



# Ambrosia beetles

## Forest Health Fact Sheet

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Christine Buhl, ODF

Ambrosia beetle frass is fine and white from burrowing into wood, versus beetle frass which is reddish-brown from burrowing into bark.

Ambrosia beetles are a type of woodboring beetle. Our native species typically attack already dying or dead trees and help the wood decay. However, some non-native species such as Mediterranean oak borer are invasive, and can harm healthy trees, often by introducing fungi that cause tree death. Unlike most wood-infesting beetles, ambrosia beetles are unique because they do not feed on wood. Instead, they cultivate and feed on fungus grown in their galleries. Although our native species don't often kill trees they can reduce the value of timber by creating many small tunnels and holes in wood, and by introducing wood-staining fungus. Although this fungus does not decay wood it stains wood. Quick processing of felled logs can reduce the amount of attacks and therefore damage done by these insects.

### Hosts

- Major: various conifers and hardwoods depending on the species

There are many species of ambrosia beetles found in Oregon. Mediterranean oak borer (*Xyleborus monographus*) is an invasive species detected in Oregon in 2018. Native from Europe, north Africa and the Middle East, this pest is attacking native oaks in Oregon and California. *Trypodendron lineatum*, *Gnathotrichus sulcatus* and *G. retusus* are other ambrosia beetles of economic importance for Douglas-fir, true fir, pine, hemlock, spruce, etc.

Curtis Ewing, CAL Fire



Ambrosia beetles are tiny, such as this Mediterranean oak borer.

### Biology

Unlike many other woodboring beetles, Ambrosia beetles are small and reach about 0.2 inches or less (<5mm) in length. Adults typically attack trees in early

spring when temperatures reach 60°F although some species are active year-round. Adults create brood galleries in the sapwood which quickly become filled with fungus carried by the beetle. The fungus is dark in color and stains wood around the galleries and exit holes. Ambrosia beetles may develop from egg to adult in as little as 6 weeks, depending on conditions. Some species (such as those in *Trypodendron*) exit trees in the adult stage and overwinter in bark crevices or leaf litter. Others (such as those in *Gnathotrichus*) develop into adults and remain over winter in their galleries. *Trypodendron* and *Gnathotrichus* species typically have one generation a year, although multiple broods per generation are possible.



*T. lineatum* gallery

Robert Dzwonkowski, Bugwood.org

### Damage

Ambrosia beetles, depending on the species, may colonize trees that are still standing, freshly felled or



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Signs of ambrosia beetles include pale, powdery frass (left) and black-stained galleries in wood (right).

those that have been on the ground for several years. They may also re-infest previously colonized trees. Galleries made by these beetles in sapwood and outer layers of wood, which are prized for veneer, can greatly reduce timber value and attacked timber may be turned away from export markets.

## Management

### Natural

No major natural controls exist to reduce ambrosia beetle population spikes.

### Silvicultural

Timely processing or disposal of fire damaged, felled or windblown trees is important to prevent or reduce ambrosia beetle attack. Removal of trees from the forest before spring is advised. Unlike with bark beetles, ambrosia beetles will still attack debarked trees.

Moisture content of wood is very important to the growth of fungus and therefore ambrosia beetle brood development. Quick processing of wood or proper drying can greatly reduce the ability of these beetles to colonize or develop within trees. Storing logs in ponds or at storage decks with sprinklers can reduce the ability for beetles to colonize or reproduce within logs. Additionally, increased moisture levels can actually reduce the amount of oxygen available for fungal growth.

Effective pheromone lures have been developed for ambrosia beetles and may be used around mills and log storage areas to 'trap out' or detect the presence of ambrosia beetles.

## Management highlights

- Process damaged and felled trees quickly
- Store logs in ponds or at storage decks with sprinklers
- Use traps baited with pheromone lures to 'trap out' or detect ambrosia beetle populations

### Insecticides

Barrier sprays to prevent infestation and fumigation gases to kill colonized beetles are available but are often costly or laborious to apply. Pesticides registered for use on ambrosia beetles can be found in the [Pesticide Center Online \(PICOL\)](#) database.

**When using pesticides, always read and follow the label**



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Ambrosia beetle frass on fire-killed tree

## More information:

Oregon Dept. of Forestry, Forest Health  
<http://tinyurl.com/odf-foresthealth>  
 2600 State St. Bldg. D, Salem, OR 97310  
 503-945-7200

## Other references:

USFS Forest Health Protection  
[www.fs.usda.gov/goto/fhp/fidls](http://www.fs.usda.gov/goto/fhp/fidls)

OSU Forestry Extension  
<http://extensionweb.forestry.oregonstate.edu/>