

# Northwest Woodlands

A Publication of the Oregon Small Woodlands, Washington Farm Forestry, Idaho Forest Owners & Montana Forest Owners Associations

## SUSTAINABLE FORESTRY

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For Whom and For What?**

**The Emotional Toll of  
Multiple Objectives**

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The Obscured Life of  
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**The Economics of Sustainability:  
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Non-timber Forest Products**

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*Commercial and precommercial thinning for fuels mitigation in a residential ignition zone helps ensure healthy and resilient forests in the future. Photo credit: Jill Buckland. Great Gray Owl inset photo credit: ©Daniel J. Cox/ Naturalexposures.com*

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# Standing Tall: The Obscured Life of Snags and the Owls Who Rely on Them

By **JEANNA CLIFFORD**

**O**wls are among the most recognized and mysterious birds in the forest, yet many people are surprised to learn that most owl species do not build their nests. Instead, they depend on existing structures, natural cavities, clumps of mistletoe, stick nests made by other species, abandoned woodpecker holes, or broken treetops to raise their young. This reliance makes them particularly vulnerable to forestry practices and highlights the importance of preserving these critical features in our forests. Without suitable nesting sites, some owl species may not reproduce successfully, threatening their long-term survival.



In Northwestern forests, life doesn't end when a tree dies; it transforms. One of the most critical but often overlooked elements of healthy forest ecosystems is the snag, a dead or dying tree that remains standing and rooted

in place. While to some, snags may appear hazardous or unsightly, these trees are lifelines for wildlife and indicators of sustainable forestry. They play a central role in the lives of many owl species, and their protection is crucial to biodiversity and ecological resilience across the Northwest.

## The Anatomy of a Snag

The term snag refers to a standing dead or dying tree formed by natural processes such as wind, lightning, disease, wildfire, insect infestation, or age-related decline. When a tree's top snaps off, it's called a broken-top snag. As the top decays, it can serve as a nesting platform for larger owls like the Great Gray or Great Horned. When a branch breaks off, decay can create a natural cavity, while other cavities are made by woodpeckers feeding on insects and drilling their nest holes. Cavities can serve as homes for smaller owls, such as Flammulated, Screech, Northern Pygmy, Boreal, and Northern Saw-whets, as well as other small mammals like squirrels, bats, and insects.

## Great Gray Habitat

Great Gray Owls, one of the largest owls of the boreal and montane forests, are particularly reliant on broken-top snags. These majestic owls often nest on broken-topped trees, typically favoring old-growth forests with tall canopies or boggy meadows with abundant snags (see inset photo on cover). These owls may return to nesting territories year after year, although they may move nests many miles away for reasons such as food supply, nest site availability (snags eventually fall), or perhaps loss of habitat.

In Western Montana, the average snag height for Great Gray Owl nests is around 32 feet, with variation from 18 to 65 feet. For the last two years, a pair has been observed nesting atop a 20-foot narrow aspen snag. We have partnered with Explore.org to install a live nest camera, where one can observe a Great Gray Owl nesting on a broken-top snag. These insights can help forest managers make more informed decisions about habitat conservation.

## Decoding Smaller Owl Real Estate

Some of our recent research has focused on snags for cavity-nesting owls, particularly Northern Pygmy and Northern Saw-whet Owls. These studies reveal specific preference patterns in tree species, cavity dimensions, tree size, and condition. Data from over 100 nest cavities show that Northern Saw-whet Owl nests are commonly found in dead trees with bark still intact, most found in Quaking Aspen, Ponderosa Pine, and Black Cottonwood. These cavities average 3.5 x 4 inches in diameter, and each tree often hosts two or three cavities.

Northern Pygmy-Owls, on the other hand, have a greater diversity of trees they use, more often in live Western Larch, Black Cottonwood, and Quaking Aspen. Their cavity entrances

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are smaller, about 2.2 inches in diameter, and are typically found in trees with fewer cavities.

### Snags: Cornerstones of Biodiversity

Snags support far more than owls; over 75 species of birds use cavities for nesting. Snags also provide perching and nesting sites for hawks, eagles, osprey, ravens, and songbirds; denning locations for mammals; and homes for countless invertebrates. Woodpeckers excavate nesting cavities in these snags, which in turn, become homes for secondary cavity-nesters, such as owls.

These old, standing trees become miniature ecosystems. Removing them interrupts complex ecological relationships that often take centuries to establish. Yet many snags are still removed out of fear they may fall, become a fire hazard, spread diseases, harbor insects, or because they appear unsightly. That's why it's important to know exactly what types of trees and their characteristics are best to leave behind.

NORTHERN SAW-WHET OWL CAVITIES (3.5 x 4in)							
	TREE COUNT	AVERAGE DBH (INCHES)	TREE ALIVE	TREE DEAD*	BARK ON*	BARK OFF	AVERAGE CAVITY HEIGHT ON TREE
Western Larch	8	16	1	7	5	2	55%
Engelmann Spruce	--	--	--	--	--	--	--
Lodgepole Pine	--	--	--	--	--	--	--
Ponderosa Pine*	14	17	1	13	9	2	62%
Black Cottonwood*	14	21	0	14	11	3	64%
Quaking Aspen*	27	16	9	18	20	6	61%
Douglas Fir	--	--	--	--	--	--	--
Western Red Cedar	--	--	--	--	--	--	--

\* Most common

Average number of cavities is 2-3 cavities per tree

NORTHERN PYGMY OWL CAVITIES (2.2 x 2.2in)							
	TREE COUNT	AVERAGE DBH (CM / IN)	TREE ALIVE*	TREE DEAD	BARK ON*	BARK OFF	AVERAGE CAVITY HEIGHT ON TREE
Western Larch*	16	47 / 18	13	3	16	--	40%
Engelmann Spruce	4	31 / 12	--	4	2	2	68%
Lodgepole Pine	3	25 / 10	1	2	3	--	68%
Ponderosa Pine	2	41 / 16	1	1	1	--	39%
Black Cottonwood*	12	53 / 21	8	4	10	1	62%
Quaking Aspen*	14	35 / 14	11	3	14	--	34%
Douglas Fir	1	46 / 18	--	1	1	--	100%
Western Red Cedar	1	58 / 23	1	0	1	--	67%

\* Most common

Average number of cavities is 2-3 cavities per tree

### Changing the Narrative: From Eyesore to Asset

There is a growing need to shift public perception of snags. Rather than

being seen as hazards or firewood, may they be recognized as vital ecological infrastructure. Sustainable forestry includes protecting snags during harvest and, when appropriate, even creating new ones by hollowing out the tops of broken trees or by leaving dying trees in place to allow natural processes to occur for the future.

Property owners can take several steps to promote snag conservation:

**Retain** snags that fall within the best nesting characteristics whenever possible and consider preserving the processes that regenerate snags for the future.

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A forest management plan helps communicate a vision for your forest and guides the business of managing your land. Management plans demonstrate your commitment to the resource and are a gateway to cost-share programs and sustainable forest management certification.





**Create** snags by removing the tops of dead trees and hollowing the tops out, or letting them decay

**Share information** with others about the importance of snags for wildlife.

**Advocate** for forestry policies that incorporate snag retention.

### **Sustainable forestry and snag stewardship**

For family forestland owners in the Northwest, integrating snag conservation into your forest management plan is a tangible, effective step toward sustainability. Reach out to your local State Forestry Associations, which can offer technical assistance, cost-share programs, and guidelines to help.

Working with an arborist or professional forester who understands wildlife habitat can yield long-term ecological benefits. Selective thinning, patch cuts, and wildlife tree retention strategies can be implemented to balance timber production with conservation. In addition, the habitat surrounding the snag is critical, e.g., a snag in a clear-cut won't support the same species, especially the Great Gray Owl, as a snag in a forest.

### **Conclusion**

In Northwest forests, snags stand as monuments to resilience. Even in death, they harbor a variety of life, providing shelter, food, and breeding sites for the forest's most secretive residents. Owls like the Great Gray, Flammulated, Screech, Northern Pygmy, Boreal, and Saw-whet depend on them, and when we protect snags, we protect an entire web of forest life.

Sustainable forestry isn't just about the trees we harvest, it's also about the ones we choose to leave behind. Let's leave the right ones. ■

**JEANNA CLIFFORD** is the Communications Director at the Owl Research Institute (ORI), which is a 501(c)(3) non-profit dedicated to owl and wildlife research, conservation, and education. They conduct long-term research on owls, their prey species, and their relationship to the habitat in which they

live and use the data to help maintain viable populations. Additionally, they collaborate on strategic projects; educate the public about owls; and provide research data to land

management agencies and conservation partners. Please visit [owlinstitute.org](http://owlinstitute.org) for more information. Jeanna can be reached at [jeanna@owlresearchinstitute.org](mailto:jeanna@owlresearchinstitute.org).



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