

STATEMENT OF  
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FOREST SERVICE  
UNITED STATES DEPARTMENT OF AGRICULTURE

Before the  
House Committee on Agriculture  
Subcommittee on Department Operations, Oversight, Nutrition and Forestry

Concerning  
**Forest Health Risk Mapping Effort**

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MISTER CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE:

Thank you for the opportunity to appear before you today to discuss the Forest Service's forest health risk mapping effort. The Forest Service last testified on forest health on September 28, 1998 before the House Resources Committee, Subcommittee on Forests and Forest Health, in conjunction with the release of the General Accounting Office's (GAO) report, Western National Forests, Catastrophic Wildfires Threaten Resources and Communities.

My name is Ann Bartuska. I am the Director of Forest Management under the Deputy Chief for National Forest Systems. I am accompanied today by Mr. Denny Truesdale, Assistant Director for Fire Operations.

Overview

I would like to discuss four items today:

1. The large and complex issue of forest ecosystem health conditions, particularly as they relate to the key indicators of forest insects and diseases, fire risk, and wildland/urban interface;
2. The development of the risk mapping project that the Forest Service is leading;
3. Preliminary results of the risk mapping project; and,
4. The potential use of this tool by the Forest Service in a cohesive, coordinated approach for dealing with the complex issue of forest ecosystems at risk.

FOREST HEALTH CONDITIONS

There are approximately 737 million acres of forested lands in the United States. Approximately 192 million acres are National Forest System lands and of those, 140 million acres are forested. The health of these forests is an issue for the private landowners, federal and state land managers, and the public that uses and enjoys them. The Forest Service's Natural Resource Agenda identifies both watershed

health and forest sustainability as key goals, and healthy forests are a critical component of meeting these goals.

Forest ecosystems are dynamic and constantly changing, with a number of forces acting on them. Effective fire suppression policies, coupled with other natural and human-caused events such as grazing, has put some of these forests at risk. For example, the exclusion of fire from forest ecosystems in the inland west coupled with the spread of white pine blister rust has resulted in increased amounts of shade-tolerant Douglas-fir, grand fir, and subalpine fir species that are highly susceptible to drought, fire, and especially root disease.

Large numbers of exotic species have been introduced into forest ecosystems in many areas, severely effecting the host species. These pests often have no natural control factors and thus cause extensive damage. Gypsy moth, for example, is an introduced species that defoliates and often kills hardwoods.

Native pathogens and insects are natural change agents in the forest ecosystem. The southern pine beetle has caused heavy losses since the eighteenth century. The significance of this problem has increased with the conversion of abandoned cotton fields to pine forests and as a result, we have seen a dramatic comeback in southern pine beetle outbreaks in several areas in the southeastern United States.

Fire suppression for many decades has resulted in the build-up of both live and dead fuels in some forest ecosystems, creating a much higher fuel hazard than would normally occur under natural processes that include frequent, low-intensity fires. This is especially true of the long needle pine forest cover types.

The rapid expansion of rural and urban settlement, especially in the west, means more and more people now live within or adjacent to forests that have one or more of these high risk situations. In some forest cover types, large, catastrophic fires have been extremely costly to suppress due to the threat to lives and property. For example, during the past decade, we have experienced some of the worst wildland fire seasons in our history. The 1994 and 1996 fires set records for the cost for suppression, accounted for tremendous damage to resources and property, and most tragically, the South Canyon Fire accounted for 14 of the 34 fire fighter fatalities in 1994.

Previous testimony to Congress by both the GAO and the Forest Service indicated that there are approximately 39 million acres at risk from catastrophic fire, based on long needle pine cover type maps of National Forest System lands. These forests are characterized by a historic fire regime with frequent, low intensity fires that remove dead fuel and brush but does not damage the pines. We believe that the risk mapping effort, which integrates multiple forest health factors, will provide a new, more comprehensive assessment of the condition of our nation's forests.

The Forest Service is dealing aggressively with forest health problems. Since the mid-1990's, the Forest Service has tripled its budget for hazardous fuel treatment, and doubled its budget for forest thinning. Congress has also funded Southern pine beetle suppression projects including detection, evaluation, and control. Another example is the Gypsy Moth Slow-the-Spread (STS) program, which began as a pilot project between 1993 and 1998 in North Carolina, Virginia, West Virginia, and Michigan, and has now been adopted nationally. The STS program will help slow the spread of gypsy moth by at least 60%; it has proven to be a very economically efficient program.

## DEVELOPMENT OF THE RISK MAPPING EFFORT

The Forest Service is taking the lead in development of this mapping effort. We will work with the Department of Interior to coordinate efforts. The risk maps are a new tool that use the best available information and data on insect and disease potential, fire recurrence intervals, and wildland/urban interface to produce composite large-scale maps of forest lands that indicate areas of high, moderate, and low risk. Individually and in combination, these maps will provide a significant amount of broad scale information for national program development. In addition, the data will be available regionally as a starting point for more local priority setting, and may eventually be expanded to include other areas and ecosystems.

The information on these maps is at the scale of watersheds, which average approximately 800,000 acres in size. Each data element, or pixel, used on these maps is based on data for an area of one square kilometer. Although this scale is much too broad to be of use in design of site-specific projects, it is very useful for evaluating risk potential at a broad regional or national level.

Multiple layers can be produced on a geographic information system (GIS). The presence of one of these risk factor attributes, or the overlap of two or more of these factors would be an indication of where a watershed or portion of a watershed would be at risk for one or more of these important aspects of forest health. The two maps described below that have been produced from the GIS database and are currently available as examples of the application and use of this risk assessment effort. These maps illustrate:

- Expected areas at risk of insect and disease caused tree mortality during the next 15 years.
- Levels of effort required to reduce fire risks in wildland areas, and fire vulnerability of wildland/urban interface areas.

We are coordinating with other agencies, state foresters, and other interested parties to incorporate information they develop. This first set of products will start further discussions and collaborations to ensure that the information and products are useful, accurate, and have the general support from interested parties.

Some of the database information, and thus maps generated from the database, do not yet reflect interagency review and consensus. This review will be taking place over the next few months, and after that phase is completed, more comprehensive maps will be available.

## RESULTS OF THE CURRENT EFFORT

Two maps currently available are examples of what can be produced for analysis and use from this effort. The first depicts risk potential for insect and disease on all forested lands throughout the United States across all ownerships. The map identifies areas most susceptible to insect and disease damage over the next 15 years. The risk from four major agents make up the bulk of the high risk areas. These are gypsy moth in the northeast, root disease and mountain pine beetle in the west and interior west, and southern pine beetle in the south. Exhibit I attached to this testimony is an example of this map.

The second map combines two important aspects of fire risk. The map illustrates the level of effort necessary to return wildland ecosystems to easily maintained fuel levels in wildlands and wildland/urban

interface areas. Some areas have undergone such dramatic change that restoration may not be practical and intervention may focus on protection from destructive fires. Other areas have not deviated as far from historic conditions and require low to moderate levels of effort to achieve fuel maintenance at levels with acceptable risk.

At this time we have complete data coverage only for National Forest System lands. For state and private lands, we are only able to show wildland/urban interface fire vulnerability and not the levels of effort needed to reduce fire risks on the non-Federal lands. Exhibit II attached to this testimony is an example of this map.

The initial risk maps provide a basis for a strategic examination and dialogue on forest health problems on all lands. They serve as a coarse filter to focus our attention on broad geographic areas within which we will conduct further analyses on a watershed basis. The overlap of layers represent watersheds or portions of watersheds that are at risk for these important aspects of forest health. This is a new opportunity for the Forest Service to be able to display spatially where relatively high-risk areas are located and to ascertain the magnitude of the risk nationwide. It will also encourage us to prioritize and to coordinate better among the different programs within the Forest Service and with our partners.

#### USE AND APPLICATION

The use of this information is mainly at a broad planning level, but it can also be tiered from for local planning efforts. At the broad planning level, the information will be useful for both trend analysis and land based performance measures associated with the Forest Service's strategic planning efforts. The information can also be useful at other planning levels in terms of setting broad priorities for forest health treatment strategies.

At the national level, the Forest Service is developing an integrated set of performance measures that are mission-oriented outcomes. The Government Performance and Results Act of 1993 (GPRA) strategic plan goals are to ensure sustainable ecosystems, through clean water, clean air, productive soils, robust fish and wildlife populations, healthy forests and grasslands through improved knowledge and decision making and improved natural resource management and use. The risk maps identify acres at risk at the national and regional levels, and should facilitate the commitment of resources across staff areas to address these high risk areas, which will help meet GPRA goals for sustainable and healthy forests.

The Forest Service may also be able to use this information to help guide Regional budget allocations in the fiscal year 2000. The mapping process can also provide information that could be used as input for helping to set priorities in the fiscal year 2001 and 2002 budget processes.

As an example, a general process for setting priorities based on the information from the risk maps could include development of broad, coarse-filter maps as the foundation for strategic evaluation of forest health. These maps would provide data that would help focus attention on certain geographic areas. Following initial identification of risk areas in conjunction with external input, watersheds would be identified for further analysis. Localized planning processes would then proceed, including development of potential treatment scenarios to address forest health threats. Through the planning process, areas would be categorized and prioritized using a triage system that identifies where no action is needed, where no action is warranted due to lack of effective or cost-efficient treatment options, and where action is warranted and deemed to be both effective and efficient. Any necessary adjustments to programs would be made to incorporate the results of planning efforts and allocate resources to where

the greatest benefits can be achieved. Finally, monitoring would be done, and updates to the risk map database would be done as appropriate.

The Idaho Panhandle Douglas-fir Bark Beetle Outbreak assessment is an example of the application and use of this type of information. This analysis took broad watershed-level data and information, including insect and disease risk information, and through a local planning process that was guided by the existing Forest Plan, identified approximately 416,000 acres of existing infestation and areas with moderate to high potential for outbreak. The process then sorted this information and refined it by watersheds to begin focusing on site-specific areas. The result was a targeted number of projects that focused on the 25,000 highest priority acres based on local, site-specific information that included full public involvement and participation.

It is important to note for both the above example on the Idaho Panhandle, and in general when dealing with broad risk assessment information, that the actual treatment areas may often constitute only a relatively small percentage of the overall number of acres initially identified as being at risk. It is likely that as more site-specific analyses are done using this information, that the total number of acres that are identified at the broad, strategic level as high priority will be significantly reduced.

The risk mapping process is a foundation for a cohesive strategy for identifying and treating high risk forest areas through an integrated program utilizing multiple approaches to accomplish our objectives, such as stewardship contracting, timber sale and vegetation management contracts, forest insect and disease suppression and prevention projects, fuels management projects, and forest ecosystem restoration and improvement projects.

These maps, coupled with other planning resources will be of use to communities seeking to minimize their fire risk exposure. The FY 2000 budget included \$10 million for a new program in Cooperative Fire Protection to encourage greater community participation and fire planning in reducing fire risk in the wildland/urban interface. The program offers competitively awarded grants for State and local communities to partially support community planning and disaster prevention and hazard mitigation assistance. The program coordinates with states and localities to reduce long-term wildfire costs for the government, the communities and homeowners (Insurance company participation may provide a subsequent reduction in insurance premiums for those in participating communities) through prevention, including hazardous fuels reduction.

## SUMMARY

Mr. Chairman, the risk mapping effort is one of the significant tools we will use to provide important collaborative effort between the federal government and state foresters to look at broad, large scale areas at risk for important indicators of forest health. The information gathered on GIS will provide a mechanism for periodic updates and trend analysis, and will be useful in long range strategic priority setting. The preliminary results that identify high potential risk in certain regions of the United States will enable us to better focus our priorities for direct treatment of the risk areas, as well as better focus our assistance to state and private entities through our cooperative forestry and research programs.

This concludes my statement. I would be happy to answer any questions you or other members of the subcommittee may have.