

Addressing Insect Pests and Diseases Exacerbated by Climate and Land Use Change

Dr. Kerry O Britton

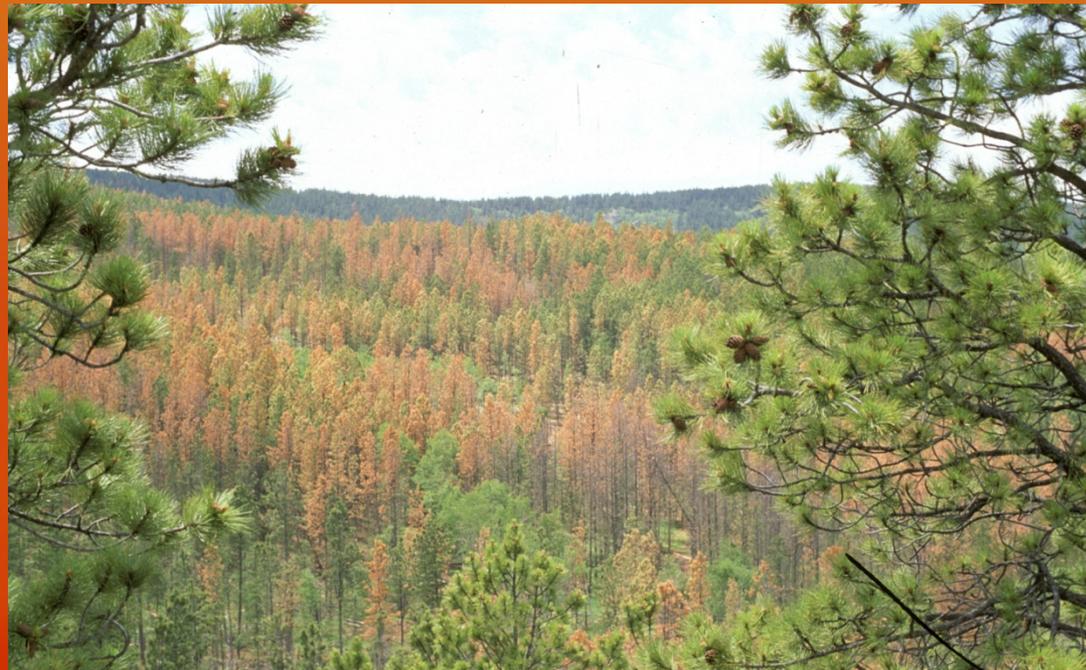
Forest Pathology Program Leader

For Research and Development

Dr. Bob Rabaglia

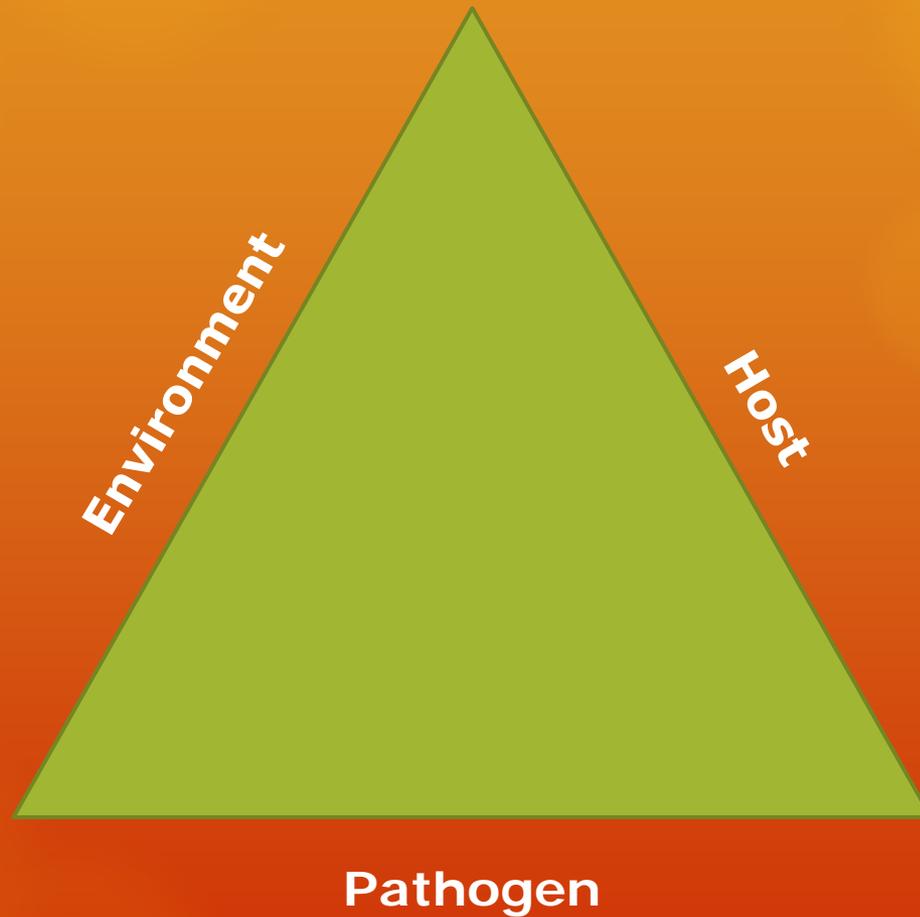
National Entomologist

For Forest Health Protection



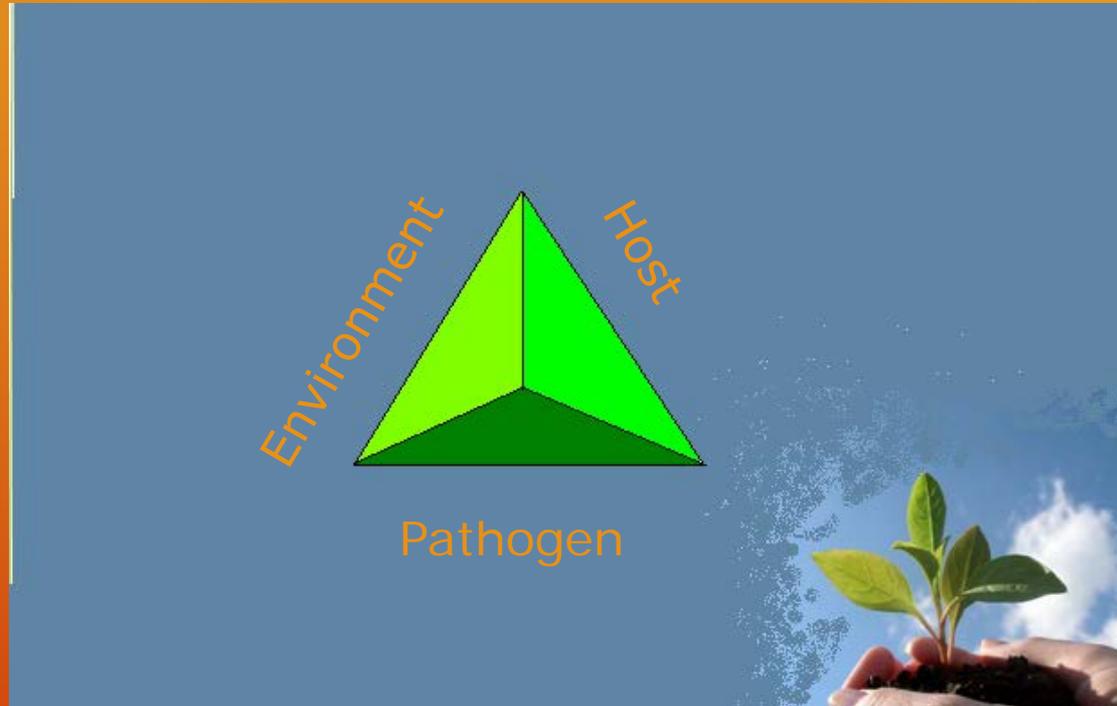
Climate and Land Use Patterns

DO Affect Forest Insect Pests and Diseases



PEOPLE Also

Affect Forest Insect Pests and Diseases



Climate change:

- Directly affects pest distribution, survival and reproduction
- Alters susceptibility of hosts
- Permits new invasive species to establish

Bark beetles

White pine blister rust

Swiss needle cast

Yellow cedar decline

Land Use Patterns:

Fire suppression can  bark beetles

Thinning can  root disease

Urbanization and Roads can  spread of invasives

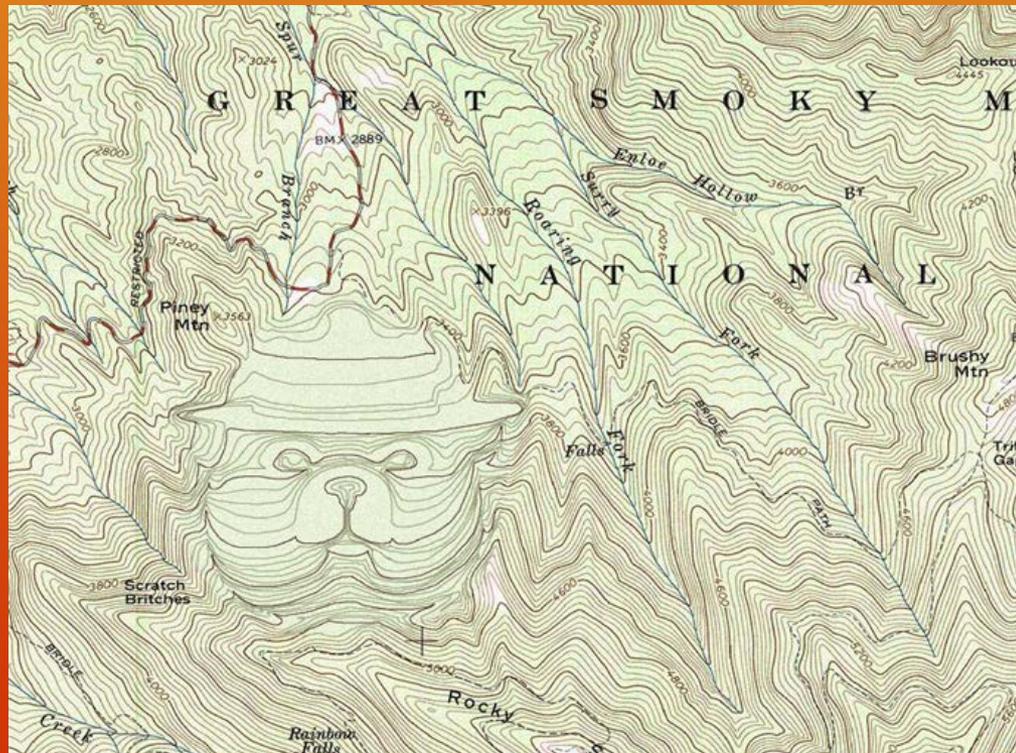
So what can we do about it?



Resiliency

- Enhance biodiversity
- Keep density below carrying capacity
- Pay attention to root disease!

Practice adaptive
Management



Traditional outreach methods:

Scientific publications (available on TreeSearch)

Field Days

State and Private Forestry, esp. Forest Health Protection

State Forestry Agency partners

Cooperative extension service

Forestry schools

NGOs

Research Stations webinars

Online tools:

- Climate Change Resource Center – www.fs.fed.us/ccrc
- ForWarn – vulnerability assessments
- TACCIMO – climate predictions and management options

How do we work together?
Mostly focused on single issue....

Some model partnering systems:

Greater Yellowstone Coalition

California Oak Mortality Taskforce

Western Bark Beetle Technical Work Group

Yellow Cedar Work Group

Continental Dialog

National Agroforestry Center

Monitoring on the Margins

Forest Health Protection Programs

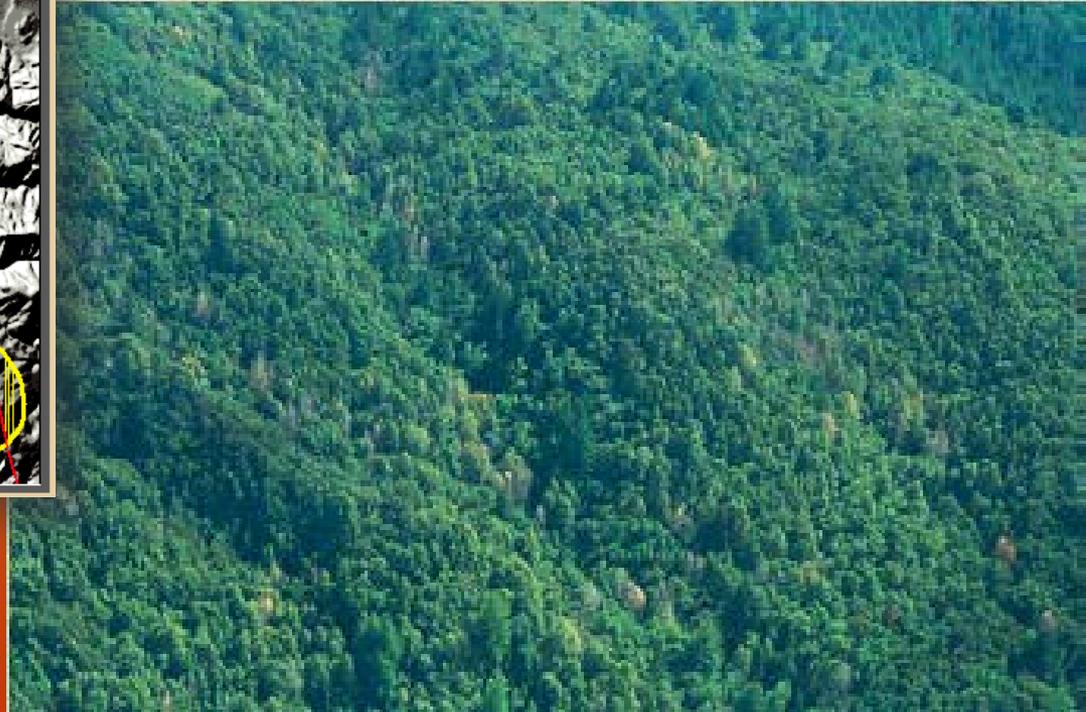
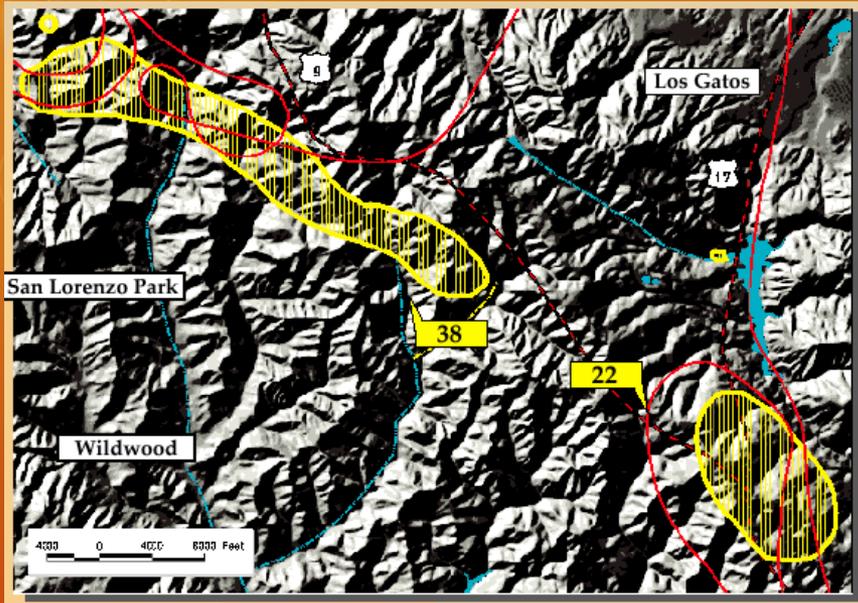
- **Prevention**
- **Suppression**
- **Restoration**
- **Survey & Monitoring**
- **Technology Development**
- **Pesticide Use**

Forest Health Protection Programs

- **Prevention**
- **Suppression**
- **Restoration**
- **Survey & Monitoring**
- **Technology Development**
- **Pesticide Use**

Aerial Detection Surveys

400 million acres flown annually



Forest Health Protection website

<http://foresthealth.fs.usda.gov/portal>

FHTET Pest Portal - Windows Internet Explorer provided by USDA Forest Service

http://foresthealth.fs.usda.gov/porta

File Edit View Favorites Tools Help

Favorites Google My Yahoo! WO FSWeb Home Page FS...

FHTET Pest Portal

FHP Mapping & Reporting Home | FHP Internet | FHTET Internet | Contact Us | Login

Explore Forest Insect and Disease Conditions in the United States using Forest Health Protection Mapping and Reporting Tools.

**WINTER MOTH
INVADES
NEW ENGLAND**

Photograph by: Milan Zubrik, Forest Research Institute - Slovakia

Headlines

- Fall Defoliators in Rhode Island**
Drought and fall defoliation picked up by our Disturbance Mapper!
- Sudden oak death in California**
Wet spring causes increased damage
- Forest Mortality Continues to Hit East Texas**
Mortality continues in East Texas forests during 2012 from *Ips* bark beetles and recent drought.
- Emerald Ash Borer Expands Into New Areas**
Emerald Ash Borer expands into new areas of Virginia - large areas of trees killed along the Staunton (Roanoke) River.
- Winter Moth In the Northeast Area**
Another Non-Native Defoliator for the Northeast.
- Pest Trend Factsheets**
FHTET has compiled Pest Trend Factsheets

Applications

Welcome to the US Forest Service, forest insect and disease reporting portal. The applications below access a myriad of state, county and local level forest insect and disease conditions data. In addition we offer a window into near real time forest disturbance information collected from space. Data input applications are restricted to cooperators with specific training and expertise. If you need access to an application not listed below please contact us.

VIEW PEST CONDITIONS
[Forest Pest Conditions](#)
Explore county level maps of major forest insect and disease conditions throughout the United States.

VIEW DATA SUMMARIES
[Data Summaries](#)
Review, query, and download tables with acre summaries from the Insect and Disease Survey (IDS) database.

EXPLORE INSECT AND DISEASE MAPS
[IDS Explorer](#)
Explore and query geospatial data from the Insect and Disease Survey (IDS) database, print high-quality 1:100K quad maps, and export data.

SEARCH REPORTS FOR ALIEN FOREST PESTS
[AFPE Database](#)
Track state and county level reports of non-native forest insect and diseases.

VIEW FOREST DISTURBANCE
[Forest Disturbance Mapper](#)
View, threshold, and download recent forest disturbance maps for use in targeted detection of forest insects and disease.

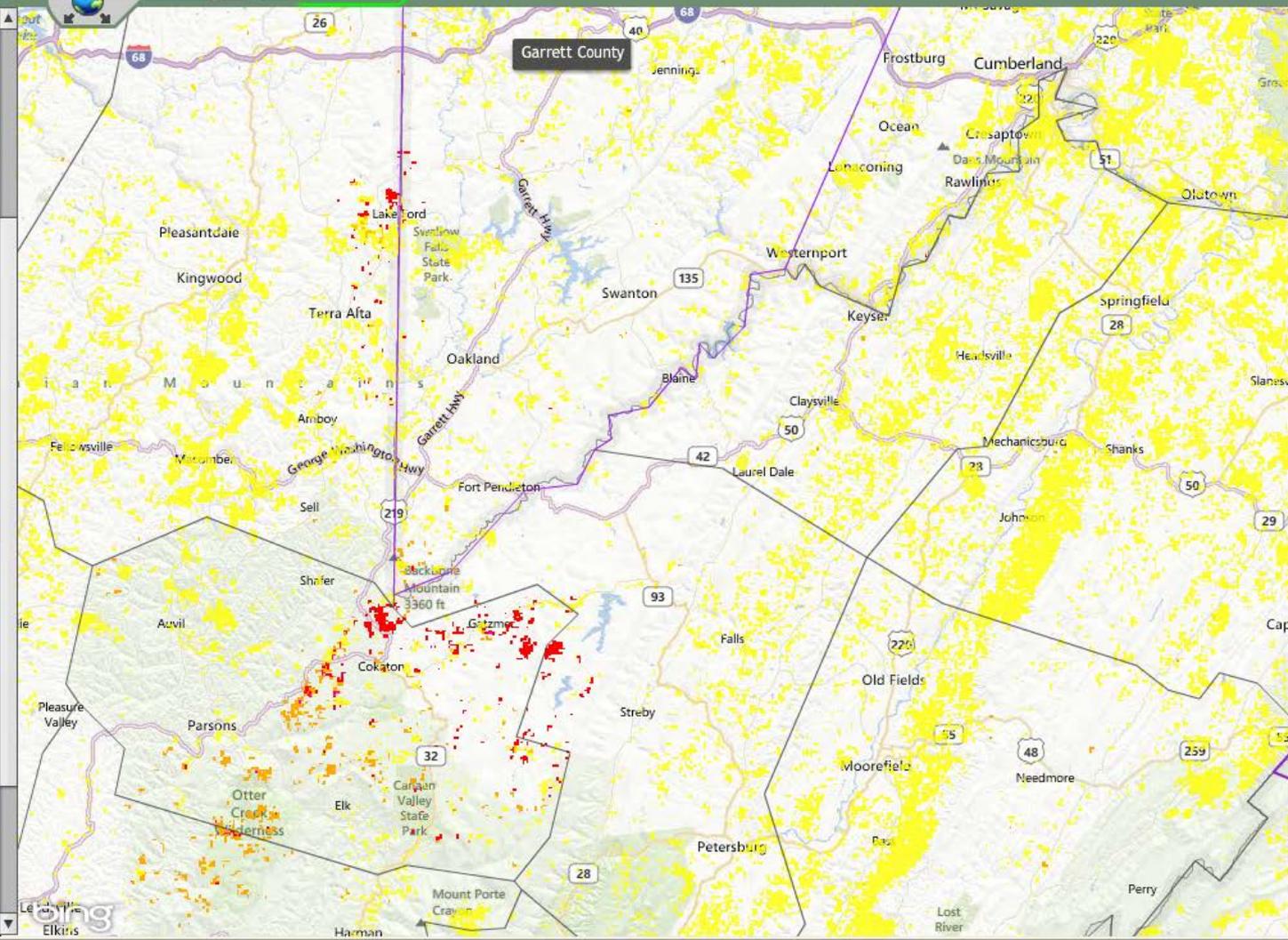
Done

start | Inbox - brabaglia@fs... | FHTET Pest Portal - ... | Climate and Land Use... | Trusted sites | 100% | 8:36 AM

FHTET-RSAC EFETAC-NASA
 Select Disturbance Composite
 May 15 - Apr 29 (5yr bd)
 Disturbance Composite
 1 | Threshold | 226
 Use arrow keys for finer threshold control
Step 3 (Optional)
 Digitize Disturbance Areas

Assessment Layers

Insect / Disease Survey (IDS)
 Mortality
 Defoliation
 Discoloration
 Other Damage
 Old Mortality
 IDS
 IDS Activity by Year: 2011
 Fire Perimeters 2007-2012
 Drought 3Year



Ground Surveys

- Visual detection surveys
- Pest-targeted surveys



Mountain Pine Beetle

Forest insects and pathogens that research has helped develop management tools:

- Asian longhorned beetle
- Emerald ash borer
- Thousand cankers disease
- Sudden oak death
- Gypsy moth



Forest Health Protection Methods Development mechanisms:

- Special Technology Development Program(STDP)
- Forest Service Pesticide Impact and Assessment Program (FSPIAP)
- Biological Control of Plants
- Pest specific projects

GAO Audit

Improvements in Delivery of
Research Results

Can Help Ensure That

Benefits of Research Are
Realized