Slowing the Spread of Sudden Oak Death in Oregon: An Overview of a Landscape Scale Disease Management Program

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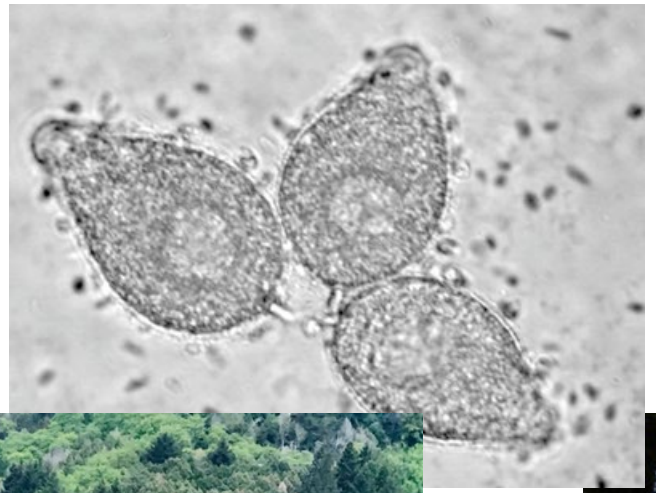
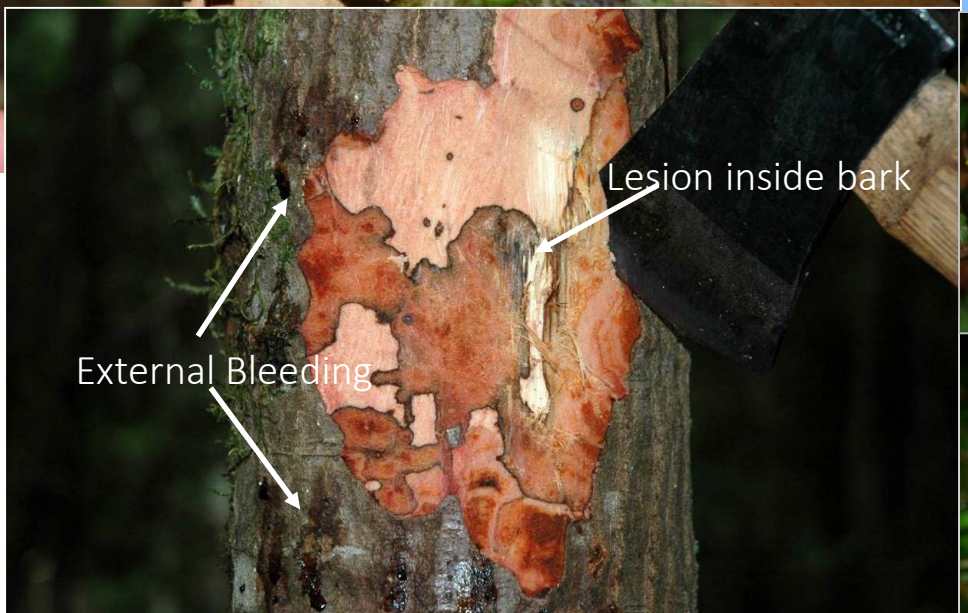
Phytophthora ramorum



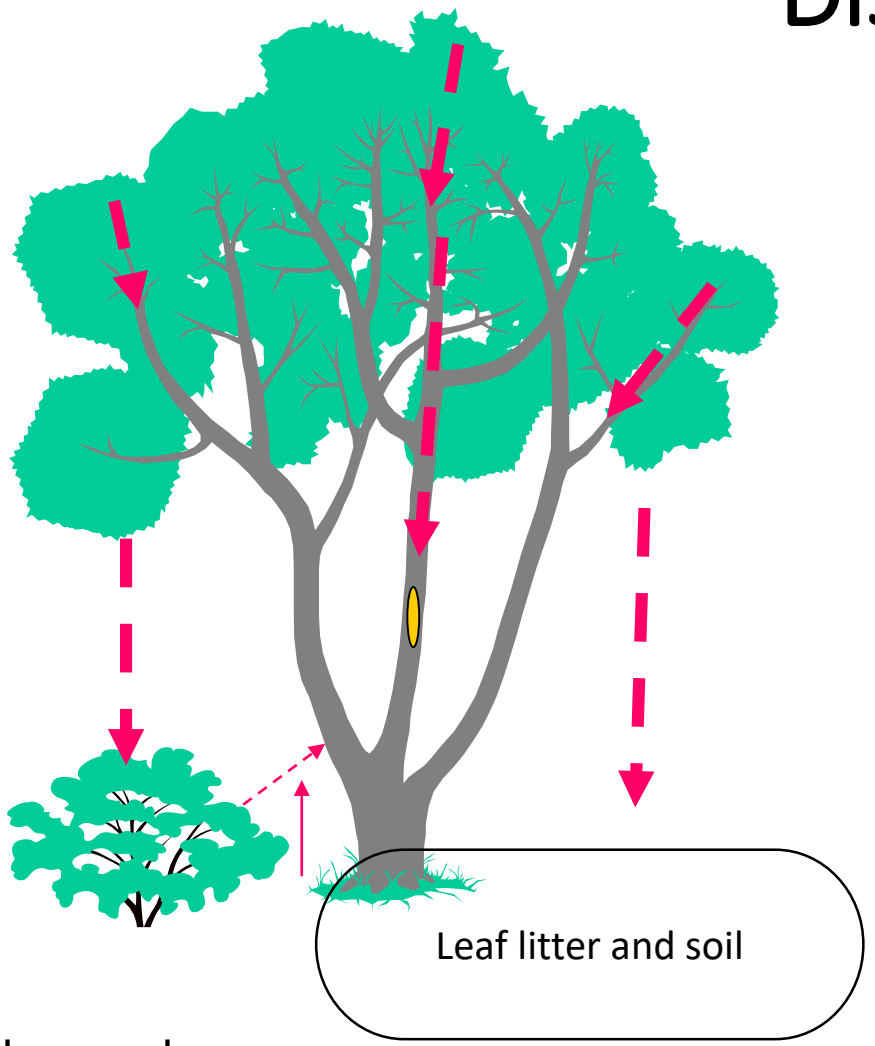
- Relatively new pathogen of world-wide importance
- Extensive mortality of tanoak and coast live oak in California and Oregon
- Killing larch plantations throughout the United Kingdom; western hemlock and Douglas-fir also damaged there
- **Pathogen introduced to Oregon four times through infected plant nursery stock**

Tanoak (*Notholithocarpus densiflorus*) is the key host species

- Tanoak is readily infected and killed by *Phytophthora ramorum,* and is the main spore producer
- Many plant species infected; only when near infected tanoak (but they are regulated)
- Oregon myrtlewood (*Umbellularia californica*) has not been a factor in disease spread

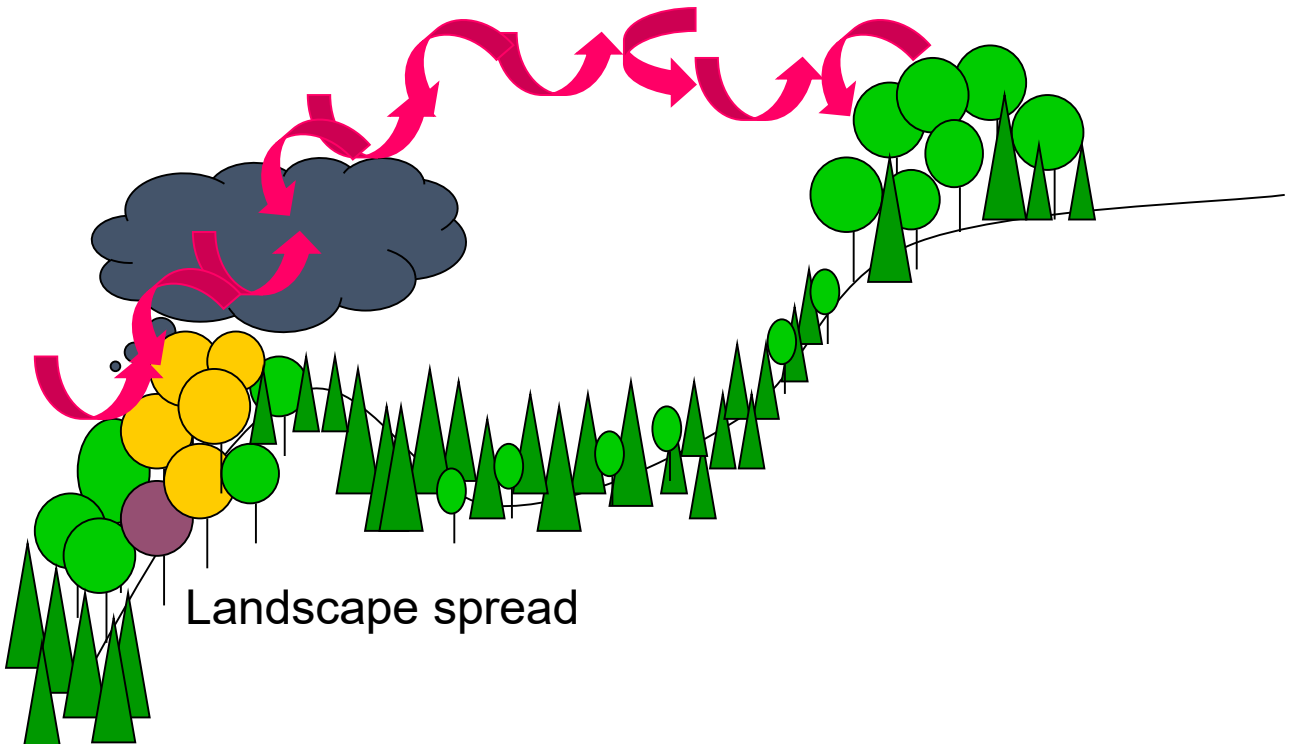


Disease Spread



Local spread

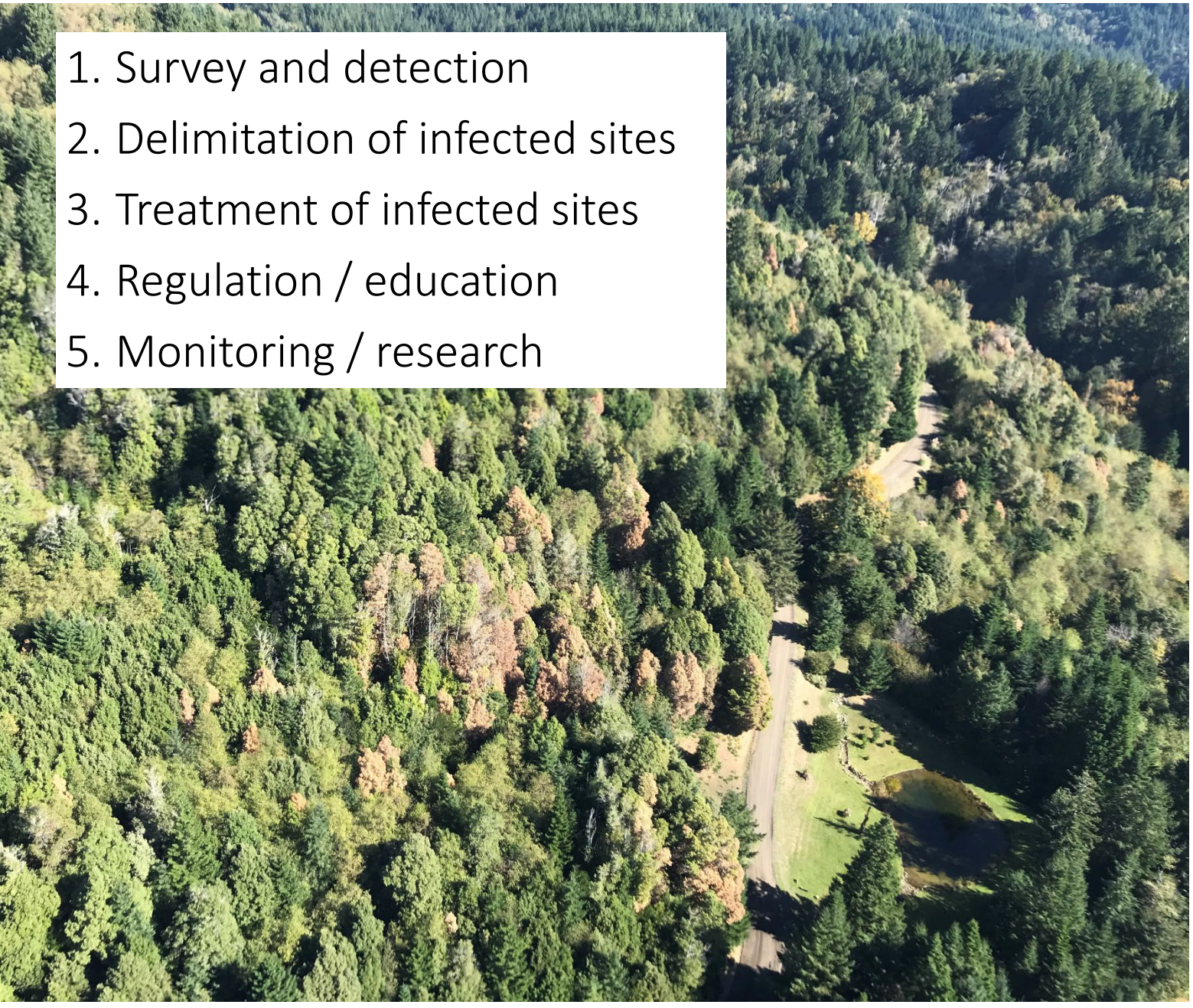
- Sporulates year round: requires moisture
- Local spread: canopy downward
- Aerial spread via turbulent transfer
- Long distance spread via infected host material



Landscape spread

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



SOD Disease Treatment in Oregon

1. Cut and burn tanoak, rhododendron, huckleberry, sometimes myrtle.
2. Larger treatment areas (300 to 600ft buffer) most effective
3. Costs : $3,500- $10,000/acre
4. No cost to private landowners where treatment is required by quarantine rule, but no compensation for loss.
5. Infestations detected early and treated with wide buffers can eliminate disease and stop spread


2012
N
0
0.075
0.15 Miles

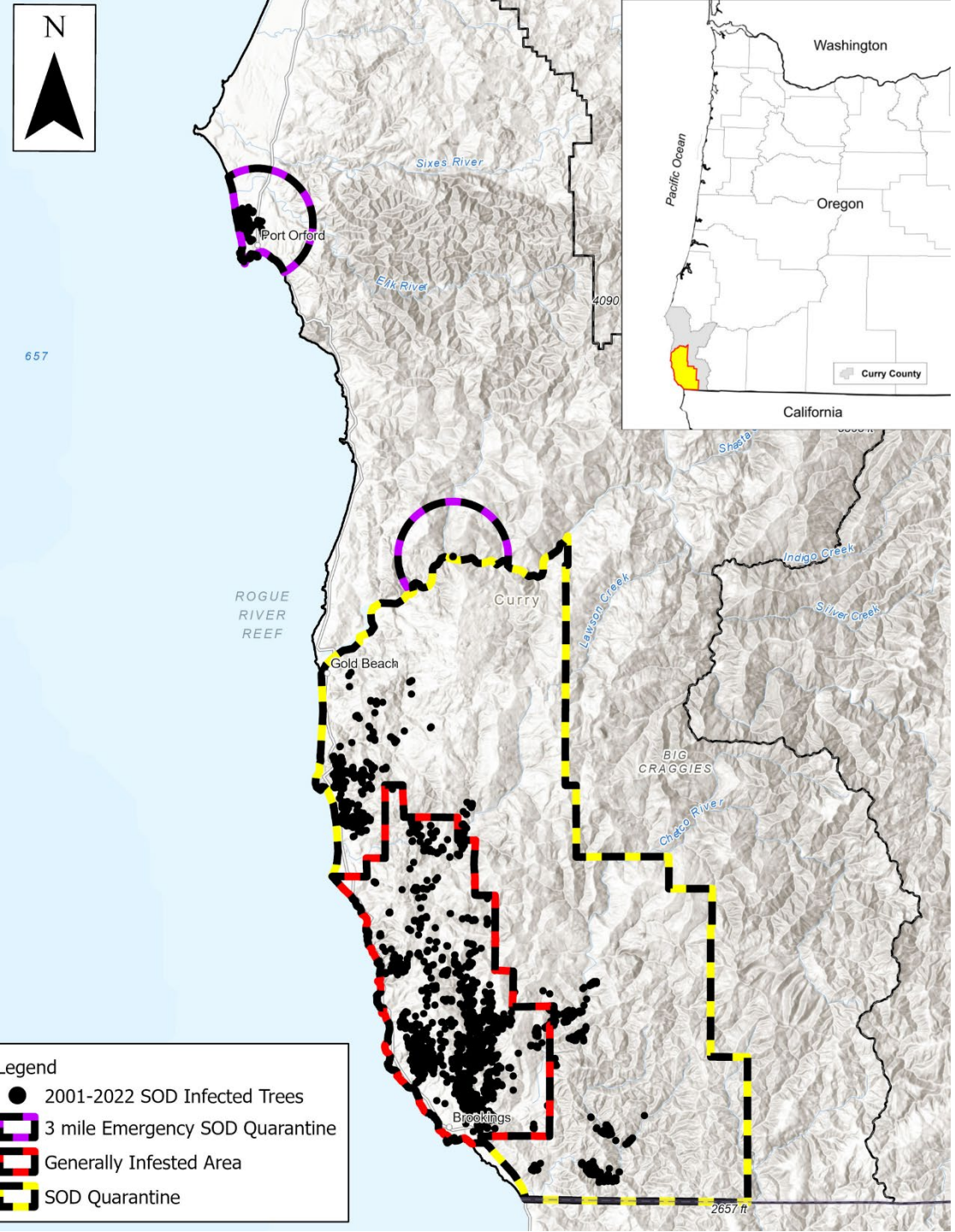

2015
N
0
305
610 Feet


2016
N
0
300
600 Feet


2017
N
0
0.075
0.15 Miles


2020
N
0
305
610 Feet

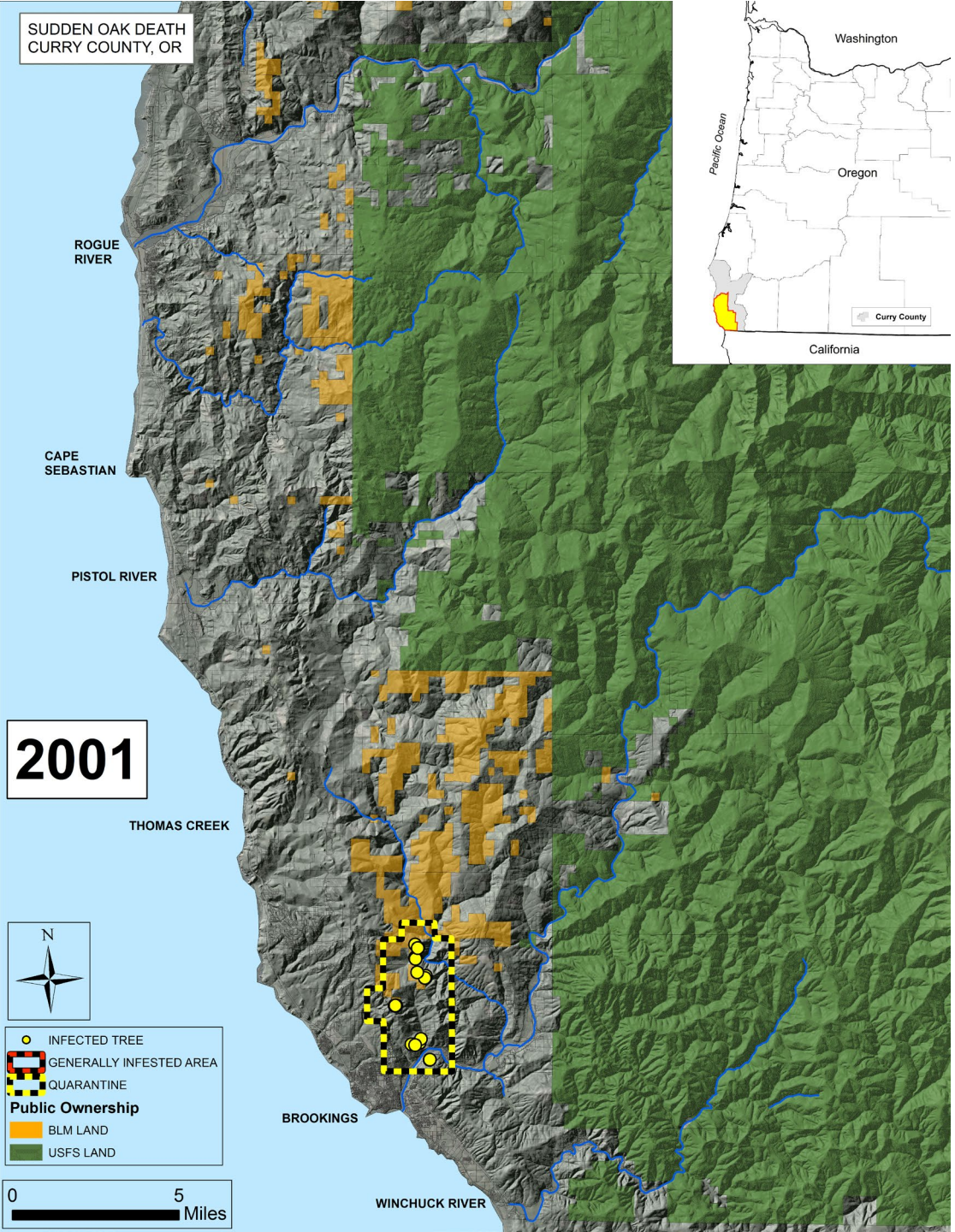

2022
N
0
0.075
0.15 Miles



SOD in Oregon

Over 20 years of disease management

- Started out as an eradication program in 2001
  - All infested sites received some level of treatment
- Shifted to the current slow-the-spread program in 2010
- New pathogen variants in Oregon forests
  - 2015: EU1
  - 2021: NA2
- **Over 8,200 acres of SOD treatments completed across all lands**



SOD in Oregon

State Quarantine (ORS 603-052-1230)

- Managed under the regulatory authority of the Oregon Dept. of Agriculture
- Requires private and state landowners to treat SOD on their property
- ODF pays for treatments when required under the Quarantine
- ODF works under ODA's authority to enforce the SOD Quarantine
- Generally Infested Area (GIA) was established in 2012

Federal Agencies, USFS and BLM, follow state regulations and conduct SOD treatments on their ownership

SOD in Oregon

- Nursery industry federally regulated for movement of *P. ramorum*

SOD in California

- 16 counties under federal quarantine
- No comprehensive state or county regulations on wildland infestations
- Nursery industry federally regulated for movement of *P. ramorum*

Oregon SOD Task Force

- Established 2016 through a block grant to the Association of Oregon Counties
- Originally co-convened by US Senator Jeff Merkley and State Rep. David Brock Smith
- Subcommittees were formed to address different issues of SOD
- A strategic plan was adopted in May 2017
  - Includes subcommittee recommendations
  - Funding requests and recommendations

SOD Task Force Subcommittees

- Funding
- Communication and Civic Engagement
- Core Science Team
- Economic Impact and Workforce Development
- All Lands
- Adaptation

Sudden Oak Death Economic Impact Assessment

- The assessment examined timber-based economic impacts:
  - Since the discovery of SOD in 2001 up until 2018
  - Potential future economic impacts from 2019 through 2038, for the four-county region of Coos, Curry, Douglas, and Josephine County.
    - Under three scenarios:
      - Halting current treatment regime
      - Current service level
      - Focused EU1
- The assessment also examined non-timber impacts, many of which are hard to quantify in economic value.
  - These included:
    - Property values
    - Ecosystem Services
    - Cultural values
    - Wildfire risk

Sudden Oak Death Economic Impact Assessment
Timber Impacts

- Current Impacts
  - No detectable job and wage losses from 2001-2018

Funding SOD treatments for a total cost of $30 million over the next 20 years could offset loss of 1,200 jobs by 2028 and $580 million in wages over the course of 10 years.

2019, impacts might occur as SOD expands to Coos County, which could happen as soon as 2028 (could be offset to 2038):

- Sanctions on southwest Oregon timber exports by China, Japan, and/or Korea
- Loss of 1,200 jobs related to timber export; $57.9 million in annual wages
- Reduction of timber harvest by 15%
- Decline of rural residential property value

Sudden Oak Death Economic Impact Assessment
Non-timber Impacts

- With the current level of spread, the potential non-timber economic costs of SOD are expected to include:
  - Impacts to cultural practices with great historic and traditional meaning—acorn gathering, materials for basket weaving, hunting—are already compromised by SOD
  - Reduced rural residential property value; loss of real estate transaction revenues
  - Decline in recreation and tourism income if an unfavorable public perception of the region takes hold due to the die off of tanoak trees
  - A key concern regarding SOD voiced during interviews with local leaders and SOD experts is potential increased wildfire risk associated with stands of dead trees and dry wood

SOD Program Costs 2001-2022 (Forests)

Funding and SOD Task Force

JEFF MERKLEY

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MERKLEY, WYDEN SOUND THE ALARM, URGE MORE FUNDING TO ADDRESS SUDDEN OAK DEATH

Friday, February 18, 2022

Washington, D.C. – Oregon's U.S. Senator Jeff Merkley and Ron Wyden today sent a letter to the Bureau of Land Management strongly urging the agency to put funds from the *Infrastructure Investment and Jobs Act* to go towards the mitigation and treatment of Sudden Oak Death, a disease that poses severe economic and environmental threats to counties in Southern Oregon.

> "Sudden Oak Death poses a significant threat to a multitude of ecosystems and plant species and has already killed millions of tanoaks in southern Oregon and northern California," the senators wrote. "The disease has been in Curry County since 2001, but a new site was recently identified outside of the quarantine area. The State of Oregon has increased its investment in SOD treatments, but more funding is needed to treat the area currently infected. Without treatment, SOD would have serious economic impacts, including job losses, declines timber harvest, and other significant economic and cultural impacts."

Senator Merkley has been a long-time leader in fighting the spread of Sudden Oak Death, and ensuring Oregon continues receive the federal funding and resources needed to combat this disease. He convened a task force in 2017 to develop a collaboration-based action plan to contain Sudden Oak Death and last year secured funding for

Modeling pest and pathogen spread just got easy.

Outlook for SOD in Oregon

ODF and USFS

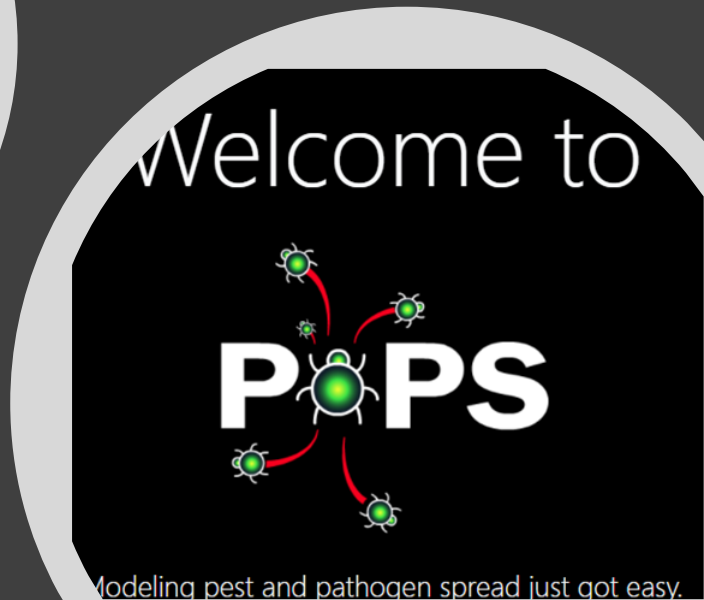
- New survey tools
- Look at Infrastructure Funding (BIL/IIJA)
- Increased communication with stakeholders

Oregon State University

- Faster diagnostics
- Permanent plot network

Oregon Dept of Agriculture

- Increasing state quarantine boundary



(https://popsmodel.org/)

Oregon Sudden Oak Death (SOD) Da…

Information is updated and maintained by the Interagency Oregon SOD Program, please contact Sarah Navarro for more information (sa…

SOD Sample Information

Trees visited for samples

172

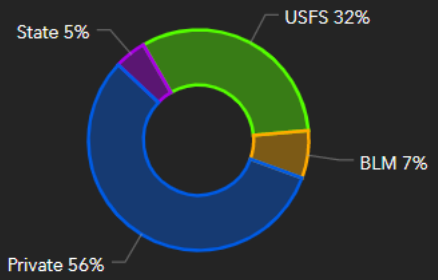
Compared to 0 in 2021

Samples sent to OSU Lab

88

Compared to 0 in 2021

SOD Samples by Ownership



Click on Ownership to filter proportion of samples

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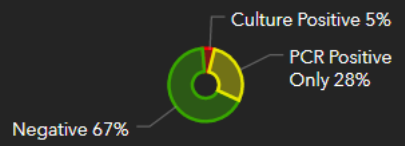
2021 Stream Bait Sites

58 streams

Compared to 41 sites in 202

P. ramorum in Streams



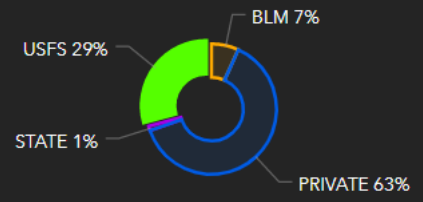
Toggle on 2021 Stream Basins in map for locations

2022 SOD Survey | 2021 SOD Lab Results | 2001-2020 SOD Data

SOD Treatment Information

Active Treatment Units

Units are defined SOD infesations consisting of one or more SOD positive trees



Click on Ownership slice to filter current treatment status

Last update: 3 hours ago

Proposed SOD Treatments

11 units

Total acres 559

Herbicide Application Complete

15 units

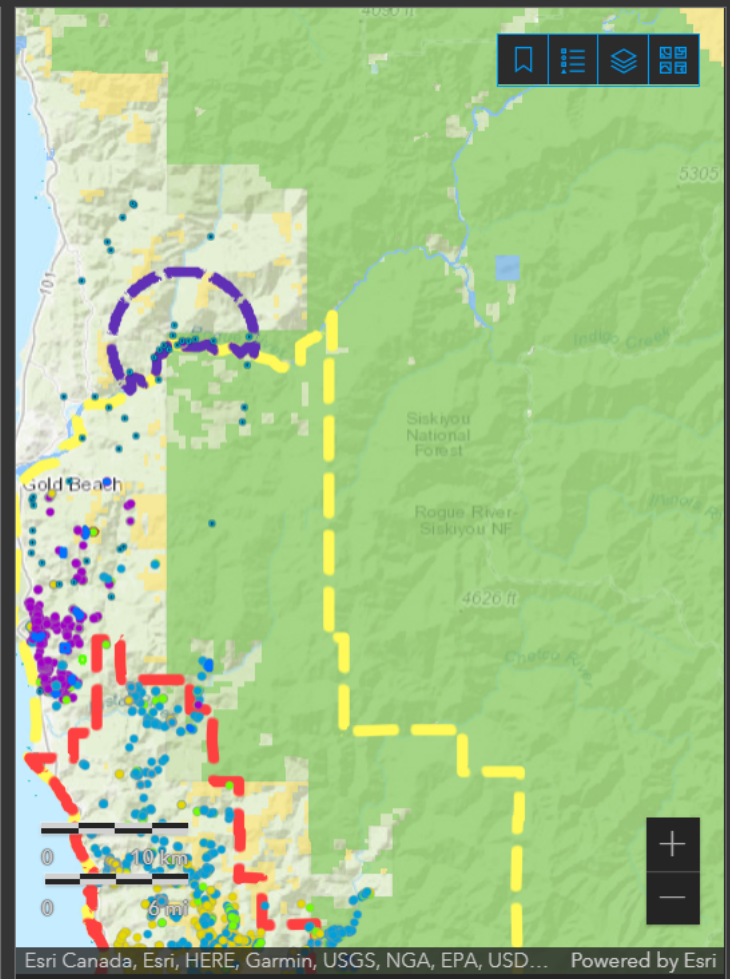
463.7 acres of tanoak

Tanoak cut and piled for burning

14 units

221.2 acres to burn

Proposed and Active Treatments | Completed SOD Treatments



Map showing locations of current and past SOD infestations and management activities to slow the spread of *Phytophthora ramourm* In Oregon.

Map | Map legend | SOD Quarantine Info

http://tinyurl.com/oregonsod

Oregon Sudden Oak Death (SOD) ...

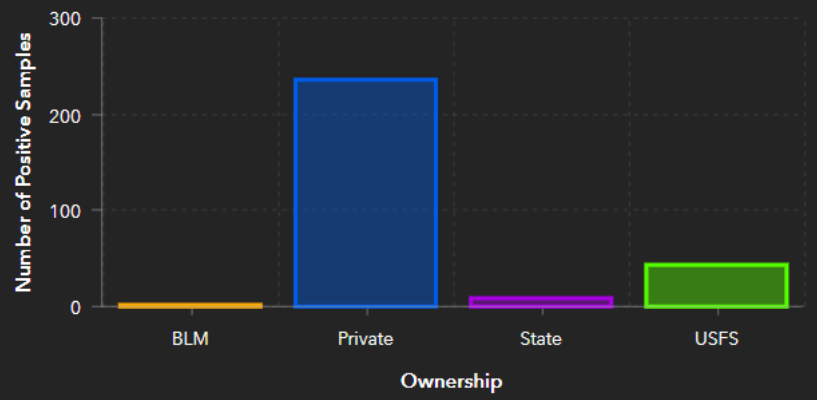
Information is updated and maintained by the Interagency Oregon SOD Program, please contact Sarah Navarro for more informatio...

SOD Sample Information

288 Positive Samples

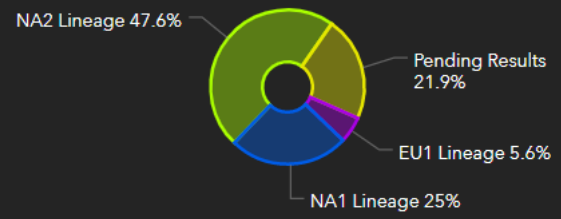
Last update: 2 minutes ago

Positive Samples by Ownership



Click on Ownership Bar to filter Lineage Results below

2021 Lineage Results



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SOD Treatment Information

Overall Completed SOD Treatment Acres

8,014 acres

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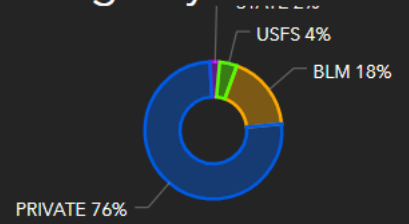
Completed Treatment Acreage by Ownership



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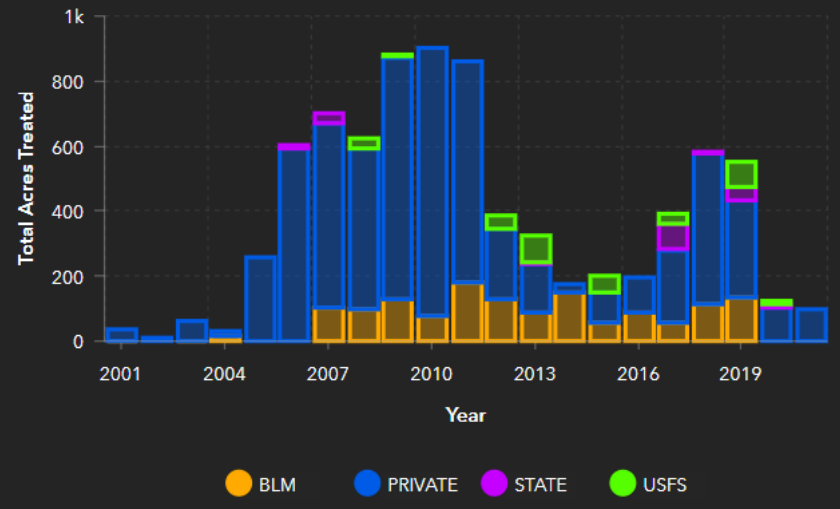
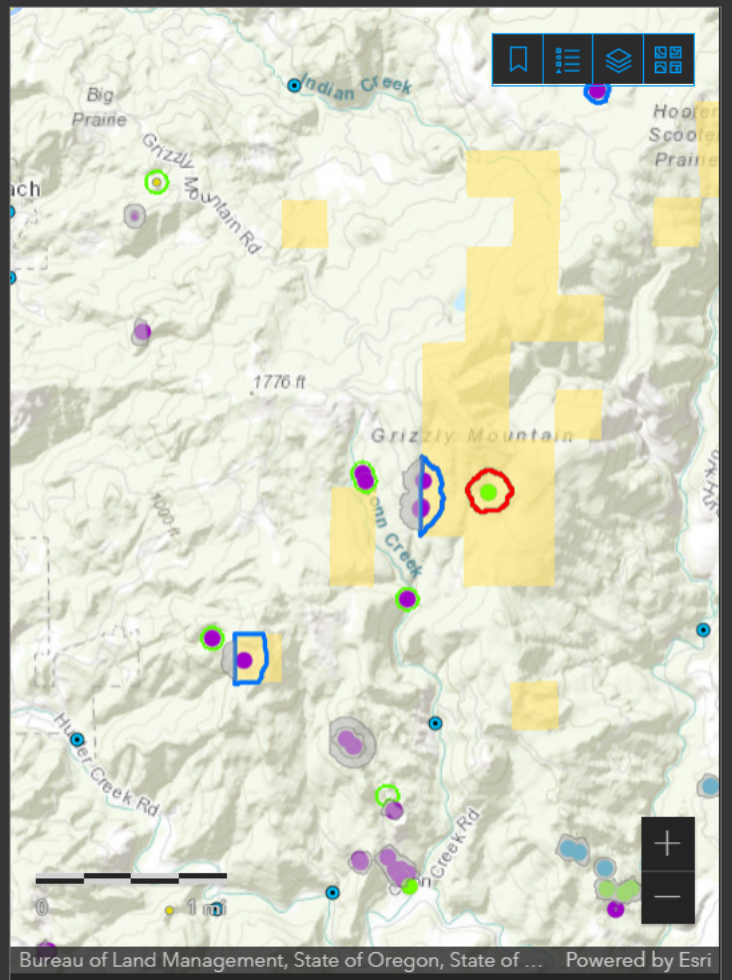
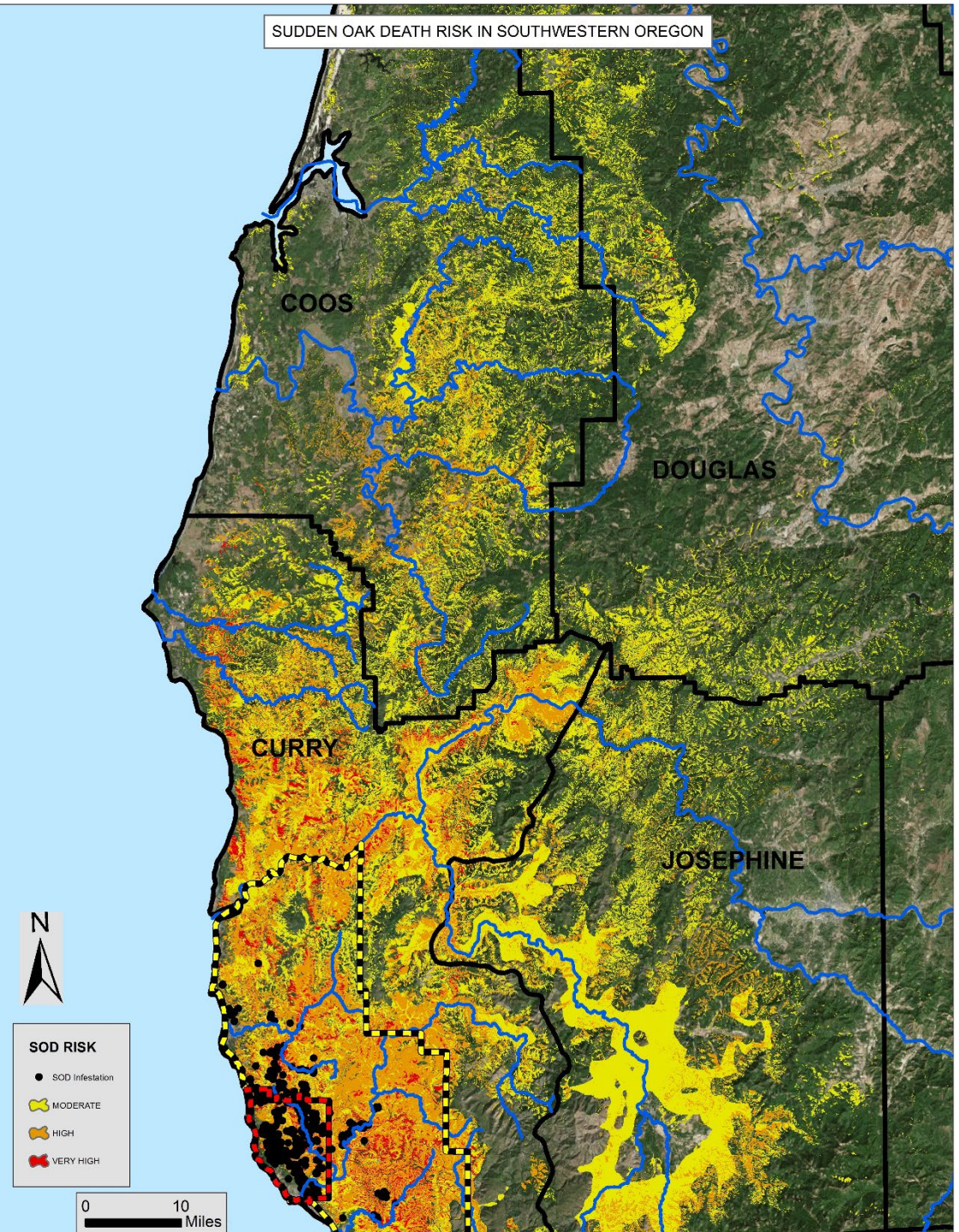
Completed Treatments by Year





Map showing locations of current and past SOD infestations and management activities to slow the spread of *Phytophthora ramourm* In Oregon.

2022 SOD Survey | 2021 SOD Lab Results | 2001-2020 SOD Data | Proposed and Active Treatments | Completed SOD Treatments | Map | Map legend | SOD Quarantine Info



Lessons Learned…

- Treatment buffers were not large enough in the first few years- only 50-100 ft
  - Did not fully understand disease biology and spread mechanisms
  - Treatment buffers modified based on monitoring results

- Funding needs to be readily available and consistent for some time following introduction

- Work closely with private landowners for permissions to not delay treatments

- A deeper dialogue on transitioning to living with the disease that is SOD in lower priority areas

Thank you