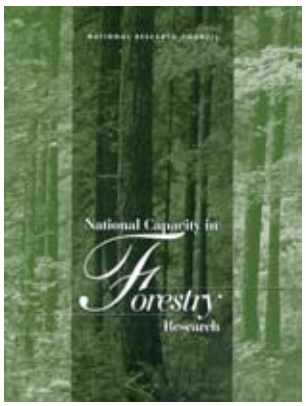
THE NATIONAL ACADEMIES
REPORT IN BRIEF

National Capacity in Forestry Research



Forests are major components of the earth's natural resources and are increasingly vital to the welfare of the U.S. economy, environment, and popu-lation. Forest management objectives vary, but all seek stewardship, sustainable forests and cost minimization if not profitability.

Today, forests cover about 33 percent of the United States' land area and about 26 percent of the earth's total land area. Studies indicate that forest area is slowly declining while world population steadily increases along with demand for forest products and recreation. Thus, forests in the United States and the world are under pressure to provide increased goods and services.

Forest managers, policy officials and other deci-sion makers perform optimally when their actions are informed by research. New management para-digms that have emerged in response to societal con-cerns, such as ecological sustainability, add to the complexity of forestry-related decisions.

Are there adequate scientists, facilities, and sup-port for research efforts now? Do education and re-search programs ensure a sufficient and appropriate knowledge base? Will the forestry research sector be prepared for emerging issues?

At the request of the U.S. Department of Agriculture (USDA) Forest Service, the world's largest forestry research organization, the National Academies' Board on Agriculture and Natural Resources was asked to conduct a study of the nation's capacity in forestry research. The Committee on National Capacity in Foresty Research was appointed to carry out the study.

Findings and Conclusions

The committee concluded that scientific capac-ity in forestry research and education in the United States is at risk. While the report identifies many encouraging facts regarding the extent and diversity of forestry research capacity, the status quo of in-cremental changes in vision, funding, cooperation, and staffing will lead to diminished, not enhanced, research, education, and practice.

The USDA Forest Service has experienced a 46 percent decrease in number of scientists in the last 15 years, from 985 in 1985 to 537 in 1999. Despite evidence of apparent increases in efficiency and pro-ductivity during the same time, the waning Forest Service research base may be challenged as demands on forest resources increase.

Enhancing the nation's forestry-research capacity must deal with the tangible matters of substance - funding, facilities and equipment, and personnel - and with intangible matters of perception and values - priorities, organizations, structures, and leadership.

Education must focus on the basics and also explore the interactions of social, economic and environmental factors related to sustainable ecosystem management. The high-priority foundation fields for forestry are biology, ecology, silviculture; forest genetics; forest management, economics and policy; and wood and materials science. High-priority emerging fields are human and natural resource interactions; ecosystem function, health and management; forest systems on various scales of space and time; forest monitoring, analysis, and adaptive management; and forest biotechnology.

Communications is increasingly important, especially for the almost 10 million nonindustrial private forest landowners who own 49 percent of the nation's forest land and 58 percent of the nation's commercial timberland. Forestry and natural resources extension programs provide direct support for disseminating research findings to research users.

Universities, government, industry and private groups can partner to a much greater extent than in the past to ensure that the entire spectrum of forestry research and development interest is addressed and that limited resources are utilized to best advantage.

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Summary of Key Recommendations

The committee made the following specific recommendations in several key areas.

Improving Knowledge Base

- To achieve an adequate knowledge base, forestry and natural-resource education programs should dedicate resources to the foundation fields of for-estry science while developing emerging education and research priority areas.
- The Forest Service should enhance its current research-information system and tracking efforts by establishing an interagency system with relevant information on forestry research activities, work-force, funding and accomplishments.

Enhancing Personnel and Infrastructure

- The Forest Service should substantially strengthen its research workforce over the next five years to address current and impending shortfalls, specifi-cally recruiting and retaining researchers trained in disciplines identified as foundation and critical emerging fields.
- As part of the increase in research personnel ca-pacity and resources, the Forest Service should en-hance cooperative relations with forestry schools and colleges.

Leading Through Strategic Planning

- The USDA Forest Research Advisory Committee should focus its efforts in two primary areas: (1) work with research leaders in the Forest Service, other agencies and the private sector to set re-search priorities and monitor accomplishments, and (2) coordinate with USDA's Cooperative State Research, Education and Extension Service and other agencies to help guide research priorities of McIntire Stennis, Renewable Resources Extension Act, National Research Initiative, and other grant programs.
- Universities and state institutions should increase the use of competitive mechanisms for allocating McIntire-Stennis and Renewable Resources Extension Act funds within these institutions, and in doing so, encourage team approaches to solving forestry and natural resource problems.
- The USDA, together with universities, should de-velop means to more effectively communicate existing and new knowledge to users, managers, and planners in forestry.

Creating Intellectual Capital

- University programs should assume a renewed com-mitment to the fundamental areas of scholar-ship and research in forest sciences that have di-minished in recent years, and adopt an enhanced, broad, integrative and interdisciplinary program-matic approach to curricula at the graduate level.
- Universities should develop joint programming in regions to ensure a "critical mass" of faculty and mentoring expertise in fields where expertise might be dispersed among the universities.

Increasing Collaboration

- Centers of excellence in forestry should be estab-lished and administered by USDA. These pro-grams and awarded projects should (1) support in-terdisciplinary and inter-organizational activities (2) focus on increasing minor-ity student participa-tion in education and research, (3) clearly justify how new forestry-research approaches and capac-ity will be enhanced, and (4) undergo initial and periodic review.
- Clear federal research facility mandates — such as long-term ecological research sites, experimental forest and natural resource areas, watershed moni-toring facilities — should receive priority for reten-tion and enhancement with a system of periodic review of all facilities.

Committee on National Capacity in Forestry Research: Frederick W. Cubbage, Chair, North Carolina State University, Perry J. Brown, University of Montana, Thomas R. Crow, University of Michigan, John C. Gordon, Yale University, John W. Humke, The Nature Conservancy, Colorado, Rex B. McCullough, Weyerhaeuser Co., Washington, Ronald R. Sederoff, North Carolina State University. Staff: Charlotte Kirk Baer, Study Director.

National Capacity in Forestry Research is available from the National Academies Press, 500 Fifth Street, N.W., Washington, DC 20001; (800) 624-6242 or (202) 334-3313 (in the Washington metropolitan area); or http://www.nap.edu. Related National Academies reports include Environmental Issues in Pacific Northwest Forest Management (2000), Forested Landscapes In Perspective (1998), Forestry Research: A Mandate for Change (1990).

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