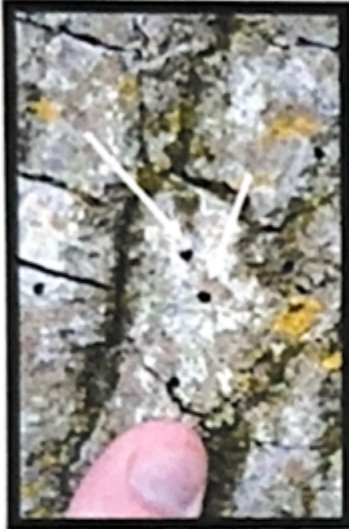
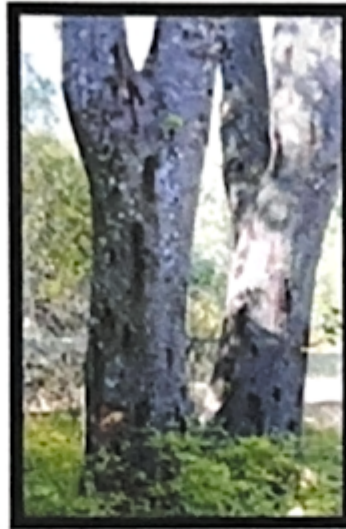


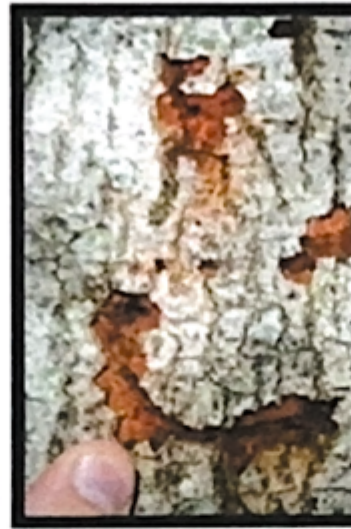
# EVIDENCE OF ATTACK



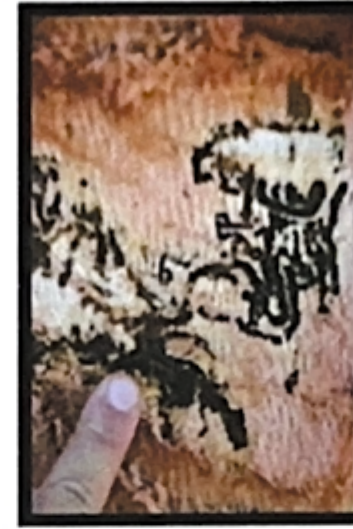
D-shaped exit holes on the main stem from the adults.



Larvae feeding causes black stains on the bark.



Woodpeckers feeding on larvae under the bark.



Feeding by the larvae kills oaks.



Injured oaks can have dead branches.

# DON'T MOVE FIREWOOD



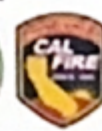
The goldspotted oak borer is thought to be introduced into southern California on firewood.

Please do not move firewood it may introduce the pest into uninfested areas!



For more information, visit the following Web sites:

[www.fs.fed.us/r5/spf/fhp/](http://www.fs.fed.us/r5/spf/fhp/) [www.fs.fed.us/r5/cleveland/](http://www.fs.fed.us/r5/cleveland/) [www.fire.ca.gov/resource\\_mgt/resource\\_mgt\\_pestmanagement.php](http://www.fire.ca.gov/resource_mgt/resource_mgt_pestmanagement.php)



# GOLDSPOTTED OAK BORER:

## A New Threat to Oaks in California

The goldspotted oak borer (GSOB), *Agrilus coxalis*, is a non-native insect that is killing several species of oaks. The new woodborer was first linked with oak mortality in southern California in May of 2008. Since 2002, this exotic insect has killed an estimated 17,000 oaks on public and private lands in a small area of the state.

### IMPACTS



Estimated area of infestation in San Diego Co



GSOB is native to Mexico, Guatemala, and southeastern Arizona.



Coast live oak



California black oak



Canyon live oak

The woodborer is known to attack these oak species



Coast live oak showing injury from GSOB.



Please do not move oak firewood it may introduce the beetle into additional areas.

### IDENTIFICATION



Adults have six distinguishing orange spots on their forewings.



Adults are 1 cm long and bullet shaped. Adults are rarely seen.



Mature larvae are 2 cm long, white, and legless. Repeated larvae feeding injures and kills trees.



Larvae can be recognized by the pincher-like spines located at the tip of the abdomen.

For additional information, please visit [www.fs.fed.us/r5/cal/tp](http://www.fs.fed.us/r5/cal/tp), [www.fs.fed.us/r5/cleveland](http://www.fs.fed.us/r5/cleveland) and [www.fire.ca.gov/resource\\_mgt/resource\\_mgt\\_prmmanagement.php](http://www.fire.ca.gov/resource_mgt/resource_mgt_prmmanagement.php)



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### SYMPTOMS



D-shaped exit holes of the adult. Exit holes are 4 mm in width.



Woodpeckers feeding on larvae under the bark.



Dark-colored stains can represent feeding from the new oak borer.



Crown thinning and branch die-back are also be a sign of attack from the woodborer.



Larval galleries of the goldspotted oak borer on the surface of the wood.



Larvae and pupae are often found in the outer bark.



# GUIDE TO HANDLING INFESTED BARK & INTACT WOOD





# GOLDSPOTTED OAK BORER INFESTED WOOD BEST MANAGEMENT PRACTICES

BMPs to prevent the spread of GSOB through the movement of logs and firewood

## OVERVIEW:

Transporting logs or firewood can introduce goldspotted oak borer (GSOB) into un-infested areas. These best management practices (BMPs) will help landowners and the firewood industry safely use wood from within a known GSOB-infested area. Be aware that firewood consumers are increasingly educated about the dangers of pest-infested wood.

Consumers may demand assurance that the wood does not contain GSOB and that BMPs were followed. Sellers are encouraged to include BMPs documentation in the bill of sale or permit required by California law (CA PEN § 384.5) when transporting or selling firewood. Neglecting to provide consumers a bill of sale could result in a fine, at minimum.

## WHY ARE BMPs NEEDED?

Firewood from GSOB-killed oaks can harbor living GSOB larvae under its bark. GSOB larvae can still mature into adult beetles for over a year after a tree dies. These adults may emerge from the bark at any time from May to October, so wood from GSOB-killed oaks must not be moved out of an infested area until the wood has seasoned (dried out) for a minimum of two summers.

## MANAGEMENT METHODS FOR INFESTED WOOD AND BARK:

METHODS	PROS	CONS	
<b>Seasoning Uncontained Wood</b>	<ul style="list-style-type: none"> <li>No cost or labor involved</li> <li>Wood can be used as firewood after 2 years</li> </ul>	<ul style="list-style-type: none"> <li>GSOB can emerge from uncontained wood and infest neighboring trees</li> <li>Splitting dried wood is labor intensive</li> <li>Piled wood can be a fire hazard</li> </ul>	
<b>Seasoning with Aluminum Screening</b>	<ul style="list-style-type: none"> <li>Inexpensive method to contain and stop emerging GSOB from spreading</li> <li>Required equipment is easy to find; use fine mesh aluminum window screening</li> <li>Wood will not mold; wood can be used after 2 years</li> </ul>	<ul style="list-style-type: none"> <li>Screening contains GSOB but does not kill it, without proper sealing there's a risk of beetles escaping</li> <li>Metal may be difficult to seal properly</li> <li>Metal may be susceptible to punctures by falling debris like pine cones and branches</li> </ul>	
<b>Seasoning with Tarping</b>	<ul style="list-style-type: none"> <li>Inexpensive method to contain and stop emerging GSOB from spreading</li> <li>No special equipment needed; use UV-resistant 6mil plastic tarps</li> <li>Wood can be used after 2 years</li> </ul>	<ul style="list-style-type: none"> <li>Tarp contains GSOB but does not kill it, regular maintenance and proper sealing is required to prevent beetles from escaping</li> <li>Wind can tear or lift buried edges</li> <li>Non-UV tarp will degrade in sun</li> <li>Wood may become moldy</li> </ul>	
<b>Grinding/Chipping</b>	<ul style="list-style-type: none"> <li>GSOB won't survive grinding to &lt;3 inches</li> <li>Chips can be used on-site as mulch</li> </ul>	<ul style="list-style-type: none"> <li>Expensive specialized equipment and handling services required</li> <li>Chips can contribute to fire hazards; check with local fire agency for guidance</li> </ul>	
<b>Debarking</b>	<ul style="list-style-type: none"> <li>Debarked wood (stripped all the way back to the sapwood) is free of GSOB and can be safely sold and/or moved long distances</li> </ul>	<ul style="list-style-type: none"> <li>Labor intensive; can be difficult to accomplish on "green" wood from recently killed trees</li> <li>Bark still harbors GSOB and has to be treated (seasoned, chipped, tarped, or screened) to prevent spread</li> </ul>	

For more information visit [www.GSOB.org](http://www.GSOB.org) and [www.firewood.ca.gov](http://www.firewood.ca.gov)

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