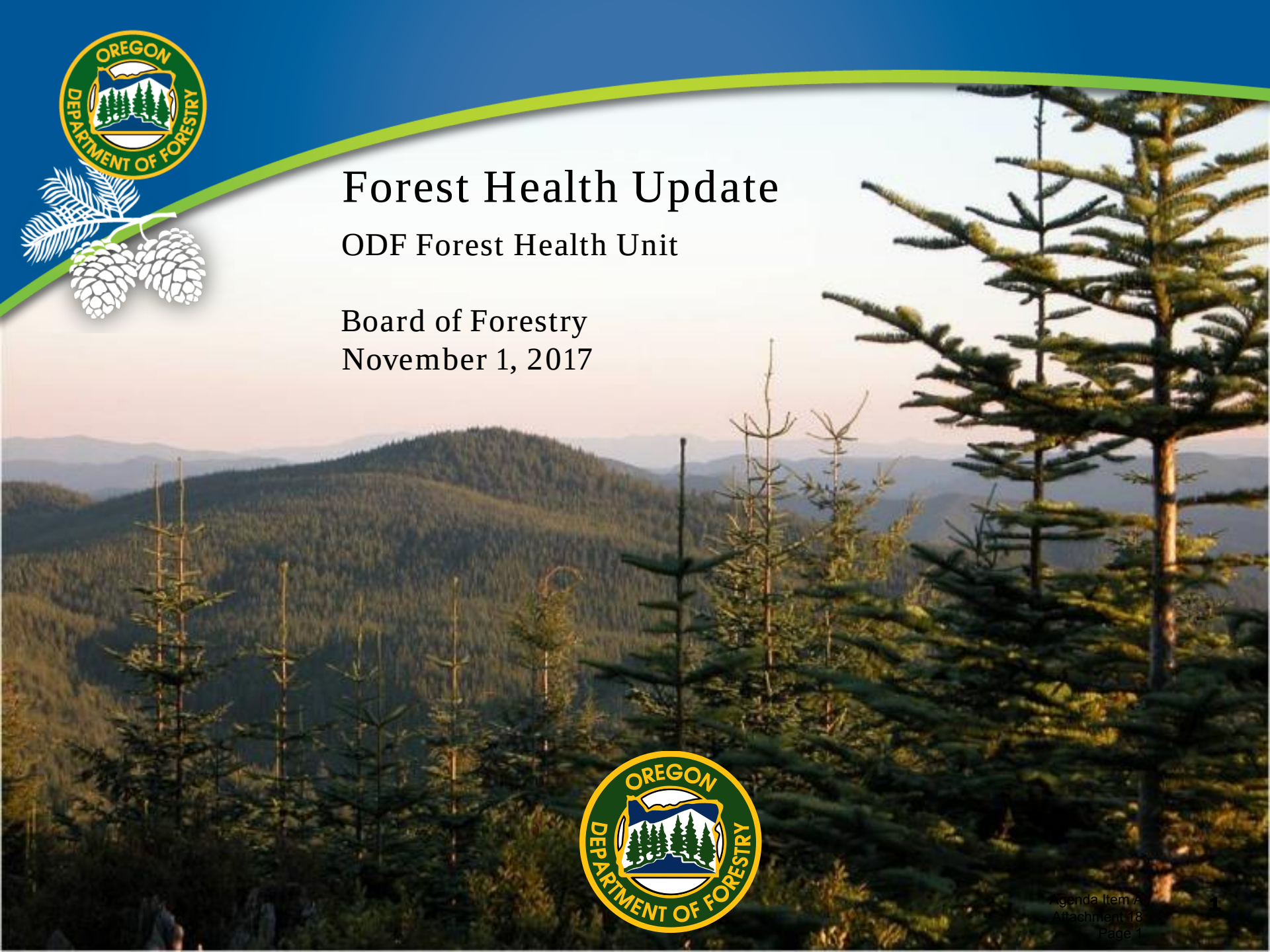


Forest Health Update

ODF Forest Health Unit

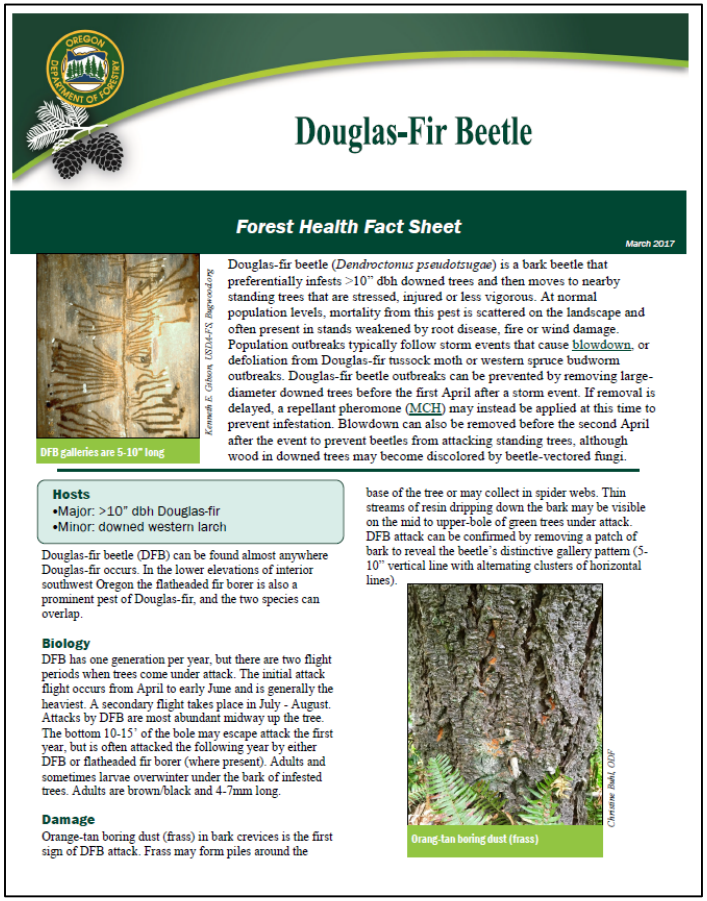
Board of Forestry
November 1, 2017

Technical specialists:

- Forest insects & disease
- Exotic, invasive species
- Abiotic tree damage
- Annual survey and monitoring
- Landowner assists
- Research

Fact sheets and highlights:

http://tinyurl.com/ODF-ForestHealth



Douglas-Fir Beetle

Forest Health Fact Sheet

March 2017

Kenneth E. Gibson, USFS, Bugwood.org

DFB galleries are 5-10" long

Douglas-fir beetle (*Dendroctonus pseudotsugae*) is a bark beetle that preferentially infests >10" dbh downed trees and then moves to nearby standing trees that are stressed, injured or less vigorous. At normal population levels, mortality from this pest is scattered on the landscape and often present in stands weakened by root disease, fire or wind damage. Population outbreaks typically follow storm events that cause blowdown, or defoliation from Douglas-fir tussock moth or western spruce budworm outbreaks. Douglas-fir beetle outbreaks can be prevented by removing large-diameter downed trees before the first April after a storm event. If removal is delayed, a repellant pheromone (MCH) may instead be applied at this time to prevent infestation. Blowdown can also be removed before the second April after the event to prevent beetles from attacking standing trees, although wood in downed trees may become discolored by beetle-vectored fungi.

Hosts
- Major: >10" dbh Douglas-fir
- Minor: downed western larch

Douglas-fir beetle (DFB) can be found almost anywhere Douglas-fir occurs. In the lower elevations of interior southwest Oregon the flatheaded fir borer is also a prominent pest of Douglas-fir, and the two species can overlap.

Biology

DFB has one generation per year, but there are two flight periods when trees come under attack. The initial attack flight occurs from April to early June and is generally the heaviest. A secondary flight takes place in July - August. Attacks by DFB are most abundant midway up the tree. The bottom 10-15' of the bole may escape attack the first year, but is often attacked the following year by either DFB or flatheaded fir borer (where present). Adults and sometimes larvae overwinter under the bark of infested trees. Adults are brown/black and 4-7mm long.

Damage

Orange-tan boring dust (frass) in bark crevices is the first sign of DFB attack. Frass may form piles around the base of the tree or may collect in spider webs. Thin streams of resin dripping down the bark may be visible on the mid to upper-bole of green trees under attack. DFB attack can be confirmed by removing a patch of bark to reveal the beetle's distinctive gallery pattern (5-10" vertical line with alternating clusters of horizontal lines).

Christine Buhl, ODF

Orang-tan boring dust (frass)

Marganne Allen
Manager

Sarah Navarro
Forest Pathologist

Wyatt Williams
Invasive Species Specialist

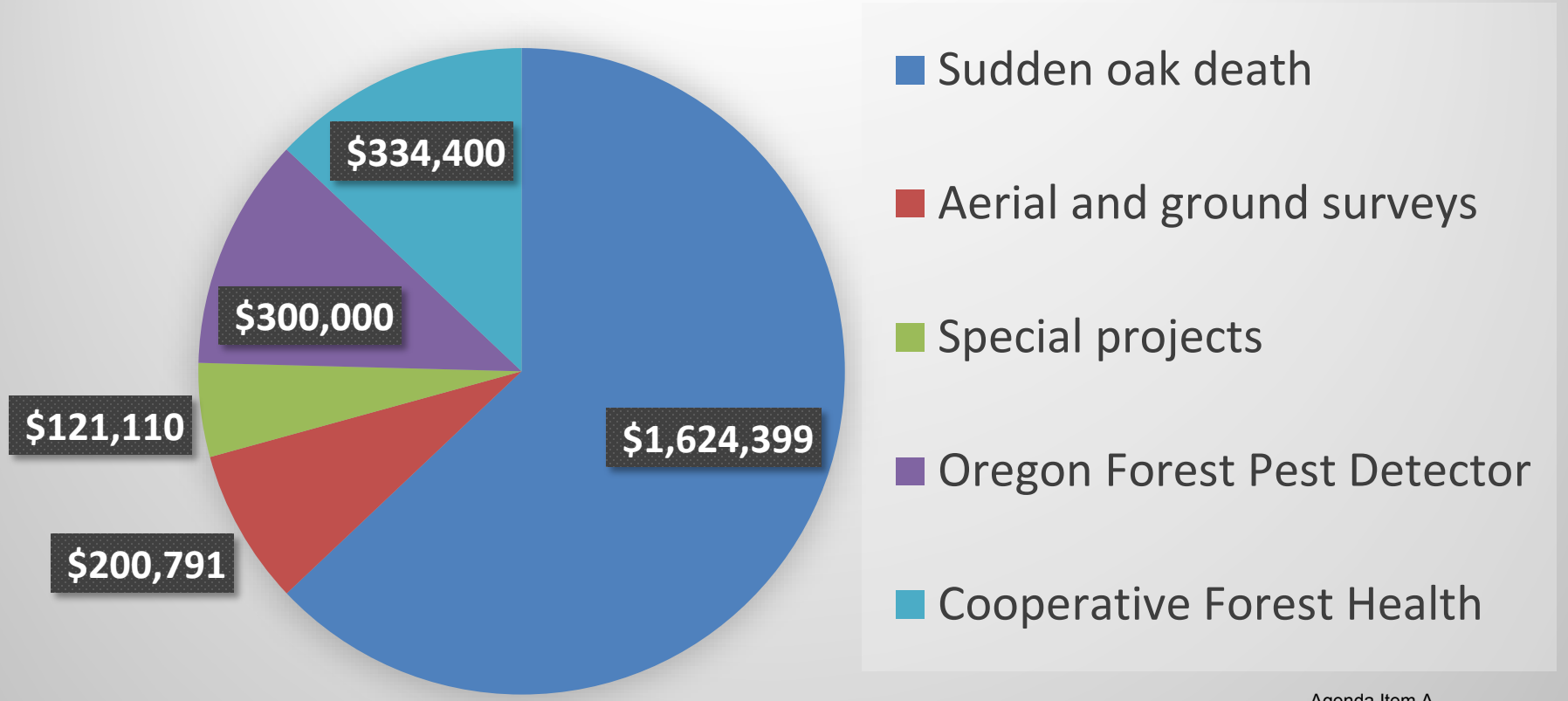
Christine Buhl
Forest Entomologist

Danny Norlander
Survey & Monitoring

Jon Laine
Forest Management Technician

Forest Health Grants, FY14-16*

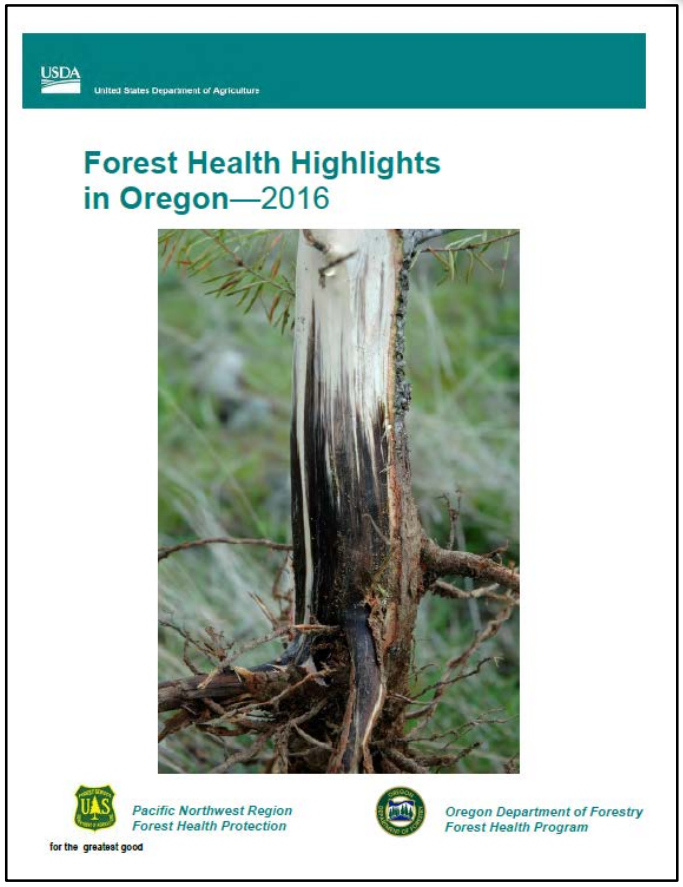
By subject



***$2.58 million in funds from U.S. Forest Service**

Topics covered in today's update:

1. 2016 Forest Health Highlights
2. Aerial survey status
3. Gypsy moth and emerald ash borer
4. Sudden oak death status



2016 FH Highlights: overview

Annual report based upon…

-aerial surveys

-ground surveys

-landowner reports

-other projects

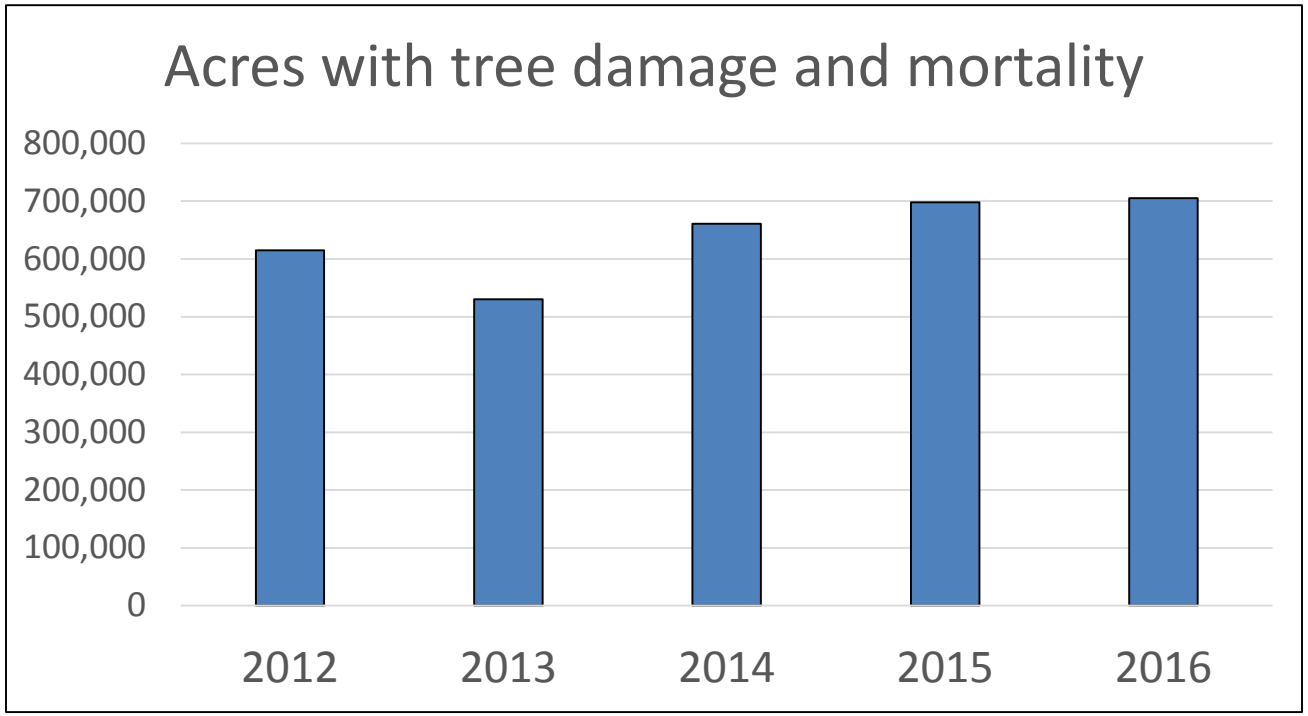
Survey target	Total acres	Total hours
Statewide Survey	35,598,000	131.4
Swiss Needle Cast	4,221,000	30.7
SOD Fixed-wing	400,000	5.5
SOD Helicopter	630,000	19.4

2016 marked the ***70th consecutive year*** of aerial forest health survey in Oregon

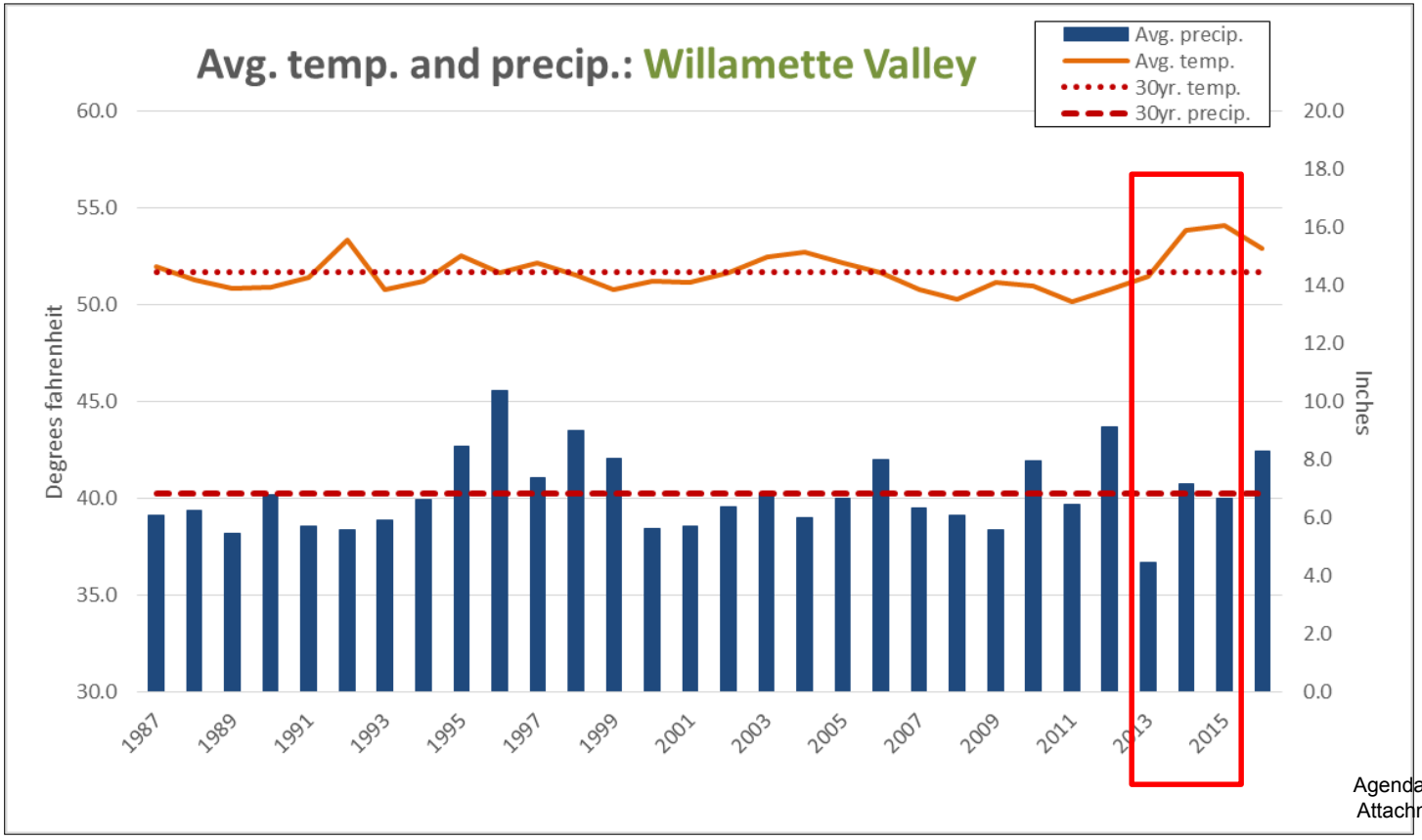
ODF/U.S. Forest Service cooperative effort

Safe, effective missions completed on time

2016 FH Highlights: total damage



2016 FH Highlights: drought damage



2016 FH Highlights: drought damage

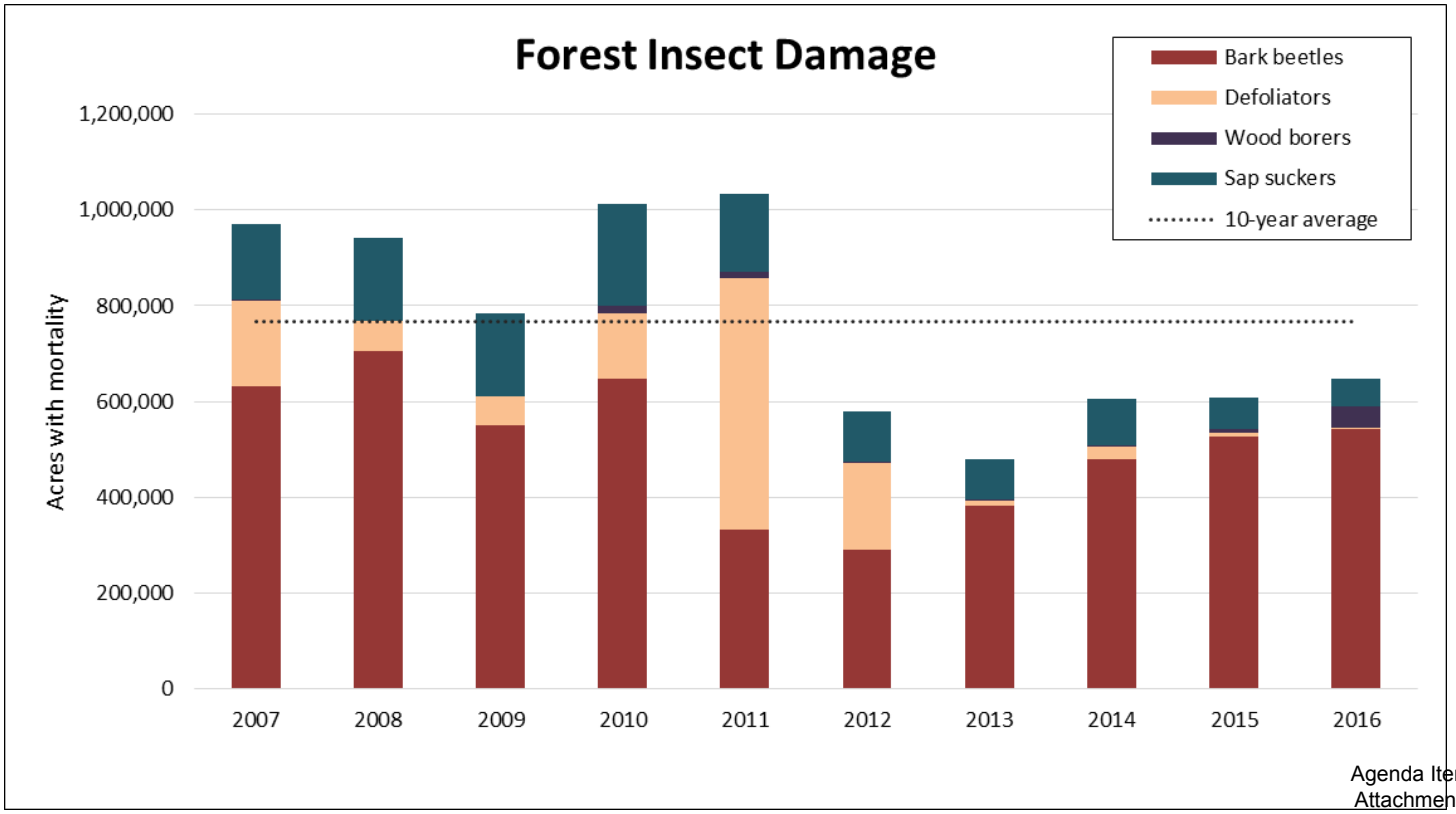
Tree species with drought symptoms:

- Douglas-fir
- Western red cedar
- Grand and noble fir
- Ponderosa pine
- Red alder

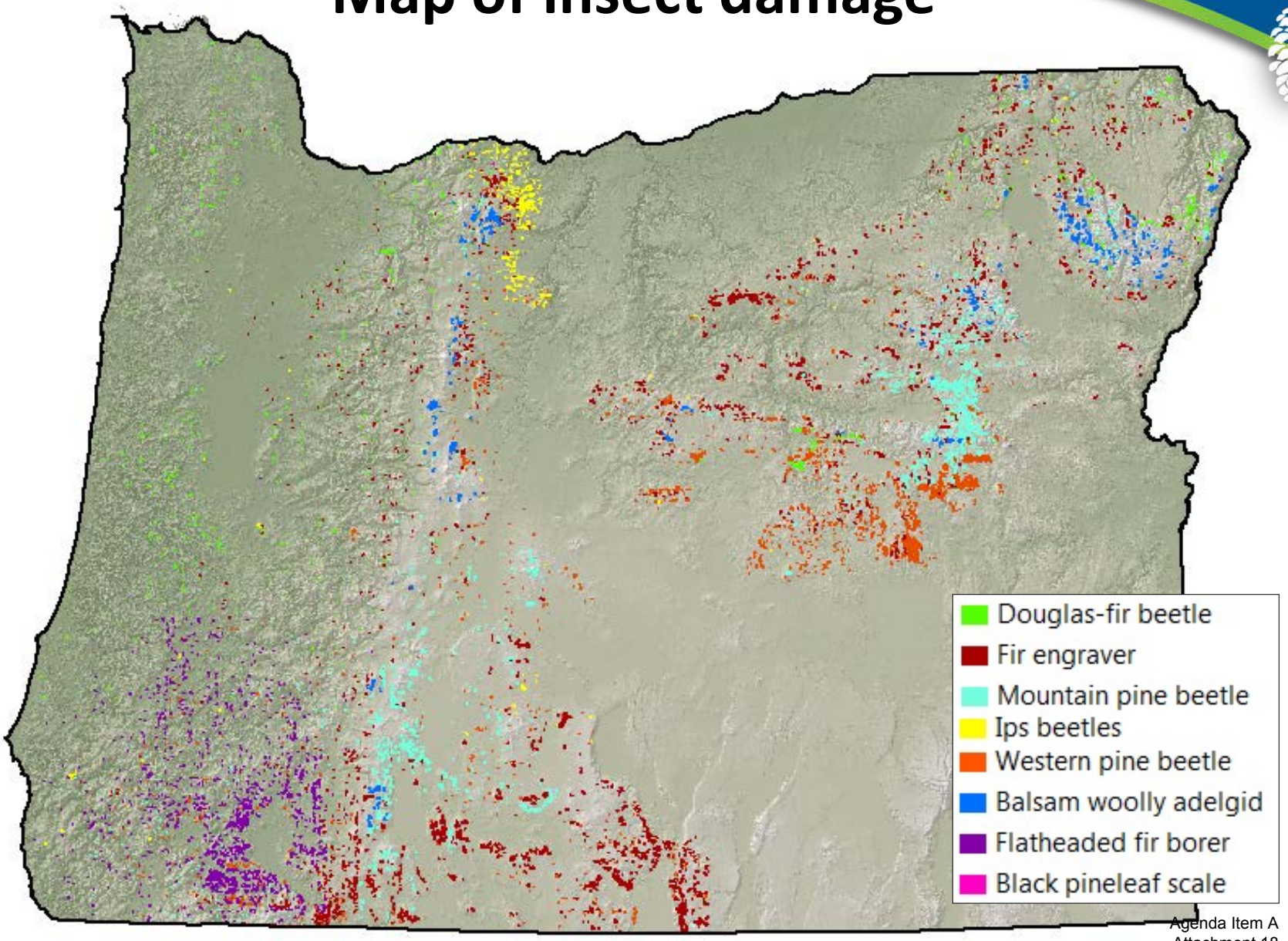
Robbie Flowers, USFS

Common “flagging” symptom of drought stress in Douglas-fir

2016 FH Highlights: insect damage

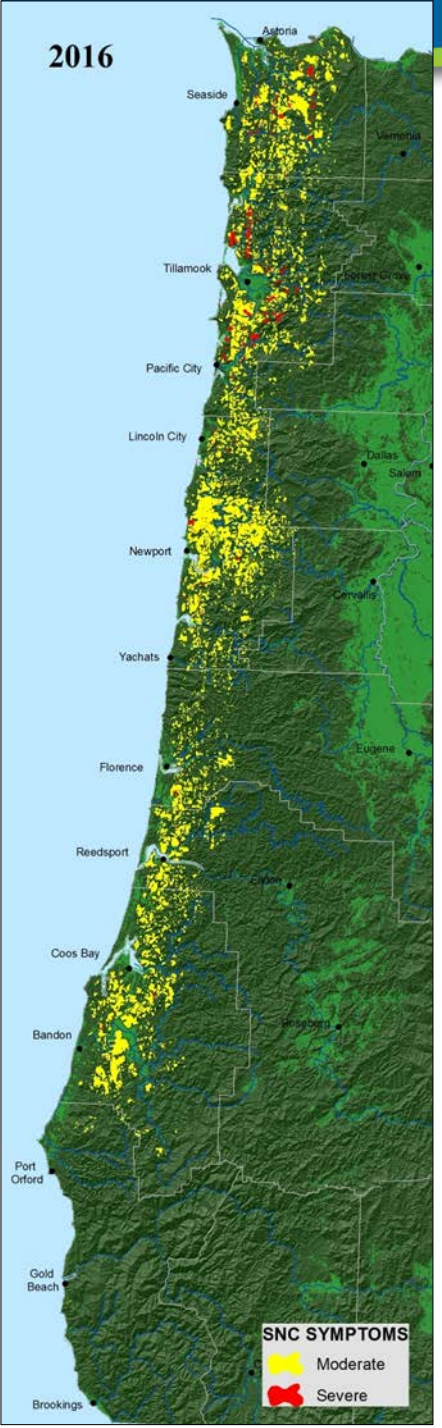


Map of insect damage

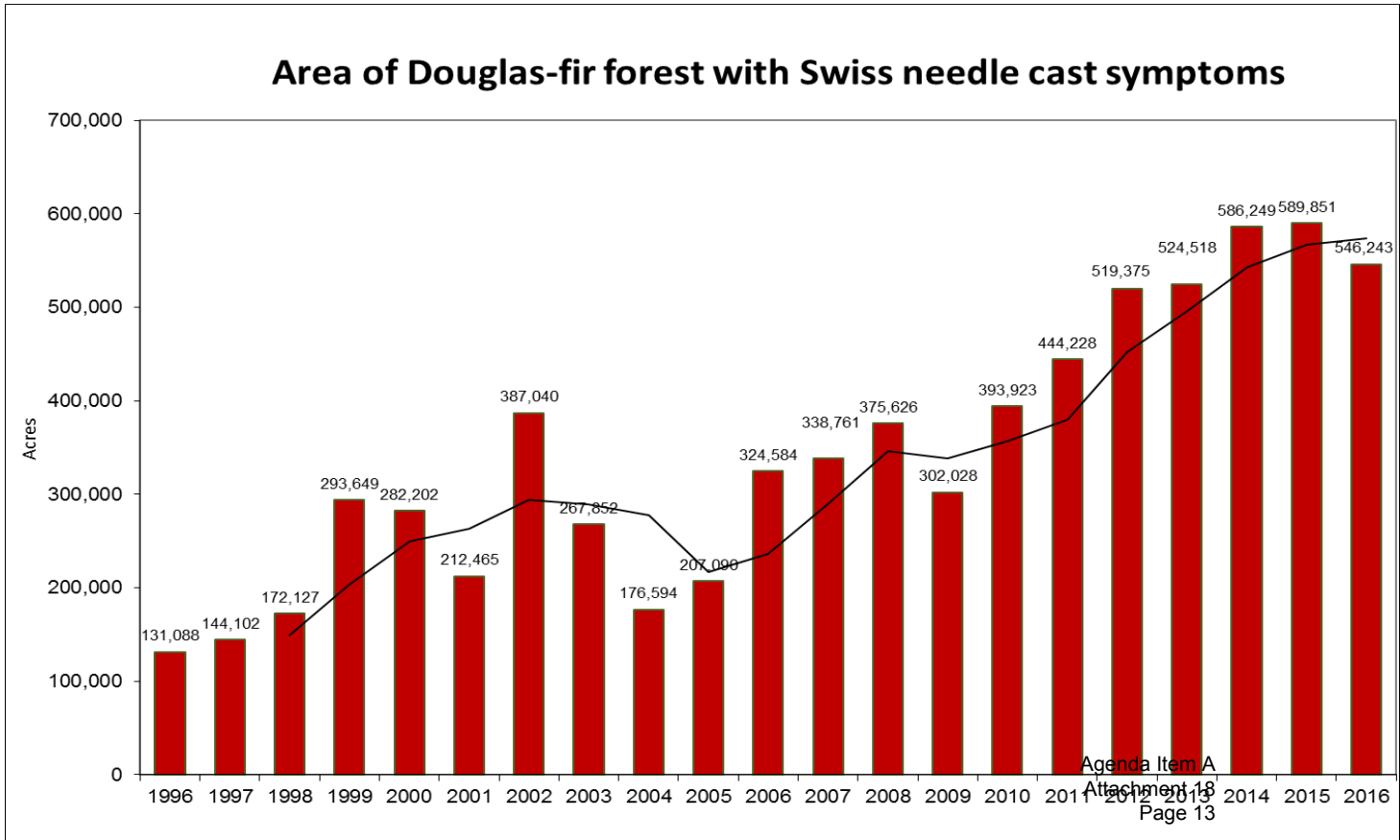


2016 FH Highlights: flat-headed fir borer

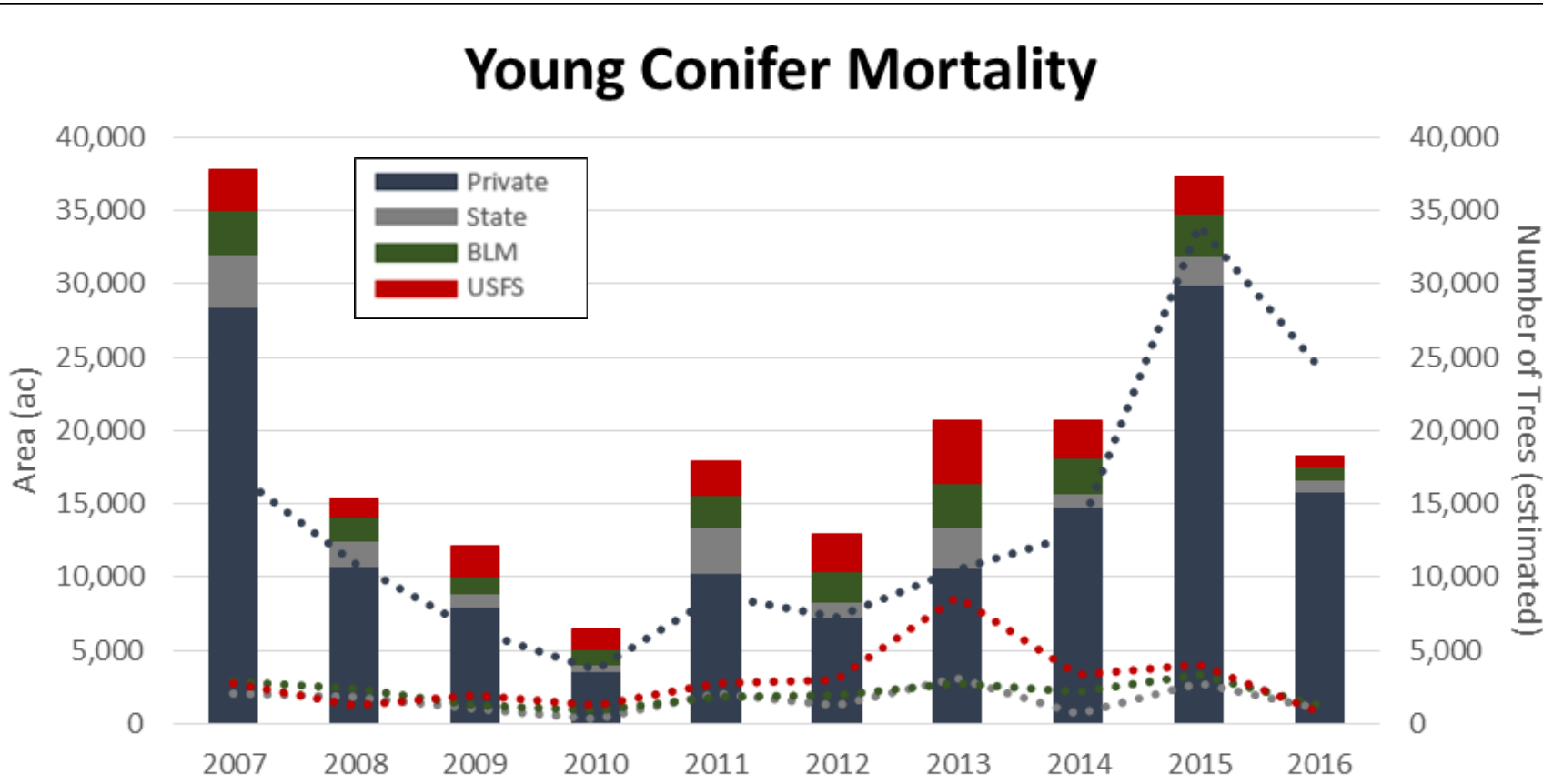
5454037

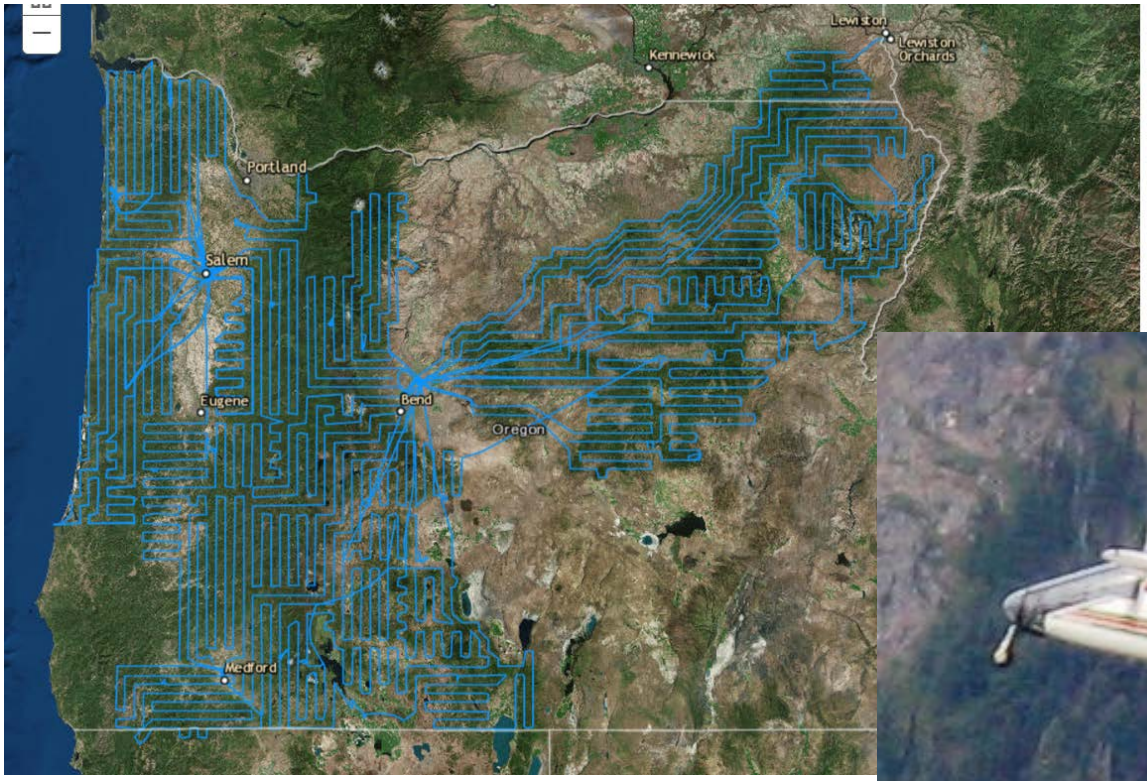


Swiss needle cast

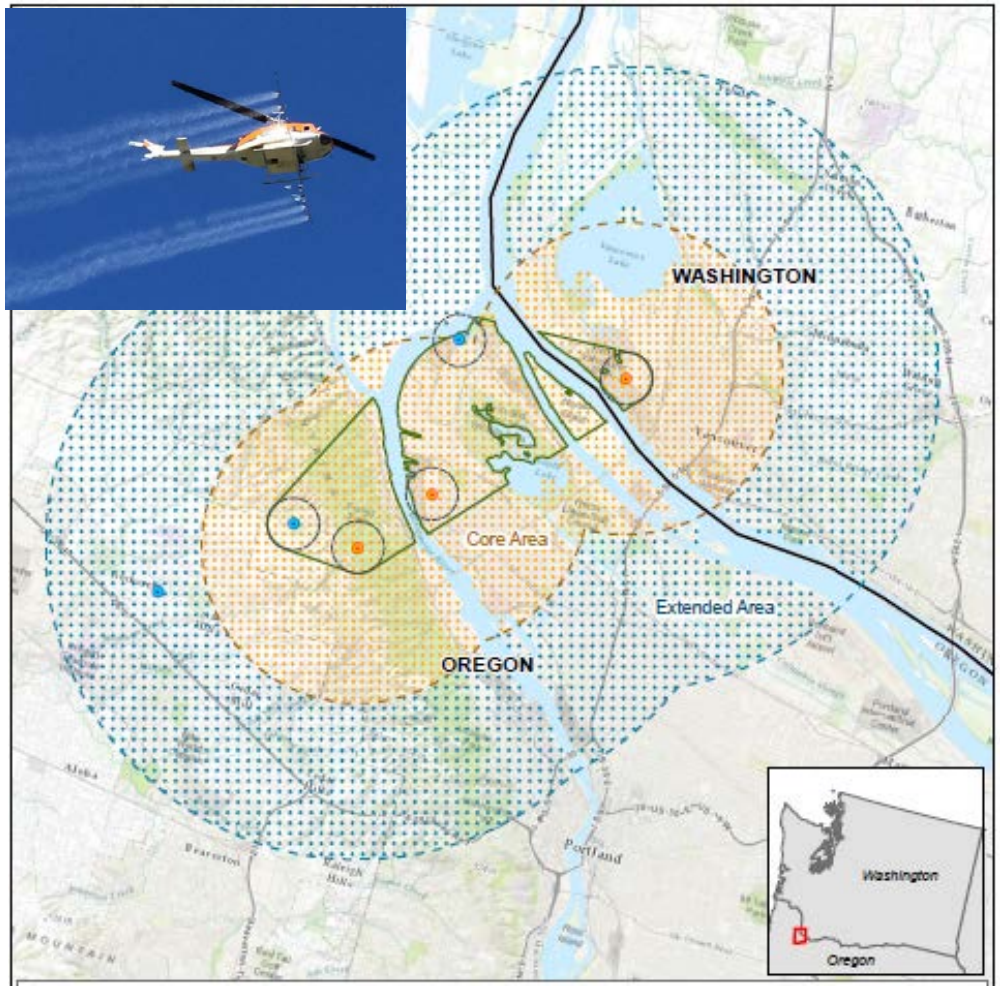


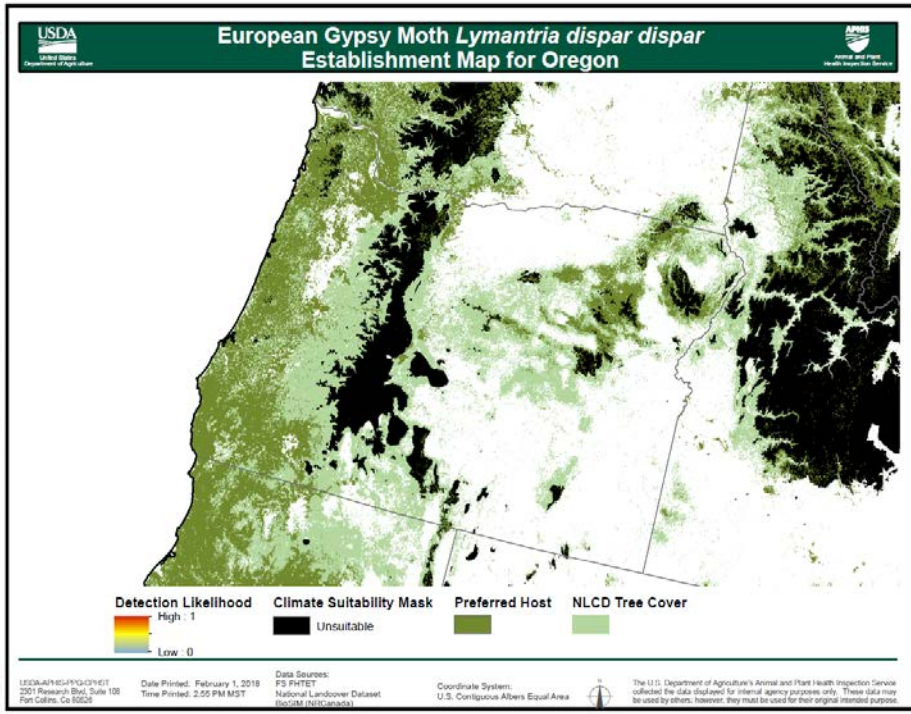
2016 FH Highlights: young conifer mortality





The survey for 2017 is complete. Data are being reviewed. Report will be published this winter.





Organic-labeled pesticide treatment for gypsy moth. Oregon is at high risk for gypsy moth establishment (above).

- 500+ host species, including DF
- Forest and Ag pest
- Great tools for early detection

2015: 14 gypsy moths captured, most since 2006

2016: Eradication and surveillance

2017 update:
No GM captured in treatment area
No GM captured in SW OR
3 GM captured in Mult. Co.
4 GM captured in Benton Co.

1. Aerial surveys

2. Ground surveys

3. Landowner/public reports

4. Forester/arborist/park worker reports

Chemical lure and funnel trap for forest insects.

OSU Oregon State University

Calendar Catalog Library Maps Online Services Make a Gift

Search this site

Search all of OSU

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

Organization	# students
Local government	150
State agencies	36
Federal agencies	12
Higher education	47
Business/utilities	40
Nonprofit/other	73
Total	**358**

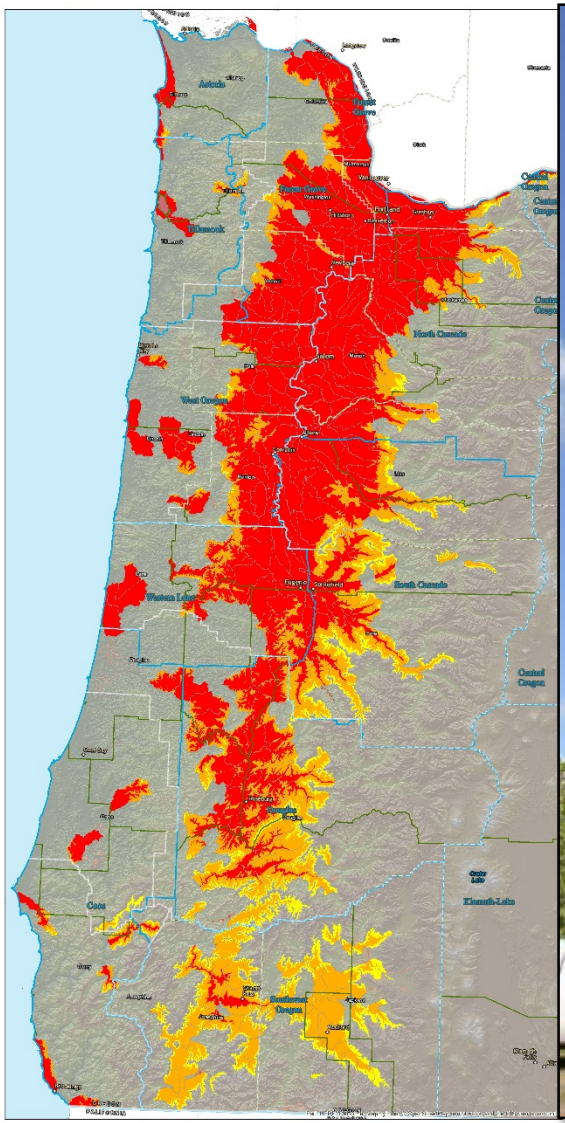
Other metrics	
# of workshops	20
# field courses	7
# counties impacted	12
# hotline reports	24

2017 Fall Trainings:

August 23-25: Portland
September 1: Eugene
October 6: Central Point

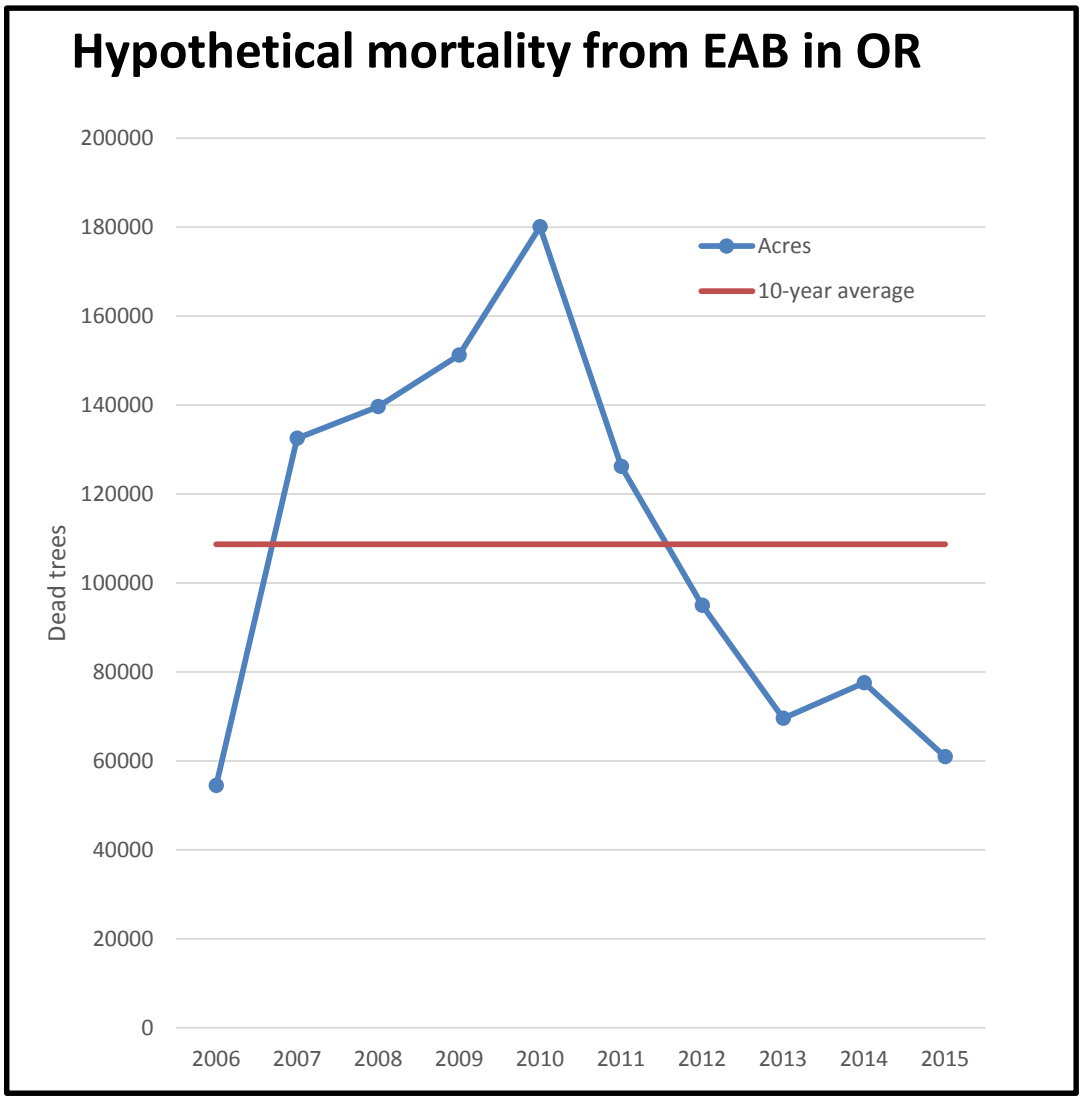
For more information or to take the free class,
http://pestdetector.forestry.oregonstate.edu/

HUC 12 Watersheds with Known Oregon Ash Locations



- Not in Oregon
- One native ash
- Quarantine risk if EAB arrives

Risk map for EAB in Oregon (D. Norlander)



How will ODF respond to EAB?

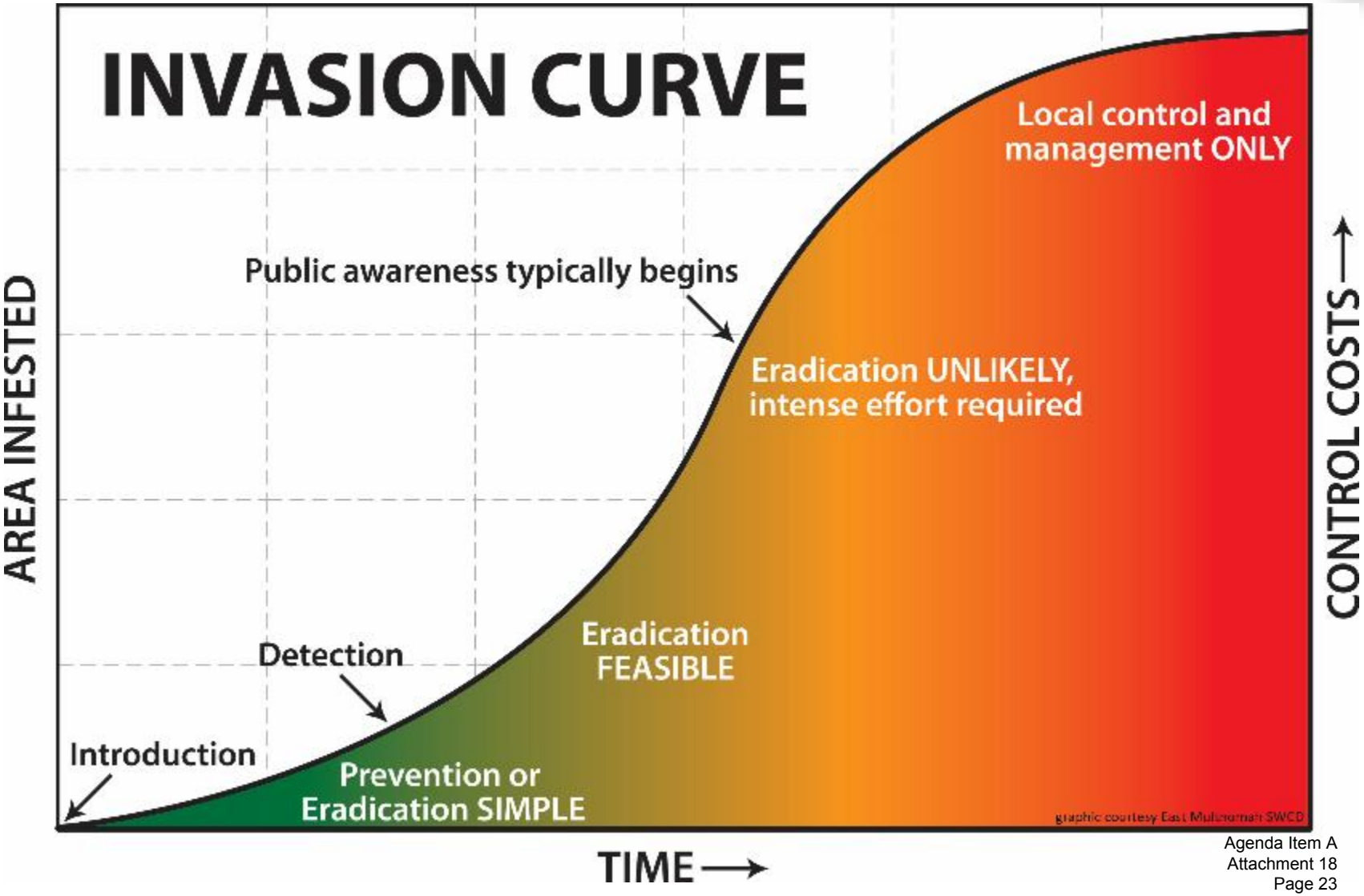
- Cooperate with other agencies, ODF programs (Urban/Comm. Forestry, State Forests)
- Monitoring of riparian health
- Best Management Practices
- Recommendations for cities
- Conservation (seed bank?)
- Biocontrol releases

ODF/ODA leading effort to develop statewide preparedness plan.

Fall 2017: Stakeholder meetings

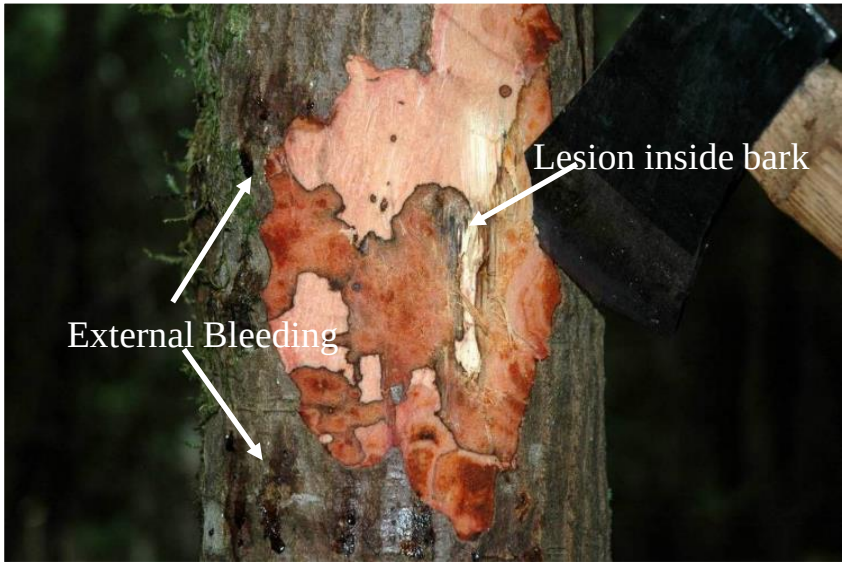
Winter 2018: Plan revisions

March 2018: Working draft for review


INVASION CURVE
Local control and management ONLY
Public awareness typically begins
Eradication UNLIKELY, intense effort required
Eradication FEASIBLE
Detection
Introduction
Prevention or Eradication SIMPLE
graphic courtesy East Multnomah SWCD
AREA INFESTED
CONTROL COSTS
TIME

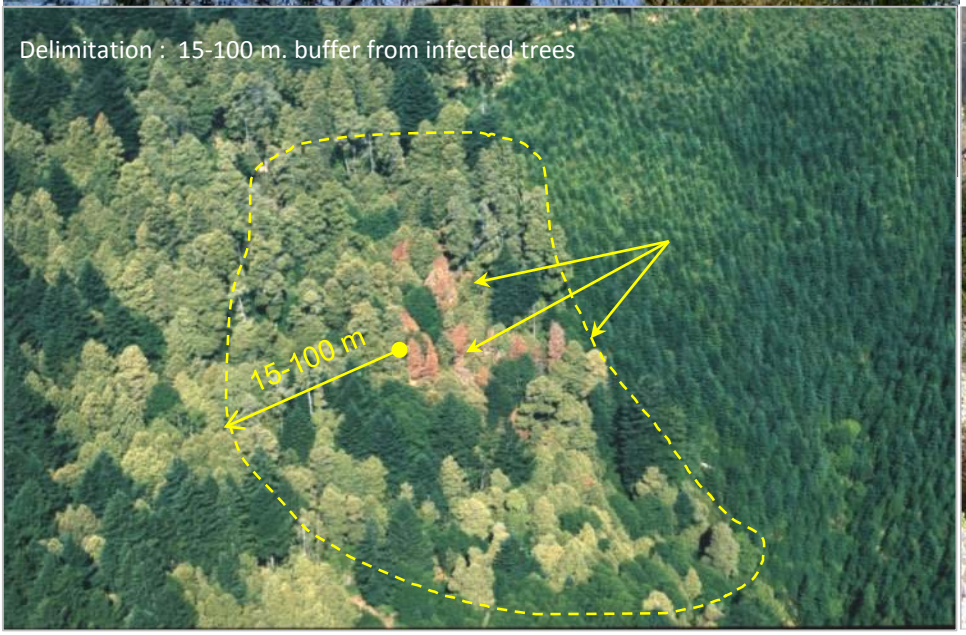
Disease biology of *Phytophthora ramorum*:

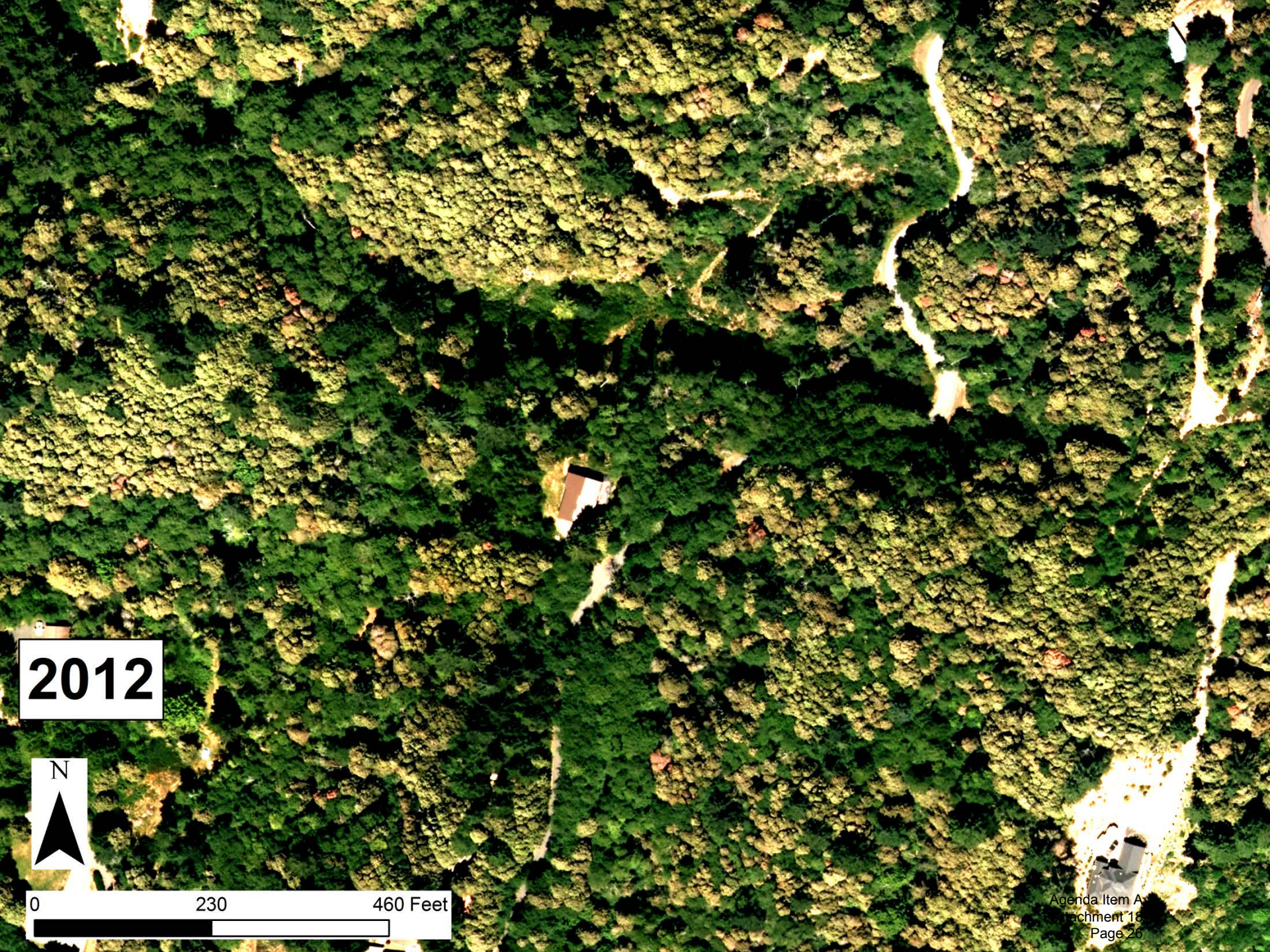
- Tanoak key host species
- Many hosts infected
- Reproduces by spores
- Aerial spread
- Pathway: Horticulture industry
- Different strains (NA1, EU1)



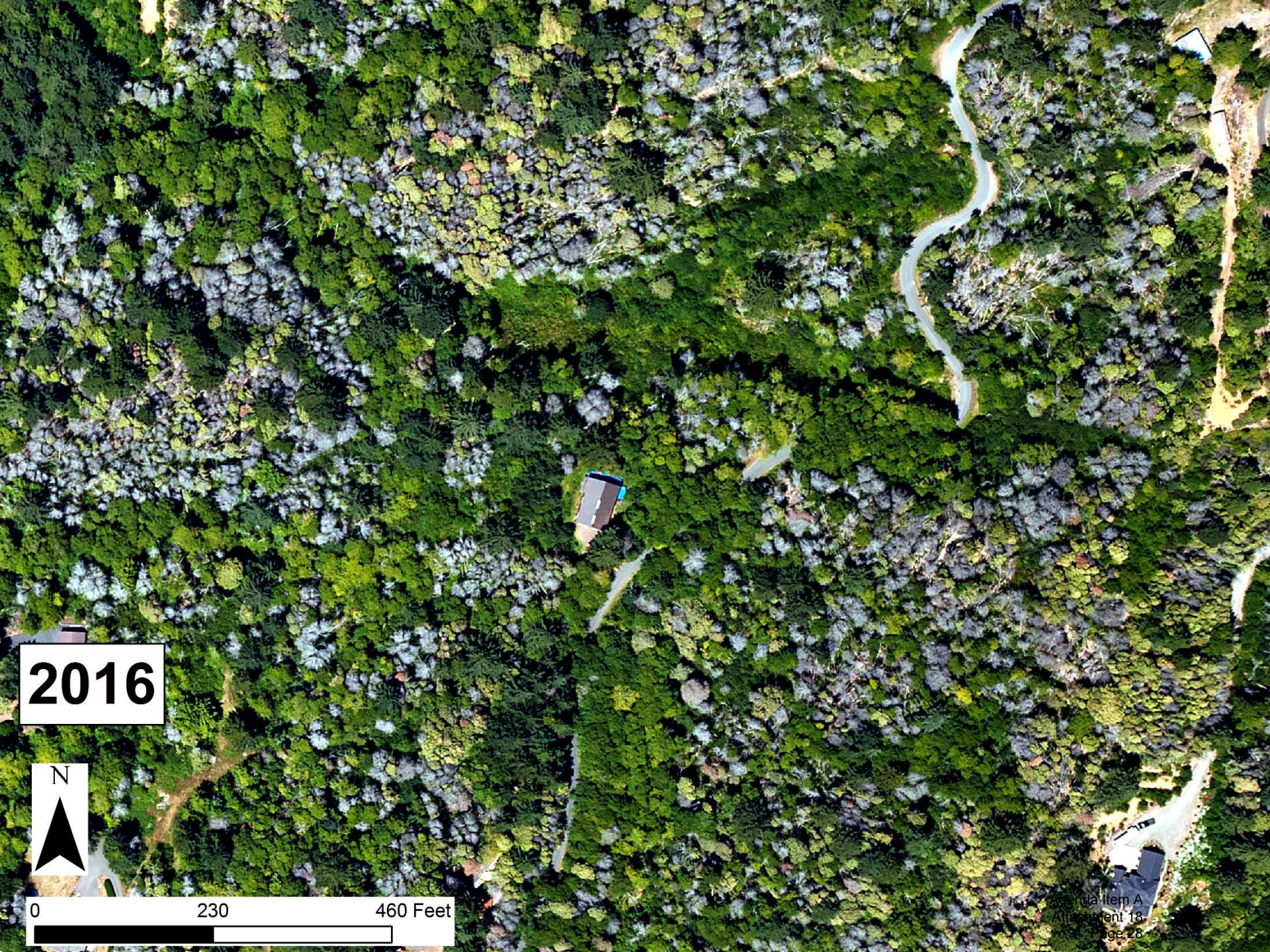
ODF SOD Program (since 2001):

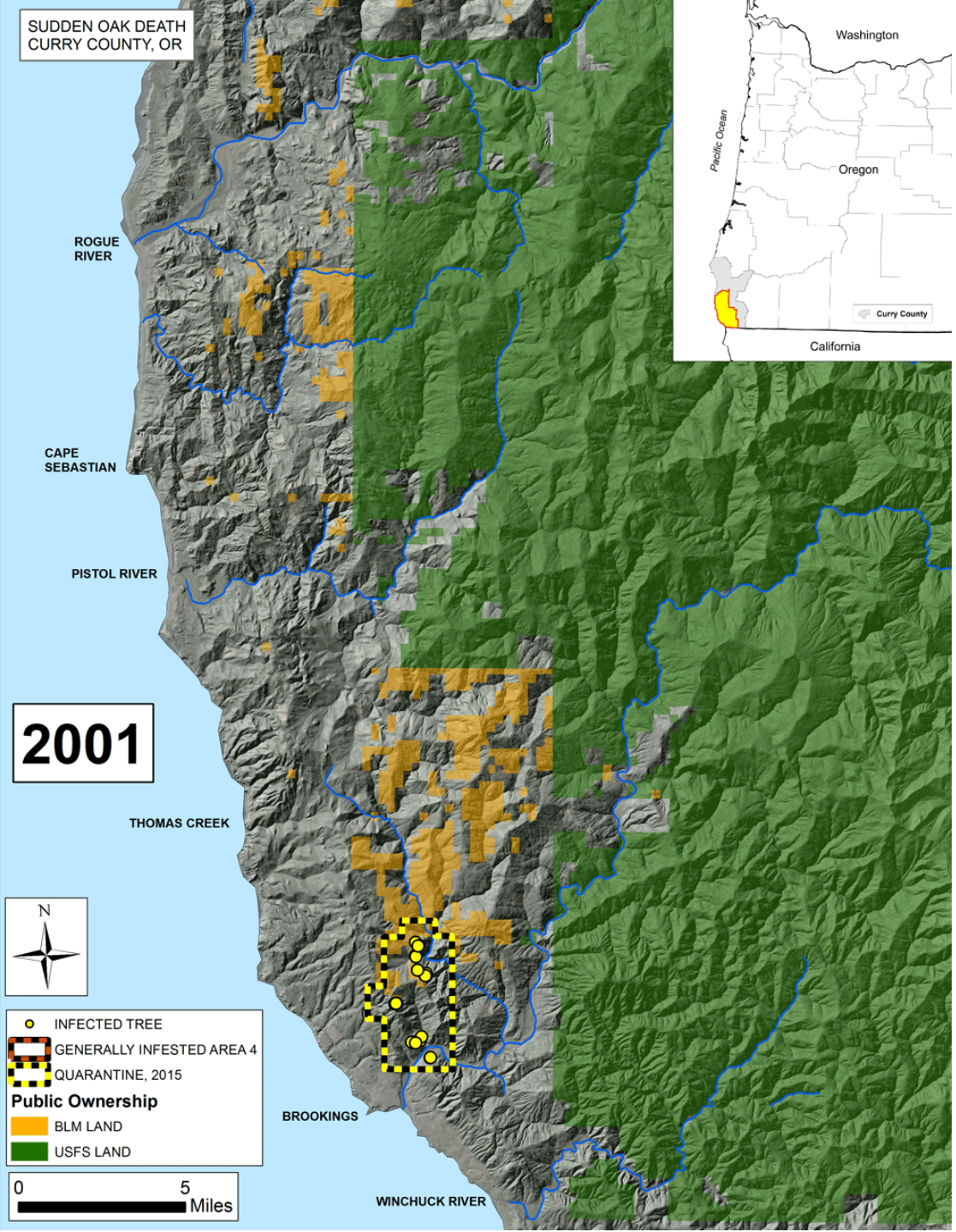
1. Survey and detection
2. Delimitation of infected sites
3. Treatment of infected sites
4. Regulation / education
5. Monitoring / research




2012
N
0
230
460 Feet

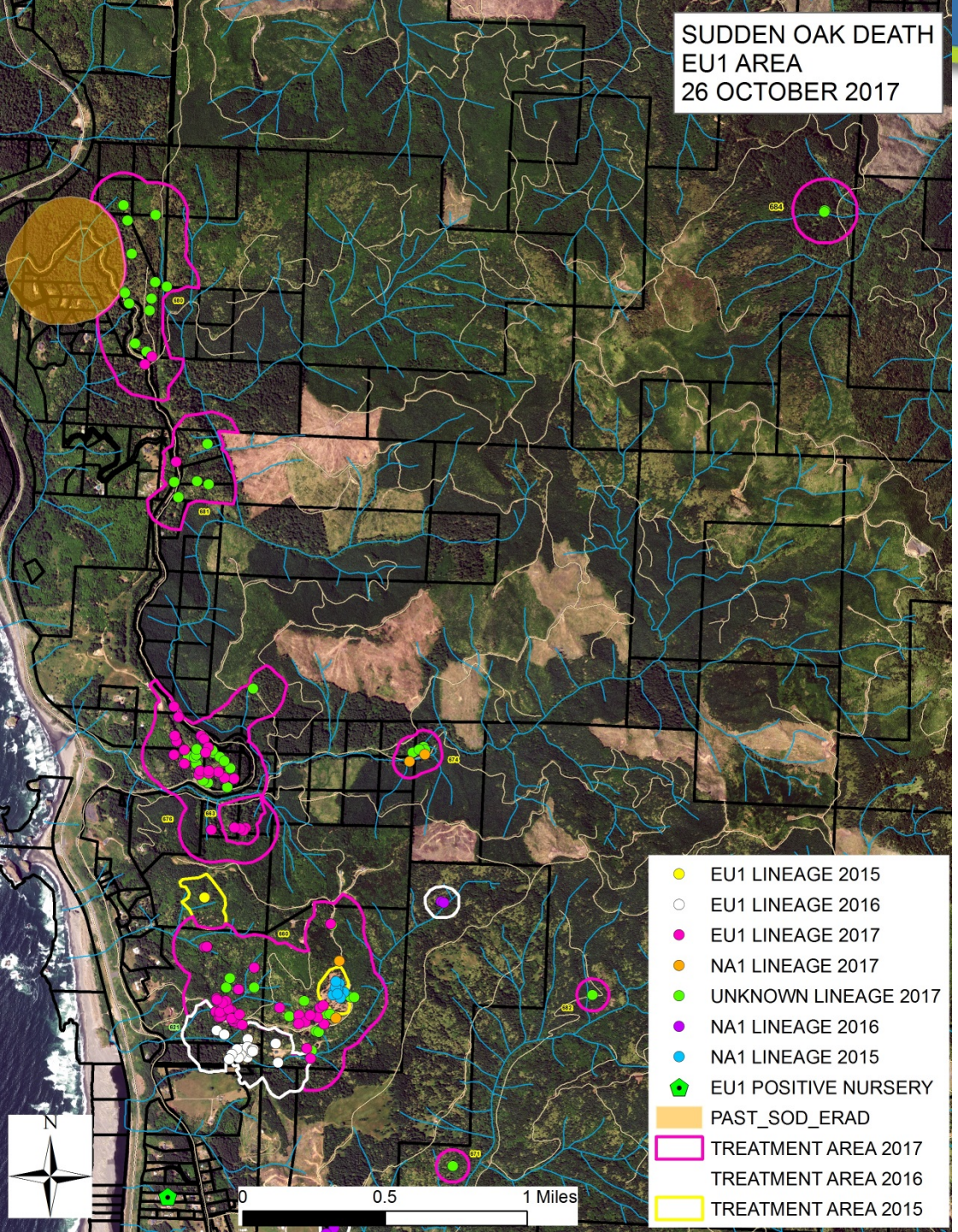

2014
N
0
230
460 Feet


2016
N
0
230
460 Feet



SOD in Oregon over time

- Risk of sudden oak death is driven mostly by abundance of tanoak
- Potential to spread throughout range of tanoak into Coos, Douglas, and Josephine counties
- Early detection and Rapid Response key to eradicating new strains and slowing the disease spread

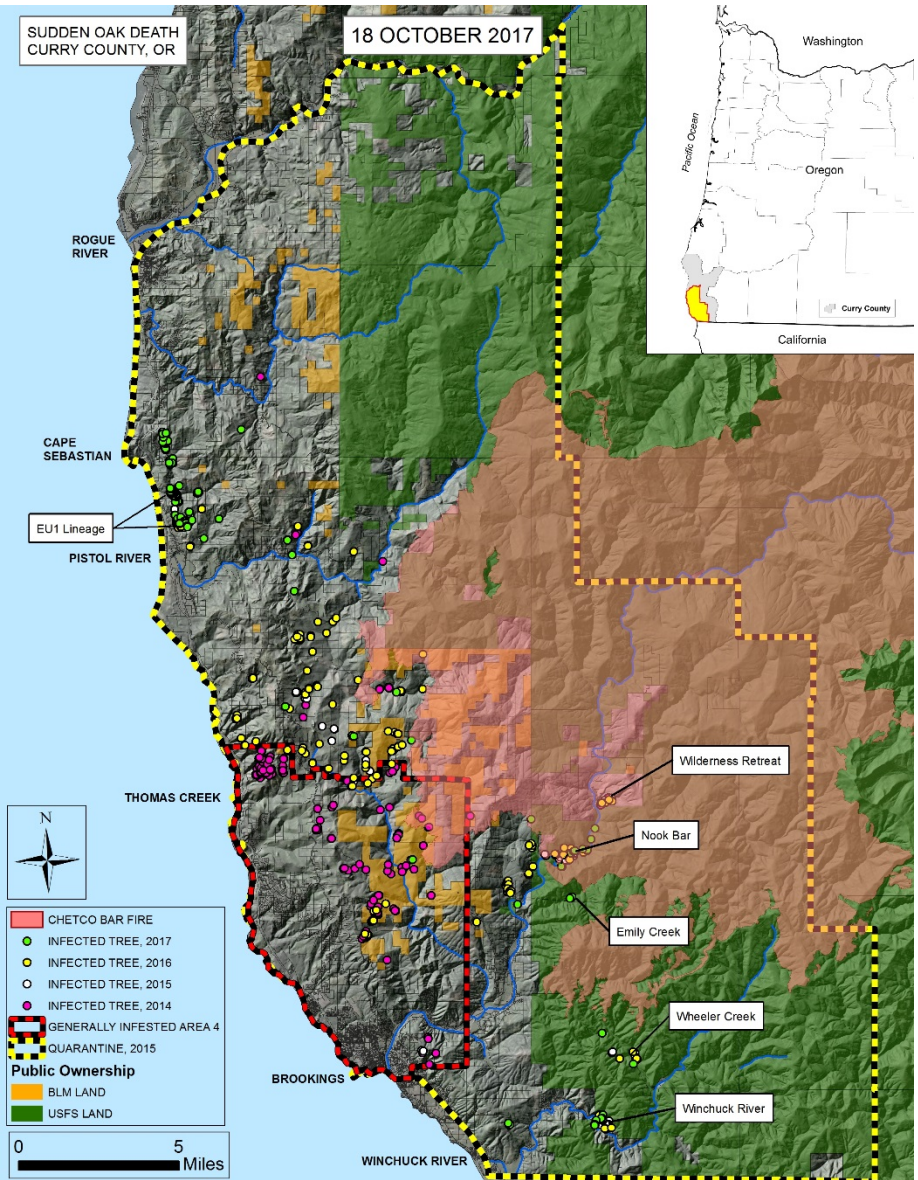

SUDDEN OAK DEATH
EU1 AREA
26 OCTOBER 2017
EU1 LINEAGE 2015
EU1 LINEAGE 2016
EU1 LINEAGE 2017
NA1 LINEAGE 2017
UNKNOWN LINEAGE 2017
NA1 LINEAGE 2016
NA1 LINEAGE 2015
EU1 POSITIVE NURSERY
PAST_SOD_ERAD
TREATMENT AREA 2017
TREATMENT AREA 2016
TREATMENT AREA 2015
N
0
0.5
1 Miles

In United Kingdom timber plantations:

- Severe Japanese larch mortality
- Adjacent DF with mortality, 4-40 years old
- Also: grand fir, noble fir, Port Orford cedar

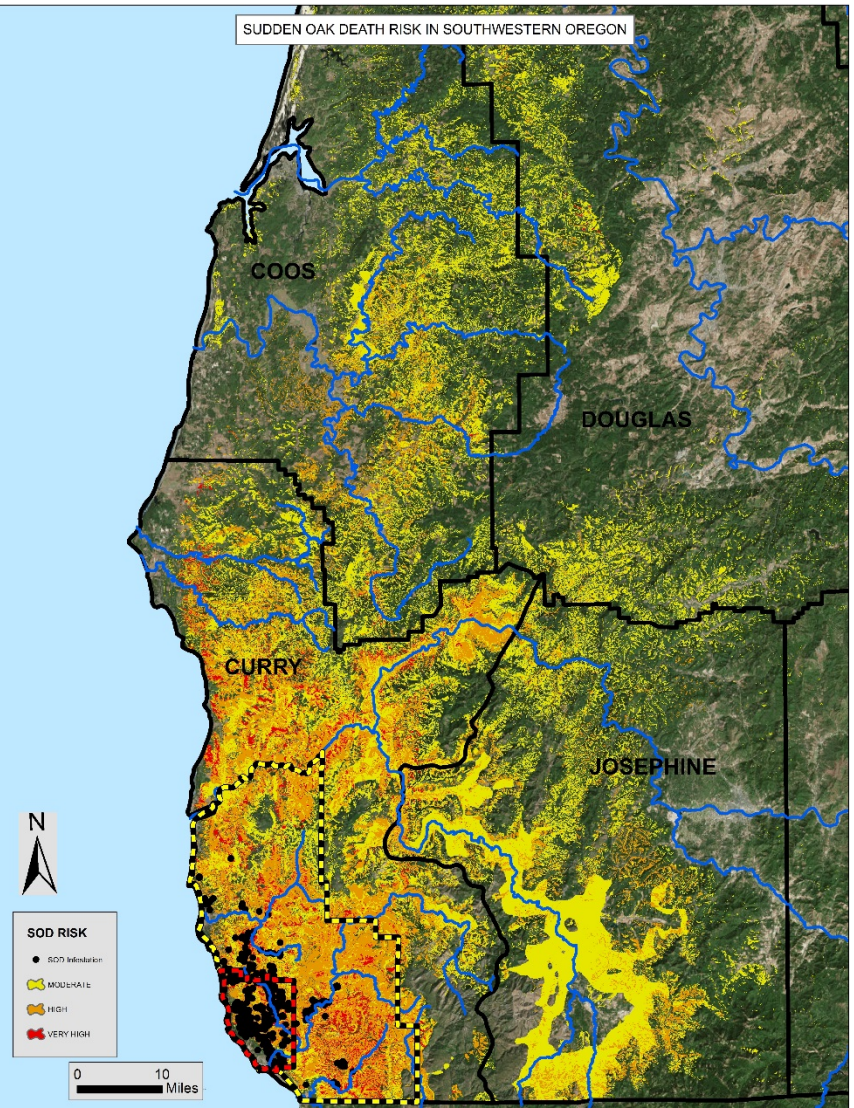
EU1 studies underway at OSU:

- Compare aggressiveness of EU1 vs NA1
- Inoculations of DF, white oak, others
- Outplantings of seedlings

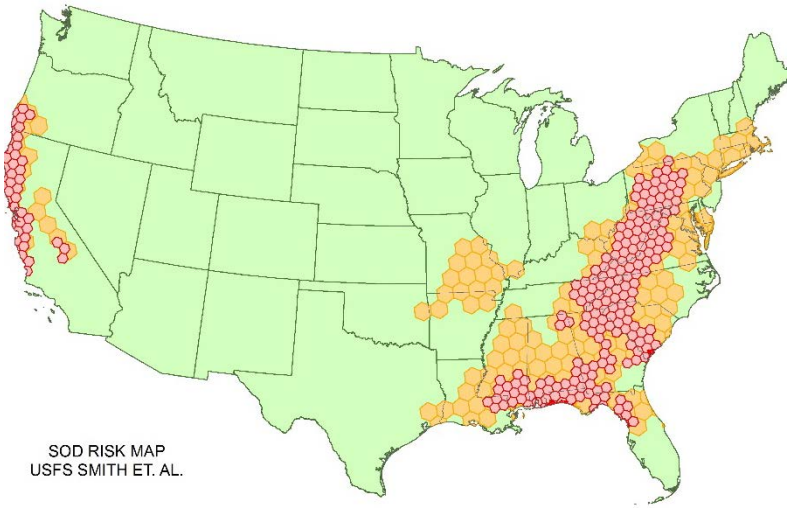


Latest updates:

- ODF received $450,000 from State Legislature, $200,000 from BLM, and over $100,000 from USFS
- Prioritize EU1
- 29 new infestations detected
- SOD Task Force
- Chetco Bar Fire



- Protect tanoak and other systems across the U.S.
- Delay or prevent costs to forest and nursery industries:
  - Regulatory costs
  - Market loss (quarantines)



SOD RISK MAP
USFS SMITH ET. AL.


OREGON
DEPARTMENT OF FORESTRY