

Douglas-fir Beetle Overview and Management Considerations

Background

The Douglas-fir beetle (*Dendroctonus pseudotsugae*) is a native bark beetle that occurs throughout the range of Douglas-fir in western North America. Douglas-fir trees are typically able to resist beetle attacks when healthy; however, stressed, damaged, or declining trees may become more susceptible.

Adult beetles attack the inner bark of Douglas-fir trees. This layer of tissue contains the **phloem**, which is the part of the tree responsible for transporting sugars produced by the needles and leaves to other parts of the tree. After entering the tree, adult beetles create tunnels beneath the bark where eggs are laid. The developing larvae feed in the phloem, disrupting the tree's ability to transport resources and potentially resulting in tree mortality.

After completing development, new adult beetles emerge from infested trees and disperse to locate additional susceptible Douglas-fir trees. Beetles may also spread over longer distances through the movement of infested logs, firewood, or other untreated wood products.



Figure 1. Beetle larvae



Figure 2. Adult beetle

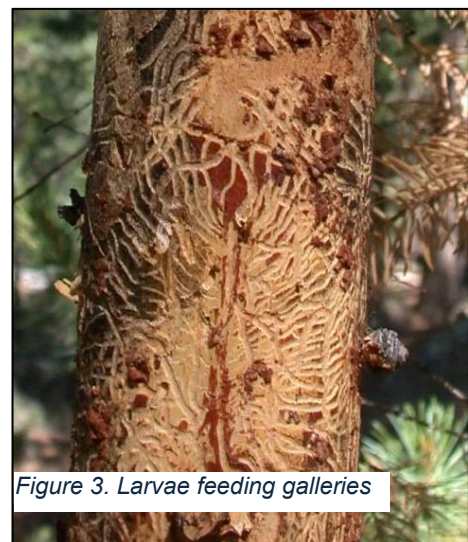


Figure 3. Larvae feeding galleries

Seasonal Activity

Douglas-fir beetles generally emerge and begin flying in spring, typically from **April through early June in the Pacific Northwest**. Actual timing varies depending on elevation, temperature, and weather conditions.

During this period, adult beetles leave infested trees and seek new host trees.

Management actions intended to reduce beetle spread are generally most effective when completed before adult emergence and flight.



Figure 4. Reddish-orange beetle entry holes.

Recommended Management Approach

The primary management objective is to reduce the likelihood that beetles developing in infested trees will emerge and attack nearby Douglas-fir trees.

1. Identify and Remove Confirmed Infested Trees

Recommended actions include:

- Confirm suspected infestations through inspection of tree symptoms and bark conditions.
- Remove actively infested trees before adult beetle emergence when feasible.
- Prioritize removal during winter and early spring before the primary flight period.
- Avoid leaving intact infested logs or large pieces of bark-covered wood on site through spring and early summer.

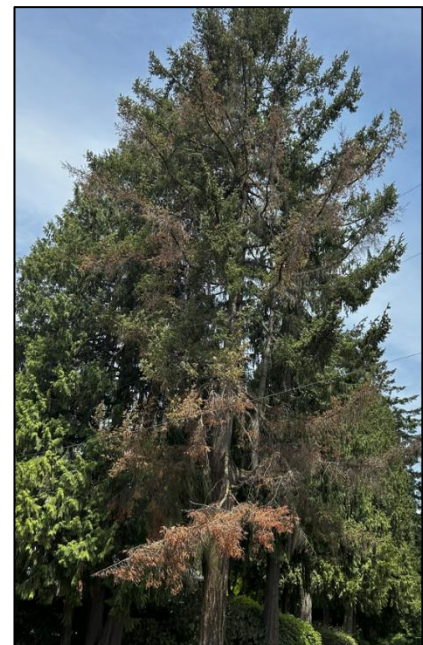


Figure 5. Douglas-fir showing symptoms of bark beetle infestation.

Early removal is generally considered the most effective method for reducing localized beetle spread because it directly addresses the source of emerging beetles.

2. Chip or Process Infested Wood Material

The purpose of wood processing is to disrupt the bark habitat where beetles develop.

Recommended practices include:

- **Chipping infested wood:** Properly chipped material disrupts beetle galleries and destroys the habitat needed for continued development. Chipped material does not generally need to be burned or removed from the site.
- **Avoiding storage of intact logs:** Whole logs, firewood, or large bark-covered pieces from infested trees should not remain on site through the beetle flight period unless appropriately managed.
- **Processing before emergence:** Cutting or otherwise processing infested material before adult beetles emerge reduces the likelihood of successful beetle development and dispersal.

For municipal applications, chipping is generally the most practical and cost-effective disposal method when removal of infested trees occurs.

MCH Pheromone Treatment

- MCH is a preventative pheromone treatment used to reduce the likelihood of Douglas-fir beetle attacks on nearby susceptible trees. **It is a synthetic version of a naturally occurring pheromone produced by Douglas-fir beetles that signals a tree has already been occupied,** discouraging additional beetles from attacking nearby trees.

- MCH does not kill beetles and does not treat trees that are already infested. Instead, it functions by altering beetle behavior and is intended to help protect nearby susceptible Douglas-fir trees from new attacks.



Figure 6. MCH Bubble-cap Dispensers

- MCH is typically applied shortly before the annual beetle flight period, generally around early April. Bubble-cap dispensers are commonly attached to trees

approximately 6 to 8 feet above ground and remain effective for approximately 50 to 60 days, covering the primary spring flight period.

- When used according to label directions, MCH is considered a low-risk management tool. It has been evaluated and registered by the U.S. Environmental Protection Agency (EPA) for use against Douglas-fir beetle and has been used for many years by the U.S. Forest Service and other federal, state, tribal, and local land management agencies as part of integrated Douglas-fir beetle management programs.

Estimated Cost

- MCH dispensers generally cost approximately **\$10 to \$20 per tree for the pheromone product**, depending on supplier and purchase quantity.
- Because MCH is preventative rather than a treatment for infested trees, it is generally most cost-effective when used to protect specific high-value Douglas-fir trees or areas where additional attacks are a concern.

Management Considerations

The most practical approach for municipal management is generally a combination of:

- Monitoring Douglas-fir trees for signs of active beetle infestation.
- Removing and properly processing confirmed infested trees before beetle emergence.
- Using MCH pheromone treatment selectively to help protect nearby high-value or susceptible Douglas-fir trees where additional beetle attacks are a concern.

Subject Tree as of July 14, 2026

