



# Invasive Forest Pests: Threats to Oregon

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Forest Health in Oregon: State of the State 2018  
February 28, 2018, Corvallis



**Oregon Department  
of Forestry**

*Promoting and Practicing  
Sustainable Forestry*

# What is an invasive species?



- *Non-native in origin*



Native

Non-native

Hypothetical community



# What is an invasive species?

- *Non-native in origin*
- *A pest (competes with humans for resources)*



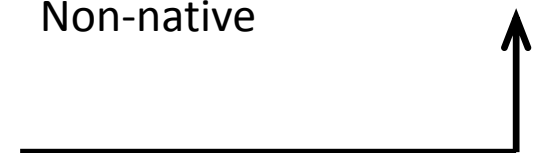
Native



Non-native



Hypothetical community





# What are invasive species?

- *Non-native in origin*
- *A pest (competes with humans for resources)*
- *Catastrophic to environment/economies*



Native

Invaders

Non-native



Hypothetical community



# How do forest invasive species get here?

- 1. Live plant trade (~70% of species)
- 2. Wood packing material (~25% of species)

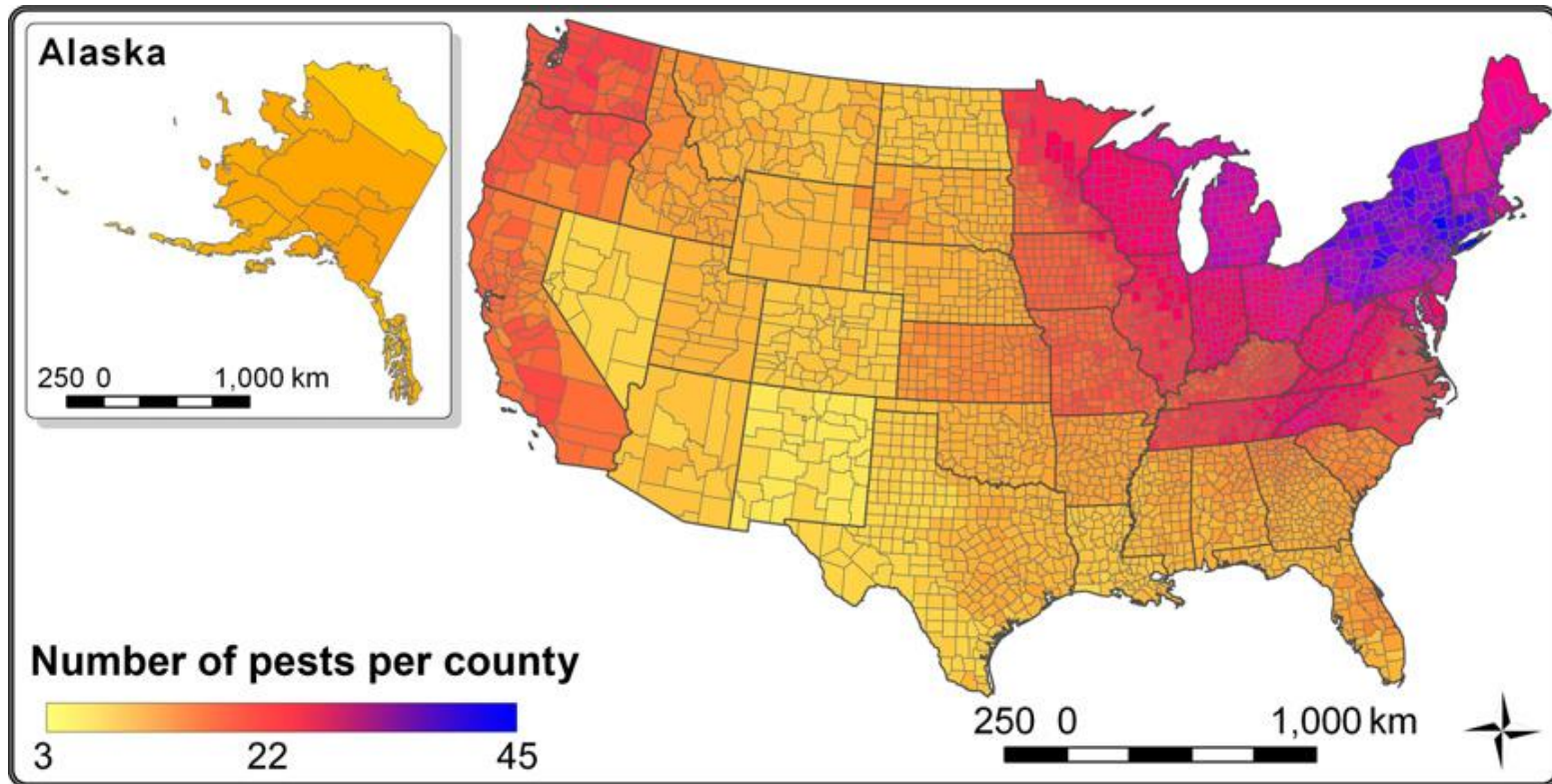


REVIEWS REVIEWS REVIEWS

## Live plant imports: the major pathway for forest insect and pathogen invasions of the US

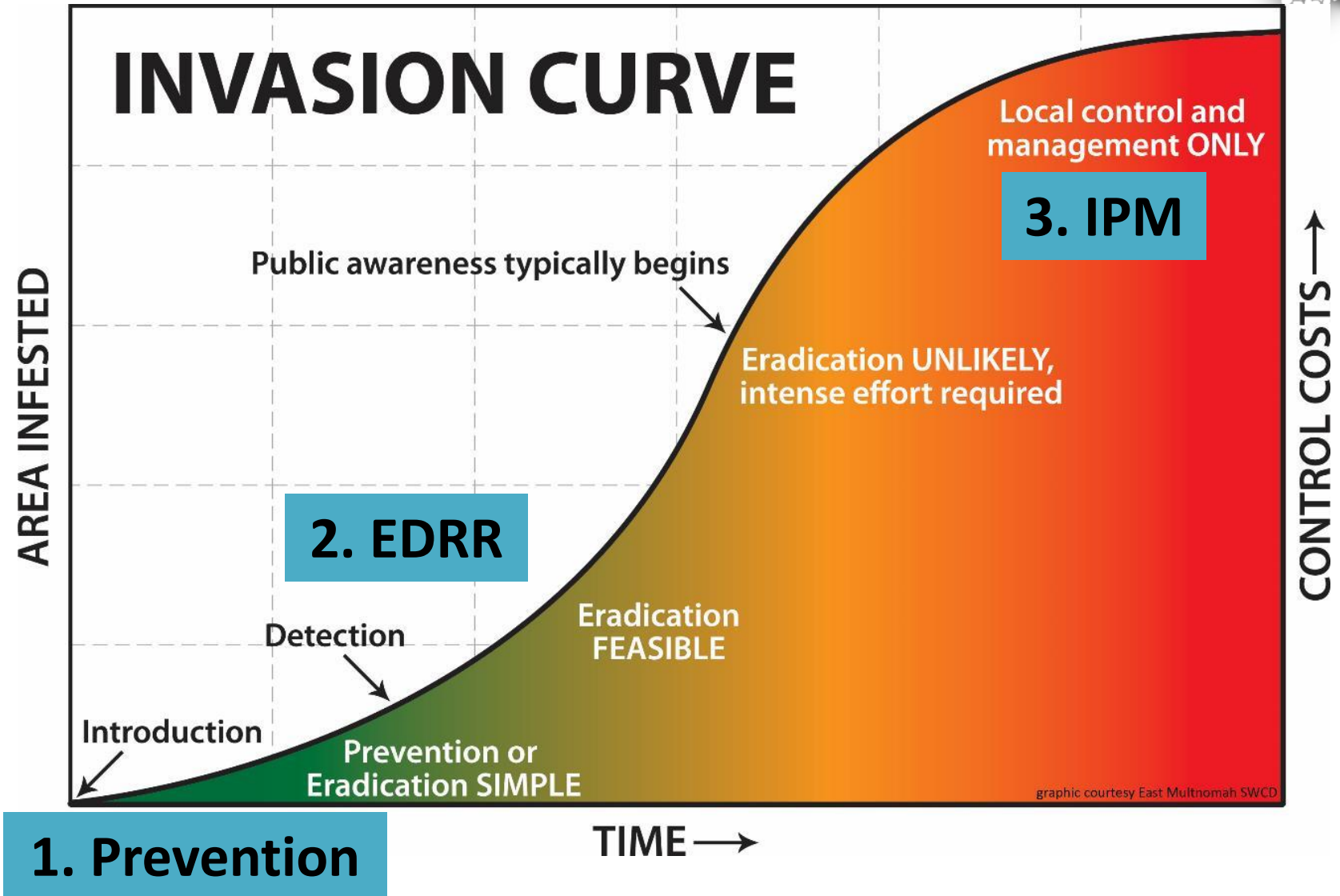
Andrew M Liebhold<sup>1\*</sup>, Eckehard G Brockerhoff<sup>2</sup>, Lynn J Garrett<sup>3</sup>, Jennifer L Parke<sup>4</sup>, and Kerry O Britton<sup>5</sup>

# Distribution of exotic forest pests



- Over 450 non-native forest insect species are established in U.S. (Liebhold et al. 2013)

# What can we do about invasive species?



College of Forestry

## Oregon Forest Pest Detectors

Interagency  
cooperation!

Asian Longhorned Beetle

## Main menu

Home

Course Information

Take the Course

Report a Find

The Pests

Spreading the Word

Additional Resources

Partners

- Goal: Train professionals how to identify key invasive pests
- Early detection = better chance of eradication or containment



# Oregon Forest Pest Detectors



Six online modules – 1.5 hour total:

1. Invasive species overview
2. Emerald Ash borer
3. Asian Longhorn beetle
4. Goldspotted oak borer
5. Asian gypsy moth
6. Reporting invasive species



For more information or to take the free class,  
<http://pestdetector.forestry.oregonstate.edu/>

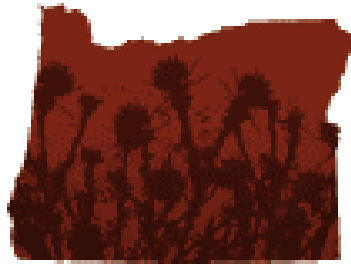
# OFPD Field Courses



Students test their knowledge from online, face-to-face workshops.

For more information or to take the free class,  
<http://pestdetector.forestry.oregonstate.edu/>

# To report an invasive species:



## **Oregon** Invasive Species Online Hotline

[Oregoninvasiveshotline.org](http://Oregoninvasiveshotline.org)

### Report an Invader

If you spot a potential invasive species in Oregon, use our online form to report it. Or call our toll-free number 1-866-INVADER.

**Report Now**

[Tips for reporting >>](#)



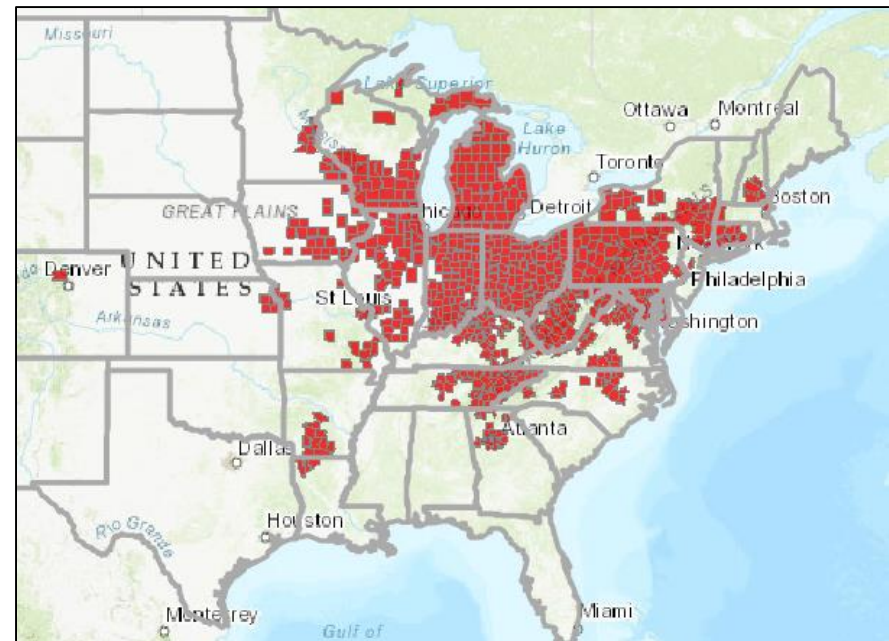
# Emerald Ash Borer (EAB)



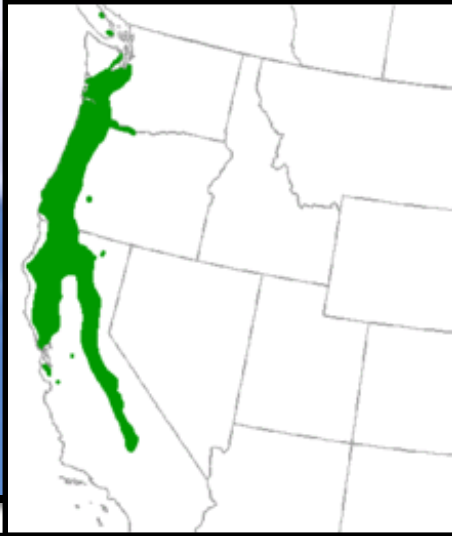
- First detected in U.S., 2002
- 100+ million trees killed in 30 states since 1990s
- Several ash species at risk
- Ecosystem effects



EAB in the U.S.



Oregon Ash – a widespread and common tree in Oregon, California, and Washington.





# Oregon Emerald Ash Borer Risk Map



## Oregon Campgrounds

### Risk Sites

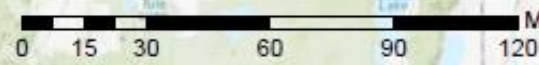
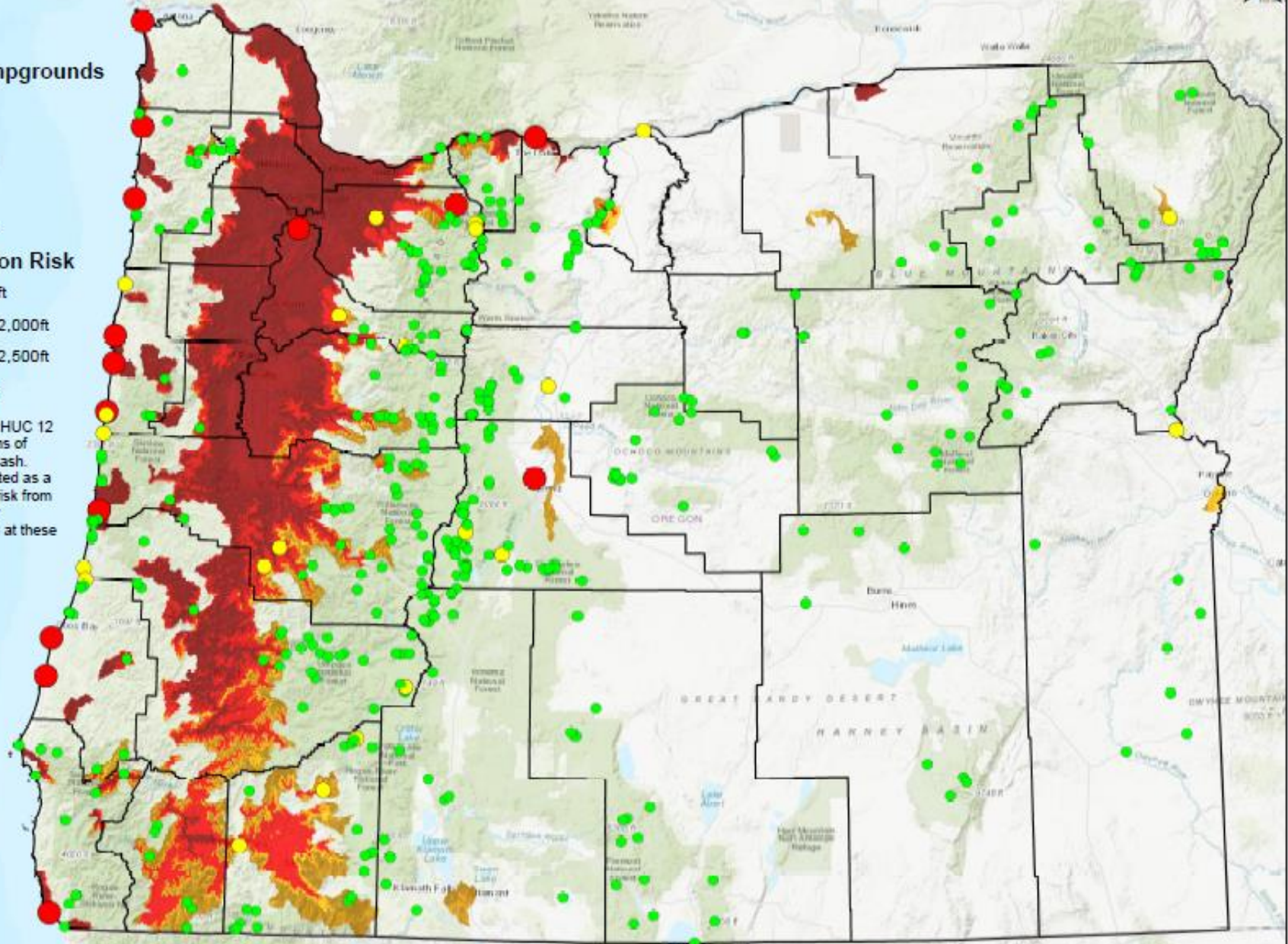
- 500 +
- 100-500
- 0-100

Counties

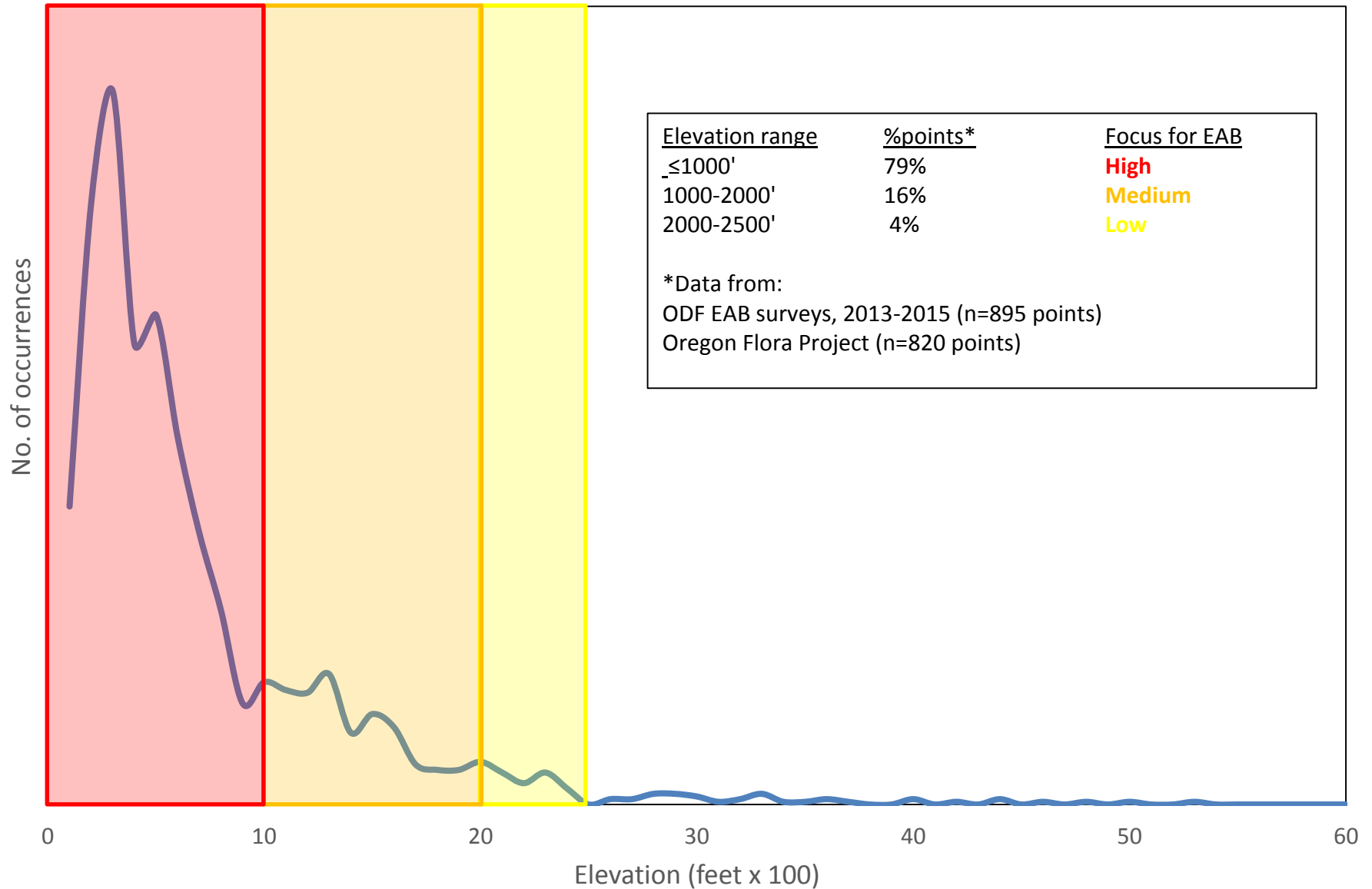
### EAB Elevation Risk

- 0 - 1,000ft
- 1,000ft - 2,000ft
- 2,000ft - 2,500ft
- > 2,500ft

Representation of HUC 12 watershed locations of Oregon and other ash. Elevation is indicated as a representation of risk from EAB due to higher populations of ash at these elevations.



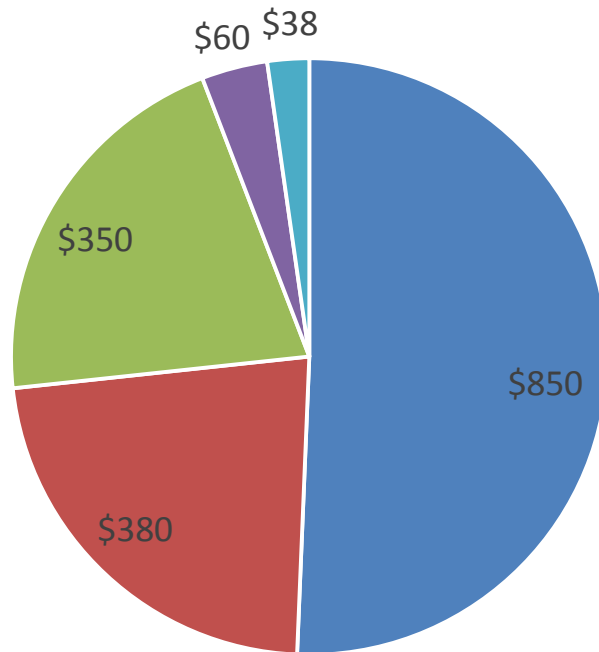
# Frequency distribution of Oregon ash by elevation





# Hold onto your Ash!

Costs of EAB in millions \$, as of 2011\*



- Local government
- Property value losses
- Landowner costs
- Timber industry
- Federal government



## City of Portland Street Tree Inventory

4.8% or 72,000 public ash  
\$21M removal (\$290/tree)  
\$28M replacement (\$387/tree)  
**\$49M total cost to PDX**

\*Aukema et al. 2011. Economic impacts forest invaders in the U.S. PLoS one. **16**



Toledo, OH Before EAB 2006



Photo: Dan Herms

Toledo, OH

After EAB

2009



Photo: Dan Herms



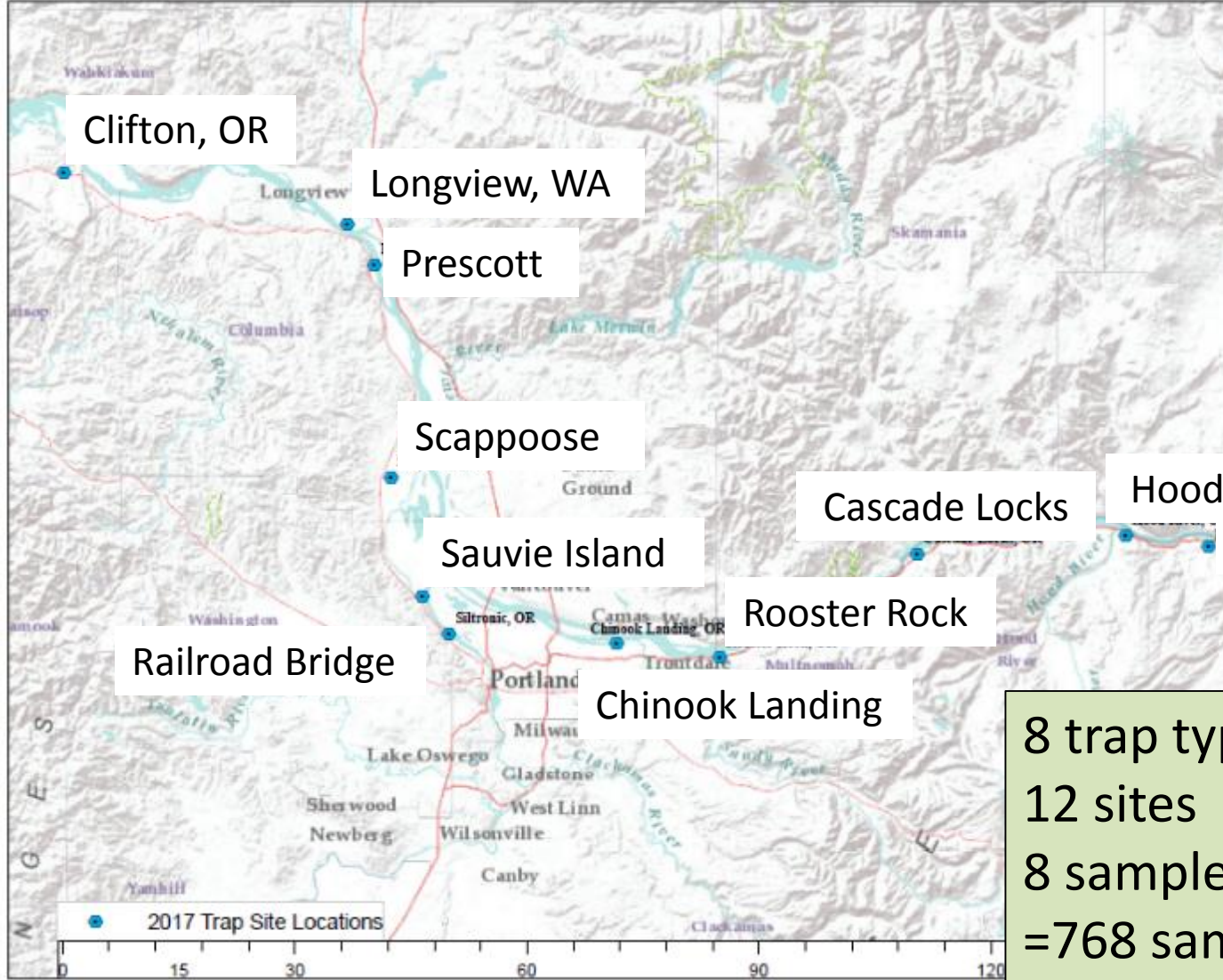
# Draft EAB Plan for Oregon

- Introduction and background
- Define roles of stakeholders
- Readiness
  - Risk Assessment, Detection
- Response
  - Communication plan, quarantine, restoration
- Funding
- Appendices
  - Sample press release, IPM fact sheet

Final plan will be released late Spring 2018

<http://www.OregonEAB.info/>

# Invasive woodborer survey

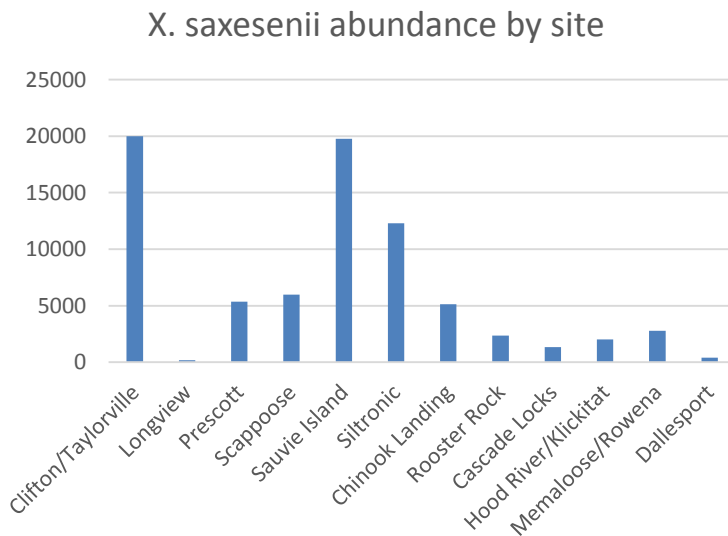


8 trap types per site  
12 sites  
8 sample periods, Apr-Sept  
=768 samples per year



# Invasive woodborer survey – 2016-2017 results

	Abundance	# species
Native	11,521	170
Exotic	81,437	24
Genus only	467	6
Total	93,425	200



77,605, or 83%, of total capture:



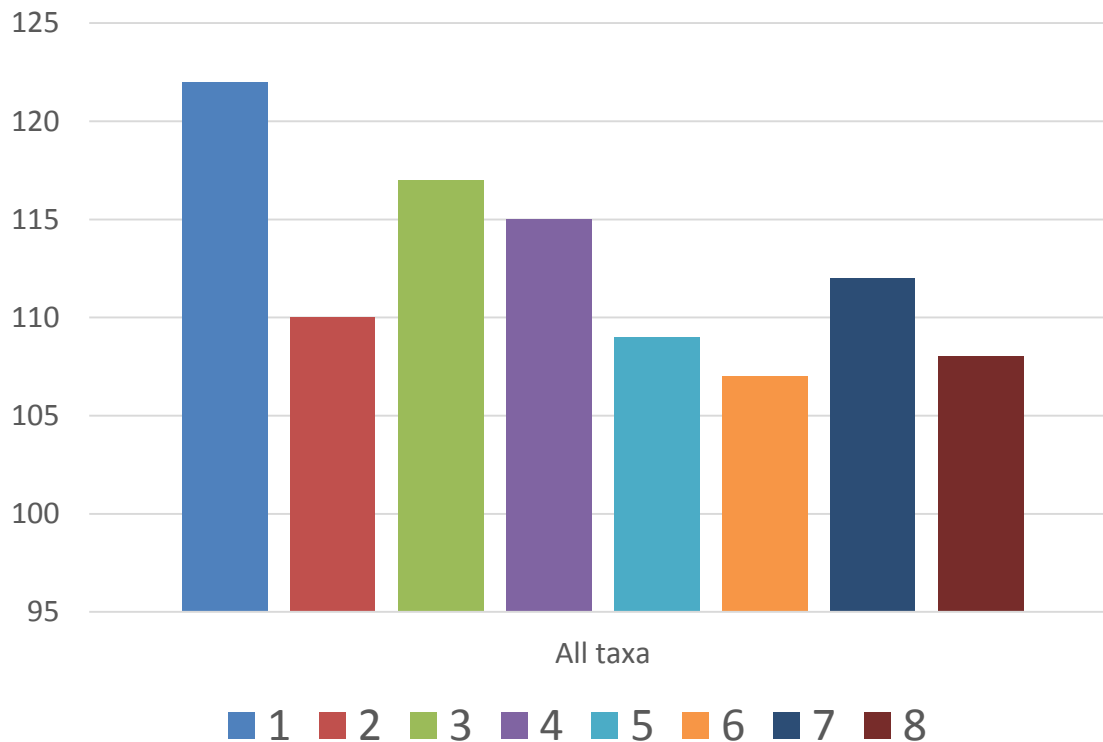
Fruit-pinhole borer (*Xyleborinus saxesenii*)

Photo by Pest & Diseases Images Library, Bugwood.org



# Invasive woodborer survey – 2016-2017 results

Total number of species by trap type



1. **alpha-pinene, ethanol**
2. **ethanol**
3. **Monochamus lure set**
4. **Exotic Ips lure set**
5. **Oak pinhole lure set**
6. **Pine shoot beetle lure set**
7. **Control (no lure)**
8. **Green leaf volatiles**

# New exotic species detected



Longview, WA; June 15, 2017  
Native to eastern North America  
First record on west Coast  
Hosts: Oak, chestnut

*Chrysobothris rugosiceps*  
(Cerambycidae)



J. Basham

# New exotic species detected



Rooster Rock; May 24, 2017

Native to Asia

First record in western North America

Hosts: Alder, maple, oak, chinkapin



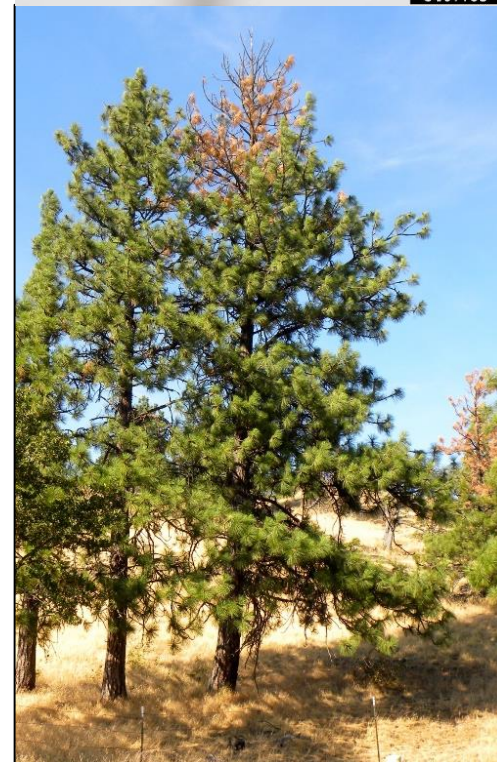
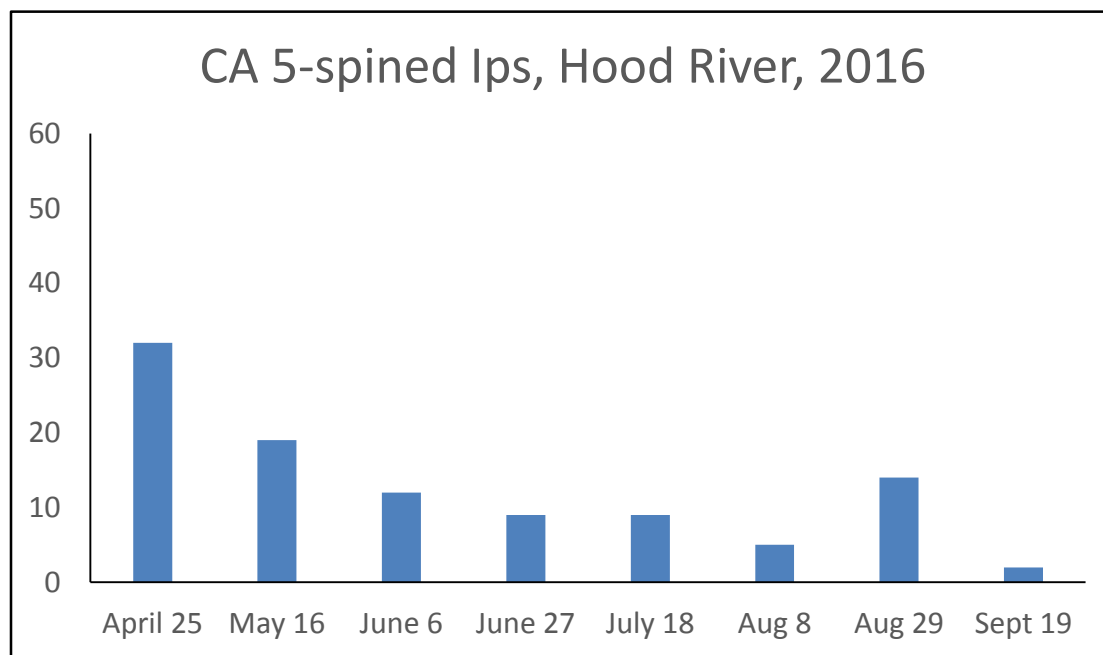
*Cyclorhipidion pelliculosum*  
(Curculionidae: Scolytinae)



Pest and Diseases Images Library, Bugwood.org



# Providing info on native forest insects



Pest and Diseases Images Library, Bugwood.org

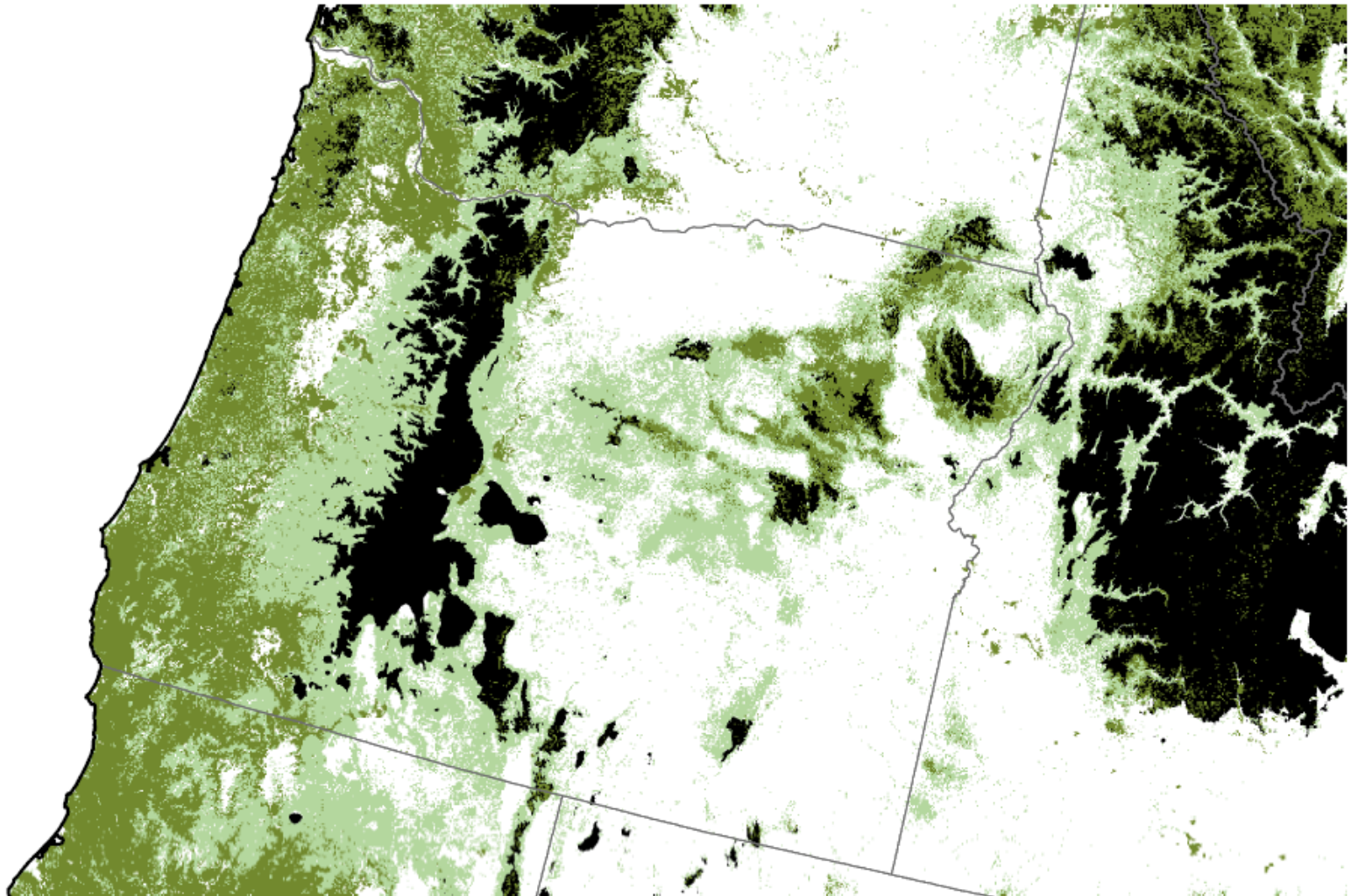
Additional info for slash management

# Gypsy moth

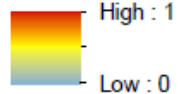
- European & Asian subspecies
- 500+ host species, including DF
- Forest and Ag threat in PNW
- Detections (and eradications) in Oregon since 1970s



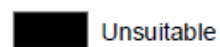
# European Gypsy Moth *Lymantria dispar dispar* Establishment Map for Oregon



Detection Likelihood



Climate Suitability Mask



Preferred Host

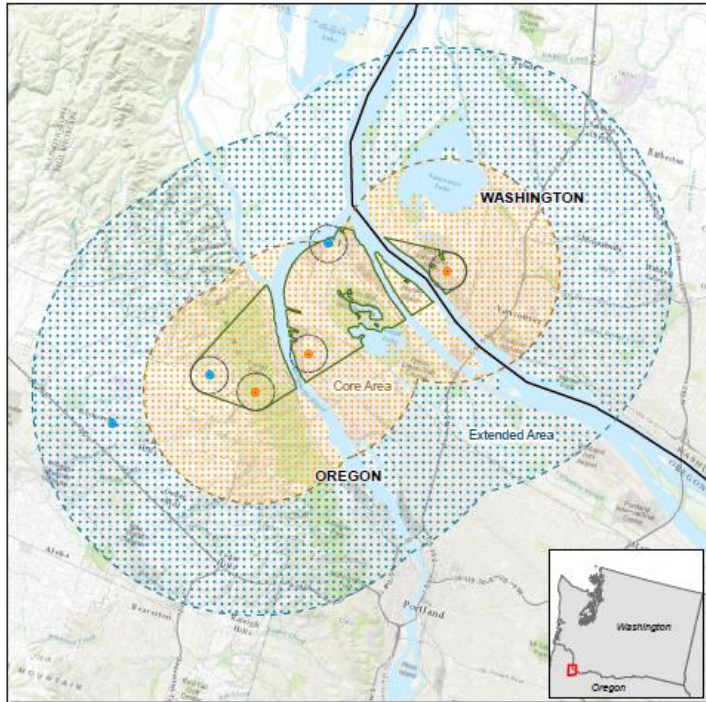


NLCD Tree Cover





# Oregon gypsy moth update



2016 gypsy moth eradication site  
(green polygon: 8,674 acres) in  
Portland/Vancouver.

Source: Oregon Dept. Agriculture

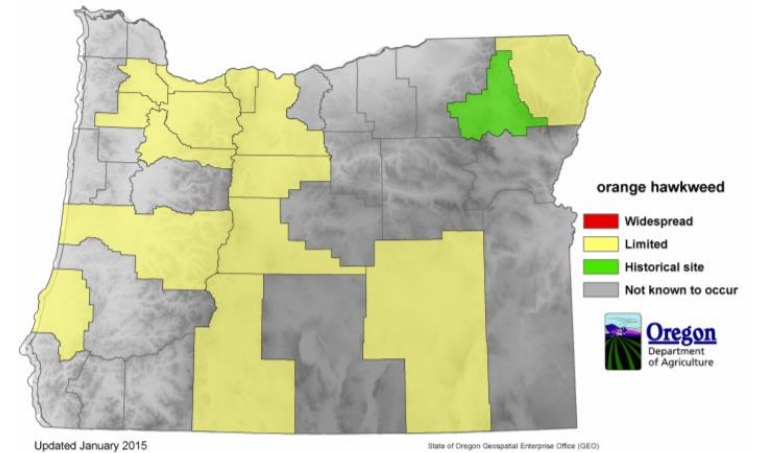
- **100% success** in eradicating gypsy moth
- Enormous benefits to Oregon's economy
- Vast amounts of pesticides not being applied in PNW

## 2017 Gypsy moth report (From ODA):

- 15,135 traps deployed
- No AGM
- No GM from 2016 eradication site
- EGM in 2017: Multnomah Co. (3); Benton Co. (5); Lane Co. (2); Josephine Co. (1)



# Orange hawkweed (*Hieracium aurantiacum*)



Oregon Dept. of Agriculture



- Detected in Clatsop Co, 2017
- Class A noxious weed (ODA)
- Perennial
- Rhizomes, stolons, seeds
- Adapted to disturbance
- Surveys on Clatsop SF, 2018

# Gorse (*Ulex europaeus*)

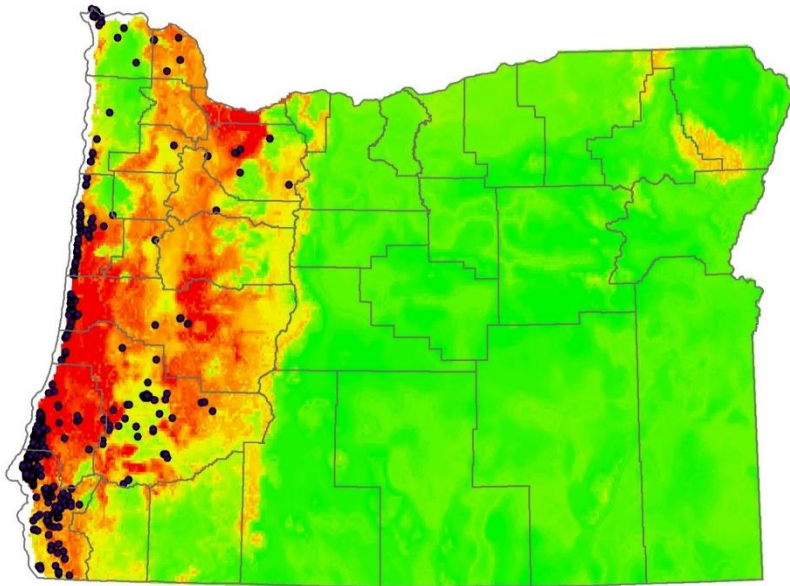
- Bandon, OR 1873
- Related to Scotch broom
- “List B” noxious weed





# Gorse: costs, distribution

First in Oregon: 1873



<b>Current acres, costs:</b>	
28,000 acres	\$441,000
<b>Total susceptible:</b>	
16.6 million acres	\$206 million
<b>Percent of potential:</b>	
0.2% acres occupied	0.2% costs realized

## Map Key

• Gorse locations

## Gorse Suitability Index



0 37.5 75 150 225 300 Kilometers

# Bandon fire of 1936





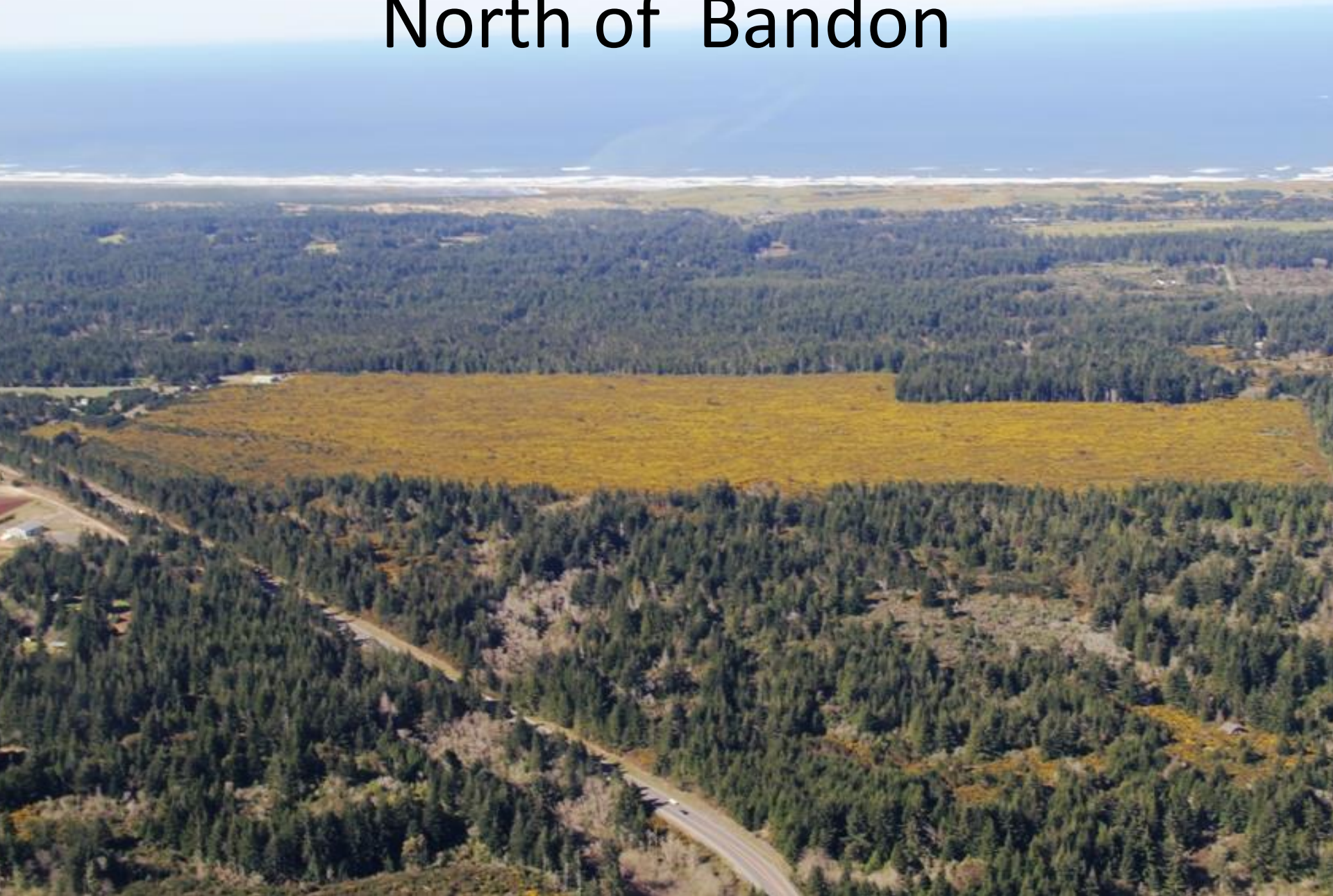
# Town of Bandon



# Between Elk and Sixes Rivers



# North of Bandon



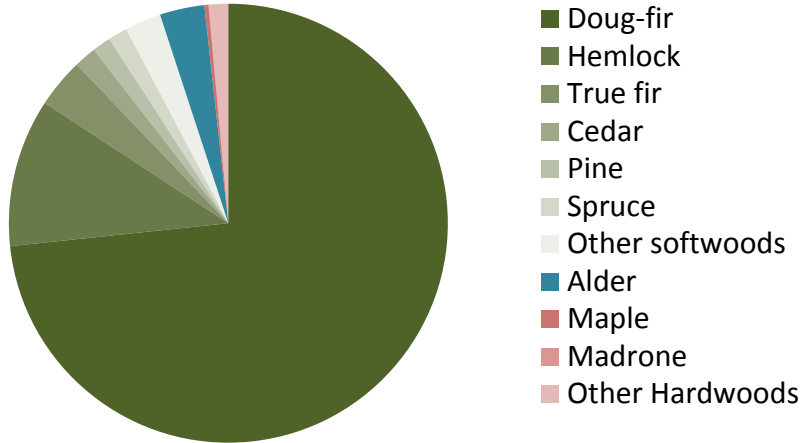


- Awarded “Oregon Solutions” Project by Gov. Brown – 2017
- Mapping, Best Management recommendations, Education/Outreach, FireWise, Hwy 101 Demo project
- Next meeting: March 12, 9-noon, Bandon

# Invasive species threaten sustainable forestry



W OR Total harvest by tree species, 1987-2007



**Forestry: \$5.2 billion GDP** in Oregon  
Are we ready for next invasive species?



# Thank you for listening!



- Invasive species will continue to affect Oregon's forests
- Prevention and EDRR are keys to success
- Collaboration required to meet challenges



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