MICHIGAN

FOREST SERVICE RESEARCH AND DEVELOPMENT

STATE FUNDING HISTORY	Enacted FY 2003 ($)	Enacted FY 2004 ($)	Pres. Budg. FY 2005 ($)
EAST LANSING			
NC-4401 Atmosphere-Ecosystem Interactions	594,000	584,000	585,000
NC-4501 Forest Insect Pests	843,000	1,105,000	1,131,000
EAST LANSING TOTAL	1,437,000	1,689,000	1,716,000
HOUGHTON			
NC-4159 Productivity and Function of Northern Forests	860,000	1,072,000	1,097,000
MICHIGAN TOTAL	2,297,000	2,761,000	2,813,000

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 North Central Research Station, headquartered in St. Paul, Minnesota, currently has research and development programs in six Midwestern states (Illinois, Indiana, Minnesota, Missouri, Michigan, and Wisconsin). The FY 2005 President's Budget is $22,200,000, an increase of $1,308,000 above FY 2004.

EAST LANSING

NC-4401, Atmosphere-Ecosystem Interactions. Research on the interactions between the atmosphere, ecosystems, and disturbances that

affect forest health provides managers with information necessary to anticipate pest outbreaks and establish quarantines. Projections of ozone transport and diffusion in the Great Lakes region depict how landscape change and urban sprawl may affect the future health of the region's forests and the people who enjoy them. Smoke transport and diffusion models allow fire management agencies and air quality agencies to anticipate the impact of wildfires and controlled burns on local and regional air quality. By knowing how future climate and air quality may interact, state and federal regulators and regional and local planners can anticipate a future environment as part of their decisionmaking processes.
http://www.ncrs.fs.fed.us/4401/

NC-4501, Forest Insect Pests. An explosion in slow motion is how experts describe the costly invasion of non-native forest pests such as gypsy moth, pine shoot beetle, and most recently, the Asian longhorned beetle and emerald ash borer. The unit leads a national effort to detect and control invasive insects that threaten the health of U.S. forests. Unit scientists work with state, federal, university, and international investigators to understand these pests, develop better detection tools, test various insecticides, and learn more about their natural enemies in their native land. http://www.ncrs.fs.fed.us/4501/

HOUGHTON

NC-4159, Productivity and Function of Northern Forests. The unit develops information on the processes that regulate the cycling of carbon, nutrients, and water both above and below ground, in order to predict how forest management impacts the long-term health and productivity of those systems. Management activities, natural disturbances, and global change interact to alter the availability of water and nutrients and their storage and use in forests. The National Academy of Sciences has recently identified research on biogeochemical cycles as one of the most scientifically urgent "Grand Challenges in Environmental Sciences." The greatest sources of uncertainty in understanding these cycles lie below the surface of the soil. This research is narrowing the uncertainty in how tree root systems function and how soil organisms interact and transform carbon, nutrients, and water to regulate biogeochemical cycling. Scientifically validated documentation of the potential for forests to store carbon below ground is a key element in policy debates over carbon management. http://www.ncrs.fs.fed.us/4159/.

FIRE RESEARCH IN MICHIGAN SUPPORTS THE NATIONAL FIRE PLAN.

The Station expects to receive additional research funds to support the National Fire Plan in FY 2005. The East Lansing Field Office will receive $228,000.

- Atmospheric, environmental, and social factors all play critical roles in the efficient implementation of hazardous fuels reduction projects. Station researchers are working hand-in-hand with managers in the Region to help them meet their fuel reduction targets by developing new products and accelerating their delivery. A novel effort underway at the Station involves taking the latest research tools and technologies "on the road" to deliver and demonstrate them in person and interactively with Regional staff.

FY 2005 PROGRAM CHANGES:

- The FY 2005 President's Budget directs increased spending on three priority research areas: Invasive species, watershed, and science application technology. It also includes increases for fixed costs.
- FS R&D will continue research at the Houghton and East Lansing locations, which have:
  - Developed a beetle detector that helps agencies and port inspectors find exotic pests inside trees and wooden crates. A prototype pinpointed the location of an Asian longhorned beetle infestation in New York and New Jersey, saving valuable city trees from destruction.
  - Demonstrated that increased ozone pollution can result from reduced nitrogen oxide emissions near the Great Lakes, which will help air quality regulators and policy makers establish ozone pollution standards for the Great Lakes region.
- 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:

Work continues at East Lansing and Houghton toward developing and delivering the following products:

- Regional Air Quality models, coupled with fire weather meteorology, that fire management and air quality agencies can use to predict smoke dispersion from wildfires and estimate the cumulative impact of smoke and haze on regional air quality and public health.
- New fire weather forecasting tools and models that improve firefighter safety by predicting when and where fires will spread or risk going out of control. http://www.fs.fed/fcamms
- Assessments of pesticide efficacy that enable states and municipalities to eradicate pests that are accidentally introduced from other countries.
- The Northern Institute of Applied Carbon Science (NIACS) in Houghton, MI. NIACS focuses on understanding the role forests can play in managing atmospheric carbon. The institute was Established in partnership with forest industry, Michigan Technological University, and the Northeastern Research Station.

SOME CLIENTS/COLLABORATORS:

Department of Energy
International universities and research institutes
Michigan State University
Michigan Technological University
Monsanto Inc.
Northern Global Change Research Program
University of Michigan
USDA Animal and Plant Health Inspection Service
USDA Natural Resources Conservation Service
U.S. Fish and Wildlife Service