

Pennsylvania Woodlands

Number 7

Dead Wood for Wildlife

Most of us would have little difficulty responding if asked what value trees have for people. Living trees provide shade. Trees filter air and produce oxygen with their leaves. Trees can soften the impact of rain, prevent soil erosion, produce food, and are pleasing to the eye. Harvested trees provide many valuable products for people. When a tree is cut, it can be used to frame, insulate, or heat a house. This publication was written and reproduced on paper made from trees.

But most of us would have much difficulty relating the value that trees have for wildlife, especially dead trees. Trees do have special value for wildlife. Dead parts of live trees and dead trees, whether standing (snags) or fallen (logs), are particularly important resources.

Felling a tree for whatever reason alters wildlife habitat. The effects can be beneficial or detrimental, planned or haphazard. Some people believe leaving dead trees in the forest to rot is a waste of resources. However, dead trees offer both shelter and food to many wildlife species. Dead limbs and trees are a natural and desirable part of wildlife habitat. The existence of numerous species depends on the presence of dead trees. A fallen tree becomes infested with fungi and insects. As the tree decomposes, nutrients

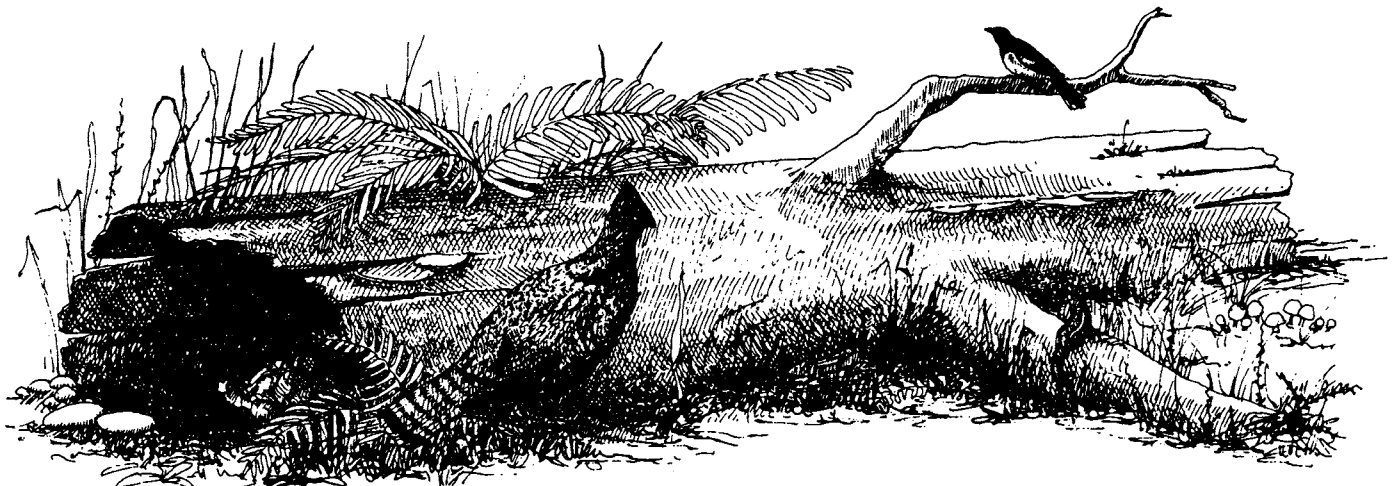
are recycled into the soil and a microhabitat favorable for the growth of new tree seedlings is often created.

Insects, salamanders, snakes, mice, and shrews seek refuge in rotting logs. Skunks, bears, and woodpeckers repeatedly return to these cafeterias for easy pickings. Depending on a log's location relative to good cover, a grouse may use it as a drumming site. Some rot-resistant logs have been used by generations of ruffed grouse.

The accumulation of organic material, including damp, rotting wood and leaves, favorably affects mushroom populations. Mushrooms are food for insects, turtles, birds, mice, squirrels, and deer. During critical winter periods, highly nutritious mushrooms can compensate for nutrient deficiencies in deer's native forage.

Ruffed grouse and eastern towhees, among other species, nest under partially elevated logs. Depending on their size, hollow logs can shelter a variety of forest mammals such as shrews, chipmunks, and bears. Foxes and coyotes also may use logs for dens. For some mammals, including deer mice, chipmunks, and squirrels, log tops are highways over the forest floor. Rattlesnakes often coil next to a log and wait for food to arrive.

Logs and stumps meet the special habitat requirements



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of the redback and slimy salamanders. The four-toed and longtailed salamanders hide in moist, decaying wood. The eggs of the northern spring salamander are laid in running water under logs. Greater and lesser gray tree frogs may be found in hollow trees, under loose bark, or in rotted logs during the summer. Seven species of turtles bask on logs that are in or near water. The eastern box turtle may burrow under a log during hot weather. The northern fence lizard is found in log piles and around stumps and hibernates in the rotting wood. Special habitat requirements of the five-lined skink include open woods with logs and slash piles.

Snakes use logs for shelter and food-seeking activity. Some species, such as the eastern garter snake and the eastern worm snake, hibernate in rotting wood. At least 19 kinds of salamanders and 26 species of reptiles make some use of logs, stumps, bark, and slash piles in Pennsylvania's forests. Ecologists believe dead wood is one of the greatest resources for animals species in the forest.

Wildlife use of dead snags and cavity trees

Standing dead trees (snags) and dead parts of live trees offer both room and board for many kinds of wildlife. Tree cavities in live or dead trees are used by 35 species of birds and 20 species of mammals in Pennsylvania (Tables 1 and 2).

Wood ducks look for tree cavities near water. Barn owls look for nest sites that are near large fields. Bluebirds can nest in wooden fence posts bordering farm fields, or they can occupy holes in snags that are left in recently clearcut areas. Unlike the barn owl and bluebird, pileated woodpeckers are birds of the big woods and next in tree holes far from fields. Table 1 lists the habitat of 35 bird species that nest in free cavities.

In addition to location, the nature of the cavity tree is important to wildlife. Some species choose a cavity in either a live or a dead tree; this is not true of all species. The yellow-bellied sapsucker, for example, constructs a new cavity each year in a live tree. The northern flicker, on the other hand, uses or excavates cavities in dead trees. Whether a snag is hard (sound) or soft (plunky) also determines which birds use it. The pileated and hairy woodpeckers choose to nest in hard snags. The brown creeper nests under exfoliating bark of hard snags. The black-capped and Carolina chickadees prefer to excavate nesting cavities in soft snags.

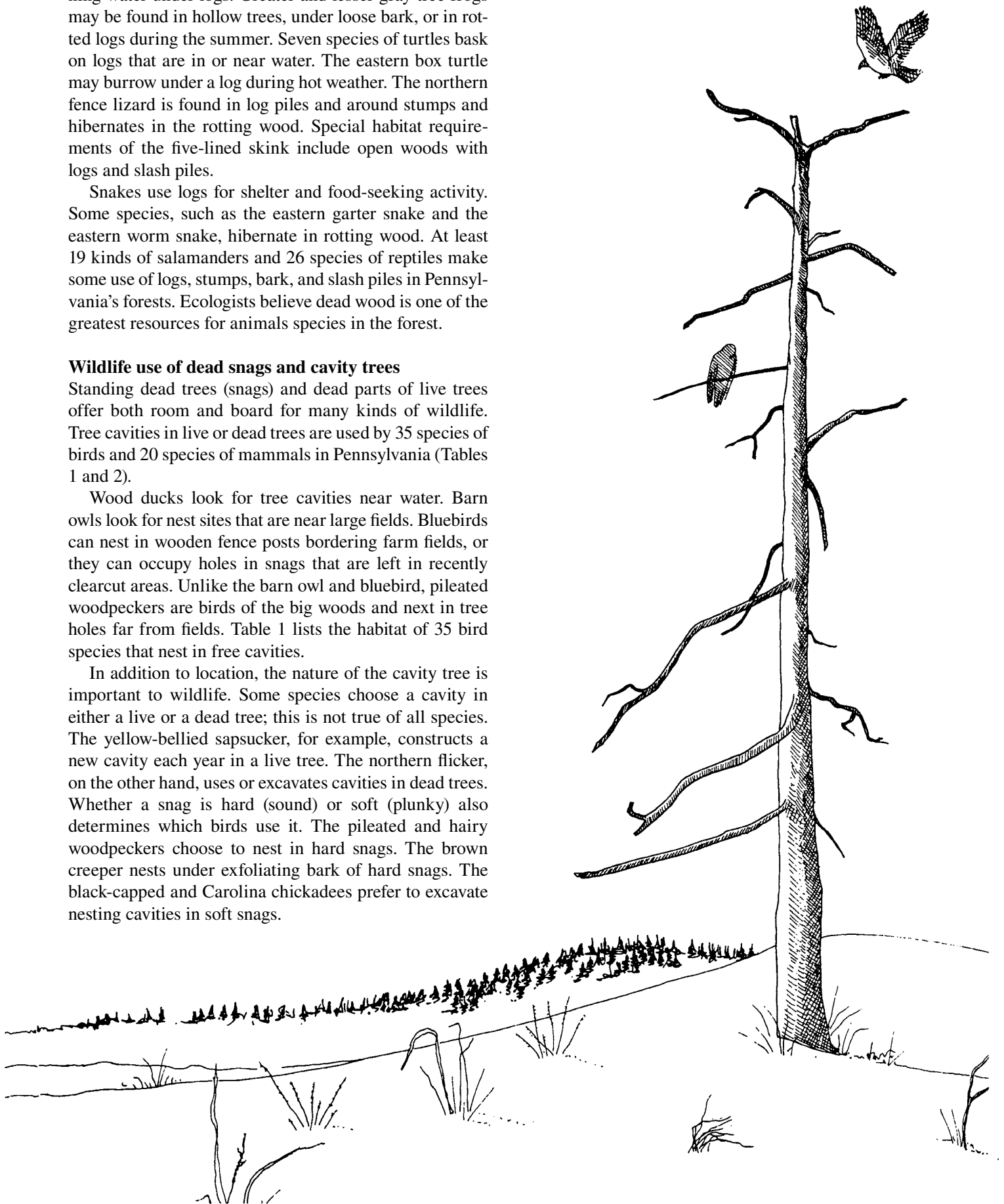


TABLE 1. Birds that use tree cavities in Pennsylvania.

CAVITY-USING BIRDS	CUTTING SITE AND TYPE OF CUTTING ACTIVITY*					FREQUENTLY CHOSEN CAVITY TREE TYPE**		
	FOREST INTERIOR		FOREST-FIELD EDGE	NEAR WATER, WETLAND	SCATTERED TREES, LARGE FIELDS	LT	DEAD	
	A	B	C	D	E		HS	SS
Wood duck				x		x	x	x
Hooded merganser				x		x	x	x
American kestrel			x		x	x	x	x
Barn owl			x		x	x	x	?
Screech owl		x	x		x	x	x	x
Barred owl	x			x		x	x	x
Sawwhet owl	x			x			x	x
Great horned owl	x	x	x	x	x	x	x	x
Chimney swift			x	x	x	x	x	x
Northern flicker		x	x	x	x		x	x
Pileated woodpecker	x			x		x	x	
Yellow-bellied sapsucker	x	x	x	x		x		
Hairy woodpecker	x			x		x		
Downy woodpecker	x	x	x	x			x	x
Red-headed woodpecker		x	x	x	x	x	x	x
Red-bellied woodpecker	x	x		x		x	x	?
Great crested flycatcher	x	x	x	x		x	x	x
Tree swallow			x	x		x	x	x
Black-capped chickadee	x	x	x	x				x
Carolina chickadee	x	x	x	x				x
Tufted titmouse		x	x	x		x	x	x
White-breasted nuthatch	x	x	x	x		x		
Red-breasted nuthatch	x			?		x	x	x
Brown creeper	x			x			x	
Winter wren	x	?		x		x	x	x
Carolina wren	x	x	x	x		x	x	x
House wren		x	x	x	x	x	x	x
Bewick's wren		x	x	x	x	x	x	x
Prothonotary warbler	x			x		x	x	x
Eastern bluebird		x	x		x	x	x	x
Purple martin		x	x		x		x	?
European starling			x		x	x	x	x
House sparrow			x		x	x	x	x
Turkey vulture	x	x	x	x				x
Black vulture	x	x	x	x				x
TOTAL:	19	19	24	27	14	26	29	27
PERCENT:	54	54	69	77	40	74	83	77

* **Type of tree cutting activity.** **A:** partial cutting within a woodlot, often a diameter limit cut or thinning; **B:** cutting heavy enough to create clearings within a woodlot, often a clearcut; **C:** cutting within 100 feet of a field, often fuelwood removal; **D:** any cutting near a stream, pond, or within other wetland sites; **E:** removal of trees competing with crops or for purposes of site development, often the elimination of a fencerow.

** **Cavity tree type.** **LT:** a live tree with a cavity large enough to shelter the indicated species; **HS:** a hard or firm, dead snag with or without bark and with a cavity large enough to shelter the indicated species; **SS:** a soft, punky, dead snag with a suitable cavity.

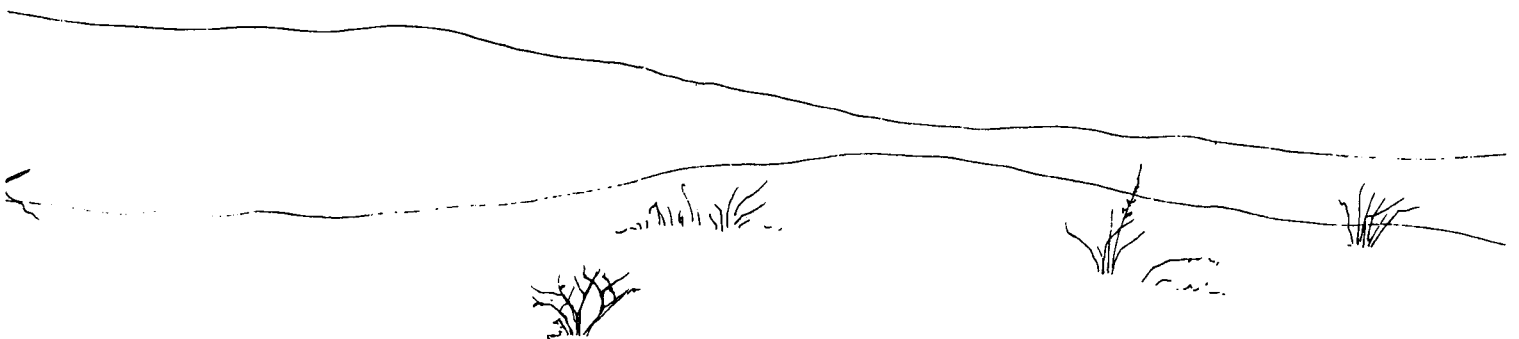


TABLE 2. Mammals that use tree cavities in Pennsylvania.

Opossum	Red squirrel
Pipistrel bat	Eastern flying squirrel
Little brown bat	Northern flying squirrel
Keen bat	Chipmunk
Indiana bat	Deer mouse
Silver-haired bat	White-footed mouse
Big brown bat	Porcupine
Evening bat	Raccoon
Gray squirrel	Black bear
Fox squirrel	Long-tailed weasel

Only the squirrels and perhaps one or two kinds of bats are obligate cavity nesters. Other species may use cavities if they are available.

In addition to the soundness and location of a cavity tree, the following other factors may affect its use by wildlife:

- The size of the cavity. Will the entrance accommodate a bluebird, a barn owl, a squirrel, a raccoon, or a bear?
- The diameter and height of the cavity tree. The house wren and bluebird rarely nest in holes more than 12 feet above the ground, while pileated woodpecker cavities are found higher than 15 feet. Generally speaking, the larger the cavity nester, the larger diameter of the tree selected for nesting.
- The direction faced by the cavity entrance. Screech owls, for example, often choose cavities with north-facing entrances and, consequently, low internal light levels.
- The relationship to other cavity trees. Cavity trees chosen by gray and fox squirrels are often located near other cavity trees.
- The nature of the woodlot. Although most species choose stands of deciduous trees or mixed stands including some evergreens, the sawwhet owl prefers stands of evergreens. Whether a cavity tree is located in a woodlot with a dense or open understory also affects its use by some species. Hairy and downy woodpeckers prefer open and dense understories, respectively. Similarly, dense understories favor gray squirrels, whereas more open understories attract fox squirrels.
- The time of the year. Cavity trees are used for nesting, roosting, winter shelter, escape, food storage, and foraging. One researcher found that amphibian and reptilian use was highest in the summer and early fall, followed by high mammalian use in late fall and winter. Bird use is greatest in spring and early summer. People cleaning bird boxes in early March frequently evict deer mice from the winter apartment.

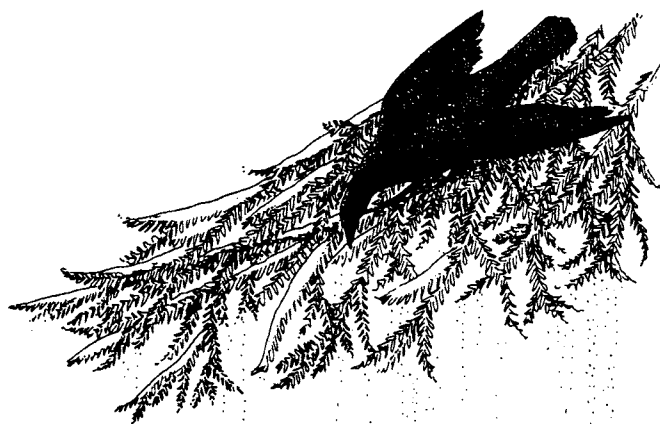
The presence of cavities or the possibility of excavating cavities in wood with heart rot or other decay is not the only attraction of a dying or dead tree for wildlife. Snags are a common source of insects and other invertebrates. This food source may be exceptionally important for overwintering birds.

If snags are houses and cafeterias, they are also airports. Flycatchers use snags for launch sites as they sally forth time and again after flying insects. A snag that borders a field or orchard may be used constantly by hawks and owls while they wait for an errant field mouse. Similarly, kingfishers, ospreys, and bald eagles perch on or fish from dead trees standing in or near water. At least 30 kinds of birds commonly use snags for foraging perches. In addition, the indigo bunting, northern mockingbird, and crow are among species that regularly use snags for singing perches.

Using dead wood for wildlife rather than fuelwood requires some choices. The fuelwood value of a hollow tree must be weighed against the possible value of the wildlife it attracts.

Aside from food or dollar values, the recreational value of such species are, for many of us, worth leaving a few hollow trees and logs on every acre. You may be hunting squirrels, wood ducks, or grouse, or trying to take that special photograph of a bluebird. The entertaining chickadee on your bird feeder may have been born in the hollow aspen tree behind your house. These values are not measured by dollars but by feeling.

The poet Robert Frost put one such intangible value in perspective:



*The way a crow
Shook down on me
The dust of snow
From a hemlock tree*

*Has given my heart
A change of mood
And saved some part
Of a day I had rued.*