Woodland Habitat Management for Wildlife

Before European settlement, 95% of Ohio's landscape was forestland. Pioneers discovered trees in these primeval forests that towered more than 60 feet from the ground to the first limb and had diameters over six feet.

Since settlement times, Ohio woodlands have been altered by cropland conversion, overgrazing, residential and industrial development, and commercial timber harvest. Today, 33% of Ohio's natural resource base is classified as woodland, and 94% of this land is privately owned. Two-thirds of the state's forestland is in the hill country of eastern and southern Ohio. Hill country forestlands are more or less continuous tracts that are occasionally broken by small cropfields and pastureland.

Conversely, most forestlands in western Ohio are small woodland islands surrounded and separated by large expanses of cropland. These woodland islands typically range from 5 to 50 acres.

Ohio's primeval forests supported wildlife species such as elk and woodland bison. Though the elk and bison disappeared long ago, the state's woodlands are still home to a multitude of wildlife. Species from every animal class can be found. Endangered animals such as the Indiana bat, bobcat, Eastern woodrat, and timber rattlesnake are dependent on woodland habitat for survival. Birds are one of the largest animal groups that use woodland habitat. The endangered sharp-shinned hawk, game birds such as the wild turkey and ruffed grouse, and a host of songbirds inhabit Ohio's forests. All of Ohio's 22 species of salamanders require woodland habitat at some time during their life cycle. Almost half of Ohio's wildlife species require woodland habitat.

WOODLAND TYPES

Forestlands in Ohio occur in several specific types, identified according to the dominant tree species. Dominant trees are those that make up 50% or more of the canopy or top layer of the forest stand. The three principal forest types in Ohio are oak-hickory, beech-maple, and elm-ash.

Oak-Hickory

The oak-hickory forest type is dominated by oak species such as red, black, white, and chestnut and hickories such as mockernut, shagbark, pignut, and bitternut. Associate trees include black walnut, white ash, basswood, and black cherry. Common understory shrubs are redbud, pawpaw, wild plum, sour gum, flowering dogwood, sassafras, and spicebush.

Generally the oak-hickory forest type develops on well drained sites. It is most frequently found in the east-central, southeastern, and south-central hill country regions of the state.

Beech-Maple

This is the second-most common woodland type. It occurs on the poorly drained flatlands of southwestern, west-central, north-central, and northeastern Ohio. The beech-maple type is characterized by large numbers of beech, accompanied by sugar maple, red oak, white ash, and white oak. Other hardwood species commonly present are black cherry, basswood, and shagbark hickory. Ironwood, spicebush, and pawpaw shrubs often appear in the understory.

Elm-Ash

The elm-ash forest type is interspersed throughout the oak-hickory and beech-maple types. It is found predominantly in the glaciated (northern and western) region of the state. American and red elm, white and green ash, and red and silver maple are the dominant hardwoods. Blackhaw, prickly ash, and spicebush are the most common understory species.

Successional Hardwoods

This is a common forest type that lacks dominant tree species. The type occurs early in forest development and consists of a mixture of hardwoods such as red elm, white ash, black cherry, red maple, and black locust. Old field remnants such as wild crab, hawthorn, sassafras, and flowering dogwood normally make up the understory.

WOODLAND MANAGEMENT

Identifying the type and maturity (age) of a woodland habitat is necessary to design a management plan. The age of a forest can be estimated by the size of the dominant trees. A sapling-size stand is 10 to 20 years

old with trees at least three feet tall, but less than four inches in diameter breast high. A pole-size stand has trees 4-11 inches across and is 20 to 50 years old. A sawtimber-size stand would be over 50 years old and most of the trees would be greater than 12 inches across. Old growth forests are loosely defined as mature forests over 100 years old with relatively open ground cover. If more than 50% of the woody species in the overstory fall into one of these type/age, the forest is labeled accordingly, such as an oak-hickory type/pole-size stand.

The maturity of a woodland habitat influences the kinds of wildlife using it. For example, the early, sapling-pole size stages of woodland development will be used by wildlife such as the indigo bunting, rufous-sided towhee, and yellow-breasted chat that prefer an open stand. As the forest matures to a sawtimber stand, a different mixture of wildlife (e.g., scarlet tanager, pileated woodpecker) will replace the previous community. Consequently, it is important to set management goals for a woodland habitat that impacts the wildlife community in a positive fashion. The following principles should help:

1. The potential of woodland habitat to support certain types of wildlife is influenced by its size, location, and surrounding land use.
2. The types and numbers of wildlife species a woodland will attract and support depend on the forest type, age class, and density of the overstory and understory.
3. In large woodland tracts, a mixture of various age classes and forest types should be maintained.
4. Uneven-age forests (forests with trees of various ages) support a greater diversity of wildlife than even-age forests.
5. Consideration must be given to whether planned activities will meet the needs of the desired wildlife. This requires knowledge of the habitat requirements of the desired species.
6. Generally, wildlife diversity will be greatest in immature (early successional) stands. However, mature stands—especially old growth forests—draw and sustain a unique set of wildlife. Large blocks of mature forest should be preserved.

Once the forest type and age have been determined, it is time to establish a wildlife management forest plan. You should identify problems, set objectives and determine what you need to reach your goals. Typical problems include a lack of mature forest, poor tree species composition, scarcity of suitable nesting cavities, or grazing, among others. The problems may seem overwhelming, but there are many established practices to help correct those deficiencies.

Protecting and Creating Nesting Cavities

Many woodland animals depend upon natural cavities or hollows for nesting and roosting sites. Cavity dwellers make up nearly 30% of all wildlife species using woodland habitat in Ohio. These include primary cavity excavators (species that make their own cavities) such as the red-bellied woodpecker, pileated woodpecker, and common flicker. Secondary cavity users are species that depend upon primary excavators and/or natural formation for cavities and include the black-capped chickadee, tufted titmouse, raccoon, and gray squirrel. Scarcity of suitable nesting cavities can be a major factor limiting woodland wildlife.

Cavities can be formed by woodpeckers and by natural tree decay due to age, weather, disease, and stress. Dead trees that remain standing are called snags. Snags supply nesting cavities as well as foraging perches and roosting sites for many wildlife species. Unless snags present a safety hazard, they should not be removed from a woodland. Maintain at least two snags of 6-14-inches diameter at breast high (dbh) per acre, four snags of 14-18-inches dbh per acre, and six snags of over 18 inches dbh per acre.

Snags can be created by killing trees six inches dbh or larger. Select trees that are prone to forming cavities such as elm, ash, box elder, cottonwood, and basswood. Use an ax to cut away a three- to four-inch band of bark around the circumference of the trunk. Apply an herbicide to the exposed area. Contact the Cooperative Extension Service for more information on brands of herbicides and their proper use. Eventually, the tree will die and provide cavities that would otherwise have taken years to develop.

Live trees with hollows are called wolf trees Wolf trees furnish den sites for woodland wildlife species such as the wood duck and fox squirrel. These trees are characterized by a large spreading crown and broad trunk diameter and they normally produce a bumper crop of mast (nuts), in addition to provid-

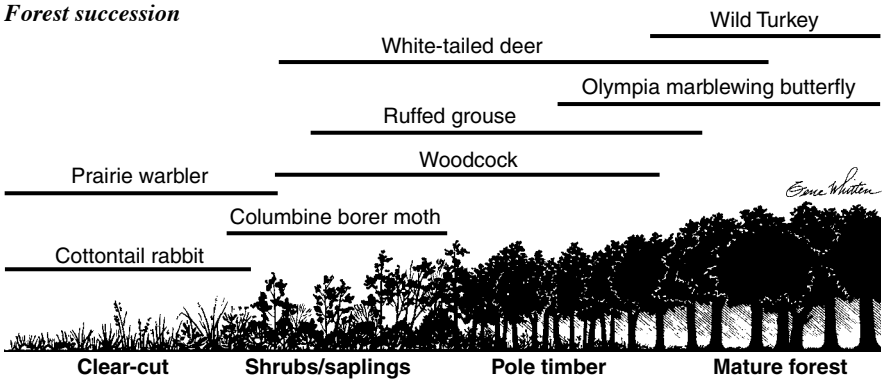

Figure 1. Different wildlife species depend on different stages of plant succession for habitat. After an area is clear-cut, the field is invaded by perennials and saplings, then pole timber begins to dominate, and finally mature forest.

Figure 2. A snag

ing many cavities. Beech and sycamore make ideal wolf trees and should be protected and encouraged within a woodland area or in connecting fencerows.

It is equally important to preserve large quantities of woody ground debris such as fallen trees and decaying logs and stumps. These structures are used by woodland salamanders, snakes, and turtles.

Figure 3. Wolf tree

Grapevine tangles provide food and serve as structures to anchor nests. Leave at least three or four grapevine tangles per acre on trees that are of low commercial timber value.

Man-made nesting boxes can be constructed and erected in a woodland area to supplement natural cavities. Refer to the *Artificial Nesting Structures for Wildlife* publication for more details.

Woodland Edge Enhancement

The transition zone between the woodland border and adjacent habitat, such as cropland or meadow, is referred to as edge habitat. Edge habitat supports a diverse and abundant wildlife community. This habitat area can be improved by cutting a few larger trees along the edge of the woods. This will open up the tree canopy and permit sunlight to reach the ground and stimulate the growth of brambles and shrubs. Hickory, oak, walnut, dogwood, hawthorn, wild plum, grapevine, and similar mast or fruit producing woody plants should be left standing. Brushpiles can be constructed with the cut materials; refer to the *Old Field Habitat Management for Wildlife* publication. Woodland edge development works best along the east- and south-facing edges of the woodland. Brushy growth tends to develop faster on these edges due to their exposure to the sun. Wildlife use the sunnier sections of a woodland border, especially during winter. Maintain a brushy edge approximately 15–30 feet wide by selectively cutting undesirable tree species (e.g., elm, ash, maple) every 5–10 years.

An alternative method for enhancing a woodland edge is to establish a 15-foot-wide shrub planting adjacent to the edge. This can be done by planting two rows of shrubs six feet apart. Rows should be placed at least 10 feet from the current edge. Apply this practice to the west-, east-, and south-facing edges. The following woody plant species can be planted alternately at six-foot spacings within each row: wild plum, silky dogwood, crabapple, blackberry, raspberry, hawthorn, serviceberry, and hazelnut. Refer to the *Planting Trees and Shrubs for Wildlife* publication for additional information.

Timber Stand Improvement (Release Cutting)

Timber Stand Improvement (TSI), from a wildlife management perspective, involves the removal or thinning of "undesirable" tree species from around trees beneficial to wildlife to allow more space for crown development. Increased crown size will result in greater mast production. In addition, TSI will encourage the development of uneven-age stands and create small openings that are attractive to wildlife.

All tree species possess characteristics that contribute to the overall health of a woodland wildlife population. However, oaks, hickories, black cherry, American beech, black walnut, and sycamore have exceptional qualities beneficial to wildlife and should be favored.

The first step in TSI is to choose the wildlife crop trees to be improved. The next step is to remove competing trees of the same size or larger that are hindering the growth of the target trees. For example, a black walnut is being suppressed by several surrounding red maples. The walnut's growth can be substantially improved by simply cutting all the encircling maples. The diameter of the circle to be cut can be calculated by the following formula: two times the dbh (inches expressed as feet) of the wildlife crop tree (the walnut) plus a constant. The constant is one for trees less than 10 inches dbh, two for trees 10-17 inches dbh, and three for trees over 17 inches dbh. A walnut tree with a 12-inch dbh would require a cleared circle of 26 feet (2 x 12 + constant [2] = 26) in diameter. Removing the maples within a 26-foot circle around the walnut would enable it to grow more vigorously and productively. Without this treatment, the walnut might not reach its mast yielding potential for wildlife.

Wildlife Openings

Clear-cutting to create wildlife openings within a woodland serves several purposes. Openings diversify the plant community by encouraging the development of herbaceous and shrubby growth, subsequently furnishing essential habitat elements for animals such as the wild turkey and ruffed grouse. Clear-cutting is an effective method for promoting oak regeneration. This practice can also be applied to aspen stands to stimulate sprout growth.

Clear-cutting for wildlife involves the removal of all trees larger than one inch dbh. The openings should be placed near the outer perimeter of the forest tract, to make it more accessible to edge wildlife and to minimize any negative impact on the interior forest wildlife community. Create openings that are irregularly shaped and range in size from 1/2 to 10 acres. Clear-cutting is not an appropriate practice for small, isolated woodland patches.

To hasten the development of brushy growth in openings, shrubs can be planted randomly throughout the cutover area. Select species such as flowering dogwood, hazelnut, viburnums, hawthorns, crabapple, and wild plum. If oak regeneration is a goal, plant bare-root oak seedling stock at the rate of 436 trees per acre within the cutover area; plant at 10-foot spacings. Contact the Division of Forestry for more information.

Maintain openings in brushy/herbaceous cover by cutting invading hardwood species every 15 years. Construct brushpiles with cut materials; refer to the *Old Field Habitat Management for Wildlife* publication. Maintain openings in herbaceous cover by mowing every three to five years.

Reforestation

Forest fragmentation (creation of small, isolated woodland blocks) and conversion to other land uses are major problems affecting woodland wildlife populations statewide, and particularly in western Ohio. Woodland islands or patches generally support a poor diversity of wildlife and exclude species that require large blocks of unbroken woodland habitat altogether. To mitigate the detrimental effects of forest fragmentation and increase the use of woodland islands by wildlife, a woody corridor can be established to link up isolated woodland tracts.

A woody corridor should be a 35-foot-wide strip with two middle rows of trees and two outer rows of shrubs. Place all rows eight feet apart. Plant trees at 10-foot spacings in each row and shrubs at six-foot spacings. Use primarily oak and hickory tree species for the two middle rows. Washington hawthorn, wild plum, crabapple, and hazelnut are excellent candidates for the shrub rows. Refer to the *Planting Trees and Shrubs for Wildlife* publication. A woody corridor will not only increase the overall wildlife use of woodland islands but will also serve as a travel lane for species such as the cottontail rabbit and bobwhite quail.

Old fields and odd areas, such as irregular field corners, adjacent to woodland tracts can be planted to trees or allowed to revert naturally, to expand the tract. An adjacent field can be reforested by planting tree seedlings at 8-foot x 10-foot or 10-foot x 10-foot spacings throughout the field. Don't use pine trees for this type of planting. Although pines are appropriate for small clump and windbreak plantings, large blocks of pine trees provide very few benefits for woodland wildlife. (Refer to the trees and shrubs publication.) Consult your service forester for more details on planting specifications and species selection for reforestation.

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