



# Forest Health Monitoring

## Program Highlights

Borys M. Tkacz  
National Program Manager





## 2007 Program Highlights

- Management Team
- Detection Monitoring
- Evaluation Monitoring
- Research on Monitoring Techniques
- ISM
- Reporting Highlights
- Risk Map
- Budget Outlook



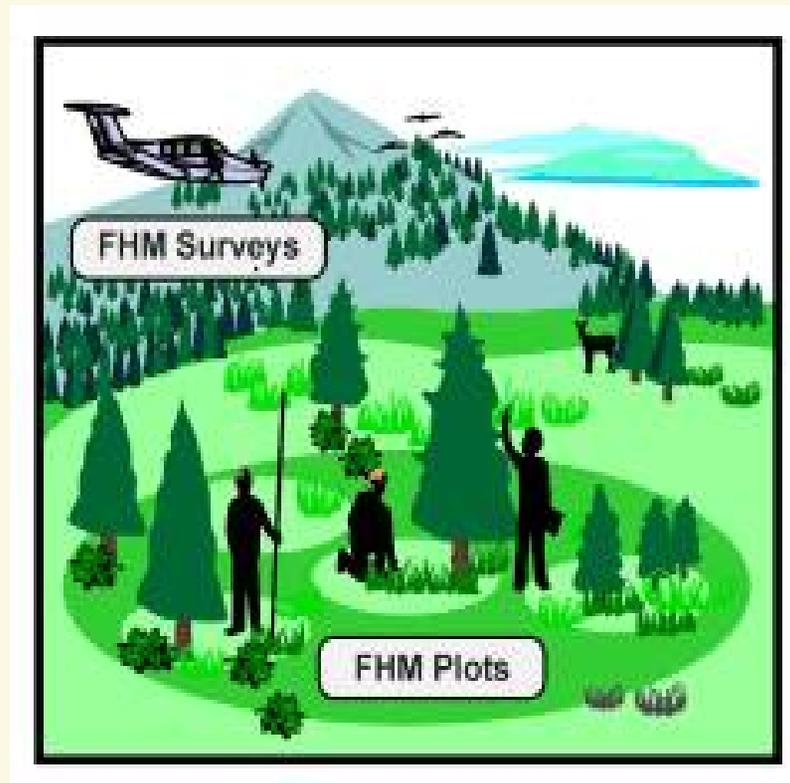
## FHM Management Team

- **Chair – National Program Manager- Borys Tkacz**
- **FHP Rep. for each FHM Region**
  - NE – Jim Steinman
  - NC – Manfred Mielke
  - SO – **Dale Starkey**
  - INT –Jeri Lyn Harris
  - WC – Alison Nelson
- **State Rep. for each FHM Region**
  - NE – **Kyle Lombard, NH**
  - NC – Dave Heinzen, MN
  - SO – Ed Barnard, FL
  - INT – **Gail Durham, NV**
  - W – Roger Burnside, AK
- **FIA National Program Leader – Greg Reams**
- **FHM National Research Team – Bill Bechtold**
- **NFS EMC – Doug Powell**
- **FHTET – Frank Sapio**
- **SPF U&CF - **Keith Cline****

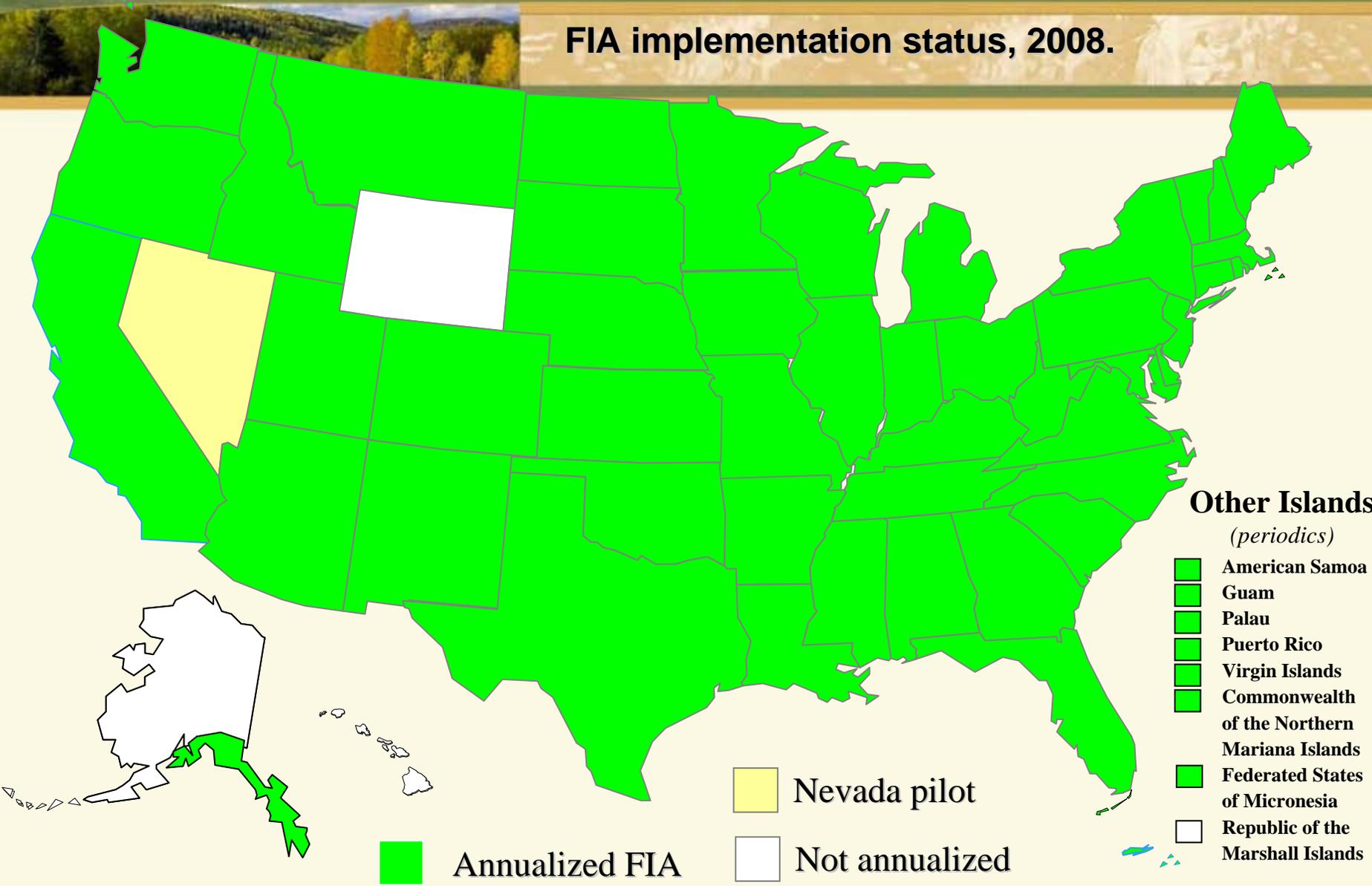
## Detection Monitoring

### Purpose of Detection Monitoring

- Establishes baseline conditions for analysis of future changes & trends
- Identifies location & extent of areas with forest injury or mortality
- Triggers suppression or evaluation monitoring actions



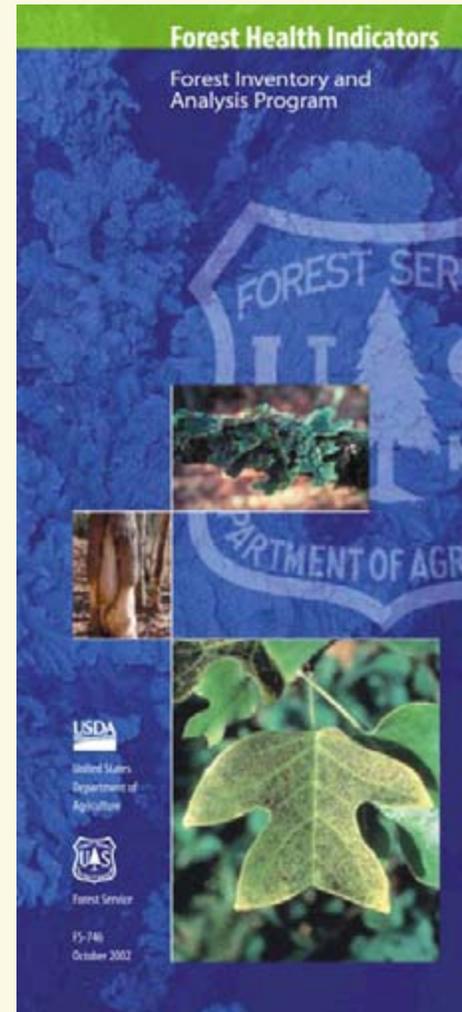
**FIA implementation status, 2008.**





## Forest Health Indicators

- Tree Growth
- Tree Regeneration
- **Tree Crown Condition**
- Tree Damage
- Tree Mortality
- **Lichen Communities**
- **Ozone Bioindicator Plants**
- **Soil Morphology and Chemistry**
- Vegetation Structure
- Plant Diversity

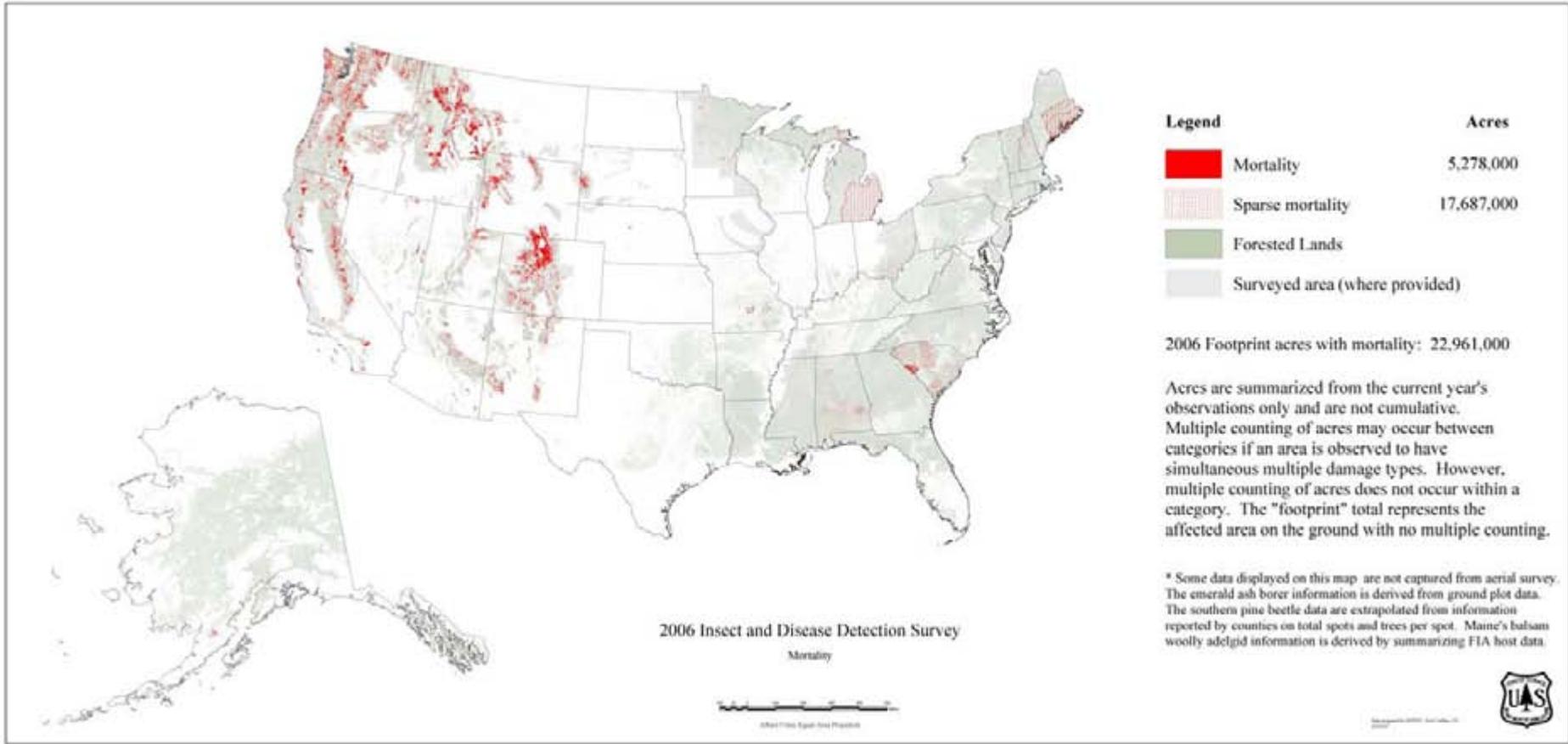


## Detection Monitoring

- Aerial surveys – detect visible damage to tree crowns from insects, diseases, and weather; may be conducted annually or seasonally based on local needs



# 2006 Aerial Survey Results

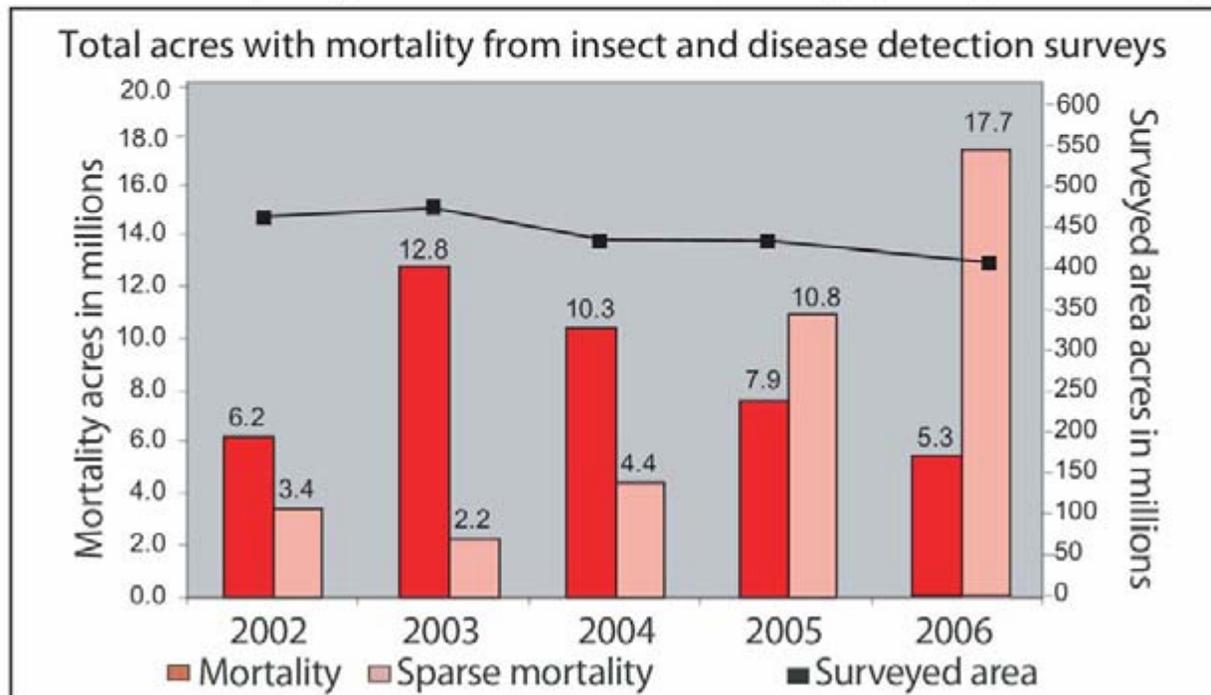


## SUMMARY FOR 2006

Emerald ash borer (EAB) accounts for 59% and balsam woolly adelgid (BWA) in Maine accounts for 40% of the acres considered sparse mortality. Excluding EAB and BWA in Maine, the top five mortality agents are listed below.

- |  |     |                 |    |
|--|-----|-----------------|----|
| • Mountain pine beetle                 | 50% | • Fir engraver  | 7% |
| • Subalpine fir mortality              | 13% | • Bear damage   | 6% |
| (Including western balsam bark beetle) |     | • Spruce beetle | 6% |

Acres with mortality were reported in 38 states. Colorado reported the most with 1.1 million acres. The total cost of aerial survey is approx \$5 million annually or roughly \$.01 per acre surveyed.



# Special Detection Surveys

## *Phytophthora ramorum* (SOD)

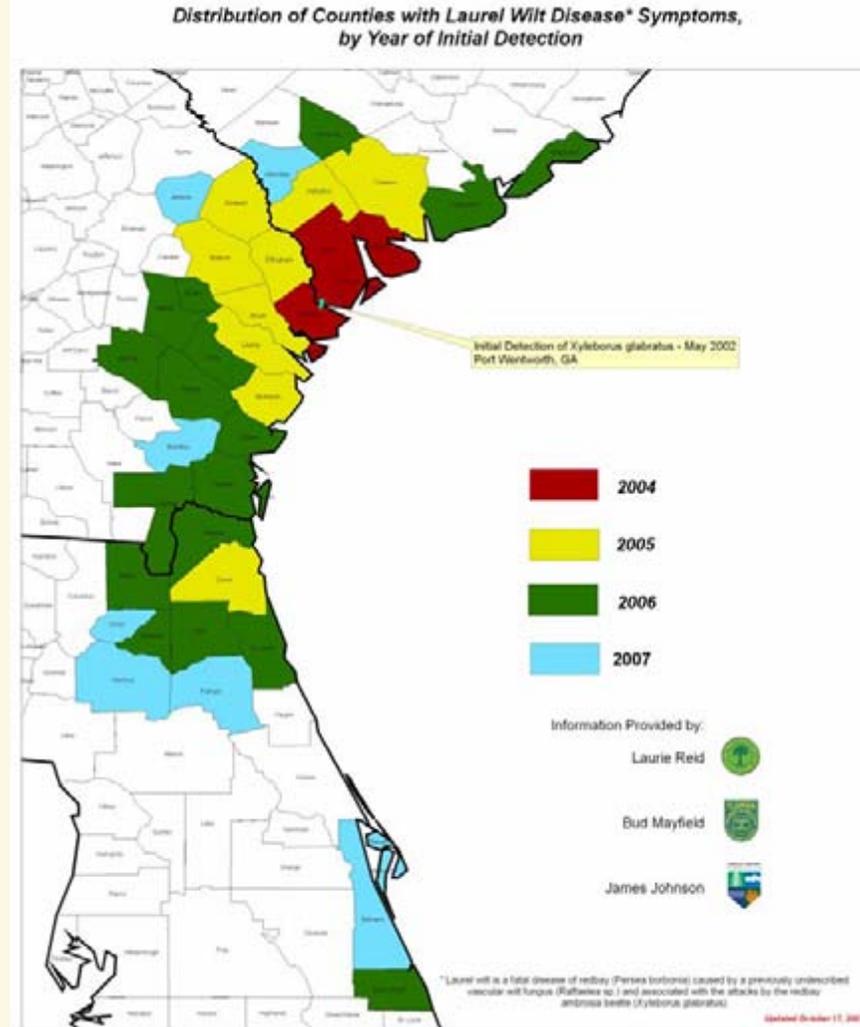
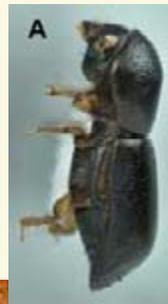
### National Detection Survey

- Stream bating in 2007
  - 28 States
  - 150 Watersheds
  - 5+ baiting periods
  - 1662 samples
  - Pos. in CA, OR, WA, MS



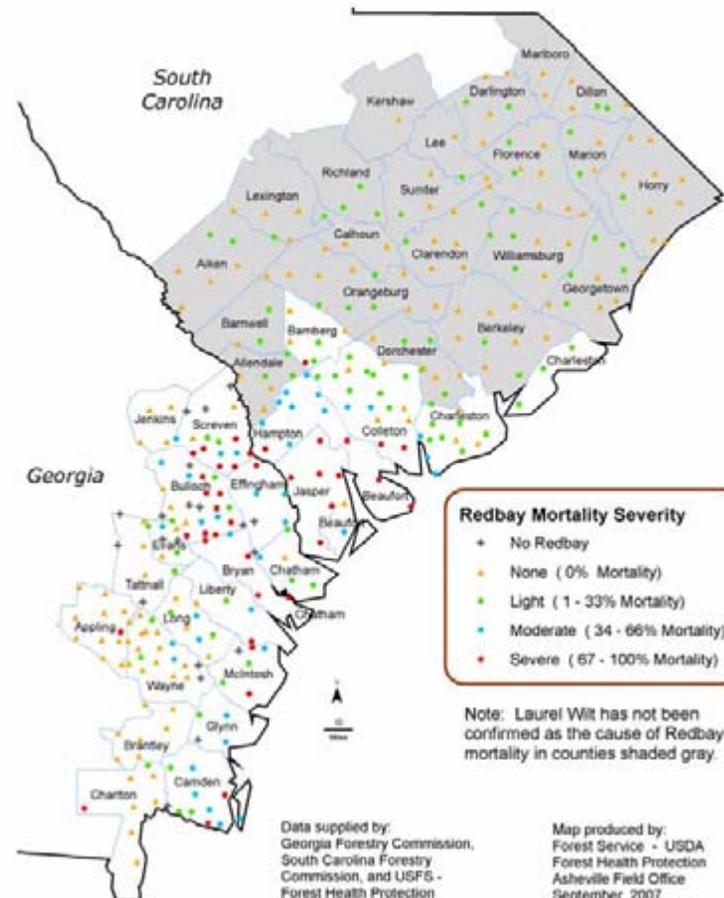
# Special Detection Surveys

Red Bay mortality –  
 exotic ambrosia beetle  
*Xyleborus glabratus*  
 vectoring *Raffaelea*  
*sp.* in Southeastern  
 coastal states, killing  
 red bay, sassafras,  
 and other Lauraceae



# Laurel Wilt Surveys – GA, SC

## Laurel Wilt Survey 2006 - 2007



## Evaluation Monitoring Projects 2008

### **BASE**

- Limber Pine Health – INT
- Aspen Mortality in Rockies – INT
- Spruce Beetle – INT
- Whitebark Pine & MPB - INT
- Black Ash Decline – NC
- Hickory Decline – NC
- Bacterial Leaf Scorch – NC & NE
- Butternut Canker – NE & SO
- White-cedar Crown Dieback - NE
- Interfering Shrub Species – NE
- Impact of Laurel Wilt - SO
- Yellow Cedar Decline in AK – WC
- Lichens and Nitric Acid in CA – WC
- Fragmentation in West. WA - WC
- Larch Sawfly in AK - WC

### **FIRE PLAN**

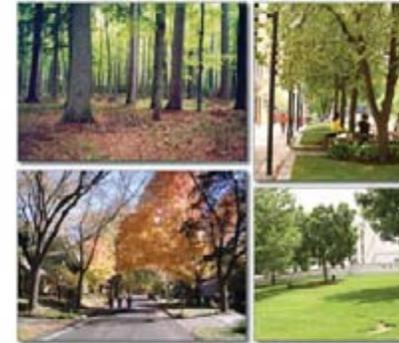
- Aspen Decline– INT
- Bark beetles and fuel loading in the Southwest – INT
- Fire and Ponderosa Pine beetles – INT
- Bark beetles and fire occurrence INT
- Fire spread and intensity – INT
- MPB in fire-damaged PP & LPP - INT
- Fire and oaks in IA and MO – NC
- Fire and species reintroduction – NC
- Gypsy moth, fire, and climate change - NE
- Balsam woolly adelgid – WC
- Invasive bark and woodboring beetles following fire – WC
- Threats to foxtail pine – WC
- Survival of fire-injured trees in OR & WA - WC

# Urban Forest Health Monitoring

- **Urban Forest Inventory**
  - Extend FIA sampling grid into urban areas
  - Pilots conducted in NJ, IN, WI, TN, CO
  - Reports issued for IN, WI
- **Statewide Street tree assessments**
  - Modify sampling to characterize trees along public streets
  - Pilots conducted in MD, MA
  - Report issued for MD, MA
- **FIA Urban Task Team working on logistical issues – PDA, Manuals, Training**
- **FHP and U&CF propose national program for Urban FHM**

NATIONAL FOREST HEALTH MONITORING PROGRAM

**Urban Forests of Wisconsin:  
Pilot Monitoring Project 2002**



United States  
Department of Agriculture  
Forest Service  
National Forest Health Monitoring  
State and Private Forestry  
Madison, Wisconsin, USA  
160-075-000-001  
March 2003

NATIONAL FOREST HEALTH MONITORING PROGRAM

**Monitoring Urban Forests in Indiana:  
Pilot Study 2002**

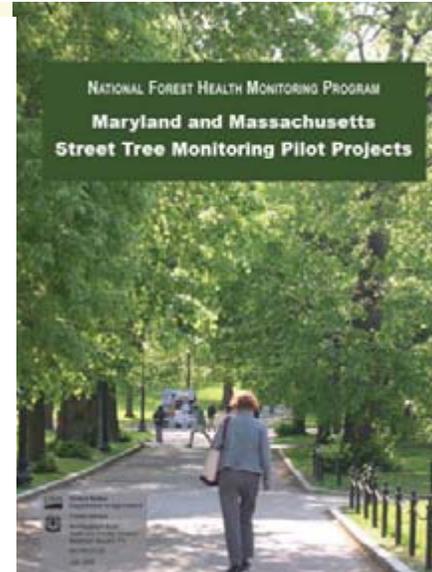
Part 1: Analysis of Field Methods and Data Collection



United States  
Department of Agriculture  
Forest Service  
National Forest Health Monitoring  
State and Private Forestry  
Madison, Wisconsin, USA  
160-075-000-001  
December 2002

NATIONAL FOREST HEALTH MONITORING PROGRAM

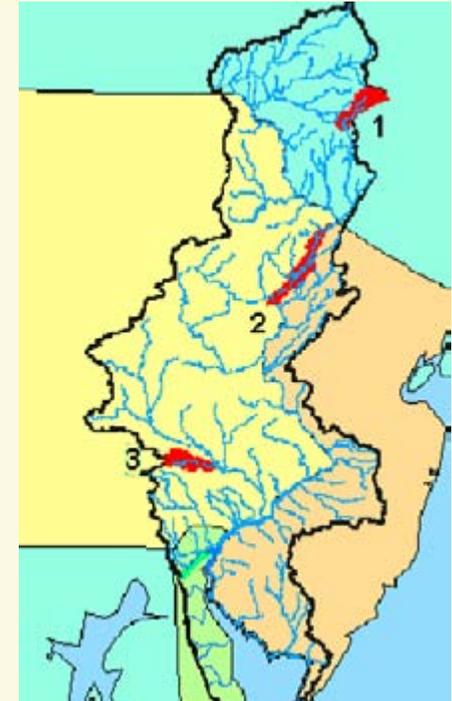
**Maryland and Massachusetts  
Street Tree Monitoring Pilot Projects**



United States  
Department of Agriculture  
Forest Service  
National Forest Health Monitoring  
State and Private Forestry  
Madison, Wisconsin, USA  
160-075-000-001  
July 2003

## Intensive Site Monitoring

- Delaware River Basin Pilot
- RFP Issued for FY08
- Budget Shortfall in FY08
  - Additional funding provided by FHP to fund top rated proposal in So. California



<http://www.fs.fed.us/ne/global/research/drb/index.html>



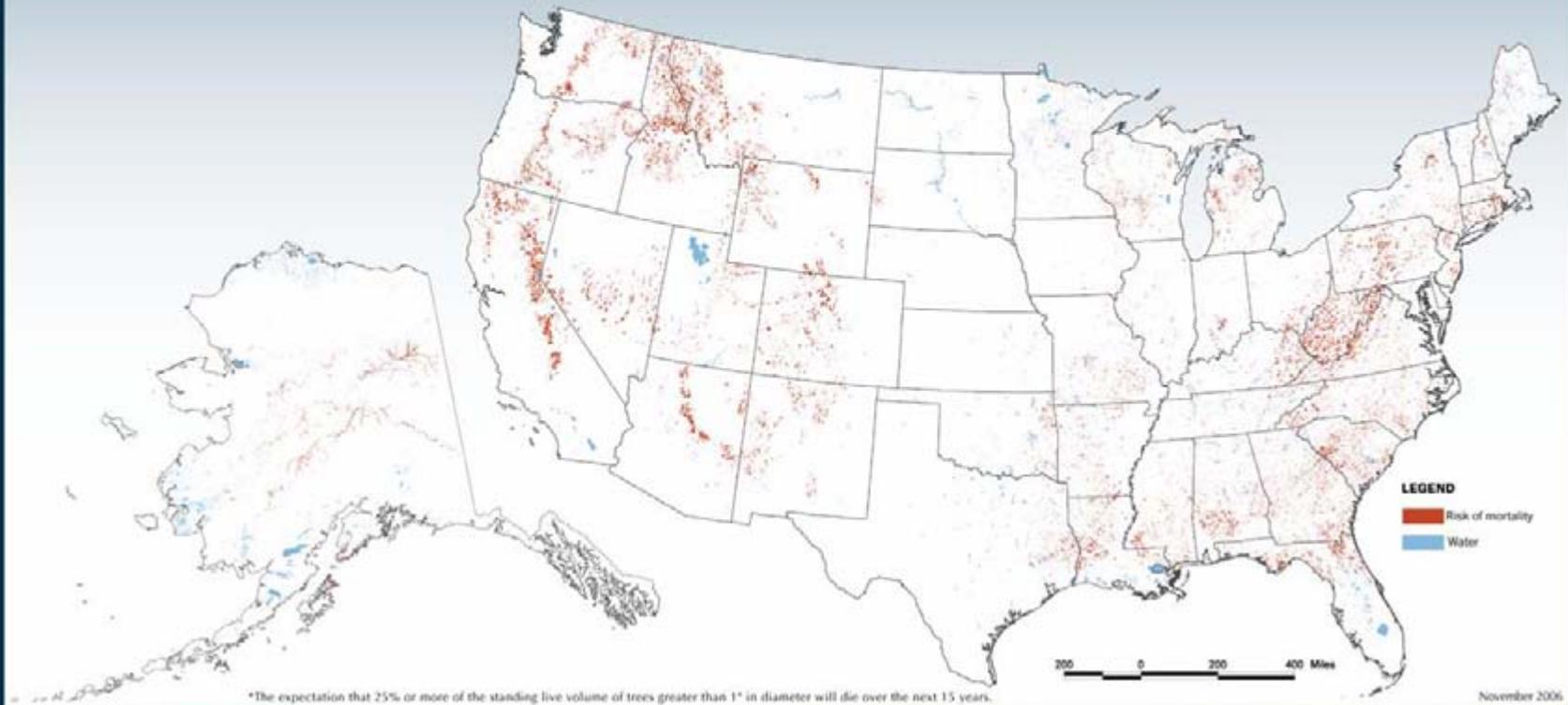
# National Insect and Disease Risk Map



## NATIONAL INSECT and DISEASE RISK MAP

### National 2006 Composite Insect and Disease Risk\* Map

Acres at risk: Approximately 58 million

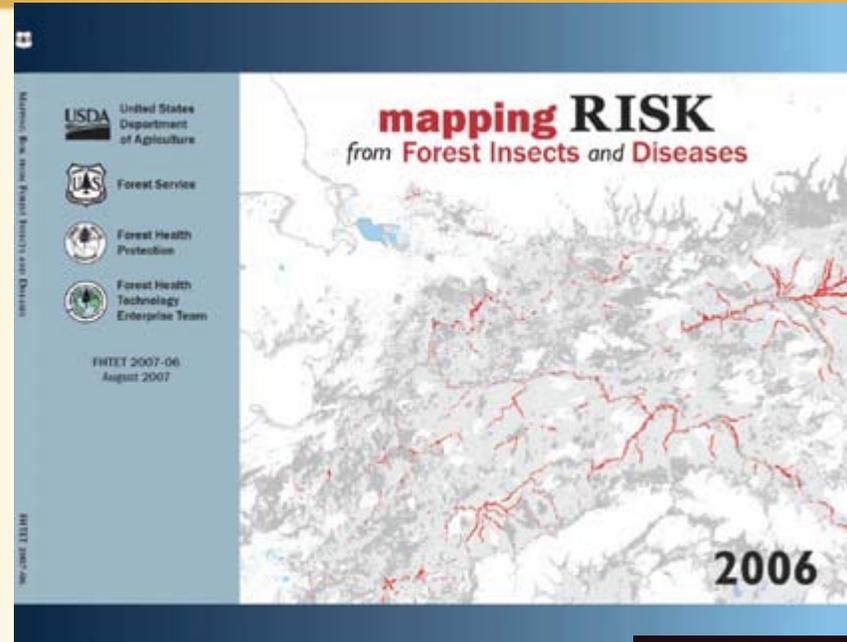


\*The expectation that 25% or more of the standing live volume of trees greater than 1" in diameter will die over the next 15 years.

November 2006

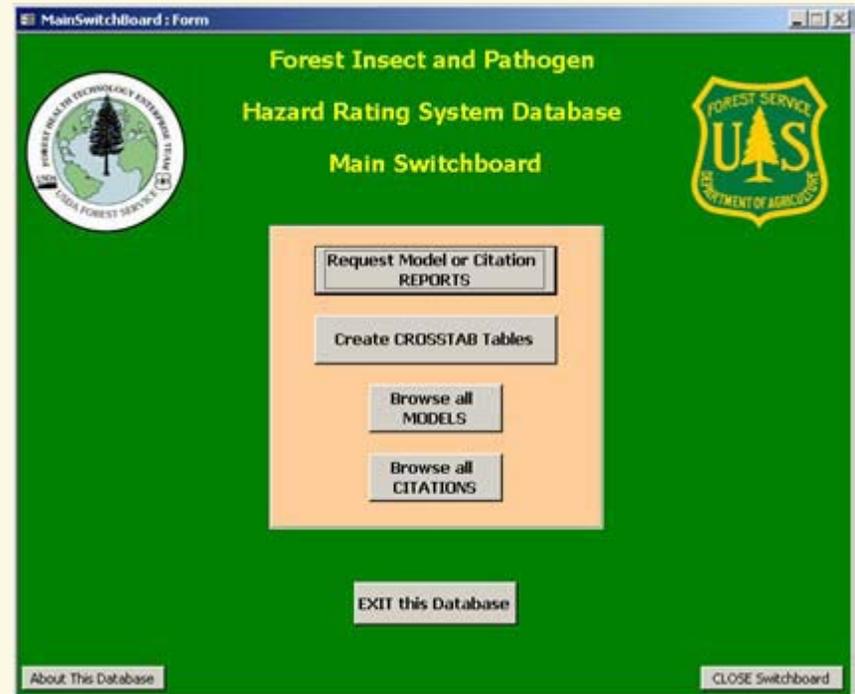
# National Insect and Disease Risk Map

- Final Report Published
- Website:  
<http://www.fs.fed.us/foresthealth/technology/nidrm.shtml>
- Chief's Honor Award for Natural Resource Stewardship
- Launching 2010 Risk Map Effort



# Rating System Database

- Access database
- 450 citations
- 250 available digitally as PDFs or online with URL
- 188 models from the NIDRM database
- Entries include agent and host application, independent and dependent variables, model type, geographic range





## Road To 2010 Risk Map

- National Oversight Team:
  - Involve partners
  - Overall project scope and goals
  - Approves work plans and timelines
  - Monitors progress
- Data Development Team:
  - Determine data needs
  - Ensure national consistency and accessibility
  - Construct core datasets
  - GIS support to Model Development Team
- Model Development Team:
  - Review models for consistency and data gaps
  - Identify current and future validation needs
  - Propose model improvements or development
  - Regional sub-teams for pest groups

## Budget Outlook

<b>Program Component</b>	<b>FY 2007 Allocated \$K</b>	<b>FY 2008 Allocated \$K</b>	<b>FY 2009 Proposed \$K</b>
<b>Federal Lands Survey</b>	<b>812</b>	<b>812</b>	<b>600</b>
<b>Cooperative Lands Survey*</b>	<b>2287</b>	<b>2131</b>	<b>1500</b>
<b>FHM Analysis</b>	<b>401</b>	<b>391</b>	<b>0</b>
<b>SOD Detection Surveys</b>	<b>420</b>	<b>426</b>	<b>100</b>
<b>EM Base Projects</b>	<b>701</b>	<b>700</b>	<b>500</b>
<b>EM Fire Plan Projects</b>	<b>575</b>	<b>486</b>	<b>0</b>
<b>Analysis &amp; Reporting-RTP</b>	<b>150</b>	<b>150</b>	<b>0</b>
<b>National Activities</b>	<b>235</b>	<b>92</b>	<b>0</b>
<b>TOTAL</b>	<b>5581</b>	<b>5188</b>	<b>2700</b>

\* Federal Share of 50/50 Cost Shared Program