



# INVASIVE PEST ALERT!

## Mediterranean Oak Borer

**This invasive pest will devastate California Oak Woodlands without urgent action!**

### About the Beetle

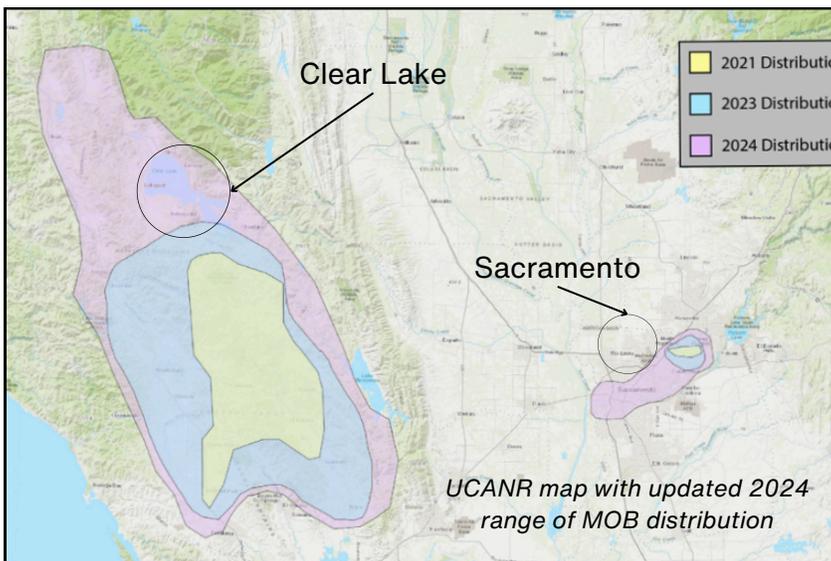
Mediterranean Oak Borer (*Xyleborus monographus*) is an ambrosia beetle originating from the Mediterranean region. Females target many oak species such as Valley oaks (*Quercus lobata*), Blue oaks (*Q. douglasii*), and Oregon white oak (*Q. garryana*) with the potential to target other oak species. As the beetles tunnel into the tree, they inoculate the tunnels with a fungus (*Raffaelea montetyi*) that will feed their young and disrupt water transport. Over the course of 3-5 years, the combination of the fungus and the beetles tunneling weakens the tree until eventually girdling and killing them. The beetles infect the trees starting at the end of the branches working towards the trunk.



The size of a female MOB beetle compared to pencil lead (Curtis Ewing, CALFIRE)

### Distribution

MOB's native range is in Europe, western Asia (Iran, Russia, Turkey) and northern Africa (Algeria and Morocco). It was first detected in California in Napa County in 2018 with it spreading to Lake, Sonoma, Mendocino and Sacramento Counties. It is believed to have come into the Country in wine barrel staves, suggesting continued monitoring of imported wood is needed. MOB has also been found in Oregon. A map of the detections in Lake County can be found at [www.theclerc.org](http://www.theclerc.org).



Enlarged map of Lake County on last page

**PLEASE REPORT SUSPECTED MOB!**

For more information visit [www.theclerc.org](http://www.theclerc.org)

Questions? Email us at [info@theclerc.org](mailto:info@theclerc.org) or

Call Biologist, Julia Clickard at (707) 261-0008 ext 4



# Signs and Symptoms of MOB

## EARLY SYMPTOMS:

The first sign of a Mediterranean Oak Borer (MOB) infestation appears in the tree canopy. Browning leaves on a single branch or section, while the rest of the canopy remains green, indicate early-stage infestation. As the damage progresses, the entire crown will eventually be affected. Leaves will fall prematurely, leaving behind bare, dead branches. Infected limbs become brittle and may break off unexpectedly as they die.

Dead  
Branches



*Crown Dieback from the infestation  
(Christine Buhl, ODF)*

## ADVANCED SYMPTOMS:

Another clear indicator is the presence of frass, a fine, pale sawdust-like material. This dust accumulates in the crevices of the bark or at the base of the tree, where the beetles are actively boring. The presence of frass suggests significant tunneling beneath the bark, which disrupts the tree's nutrient flow. Over time, this can lead to girdling, further accelerating decline and branch dieback.

Burrowing  
Holes



Frass

*MOB entry and exit holes as well  
as the presence of frass  
(Tracy Cline, CLERC)*

## INTERNAL SIGNS:

MOB also creates small, round entrance and exit holes in the bark, typically 1.3–1.5 mm in diameter. These holes are often accompanied by black-stained, branching tunnels beneath the bark, caused by a symbiotic fungus the beetles introduce. The beetles themselves are tiny, with females reaching only 3 mm and males up to 2 mm in length. Males have a distinct rhino-like horn, but they are far fewer in number than females.

Black  
Branching  
Tunnels



*Trellis-like galleries of  
Mediterranean Oak Borer  
(Curtis Ewing, CALFIRE)*

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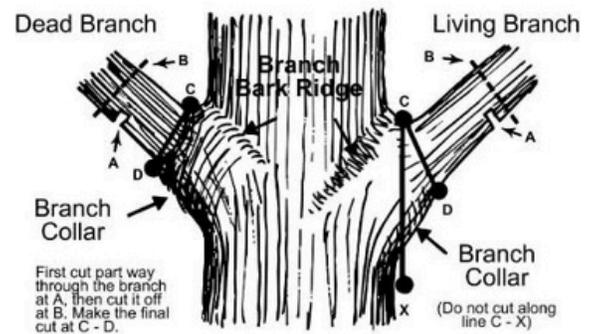
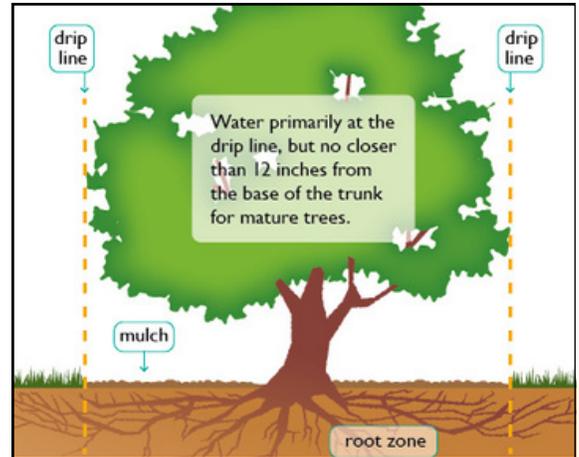
## Similar Symptoms of Other Pests

Canopy thinning and early browning can result from various stress factors, including disease, drought, storm damage and other insects. However, these factors do not produce pale boring dust. Other native and invasive borers may leave frass in tree crevices, but the color will be dark brown or red. Additionally, other borers create D-shaped exit holes, while MOB's leave round holes.

## Prevention

Mediterranean Oak Borers target stressed trees, so here are a few things you can do to keep your trees healthy.

- Additional watering during the summer months to reduce drought stress
- Prune damaged limbs back to the collar to reduce the threat of beetles entering through wounds after a limb breaks
- Injections of a fungicide (e.g. propiconazole) and insecticide (e.g. emamectin benzoate) may be effective in preventing MOB attack, but more research is needed.
- MOB is spread by movement of firewood. Only use local firewood and avoid moving wood more than 10 miles from where it was cut.
- Don't buy infested firewood. Look for trellising, exit holes and frass.



## Controlling the Spread

While there aren't any proven effective management techniques yet, there are a few options to control the spread throughout your property and the community.

- Hire knowledgeable Arborists and tree care specialists with MOB training.
- Prune infected limbs to slow the spread of the pest and associated fungi within the tree.
- Perform pruning in winter when trees and beetles are dormant.
- Identify/mark limbs for winter pruning before leaf drop to ensure proper timing and easy ID.
- Burning infested material is the best method to kill beetles and protect neighboring trees.
- If burning is not an option, chip infested material less than 1", and leave on-site or burn.
- Gently lower infested limbs to the ground to avoid beetle escape and spread, especially if pruning takes place between March and November when beetles are most active.
- **DO NOT MOVE INFESTED WOOD!**

[www.dontmovefirewood.org](http://www.dontmovefirewood.org)

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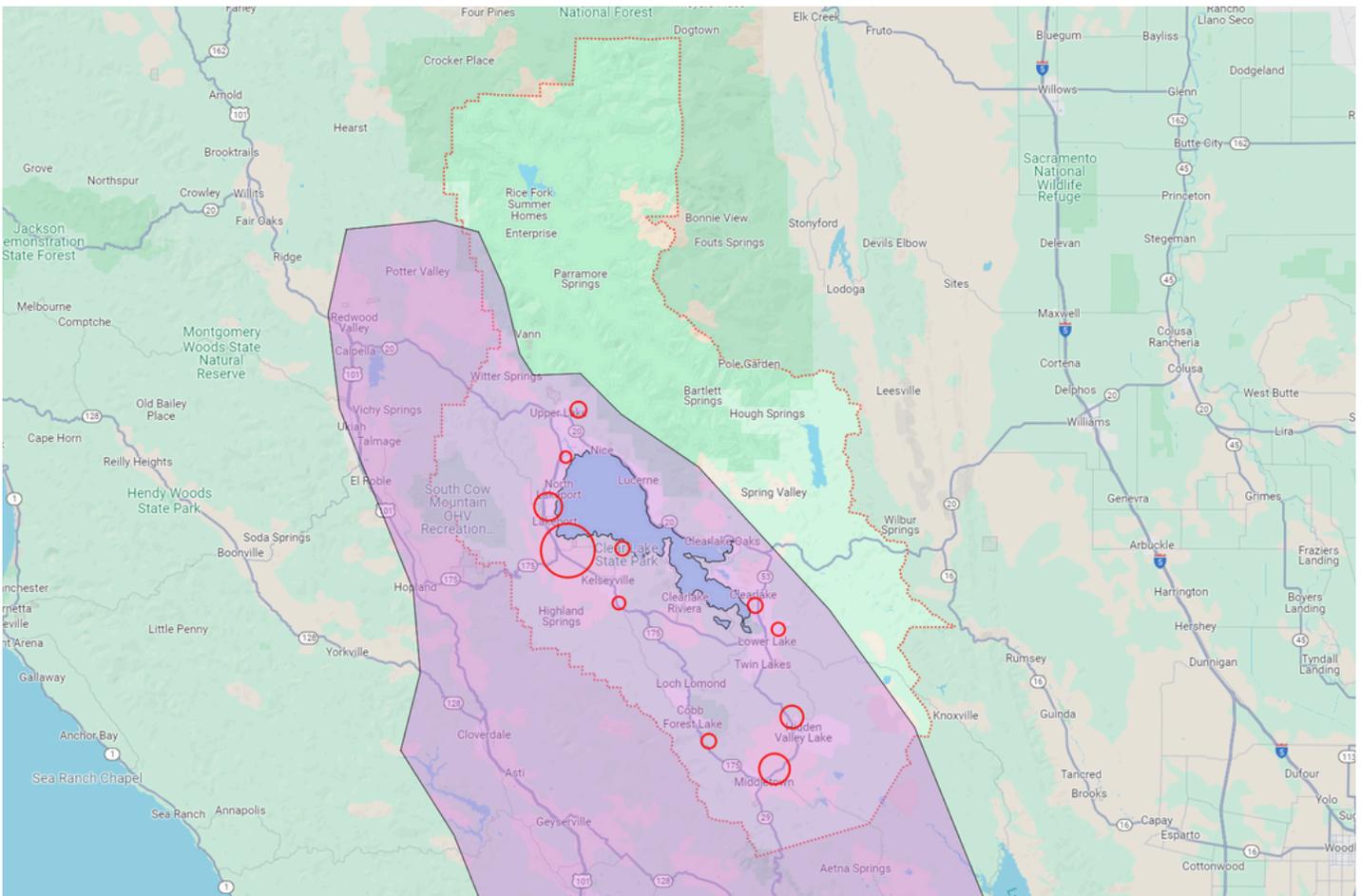
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# We need your help to stop the spread of this destructive pest!

CLERC has developed a local reporting tool to track the extent of the infestation in Lake County. This data will inform the creation of a local action plan and management program.

Your input is vital to the success of these efforts.



UCANR map with updated 2024 range of MOB distribution and reported hot spots in Lake County.

Use this QR Code to report MOB in your neighborhood!

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