

Appendix S

The Value of Dead and Down Wood

by John M. Davis, Urban Biologist
TX. Parks and Wildlife Department



In a healthy forested area, there are trees that are in many different stages of life. There are young trees, mature trees, old trees, and dead trees. Most everyone understands the value of living trees. They provide shade, homes for wildlife, and increase property values. However, many people don't understand the value of dead trees. Dead trees (or "snags") are caused many different factors. Natural processes such as wind, fire, flooding, drought, disease, and old age all function as natural controls on tree populations. Tree mortality is a natural process. (Unfortunately, many processes of man such as overwatering, construction damage to root zones, root suffocation, herbicides, etc., contribute unnaturally to the death of trees.)

Typically society wants to remove snags. We seem to think that once a tree has died, it is no longer useful and should be removed. That, however, is not the case. Standing snags and fallen logs are extremely valuable to the forest ecosystem.

Wildlife Benefits of Standing Dead Trees (Snags)

Many different species of wildlife rely heavily on snags to survive (see the attached list). While some woodpeckers nest in cavities excavated in living trees, many of them nest only in cavities excavated in snags. Without snags, these woodpeckers can't exist. Once cavities are excavated, used, and abandoned by woodpeckers, secondary cavity-nesters move in. These birds include: Chickadees, Titmice, Wrens, and Bluebirds. In addition to excavated cavities, the often hollow trunks and limbs of snags provide excellent homes for owls, raccoons, squirrels, and certain species of bats.

Wildlife Benefits of Fallen Logs

The shelter provided by logs on the forest floor is also valuable to many different species of wildlife (see the attached list). Many different types of invertebrates, reptiles, amphibians, and mammals can be found on, in, or under fallen logs. These logs may be used as nesting sites, feeding sites, or escape cover. Fireflies require decaying logs to complete their life cycle. Without fallen logs, many of these animals could not exist. This is important because these animals form much of the foundation of the food web. Without them, hawks, owls, and other interesting animals would not be able to survive.

Nutrient Cycling Benefits of Fallen Logs

When a dead tree or limb falls to the ground, fungi, invertebrates, and other decomposers accelerate the process of decomposition. These decomposers disassemble the complex chemical structure of the wood and release nutrients back into the soil. Without this process, the forest ecosystem would have no way of recycling its

nutrients. The newly available nutrients are then taken up by the living vegetation and life benefits from death.

Management Recommendations

Dead and down woody material is certainly valuable to wildlife and the forested ecosystem, but there may be situations that require human action to maximize the usefulness of snags and fallen logs while minimizing any drawbacks. If the snag is located away from structures or walkways, then it can be left alone with no serious drawbacks. However, if the snag is near a structure, driveway, or walkway, then steps should be taken to reduce the risk of the trunk or limbs falling on them, causing damage to people or property.

The height of the tree determines the radius that could be affected should any part of the tree fall. For example, if a 30 foot tree falls, then anything within a 30 foot radius of the tree could be affected. To reduce the risk of damage, you can "limb" the tree or remove the major limbs leaving only the main trunk standing. You may also consider "topping" the snag or removing just enough of the top so that it does not extend beyond the height of surrounding trees. (Hire a professional to do this. It is not a job for someone without the right equipment.) Both of these techniques will reduce the wind stress on the snag, thus allowing it to stand longer.

Although fallen trees and limbs are valuable to wildlife and the forest itself, they may appear unsightly to some people. To minimize this, simply cut the multi-branched limbs into smaller sections and scatter them on the forest floor. If this practice is not satisfactory, you may create lots of small "criss-crossed" stacks of limbs located throughout the property or simply hide the limb sections within shrubbery. These practices will eliminate unsightliness while allowing the decaying wood to serve its purpose.

For large logs, you may consider splitting them and laying them on the forest floor with the flat side in contact with the soil. This isn't necessary as the log will decay by itself. However, doing this will create more surface area in contact with the soil. This will provide more shelter for wildlife and allow fungi and decomposers to disassemble the wood more quickly.

Because dead and down woody material is extremely valuable for many species of wildlife, it is often recommended that snags be "created" if none exist in the area. To do this, carefully select a tree and "girdle" it. To girdle a tree, you simply cut a ring into the base of the tree that is about an inch deep and an inch wide at the bark. Since it is only the outer rim of the tree that is alive and transporting nutrients, cutting this section will kill the standing portion of the tree. Depending on the species, the roots may or may not remain alive and re-sprout. When selecting the tree to girdle, consider those that are not native to the area, are short lived, or are undesirable for some other reason. Remember to also consider the tree's proximity to structures, driveways, etc. before girdling it.

Finally, it is important to help others understand the value of dead and down woody material. Educating others will not only help them understand why snags and logs are needed by wildlife, but will also help them to understand the actions of those who are employing the management practices previously described.

Species in North Central Texas That Will Use Standing Snags

* Denotes non-native

Common Name	Scientific Name	Uses Excavated Cavities	Uses Hollow Trunk or Limbs	Nests in Crotch of Snag
Wood Duck	<i>Aix sponsa</i>	x	x	
American Kestrel	<i>Falco sparverius</i>	x	x	
Barn Owl	<i>Tyto alba</i>		x	
Eastern Screech Owl	<i>Otus asio</i>	x	x	
Great Horned Owl	<i>Bubo virginianus</i>		x	x
Barred Owl	<i>Strix varia</i>		x	
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	x		
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	x		
Downy Woodpecker	<i>Picoides pubescens</i>	x		
Ladder-backed Woodpecker	<i>Picoides scalaris</i>	x		
Hairy Woodpecker	<i>Picoides villosus</i>	x		
Northern Flicker	<i>Colaptes auratus</i>	x		
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	x	x	
Carolina Chickadee	<i>Parus carolinensis</i>	x	x	
Tufted Titmouse	<i>Parus bicolor</i>	x	x	
Carolina Wren	<i>Thryothorus ludovicianus</i>	x	x	x
Bewick's Wren	<i>Thryomanes bewickii</i>	x	x	
Eastern Bluebird	<i>Sialia sialis</i>	x	x	
* European Starling	<i>Sturnus vulgaris</i>	x	x	
* English Sparrow	<i>Passer domesticus</i>	x	x	
Prothonotary Warbler	<i>Protonotaria citrea</i>	x	x	
Big Brown Bat	<i>Eptesicus fuscus</i>		x	
Evening Bat	<i>Nycticeius h. humeralis</i>		x	
Silver-haired Bat	<i>Laionycteris noctivagans</i>		x	
Brazilian Free-tailed Bat	<i>Tadarida brasiliensis</i>		x	
Eastern Flying Squirrel	<i>Glaucomys volans</i>	x	x	
Eastern Fox Squirrel	<i>Sciurus niger</i>		x	
White-footed Mouse	<i>Peromyscus leucopus</i>		x	
Gray Fox	<i>Urocyon cinereoargenteus</i>		x	
Ringtail	<i>Bassariscus astutus</i>		x	
Raccoon	<i>Procyon lotor</i>		x	
Long-tailed Weasel	<i>Mustela frenata</i>		x	
Eastern Spotted Skunk	<i>Spilogale putorius</i>		x	