



Blowdown and Douglas-fir Bark Beetles in Western Oregon

Forest Health Unit Oregon Department of Forestry

Windstorms and unusual winter weather often result in substantial levels of blowdown in western Oregon each year. Bark beetle outbreaks can follow these events and result in additional mortality to surrounding trees. The following information describes the nature of this relationship and addresses some of the questions that may arise when considering different treatment options.

Tree Susceptibility

Douglas-fir is generally the most susceptible tree in western Oregon to bark beetle outbreaks after storm or wind events. Aerial survey records indicate that there is often a direct increase in Douglas-fir mortality following significant wind events, but a similar pattern has not been observed for true firs, except in periods of sustained drought. Douglas-fir susceptibility to bark beetle damage is largely determined by tree size, site/stand conditions, and recent moisture levels. Generally, only trees that are greater than 12" in diameter are vulnerable. If trees occur in relatively young, vigorous stands, there is usually low risk of beetle-caused tree mortality, unless drought or root diseases are involved.

Douglas-fir Beetle

Douglas-fir beetle is often associated with tree mortality 1-2 years following large storm events. In western Oregon, outbreaks are usually localized and can persist for 1-3 years. Downed trees are colonized in early spring (late March-April) and brood develop during that year. The following year, large numbers of beetles can emerge from these downed materials and attack standing green trees such that host defenses are overcome. A general rule-of-thumb in western Oregon is that if you have more than 3 downed trees/acre (that are greater than 12" in diameter) beetle populations can rise to the level where 1-2 additional large trees/acre may be killed the following year.

The greater the intensity and extent of the blowdown, the more likely bark beetle related tree mortality will occur. Because the beetles usually take a full year to mature, treatments do not have to occur immediately, but should be completed before the following spring to prevent attacks on adjacent trees. If drought conditions occur, trees often become more susceptible and increased mortality may result.

Treatment Options

Salvage

In many areas, salvaging materials is the most preferred course of action to capture wood value. If downed trees are removed from the stand before April of the following year, it is unlikely that mortality of standing trees from Douglas-fir beetle will occur, as the brood are removed along with these materials. As warmer weather arrives in the spring, additional bark and wood-boring insects as well as fungal spores become more abundant and can cause significant wood damage and staining. In wet sites with easily compacted soils, it may be best to delay operations until summer to avoid site damage. Douglas-firs that are larger than 24" in diameter often do not deteriorate significantly during the first year, and can remain merchantable if removed within one year.

Overall, it is important to consider the trade-offs between salvaging to recover wood value and the habitat/ecosystem benefits of downed wood. In many cases, selective salvage is a good approach, as leaving moderate amounts of downed material adds wood to the forest floor or streams and creates structure at several levels. Assessing the current levels of snags available for wildlife and the downed wood conditions can be a useful part of the overall salvage planning and decision process.

MCH Pheromone

There is also an anti-aggregation/repellent pheromone commercially available, which has been used successfully to reduce Douglas-fir beetle caused tree mortality on individual trees up to several hundred acres. MCH protects trees by preventing beetles from initiating new attacks. It is formulated into bubble-capsules that can be attached to downed materials directly, to reduce their initial infestation, or to standing, green trees nearby, to protect them the following year. In either case, it should be applied from late March to April, which is the usual beginning of the flight period of Douglas-fir beetle in western Oregon.

MCH has been used successfully to protect sensitive wildlife areas, campgrounds, riparian zones, and timber production sites where salvage is not permitted or accessible. Treatment costs are currently \$2-3/capsule or approximately \$80-100 per acre. Although this product is a pheromone, it is subject to the Forest Practices Act and a notification of operation should be submitted to the Oregon Department of Forestry prior to use on forest lands. Please see the following link for additional information.

MCH Brochure

http://www.fs.fed.us/foresthealth/technology/pdfs/MCH_online.pdf

Summary

Overall, there are no simple answers for dealing with the potential for additional tree mortality related to storm events that commonly occur in western Oregon. Each situation will likely require a unique approach that takes into consideration the particular objectives of the landowner. For forest lands managers, these events can be an opportunity to increase stand structure and the amount of downed materials, while also salvaging trees to capture their value and protect stands from further damage. On forest lands that possess a large component of mature Douglas-fir, managing the accumulation of downed materials is especially important when it occurs rapidly, as these events can accelerate the break up of stands and damage areas that have taken decades to develop into high-value sites or unique wildlife habitat.

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<http://www.oregon.gov/ODF/ForestBenefits/Pages/ForestHealth.aspx>