

# Living with Wildlife



Raccoon family in tree den. A note about raccoons – raccoons can become habituated to people; they are aggressive and sometimes dangerous and carry the roundworm *Baylisascaris procyonis* that can infect humans and pets. Do NOT leave pet food and garbage out and never feed raccoons.

## Snags – The Wildlife Tree

### The Importance of Snags in Your Neighborhood

#### Dead Wood Brings New Life

Hard to believe, but trees can actually provide more habitats for wildlife dead than when they are alive. Standing dead and dying trees, called “snags” or “wildlife trees,” are important for wildlife in both natural and landscaped settings, occurring as a result of disease, lightning, fire, animal damage, too much shade, drought, root competition, as well as old age.

Birds, small mammals, and other wildlife use snags for nests, nurseries, storage areas, foraging, roosting, and perching. Live trees with snag-like features, such as hollow trunks, excavated cavities, and dead branches can provide similar wildlife value. Snags occurring along streams and shorelines eventually may fall into the water, adding important woody debris to aquatic habitat. Dead branches are often used as perches; snags that lack limbs are often more decayed and, may have more and larger cavities for shelter and nesting. Snags enhance local natural areas by attracting wildlife species that may not otherwise be found there.

All trees of all sizes are potential snags. Unfortunately, many wildlife trees are cut down without much thought to their wildlife value or of the potential management options that can safely prolong the existence of the tree. Wildlife trees offer a one-stop, natural habitat feature. In short, snags “live on” as excellent wildlife trees for all to enjoy!

#### Wildlife That Use Snags

West of the Cascade Mts 39 species of birds and 14 species of mammals depend on tree cavities for their survival. East of the Cascades 39 bird species and 23 mammal species depend on these snags (Pederson, USDA Forest Service). In total, more than 100 species of birds, mammals, reptiles, and amphibians need snags for nesting, roosting, shelter, denning, and feeding (Bottorff, WSU, Snohomish Co. Ext); nearly 45 species alone forage for food in them. Hollow snags and large knot-holes are used by many species of mammals such as squirrels, marten, porcupine, and raccoons. Table 1 shows Washington State bird species that depend on snags.



Tree swallow peering from a nest cavity excavated by a woodpecker.

Photo Credit: Joy Spurr

In winter when snow covers the ground, northern flickers and other common backyard wildlife depend heavily on insects and other foods found in snags. Brown creepers, bats, and other small animals will roost behind loose bark and bark slits for winter warmth and shelter. Hollow snags are very valuable in winter as they are used by many species such as squirrels, raccoons, owls, and bear for denning and roosting.

This high use of snags by a myriad of species underscores the importance of preserving snags and including them in your landscape.

## The Woodpecker - Cavity Creator

Woodpeckers such as the northern flicker create new cavities in snags and are thus referred to as “primary cavity nesters.” They have thick-walled skulls supported by powerful neck muscles, and a beveled, chisel-like bill. A woodpecker’s strong, grasping feet with sharp, curved nails form a triangular base for support in the vertical position along with specially adapted tail feathers. The woodpecker’s barb-tipped tongue and sticky saliva help it get insects from deep crevices. Unlike other cavity-nesting birds, woodpeckers rarely use nest boxes because they are biologically conditioned to dig their own cavities: the physical motions of cavity excavation stimulate reproduction.



Northern flicker in the process of excavating its nest cavity. Note the wood chips flying.



The head of a young pileated woodpecker emerging from its nest cavity.

Woodpeckers excavate several holes each year and rarely nest in the same one in consecutive years, thus creating many cavities for secondary cavity nesters such as bluebirds, tree and violet-green swallows, chickadees, nuthatches, house wrens, wood ducks, squirrels, and owls who cannot excavate cavities themselves. Secondary cavity nesting wildlife are highly dependent upon the availability of these abandoned nest cavities.

## Trees That Make The Best Snags.

Large conifers such as cedar, fir, larch, and pine, tend to rot more slowly than do deciduous trees such as alder, birch, and cherry. However, large deciduous trees such as cottonwoods, big-leaf maples, and oaks can last many years as snags. Moreover, while alive, they tend to develop cavities in their bulky live and dead branches and trunks

Large snags more than 12 inches in diameter and 15 feet tall offer ideal hunting perches for hawks, eagles, and owls. They function as resting perches for swallows, band-tailed pigeons, mourning doves and other birds; food storage for mice, squirrels, woodpeckers, and jays; and song perches for tanagers and flycatchers. In addition to nesting, woodpeckers use large dead tree trunks as a way to announce their presence during courtship, hammering their bills against the tree’s resonating surface. Small snags may be used as song posts by bluebirds, hummingbirds, and other songbirds to attract mates and proclaim nesting territories. Black-capped chickadees nest in small tree snags as little as six feet tall and four inches in diameter.

**Tree Species.** Snags of both deciduous trees (those that shed leaves in winter) and conifer trees (evergreens) are used by wildlife. The most favored snag species east of the Cascades are: ponderosa pine, western larch, quaking aspen, and paper birch; west of the cascades Douglas fir and western red cedar snags are highly favored and big-leaf maple and



Bald eagles using a large dead tree snag. Bald eagles prefer bulky, tall snags for perching.





## Hard and Soft Snags

A snag habitat begins to form when a large tree dies and forms a "Hard Snag." As this hard snag decays it gradually becomes a "Soft Snag." A partially or recently dead tree is a hard snag. Hard snags tend to have their bark intact while the heartwood (the non-living inner core) and sapwood (the younger, softer, growing wood between the bark and heartwood) are still firm. These kinds of snags are good for cavity excavating birds. A soft snag has considerable decay in its heart and sapwood. Fungi infiltrate the heartwood and the tree becomes soft or hollow in the center. A soft snag rarely has limbs, and its top may be missing. Over the years, a soft snag gets shorter as weather and animal activity weakens it. Eventually it falls over and continues to provide important food and shelter on the ground.

The snag with the abundant nest cavities and foraging evidence is a soft snag that has been used for many years. This photo was taken four years after the flat-top trees were created from live Douglas fir; they have barely started the decay process yet woodpeckers are beginning to work them.

*Photo Credit: Patricia Thompson*



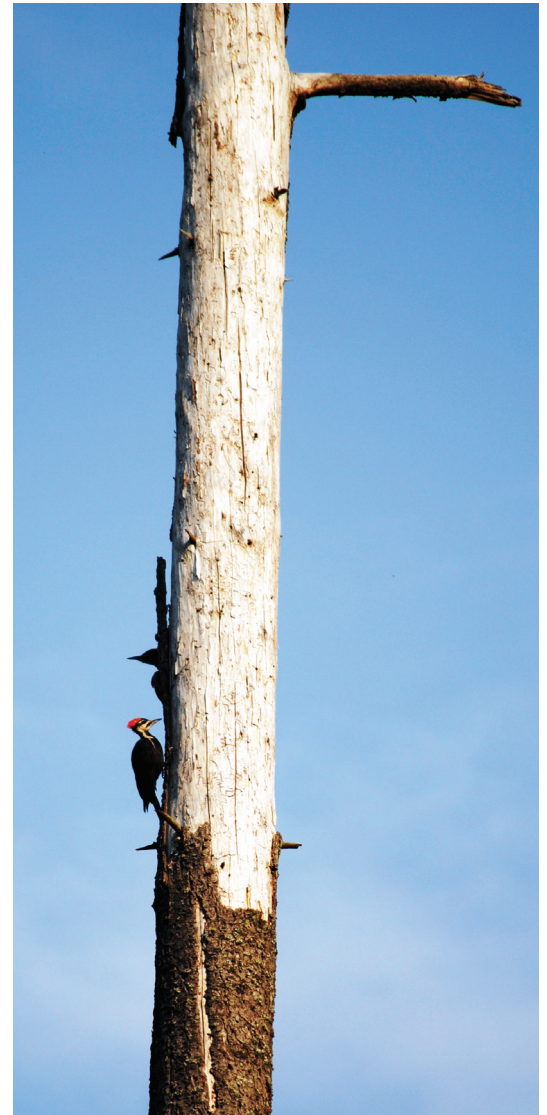
Red squirrel poking out of a den tree savoring a nut dropped by a passerby. Central Park, New York City.

*Photo Credit: Bruce Yolton*

[urbanhawks.blogs.com/.../2006/01/index.html](http://urbanhawks.blogs.com/.../2006/01/index.html)

Pileated woodpeckers foraging on an old dead snag pulling off the bark to get to the insects underneath. Note the thick bare branch at the top of the tree perfect for bald eagles or other large birds.

*Photo Credit: Patricia Thompson*





## Dead Tree/Wildlife Condo

You can see where wildlife finds food and shelter if you look carefully at a snag:

- A snag harbors many insects that are food for wildlife. The outer surface of the bark is where birds such as brown creepers, nuthatches, and woodpeckers eat bark beetles, spiders, and ants.
- The inner bark is where woodpeckers eat larvae and pupae of insects. Mammals such as raccoon and black bear may tear into these areas of snags to harvest the protein-rich insects.
- The heartwood is where strong excavators such as the pileated woodpecker prey upon carpenter ants and termites.
- The space between partially detached bark and the tree trunk is where nuthatches, winter wrens, and brown creepers roost or search for food. Pacific tree frogs, several species of bats, and many butterflies also find shelter there.



Live aspen snag “condominium.” These trees have many nesting cavities excavated by at least three species of woodpeckers. In the tree on the left, the largest rectangular hole is a pileated woodpecker nest in which the pileateds were seen nesting; the top cavity just under the greenery was excavated and used by northern flickers; smaller nest cavities were excavated by red-naped sapsucker and also used by black-capped chickadee and house wren for nesting. Look for small nest holes in the tree on the right also.

*Photo Credit: Patricia Thompson*

cottonwood are also used. Softwood trees such as fir tend to make better food foraging trees, while hardwood trees are sometimes better for nesting cavities. Nevertheless, just about any species of snag tree will be used by wildlife.

**Size.** Small trees rot rapidly, creating wildlife habitat. Black-capped chickadees nest in snags as small as six feet tall and four inches in diameter. The large conifers such as cedar, fir, larch, and pine, tend to rot more slowly than do deciduous trees such as alder, birch, and cherry. However, large deciduous trees such as cottonwoods, big-leaf maples, and oaks can last many years as snags. Moreover, while alive, they tend to develop cavities in their bulky and dead branches and trunks.

**Decay.** The best snags for cavity-nesters are those with hard sapwood (between bark) and decayed heartwood (inner core) making them hard on the outside and soft in the middle. The hard sapwood provides protection from



Cedar snag with top burned out by homeowner adds an interesting and striking feature to this backyard landscape.

*Photo Credit: Russell Link*





*Photo Credit: Russell Link*

predators and insulation against weather, while the softened heartwood allows easy excavation deep into the snag. Many birds avoid very soft snags for nesting because extremely soft wood can be wet or crumbly.

Strong primary excavators, such as the pileated woodpecker and northern flicker, occasionally select living trees with decayed heartwood because they can penetrate through the sound layer of sapwood and excavate the nest cavity in the soft heartwood. Generally, the sapwood remains fairly intact and forms a shell surrounding the decaying heartwood. The excavated interior may remain useable for many years by many species.

## Snags in Your Landscape

Try to incorporate one or more snags into your landscape keeping old and damaged trees when possible. When clearing, retain trees and tall shrubs near the planned snag to protect it from wind and provide a healthier environment for wildlife. In urban areas, tall snags are best located away from high activity areas, where they won't pose hazard if they fall. Trees that lean away or are downhill from structures and other areas of human activity present little or no risk.

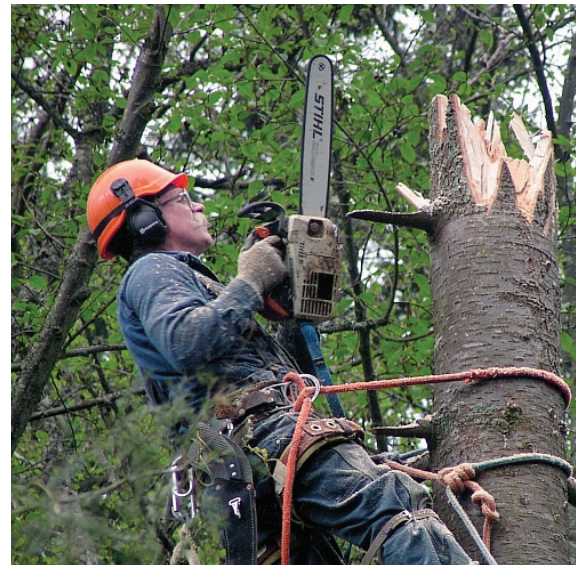
## Ways to Tell a Future Snag:

- Sap runs,
- Splits in the trunk,
- Dead main limbs,
- Fungi on the bark.
- Evidence of animal use, such as woodpecker holes.

Also, note any trees you may want to make into a snag including:

- Hazard trees--for example, one with a forked top, weak wood, or disease,
- A shade tree in an area where you want sun,
- A tree with invasive roots threatening a drainage or septic system,
- A tree in a group that needs thinning out,
- A tree in an area where there aren't any snags.

Because individual snags may have only one wildlife habitat feature (perch, cavity, etc.), retaining and promoting small clumps of snags throughout a larger property is more likely to provide all of these features. Small dead ornamental and fruit trees can be left in the landscape where they are not a safety hazard because they will be used as perches for preening, resting, foraging, and singing.



**A professional arborist creates an alder tree snag giving it a natural-looking jagged top. You must hire a professional to create these tall snags. It is unwise to attempt this yourself.**

*Photo Credit: Russell Link*



## Creating Snags from Live Trees

Any snag you provide for wildlife will likely be used. You can even create one from a live tree. Branches or trunk you remove can be added to a brush shelter. Remember, a tree can provide habitat even when just part of it dies. For instance, if a large conifer has a fork in it, you can girdle one of the forks creating an excellent perch. If the trunk of this tree is large enough in diameter, a future cavity may develop at the perch limb dies. In addition, if the tree is not dying after the side branches and top have been removed; some individual side branches can be girdled to create perches help the tree decline.

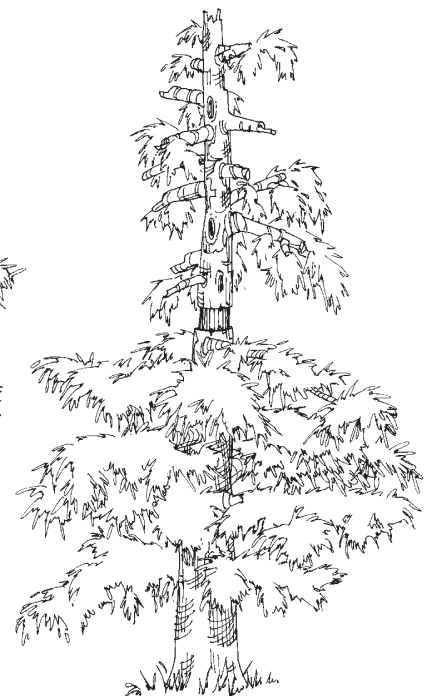
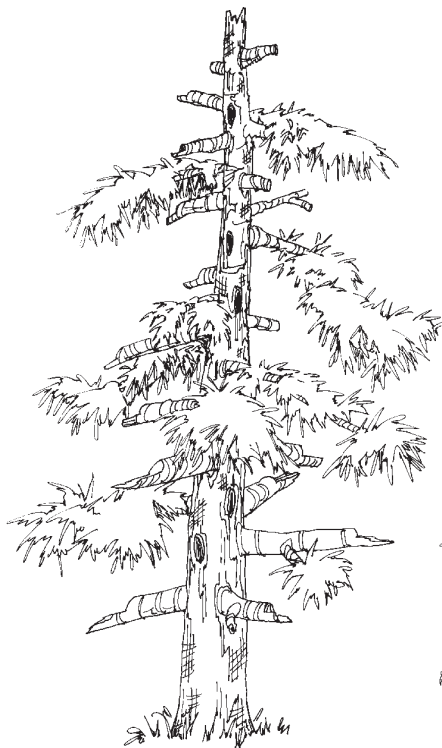
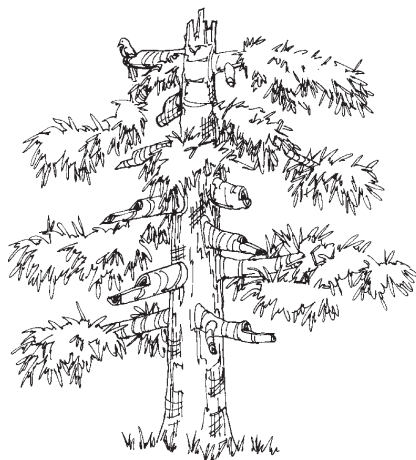
Always hire an expert tree service to remove branches and tops of large trees. Make sure that whoever does the work is licensed, bonded, and insured, and understands your intention to make a wildlife tree. Many certified arborists with the International Society of Arboriculture specialize in wildlife tree creation and maintenance. Check with your local chapter.

### There are several methods for creating snags:

- Remove the top third of the tree and half the remaining side-branches.
- Leave the top the way it is and remove a majority of the tree's side-branches.
- Leave the top and sides as they are and girdle the trunk.
- Girdle the branches.

Ways to create a snag from a live tree. A jagged top and shortened branches at the top give the snag a more natural look and speed the process of decay.

*(Drawing by Jenifer Rees)*



## Creating a Cavity in a Live Tree

### Gradual Technique

Drill a 1" diameter hole at a ten-degree angle downwards into the heartwood of the tree anywhere water might collect, such as below a crotch of a branch, starting the cavity making process. The illustration shows the drill going up

Remove a large (4" or larger) limb and leave the jagged, broken stub allowing for invasion by bacteria, fungi, and insects. Most diseases attack the dead heartwood and the outer layer can continue its growth around the rotten core; the rest of the tree can continue to grow for many years.

### Rapid Technique

Cut a cavity in the trunk using a small chain saw, drill, or chisel. Next, cover the cutout with a piece of wood or sheet metal with the species-appropriate size entry hole drilled into it. Whether this kills a tree depends on the size of the cavity in relation to the size of the tree.

**To prevent aggressive, non-native European starlings and house sparrows from nesting in a snag, create or reduce the size of an existing hole to 1 1/8 inches using leather, wood, or metal covers.**



**Remove the top third of the tree and half the remaining side branches.** This method ensures that the tree begins the preferred inside-out decay process, premium sites for cavity-nesting birds. Leave some shortened branches at the top for perches and make the snag look natural by creating a jagged top. A jagged top also provides an avenue for fungi infection and other rot-causing organisms. Water and bird feces will collect and speed decay. Sow bugs, earwigs, and other invertebrates will find their way in and assist in the decay process.

**Leave the top intact and remove about 3/4 of the tree's side-branches.** Douglas fir, hemlock, and pine respond well to this technique. Western red cedar is a tough conifer to kill in this way, but it makes an excellent snag because it is extremely wind-resistant and long-lasting. Keep branch ends jagged and more susceptible to microorganisms and fungi, and more natural looking.

**Leave the top and sides as they are and girdle the trunk.** Least preferred method. Girdling creates a dead but intact top, providing a taller snag, but leaves it more susceptible to breaking at the wound site. Girdling tends to cause a tree to rot from the outside in, instead of the preferred inside-out. As a result, by the time the rot has progressed far enough for woodpeckers to excavate a cavity, the tree has become fragile and may easily fall in a windstorm. Furthermore, a cavity in a girdled tree may not be safe because the hole is likely to be shallow, which exposes young to weather and predators.

To girdle a tree, remove a four-inch belt of inner and outer bark around the trunk which stops the movement of water and nutrients. If girdling is done at breast height and the tree falls, this leaves very little remaining snag habitat. Therefore, try to make the girdling cut as high up as possible. Big-leaf maple, aspen, and poplar may send up sprouts, which can be removed or left to grow around the tree as temporary cover. Some tree species, alder for example, are difficult to kill even when properly girdled. A tree girdled in winter may not show signs of decline until well into spring, after it has used its stored energy.

## Roosting Slits

Roosting slits for bats and some songbirds, including brown creepers, may be added to created snags that are tall enough and wide enough in diameter to accommodate the cuts. The slits should be at least eight inches deep, one or more inches wide, and angled sharply upward. Bats need to fly up into the slits so the slits should be located in an area free of branches. The higher up the snag they are, the more likely these roosting slits will be used. Some sun exposure warms these roosts and makes them more attractive in winter.

## Relocating Snags

It is possible to install a small snag on your property obtained from somewhere else, such as those salvaged from a construction or logging site. Be sure to get permission from the landowner. Snag relocation is difficult, dangerous and usually requires professional help and special equipment. A dead tree is generally much heavier and more fragile than it looks weighing several hundred or even thousands of pounds. Remember, if you double the diameter of a cylinder, you quadruple the weight. An old snag, too rotten to support its own weight, is best used as a log.

Relocate the snag to a place where it will remain upright and secure. If you are moving it within your property, try to install it as close as possible to its original location minimizing disturbance to wildlife that have been using it. Locate the snag in a wind-protected area near live trees and shrubs.



**Brown creeper on a snag with visible roosting slits.**



## **"Planting" a large snag.**

Before setting the snag, cut its base flat so the snag will stand straight. Then do any of the following:

- Place it in a hole approximately one-third the height of the snag and firmly tamp soil, gravel, or pour a concrete footing around it.
- Lower a firm, hollow snag over a metal or wooden post that's been securely placed in the ground.
- Wire the snag to a sturdy post.

## **Hazard Tree and Snag Management**

If not managed properly, snags can pose a risk to people and structures. If a dead or dying tree threatens something that can be moved, such as a swing set or patio furniture, consider moving those items before cutting the tree down. An alternative to eliminating the entire tree is to remove only the dangerous section(s). Consulting with a certified arborist with experience in wildlife snags is recommended. These professionals can determine what part of a tree is a hazard and provide management options to reduce or eliminate any risk. Remaining parts can be removed over time. Often, once the unsafe limbs or portions of the trunk have been removed, the tree is safe.

When a tree must be cut down, maximize its habitat value by placing as much of the debris as possible near the area where the tree was removed. In hot, dry areas, move the material into the shade of nearby trees or large shrubs. Bringing branches in contact with the ground will cause them to rot faster. Place a nest box on your site as replacement for cavities lost through tree or limb removal.



**Wood duck ducklings plunging from their nest cavity in a tree. This is normal behavior for wood ducks when leaving the nest cavity which can be anywhere between 6 to 15 feet above ground and almost always above water into which they fall.**

*Photo Credit: Mike Lentz Images*

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- Washington Department of Fish and Wildlife. Backyard Wildlife Sanctuary Program. <http://wdfw.wa.gov/wlm/backyard/>. Note – in particular, see the link for “Nest Boxes for Birds” section for cavity diameter and related habitat specifics.

## Organizations

- International Society of Arboriculture, Pacific Northwest Chapter. (503) 874-8263. <http://www.pnwisa.org/>
- Plant Amnesty. (206) 783-9813. <http://www.plantamnesty.org/home/index.aspx>





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