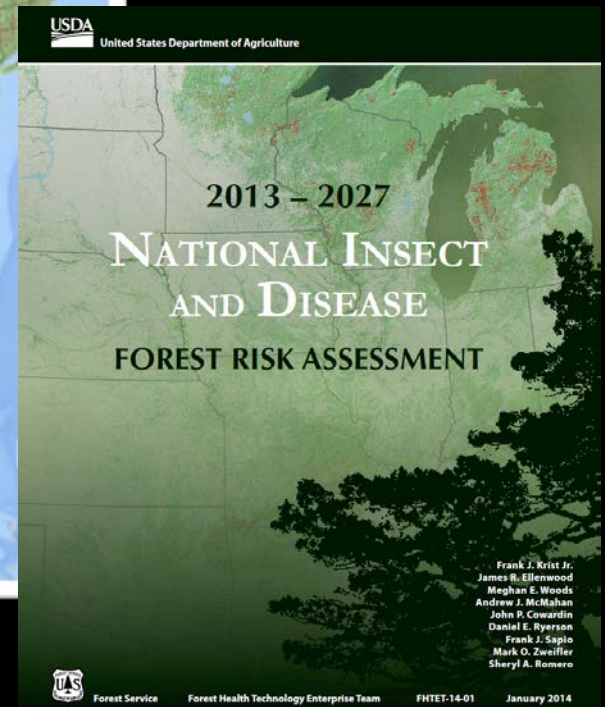
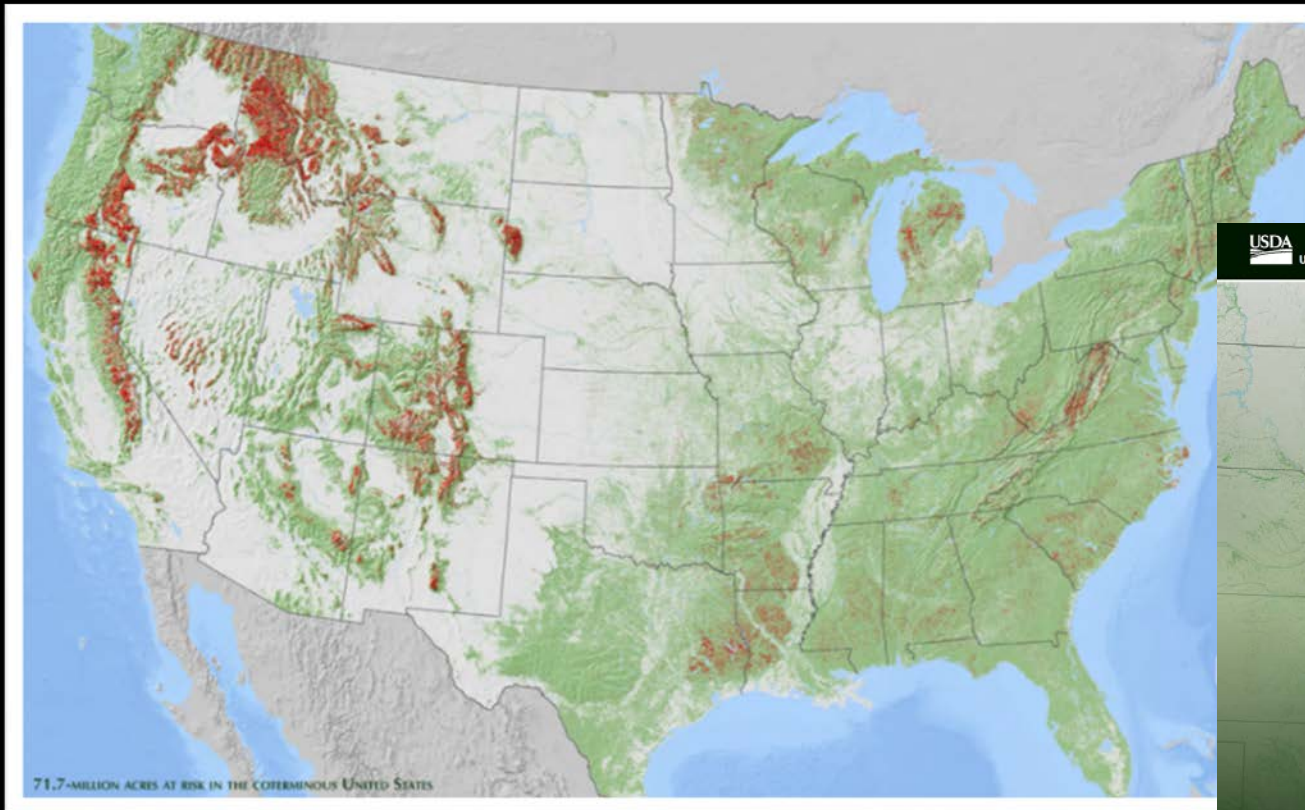




# Creation & Application of the National Insect & Disease Risk Map

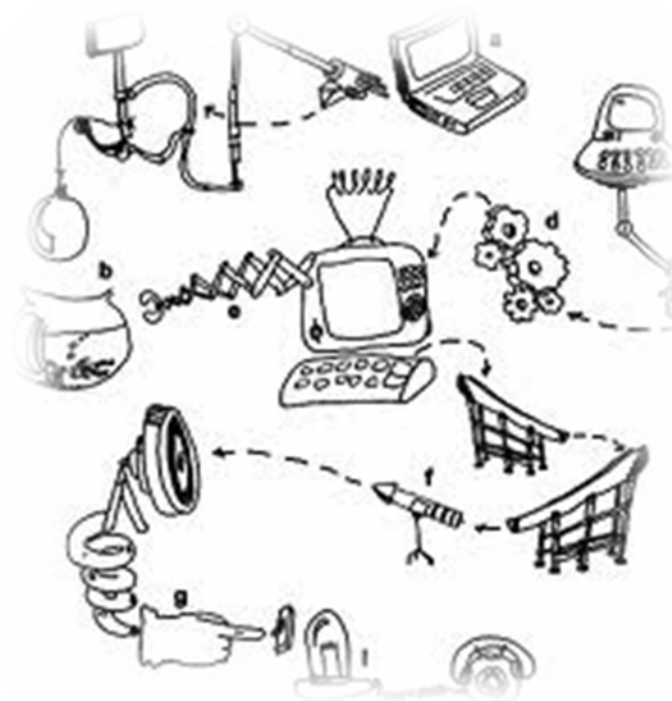


# National Insect & Disease Forest Risk Assessment & Map

## What is it?

Nationwide assessment of the risk for future tree mortality

Expert input  
& validation  
from nearly  
**150 partners**



Repeatable and  
credible  
models of  
severe forest  
mortality  
caused by  
insects and  
diseases

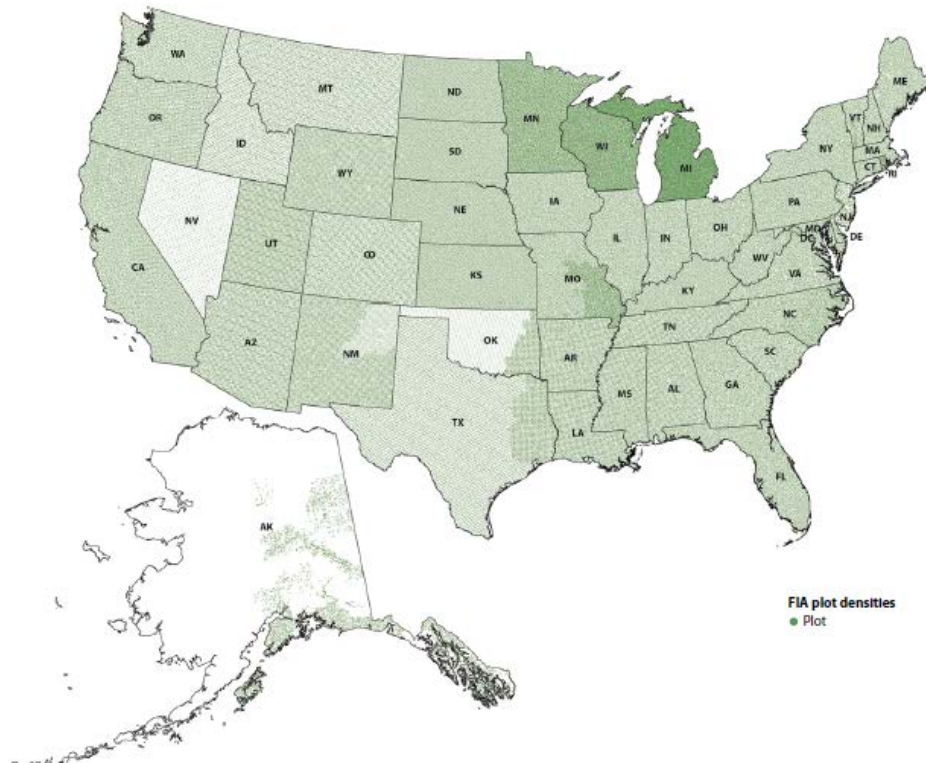
Over **748 Pest & Pathogen Models** in the NIDRM database – **186 published**



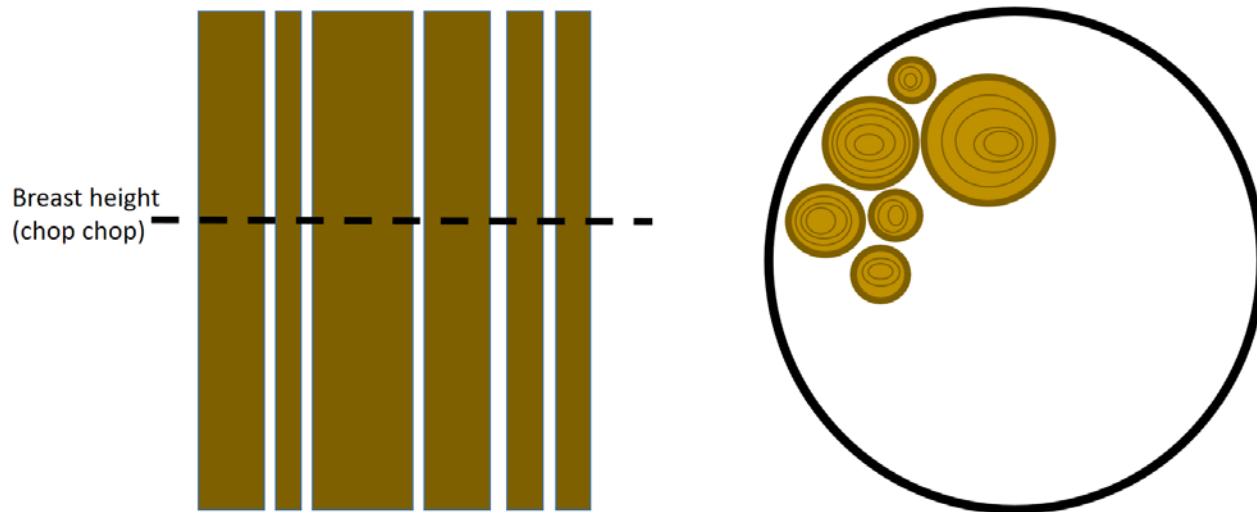
# National Insect & Disease Forest Risk Assessment & Map

## Individual tree host model:

- USDA Forest Service Forest Inventory & Analysis
- National Land Cover Database
- USDA National Resource Conservation Service  
Soil Survey Geographic Databases - SSURGO, STATSGO2
- National Elevation  
Dataset
- National Climate  
Data Center



## Basal area



# National Insect & Disease Forest Risk Assessment & Map

## Model criteria:

Insects or diseases may be influenced by:

elevation

aspect

annual temperature

tree age

tree diameter

host density

Maximum mortality to host (%)

52 citations for **mountain pine beetle** in the Interior West

33 citations combined for **root diseases** in the Interior West



# National Insect & Disease Forest Risk Assessment & Map

## Mountain pine beetle hazard rating criteria for ponderosa pine:

Stand risk value = SS x DBH x SD

<u>Stand risk value</u>	<u>Hazard rating</u>
2-6	Low
8-12	Moderate
18-27	High

$2 \times 3 \times 2 = 12$   
Moderate hazard for attack

### Stand Structure (SS)

Single-story = 3

2-story = 2

multi-storied = 1

### Average diameter (DBH)

>10 inches = 3

6-10 inches = 2

< 6 inches = 1

### Stand density (SD)

> 150 ft<sup>2</sup>/ac = 3

80-150 = 2

< 80 = 1

## Defining RISK

potential for mortality due to an insect or disease

*Risk...the expectation that, without remediation, at least 25% of standing live basal area greater than one inch in diameter will die over a 15-year time frame (2013 to 2027) due to insects and diseases.*

## Why was it created?

- Provide a national view for Congress

2012 Assessment for Continental US:

- 1.2 billion acres with trees
  - 72 million acres in at risk condition
- Strategic, broad-scale planning tool that can be used for administrative activities and work planning



## Who is using it?

- States, original proposed areas for designation under 2014 Farm Bill

(H.R. 2642-268; Sec. 8202 Insect and Disease Infestation;  
Sec. 602 Designation of Treatment Areas)

- National Forests
  - Forest Plan Revisions
  - National models applied at finer scales
- Scale limitations
  - 240 meter scale / 1 pixel ~14 acres
  - 6<sup>th</sup> level USGS sub-watershed (10,000-40,000 acres)

## Why is this important to you?

- Learn about major pests affecting local forests
- Active participation in Forest Service collaborative groups
- Provide input to Forest Plan revisions

# Validation of NIDFRA

## 2002-vintage susceptibility data vs the 1999-2015 cumulative aerial survey MPB data

### NIDFRA and ADS Data Association:

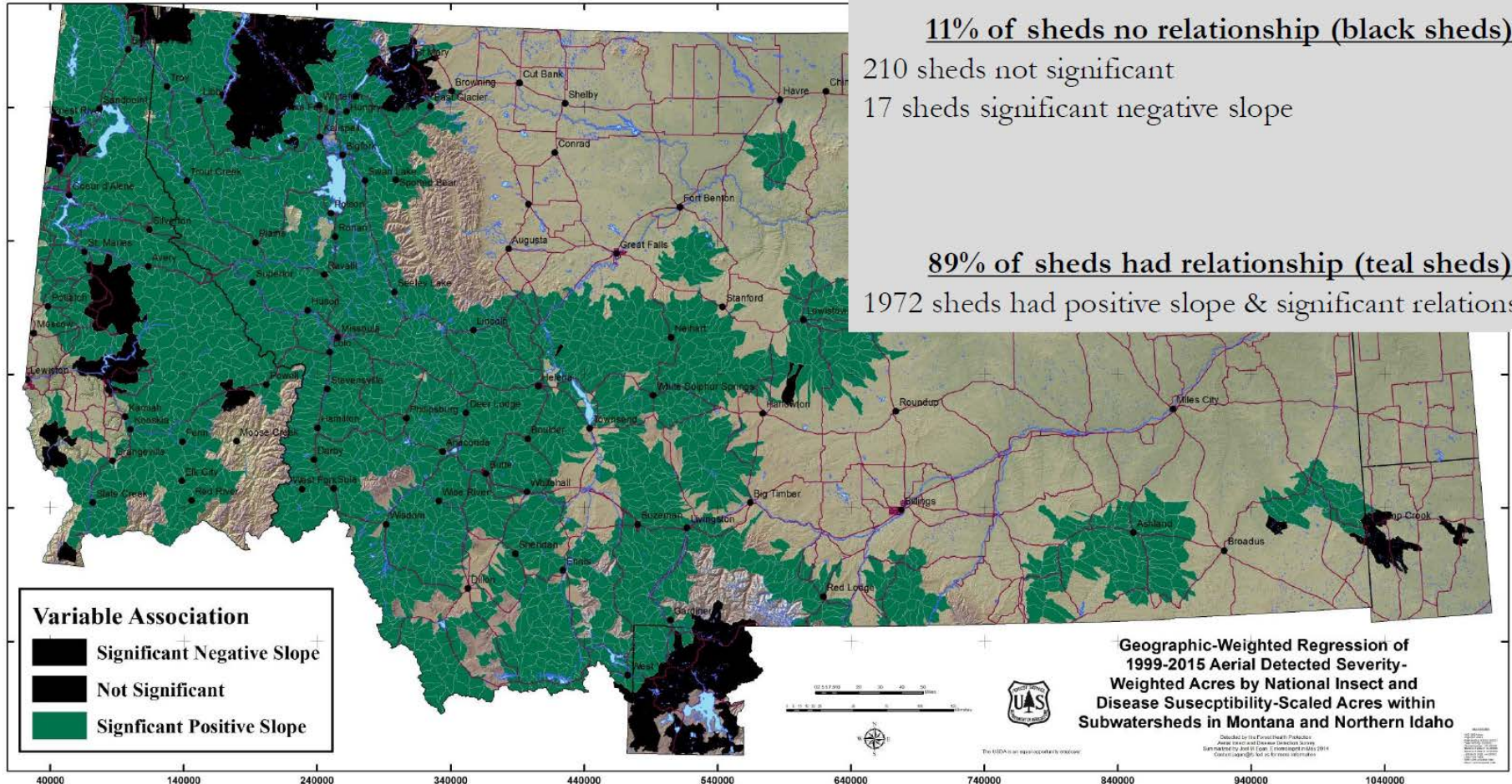
11% of sheds no relationship (black sheds)

210 sheds not significant

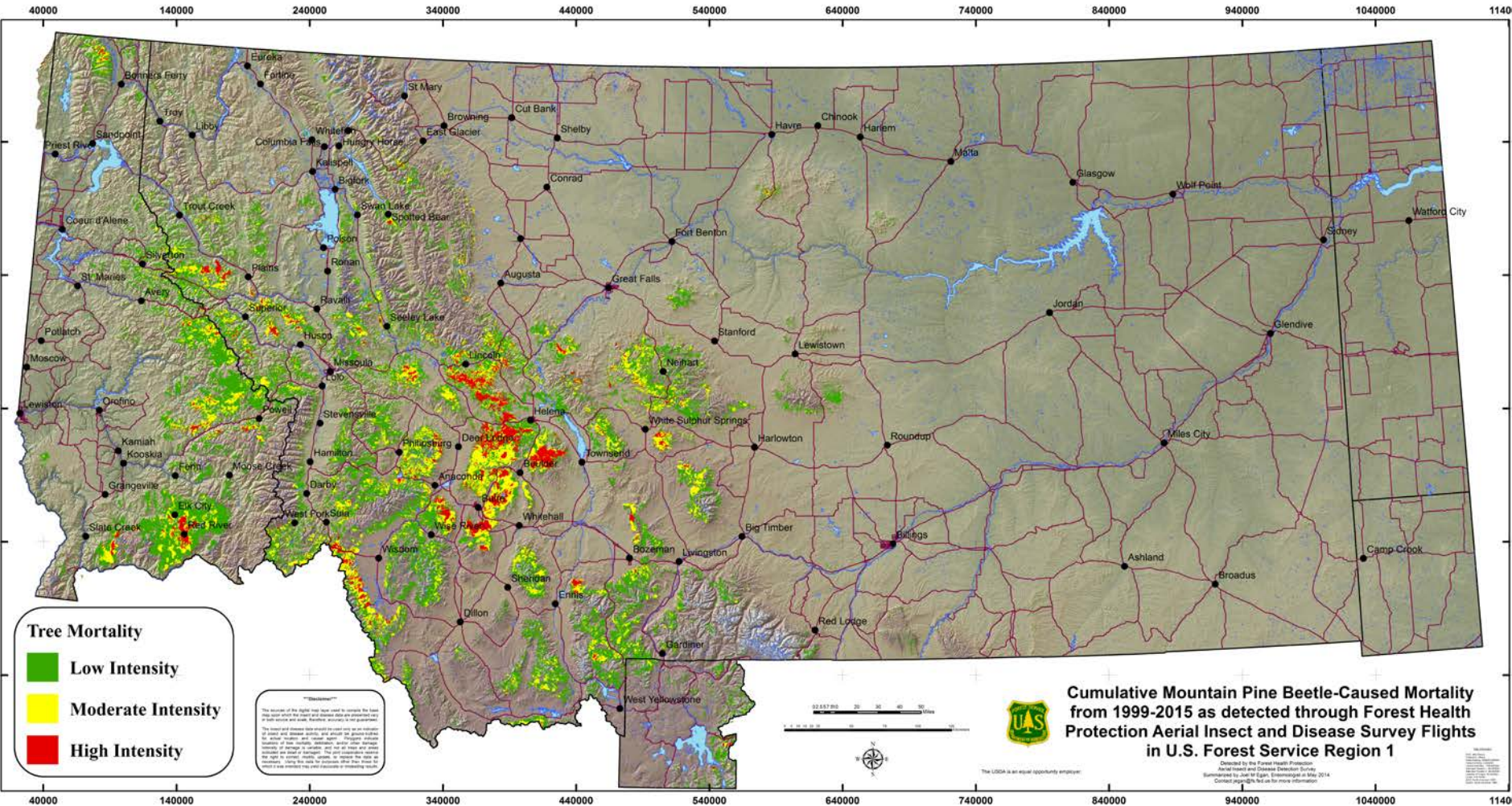
17 sheds significant negative slope

89% of sheds had relationship (teal sheds)

1972 sheds had positive slope & significant relationship



# Validation of NIDFRA



Joel Egan, 2016, unpublished

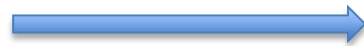


## How can you access the data?

Forest Health Protection: GIS & Spatial Analysis

<https://www.fs.fed.us/foresthealth/applied-sciences/mapping-reporting/gis-spatial-analysis/national-risk-maps.shtml>

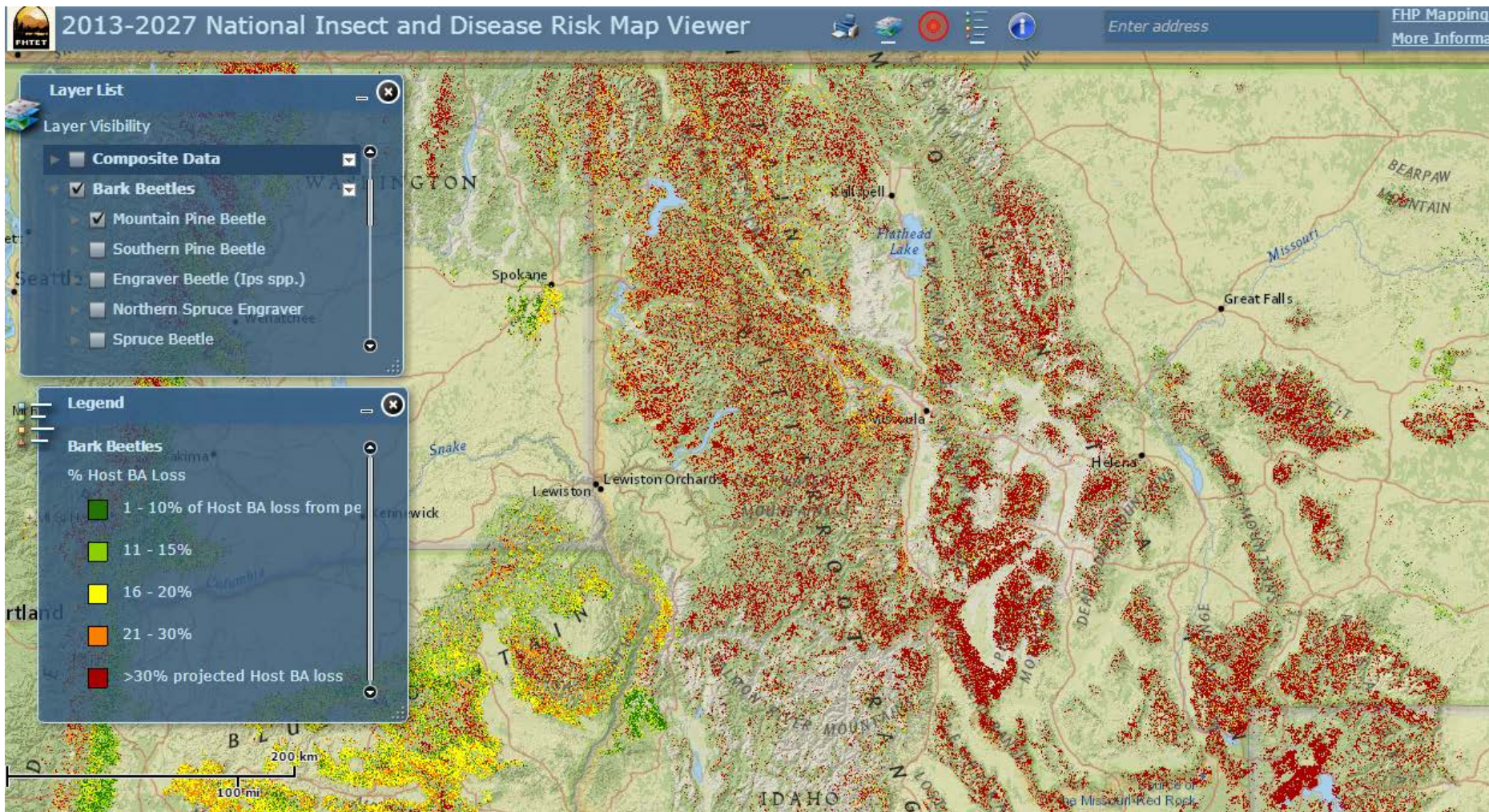
## On-line data viewer- Damage Agents



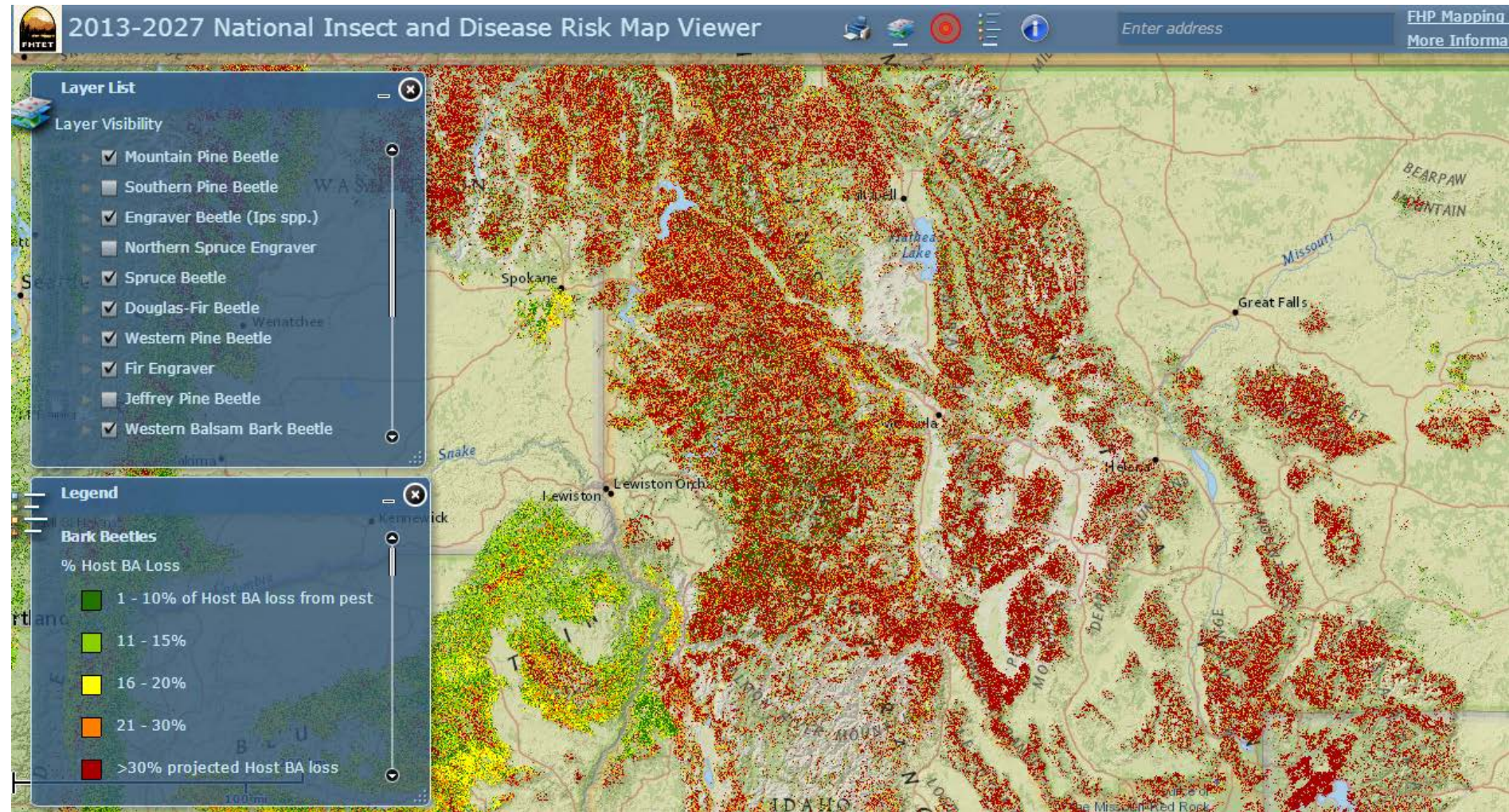
### Related Links

- 📌 National Insect & Disease Risk Map Viewer
- 📌 National Forest Damage Agent Range Maps
- 📌 Southern Pine Beetle County Hazard Rating Maps

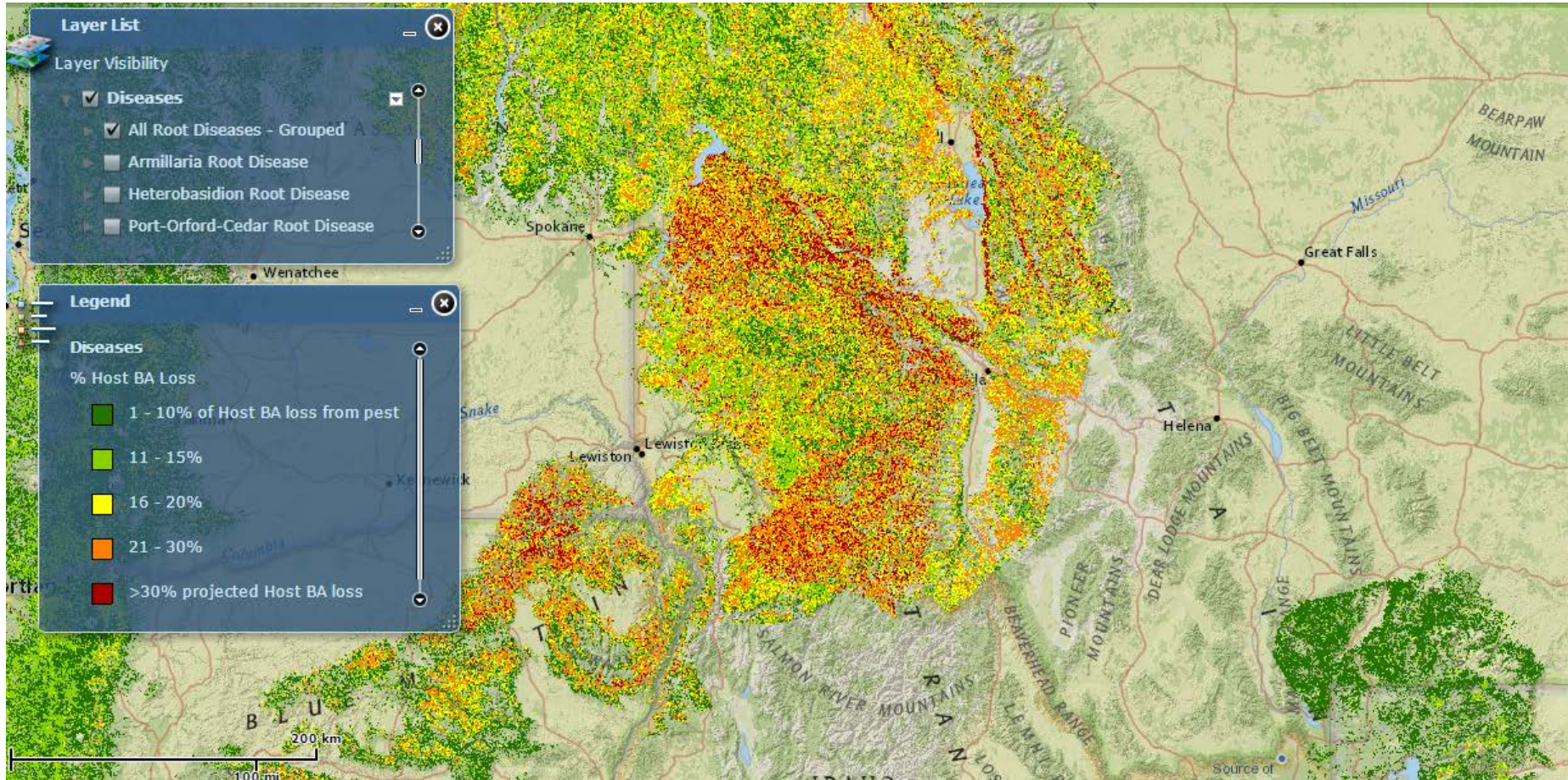
# National Insect & Disease Map – Mountain Pine Beetle



# National Insect & Disease Map – All Bark Beetles

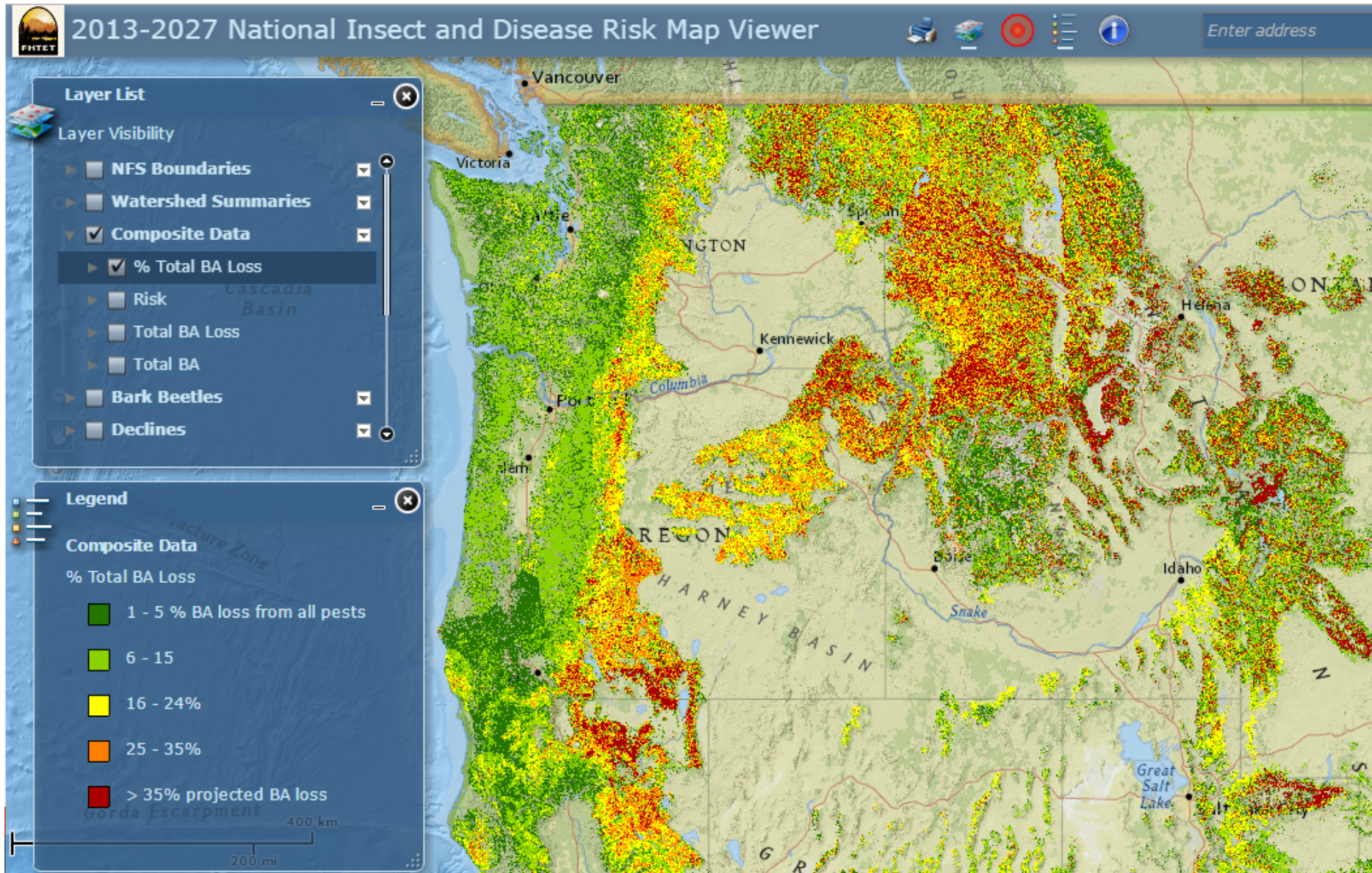


# National Insect & Disease Map – All Root Diseases





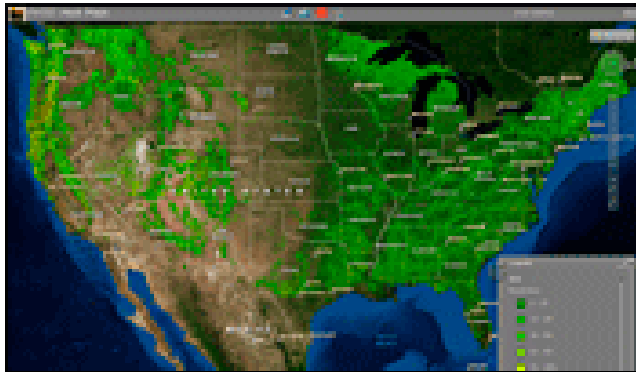
# National Insect & Disease Map – All Damage Agents



## How can you access the data?

Forest Health Protection: Pest Portal

<https://foresthealth.fs.usda.gov/host/>



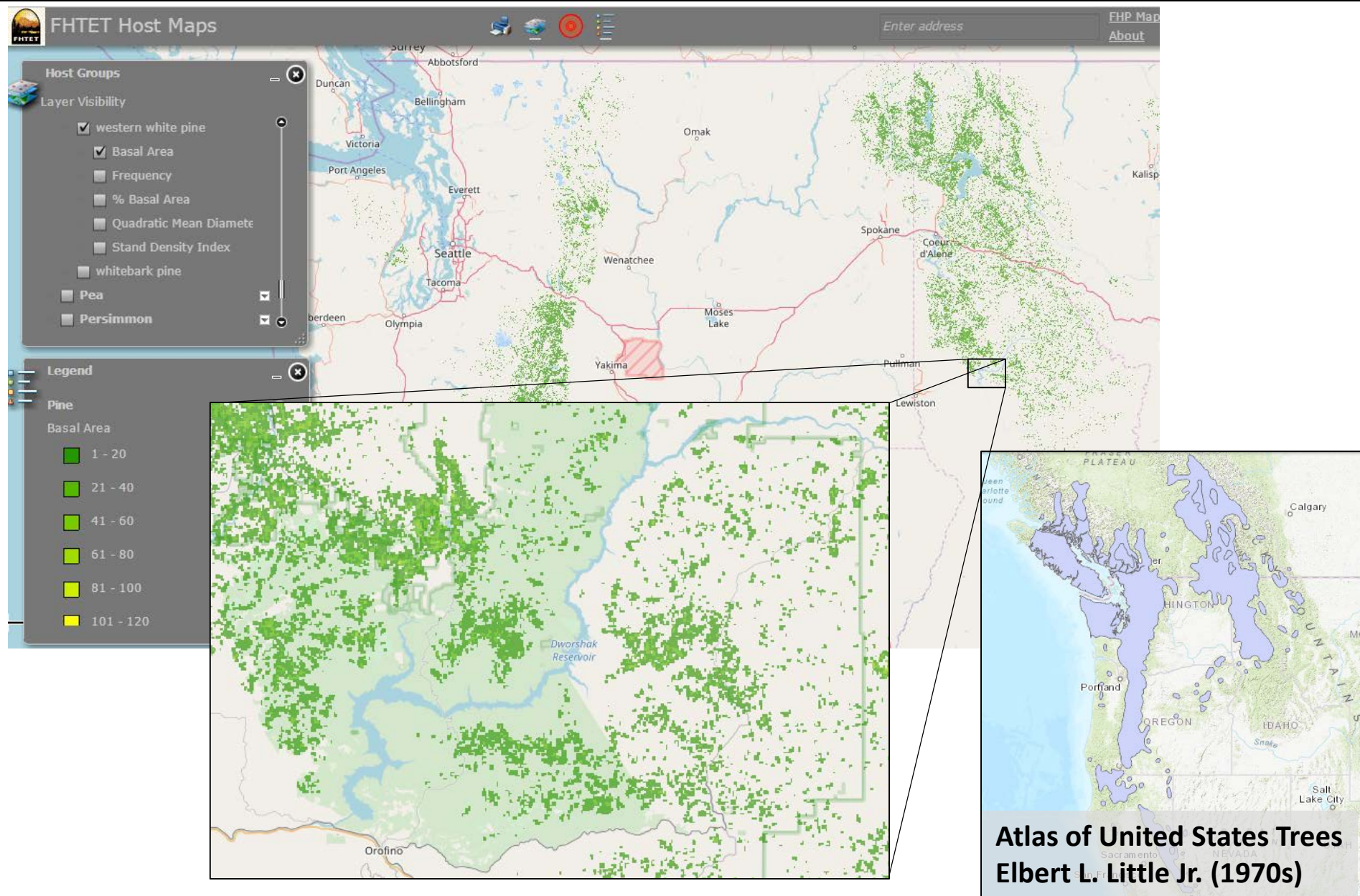
On-line data viewer

**VIEW PEST HOST MAPS**

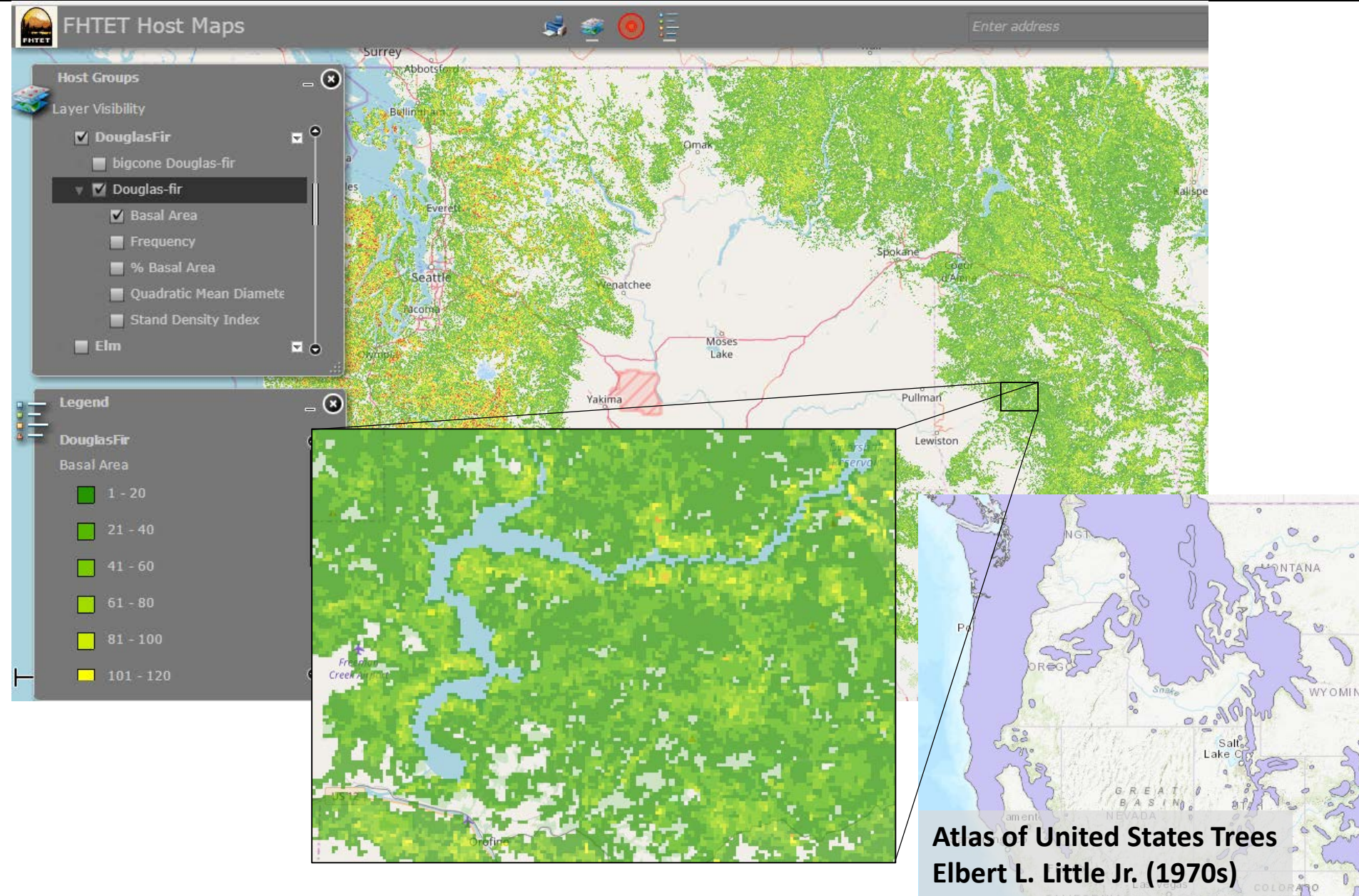
**[Individual Tree Species  
Parameter Maps](#)**

View individual tree species parameter layers that were generated for use as base data for the NIDRM 2013-2027 product.

# National individual tree species maps – Western White Pine



# National individual tree species maps – Douglas Fir















## How can you access the data?

Forest Health Protection: GIS & Spatial Analysis

<https://www.fs.fed.us/foresthealth/applied-sciences/mapping-reporting/gis-spatial-analysis/national-risk-maps.shtml>

- Download data

### GIS Data Downloads

CONTIGUOUS US	PREVIEW	ZIP
Hazard by agent-Eastern pests	 32 KB	 295 MB
Hazard by agent-Western pests	 32 KB	 213 MB
Hazard by agent - Pests that span L48	 32 KB	 140 MB
Composite hazard from all pests	 13 KB	 97 MB
Hazard by host tree species	 36 KB	 181 MB
Treed area, Total basal area	 13 KB	 87 MB

# Questions

