



# Purpose and Outcomes

## Introduction

Forest ecosystem health has gained popular attention in recent years because of environmental concerns about air pollution, acid rain, global climate change, population growth, and long-term resource management. In response to these environmental concerns and to legislative and policy direction, Federal and State agencies have been working together since 1990 to develop a national program for monitoring and reporting on the status and trends of forest ecosystem health. The national Forest Health Monitoring (FHM) program has been established to accomplish this objective.

## The Purpose of FHM

The purpose of forest health monitoring is to make statements about status and trends in the health of forested ecosystems in the United States. This is analogous to a system of annual physical check-ups for human health. A periodic check of a variety of health indicators can detect changes from “normal” conditions, serving as a signal of a medical problem. A more intense examination can then focus in on the problem, identify causes, and determine treatments for solution.

Forested ecosystems are more complicated than individual humans, but the principals are the same. In **Detection Monitoring** we use data from a variety of sources to monitor indicators of forest health on an annual basis. We intend to detect changes in baseline parameters that occur on the regional (multi-state) scale over several years. A systematic grid-based sampling design was developed by FHM to assure national coverage at an equal intensity. Data are gathered every year, so that information is constantly updated. We recognize that people are concerned about both the current status of the ecosystem, as well as the change over time, so we designed our sampling to address both issues. Finally, the concept of ecosystem health implies a wide array of values, so we collect data from many different dimensions, for example, trees, shrubs, lichens, soil, and wildlife habitat. Since 1999, the FHM plot network has been integrated with the more intensive forest inventory network maintained by the Forest Inventory and Analysis Program (FIA). Aerial detection surveys monitor changes in tree damage over most forested lands in the United States. Observers map areas of tree mortality, defoliation, and other damages visible from aircraft flying at

about 1,000 feet above ground level. Special ground surveys are conducted to detect new infestations of invasive species.

When problems are noted, we often need to examine further to establish the magnitude of the problem. This is done through **Evaluation Monitoring**, which is a more intense look at a specific problem in a specific area. Many times the causal agent is inferred from past experience (for example, defoliation due to gypsy moth infestation). Occasionally the causal agent may not be obvious. In this case, we might draw on information from the third tier of FHM, **Intensive Site Monitoring** where we conduct formal research in small areas to test hypotheses concerning cause and effect relationships. **Analysis and Reporting** at local, State, regional, and national levels provides synthesis of information from all of the program components of FHM.

## Expected Outcomes of the FHM Program

**Addressing public concerns** - The public is concerned about the health of the Nation’s forests. The FHM program provides periodic, objective information regarding forest health across the United States. This information addresses many dimensions and aspects of forest health and is published in a variety of outlets, from scientific publications to popular brochures and websites.

**Baselines for forest health** - Baselines are especially important because we do not know what the “normal” ranges are for many of the things that we are measuring. Over time we will establish a track record for our measurements, which will give us some objective criteria by which to say whether or not something is in an unhealthy condition.

**More sensible laws and regulations** - Many regulations are promoted to protect the environment. A forest health monitoring system will help quantify the need for new regulations and the effect of existing regulations. Periodic information from before and after implementation will help assess whether or not the regulation had the intended effect. This will allow lawmakers to be more efficient in their actions by reducing unnecessary or ineffective regulations.

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