Mediterranean oak borer (MOB)

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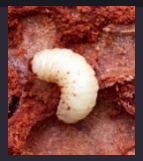
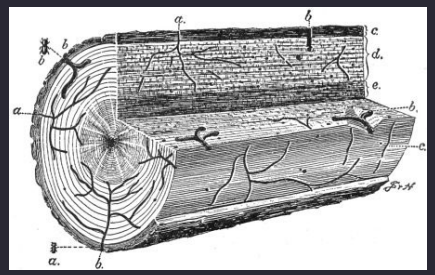
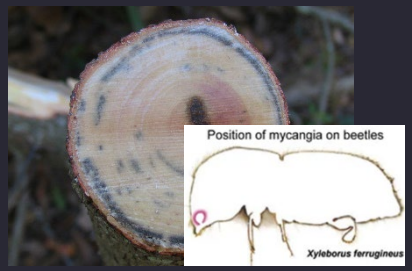
ODF Forest Health: *http://tinyurl.com/ODF-ForestHealth*

Ambrosia beetles

- Relative of weevils and bark beetles
- Woodboring (only feeds on fungus)
- We have many native and non-native species that are <u>not</u> pests





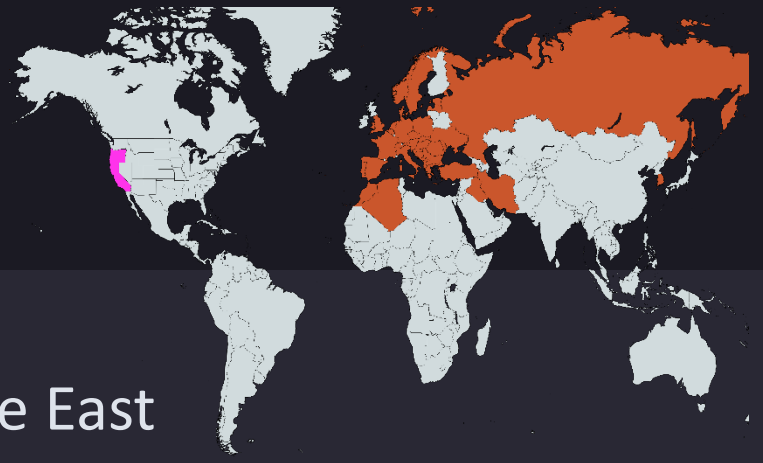


MOB life history

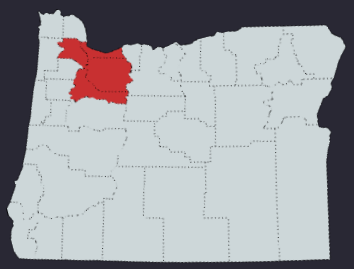
(*Xyleborus monographus*)

- Attacks oaks, and in its native range many other hardwood species
- Vectors fungi (*Raffaella montetyi, Fusarium solani*, inc.) in sapwood that cause a fatal wilt in oak
- Females are active for most of the year (i.e., cold-tolerant)
- 2-3 generations estimated for Oregon

MOB Distribution



- Native to Europe, N. Africa, Middle East
- Detected in Napa, CA 2017 (likely present since 2010s)
- Detected in Oregon:
  - 2018 single adult found in trap in Multnomah county
  - 2021 another adult found in Marion county
  - 2022 infested trees found in Clackamas and Multnomah counties
  - As of 2024 MOB found in traps or trees in Multnomah, Washington, Clackamas, Marion counties

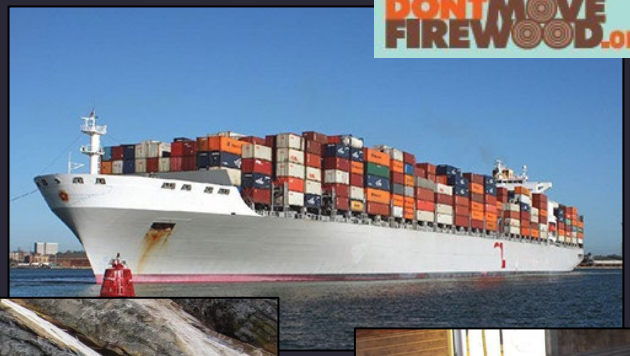


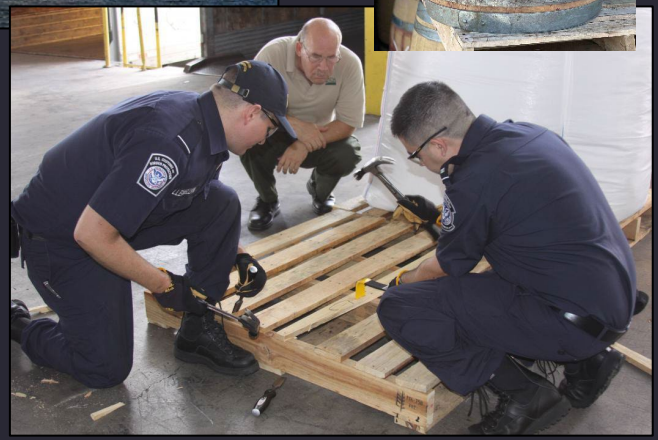
DNA analyses of current MOB populations indicate that the OR population of MOB (GER) originated in a different region than the CA (FRA) population. Provenance may play a role in biology.

Pathways

Report invaders

- Untreated wood imports
- Firewood (don’t move wood >10 miles)
- Nurseries





MOB hosts

Native range:

Weakened oak, harvested logs, dropped limbs. Occasionally infests maple, walnut, beech, elm, cherry, chestnut, hornbeam.

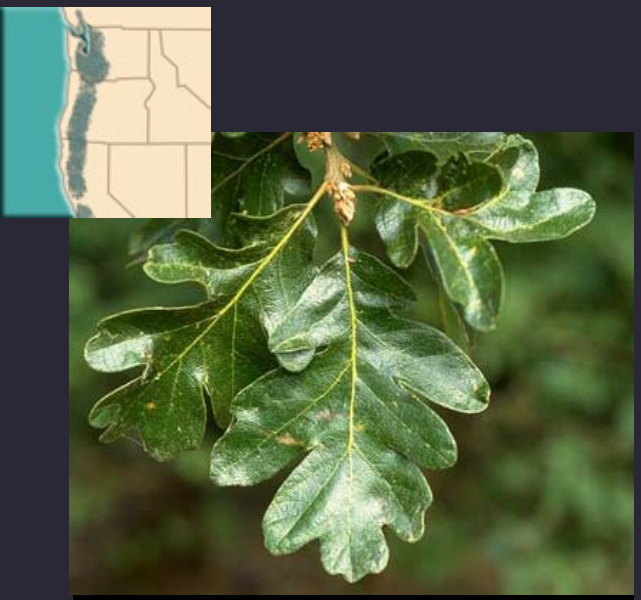
Oregon:

- Oregon white oak (*Q. garryana/white*)
- Red oak (*Q. rubra*/red) – *low incidence*

California:

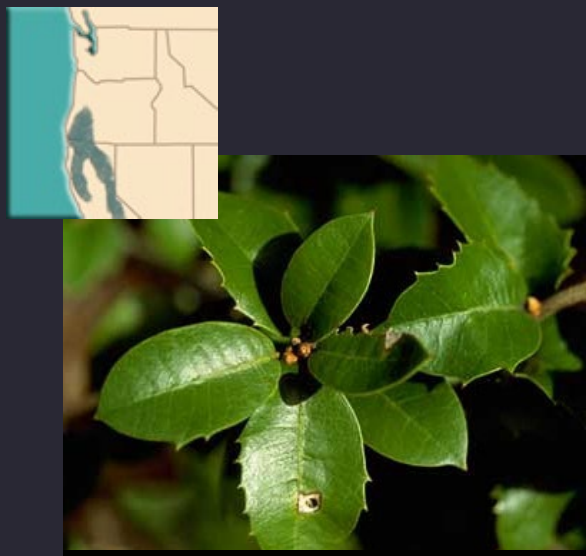
- Valley oak (*Q. lobata*/white section)
- Blue oak (*Q. douglasii*/white)
- CA black (*Q. kelloggii*/red) – *low incidence*
- Oregon white oak (*Q. garryana/white*) – *low incidence*

Oregon oaks



Oregon white oak
(*Quercus garryana*)
white Quercus section

California black oak
(*Q. kelloggii*)
red Quercus section



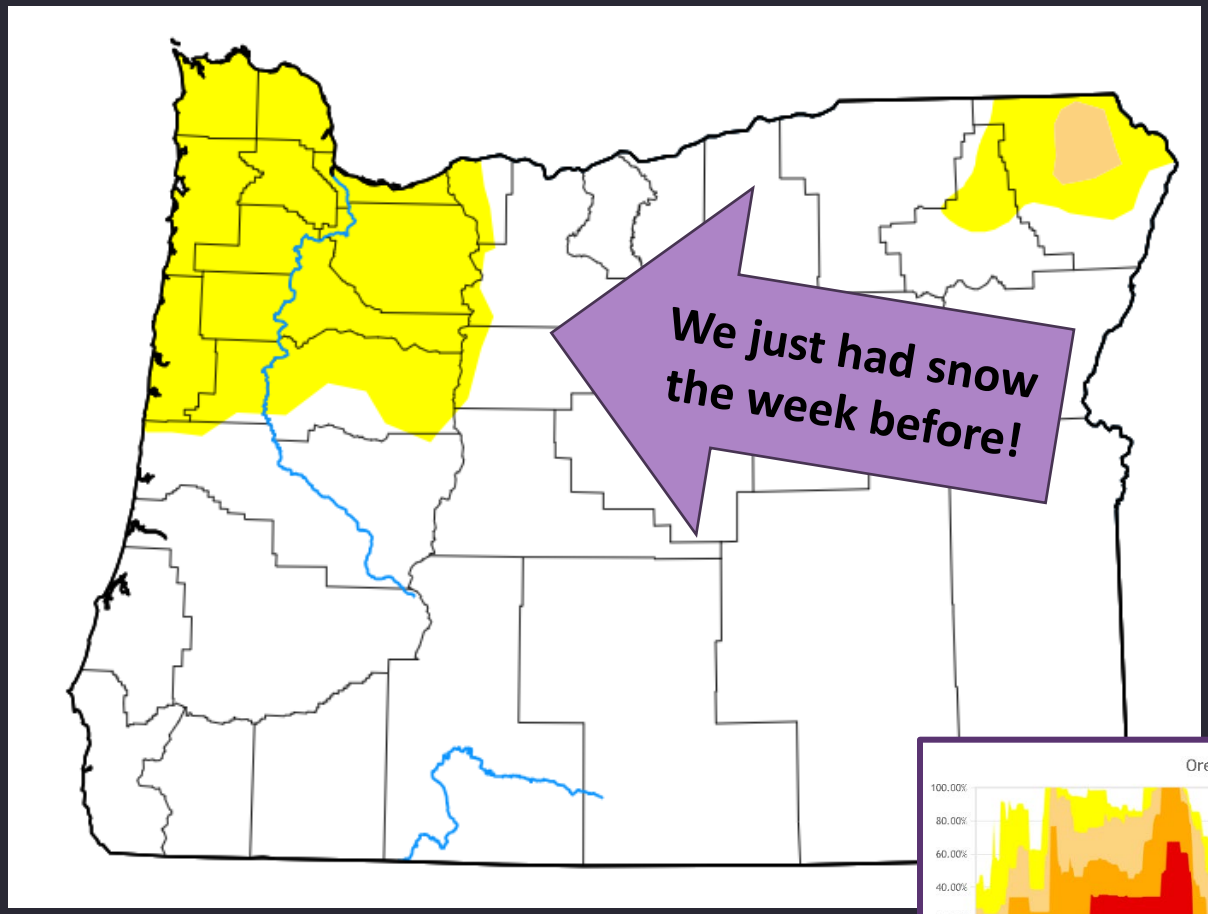
Canyon live oak
(*Q. chrysolepis*)
Intermed. Quercus section

Importance of Oregon white oak

- White oak can live up to 500 years
- Primary overstory in Oregon oak savannahs
- Extremely drought-tolerant
- Important wildlife resource (nesting, overwintering, food)
- Wildfire tolerant (thick bark)
- Deciduous (escapes damage from annual defoliators)
- Tri-county oak presence: ***https://www.theintertwine.org/projects/oak-prairie-work-group***

Drought status

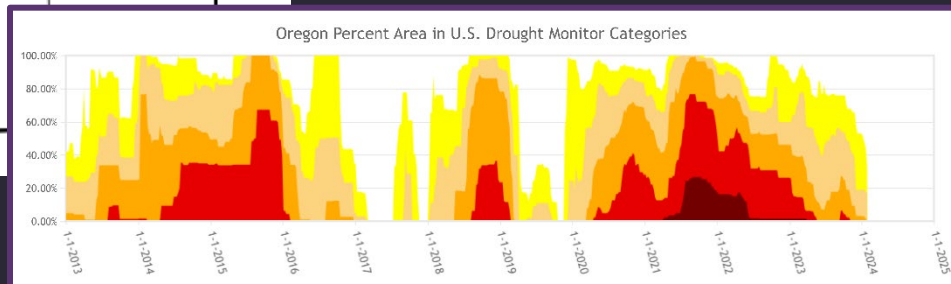
Current drought conditions



U.S. Drought Monitor

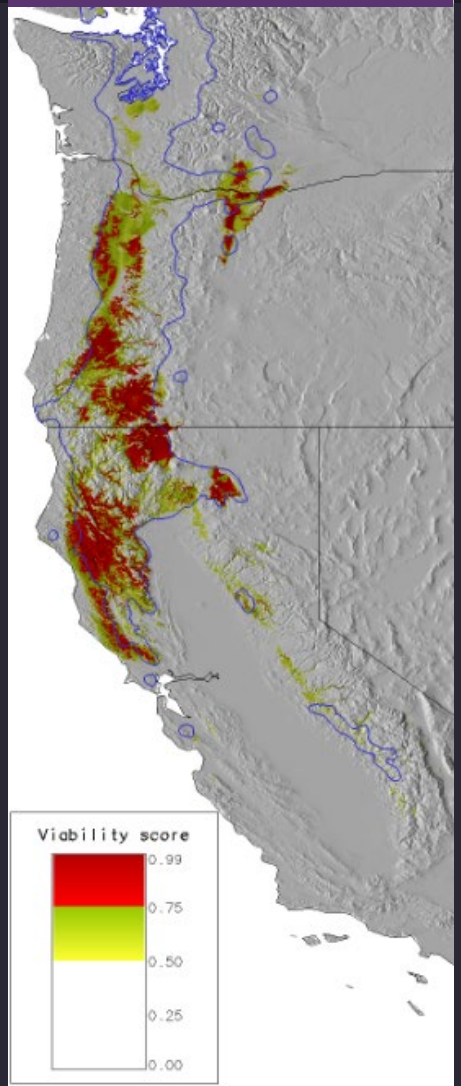
Intensity

- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)
- No Data

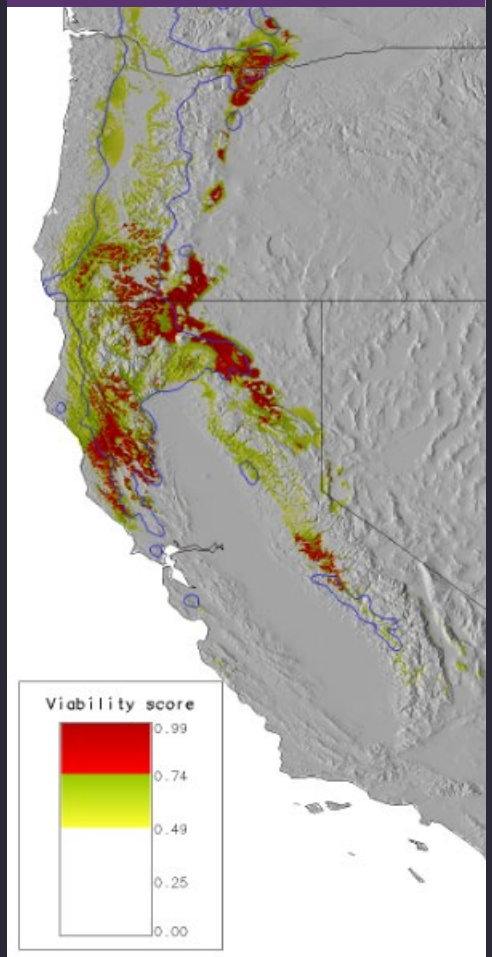


Oregon white oak range predictions

2010 range



Predicted 2030 range under mild climate model



Crookston et al. 2010

MOB diagnosis

- Dieback of a whole branch or whole section of crown
- Canopy thinning

- Pale boring dust (frass)
- Tiny, shiny brown beetles in frass
- Black-stained branched galleries in sapwood

Non-MOB issues in oak

1. Storm breakage
2. Fungal conks
3. Oak lacebug
4. Galls + squirrels
5. Other woodboring beetles, including native ambrosias
6. Carpenterworm
7. Woodpeckers

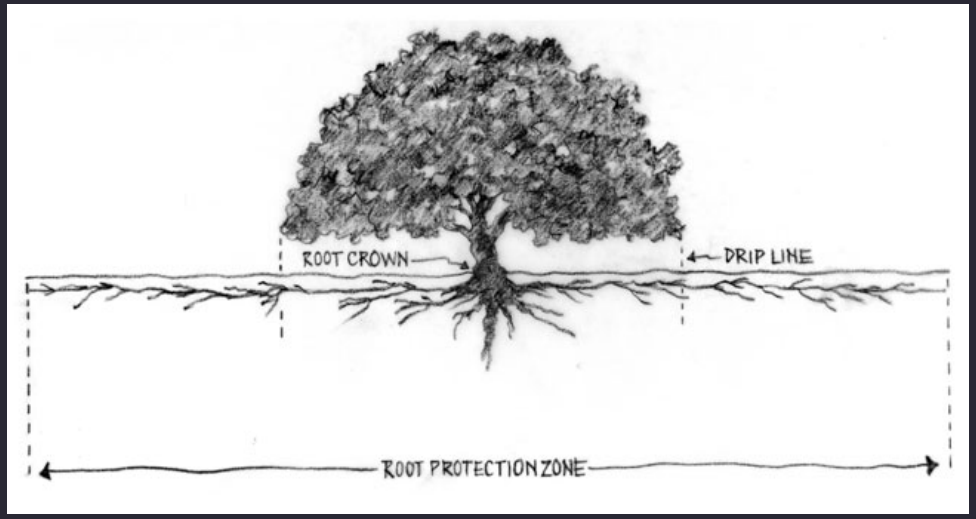
A tale of two trees

Evidence of infested trees with prior storm damage or root disease adjacent to healthy unifested trees…

MOB management

MOB management

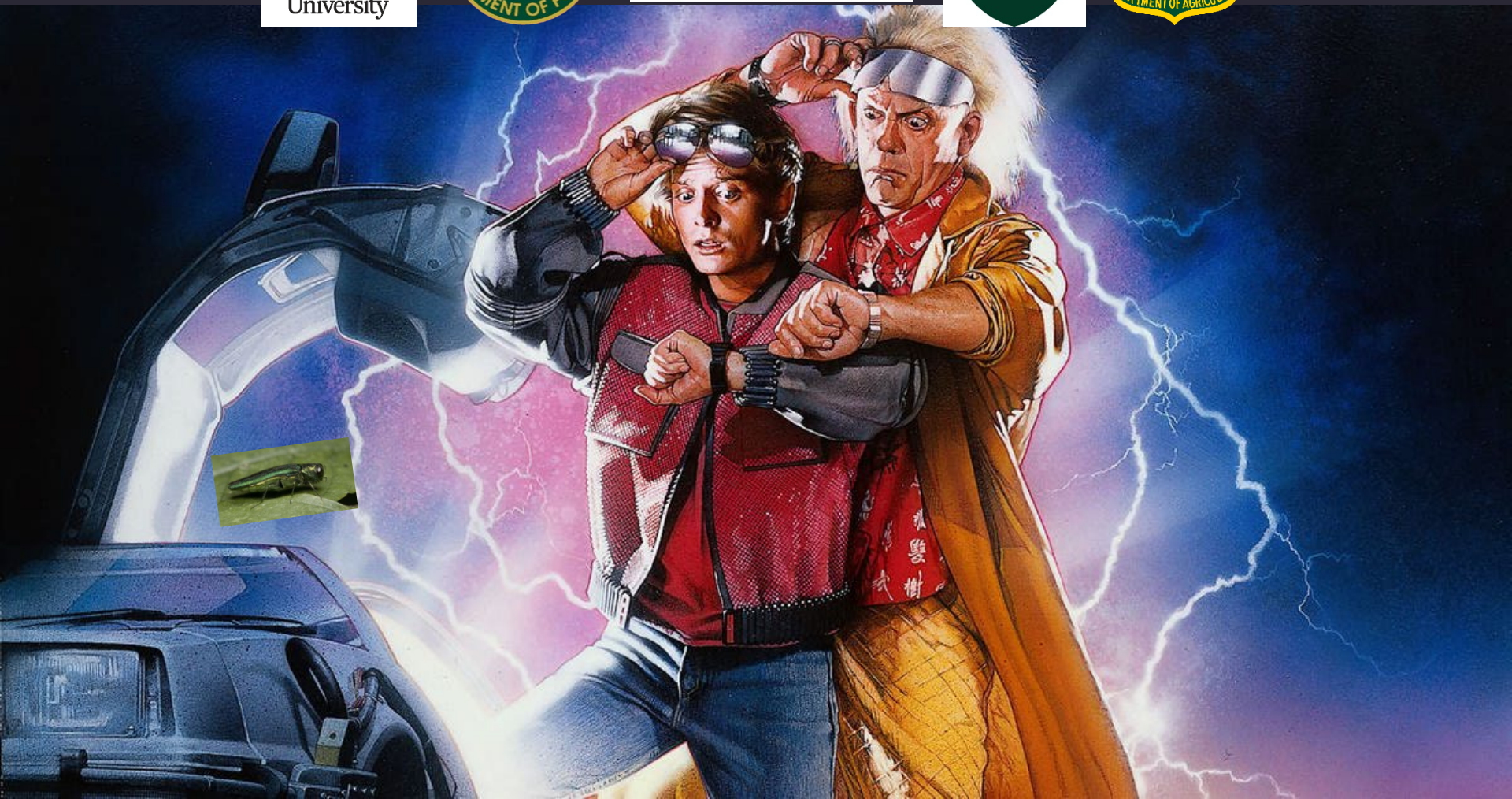
- Remove large, unsupported branches to avoid storm breakage
- Avoid construction, root compaction at least 2x the radius of dripline



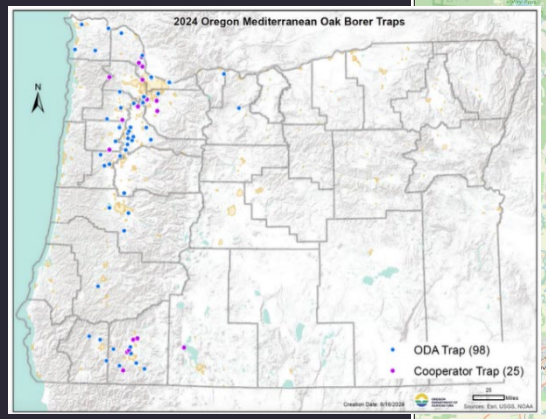
- Cut infested trees to the ground and chip/burn onsite
- Sterilize equipment: 70% ETOH, 5% Bleach, Oxidate (hydrogen peroxide), or Lysol
- Pesticide (insect + fungicide) - not yet proven

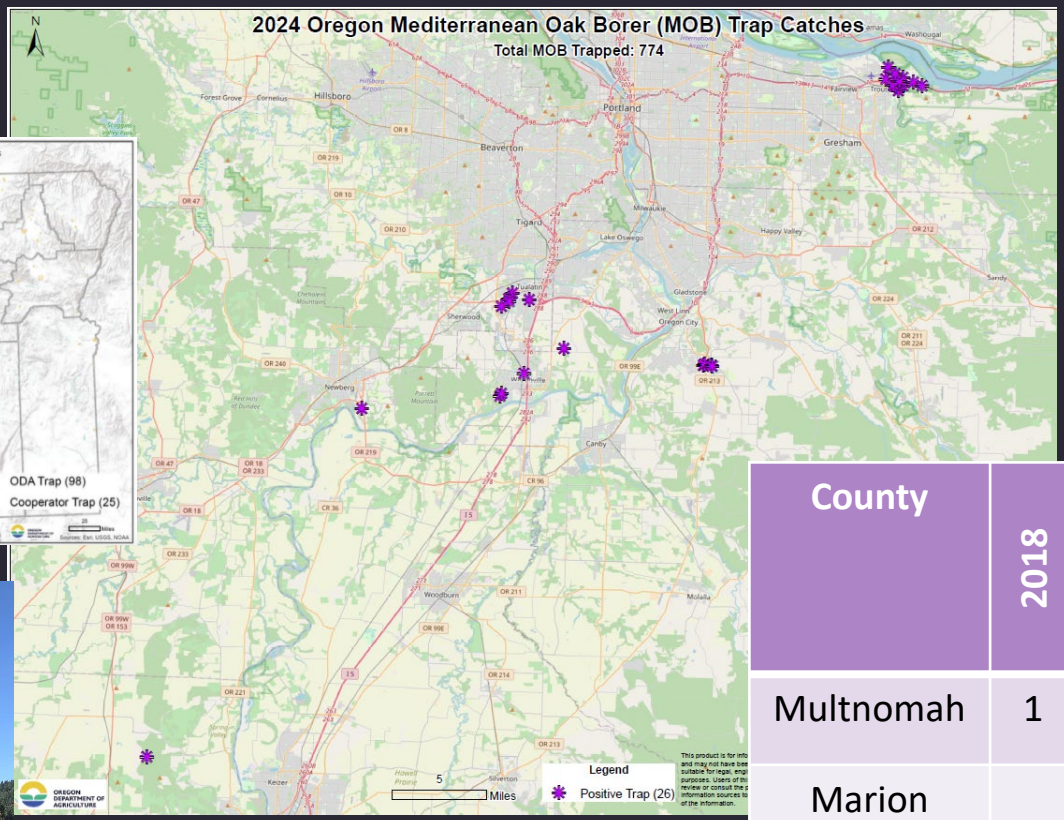
…Much to be learned, more guidance to follow

The good news is…we've been here before!



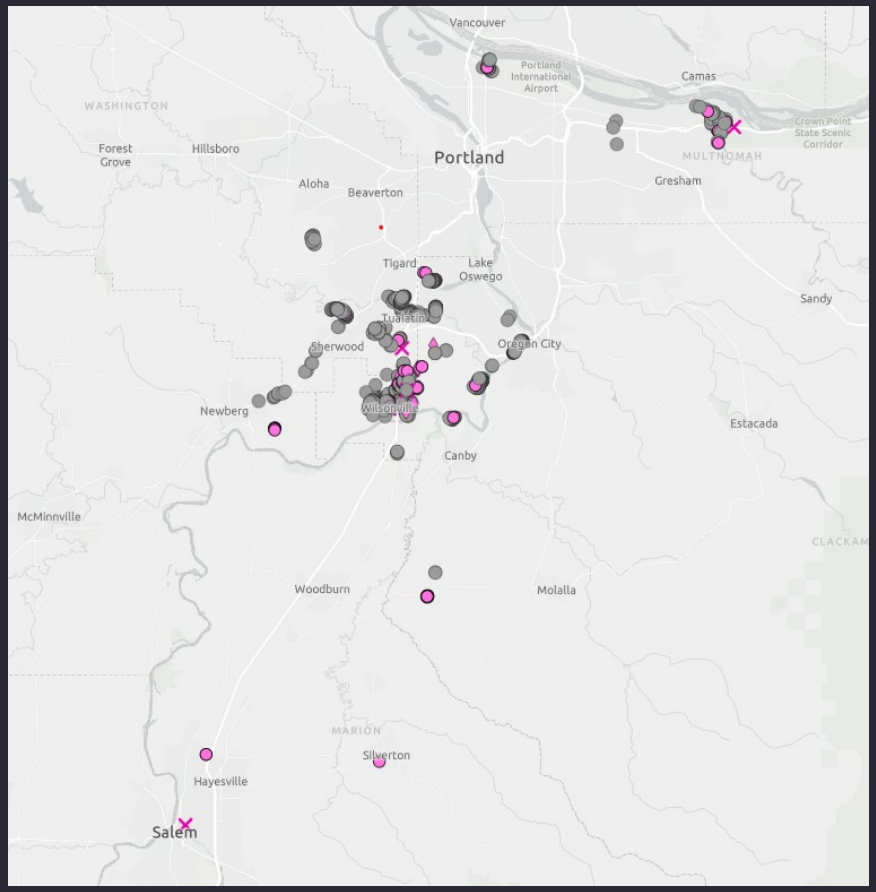
Monitoring: traps 2024



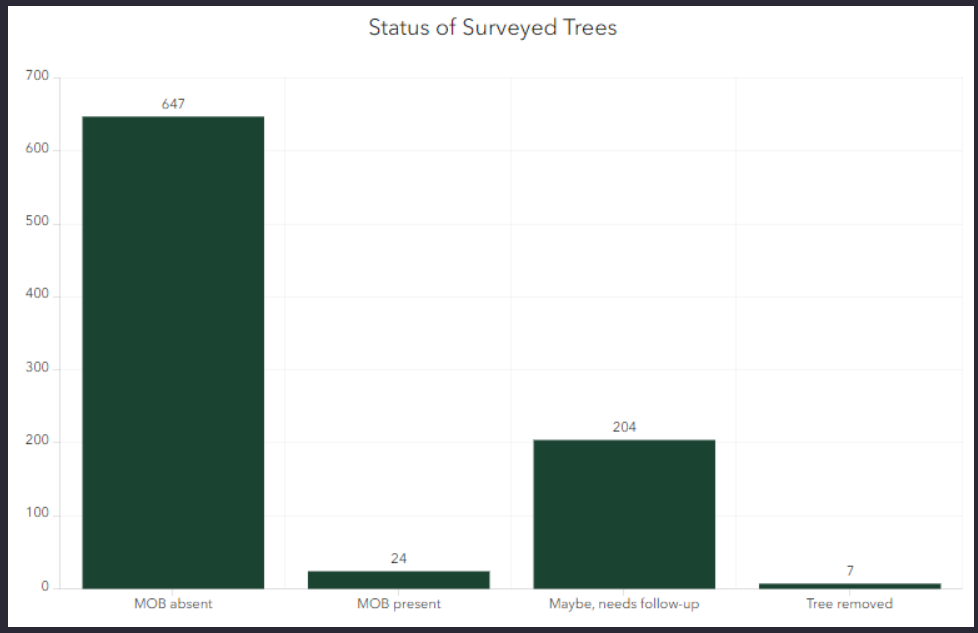


County	2018	2021	2022	2023	2024
Multnomah	1		15	16	
Marion		1	2	5	
Multnomah			15		
Washington			2	8	
Clackamas			3		

Monitoring: ground observations

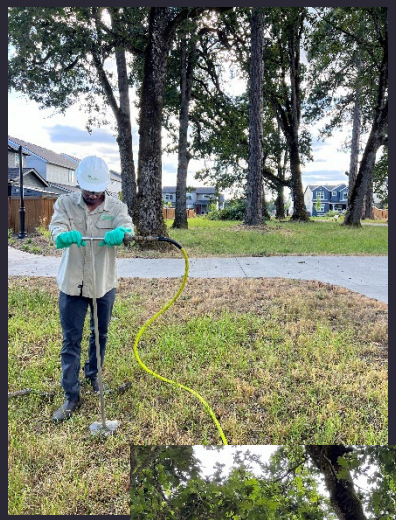


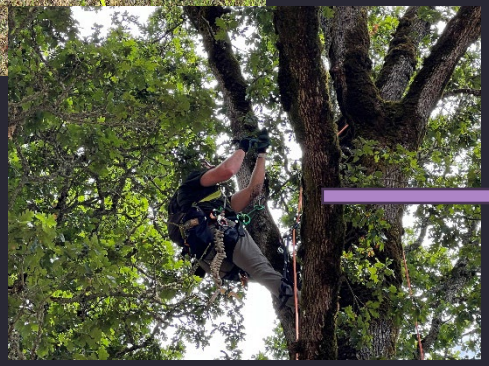
Year	County	Infested trees
2022	Clackamas	1*
	Multnomah	1*
2023	Clackamas	~30
	Multnomah	3*
	Marion	1*
2024	Clackamas	likely >30
		* Trees have been destroyed



Research

1. Emergence monitoring detected - *adults outside trees in January*
2. Semiochemical repellence trapping – *not effective*
3. Insecticide + fungicide application – *not effective, more testing*
4. Preventative irrigation - *TBD*
5. Burial of infested material - *TBD*
6. Root disease precursor - *TBD*





MOB resources

1. ODF factsheet: https://tinyurl.com/MOB-oregon
2. Other oak pests: https://www.oregon.gov/odf/Documents/forestbenefits/oak-pests.pdf
3. Management guide: https://www.oregon.gov/odf/forestbenefits/Documents/mediterranean-oak-borer-best-management-practices.pdf
4. Invasive hotline reporting: https://oregoninvasiveshotline.org/
5. MOB infestation map: https://tinyurl.com/mobfieldmap
6. MOB dashboard stats: https://tinyurl.com/mobfielddash
7. MOB diagnosis training video: https://youtu.be/_lQEPLkUciM

Factsheet

Map

Dashboard

Partners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