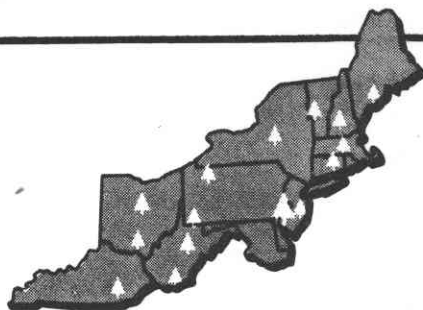


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FIREWOOD AND WILDLIFE

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Abstract. The increased demand for firewood threatens the habitat of many wildlife species. Dead or dying trees that commonly are cut for firewood are vital to wildlife species that nest in tree cavities. Likewise, healthy trees of many species preferred for firewood are important components of wildlife habitat. Tree species or species groups are value-rated for both firewood and wildlife so that the ratings can be used to decide how to manage a woodland for fuel and wildlife.

As the cost of heating a home rises and the threat of fuel shortages persists, wood becomes increasingly attractive as an alternative energy source. Increased demand for firewood has widened the range of management options available to forest managers and landowners. Previously uneconomical thinning of forest stands may be profitable. Previously unmerchantable trees—the dead, dying, or injured ones—make good firewood. It might be profitable to manage certain areas solely for firewood and to cut immature trees at frequent intervals. Superficially, the economical removal of dead, dying, or injured, or malformed trees seems attractive and

so does the prospect of profitable thinnings that may increase the growth of the remaining trees. However, from the chickadee's point of view, such action may be tragic. The dead, dying, or injured trees are the foraging substrate for a number of insectivorous birds, especially woodpeckers and bark-gleaning birds. Removing the low-vigor trees that provide foraging substrate and the large dead trees and "wolf" trees that provide nest cavities and dens results in an "energy crisis" for a number of wildlife species. So consider your goals carefully before deciding whether or not to harvest firewood, and if you do so, decide what tree species and how much to harvest.

Table 1.—Ratings of tree species for values to wildlife and as firewood.

Tree	Value to Wildlife				Value as firewood	Remarks
	All wildlife	Songbirds	Upland game birds	Fur and game mammals ^a		
Oaks <i>Quercus</i> spp.	Excellent	Excellent	Excellent	Excellent	Excellent	Retain a variety of species.
Black cherry <i>Prunus serotina</i>	Excellent	Excellent	Good	Good	Good	May have high timber value when mature.
Apples <i>Malus</i> spp.	Excellent	Good	Good	Good	Excellent	Rare; especially attractive to grouse.
Pines <i>Pinus</i> spp.	Excellent	Excellent	Fair	Good	Fair	Good as kindling.
Flowering dogwood <i>Cornus florida</i>	Excellent	Excellent	Good	Fair	Excellent	High aesthetic qualities.
Maples <i>Acer</i> spp.	Good	Good	Fair	Excellent	Excellent	High aesthetic qualities in the fall.
American beech <i>Fagus grandifolia</i>	Good	Fair	Fair	Excellent	Excellent	Aesthetic in the fall; important to squirrels.
Alders <i>Alnus</i> spp.	Good	Good	Good	Fair	Good	Locally important to songbirds and game birds.
Aspens <i>Populus</i> spp.	Good	Fair	Good	Excellent	Fair	Especially attractive to grouse.
Birches <i>Betula</i> spp.	Good	Fair	Good	Good	Excellent	Important to northern wildlife.
Spruces <i>Picea</i> spp.	Good	Good	Fair	Good	Fair	Good as kindling; important to northern wildlife.
Hackberry <i>Celtis occidentalis</i>	Fair	Good	Fair	Fair	Excellent	Important winter food for songbirds.
Hickories <i>Carya</i> spp.	Fair	Fair	Fair	Good	Excellent	Especially attractive to squirrels.
Ashes <i>Fraxinus</i> spp.	Fair	Fair	Fair	Fair	Excellent	Supplies mast in the fall.

American basswood <i>Tilia americana</i>	Fair	Fair	Fair	Fair	Fair	Good as kindling.
Black walnut <i>Juglans nigra</i>	Fair	Fair	Fair	Fair	Excellent	May have high timber value when mature.
Black tupelo <i>Nyssa sylvatica</i>	Fair	Fair	Fair	Fair	Fair	Locally important to songbirds and game birds.
Eastern cottonwood <i>Populus deltoides</i>	Fair	Fair	Fair	Fair	Fair	Good as kindling.
Elms <i>Ulmus</i> spp.	Fair	Fair	Fair	Good	Fair	High water content when green; hard to split; cut if diseased.
Balsam fir <i>Abies balsamea</i>	Fair	Fair	Fair	Fair	Fair	Good as cover for snowshoe hares.
Eastern hemlock <i>Tsuga canadensis</i>	Fair	Fair	Fair	Fair	Fair	Attractive to northern wildlife.
Black locust <i>Robinia pseudoacacia</i>	Fair	Fair	Fair	Fair	Excellent	Low wildlife; high firewood; nitrogen-fixer.
Magnolias <i>Magnolia</i> spp.	Fair	Fair	Fair	Fair	Good	Low wildlife; good firewood.
Eastern redcedar <i>Juniperus virginiana</i>	Fair	Good	Fair	Fair	Fair	Good as kindling; attractive to songbirds.
Sassafras <i>Sassafras albidum</i>	Fair	Fair	Fair	Fair	Good	Berries eaten by insectivorous birds.
Sweetgum <i>Liquidambar styraciflua</i>	Fair	Fair	Fair	Fair	Fair	High water content when green; high aesthetic value.
Sycamore <i>Platanus occidentalis</i>	Fair	Fair	Fair	Fair	Fair	Aesthetic; high water content when green; hard to split.
Yellow-poplar <i>Liriodendron tulipifera</i>	Fair	Fair	Fair	Fair	Fair	Good as kindling; aesthetic.
Willows <i>Salix</i> spp.	Fair	Fair	Fair	Fair	Fair	Attractive to northern wildlife.

^aRabbits, squirrels, foxes, skunks, etc.

WOOD AS A FUEL

If the decision has been made to manage a forest or woodlot for a variety of products—wildlife, scenery, firewood, and timber—then there are a number of things to consider before deciding what to cut for firewood. Pound for pound, dry, sound wood differs little among species groups in the energy it contains (Shelton and Shapiro 1978). There are, however, marked differences among tree species: the ease of splitting, drying, and igniting the wood; the energy per volume of wood (some species are more dense than others); coaling qualities; tendency to produce sparks; and resin content and consequently creosote release (Baker et al. 1978, Karchesy and Koch 1978, Shelton and Shapiro 1978, U.S. Forest Service 1978, and Vivian 1978). Rather than discuss all these considerations here, certain tree species or genera are given overall ratings on a broad scale (excellent, good, and fair) in Table 1. Unfortunately, many of the species that are valuable as firewood when they are immature (for example, when removed in a thinning) are valuable as timber and to wildlife when they are mature (Martin et al. 1961). The values of black walnut for veneer and white pine for lumber are well known and such timber-related values are not discussed here. But what about wildlife?

FIREWOOD AND WILDLIFE

The relationship between cavity-using birds, such as woodpeckers, and dead or dying trees (snags) has already been mentioned. Large soft snags are too punky to produce good firewood. However, hard snags and suppressed trees are good candidates for firewood and for these trees there is a direct trade off: wood vs woodpeckers. The hairy woodpecker and the red-headed woodpecker have been placed on the Audubon Society's "early warning list" of bird species that are declining in number. The reason given was firewood cutting and particularly the cutting of dead trees (Arbib 1979).

What about other wildlife species? All trees have some value as firewood and to wildlife. Some trees, quaking aspen and alder for

example, are very important to ruffed grouse and American woodcock; these trees provide maximum protective cover when in dense immature stands. Grouse and woodcock could benefit from harvesting mature trees for firewood. Apple trees, often planted by wildlife biologists to enhance wildlife clearings, are most beneficial to wildlife when mature; however, they are relatively rare on wildlands, so even immature and low-vigor trees are given special consideration. Other trees such as the oaks and hickories are abundant in some forests. These trees are important as den trees and fruit producers when mature, and an effort should be made to retain a mixture of species to ensure regular fruit crops. Time of fruit ripening differs among species, thus a mixture of ash and black cherry provides a more continuous fruit supply in the cherry-maple forest than cherry alone.

Detailed information on the food, cover, and nesting values of particular tree species to wildlife can be found in publications such as those by Martin et al. (1961) and DeGraff and Witman (1979). Because of the diversity of life styles found among American wildlife, tree-wildlife relationships are complex. Therefore, we listed groups of wildlife species rather than single species in Table 1. Trees are rated from excellent to fair for those groups and are also assigned an overall rating.

MANAGEMENT: OBJECTIVES AND ACTIONS

Select objectives clearly before managing a forest or woodlot. Knowledge of the ecology of the products desired (trees and animals managed for lumber, firewood, scenery, and recreation) is necessary to evaluate the costs and benefits of any action. For example, considerations in managing for nongame birds were discussed by Gill et al. (1974). If the choice is to manage for fuelwood and wildlife, Table 1 may be used as a guideline to evaluate actions under considerations. A good field guide to trees and shrubs, such as Trelease (1931) or Petrides (1958), will be valuable especially for identifying trees in winter.

Perhaps the best single rule of thumb to obtain a diversity of wildlife is to harvest

firewood from tree species that are most abundant, and therefore retain the greatest variety of tree species.

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