California Forest Pest Conditions Report 2019

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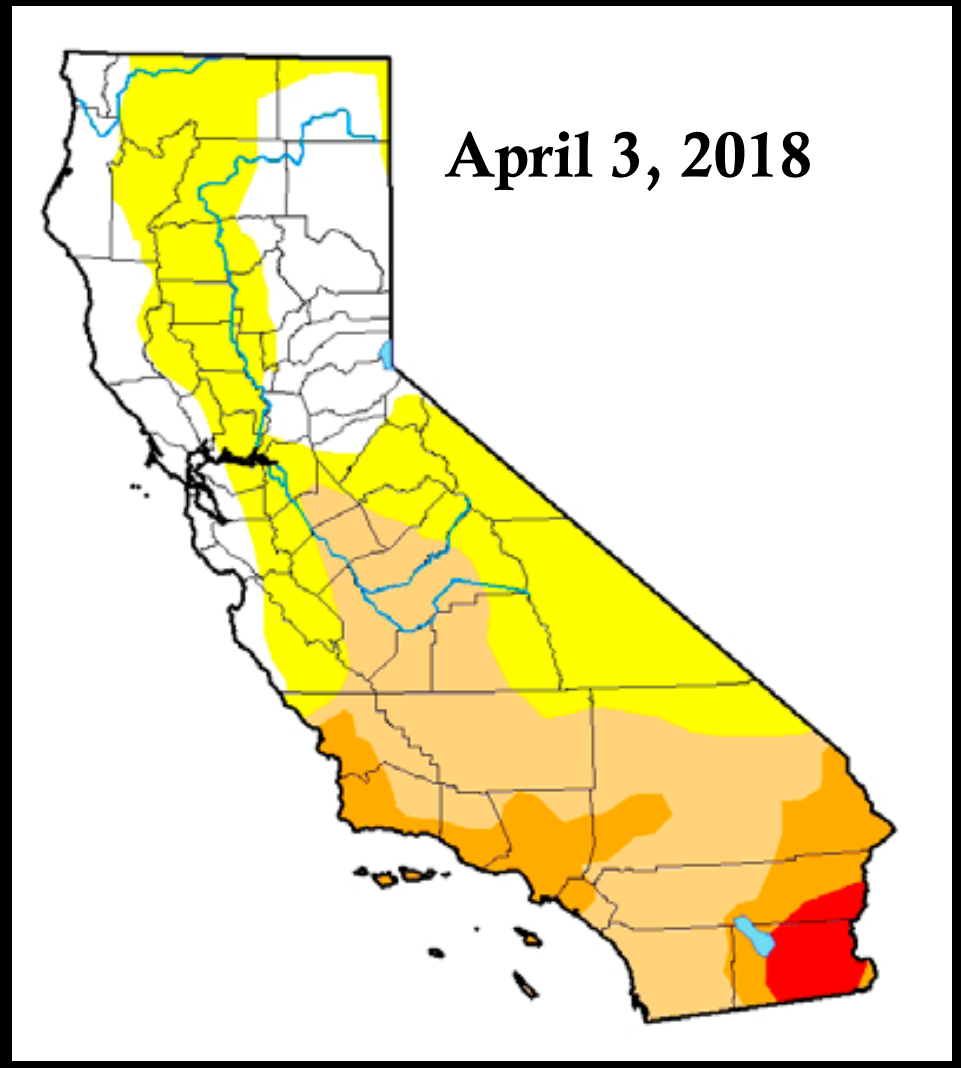
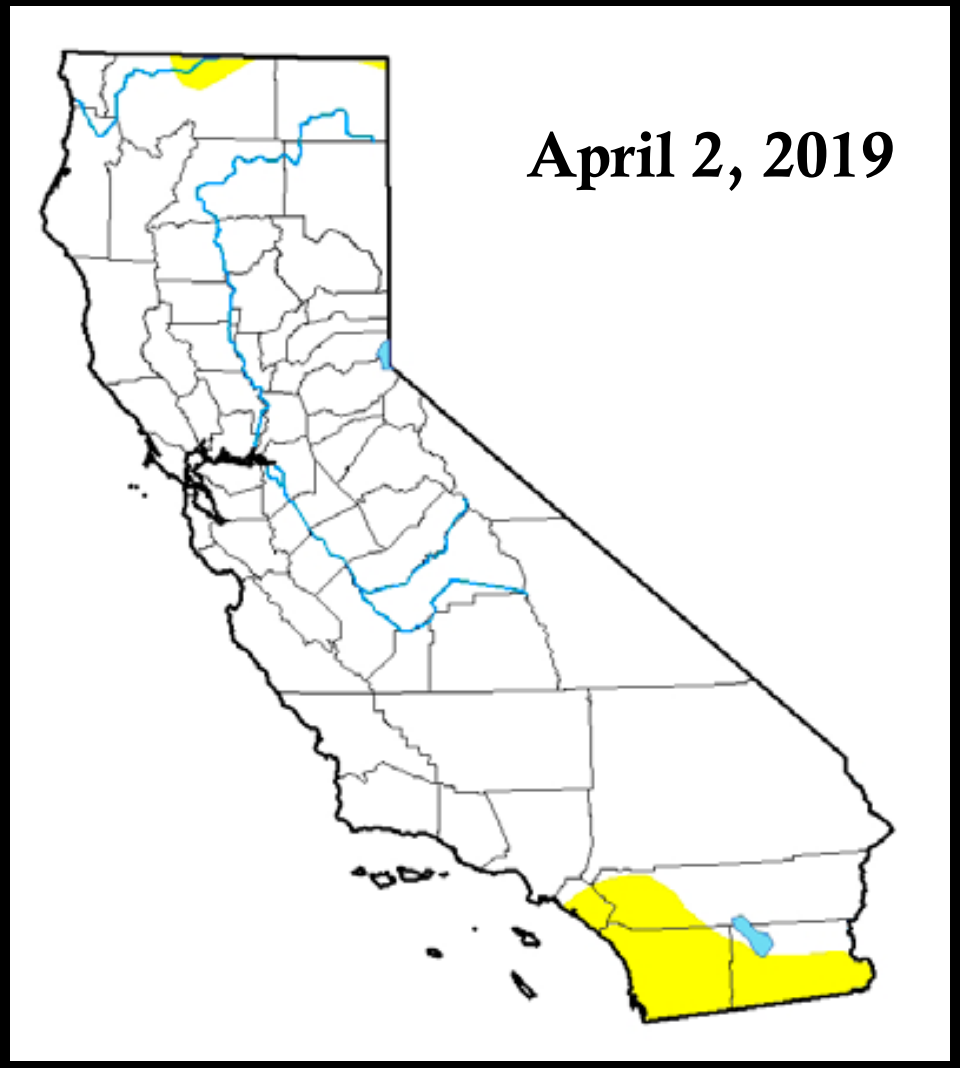
Aerial Detection Survey for Mortality

- 41 million acres surveyed
- Mortality recorded on 2.2 million acres
- Approximately 15.1 million dead trees (163 million dead trees since 2010
- 82% true fir mortality at higher elevations
- High levels of mountain pine beetle mortality but a decrease in western pine beetle mortality
- Also increases in gold spotted oak borer and sudden oak death mortality s well as various defoliators





DROUGHT - Drought Conditions Down, 20th wettest year on record

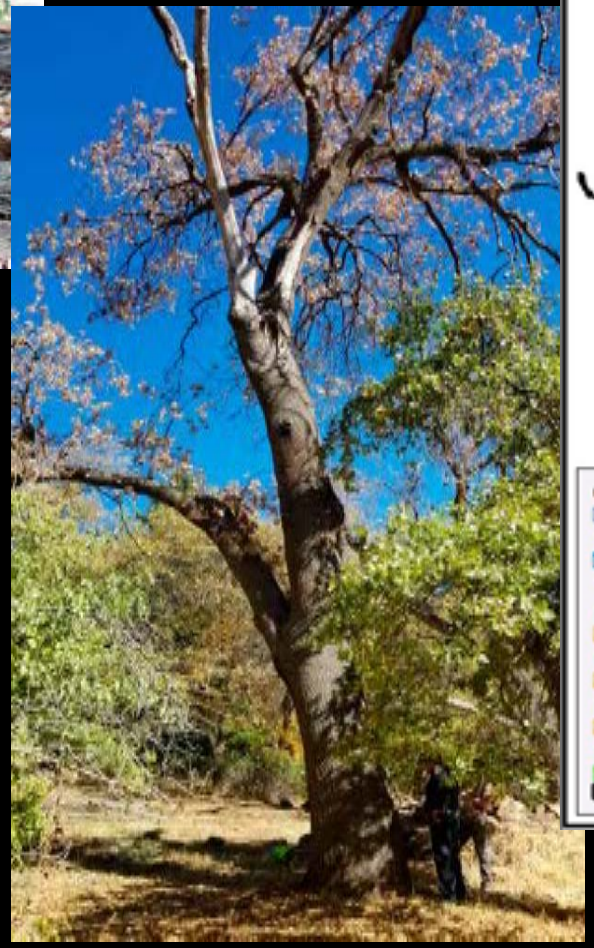
Fir Engraver Beetle

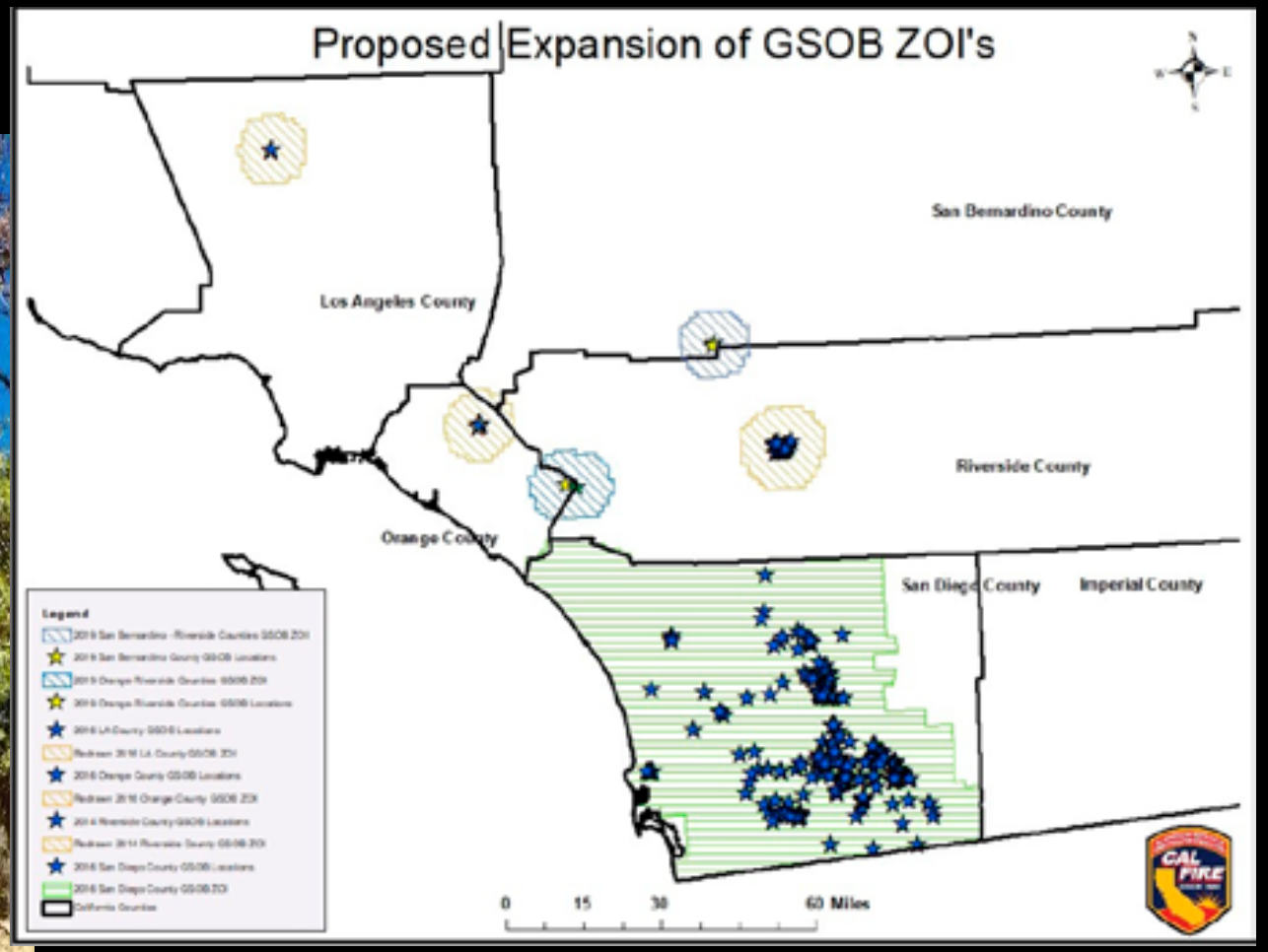
- Fir engraver (*Scolytus ventralis*) remained the single major cause of insect related mortality killing increased numbers of true firs at higher elevations throughout California, often in association with dwarf mistletoe, root disease and/or Cytospora Canker

Pine Bark Beetles

- Western Pine Bark Beetle (*Dendroctonus brevicomis*) mortality of ponderosa pine decreased in 2019
- Mountain pine (*Dendroctonus ponderosae*) beetle mortality of high elevation five needle pines increased

Gold Spotted Oak Borer





New infestations of GSOB (*Agrilus auroguttatus*) were found in Orange, Riverside and San Bernardino Counties and spread elsewhere

Invasive Shot Hole Borer Complexes

- *Euwallacea* species
- Found in seven southern California counties
- Large host ranges – killing as many as 60 species of trees

Mediterranean Oak Borer

- *Xyloborus monographus*
- Killing Valley and Blue Oaks in Napa and Lake Counties
- First report in North America

Pitch Canker

- *Fusarium circinatum*
- Continues to kill pines in coastal counties
- Especially severe in Sonoma County and Point Reyes

Sudden Oak Death

- *Phytophthora ramorum*
- Intensifying after two years of wet spring weather
- Mortality is increasing
- Potential new sites in Del Norte County and San Luis Obispo County

Coastal Pine Decline

- Multiple Causes
- Pitch Canker Disease
- Destruction of root systems by previous drought conditions
- *Ips* Pine engraver beetles
- Short Lived Species
- Lack of Regeneration due to Fire Suppression

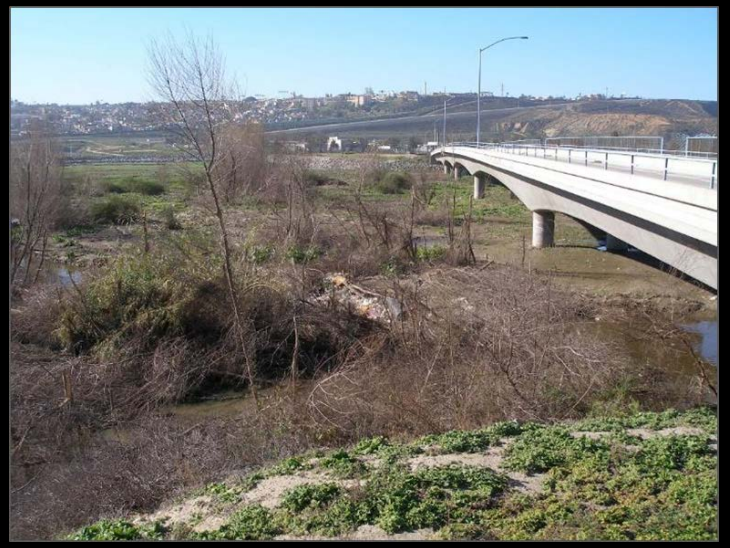
Drought

- Although the drought is over many species continue to suffer due to the loss of fine feeder roots – particularly incense cedar and various oak species

Invasive Weeds

- Eight New Species Highlighted by the California Invasive Plant Council and the California Department of Food and Agriculture
- Invading New Areas
- Costly Eradications
- Negative Impacts on Native Vegetation
- Potential Impacts on Wildfires

Update on the Invasive Shot Hole Borer Complexes



$5 million to CDFA (over 3 years):

- **$2 million for research**
- **$1.6 million for survey, detection and rapid response**
- **$450,000 for outreach and education**
- **$240,000 for training**
- **$150,000 for green-waste and firewood management**
- **$450,000 for overall management/coordination**

Update on the Invasive Shot Hole Borer Complexes

$5 million dollars through Cal Fire:

$4.5 million to impacted counties for tree removal, treatment and disposal

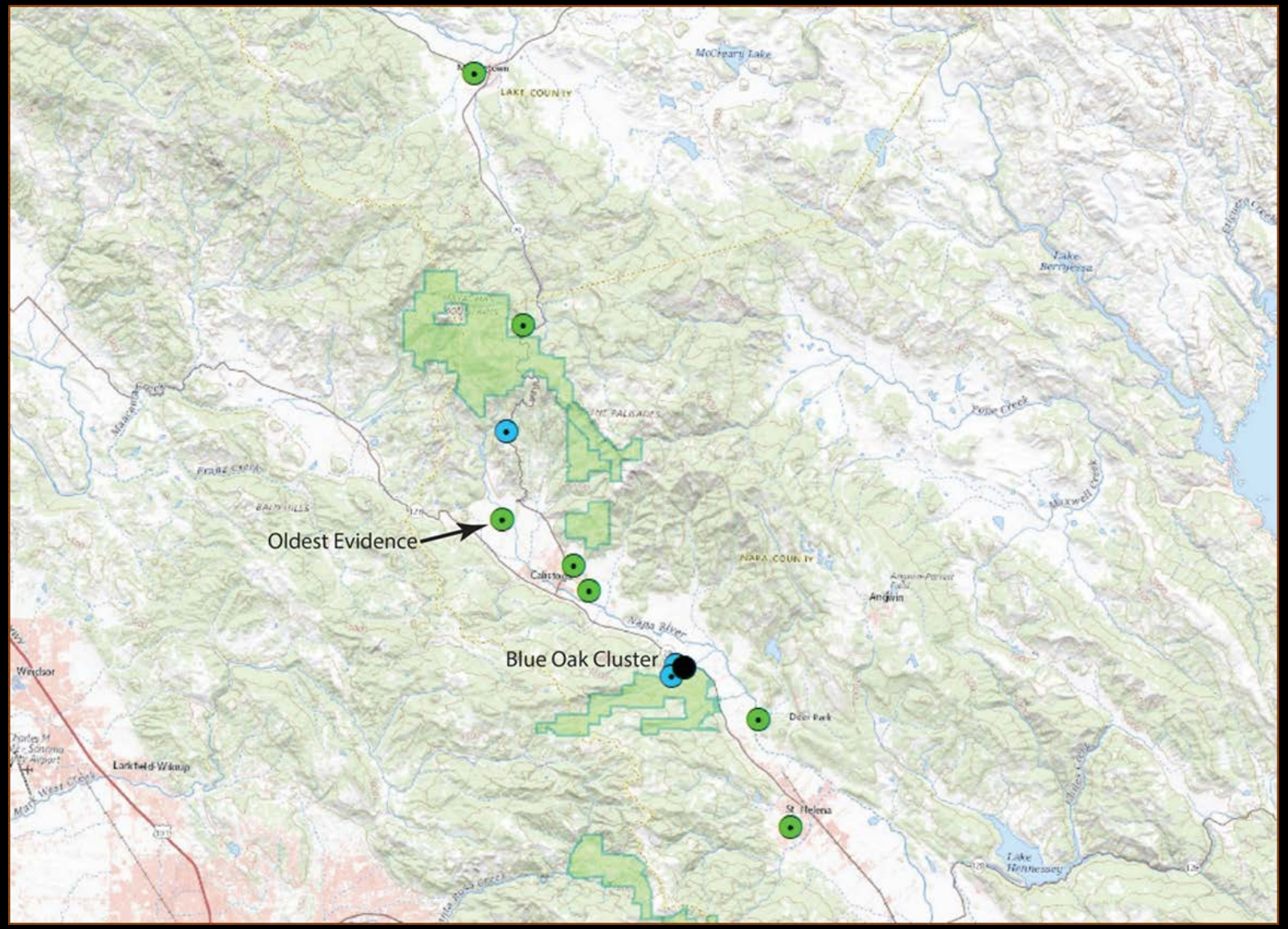
- **$598,000 each for San Diego, Orange, Los Angeles, Ventura, Riverside, San Bernardino and Santa Barbara Counties**
- **$165,000 each for San Luis Obispo and Kern Counties**

$500,000 for traps, lures and trapping supplies for the entire State

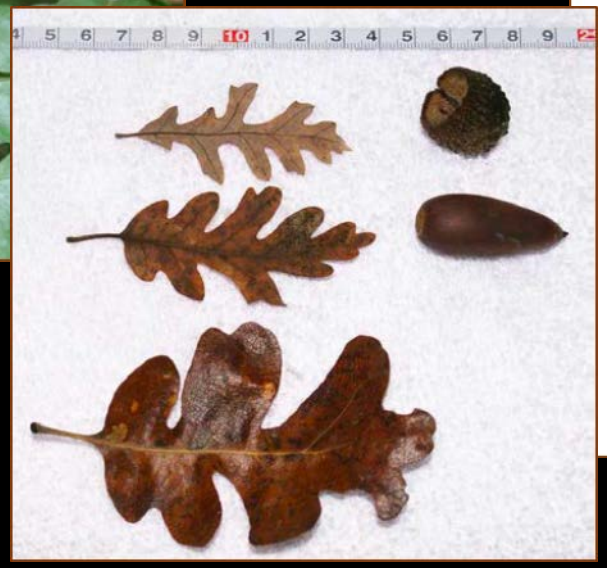
Mediterranean Oak Borer (MOB)

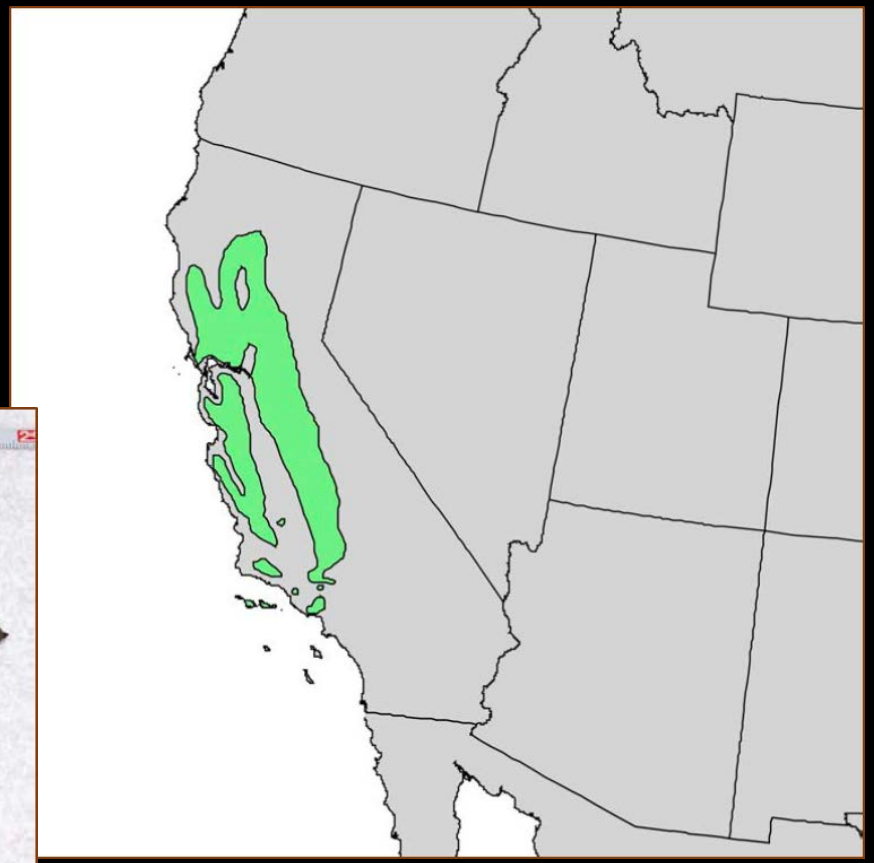
- First Identified In Late October/Early November 2019
- Native to Europe, North Africa and Western Asia
- Attacks European Oak and Some Other Hardwoods

Found in Napa and Lake Counties



Attacking Valley Oaks

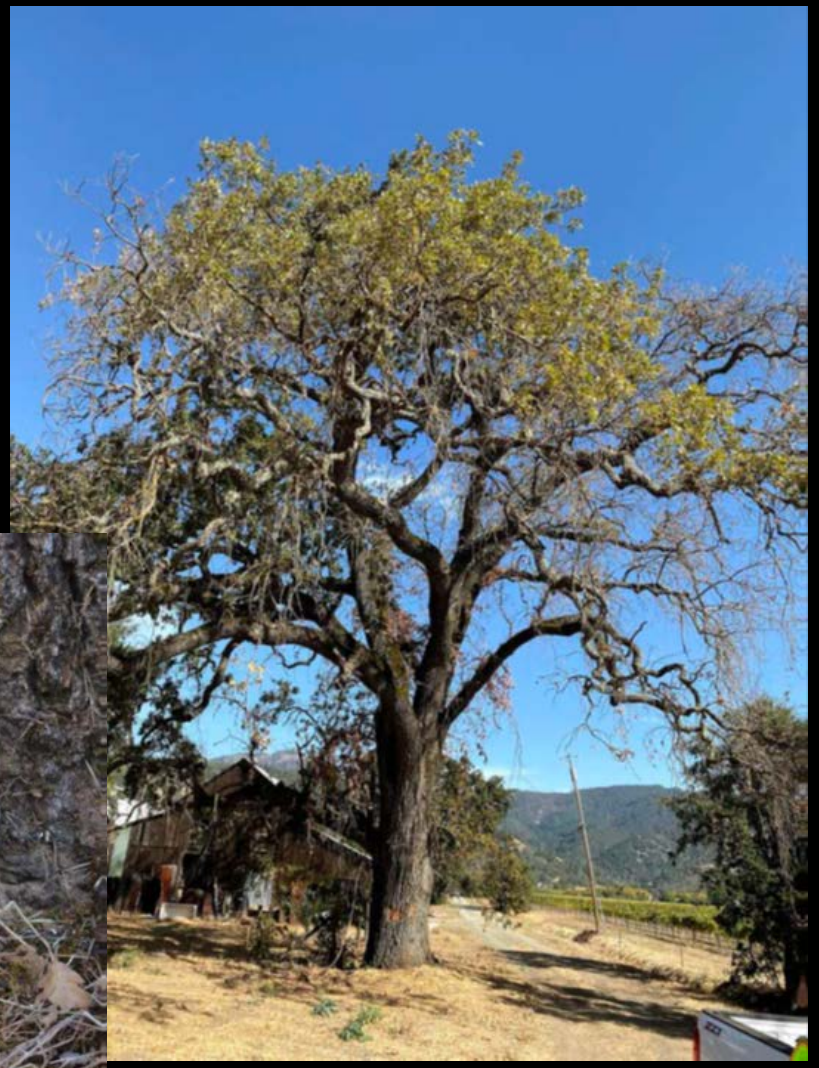




Also Attacking Blue Oaks

European Oak Ambrosia Beetle

Symptoms

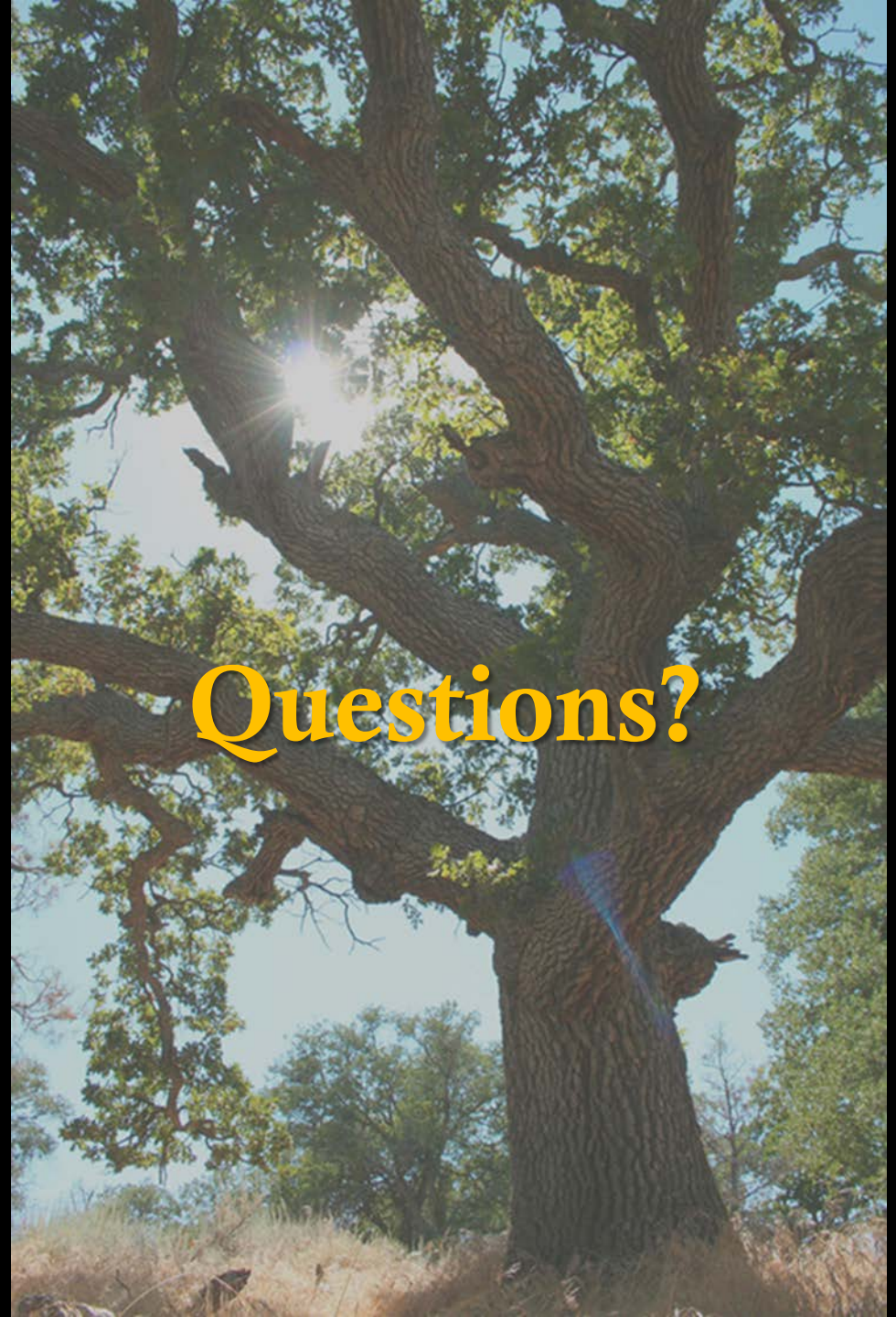


Symptoms

Beetle Lifecycle

Present Situation for MOB

- ICS Team Involved (State, Federal, County, Tribal, University, Arborists, Landowners, PG&E
- Evaluation Monitoring Project Approved by the USFS
- Survey and Monitoring
- Education and Outreach
- Research into the Identification and Pathogenicity of the Fungi
- Do the Beetles Healthy Trees of Only Stressed Trees?


Questions?