



**USDA Forest Service  
National Office**

**National Forest Health Monitoring Review**



**Arlington, VA**

**October 31- November 2, 2006**



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**Preface**

**Review Objective:** The USDA Forest Service (FS), State and Private Forestry (SPF) Programs in discharging responsibilities to provide assistance in the management, development and protection of the nation's forest resources, periodically review program aspects to ensure appropriate and effective direction and implementation. The Forest Health Monitoring component of Forest Health Protection, a joint federal and state cooperative effort, has undergone a number of changes in recent years and will benefit from a review to reinforce or adjust current direction based on needs and/or opportunities. To be effective, State-Federal cooperative programs like Forest Health Monitoring (FHM) require a well coordinated team effort. The specific purpose of this review is to heighten achievements and identify issues and opportunities to strengthen program delivery.

**Methodology:** The review was conducted over a two-day period during a conference of state and federal officials near the National Forest Service Forest Health Protection (FHP) offices in Arlington, Virginia. The review team consisted of federal and state managers engaged within this program area. The review process included presentations by state and federal representatives charged with implementation of this cooperative effort. Presentations describing various implementation aspects were made and opportunity for review team members to question other subject matter cooperators was accommodated. The Forest Health Monitoring Management Team was available for clarifying discussion throughout the review. Focus for the review included input from regional Forest Health Protection Directors as well as input from the Forest Health Monitoring Management Team.

**Background:** The FHM component of FHP has been in existence since the 1990's. It was first established as a multi-agency program designed to monitor and report on the health of the nation's forests. Since its inception, it has undergone a number of changes, transitioning from an Environmental Protection Agency, Forest Service, State partnership program to activities primarily funded and managed within the Forest Service SPF Deputy Area, (FHP program). Further refinement has shifted the long term plot establishment and monitoring aspect to the Forest Service Research branch, Forest Inventory and Analysis (FIA).

Currently, the national FHM effort is an example of an excellent federal/state partnership with substantial ownership by states, resulting in quality working relationships among implementation personnel. The program has had several successes helping to address invasive species issues threatening the nation's forests as well as furthering the consistent monitoring and reporting on the condition of the nation's forests.

This is the first Forest Service administered national review of Forest Health Monitoring to occur.



## I. COMMENDATIONS

The Review Team would like to thank the Forest Health Monitoring Management Team for thorough preparation for this review. Information presented and availability of managers and cooperators for further discussion greatly helped facilitate an informed and productive dialogue. The Managers and principles responsible for FHM are commended for the following:

- **Management.** FHM has a high level of commitment to expanding its network of partners to help deliver forest health monitoring actions. The collaborative management team approach with state representation on the Management Team gives all participants an equal voice in development and implementation. The effective, inclusive Management Team and Steering Committee structure greatly enhance perspective and ownership in the program component.
- **Credibility.** FHM has increased the visibility and credibility of the overall FS FHP Program with Congress. The National Insect and Disease Risk Map is an example of this.
- **Futuring.** The annual FHM Workgroup Meeting, has many innovative ideas and thinking outside the box. Survey standardization, urban monitoring, information quality control, national risk mapping procedures, etc. are all examples of this think tank process.
- **Partnerships.** FHM does an outstanding job of building partnerships among state, university, and research. These partnerships leverage the work done and expand the capacity and influence of the FHP program. Examples include the Evaluation Monitoring (EM) management structure and project funding. The EM funded projects and workshops add a vibrant component that fosters excellent participation, innovation, and nimbleness to the entire FHP program. For example, the ability to investigate the extent, severity, and causes of oak mortality provided the first understanding of sudden oak death (SOD).
- **National Insect and Disease Risk Map.** Revision of the National Insect and Disease Risk map was well coordinated and resulted in a significantly improved product. This huge undertaking, using a multi-criteria framework, provides a consistent, repeatable, transparent process and is an outstanding testimony to the coordination abilities of the FHM leadership, capacity of the partnership, and technological skill of the excellent staff at the Forest Health Technology Enterprise Team (FHTET).
- **SOD Special Survey.** The leadership, systematic approach, and timely response to this need are exemplary and invaluable in pursuit of our forest health mission. FHM has aided managers to be prepared and pre-positioned to effectively address cryptic organisms such as *Phytophthora ramorum*, the cause of SOD.
- **Research on Monitoring Techniques (ROMT).** The Review Team recognizes FHM's invaluable ability to develop national standardized survey techniques.
- **Intensive Site Monitoring.** The Delaware River Basin Pilot is recognized as a successful model for regional collaborative monitoring within the national environmental monitoring framework. It is a state-of-the-art enhanced monitoring project linked to process-level research in order to address regional concerns associated with impacts and changes to the ecosystem. This pilot is distinguished by the integrated, interagency approach to issue-driven data collection and analysis of resource conditions.



The systems, techniques, and partnerships developed through this pilot can be readily modified for implementation to respond to new risks in other areas. The Delaware River Basin Pilot demonstrates precisely the type of tool development that Intensive Site Monitoring was intended to produce.

## II. FINDINGS and RECOMMENDATIONS

Within this 2006 review, the Review Team identified the following findings and recommendations:

### A. Organization

#### **Background:**

There are questions as to whether to restructure the FHM Management Team, and the FHM Steering Committee to address representation issues. Specifically, some FHP regional Directors (Regions 1, 3, 4 and 5) would like individual representation on the FHM Management Team.

There are currently 16 positions represented on the FHM Management Team (one is vacant): the FHM National Program Manager (Tkacz), five FHM mega-region Coordinators (Brown, Steinman, Mielke, Harris, Nelson), five state representatives from the same mega-regions (Rogers, Burnham, Heinzen, DeGomez, Burnside), one FS Vegetation Management and Protection Research (VMPR) representative (vacant), one FS National Forest System (NFS) representative (Powell), one Project Leader from the National FHM Research Center (Bechtold), one FHTET representative (Sapio), and one FIA National Program Leader (Reams). The team meets once or twice a year, seems to function well, and decisions are made by consensus. The team plans and manages the strategic and operational aspects of FHM.

The FHM Steering Committee provides general oversight and sets policy for FHM. It consists of executives representing the FS and the National Association of State Foresters (NASF). The FS executives include the Associate Deputy Chiefs for SPF (Thompson), Research and Development (R&D) (Reeves), and the NFS (Manning). The NASF executives include the Chairs of the NASF Forest Health Protection Committee (Crapser) and Forest Research Committee (McSwords). This committee meets once every 15 months or so.

#### **Findings:**

There has been some confusion regarding whether FHM and FHP are separate independent programs. The review team recognizes FHM as the main survey, monitoring and reporting **component** of the overall FHP **program**. Aerial and other forms of survey/detection work of the FHP program should be considered the responsibility of the FHM component and thus be directed by the Management Team and Steering Committee structure, but coordinated with and implemented by the Regions/Area Forest Health Directors.

The western FHP Directors from Regions 1, 3 and 4 (represented by the Interior West FHM mega-region federal representative, now stationed in Region 2) and from Region 5 (represented by the West Coast FHM mega-region federal representative, now stationed in Region 6) desire to have their own representative on the FHM Management Team, in addition to the regional coordinators already on the team. We recognize there may be some communication issues contributing to this.



There is a concern that the membership is already too large. The western States, on the other hand, are comfortable with the current setup of multiple states being represented by the Interior West and West Coast State representative to the Management Team. The state representatives interviewed did not want the FHM Management Team to be heavy to federal representation, and wanted to maintain the state representation parity with federal entities.

They also did not want the team to get any larger, beyond the 16 members. The need for more communication between the FHM federal Regional Coordinators and FHP Regions they represent is necessary. FHP Directors have input to FHM budget levels during FHP Director meetings and through their representatives on the FHM Management team.

The Review Team also discussed the FHM Executive Steering Committee membership, and the importance of having the FS and NASF executives aware of FHM activities and accomplishments. We recognize that there will be some changes coming in NASF committee structure and this may affect who the NASF representatives are. We discussed whether the Steering Committee would better serve FHM if it were at the Director level, possibly the same people as the Threat Centers Steering committee.

**Recommendations:**

- 1.) The FHM Steering Committee representatives should remain the same, at the executive level, and the Review Team encourages two members from NASF (general membership or committee Chairs) remain on the Steering Committee.
- 2.) The Steering Committee should meet once a year, rather than every 15 months. There would be value and opportunities for the Steering Committee to meet with the full FHM Management Team.
- 3.) FHM Management Team - The Review Team recommends maintaining the mega-region concept and representation that has been in place since its start tiered to the FIA regional structure. The Review Team suggests leaving the FHM Management team with the same official representation, and not increasing the number of members. We encourage participation during FHM Management Team meetings from any FHP Region and/or State that desires to be part of the discussion. Decisions would still be made by the official FHM Management Team members.
- 4.) FHP Directors are responsible for all FHM activities within their area, therefore, the Review Team encourages FHP Directors to stay involved and aware of the FHM program component.
- 5.) To clarify relationships, the four plains states (North Dakota, South Dakota, Nebraska, and Kansas) are recognized as under the Northeastern mega-region of FHM, with two federal reps and two state reps on the FHM Management Team.
- 6.) The Review Team suggests that the model of state and federal collaboration that exists within FHM should be looked at for expansion program-wide in the upcoming FHP program review. It would position the overall FHP program well within the new upcoming SPF re-invention process.



## **B. Evaluation Monitoring**

### **Background:**

Since the program's inception in 1996, Evaluation Monitoring (EM) projects have been funded in a wide range of topics and geographic areas. Project funding selection is performed in a collaborative, tiered regional and national panel process using criteria of; linkages to detection monitoring, significance in geographic scale, biological impacts and/or political importance, and probability of completion within 1-3 years. The work is excellent, timely, and has been published in nearly 80 refereed papers, over 200 non-refereed reports, more than 300 posters, available on the EM website. The EM element provides opportunity to address local topics and investigate potential new concerns, which is critical to the FHP program's abilities in early detection and rapid response.

### **Findings:**

Dissemination of EM project summaries and findings needs to be improved. Stringent review of EM project criteria should continue to be done annually by the FH Management Team to ensure priority focus.

### **Recommendations:**

- 1.) It is time to synthesize the EM projects. Projects need to be linked to identified priorities, and packaged to demonstrate what we have learned and the value gained.
- 2.) An on-line EM database, with search engine similar to Tree Search or the Forest Encyclopedia Network, should be made available to enhance utility of EM products and information.
- 3.) Future project criteria should include risk, links to national data/information needs, and a feedback loop from users to ensure information relevance and utility in current and foreseeable policy or management. Review of how adequate the existing information is by topic needs to be continually assessed before additional resources are distributed to a topic that has already been studied, and potentially away from a new need. The FHM Management Team should continue to provide direction annually on overall priorities for EM projects, but with a sharper focus.

## **C. Intensive Site Monitoring**

### **Background:**

**Finding:** Intensive Site Monitoring (ISM) is an element of FHM that has not received funding for the past three budget cycles. Discussion related to the future of the ISM element within FHM is relevant. Vision within the workgroup could bring NFS to the table, in relation to forest plan revisions, etc. Any future activity in ISM needs to be coordinated with R&D.

### **Recommendations:**

- 1.) Upon review of the strengths of ISM, in particular, the unique collaborative and comprehensive design, it is the recommendation of the Review Team that the ISM element be maintained as a **placeholder** within FHM in order that it can be readily implemented should a compelling risk-based need arise and necessary funding is available.



2.) The potential for new opportunities for ISM is seen in collaboration with partners that include, but are not limited to; Long Term Ecological Research sites, Forest Service Experimental Forests and Ranges, National Ecological Observation Network, Natural Resources Conservation Service, National Aeronautics and Space Administration, and the Research Natural Areas of the NFS. Any new ISM undertakings should make every effort to link to these sites where other ecological process data is being collected.

## **D. Partnerships**

### **Background:**

One of the FHM strengths is the collaborative relationship between the partners who are engaged in the development and implementation of the FHM component. This successful partnership has given all the partners an equal voice in development and implementation and provided a strong sense of ownership. More importantly, this partnership has provided for a network of individuals and organizations that are interested and concerned with issues related to forest health. As the risk of invasives increases, emphasis on Early Detection Rapid Response (EDRR) is an extremely important aspect of FHM to minimize the establishment and spread of these invasives.

### **Findings:**

The ability of FHM to complete early detection surveillance for new invasives and cryptic organisms is limited by the available funding and personnel. Citizen monitoring could serve as a low cost, valuable source of early detection information for FHM.

### **Recommendations:**

- 1.) The FHM Management Team should support development of expanded partnerships for enhanced early detection of invasives. Opportunities for new partnerships include, but are not limited to; Cooperative Extension, the Urban Community Forestry Program or a Citizens Monitoring Initiative. These relationships should be fully expanded to fill data gaps through standardized surveillance protocols for invasives in areas that are not currently monitored.
- 2.) New focus areas need to be continually developed and vigorously pursued. The Management Team needs to give critical review and timely feedback of all resolutions submitted at the annual FHM Workgroup meeting.

## **E. Detection and Monitoring Methods Research and Development**

### **Background:**

FHM depends on continuing research and development to stay abreast of new technical developments that offer improved efficiencies and effectiveness in dealing with forest health problems, and to deal with the tide of new organisms and problems that surface on a periodic basis. This research is accomplished through a variety of methods, including work with federal, state, and university cooperators, and also through its formal partnership with the FHM Research Team at the Southern Research Station. Funding for this kind of research is relatively small, although it is supplemented from time to time as specific situations dictate.



### **Findings:**

One of the issues identified in this review is the opportunity offered by the recent creation of the eastern and western Threat Assessment Centers, part of the agency's response to the Healthy Forest Restoration Act. The charters for these centers include mandates that overlap with the mission of FHM and attention is needed to ensure that these centers compliment the work that is already underway.

The centers also offer the opportunity to increase the total amount of financial resources and scientific capacity dedicated to FHM Research on Monitoring Techniques (ROMT). The centers could also help administer any research program focused on rapid response that the agency decides to undertake, realizing that these centers and FHM will not work alone when new pests are introduced, but within the existing interagency, cooperative framework.

Rapid response research is one area where the Agency's approach is not consistent. A successful example is the ROMT work done in response to sudden oak death; however, the Review Team heard from the FHM Management Team and state cooperators that good survey methods for the emerald ash borer do not yet exist, and that there are significant unrealized opportunities to develop better methods for cryptic organisms, linear environments (such as riparian areas), and urban areas. There are also opportunities to develop the use of citizen monitoring with better protocols and training (see the section on Partnerships), and to better coordinate the various working groups that oversee aerial surveys.

### **Recommendations:**

- 1.) The FHM leader (Tkacz) should convene the Threat Assessment and FHTET Directors to develop a consistent coordination mechanism among the FHM Management Team and the eastern and western threat assessment centers to ensure maximum efficiency and effectiveness. This could be accomplished via the Early Warning System Steering committee, if appropriate.
- 2.) FHM should work with R&D and the Animal and Plant Health Inspection Service to develop survey methods for emerald ash borer and *Sirex*, and other new invaders. This needs to be done within the existing interagency invasive response framework.
- 3.) The FHP Director should work with R&D (VMPR) to develop a clearly articulated research program (base funding) for FHM detection and evaluation methods with realistic funding expectations.
- 4.) Develop a coordinated relationship between the FHP Aerial Survey Working Group (ASWG) and FHM. Hold a joint meeting of the two groups during a future planned FHM Workgroup meeting.



## **F. Reporting**

### **Background:**

FHM constitutes a major portion of the reporting function associated with the SPF FHP Program. A reporting plan describing local (annual State Highlights), regional (periodic trend analysis), and national periodic sustainability assessments is in place, however, accountability to produce reports and more effective use of the information to reduce duplicative reporting is needed. There are much more data available than have been analyzed and reported. Periodic issue-based trend reporting is ripe for expansion, however, sufficient analysis capacity to accomplish quality periodic trend reporting is not in place.

### **Findings:**

The annual State Highlights report is an important tool. This annual report is a snapshot used by many State Foresters to describe current conditions, and program accomplishments. There is a template available for standardization, although states want flexibility to vary these reports to meet their needs. These one-to-three page reports require little analysis, and are not a major burden to produce. While these are a required report with a national due date from states receiving off-plot FHM funding, not all States are providing them. These reports are potentially being underutilized by the FHP Program.

### **Recommendations:**

- 1.) States/Regions receiving FHM funding should be held accountable to produce annual State Highlight reports by the national due date.
- 2.) Use the annual State Highlight reports to accomplish the FHP Program's requirement for annual forest health reporting to Congress. Condense and reformat as necessary for a standard look, and compile into a report for Congressional submission and eliminate developing a separate annual National Pest Conditions Report.

### **Findings:**

Access to data for developing reports and access to reports themselves continues to be an area needing attention. Technology advances provide new opportunities for improvements both in how we use information, but also in how we conduct information transfer. Full use of digital sketch mapping devices for data collection and improved methods for compiling and displaying use of that information can not only improve our efficiency, it can improve the utility of the information to clients.

### **Recommendations:**

- 1.) The FHTET should continue to develop the data portal concept that will provide web access to forest health survey data.
- 2.) Annual detection information should be made geospatially available to clients in a real-time manner (ARC-GIS ready).



### **Findings:**

Analysis capacity for conducting periodic trend assessment is not in place across the country even though funding to provide this capacity has been available. Potentially more reports could be done if Analysts were in place. Responsibility for providing analysis and achieving this reporting lies with regional FHP Directors. The quality and focus of regional reporting can improve.

### **Recommendations:**

- 1.) More effort needs to be done by regional FHP Directors to secure analysis capacity (analysts), specifically the interior west and southern FHM mega regions. Funding should be directed to areas providing the full compliment of reporting capability.
- 2.) Provide national direction and examples of how to improve regional reports. These reports should be issue driven or temporally/spatially oriented to provide audiences the understanding of forest health issues. They must also better describe resource impacts, the “so-whats” and be linked to risk assessments.

### **Findings:**

There is some amount of confusion in terms of reporting accountability stemming from the differing alignment of FHM mega-regions with FHP regional boundaries.

### **Recommendation:**

- 1.) Reporting should be conducted along mega-region lines and through the FHM coordinators and the regional FHP Directors they report to. Specifically, the four plains states should submit reporting through the NorthCentral FHM Coordinator (Mielke).

## **III. Opportunities**

During discussion several potential opportunity areas were noted that were not focused into specific recommendations but were noted for consideration for potential action. These include:

- A.) Develop survey and detection networks for the urban environments and the wildland-urban interface. Vigorously pursue the citizens monitoring concepts and integrate the needs for data storage, web based portals, and various existing partnership examples into an adaptable, scalable program, which is linked to a robust diagnostic system and that can ultimately fit the multitude of situations found throughout the communities in our nation.
- B.) Utilize the national insect and disease risk map and remote sensing imagery to guide where aerial survey detection should and shouldn't be applied and to assist in identifying the extent and intensity of impact on the landscape. Continually explore opportunities to integrate remote imagery, aerial detection and ground survey data into a system that strives for timely and efficient detection with known precision that also minimizes employee exposure to hazards.
- C.) Expand involvement with the FIA Program to collaborate with writing of forest health sections in their State reports using existing examples from the states of South Carolina, Indiana, and Maine as guides. Expand involvement in the collaborative preparation of special issue-oriented reports at the regional and national scale using the approach used in FHM National Technical Reporting as a guide.



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