

WOODLANDS




AND NONGAME WILDLIFE

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A GUIDE TO MANAGEMENT AND PRESERVATION

WOODLANDS AND NONGAME WILDLIFE, A GUIDE TO MANAGEMENT AND PRESERVATION

So you own a piece of land and would like to improve it for forest songbirds, salamanders or bald eagles. Many other landowners are asking questions about how to best manage their forested acreage. This brochure was developed to answer some of the questions you might have on how to manage your property for the array of wild species we have in our state.

Minnesota boasts a diversity of natural habitats including 16.7 million acres of forested land. Private ownership accounts for 42% of the forested land in Minnesota. Managing that land wisely for a diversity of natural resources is called forest stewardship.

Becoming a forest steward implies responsibility. You will definitely have the potential for shaping the landscape. The ideas contained in this brochure are a small part of the stewardship concept, and will help you to develop an understanding of some of the unique forest resources you are privileged to know, and to provide direction in managing the forest so as to encourage their presence.

Property owners often have many different objectives for the land they own and manage. Some would like to see the land produce marketable timber, others would prefer to use their land for recreational pursuits such as hunting or hiking, or as an investment. This brochure provides ideas for the landowner who is primarily interested in improving wooded land for nongame wildlife.

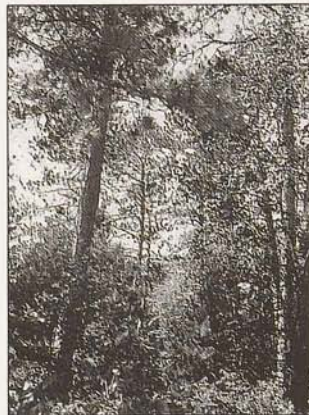
Minnesota has 600 wildlife species, and 371 of these are nongame. Nongame wildlife species are those that are not hunted, fished, or trapped. Examples of nongame species are all around you; the eastern bluebird, the painted turtle, the osprey and the little brown bat.

Many of these can be found in woodland habitats throughout the state. A landowner can incorporate management techniques to improve habitat for many of these species. While it isn't possible to encourage all species of wildlife in all places, if you would like to see more barred owls, bluebirds, kestrels, scarlet tanagers, pileated woodpeckers or painted turtles, then these ideas are for you.



Katherine Haws

Jack Pine



Katherine Haws

Red Pine/White Pine



Kurt Ruettemoltz

Northern Hardwoods



Katherine Haws

Aspen/Birch

WOODSMAN, SPARE THAT SNAG

Dead trees, also known as snags, rarely receive recognition or appreciation. Viewed as eyesores or hazards, they are often the first trees the landowner tries to “clean up”. However, there are 43 species of birds and at least 25 species of mammals that use holes in dead trees (cavities) for nesting or breeding!

The rat-a-tat-tat of a red-bellied woodpecker on a basswood tree. The familiar presence of the sturdy hairy woodpecker at the bird feeder. The beautiful melodic trill of the male bluebird in May. These species are examples of cavity dwellers, and their cavities are almost always found in dead or partially dead trees. Eliminate their natural homes, and they may not continue to thrive in our woodlands.

Birds that make the holes are called primary excavators, and these include pileated woodpeckers, hairy woodpeckers and even chickadees. Secondary cavity nesters use holes hollowed out by others, and generally include mammals such as raccoons and flying squirrels, and birds such as bluebirds, kestrels, purple martins, tree swallows and house wrens. Even salamanders and snakes find homes in rotten trees. Without dead trees to nest in, populations of cavity nesters will decline.

Both well decayed trees which are completely dead (soft snags) and partially decayed trees with some live branches (hard snags) are important to wildlife. Both kinds need to be present for the full complement of cavity nesters to use an area.

There is evidence that insect-eating birds such as woodpeckers are important in controlling forest insect outbreaks. These birds are an important part of the ecosystem, and we should strive to make certain they have places to live.



Soft snag with woodpecker use.



Snag trees remaining in a cutover area.

Old growth or older forest on your woodland provides ideal habitat for cavity nesters. This means allowing the forest to mature past the point at which it normally would be harvested. The older the forest, the greater the number of dead trees present. If you decide to manage your forest for timber production or younger-aged forest, there are ways to accommodate the needs of some cavity dwellers in the managed area.

If you are setting up a timber sale, instruct the logger to leave as many snags as possible, at least three snags per acre of woodland. Also consider leaving some live trees in the sale area, too. The dead trees will provide homes and feeding sites immediately, but will eventually fall over, creating habitat for a whole new array of plants, insects, mammals, amphibians, etc. The live trees will initially be used for feeding, shelter and song perches by many animals, including olive-sided flycatchers and boreal owls. Over time, as these trees mature and die, they'll replace the fallen snag trees as homes and feeding sites for the many species attracted to old and dead trees like northern flickers and kestrels.

Consult a forester or wildlife manager for advice on how and where to leave snag trees. Sometimes the best way to make sure that large suitable trees are left is to mark the trees yourself. Snag requirements should also be included in the timber sale contract.

Natural cavities can be supplemented by building boxes for use by wildlife. Bluebirds, tree swallows, house wrens, purple martins and bats are just a few of the many wildlife species known to frequent nest boxes.



Downy woodpecker excavating nest in tree.

ENCOURAGE CAVITY NESTERS ON YOUR PROPERTY:

- **Maintain as many large dead trees as possible on your property, especially those with a diameter of 12" or greater, as well as live trees. Trees which make the best snags include oaks, maples and basswood.**

- **Build nest boxes with a particular occupant in mind. Information on specific plan designs is available in the newly revised "Woodworking for Wildlife" book, a DNR publication authored by Carrol Henderson. Available from Minnesota Documents Division, 117 University Ave., St. Paul, MN 55155.**

- **If no naturally occurring snag trees are available, consider cutting a groove in a 12" diameter or greater tree which circles the circumference. Eventually this will kill the tree. This sounds cruel, but this recommendation would only apply to a very small number of trees, and would ultimately benefit many nuthatches and chickadees.**



Many mammals, like this chipmunk, use snags and den trees.

FRUITING SHRUBS AND TREES—A KEY TO ATTRACTING WILDLIFE

MANAGE FOR OAKS AND OTHER MAST PRODUCING SPECIES.

- Oaks can be sprouted from stumps, or planted as seedlings. Reserving oaks in timber sale areas also is of benefit. Consult your Wildlife Manager or Forester for details.

- Plant an array of climate-suitable fruit producing shrubs and trees to benefit birds like waxwings, bluebirds and robins. Fruiting trees and shrubs do best when planted in direct sunlight. These shrubs are most likely to succeed if planted near a residence where they can be weeded. Shrubs can be protected from wildlife damage by planting in a plastic container called a “tubex” container, or by fencing.

- Often, just clearing out small areas in the forest can stimulate the growth of naturally occurring shrubs such as raspberry and chokecherry.

- Excellent fruiting plant materials can be ordered from DNR-Forestry, many private nurseries and often the Soil and Water Conservation Districts.

Another component to manage for in your woodland is fruiting shrubs and trees. Birds thrive on the fruits of plants, and by selecting plants which produce fruits at various times of the year, you can be assured that you will have birds to look at during all the seasons. Chokecherries, wild plums, crabapples, juneberries and pin cherries are all examples of fruiting shrubs and trees which appeal to wildlife. Trees which produce acorns such as burr oaks and hazel are also key wildlife foods. This fruit is called “mast” and is favored by gray squirrels, black bears and others.

In addition to being an important food source, shrubs provide additional layers of habitat within which to nest. Information on the various kinds of trees and shrubs to plant which would be of most benefit to wildlife is found in “Landscaping for Wildlife”, a DNR publication authored by Carrol Henderson, available from the Minnesota Documents Division, 117 University Ave., St. Paul, MN 55155. This book recommends many species including non-native plant materials. The emphasis in woodlands should be on native species.



Cedar Waxwing feeding on mountain ash.

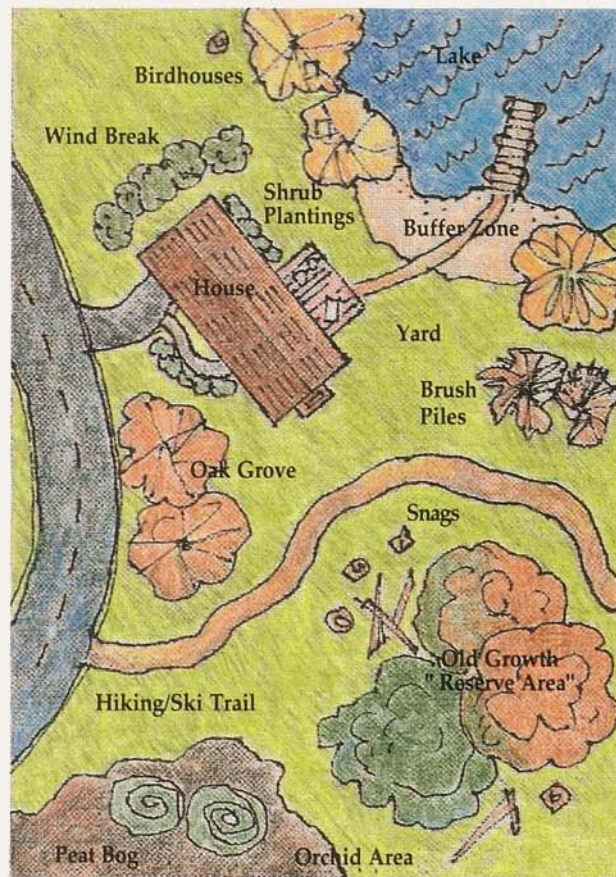
HOW TO MODIFY TRADITIONAL FOREST MANAGEMENT TO BENEFIT NONGAME

Traditional forest management prescriptions can be modified to accommodate nongame concerns. One technique is to plant fewer trees per acre (400-600 stems per acre) to prolong the time period before the canopies of the growing trees completely shade the ground. Or use curving broken rows to simulate natural arrangement. Another option is to leave some heavily brushed areas, oak areas or areas of aspen free of harvest and tree planting. Most likely these areas would be trouble spots in the plantation even if they were planted. Planting in clumps rather than rows also simulates natural arrangements. Limiting your plantings to native species will enhance the natural value of your acreage. Leaving or creating travel lanes and corridors for wildlife is also a valuable tool. Leaving buffer zones around lakes, wetlands and streams also has numerous wildlife benefits.

Often it will be possible to accomplish your forest management objectives, be they harvest, planting or thinning while at the same time taking a few extra steps to assure that nongame wildlife species can continue to use the area.

*Protect the quality of—soils—wildlife—vegetation—
manage your land with an eye towards
protecting our biodiversity.*

Figure 1. A woodland managed for nongame wildlife.



MANAGE FOR REPTILES AND AMPHIBIANS — REMEMBER YOUR COLD-BLOODED NEIGHBORS

Minnesota's reptiles and amphibians are probably the least known and least appreciated wildlife species. The beautiful Blanding's turtle, with its sculpted shell, the petite red-bellied snake; the rumbling bull frog, or the mighty snapping turtle. These are all a part of our world, and deserve management and protection. Woodlands associated with streams, rivers, lakes and ponds are often important breeding habitats for salamanders and turtles. Wooded wetlands are very important as breeding sites for frogs, and many species also overwinter in these habitats. The wooded bluffs along the Mississippi River, oak barrens, sand plains, beach ridges and moraines are crucial to a number of reptile and amphibian species.

- Selective thinning in plantations to stimulate the growth of shrubs and non-woody plants on the forest floor will increase cover, and benefit these species.
- Consider the establishment of brush piles to encourage use by reptiles and amphibians. Brush or log piles can be important for salamanders, and also mammals such as rabbits.
- Protect wetland habitats. Even temporary or wooded wetlands are vital habitat to reptiles and amphibians.

This brush pile provides good habitat for reptiles and amphibians.



DNF Photo

FORESTED WETLANDS

Forested wetlands are critical habitats to protect for the benefit of associated plants and animals.



Barney Odfield

Blue-spotted Salamander



Steve Maxson

Black Tern on Nest



Barney Odfield

Striped Chorus Frog



Steve Maxson

Peat Bog



Barney Odfield

Bottomland Forest

MANAGING FOR BIODIVERSITY— A BIG CHALLENGE

The phrase biodiversity has a broad definition; diversity of life in all its forms and at all levels of organization, from molecules to biomes, from moose to maples. When ecologists speak of managing for biodiversity this implies protection of the millions of species of animals and plants on this earth. Can a private landowner manage for biodiversity? The answer is yes, to a limited extent.

There are three levels of biodiversity; alpha diversity, beta diversity and landscape diversity. Alpha diversity can be thought of as diversity within a habitat. An example of this would be deer mice living in the ground litter and red bats living in the tree tops of a lowland hardwood forest.

A landowner does have the capability of improving alpha diversity, for example by providing adequate levels and types of vegetation on his property to complement adjacent timber types on other ownerships.

Another way to improve alpha diversity is to protect plant communities that may have special significance. Plant communities that are rare such as native prairie, peat bog, oak savannah or maple basswood forest are important vestiges of the pre-settlement vegetation that was found in this state. Without protection of these remnant natural communities, many of the plant and animal species associated with them would disappear.

If you think that you may have a significant plant community on your property, please contact your nongame specialist or wildlife manager to arrange for a survey.

Managing for biodiversity also means managing for rare and unique plant and animal species. Species which might be



Steve Mason

Calypso Orchid, rare plant of the peat bog.



Don Enger

The Bald Eagle is listed as a "threatened" species in Minnesota.

potentially found in your woodland are the red-shouldered hawk, the Blanding's turtle, the bald eagle or the ram's head lady's-slipper. There are 96 species of animals and 191 species of plants that are listed either as endangered, threatened or special concern under Minnesota's endangered species law. Several publications such as *The Uncommon Ones: Minnesota's Endangered Plants and Animals*, DNR publication 1989; and Coffin and Pfannmullers, 1988, *Minnesota's Endangered Flora and Fauna* will tell the reader which species are classified and where they may be found.

If the landowner suspects the presence of one of these species of rare plant or animal on his/her property, contact the DNR nongame specialist or area wildlife manager for more information on how to protect the species.

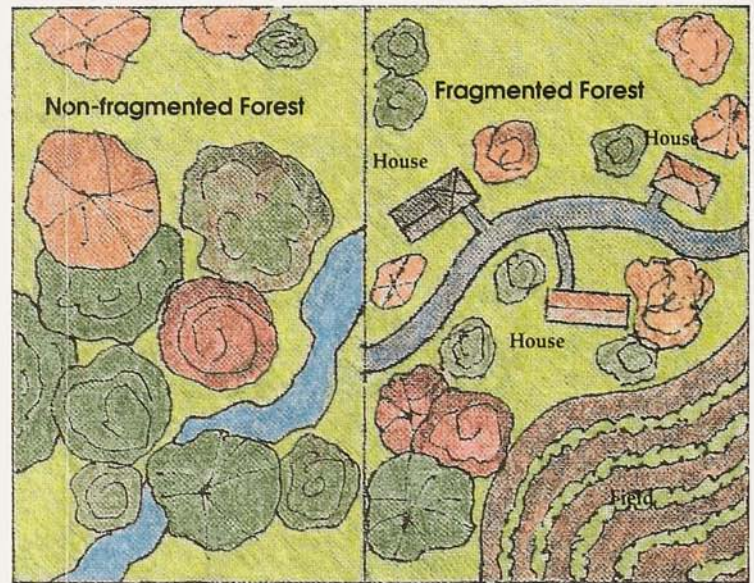
Beta Diversity, or diversity between habitat types can also be a consideration on private land. For example, you may want to strive to maintain different habitat types than currently are present.

It is more difficult for the small landowner to manage for biodiversity on the landscape scale. However, some serious biodiversity concerns have been raised at this level. For instance, there is no doubt that forest songbird populations have been declining nationwide. A total of 36 species of birds are thought to be at high risk of decline in Minnesota, including the scarlet tanager, many species of warblers, vireos and the wood thrush. Reasons for decline of these species may include tropical deforestation, as well as fragmentation (splitting up) of forest habitats on the breeding grounds (Minnesota's Northern forests).

Forest management techniques to help these species are now being studied, but specific direction is not yet available. Creation of permanent openings and the creation of edge habitat is not thought to be favorable for these forest birds. Consider leaving your forest acreage intact, or banding together with adjacent landowners to manage contiguous forest habitats to minimize fragmentation.

Figure 3. Forest fragmentation is occurring in many forested areas.

Figure 2.
Declining tanager population



WHAT ABOUT OLD GROWTH FORESTS?

Most of Minnesota's forestland was logged, converted to agriculture, (in the SE) or burned by catastrophic fires in the latter part of the 1800's and early 1900's. As a result, very few natural origin undisturbed old stands remain. Current efforts to protect what little old growth remains are focused on state and federal land. It is possible that some older forest remains on private land, where for one reason or another the original forest wasn't harvested.

Old growth forests have developed over a long time, free from disturbances such as logging or fire. They contain large old trees of long-lived species like red pine, white pine, spruce, white cedar, basswood, ash or maple. Old growth forests can usually be identified by their age (at least 120 years of age), and lack of catastrophic disturbance. Such forests often have large trunk diameters and presence of many snags and downed logs.

Unlike the Pacific Northwest where several vertebrate species such as the northern spotted owl are found in association with old growth, Minnesota has no known vertebrate species that depend entirely on old growth. Nonetheless, there are a number of interesting species associated with these older forests. A variety of woodpeckers and warblers can be found; other possibilities include barred owl, black-backed woodpecker, wood thrush or oriole, and species diversity is greater in older stands.

Birds live in a variety of levels within old growth forests. They use the ground layer, shrub layer, sub canopy (middle layer) and canopy (tops) of the tall trees. There are also many fungi, beetles, ants and other invertebrates which interact to accomplish the process of decomposition.

The best way to protect old growth forests is to recognize their value and retain these woodlands as undisturbed,



Decomposition on the forest floor.



Old growth red pine forest.

particularly where they can be protected from prevailing winds. We do not have the expertise to get these forests to grow back in a natural condition, so the best policy is to leave the forests as they are. Listening to the wind howl through the mighty big trees is reason enough to retain these old forests. Their beauty, uniqueness, and wildlife habitat value are irreplaceable.

- Get help from the DNR to determine the age and uniqueness of your forest.
- If some of your forest land is "old growth" large enough to protect in an undisturbed state, consider managing it as a natural area avoiding any disturbances.
- If your forestland consists of mature timber, but is predominantly aspen, jack pine or balm of gilead,

Katherine Hows

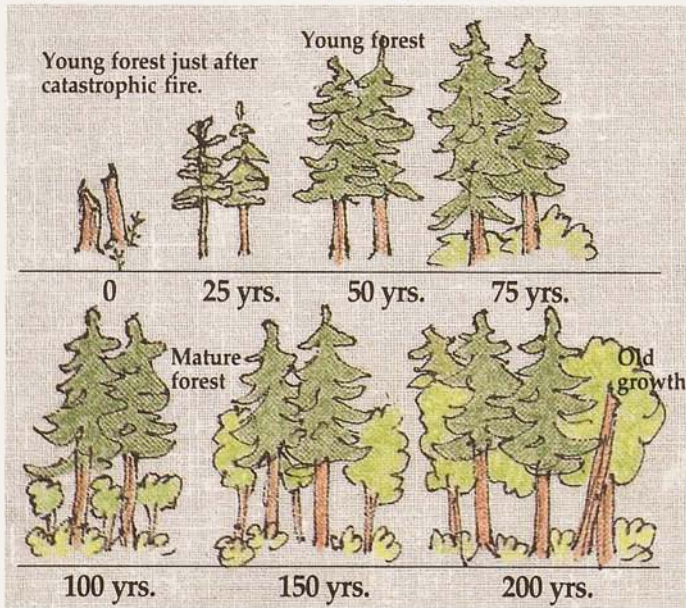
Katherine Hows

consider allowing it to grow longer than it normally would under standard timber harvest regimes. This older forest is important to a number of wildlife species, even though it would not be viewed as virgin old growth habitat. For example, in Northern Minnesota older deciduous forests often have an important component of balsam fir and white spruce in the understory. These understory plants provide important cover for animals like boreal owls, deer and moose. When the forest is left standing until an older age, these conifer species proliferate, and as a result, wildlife benefits.

- Older forest stands will benefit warblers, tanagers, vireos and the secondary goal of selling wood can also be realized. Be aware that some tree species lose marketability after a certain age due to rot. Another possible outcome of deferred harvest would be succession of the stand of timber from one type (aspen for example) to another (such as balsam fir). Consult your wildlife manager or forester for details on how to effectively extend harvest age.

- Livestock use degrades old growth forest, and is not a good idea.

Figure 4. Forest succession, white pine forest.



DNR WOODLAND PLANNING

Woodland planning is available free of charge to those owning 10 acres or more. For further information on stewardship planning contact the *Division of Forestry*, *Division of Ecological Services Nongame Program*, or *Division of Fish and Wildlife's Private Lands Program*.