FOREST HEALTH PROTECTION

SUMMARY FOR 2009

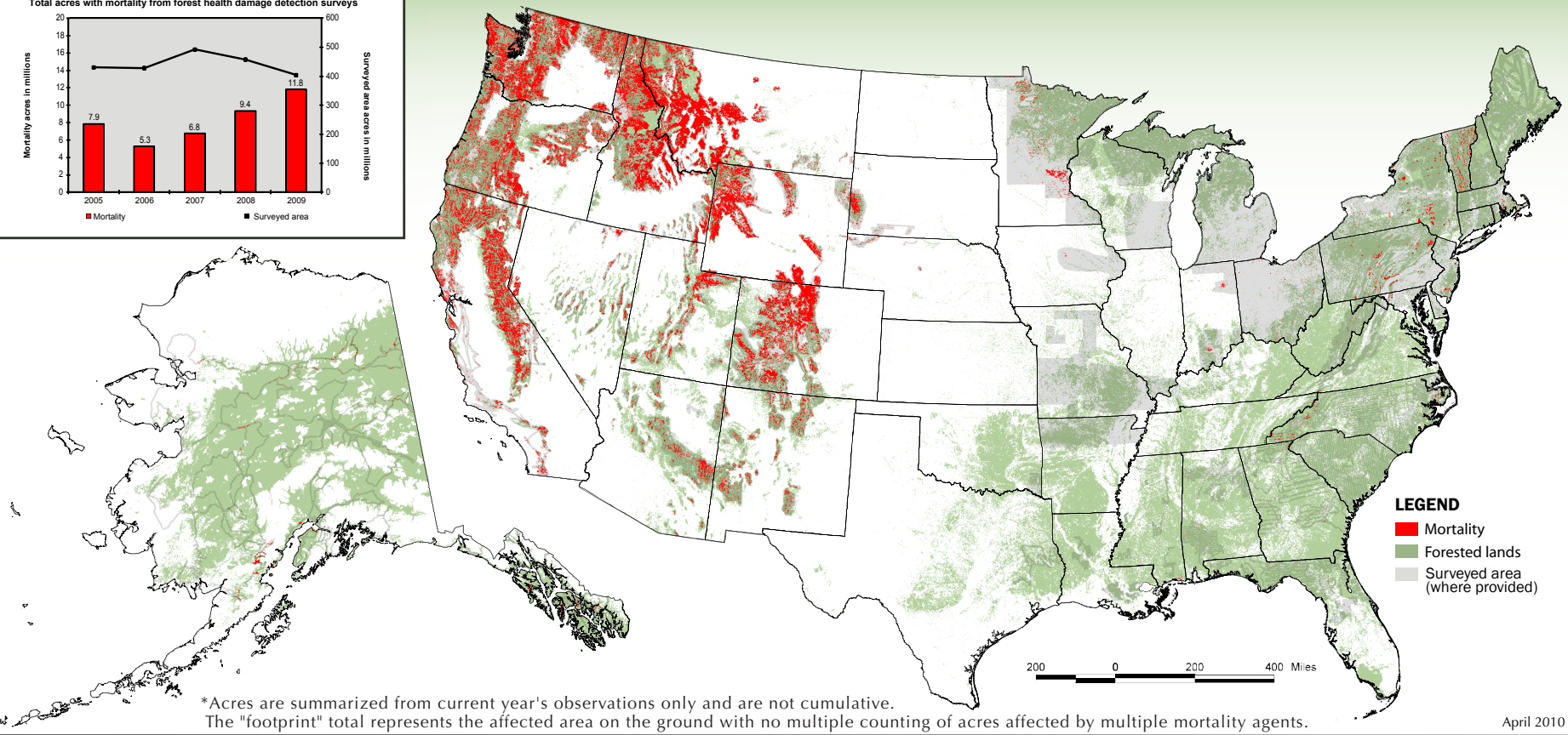
The top five mortality agents are:

- Mountain pine beetle 73%
- Bear damage 5%
- Fir engraver 4%
- Subalpine fir mortality (Including western balsam bark beetle) 3%
- Sudden aspen decline 3%

Total acres with mortality from forest health damage detection surveys

2009 Acres with Tree Mortality

Approximate Footprint Acres with Mortality: 11.8 million*



*Acres are summarized from current year's observations only and are not cumulative.
The "footprint" total represents the affected area on the ground with no multiple counting of acres affected by multiple mortality agents.

April 2010

2009 Forest Health Damage Detection Surveys – Acres with Mortality

Detection and Aerial Survey Overview

Aerial detection surveys are an efficient and economical method of collecting and reporting data on forest insects, diseases, and other disturbances. Aerial sketchmapping is the primary data-collection method: data are collected by aerial observers from the Forest Service and other cooperating state and federal agencies. Areas of damage are captured as polygons on hardcopy 1:100,000 scale maps or through a Digital Aerial Sketchmapping System (D-ASM). The D-ASM uses a moving map display, GPS tracking, and touch screen technology to create a digital version of the data on-the-fly in the aircraft. Regardless of the method, it is important to note that sketchmapping is a valuable but subjective endeavor with inherent spatial and attribute inaccuracies.

Polygons are coded to identify the damage agent, damage type, and other attributes. Reporting the number of dead trees or dead trees per acre is required for areas with mortality. In large areas where mortality is widely scattered, other attributes may be used to capture the pattern of damage, but are not required. In all cases, mortality may be continuous or discontinuous; therefore, acres are reported as acres "with" mortality.

Damage from some key species, such as emerald ash borer and southern pine beetle (SPB) are not well represented on aerial survey maps at a national scale. SPB survey data from past years often lacked a spatial component but was nonetheless included on the map. Beginning in 2007 only spatially-located SPB spots are depicted and therefore represent only a portion of the total SPB damage.

Bear damage is included because of the significant economic impact to conifers in the Pacific Northwest. Bears peel the bark in early spring to eat the inner tissue. There is evidence that for every tree killed by bears, there are two additional trees damaged. Damaged trees are more susceptible to insect and pathogen attack.

Resources:

A Guide to Conducting Aerial Sketchmapping Surveys. McConnell, T.J., Johnson, E.W., and Burns, B., USDA Forest Service Publication, FHTET 00-01, March 2000.

Digital Aerial Sketchmapping. Schrader-Patton, C., USDA Forest Service Remote Sensing Appilcation Center publication, RSAC-LSP-3400-RPT2, May 2002.

Aerial Survey Geographic Information System Handbook, November 2005, and Forest Health Monitoring Aerial Survey Standards, October 1999, online at: http://www.fs.fed.us/foresthealth/technology/ads_standards.shtml.

Summary for 2009:

Footprint acres with tree mortality: 11,792,000

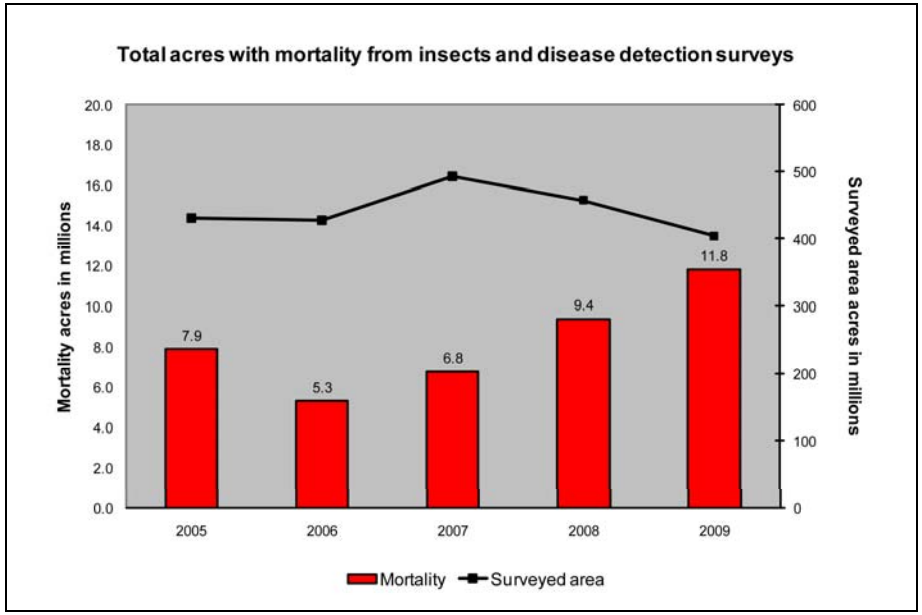
Note: Acres are summarized from current year's observations only and are not cumulative. The "footprint" total represents the affected area on the ground with no multiple counting of acres affected by multiple mortality agents.

Top 5 mortality agents: Percent of footprint acres with mortality

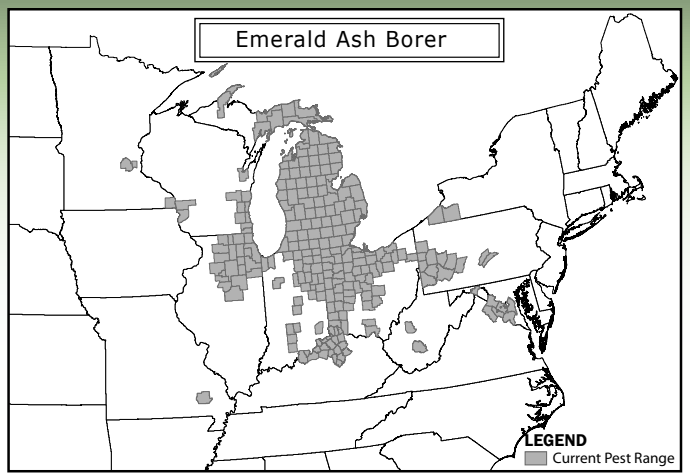
- Mountain pine beetle 73%
- Bear damage 5%
- Fir engraver 4%
- Subalpine fir mortality (including western balsam bark beetle) 3%
- Sudden aspen decline 3%

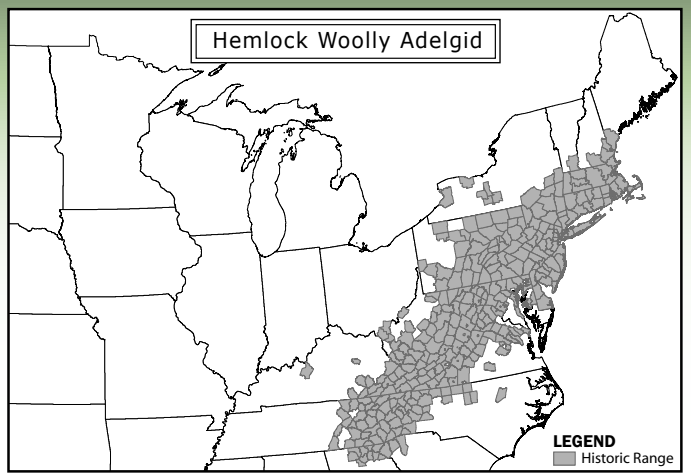
Acres with mortality were reported in 44 states. Montana reported the most at 3.5 million acres.

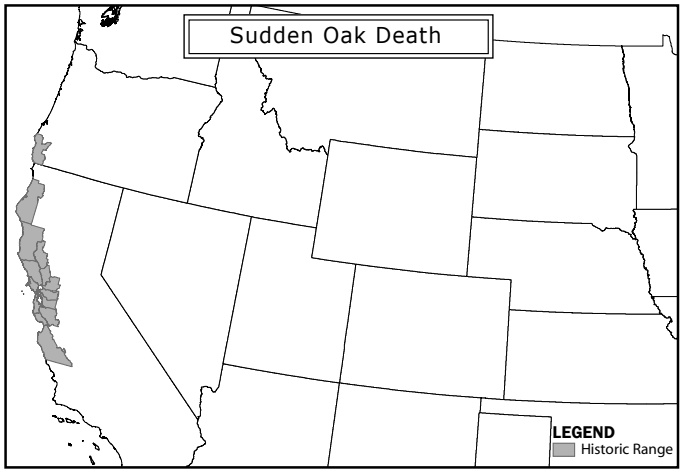
The total cost of aerial survey is approx $5 million annually, or roughly $.01 per acre surveyed.

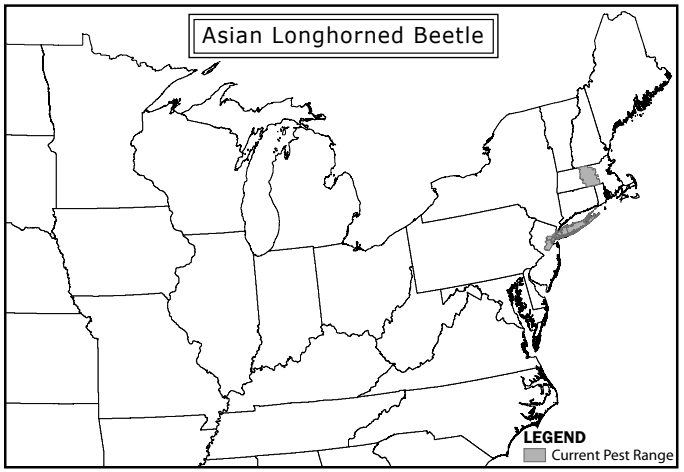


FOREST HEALTH PROTECTION









Invasive Pests of Special Concern

Tree mortality caused by pests depicted on these maps are not well represented by aerial detection surveys. This is because mortality is either too scattered or the polygons are too small to see at a National scale. These maps represent other reporting mechanisms and are the most current depictions of damage caused by these pests.