



Project Summary

Environmental Monitoring and Assessment Program: Forest Health Monitoring 1992 Activities Plan

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Forests, which cover approximately one-third of the United States, are an important part of the U.S. economy, culture, and ecology. In response to legislative mandate and concerns for our environment, several government agencies have been working together to develop a program to monitor the condition of the nation's forests. This multi-agency program is called the Forest Health Monitoring (FHM) program. The U.S. Department of Agriculture Forest Service has contributed to this initiative under the auspices of its FHM program. The U.S. Environmental Protection Agency has participated through the forest component of the Environmental Monitoring and Assessment Program. Other contributing agencies include the National Association of State Foresters and individual state forestry agencies, the Tennessee Valley Authority, the Soil Conservation Service, the Bureau of Land Management, the Fish and Wildlife Service, and the National Park Service.

This report is designed to serve several purposes for FHM. The first is to provide a description of major FHM activities planned for the fiscal year 1992. These activities range from the initial planning stages of field work to the assessment and reporting activities. The second is to provide background information about the FHM program organization, the indicator development process, and other activities within FHM.

This Project Summary was developed by EPA's Environmental Monitoring Sys-

tems Laboratory, Las Vegas, NV, to announce key findings of the research project that is fully documented in a separate report of the same title (see Project Report ordering information at back).

Introduction

Forests, which cover approximately one-third of the United States, are an important part of the U.S. economy, culture, and ecology. In response to legislative mandate and concerns for our environment, several government agencies have been working together to develop a program to monitor the condition of the nation's forests. This multi-agency program is called the Forest Health Monitoring (FHM) program. The U.S. Department of Agriculture Forest Service has contributed to this initiative under the auspices of its FHM program. The U.S. Environmental Protection Agency has participated through the forest component of the Environmental Monitoring and Assessment Program. Other contributing agencies include the National Association of State Foresters and individual state forestry agencies, the Tennessee Valley Authority, the Soil Conservation Service, the Bureau of Land Management, the Fish and Wildlife Service, and the National Park Service.

A major impetus behind the development of this program has been increasing concern about documented and potential effects of air pollutants, global climate change, and a variety of insect, disease, and other interacting stressors on forested ecosystems. To help address these concerns, the FHM program is designed to

assist resource managers and policy makers in managing the nation's forest resources, allocating funds for research and development, and evaluating environmental policy for forest resources.

A brief history of the FHM program and an overview of 1992 activities are found in Chapter 1. The following chapters present more detailed information about specific topics.

Procedures and Reporting

Chapter 2 describes the Detection Monitoring phase of FHM. Detection monitoring covers all forested lands and consists of 1) a plot component that is a network of permanent plots and 2) a survey component that includes aerial and other surveys of forest pest and other stressor effects coupled with reports of forest damage. Together these two components monitor and report the condition of forest ecosystems by estimating baseline or "normal" conditions, measuring changes from these baselines over time, and determining if changes are normal or a cause for concern, warranting additional evaluation.

Also discussed are specific plans for 1992 that include revisiting the plots that have been established in the 12 participating eastern states and establishing plots in two western states. The same site condition, growth, regeneration, and visual symptoms indicator data that were collected in 1990 and 1991 will be collected from FHM plots in 1992.

Chapter 3 presents an overview of Evaluation Monitoring. Evaluation monitoring is activated by detection monitoring results and is the process for estimating extent, severity, and possible causes for changes in forest health beyond that initially obtained in detection monitoring. Specific monitoring needs could include additional surveys, site- or area-specific evaluations, and more detailed monitoring. Criteria for project design and selection are being developed by FHM.

Chapter 4 describes the Intensive Site Ecosystem Monitoring (ISEM) phase of FHM. The ISEM will provide high-quality, detailed information on ecosystem processes through long-term monitoring at a

limited number of sites representing important forest ecosystems. The ISEM plan will be made final in 1992. Information about the process of choosing these sites is also included in this chapter.

Chapter 5 provides an overview of the 1992 activities in indicator development. The two demonstration projects and one pilot project that are being conducted are discussed, with details given in the appendices. The Southeast Regional Demonstration will be conducted in the loblolly/shortleaf pine forest-type group of the Atlantic coastal plain in Virginia, North Carolina, South Carolina, and Georgia. The purpose of this study is to test the regional forest health assessment potential of a broad suite of indicators across a major forest type. Indicators that will be evaluated include the following:

- Standard mensuration measurements.
- Soil productivity and classification.
- Wildlife habitat.
- Visual crown rating.
- Root disease evaluation.
- Air pollution indicator plant injury.
- Foliar chemistry.
- Lichen communities.
- Vegetation structure.
- Tree damage evaluation.
- Radial growth.
- Tree core chemistry.

The second demonstration project will be conducted in the portions of Virginia, Tennessee, North Carolina, South Carolina, and Georgia that comprise the Southern Appalachian Man and Biosphere region, principally an oak-hickory forest. This study will provide an opportunity to evaluate the developmental indicators listed above and selected research indicators (such as photosynthetically active radiation) in a second type of forest ecosystem.

The Western Pilot project will be conducted in California and Colorado. A similar suite of indicators will be tested in western forests.

In addition to field studies, other important activities in 1992 are related to the following:

- Developing a conceptual strategy for selecting and evaluating indicators (Chapter 6).
- Evaluation of indicators using a defined process (Chapter 6).
- Design and statistics (Chapter 7).
- Assessment (Chapter 8).
- Reporting (Chapter 9).
- Quality assurance and quality control procedures (Chapter 10).
- Logistics (Chapter 11).
- Information management (Chapter 12).
- Use of global positioning system technology (Chapter 13).

Each of these overview chapters presents background information about the FHM approach and specific information about 1992 activities. Detailed study plans are found in the appendices as is information about off-frame research plans for indicator development.

Conclusions and Recommendations

The Forest Health Monitoring 1992 Activities Plan presents not only 1992 plans but also appropriate background information to provide a context for 1992 activities. All field projects are discussed along with overall work areas such as design, indicator development, and assessment.

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