

Winter-fallen Trees and Bark Beetles

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January 2021 brought some massive windstorms to the Inland Northwest. During high wind events such as this, it is very common to see trees falling over at the roots or breaking off mid-bole, particularly if there is a deformity or fork in the bole. Downed and broken trees are more common on sites that have recently had timber harvest, are exposed to more wind, or have root disease issues. Saturated, unfrozen soils also played a role this year.

Many landowners correctly begin to ask questions about bark beetle hazards when they see downed trees. Given the date these trees fell down, they may well be green enough in the spring for bark beetles that breed in downed trees to successfully complete their development, emerge, then attack nearby green trees. If enough trees have fallen to make a timber sale viable, that can solve the problem if the stemwood over three inches in diameter is removed before June.

But what if the volume is too small to justify a timber sale? The downed trees may not have to be removed to prevent bark beetle problems, and downed trees do a lot of good in a forest, providing nutrients and adding to forest soil structure. They also provide food and habitat for insects and other organisms that further benefit soil fertility and structure. Downed trees must be of a specific species and size to breed beetles that present a hazard to standing trees. Three beetle species are most likely to breed on downed trees in Idaho's family forests: pine engraver beetle, Douglas-fir beetle, and fir engraver beetle. On the rare family forests where Engelmann spruce are common, spruce beetle can also be an issue (see link below)

Pine Engraver Beetle

Pine engraver beetle (*Ips pini*) (also referred to by its genus name "*Ips*") is responsible for most of the occasions in Idaho family forests where insects emerge from downed trees to attack and kill standing green trees. Pine engraver beetles and their larvae usually feed on lodgepole and ponderosa pines, but *Ips* beetles can infest most pine species. They usually focus on sapling to pole sized trees or tops of larger trees.

In late spring, pine engraver beetles will attack pines that have fallen in the winter, breed, and then emerge later in the summer to attack standing green pines. The key issue with *Ips* beetles is to remove or treat bole wood (larger than three inches in diameter) from winter fallen trees. Either debark it, burn it, chip it, or remove it from the site.

Douglas-fir Beetle

As the name implies, the Douglas-fir beetle (*Dendroctonus pseudotsugae*) is a bark beetle that feeds predominantly on large diameter, mature, Douglas-fir (it sometimes breeds in fallen larch). In the spring, Douglas-fir beetles attack and breed in trees that fell in the previous winter's storms. A year later in the following spring and summer, they emerge from the fallen trees to attack standing green trees, individually, or in groups (which become larger during epidemics). They have one generation per year. Standing green trees do not usually fade until one year after attack.

If you have winter-fallen Douglas-fir that are larger than 8 inches in diameter, remove, burn, or debark them within one year. You can also monitor them for attack. If you see trees on the ground this size, with red-orange boring dust in bark crevices, and upon cutting away the bark find larval galleries, they have been attacked and should be removed, burned, or debarked.

Fir Engraver Beetle

The primary host for fir engraver beetles (*Scolytus ventralis*) are grand fir. While they are not as commonly a problem with downed stems as *Ips* or Douglas-fir beetles, fir engraver beetles sometimes breed in windthrown grand fir and tops

of grand fir (over 4 inches in diameter), then emerge to attack new trees from June to September, most often during droughts. Not all of the attacks of standing trees are lethal – some simply kill patches of tissue or kill tops.

If you have winter-fallen green grand fir larger than four inches in diameter, and upon cutting away the bark from those trees in the early summer, find main galleries scoring the wood and running 2-4 inches perpendicular to wood grain, remove or debark them to prevent attacks to standing trees.

Generalizations about Bark Beetles and Winter-fallen Trees

A few rules of thumb can be deduced from the biology of the bark beetles that breed in winter fallen trees:

Winter broken tops and trees smaller than 3 inches in diameter are almost never a major bark beetle hazard.

Occasionally *Ips* or other minor bark beetles will attack smaller diameter materials, but the material usually dries out, starving the larvae before they develop fully.

- *Winter fallen trees from some species are almost never a bark beetle hazard.* Some bark beetle species breed in fallen cedar, and hemlock, but they do not emerge to attack standing green trees.
- *Trees dead longer than one year are not a bark beetle hazard.* Even if those trees were at one time infested with bark beetles, the offspring have already left. You will often find insects in them that are superficially similar to bark beetles, but they are not usually insects that kill trees. The same goes with large wood boring insects (commonly found working in dead trees or firewood). These insects rarely kill trees. In fact, they are beneficial to forests, to the extent they start tearing apart dead trees, making them less of a fire hazard and recycling their nutrients back to the forest. They also provide food for a variety of wildlife species.

Beyond these types of winter-deposited materials, hazard from bark beetles also depends on the size and species of the trees in the immediate area that might be attacked. For example, you may have fallen Douglas-fir of appropriate size, species, and freshness, but if the standing green trees in the immediate area are all too small or of a different species (say ponderosa pine), you do not have a potential bark beetle problem.

A final note: sometimes landowners cut green trees that have fallen in their forest into firewood sized pieces, and stack it up in the woods to cure. Cutting green stemwood into firewood-sized pieces often has little effect on its suitability as bark beetle habitat (particularly for pine engraver beetle). Bark beetles that breed in downed stem wood will still do this successfully in firewood-sized pieces (though splitting such firewood may also possibly reduce risk). If it is a green enough to be a bark beetle hazard, remove it or debark it.

For more information on bark beetles and other forest insects, your local University of Idaho Extension office has a number of publications with more information. For on-site technical assistance regarding whether you are likely to have bark beetle problems as a result of trees that have fallen or broken during winter storms, contact your local Idaho Department of Lands Office. *Thanks to Sandy Kegley, USFS, Erika Eidson and Tom Eckberg, IDL, for their review of this article.*