Partnership

Malpai Borderlands Group

National Forests in the Northern (R-1), Rocky  
Mountain (R-2), Southwestern (R-3), and  
Intermountain (R-4) Regions

USDA, Natural Resource Conservation Service

Northern Arizona University

Southwest Forest Alliance

The Nature Conservancy

The Navajo Nation

University of Arizona

Upper Verde River Adaptive Management  
Partnership

USDI, Fish and Wildlife Service

White Mountain Fort Apache Tribe

