



Forest Risk Factors for Western Spruce Budworm

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Western spruce budworm prefers dense stands of Douglas-fir and fir trees with multiple canopy layers.

If your forest is comprised of:

- 30% or greater of Douglas-fir and/or fir trees,
- two or more canopy layers,
- and is dense with 80% or greater canopy cover (tree crowns touch),

then it is ***at risk for defoliation by the western spruce budworm.***

The photos and graphic demonstrate forest conditions that are susceptible to western spruce budworm defoliation.

Please contact DNR if you believe your forest conditions are at risk of western spruce budworm defoliation by [clicking here](#) or calling toll-free 1-855-338-8200.



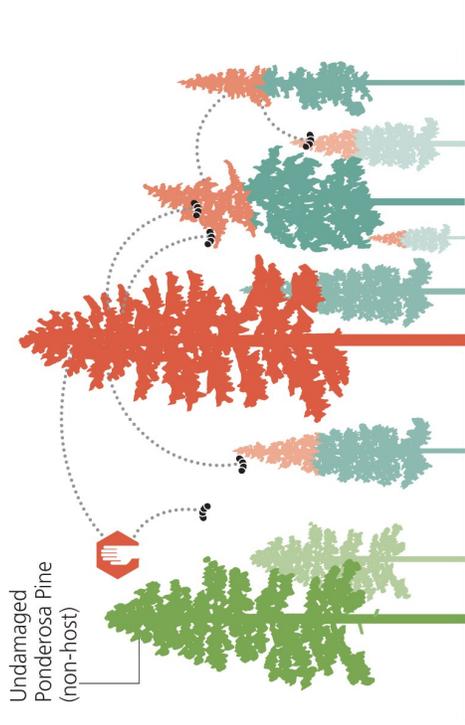
Dense Douglas-fir stand with two canopy layers at high risk of severe damage from western spruce budworm.



Greater than 80% canopy cover, tree crowns are touching (above and below).

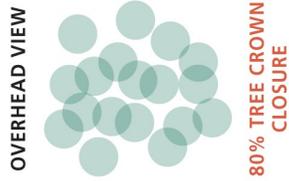


Risk Factors for Western Spruce Budworm

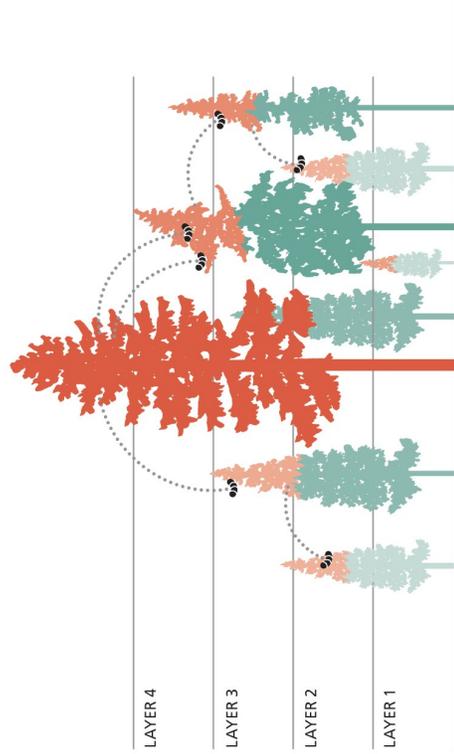
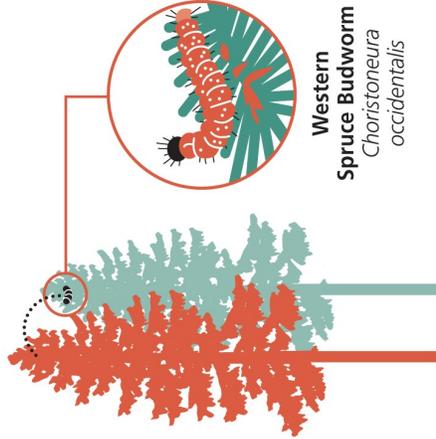


2 Douglas fir and true fir are 30% or more of the trees.

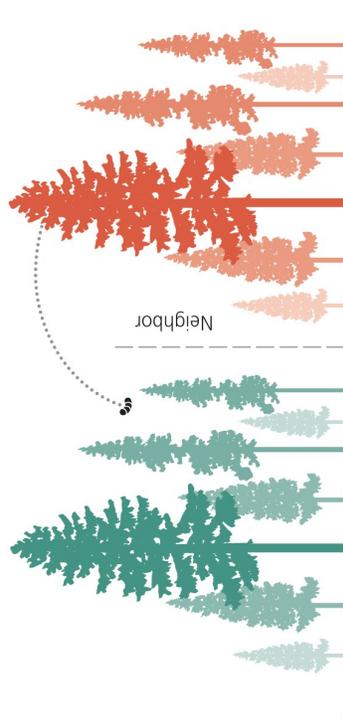
1 The tree branches are touching (tree crown closure of 80% or greater); 20% or less sky looking upward.



Western Spruce Budworm
Choristoneura occidentalis



3 There are 2 or more layers in the tree canopy.



4 Adjacent forestland (neighbors) is in a similar condition.

Recommended Actions to Reduce Western Spruce Budworm Risk

- Thin your forest to reduce the composition of Douglas-fir and fir trees to be less than 30%.
- Retain large, vigorous western larch and ponderosa pine.
- Reduce the number of canopy layers.

These actions can require commercial and/or non-commercial timber harvesting depending on site conditions. Before you start any work in the woods, it is essential to work with a professional forester to ensure the appropriate prescription is developed and implemented for your forest based on your goals and objectives and that all appropriate Forest Practices rules and regulations are followed.

The following photos show examples of forest management practices designed to reduce the risk of western spruce budworm defoliation.

High Risk



Before thinning: Dense Douglas-fir stand with two canopy layers at high risk of severe damage from western spruce budworm.

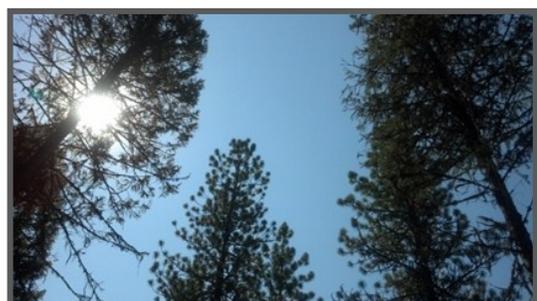


Before thinning: Greater than 80% canopy cover, tree crowns are touching.

Low Risk



After thinning: Number of trees and canopy layers reduced, resulting in a forest at lower risk of severe damage from western spruce budworm



After thinning: Crowns are not touching and ponderosa pine retained.

Forest Risk Factors for Pine Bark Beetles

Forest Risk Factors for Pine Bark Beetles

Bark beetles are most successful when trees are stressed and weakened. Trees are most often stressed by dense stand conditions, more trees than the site can support, and drought.

If your forest contains:

- 50% or greater of ponderosa pine trees,
- with an average diameter of 10 inches or greater,
- and is dense with tree crowns touching (little sky visible) or less than 13 feet between tree stems,

then it is ***at risk for attack by pine bark beetles.***

The photo demonstrates forest conditions that are susceptible to pine bark beetles. Please contact DNR if you believe your forest conditions are at risk of attack from pine bark beetles by [clicking here](#) or calling toll-free 1-855-338-8200.



Example of a dense ponderosa pine forest with trees greater than 10 inches in diameter, crowns touching and less than 13 feet between tree stems at high risk for bark beetle attack.

Recommended Actions to Reduce Pine Bark Beetle Risk

-Decrease ponderosa pine stand densities by careful thinning.

-Thin stands by removing the least vigorous trees (diseased, broken tops, wounded or slow growing trees). This will usually involve “thinning from below” which involves removing the smaller diameter trees in a stand with small crowns and leaving the largest diameter trees with healthy crowns.

-Thin to a spacing of 13 to 25 feet depending on tree size, site conditions and ownership objectives.

These actions can require commercial and/or non-commercial timber harvesting depending on site conditions. Before you start any work in the woods, it is essential to work with a professional forester to ensure the appropriate prescription is developed and implemented for your forest based on your goals and objectives and that all appropriate Forest Practice rules and regulations are followed.

The following photos show examples of forest management practices designed to reduce the risk of pine bark beetle attack.



Before thinning: Dense ponderosa pine forest at high risk of damage from pine bark beetles.



After thinning: Healthy, well-spaced ponderosa pine forest at low risk of damage from pine bark beetles. Crowns do not touch and more than 13 feet between tree stems.



Thinned ponderosa pine forest, 15 foot spacing between tree stems and crowns are free to grow on all sides.



Resilient ponderosa pine forest, recently thinned and low risk of damage from bark beetles.