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Wood for Wildlife

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Pine marten on the look-out in a well decayed snag.

When foresters talk about leaving organic debris, they often focus on feeding forest soils, minimizing fire risk, and avoiding bark beetle problems. But if they are looking at broader ecosystem functions, they will also look at organic debris for wildlife. Many forest owners value wildlife for their own sake, but even where management focus is primarily on timber, wildlife can contribute to those objectives. For example, the owls that use snags left on a site will prey on pocket gophers – a chief nemesis of tree planters everywhere.

For the most part, wildlife biologists looking at organic debris concentrate on material larger than three inches in diameter, known as coarse woody debris (CWD). Slash (organic debris smaller than three inches in diameter) ultimately helps wildlife to the extent it enriches forest soils, which in turn feeds the plants, trees, and fungi that wildlife depend on. Slash piles may also shelter small mammals. But inadequate coarse woody debris is often more limiting to wildlife. Species ranging from bears to rubber boas use CWD for many purposes. For example:

- both birds and mammals use CWD as a place to forage for insects or fungi;
- martens, fishers, bobcats, and black bears use CWD for dens and shelter;
- many small mammals use CWD for hiding cover and protection;
- small mammals also use logs as runways;
- many amphibians benefit from CWD because it provides cooler, moister habitats with more stable temperatures for breeding and other activities;
- birds use CWD for lookout posts and reproductive displays; and
- predators such as martens and weasels use CWD for access under snow to their prey.

Coarse woody debris (CWD).

Managing CWD for forest nutrition is relatively straightforward. Determine how many tons of CWD you need per acre and when and how to treat it to minimize insect and fire concerns. Managing CWD for wildlife is more complicated. The size, distribution, and orientation of logs

are more important than sheer quantity. Also, different wildlife species have different habitat needs, some of which may conflict. For example, heavy log concentrations may be good for small mammals but limit elk movement.

Since many, if not most, wildlife species of interest cross property boundaries, you also have to factor in what needs are being met by nearby forests. More research is needed, but some general strategies for managing CWD for wildlife can be grouped into three categories: snags, size and characteristics, and arrangement.

Snags.

Great horned owl perched in a snag.

The primary focus in this article is logs on the ground. But before a tree can become log habitat, it must die. Sometimes green trees are blown down by the wind and immediately provide CWD, but more commonly, the dead trees remain standing for decades. This dead, standing tree is called a snag. Snags are a valuable resource for a whole host of wildlife species and are often the first thing that biologists look for when evaluating forest wildlife habitat quality. For a good summary on snags, read *Managing Small Woodlands for Cavity Nesting Birds*, available at www.woodlandfishandwildlife.org/pubs/cavitynestingbirds.pdf

Coarse woody debris size and characteristics.

Wildlife biologists often emphasize large pieces of organic debris for wildlife, as they can benefit a wider range of species. For example, black bears can den in the stump of a large windthrown tree. Obviously bears cannot use a six-inch tree for the same purpose. But those small logs still benefit other species – maybe even bears, if they can forage grubs from the decayed log. Longer pieces of CWD are also preferred because they provide a wider range of diameters, in turn benefiting a wider range of wildlife species.

Hollow logs (formed by stem decay fungi such as Indian paint fungus that decay the tree's heartwood while it is still standing) are particularly useful to many wildlife species (e.g., pine marten). Downed logs provide the widest variety of habitat if the bark is attached, as some wildlife species or their prey will live in the space between the wood and the bark as the latter starts to loosen. Try not to roughen up downed logs any more than you have to if you want to keep that habitat.

A bear forages for grubs in decaying CWD.

Coarse Woody Debris Arrangement.

Arrangement of fallen logs is critical to some species, particularly small mammals and their prey. For example, martens and fishers like logs that are "jackstrawed" or loosely piled up across the forest floor. When these log piles are covered by snow they create a complex of snow-free spaces and runways that provide protection and foraging.

Log orientation matters too. Logs lying parallel to slope contours may be used more by wildlife than logs oriented up- and down-hill, especially on steep slopes. Arranging logs this way also allows soil to accumulate on the uphill side,

which traps moisture, hastens decay, and reduces fire risk.

Balancing competing objectives.

Several researchers have pointed out that the species that depend on CWD in forests managed for timber are currently relying on material left in historical logging. This often involved cutting in older forests that had more stem-decayed wood. Current harvests in second growth stands often do not have as much malformed wood and are made for markets that take logs down to a smaller top diameter (e.g., down to a four inch top rather than an eight inch top). These harvests do not leave as much CWD as past timber harvest practices.

So with all the varied habitat needs of different wildlife species, plus all your other forest management objectives, how do you make decisions that benefit wildlife? Unfortunately, there is not much authoritative research that gives precise recommendations of how much and what kinds of CWD to leave for specific species of wildlife. Barring more prescriptive research results, the best strategy may be to leave a variety of species, degrees of decay, and distributions of CWD to benefit a broad range of species. How much depends on your other objectives, but wildlife biologists rarely talk about a site having too much CWD.

At a minimum, pay closer attention to leaving low value (cull) pieces of stem wood out in the woods rather than burning them in one big pile, or worse yet, hauling them to a mill that won't pay you for them. Also remember, the only sizes of woody debris that fire wardens measure in assessing fire hazard are those smaller than three inches in diameter.

For more information on CWD, see *Managing Organic Debris for Forest Health*, PNW 609, University of Idaho, *Trees and Logs Important to Wildlife in the Interior Columbia River Basin,* available at www.treesearch.fs.fed.us/pubs/3051, and *Proceedings of the Symposium on the Ecology and Management of Dead Wood in Western Forests,* available at www.fs.fed.us/psw/publications/documents/psw_gtr181/.

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Jack-strawed logs an Idaho forest have been left for coarse woody debris.