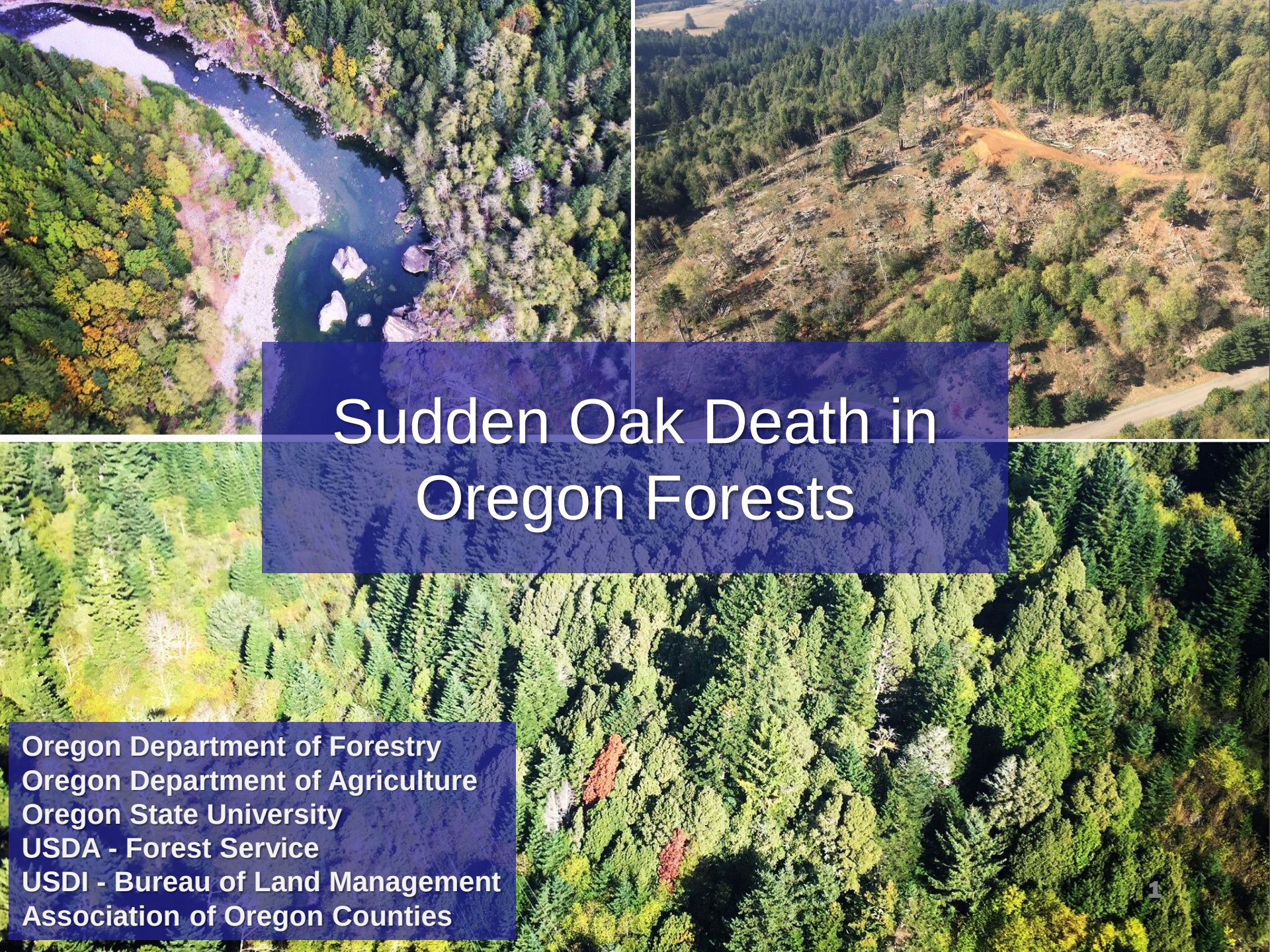


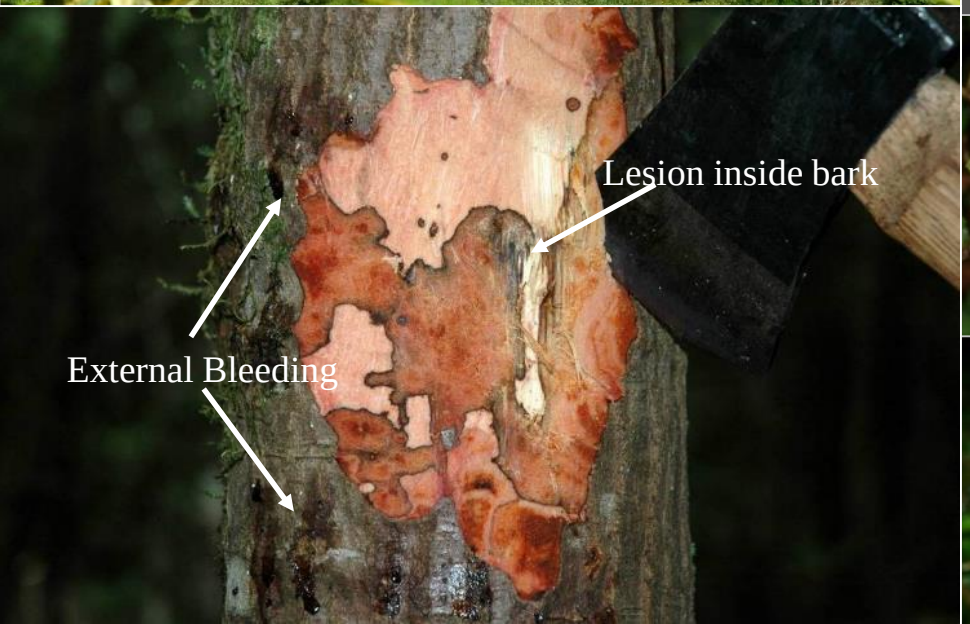
Sudden Oak Death in Oregon Forests

Oregon Department of Forestry
Oregon Department of Agriculture
Oregon State University
USDA - Forest Service
USDI - Bureau of Land Management
Association of Oregon Counties

SOD in Oregon

- *Phytophthora ramorum* (non-native)
- Tanoak is the key host species
- Many hosts infected (and regulated)
- Requires mild/moist environments
- Survives in a variety of substrates – plant debris, soil, water
- Reproduces by spores
- Origin unknown
- Many pathways for dispersal
- Aerial spread


Curry County, 2014. Tanoak mortality




Rhododendron

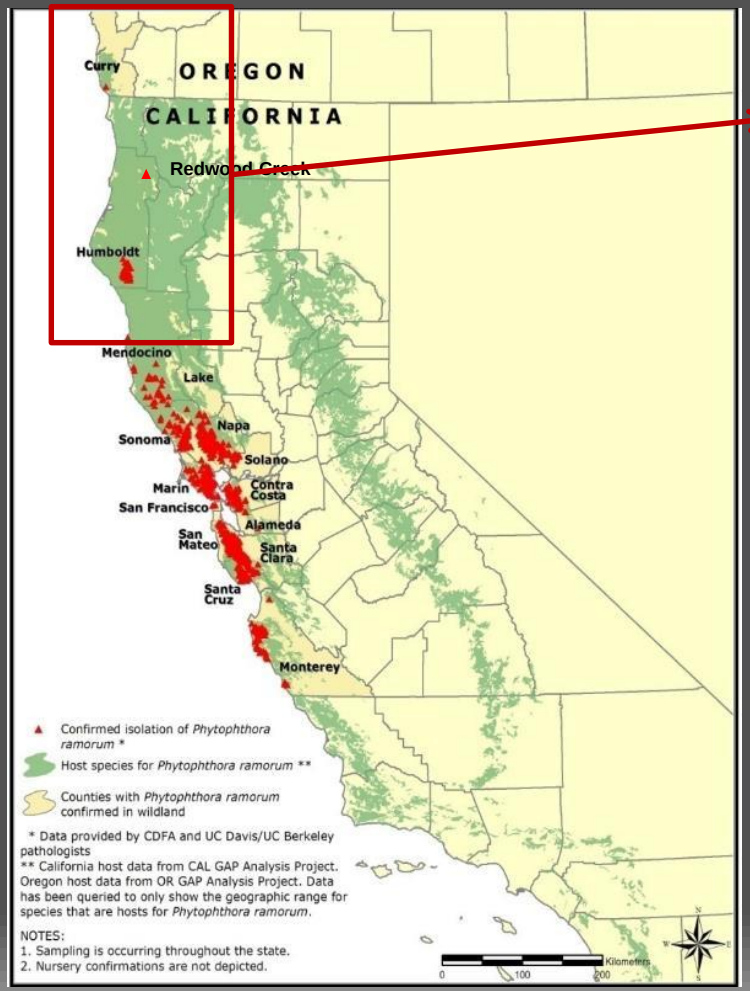

Douglas-fir

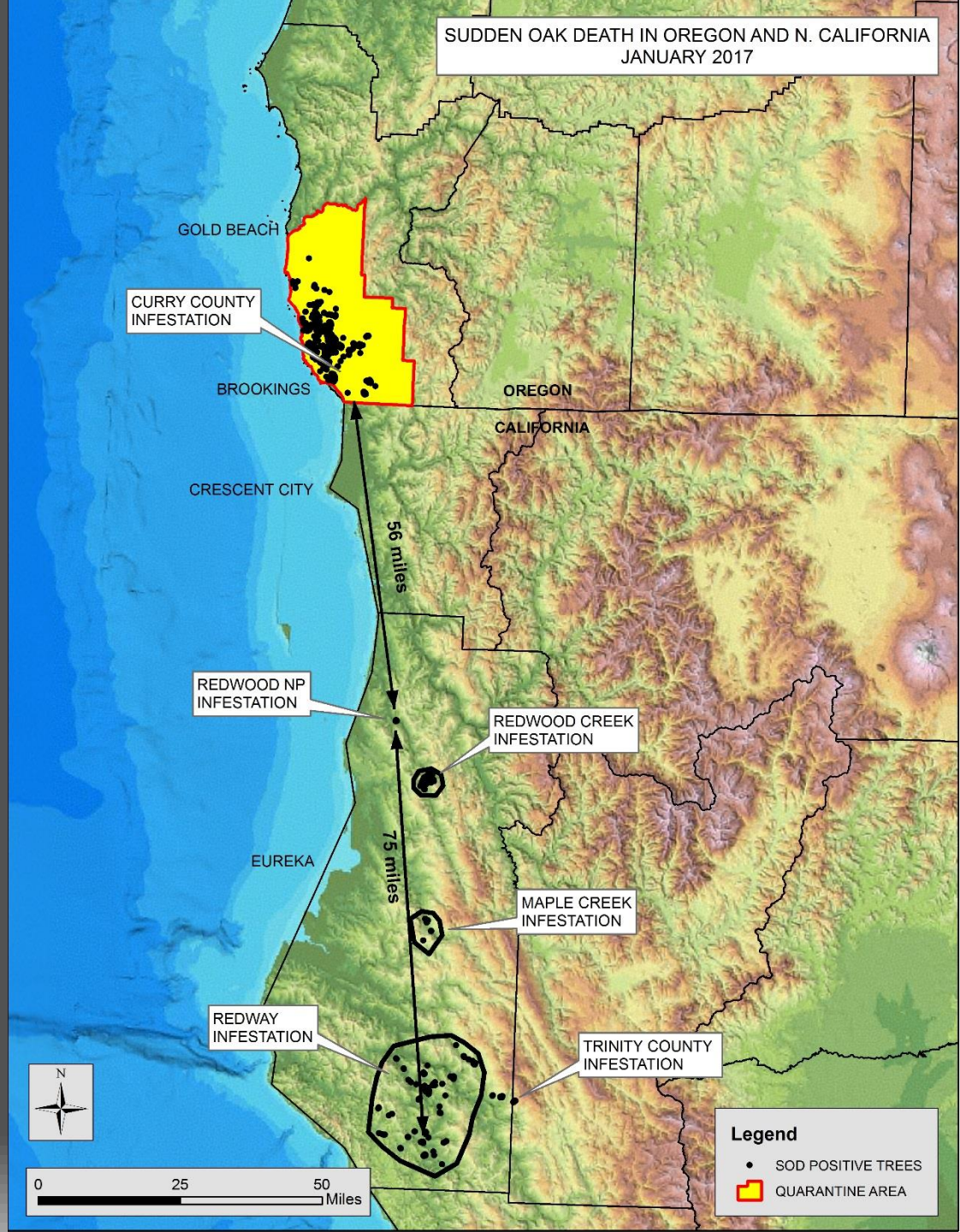

Grand fir


Oregon myrtle

SOD in Oregon and California

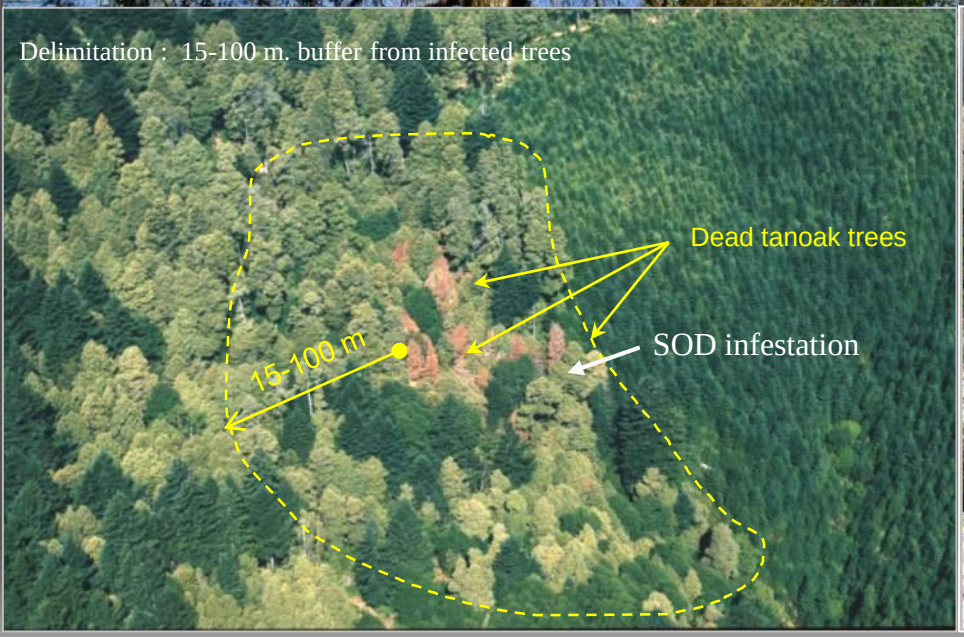
- Oregon: discovered 2001
- First introduction – 1998 (Brookings)
- Second introduction – 2010 (near Cape Sebastian)
- Third introduction- EU1 Pistol River
- Origin unknown / California





Sudden Oak Death Program in Oregon Forests

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



Ground-based transect surveys

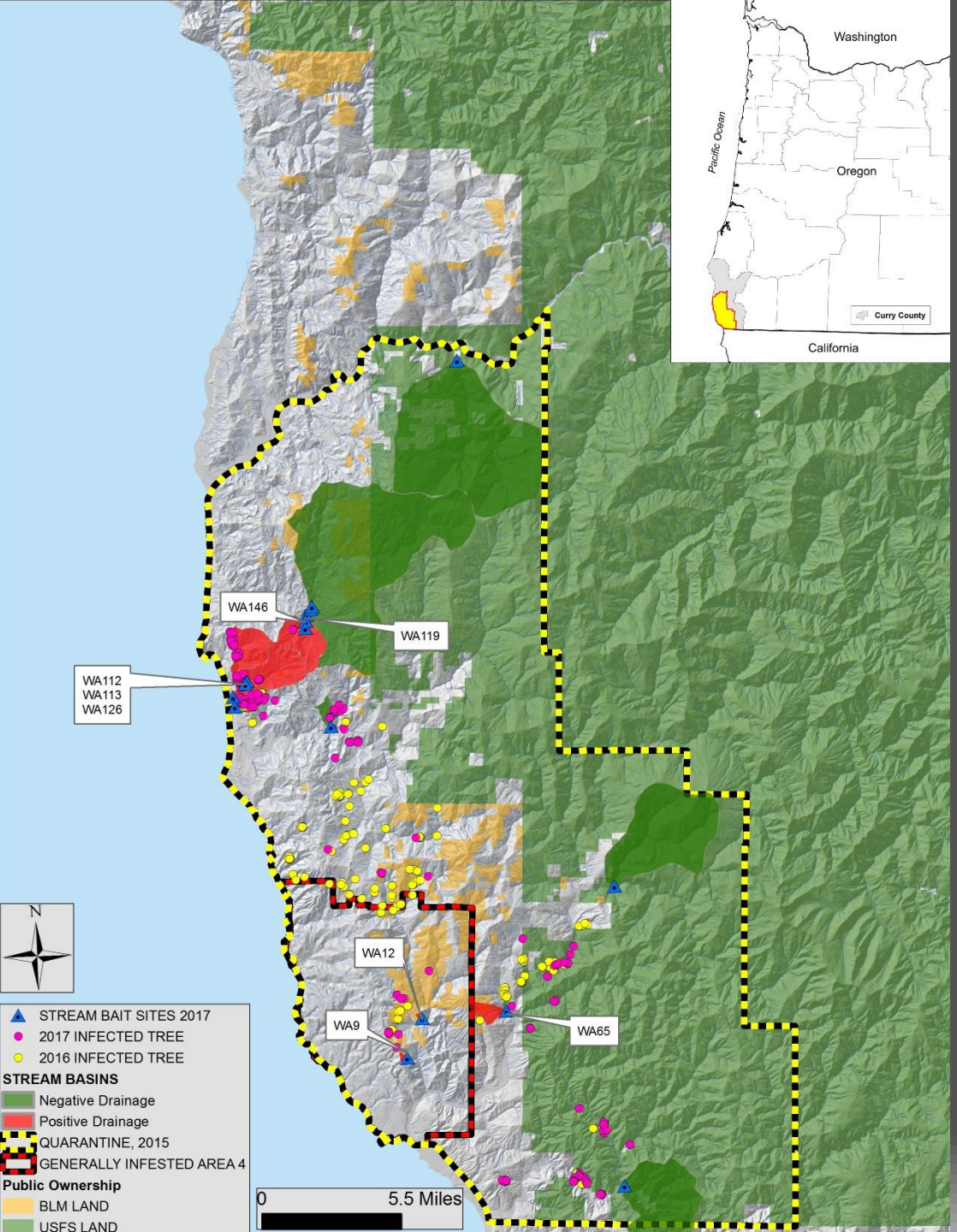
- Delimitation of treatment areas
- Pest-free certification of timber sales
- High risk areas based on risk models and stream baiting results

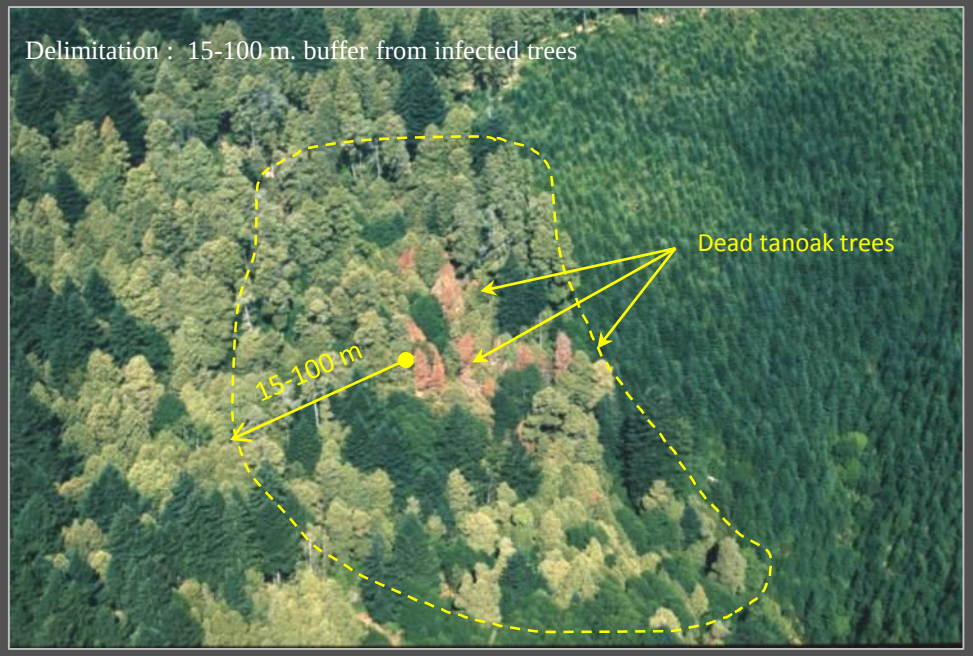
Stream Baiting

50 sites in 2016

15 sites in 2017

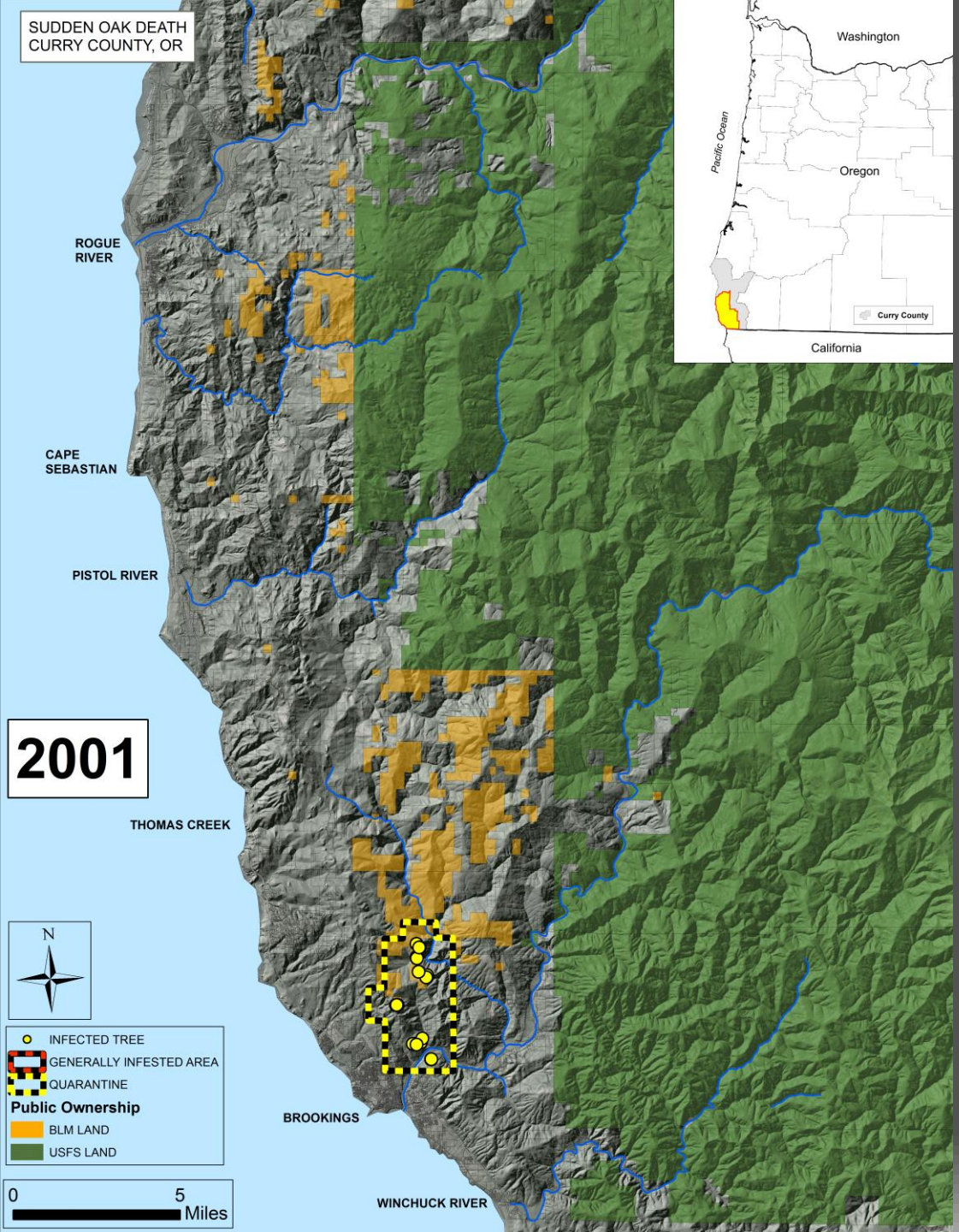
- 2017: 10 drainages tested positive for *P. ramorum* (2 are positive controls)
- Infected plants have not been found in 1 of them following restrictions of the Chetco Bar Fire





Delimitation and Treatment

1. Treatment area buffers; 50 to 300+ ft, recently as small as 20 ft.
2. Herbicide injection to prevent stump sprouting (usually)
3. Cut and burn tanoak, rhododendron, huckleberry, sometimes myrtle.
4. Costs : $3,000-$5,000 / acre
5. No cost to private landowners where treatment is required by quarantine rule, but no compensation for loss.



SUDDEN OAK DEATH

SOD Quarantine Regulations established under the regulatory authority of ODA

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

Eradication treatments can locally eliminate disease and stop spread if infestations are detected early and treatments are completed promptly and at the proper scale

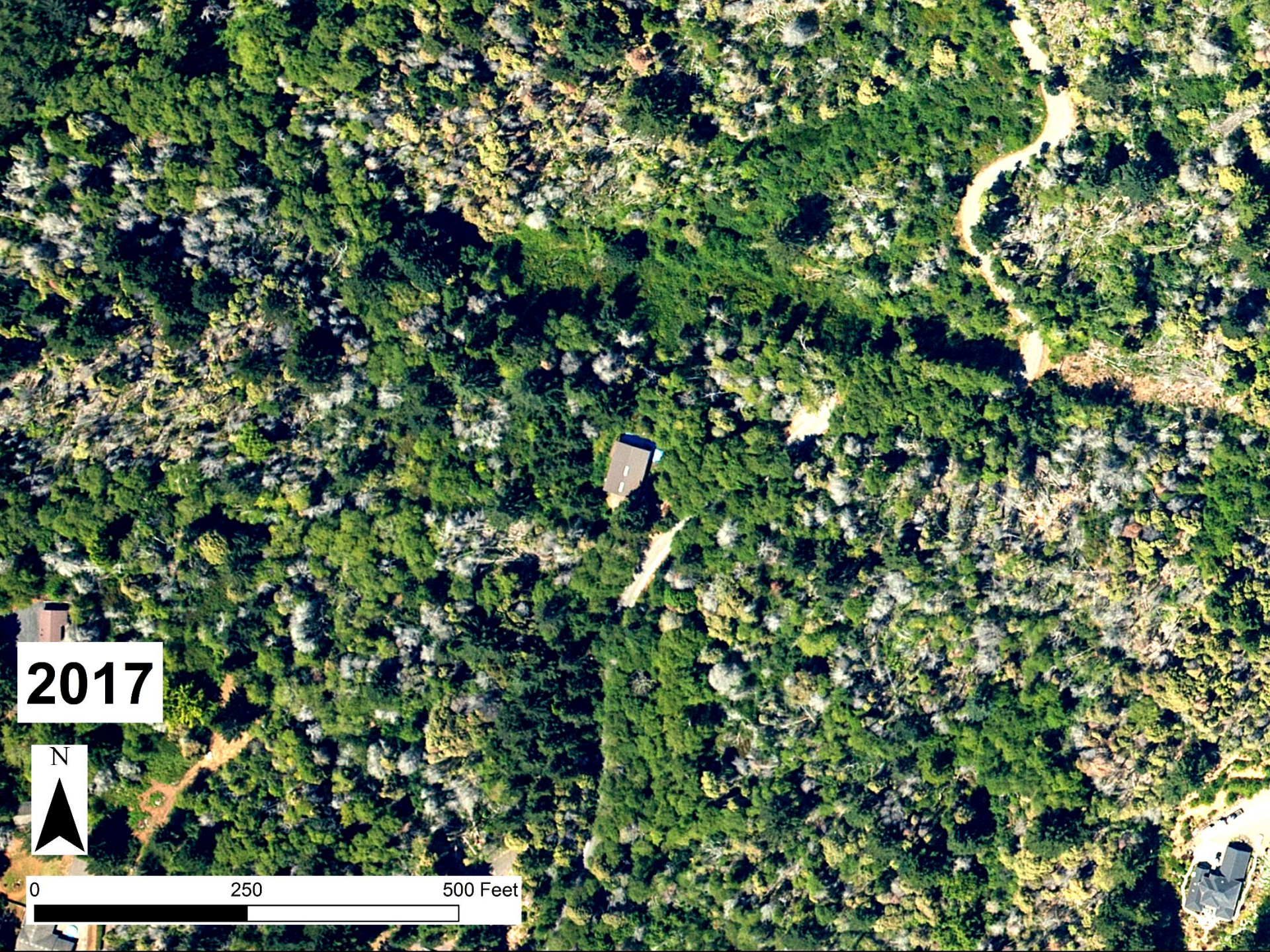

2012
N
0
250
500 Feet

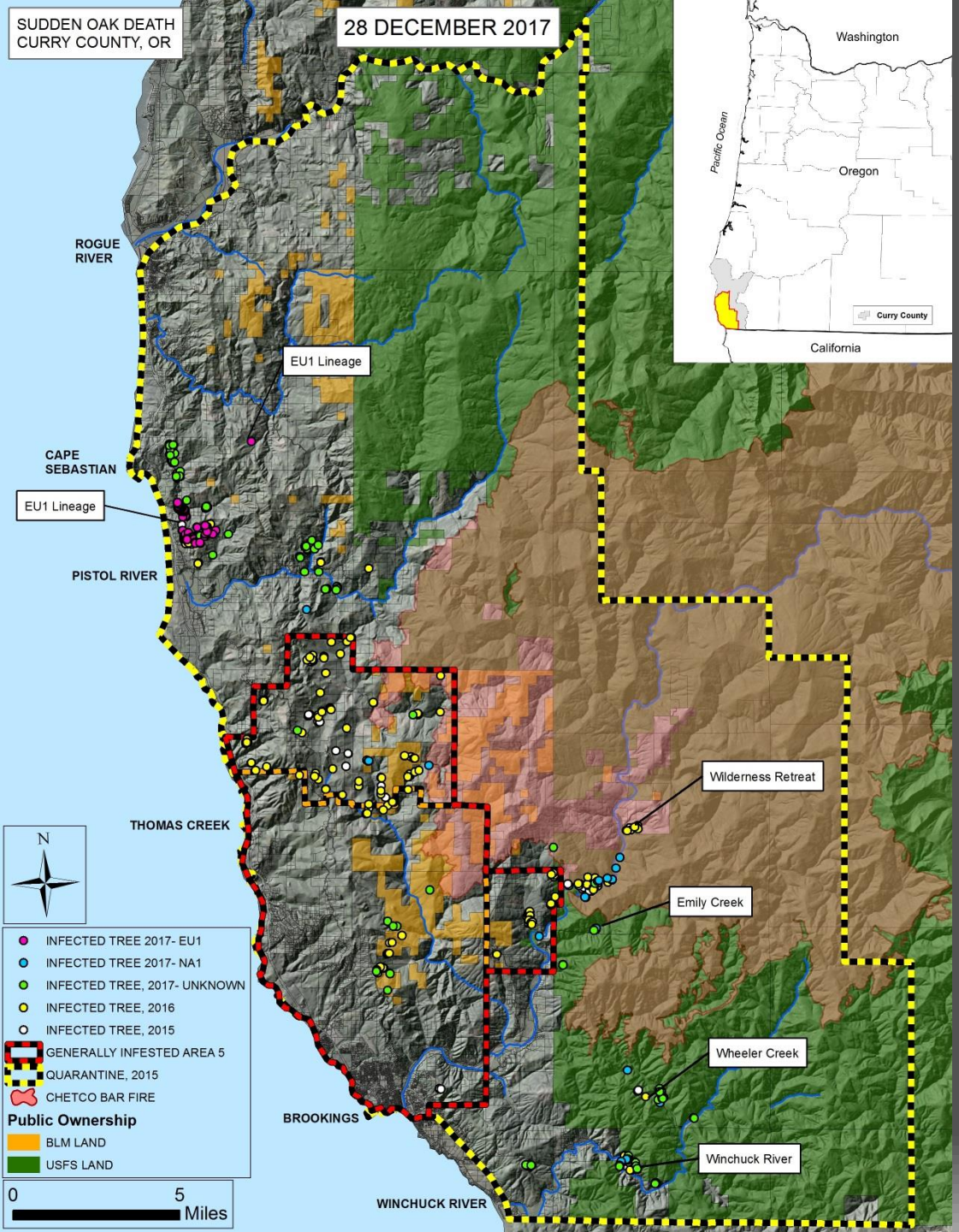

2013
N
0
250
500 Feet


2014
N
0
250
500 Feet


2015
N
0
250
500 Feet


2016
N
0
250
500 Feet


2017
N
0
250
500 Feet



SUDDEN OAK DEATH 2015-2017

2015: 18 new sites outside the GIA in 2015; none more distant than previous sites, and none near the new quarantine boundary.

Quarantine area expanded (for 7th time) to 515 mi^2 .

EU1 Lineage discovered near Pistol River

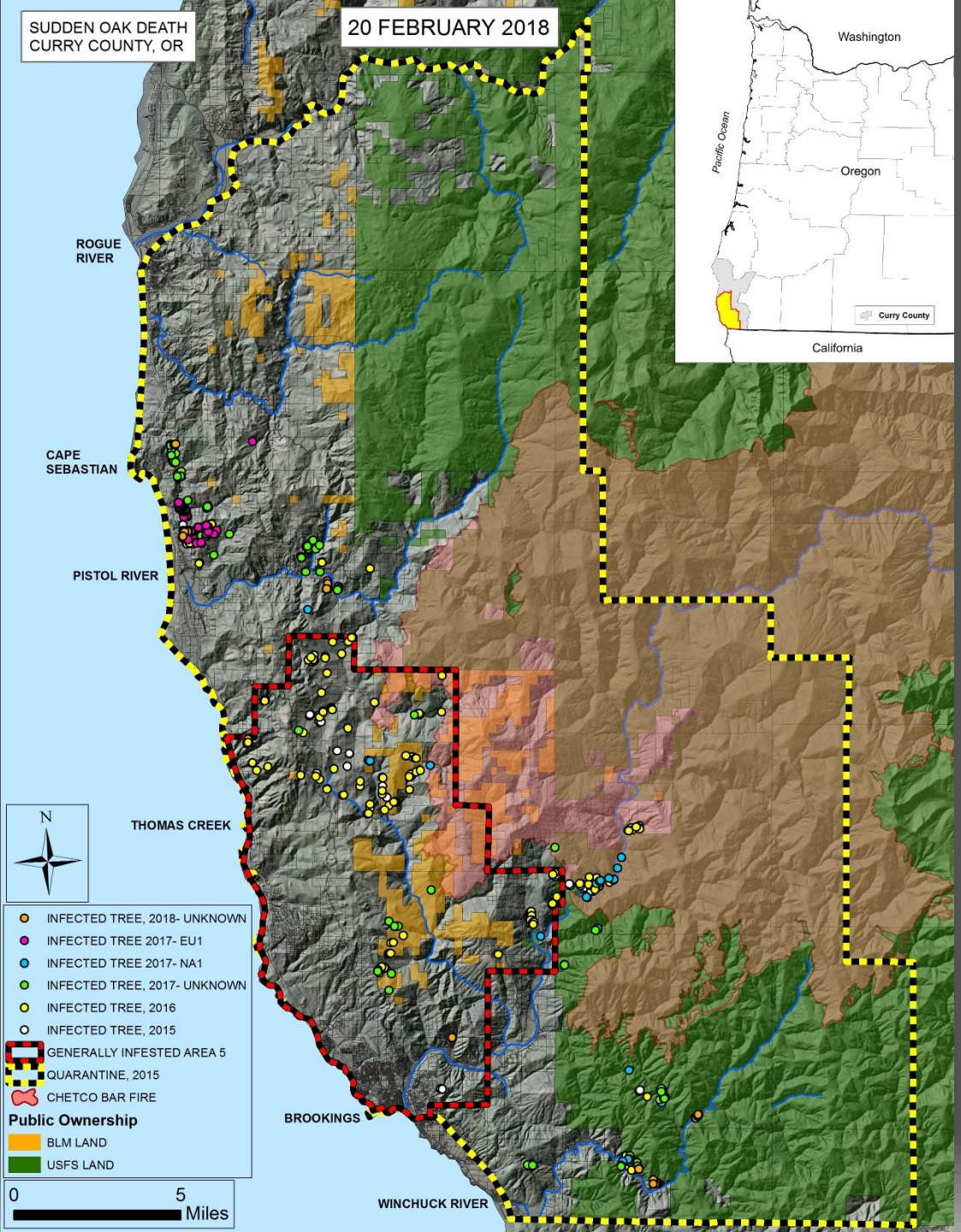
2016: 65 new sites outside the GIA in 2016; none more distant than previous sites, and none near the new quarantine boundary.

EU1 Lineage detected a second time- 25 infected trees.

2017: 39 new sites outside the GIA in 2017; none more distant than previous sites, and none near the new quarantine boundary.

EU1 Lineage detected in 119 trees- eradication treatments on-going.

Chetco Bar Fire



Chetco Bar Fire and SOD

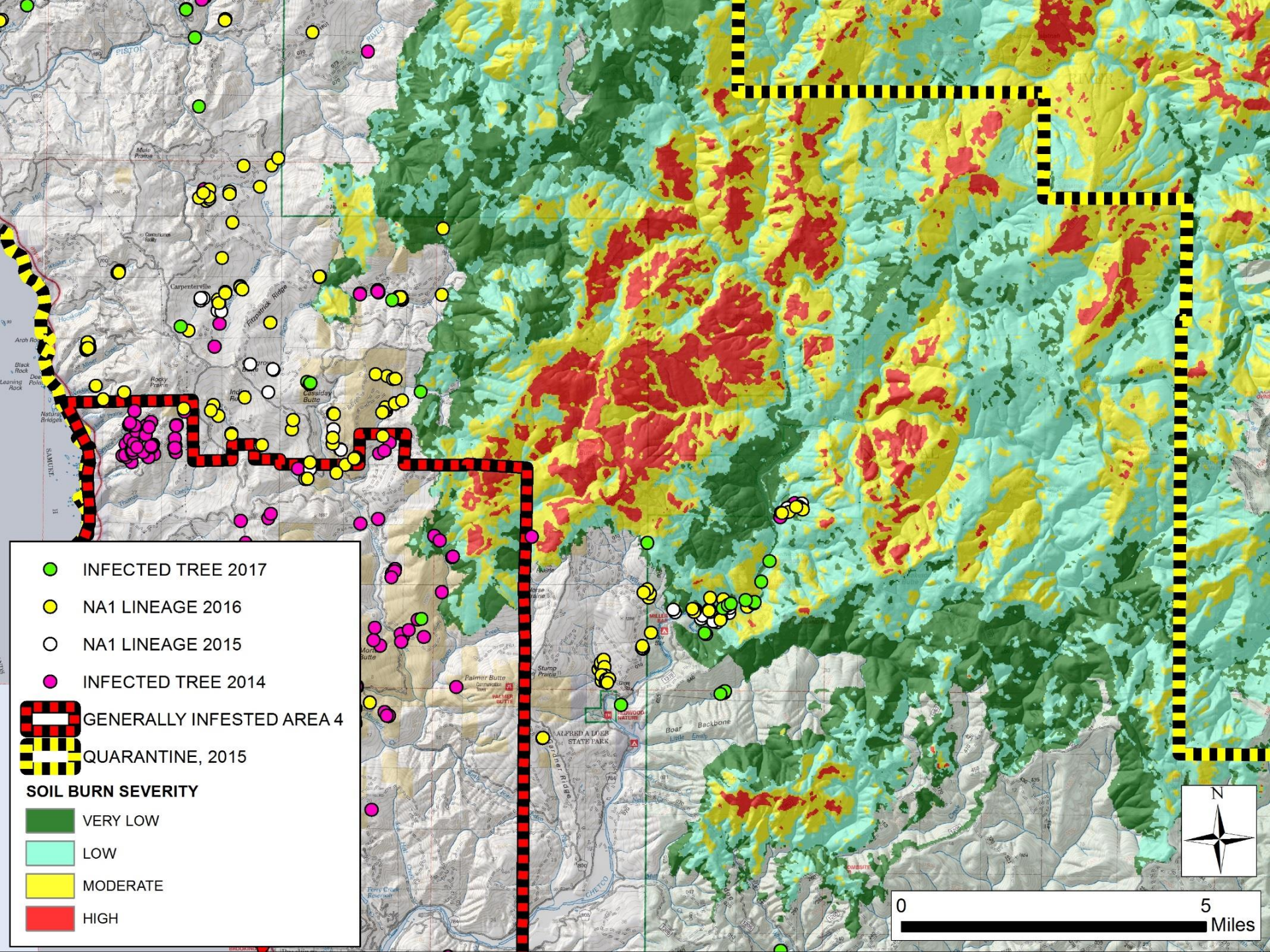
Infestations from 2014-2017 burned= 27
Total infestations from 2014-2017= 142

Ownership	Treatment acreage
BLM	34
Forest Service	96
Private	28

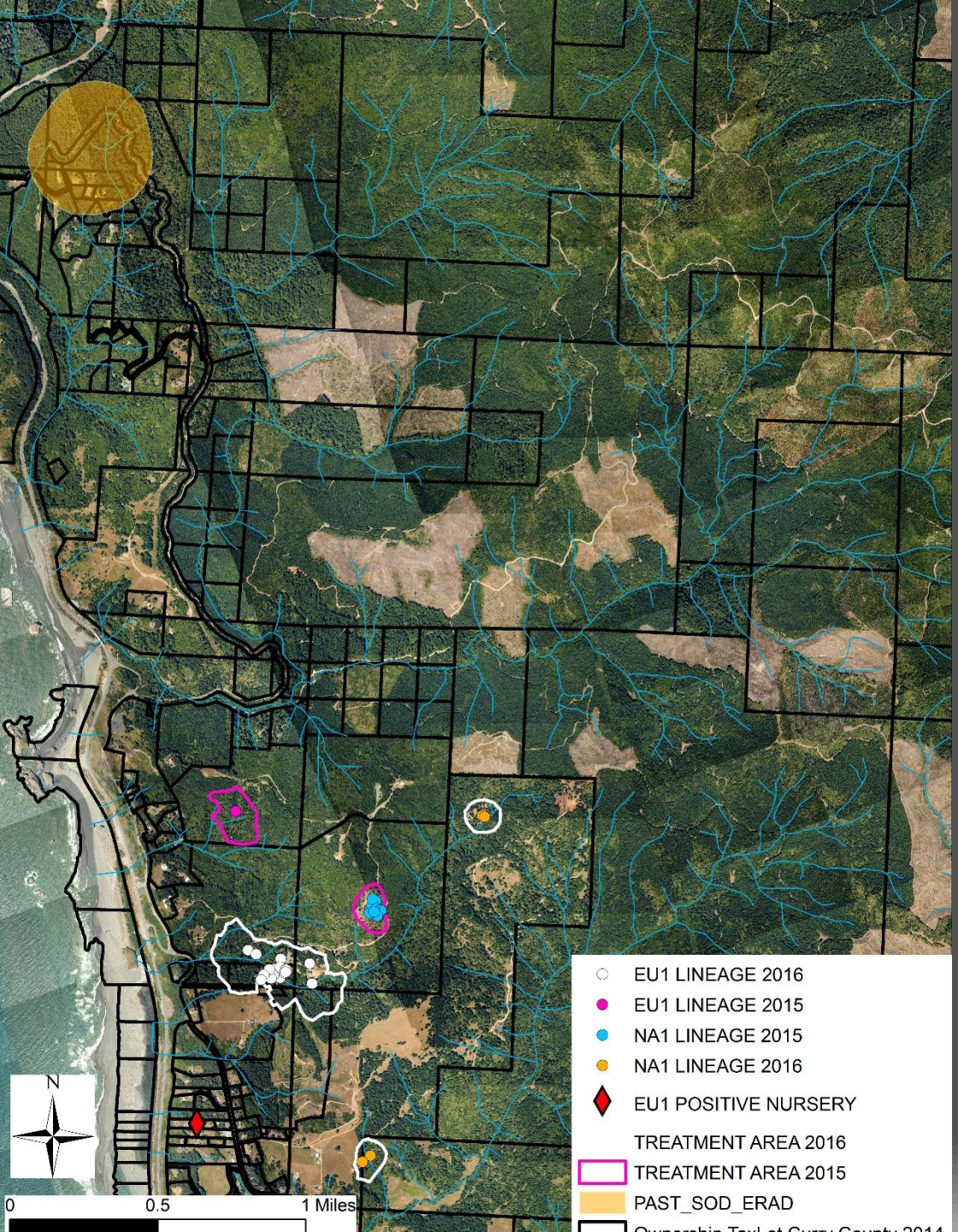
The fire will affect future aerial survey efforts in the area as tanoak mortality may be fire-related and not caused by SOD.

The Chetco Bar Fire limited access to 7 out of the 16 stream baits during second half of stream baiting season


DES 359
Photo by Jes Burns Earthfix OPB


INFECTED TREE 2017
NA1 LINEAGE 2016
NA1 LINEAGE 2015
INFECTED TREE 2014
GENERALLY INFESTED AREA 4
QUARANTINE, 2015
SOIL BURN SEVERITY
VERY LOW
LOW
MODERATE
HIGH
N
0
5
Miles


National Forest
RIVER
ACCESS
Nook Bar



EU1 Infestation- 2015-2016

Single tanoak infected with the EU1 clonal lineage of *P. ramorum* found in May 2015.

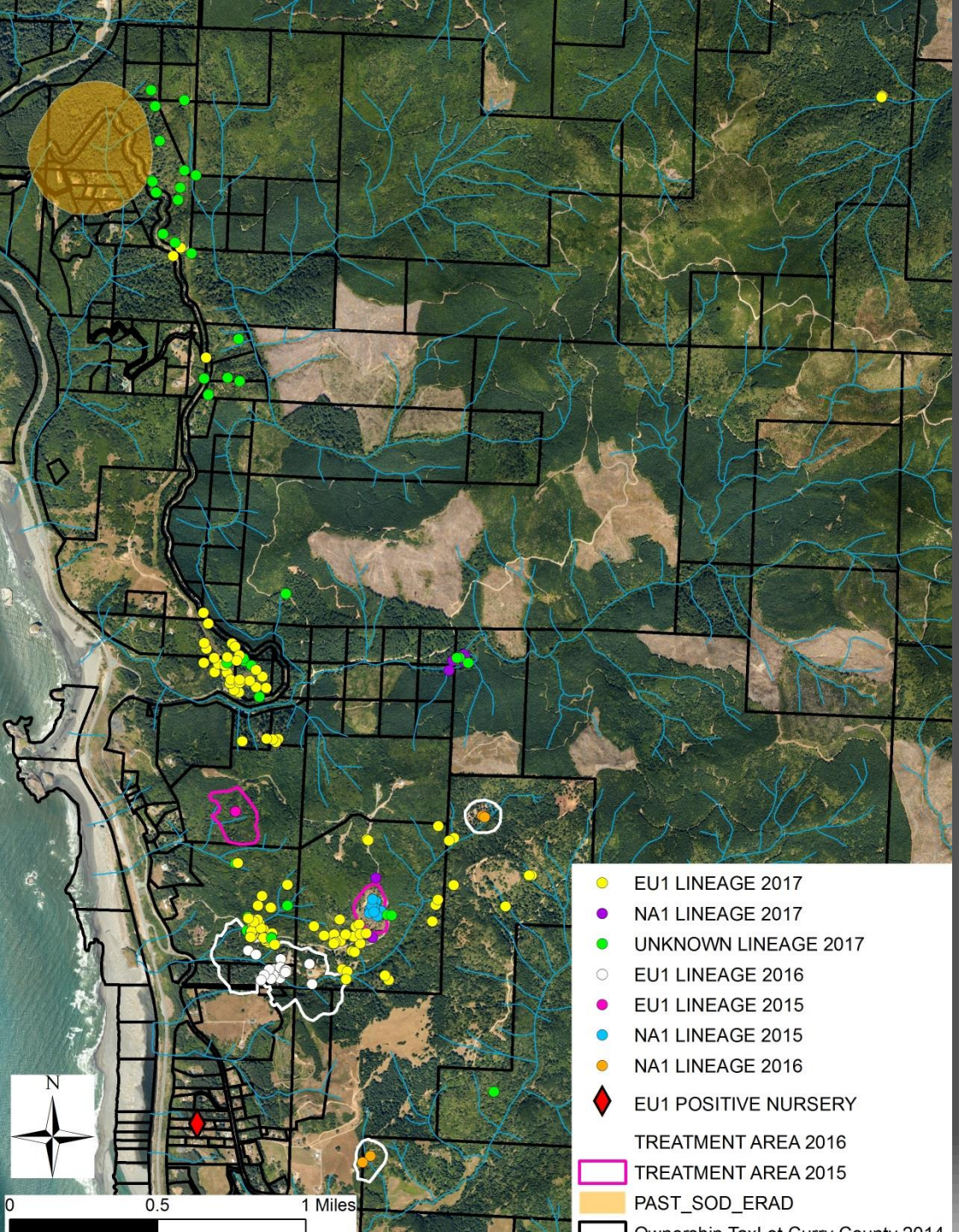
- 13 acres treated

First report of EU1 clonal lineage in US forests

EU1 lineage damages conifers in Europe and is potentially more damaging than other lineages

In 2016, 25 trees were detected ½ mile south of 2015 tanoak.

- 52 acres treated



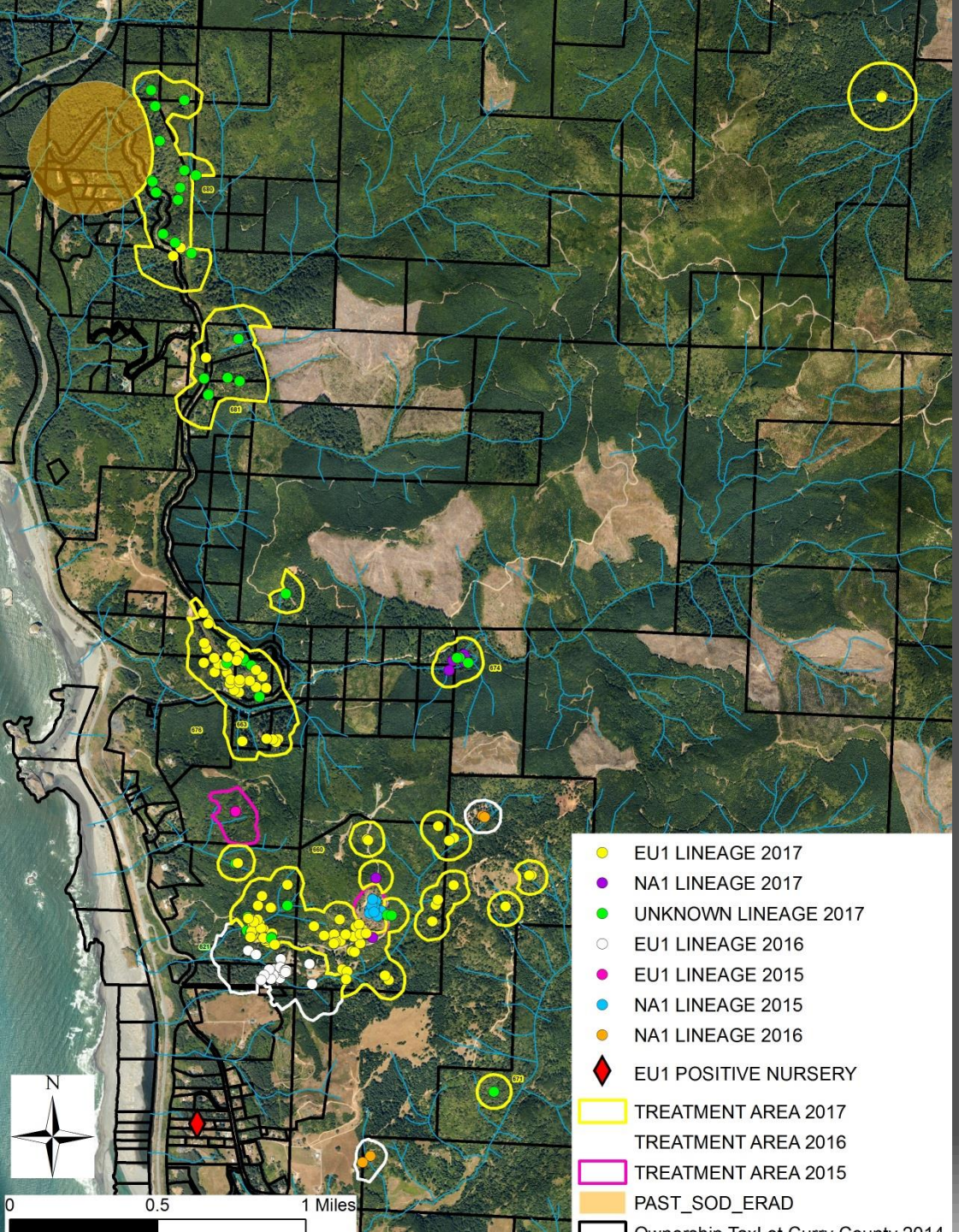
EU1 Infestation-2017

In 2017, 119 confirmed EU1 positive trees have been detected north and north east of the previous infestations

Awaiting lineage testing on 43 trees in the same area

Intensive ground surveys of the Cape Sebastian/ Pistol River area were conducted late summer

EU1 infestations are ODF's top priority.



EU1 Infestation-2017-2018

ODF will be treating 330 acres of EU1 infested areas

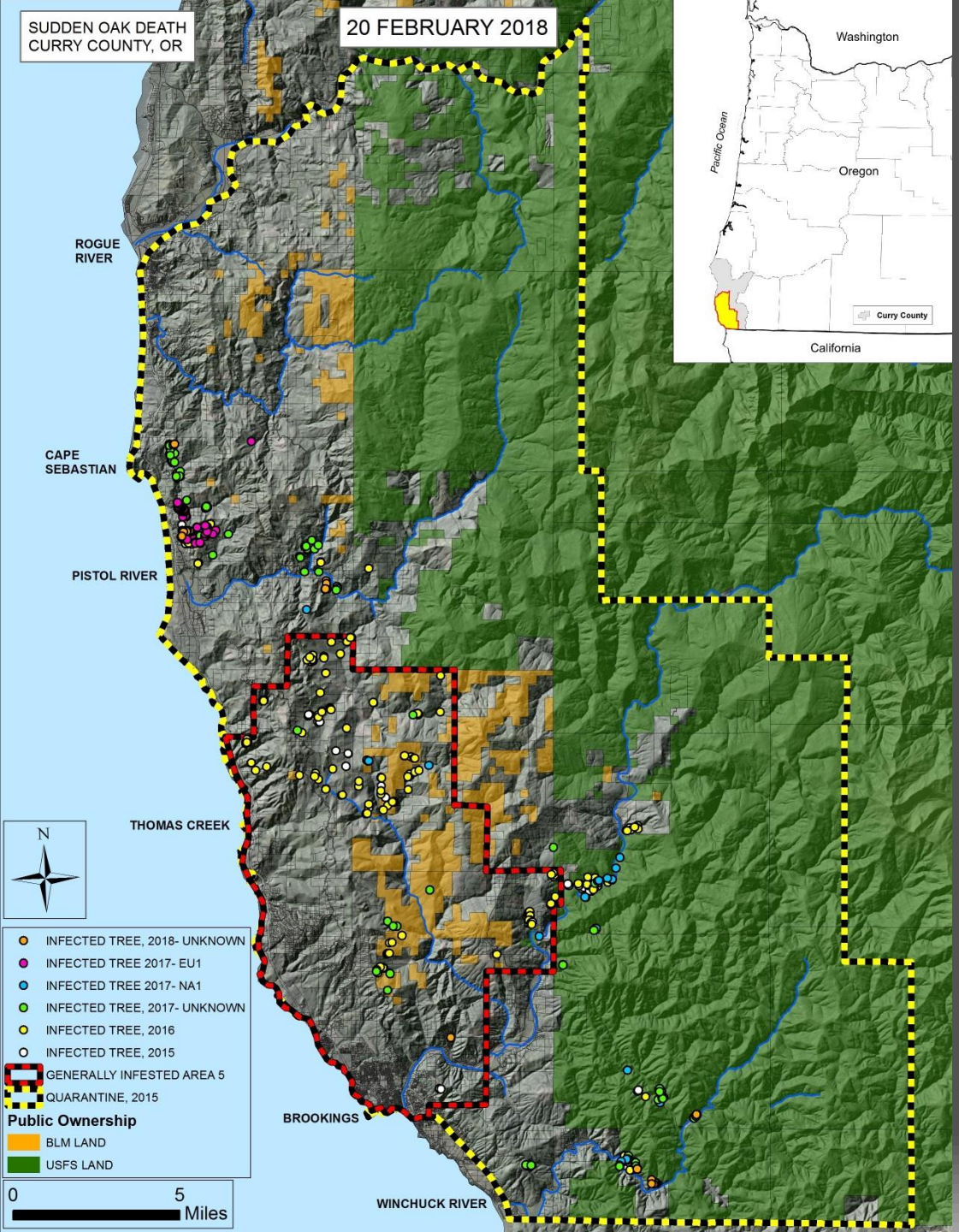
Working with both OPRD and ODOT to treatment their ownerships under IAAs

Landowner resistance in two cases

Current EU1 Studies at OSU

Multiple studies comparing the aggressiveness of EU1 and NA1.

- Log inoculations of DF, tanoak, Oregon white oak, western hemlock, Sitka spruce, and madrone.
  - Logs of Douglas-fir, tanoak, western hemlock, cankers caused by EU1 were twice the size of cankers caused by NA1
- In a laboratory sporulation study, EU1 produced two to three times more spores than NA1 on tanoak seedlings.
- Seedlings of Douglas-fir, Sitka spruce, and western hemlock, were planted under EU1 infected tanoaks and NA1 infected tanoaks.
  - At the conclusion of the experiment, three to four times more trees were infected under EU1 than NA1.



SUDDEN OAK DEATH 2018

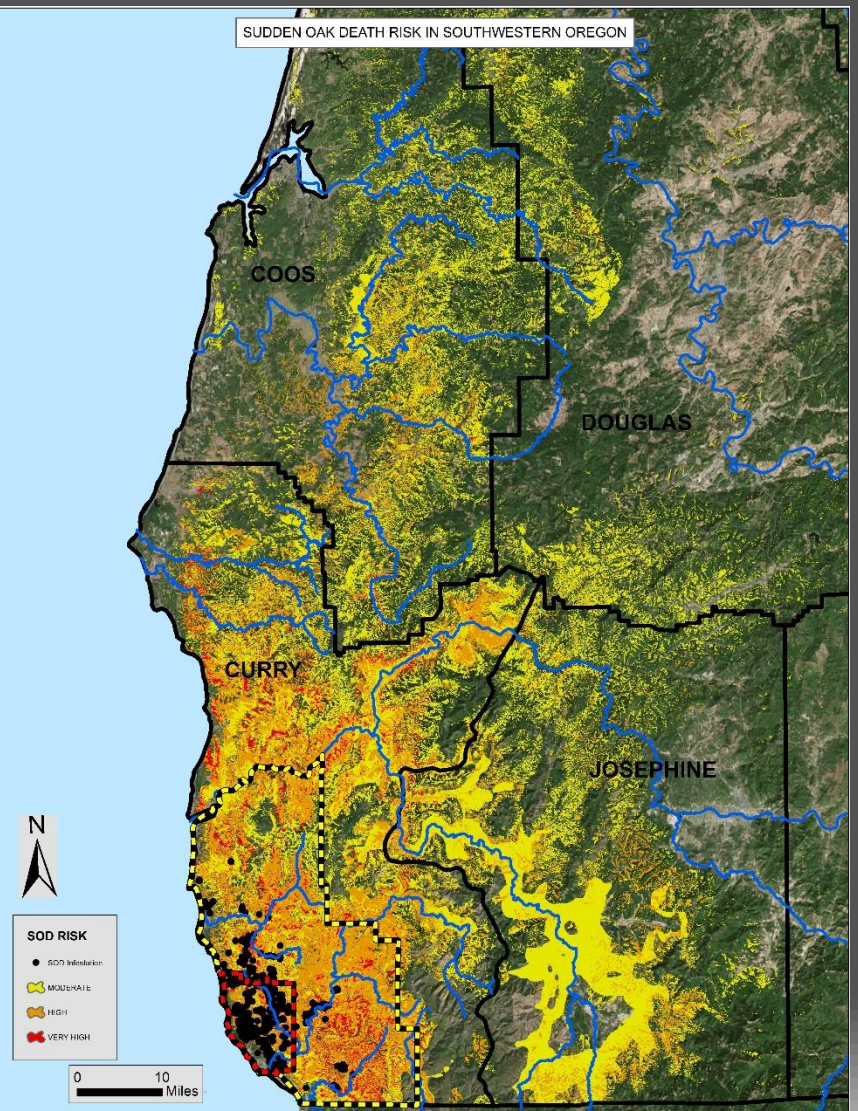
ODF SOD Program received an additional $450,000 from the state legislature to treat EU1 infestations

1 new infestation detected and intensification of 2 2017 infestations

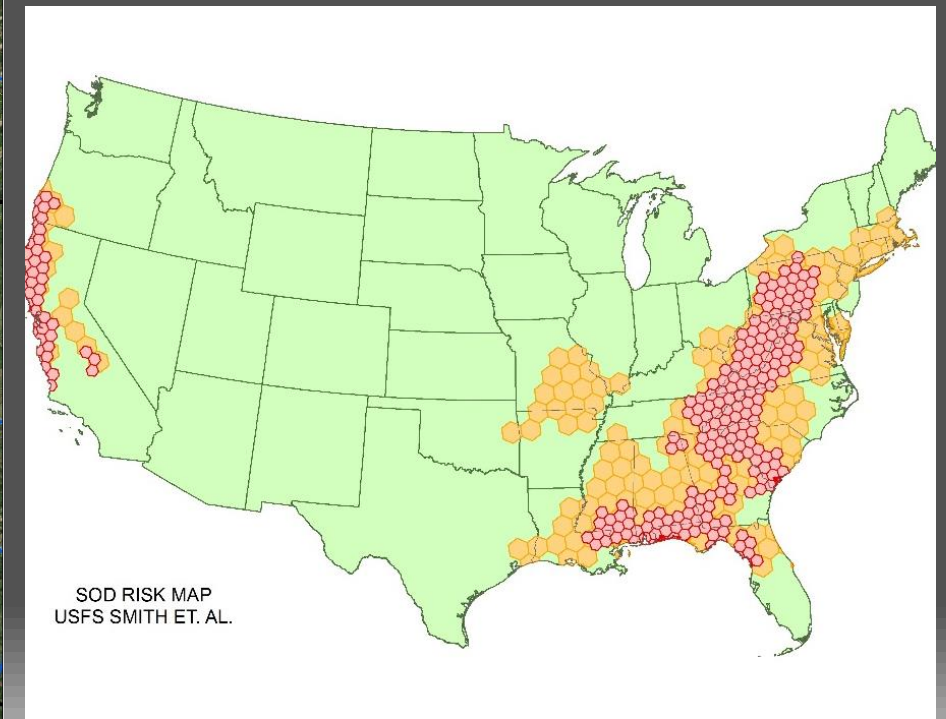
ODF has prioritized all EU1 infestations within the SOD quarantine for treatment this year. All NA1 sites from 2017 may not receive any eradication treatment this year.

Treatment funds total approx. $1,375,000 for eradication of EU1

Slow the Spread of SOD



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




2012
N
0
250
500 Feet