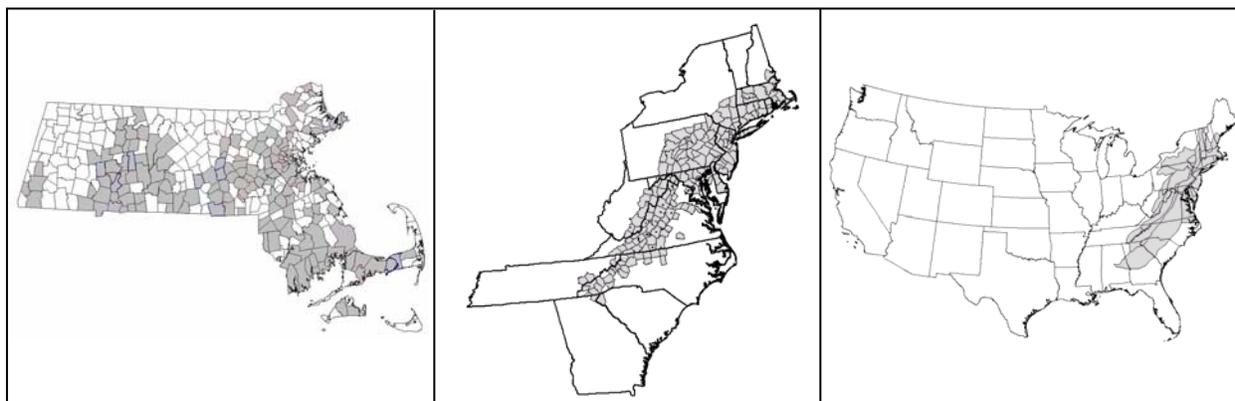


# Reporting Plan

for the

## Forest Health Monitoring Program of the USDA Forest Service

### Guidelines for State, Multi-State and National Reports



Hemlock Woolly Adelgid Infestations on Eastern Hemlock Trees: 1990-2001  
(Massachusetts Dept. of Environmental Management and the USDA Forest Service)

3/1/04

## **What is the Purpose of this Reporting Plan?**

The purpose of this reporting plan is to provide general information about the type and frequency of reporting conducted by the Forest Health Monitoring (FHM) Program of the USDA Forest Service. This plan represents a revision of the original 1998 version that contained a good framework for publishing State, Multi-State and National reports on forest conditions and trends. Since then, the FHM Program is becoming more integrated with the USDA Forest Service Forest Inventory and Analysis (FIA) and Forest Health Protection (FHP) Programs. This integration is changing how and when data for reporting are collected, processed and analyzed and thus necessitated the following revised plan.

The process used to prepare this revision was similar to that used to create the 1998 reporting plan - a team of forest health specialists from different agencies and programs was used to provide State, Multi-State and National perspectives on reporting. The revision team used a consensus approach to determine what guidelines in the 1998 Reporting Plan are still applicable, which ones were to be modified, and what new ideas could be incorporated to improve the production of timely and meaningful reports.

Reviews by other participants with the FHM, FHP, and FIA Programs were used for additional editing. Final edits to the draft were presented to the FHM Management Team for a policy review, approval and publication.

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# **Reporting Plan for the Forest Health Monitoring Program of the USDA Forest Service**

## **Guidelines for State, Multi-State and National Reports**

### **Executive Summary**

The mission of the Forest Health Monitoring (FHM) Program of the USDA Forest Service is to develop and implement a cooperative multi-agency program to monitor, assess, and report on the status, changes and trends in forest ecosystem health in a timely manner. A main objective is to provide State, Multi-State, and National reports on forest health issues to a wide range of audiences in an objective, consistent, and frequent manner.

Forest health monitoring relies upon scientific data that are collected, compiled, and analyzed by the FHM Program and other USDA Forest Service Programs in cooperation with State agencies. The FHM and Forest Health Protection (FHP) Programs together provide aerial and ground data from surveys of damages caused by specific causal agents. The FHP Program also provides narratives of causal agent occurrences in Pest Condition Reports. The Forest Inventory and Analysis (FIA) Program provides data from remotely sensed sources (Phase 1) and ground plots (Phase 2 and Phase 3) where a variety of forest health indicators are measured.

This reporting plan represents a revision of a 1998 version and makes recommendations for the following topics germane to producing meaningful and timely forest health monitoring reports:

1. How this reporting plan serves clients, analysts, report writers, and program managers.
2. What reporting components are common among State, Multi-State, and National reports.
3. How State, Multi-State and National scales of reporting are unique.
4. Who is responsible to prepare and publish reports.
5. What schedule is needed to produce State, Multi-State and National reports.

## **Who does this Reporting Plan Serve?**

### **FHM and FHP Program Managers**

This reporting plan serves as a blueprint for Regional and National managers in the FHM and FHP Programs to help them ascertain (1) what reporting service each program is expected to provide; (2) what staff positions and offices are necessary in the programs to implement reporting; and (3) what tasks are to be completed on an annual basis. Successful implementation of this reporting plan requires participation by staff in information management, analysis, and reporting. FHM and FHP Program managers will need to allocate tasks to various staff to meet expected delivery dates of reports.

### **Information Managers, Analysts, and Report Writers**

Another use of this plan is to demonstrate the importance of coordination among individuals who conduct the various activities that lead to producing a report. For example, our annual timetable for reporting is unconditionally dependent upon interactive participation among (1) information managers who make data available to analysts, (2) analysts who can quickly examine relationships among arrays of data from various sources, and (3) writers who can accurately interpret statistical results and craft easily read narratives.

This plan also illustrates the importance of coordinated participation among individuals serving different geographic entities. The FHM Program relies on data collected in a consistent manner and in turn depends on analyses comparable across administrative boundaries. Use of this reporting plan by all analysts and writers will help ensure lateral consistency among reports for the same geographic scale and vertical consistency among reports of different scales.

### **Partners and Clientele**

This plan is also intended to inform our cooperating partners about what kinds of reports can be expected and how often they will be produced. The reporting plan informs Regional and National FIA Program staff about how and when FIA data are utilized by the FHM Program to produce reports. We also prepared this plan for clientele in State agencies, National Forests and Parks, research institutes, and National offices involved with forest health issues.

This reporting plan is written to describe the overall process for preparing reports and their general content. However, we do not provide details on such topics as provision of metadata, data summarization methods, statistical techniques, report layout, and publishing procedures.

## **What do State, Multi-State and National Reports have in Common?**

### **Objectives and Audiences**

The key objective common to State, Multi-State, and National reports is to translate technical data into meaningful information about forest health issues. Discussions should be comprehensible to diverse audiences that include people with non-technical backgrounds. Reports should provide a proper amount of technical detail for forest health specialists, yet be understandable to media and policy makers. For example, reports rely on maps and graphics to depict key findings with detailed discussions of supporting data and analysis techniques referenced in appendices or technical papers.

### **Reporting Components**

Although reports will vary in content as forest health issues and available data change, all reports should follow a basic outline that allows writers and audiences to easily compare reports for different administrative boundaries and years. State, Multi-State, and National reports should all include the following outline components that are addressed in some way.

#### Title

Besides the subject, the title also refers to the geographic area and year of report preparation.

#### Executive Summary or Abstract

These summaries are for press releases with executive summaries using bullet formats.

#### Introduction

A brief overview of the scope of the report, the link to the FHM Program, and data sources.

#### 1. Scope of Report

An explanation of addressed forest health issues, geographic area, and time span covered. A statement is also provided about how all types of private and public lands are monitored (unless the report focuses on a particular type of ownership, e.g. a National Forest).

#### 2. Program Overview

A summary of how the report relates to FHM Program activities of Detection Monitoring and other program functions of Evaluation Monitoring, Intensive Site Monitoring, and Research on Monitoring Techniques. These can be “boiler plate” descriptions, though they will vary by the subject and type of report.

#### 3. Data Sources

A general description of data and analyses used to support the report along with the years of data used. All FIA data, FHP survey data, FHP Pest Condition reports, and other auxiliary data should be referenced, but metadata and analytical methods are described in an appendix or separate documentation.

## Discussion of Forest Health Issues

Forest health issues are the basis for reporting and arise from observed events or perceived changes in forest conditions considered detrimental to sustainability.

Issues are identified and prioritized by the FHM Program using input from a variety of constituents including scientists, the public, media, and interest groups. Cooperators from State agencies are relied upon to identify and prioritize their local issues. FHP field offices and FHM Regional managers/coordinators collect input from multiple States to help determine Multi-State reporting issues. Issues of National importance are often determined by a combination of input from the National FHM office, Regional managers/coordinators and external constituents.

The following steps are used to formulate how each forest health issue is addressed:

### 1. Description of the Issue

The relevance of each issue is addressed from one or more of the following questions:

- When and how did the issue originate?
- How does the issue relate to an interruption of ecological or socio-economic processes?
- How does this issue affect forest management decisions?
- How have management decisions influenced the issue?

### 2. Geographic Extent of the Issue in Context of Ecological Landscapes

Issues are examined in context of defined ecological categories on the landscape as a means to classify data and facilitate comparisons across State and Regional boundaries. Categories may correspond to ecological regions or distributions of forest types, or tree species distributions (e.g., insect host types). However, relating ecological groupings back to predominant ecological regions, where practical, will facilitate consistency among reports.

### 3. How Issues Relate to Forest Sustainability Criteria:

The relevance of issues can also be demonstrated by grouping their discussion under forest sustainability as defined by the Santiago Criteria and Indicators, where the seven criteria are:

- Conservation of biological diversity.
- Maintenance of productive capacity of forest ecosystems.
- Maintenance of ecosystem health and vitality.
- Conservation and maintenance of soil and water resources.
- Maintenance of forest contribution to global carbon cycles.
- Maintenance and enhancement of long-term multiple socio-economic benefits.
- Legal, institutional, and economic framework for forest conservation.

Issues are grouped for discussion under these sustainability criteria. For example, an “aspen decline” issue could be discussed under a section on “Biological Diversity”. Criteria and indicators are not necessarily addressed equally within a given report because of lack of specific issues or supporting data. Some issues can be discussed within context of more than one criteria.

### 4. Data Used to Support Issue Analysis

The intent of the reports is to quantify forest health conditions as much as possible by fully utilizing technical data from the FHP, FIA and FHM Programs of the USDA Forest Service. Ancillary data from other federal and state sources are also used when possible. All FHM reporting will conform to the Data Quality Act (Section 515 of Public Law 106-554).

All data sources used to perform analyses are described and referenced in some way so that it is easy for readers to locate the same data sets and perform the same analysis. Although this may not happen, authors should attempt to avoid confusion as to where and how the information was obtained that led to conclusions.

The following is a key list (though not exhaustive) of federal sources of data used in reports:

USDA Forest Service, Forest Health Protection (FHP) / Forest Health Monitoring (FHM)

- Pest Condition Reports
- Aerial Surveys of Tree Damages (e.g., insect defoliations)
- Aerial Surveys of Tree Mortality
- Ground Surveys of Tree Damages (e.g., dogwood anthracnose)
- Aerial Surveys of Weather Damage (e.g., ice storms)
- Results of Evaluation Monitoring projects

USDA Forest Service, Forest Inventory and Analysis (FIA)

- Forest Acreage and Volume
- Abundance, Diversity and Structure of Trees and other Vegetation
- Tree Growth and Mortality
- Tree Crown Conditions and Damages
- Tree Regeneration
- Bioindicators of Ozone
- Lichens as Bioindicators of Air Pollutants
- Soil Physical and Chemical Conditions
- Down Woody Material

USDA Forest Service, Natural Resource Information System (NRIS) for National Forests

- Terrestrial , Vegetation, Water, Air, Fauna, Human Dimensions, and Analytical Tools

National Oceanic and Atmospheric Administration (NOAA)

- Drought, Hurricanes, and Flood Events
- Long-term Climate Changes

US Geological Survey (USGS) and National Atmospheric Deposition Program (NADP)

- Chemistry of Precipitation and Stream Water

US Environmental Protection Agency (EPA)

- Air Quality Data

US Census Bureau

- Population Densities of People

## 5. Issue Analysis

Issues are analyzed by using above-mentioned data that can quantify the extent and severity of disturbed forest conditions, associations with possible causes, and implied consequences. Some issues are difficult to assess because of sparse data, but an attempt is still made by referencing publications and unpublished expertise. Knowledge gaps are identified as part of these analyses along with possible courses of action.

Techniques used to analyze issues are to:

- Include information from prior efforts including Evaluation Monitoring projects.
- Examine the relevance and quality of data sources to further explore the issue.
- Quantify “baseline conditions” that preceded known disturbance events.
- Quantify the current status and trends of forest conditions after disturbances.
- Quantify associations between forest conditions and possible causal agents.
- Indicate more research needed via Evaluation Monitoring or Intensive Site Monitoring.

Results from issue analyses and data summaries should include the following components:

- Maps are preferred over charts and graphs, which are preferred over tables.
- Interpretive text is concise and provides a prognosis.
- Error ranges and statistical differences are shown to indicate significant differences.
- Sample sizes and their spatial distributions are shown to support analytical conclusions.

### Conclusions

Concluding statements are similar to those in the Executive Summary, although broader in scope and in narrative form. Recommendations or emerging issues are also described here.

### References Cited

Complete citations including author, date, title, and source are provided as references for analyses. Unpublished information is also referenced when possible according to guidelines of the publisher.

### Contact Information

The following sources of information should be referenced as contacts:

- A list of information contacts such as FHM Program managers and State Foresters.
- A list of related reports and scientific publications for suggested reading.

### Appendices

Provide a core set of data summaries to for comparisons among different reports. Additional tables may also be presented that pertain directly to region-specific issues.

### Customer Feedback

Comment forms are provided to gauge the utility of reports and receive suggestions for improvement. Forms are made available in both electronic and hard-copy formats.

## **How are State, Multi-State, and National Reports Unique?**

### **State Reports**

FHM State reports, also known as “Forest Health Highlights”, are published annually on the Internet to address local issues using survey data, plot data and pest condition reports. They mostly differ from Multi-State and National reports in that they are typically shorter than five pages and do not contain descriptions of analyses or appendices of data summary tables. The executive summary and introduction are only a few sentences in contrast to longer sections in other reports. Information road maps are also brief, with hyperlinks to data sources and other publications.

State reports also differ from other reporting scales to the extent that the geographic scope and some reporting topics directly correspond to those of FIA State reports. For example, FIA reports of the abundance, growth and mortality of tree species are also of use in assessing some issues related to forest conditions in the FHM reports. This overlap of material may lend itself to shared (FHM/FIA) Highlights to address state reporting requirements by both programs.

Another difference between State reports and other reporting scales is that State cooperators directly participate in the reporting process by providing auxiliary information, data summaries, and editorial reviews. State cooperators can hopefully use this reporting mechanism to meet their other federal responsibilities of reporting pest conditions and summaries of detection surveys. States may also choose to produce additional forest health reports beyond the Highlights, if data summaries are provided in a timely manner.

### **Multi-State Reports**

Multi-State reports represent periodic compilations of information to address issues covering multiple States. The geographic scope, scale of analysis, and timing of reports are each determined by FHM regional managers/coordinators working with all FHM Program partners. Unlike State reports, Multi-State reports are produced as hard-copy products. They also provide a table of contents, more discussion of data analyses, more interpretive text, and appendices of tabular data summaries. The executive summary, introduction, descriptions of supporting data, and information road maps are also longer in these reports. These reports also include more baseline information about historical vegetation patterns, forest changes, and disturbance factors as they relate to current issues.

Multi-State reports differ from both State and National reports in that the geographic scope may vary between reports. Although reports may cover one of five FHM administrative regions (Northeast, North Central, South, Interior West, and West Coast), some forest health issues will define other Multi-State areas that are subsets of the administrative regions or a combination of States across multiple regions. Aside from these differences, some standard sections and formats are provided outside of the issue analysis section to allow readers to compare reports among years and FHM administrative regions. As with State reports, there may be a sufficient overlap in material between the FHM and FIA Programs for collaborative reporting.

## **National Reports**

National reports are produced annually as technical summaries of forest health data analyses from a national perspective. The Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests are used as a reporting framework for the national technical summary. This framework is consistent with the reporting framework of other USDA Forest Service reporting efforts. The national scale of the technical summary report provides an overview of forest health topics with graphics allowing readers to see their area of interest in the context of surrounding regions. Status and trend analyses of forest conditions are an important part of this report. Data collected by the Forest Service are used along with any ancillary data, such as climate data, that may be useful.

An additional objective of the national technical summary is to share data analysis techniques and procedures that may be of use to other analysts. In-depth methods are usually presented in an appendix.

Other reports from the national office are more issue-oriented, with issues identified by national office staff in consultation with national, regional, and State scientists. Although an issue may be of national importance, it may be expressed differently in various regions. Therefore, a national, issue-oriented report must be adapted to each issue so that the report is useful to the clients. As with all FHM reports, review by analysts working at various scales is important and useful.

## **Who is Responsible for Preparing and Publishing Reports?**

The reporting process involves several steps that involve coordinated interactions among people with various technical disciplines to provide data, derive meaningful information, and write interpretive text. The following types of partners are directly involved with the tasks that lead to producing Forest Health Monitoring reports.

### **State Cooperators**

These are staff with state agencies that contribute to the reporting process by providing:

1. Digital survey data of insects, diseases and other forest disturbance events.
2. Narrative text used to create forest health highlights and pest condition reports.
3. Prioritized issues for State and Multi-State reports.
4. Reviews of State and Multi-State reports.

### **FHP Biological Specialists**

These are staff at FHP field offices that contribute to the reporting process by providing:

1. Narrative text used to generate pest condition reports.
2. Prioritized issues for State and Multi-State forest health reports.
3. Narrative text used in State and Multi-State reports.

### **FHP GIS Specialists**

These are staff at FHP offices that contribute to the reporting process by providing:

1. Compiled FHP/FHM survey data.
2. Internet posting of FHP/FHM survey data.

### **FHM/FHP Analysts**

These are staff at FHP offices that contribute to the reporting process by providing:

1. Statistical analyses of FIA data using guidelines by FIA indicator advisors.
2. Statistical analyses of FHP/FHM survey data and ancillary data.
3. Data summaries, graphics, and supportive text used in State and Multi-State reports.

### **FHM Regional Managers/Coordinators**

These are staff at FHP field offices that contribute to the reporting process by providing:

1. Prioritized issues for State and Multi-State forest health reports.
2. Review and publication of State and Multi-State reports.
3. Coordination among State Cooperators, FHP Specialists, and FIA Program participants.

### **FHM National Program Manager and National Analysts**

These are staff at National offices that contribute to the reporting process by providing:

1. Prioritized issues for National forest health reports in coordination with FHM partners.
2. Statistical analyses of FIA data using guidelines by FIA indicator advisors.
3. Statistical analyses of FHP/FHM survey data and ancillary data.
4. Data summaries, graphics and supportive text used in National reports.
5. Review and publication of National reports.

## What is the Schedule for Producing Reports?

Annual reporting of forest health issues is dependent on the following timetable of data compilation, summarization, and analyses. The timetable is in turn dependent upon managers having adequate human resources to accomplish the tasks.

<u>Date</u>	<u>Task</u>	<u>Responsible Individuals</u>
January 15	Compilation of Multi-State FHP Pest Condition Reports	State Cooperators, FHP Biological Specialists
February 1	Identification of Reporting Issues	State Cooperators, FHP Biological Specialists, FHM Regional Managers/Coordinators, FHM National Program Manager and National Analysts
February 1	Compilation of raw FHP/FHM survey data	State Cooperators, FHP GIS Specialists
March 15	Analyses of any new FIA data and FHP/FHM survey data	FHM/FHP Regional Analysts and National Analysts
March 15	Internet posting of FHP/FHM survey data and summaries	FHP GIS Specialists
April 15	Internet posting of State-level Forest Health Highlights with reference to FIA reports and core tables	FHP Biological Specialists, FHM/FHP Regional Analysts, FHM Regional Managers/Coordinators, State Cooperators (assistance)
May 15	Internet posting of Abstract for upcoming Multi-State Report <sup>1</sup>	FHM/FHP Regional Analysts, FHM Regional Managers/Coordinators
June 15	Internet posting of abstract for upcoming National Report	FHM National Program Manager and National Analysts
December 15	Hard-copy publication of Multi-State Report <sup>1</sup>	FHM/FHP Regional Analysts, FHM Regional Managers/Coordinators
January 15	Hard-copy publication of National Report	FHM National Program Manager and National Analysts

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FHM – Forest Health Monitoring  
FHP – Forest Health Protection

FIA – Forest Inventory and Analysis  
RTP – Research Triangle Park

<sup>1</sup> Multi-states are not produced annually, but follow this schedule during a production year.