
Forest / Wildlife
GUIDELINES
and
STANDARDS
for Nova Scotia

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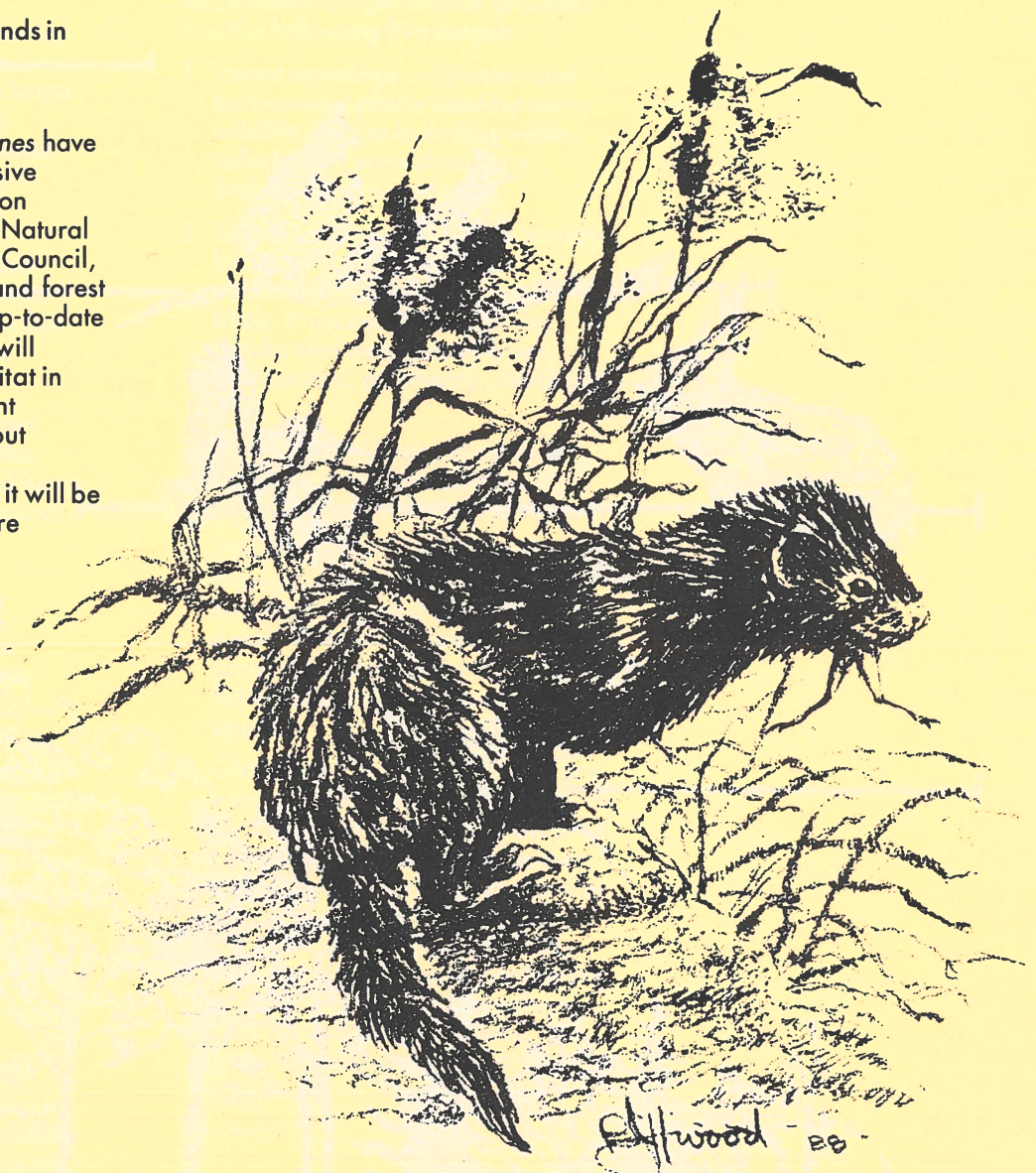
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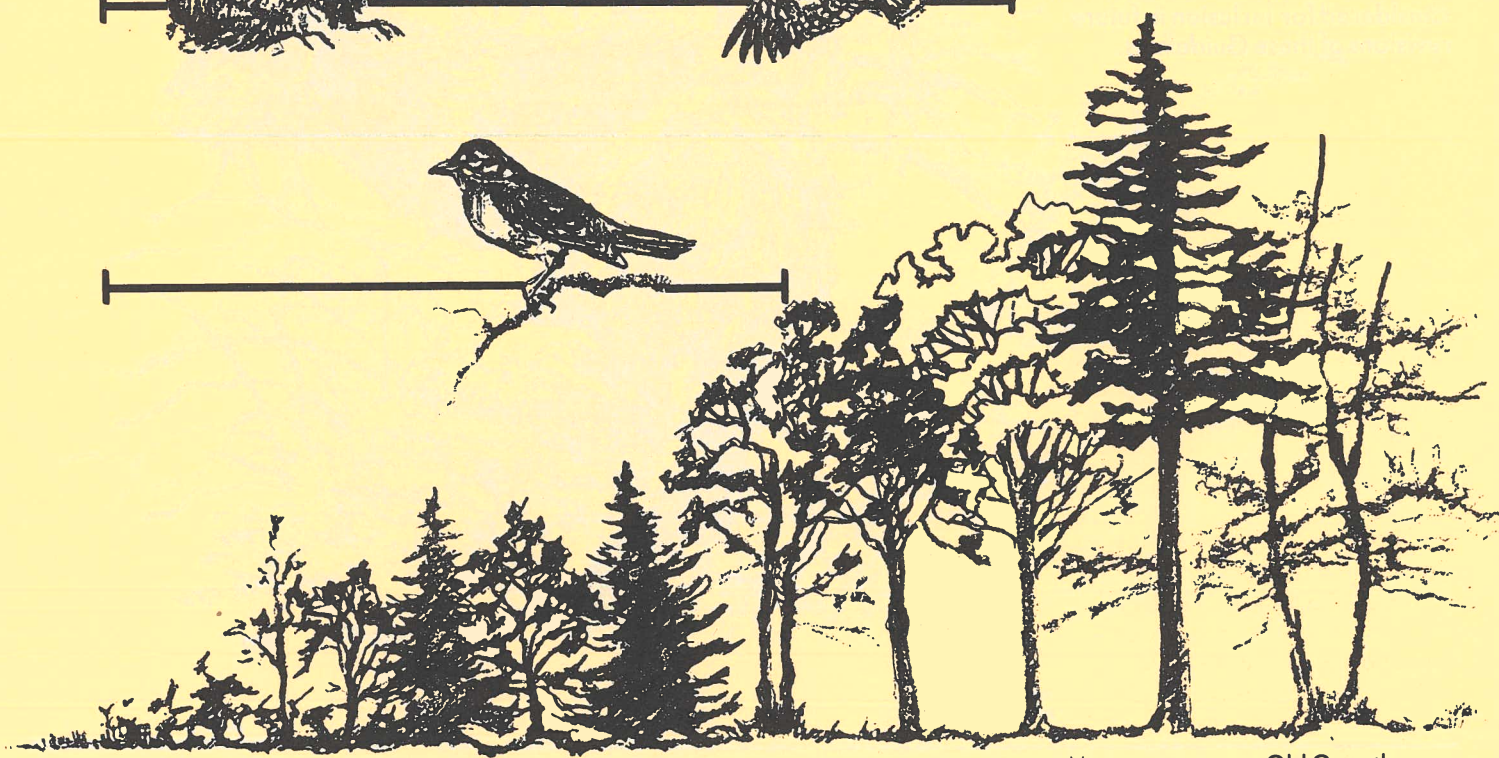
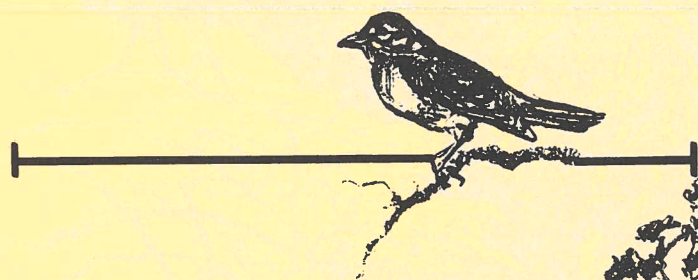
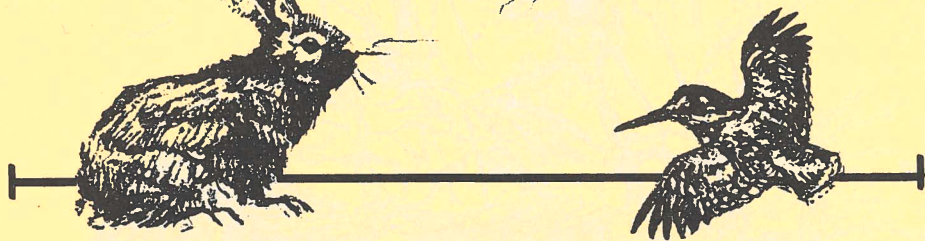
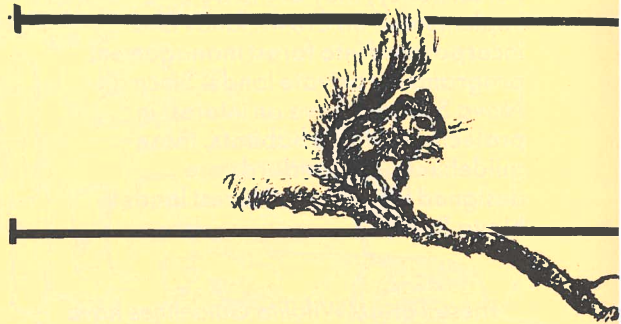
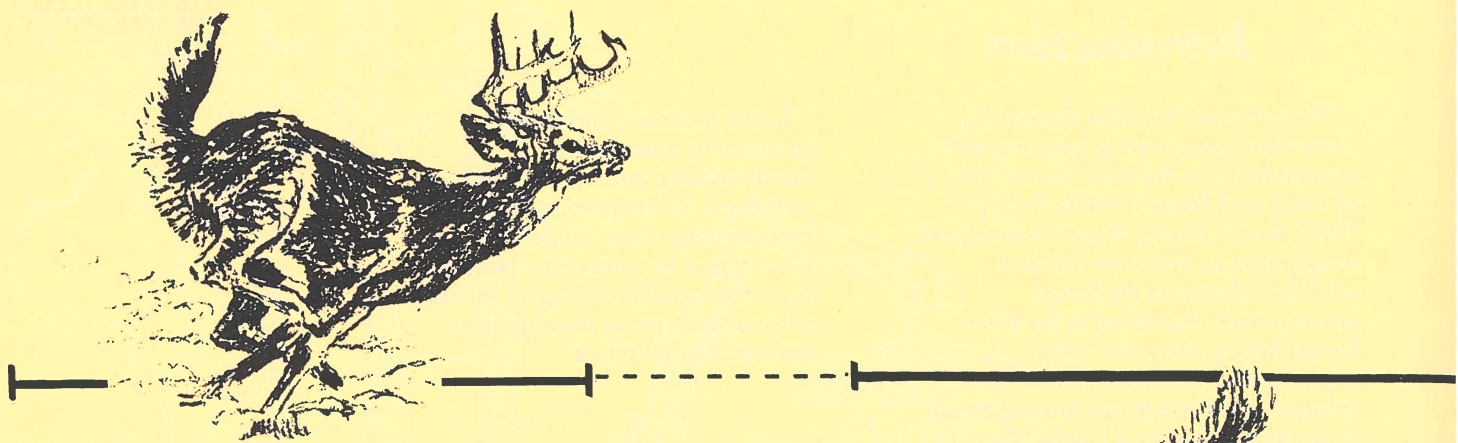
Introduction

These *Forest/Wildlife Guidelines* have been prepared in keeping with commitments in the New Forest Policy of 1986 and New Wildlife Policy of 1987. Accordingly, they are designed to maintain or enhance fish and wildlife habitats in the forest environment. As stated in the New Forest Policy, they are to be implemented on Crown lands and incorporated into forest management programs for private lands. Since all Nova Scotians have an interest in protecting wildlife habitats, these guidelines and standards are designed for use on all forest lands in Nova Scotia.

These *Forest/Wildlife Guidelines* have been developed after an extensive literature review and consultation with staff of the Department of Natural Resources, the Forest Advisory Council, the Wildlife Advisory Council and forest users of the province. It is an up-to-date compilation of techniques that will provide adequate wildlife habitat in the intensive forest management milieu. As new information about forest management/wildlife interaction becomes available it will be considered for inclusion in future revisions of these *Guidelines*.

Forest planners, managers, consultants, contractors, woodworkers and others needing assistance in interpreting and implementing these guidelines are encouraged to contact the Natural Resources wildlife biologist, forester or forest technician through their nearest District Office.





Forest Openings

Shrub - Sapling

Pole

Mature

Old Growth

Forest Diversity

An animal's habitat must provide food, cover and water. These habitat requirements may change through the seasons and through the life of the animal. Some or all of these needs may be met in a single forest stand, but a variety of stands will provide habitats for a variety of animals. Forest diversity is the mix of forest stands, each with its own tree species composition, age structure and associated plant life. With more diversity a forest will have more wildlife.

When an area provides a diversity of habitats, wildlife populations generally remain stable. When large areas of forest are disturbed by wildfires, pests or harvesting, forest diversity is altered, habitat may become limited and animal populations become unstable. Instability may lead to population declines when habitat needs are not filled, or to population increases that damage forestry crops or cause wildlife nuisance problems.

Maintaining diversity in a forest management unit also reduces the risks of fire and insect attack and has a beneficial effect on soil nutrients and watershed management. A diversified forest is also more aesthetically pleasing.

Diversity is manipulated by changing the species composition, age structure and arrangement of forest stands.

Tree Species Composition

Some animal species are associated primarily with softwood stands while others are adapted to hardwoods. Mixedwood stands are particularly good habitat for many wildlife species.

The Province is committed to maintaining a 65% / 35% softwood/hardwood ratio province-wide. However, due to site conditions or stand size, it will be impossible to obtain this ratio on all sites.

Nevertheless, tree species diversity should be encouraged in keeping with this objective wherever feasible.

Forest Succession

Succession is the progressive change in plant and animal communities over time. Each successional stage provides animals with different habitat conditions and supports a different community of wildlife. For wildlife purposes, successional stages can be grouped into the following five stages:

1. Forest openings — Grasses and herbaceous plants used by many wildlife species including white-tailed deer, snowshoe hare (rabbits) and woodcock.
2. Shrub-sapling — Provides woody browse for deer and other mammals and nesting cover for birds. It also provides fruiting shrubs and trees (blueberries, raspberries, pin cherry, shadbush, etc.)
3. Pole timber — Less valuable as wildlife habitat but used by some wildlife species for food and cover.
4. Mature timber — Mature softwood trees provide winter cover by blocking wind and reducing snow depth. They also provide escape cover and are vital for marten, fisher, squirrels and many bird species.
5. Old growth — Large old trees are used as nesting sites for large birds such as great horned owl, bald eagle and pileated woodpecker. Trunk cavities are used as den sites by many species. Old trees die, becoming snags and eventually fallen logs that are used as feeding and nesting sites. The openings created soon fill with young growth, adding diversity to the stand.



Guidelines

1. Areas to be clearcut should not exceed 50 hectares (125 acres). Smaller cuts made more often would provide a better distribution of the shrub-sapling successional stage. Where it is necessary — because of insects, disease, blowdown and/or extensive old growth stands — to cut large areas, leave corridors for wildlife (see page 8).
2. Wildlife will benefit in many ways if 3 - 8% of the area under management is maintained in openings. These can include roadsides, landings and pond edges; they should be seeded to prevent erosion and to provide food for wildlife. Take into account surrounding land use. For example, woodland near farming areas needs fewer openings.
3. Three to 8% of the area under management should contain old growth trees.
4. Where small holdings are managed as a unit, consider the effects of forest management on wildlife habitat for the whole area under management. It is unnecessary to provide every successional stage on every management unit if they are present on nearby managed areas.



Edges and Wildlife Corridors

Edge

An edge is the zone where two successional stages or vegetative conditions meet and where the wildlife species of each cover type mingle. This mingling increases the number and variety of wildlife species present. The resulting richness is known as "edge effect".

Edge conditions relate to the age difference between adjacent stands or cover types. Wildlife benefits are optimized by putting clearcuts next to pole-size stands.

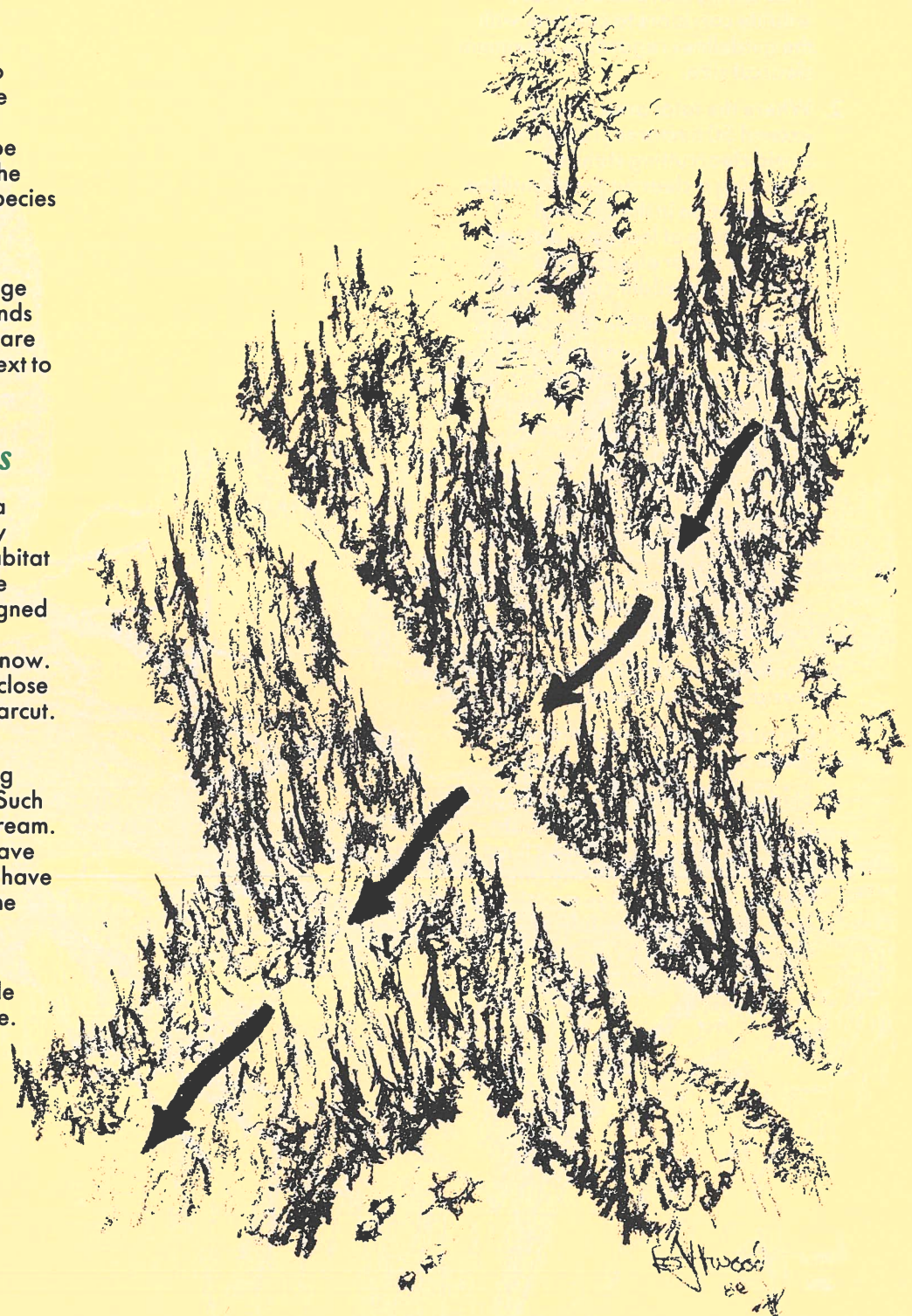
Wildlife Corridors

Uncut strips of forest crossing a clearcut create edges and supply "wildlife corridors" from one habitat to another. Where possible these wildlife corridors should be designed to provide concealment and protection from wind and deep snow. They should pass through, or as close as possible to, the center of a clearcut.

The best place to put a wildlife corridor is along a stream flowing through the area to be clearcut. Such a corridor will also protect the stream. Corridors are a good place to leave snags and overmature trees that have cavities or the potential to become cavity trees.

Uncut immature stands or inoperable sites may also provide cover and travel lanes for wildlife.

From a fire management standpoint, hardwood corridors make excellent firebreaks.



Guidelines

1. Where an area planned for clearcutting exceeds 50 hectares (125 acres) leave one or more wildlife corridors to conform with the guidelines regarding maximum clearcut size.
2. Where the total area would exceed 50 hectares (125 acres), avoid clearcutting stands adjoining a clearcut area, until the regeneration in the original clearcut is at at least two metres (six feet) tall or else provide appropriate wildlife corridors.
3. Forest managers are encouraged to prescribe irregular borders (such as stand boundaries) for clearcuts, because they provide more edge for wildlife than do straight borders.
4. Selection cutting in corridors should not remove more than 40% of the merchantable volume.
5. Wherever possible corridors should be composed of green, long-lived, wind-firm trees.
6. Corridors should join up with other corridors or uncut areas.
7. Corridors must have a minimum width of 50 metres (165 feet).
8. Skidding trails may pass through corridors but take care to locate trails on high ground, make them as narrow as possible and angle them to the forest edge so animals using the corridors would be concealed.





Special Management Zones Near Watercourses

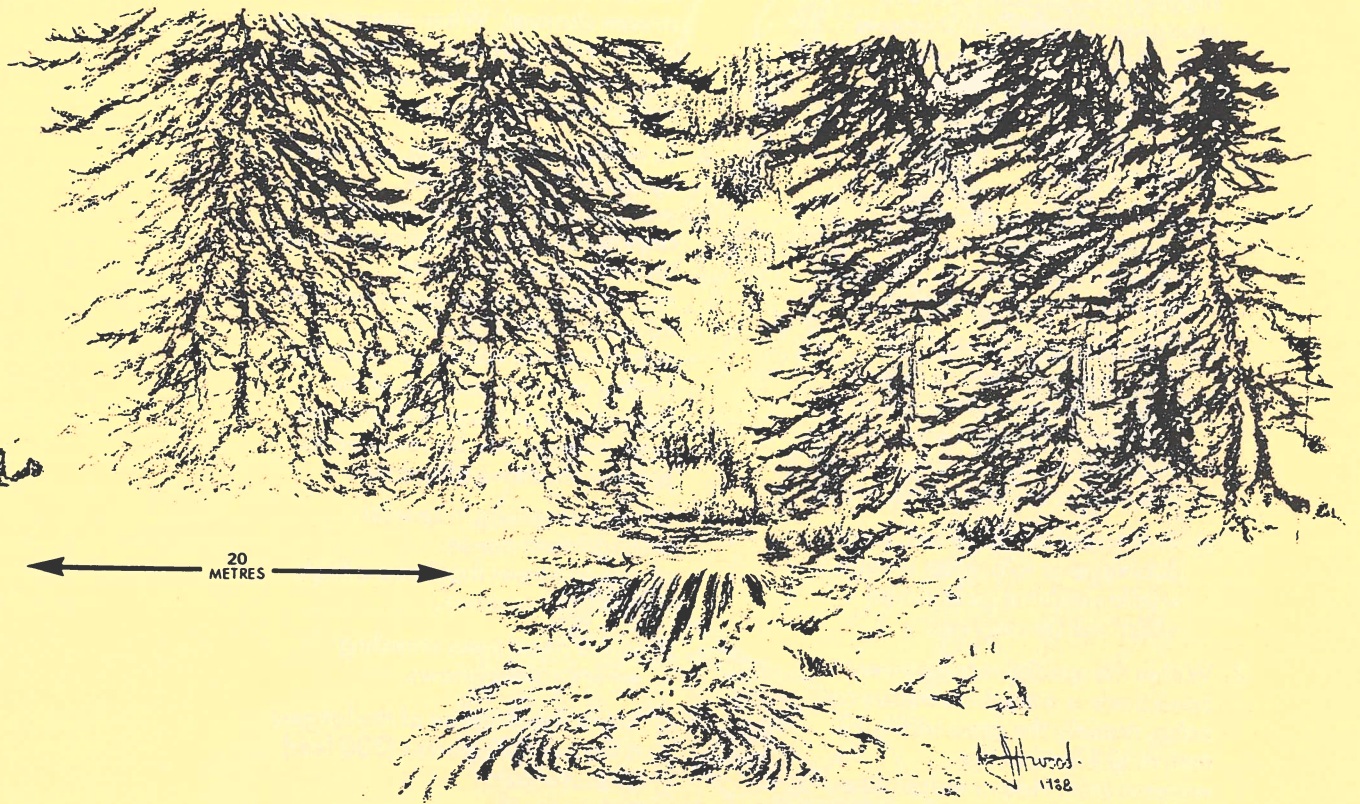
The riparian zone (the area along a lakeshore or streambank) is one of the most important and fragile wildlife habitats. It provides water, food and cover for many species of wildlife including amphibians, waterfowl and semi-aquatic mammals. It is also preferred by many larger wildlife species as a travel corridor. The presence of water, often in combination with fertile soil, increases diversity by providing a habitat for plants not found elsewhere. Moreover, the irregular shape of a riparian zone, particularly along the banks of a stream, maximizes edge.

Trees and other rooted vegetation along a watercourse stabilize the soil, preventing erosion and the resultant siltation which smothers the gravel beds needed for trout and salmon spawning habitat. Trees and shrubs shade the stream, preventing overheating of the water which can be fatal to fish. Vegetation which overhangs or falls into a lake or stream is an important source of nutrients.

Undercut tree roots and overhanging or fallen logs provide cover for fish. Large organic debris, in the form of fallen logs and branches, stabilize the streambed and are important in pool formation. Too much organic debris in a stream, however, can block fish passage and deplete the oxygen supply in the water.

Wetlands can be very productive wildlife habitat. Some of the most productive wetlands will require special management zones around their perimeters to prevent adverse effects. Further information is available in the publication *Important Freshwater Wetlands and Coastal Wildlife Habitats of Nova Scotia*, which can be seen at the local District Office of the Department of Natural Resources.





Guidelines

1. All watercourses (lakes, rivers and streams) marked on 1:50,000 topographic maps, must have a special management zone of 20 metres (66 feet) on each side to protect the aquatic resource. Extra width will be required in the following cases:
 - a) for slopes in excess of 10 degrees but less than 30 degrees, add one metre (three feet) for each degree of slope.
 - b) for slopes greater than 30 degrees go to the first regular break in slope that is more than five metres (16 feet) wide and establish the buffer strip at least five metres back from this break.
 - c) in areas of unstable soil, poor drainage or to protect unique wildlife habitat, additional width will be required.
2. Within the special management zone there is a machine exclusion zone, namely the area within 10 metres (33 feet) of the watercourse. Heavy machinery without high flotation tires is not permitted within 10 metres of the watercourse. Heavy machinery with high flotation tires is not permitted within five metres (16 feet) of the watercourse. In areas of erodable soil or where rutting may occur, harvesting should be done only when the soil is dry or frozen; otherwise a wider machine exclusion zone should be used.
3. Do not allow woody debris from a forestry operation to enter a lake or stream and keep it out of areas that are periodically flooded.
4. On the edge of smaller streams not marked on topographic maps, cut trees to leave a metre (three-foot) high stump to create a machine exclusion zone at least five metres (16 feet) wide on each side of the stream.
5. Zone measurements are generally taken from the edge of the defined stream channel. When streams are bordered by grassy, intermittently flooded meadows, measure from the forest/meadow edge.
6. To minimize blowdown, provide optimum shading of the watercourse and to encourage regeneration, selection cutting can be carried out in special management zones provided that no more than 40% of the merchantable volume is removed. On the recommendation of the Department of Natural Resources, more volume may be removed to prevent excessive blowdown.
7. When harvesting in special management zones:
 - a) remove trees that have a high risk of blowdown,
 - b) leave dead trees standing where safety allows.
 - c) leave two or three of the largest trees per 100 metres (330 feet) of shoreline.
8. Temporary and permanent stream crossings and road construction near watercourses must be done in accordance with standards given in the publication *Environmental Standards for the Construction of Forest Roads and Fire Ponds in Nova Scotia* available at the local District Office of the Department of Natural Resources.
9. Laying out special management zones requires a great deal of on-site interpretation. When in doubt consult the local Natural Resources wildlife biologist, forester or forest technician.





Cavity Trees, Snags and Downed Trees

A cavity tree is a tree greater than 30 cm (12 inches) in diameter at breast height (dbh), in which holes or cavities are present or may be excavated by woodpeckers. Cavity trees are often still living but have signs of interior decay such as broken or dead tops or limbs, wounds or fungal conks. The decayed interior is easily excavated for nest sites and the sound exterior provides structural strength and protection. After woodpeckers excavate a cavity it may be used by many other mammals and birds.

Large trees over 50 cm (20 inches) dbh are better for cavity users because they provide habitat for both large and small wildlife species. A big dead tree will often stand longer than a small one and provide habitat longer. Trees smaller than 20 cm (eight inches) dbh are of limited value to cavity nesters and will not provide nesting habitat for woodpeckers larger than the downy woodpecker, our smallest.

A snag is a standing dead or dying tree. Snags are commonly invaded by insects, providing foraging sites for insect-eating birds. Hawks and insect-eating birds perch on snags while hunting.

Unmerchantable logs or snags felled for safety reasons should be left at the stump where possible. Logs oriented across a slope trap debris and slow erosion while providing habitat for many small animals. Logging slash left on the ground will also provide cover for small animals for a short time.

Guidelines

1. Leave dead trees standing wherever it is safe to do so, particularly along the edges of cuts, in wildlife corridors and along streams and lakeshores. Trees can also be left in unproductive or unmerchantable areas. Safety procedures outlined in *The Professional At Work in Nova Scotia Forests* (available from the Nova Scotia Department of Labour, Occupational Health and Safety Division) must be followed.
2. In a harvest operation leave a minimum of 10 trees per hectare (four per acre) to provide cavity trees. For the safety and efficiency of future forestry operations these should all be clumped in the center or in a few smaller scattered clumps throughout the cut. A mixture of live and dead trees is best; the live ones will provide habitat after the dead ones fall.
3. Although cavity-nesters can use most tree species, they prefer maples and yellow birch. When choosing a living tree for a potential cavity tree, consider its benefits as a food source for wildlife other than woodpeckers. For example, an oak provides acorns as well as cavities, and ruffed grouse prefer to feed on the larger flower buds of male aspen.



Deer Wintering Areas

In much of Nova Scotia, particularly in the southwestern region, deer do not congregate in winter yards as they do where snowfall is heavier. Deer will use softwood cover to avoid deep snow and will move to river valleys to escape cold winds in winter. They are more likely to respond to forestry activities by moving up or down a watershed than across high ground to another watershed.

The following guidelines are to be used in areas identified by Department of Natural Resources wildlife biologists as deer wintering areas. They are not meant for moose, which are larger and stronger than deer and better adapted to severe winter weather.



Guidelines

1. The best location for a deer wintering area is on a slope facing south to southwest.
2. The management program should strive to maintain approximately 50% of the wintering area in softwood stands of sufficient height and density to reduce snow accumulation. These shelter stands should cover at least 10 hectares (25 acres). The program should also maintain a mixture of age classes and species.
3. Schedule any cutting in deer wintering areas for the fall and early winter when felled hardwoods will provide immediate browse and future sucker growth.
4. In wintering areas, selection cutting is preferred because it creates the smallest openings, stimulates browse production and provides growing space for smaller trees.
5. Limit individual openings to 10 hectares (25 acres), separated by uncut areas at least equal in size to the cut area. Make openings irregular in shape to increase the amount of edge.
6. Leave uncut areas attached to adjacent shelter areas by travel lanes with a minimum width of 50 metres (165 feet). Where watercourses occur, travel lanes should follow them. If there are no watercourses, travel lanes should be located to take advantage of natural travel routes and protection from wind (i.e., along the side of a ridge, not across the top).
7. Integrate cutting within deer wintering areas with adjacent land-use. If clearcutting the surrounding area, reduce cutting in the wintering area. The amount of reduction can only be determined by inspection of each site.



Birds-of-Prey and Heron Colonies

Bald eagles, ospreys, hawks, falcons and owls are naturally less numerous than other birds because they are at the top of the food chain, feeding on smaller prey. As such they are very sensitive to the activities of man, especially during the breeding season when disturbance might cause them to abandon eggs or young.

Great blue herons which nest in tree-top colonies of up to 30 or more, may abandon traditional breeding sites if sufficiently disturbed by activity in or adjacent to their colonies.

Guidelines

1. Before conducting forestry operations near eagle nests or heron colonies, consult a Natural Resources wildlife biologist.
2. Preserve clumps of large living and dead trees along shorelines to provide possible nest and perch sites for foraging ospreys.
3. Avoid disturbing nest sites of hawks and owls from March through mid-July. When harvesting near a nest, leave a clump of trees large enough to conceal the nest and to provide perching sites.



Other Legislation and Policies

Existing legislation and policies pertaining to resource protection, including the Special Places Protection Act and Provincial Policies for the Conservation of Wildlife Habitat, will be followed.

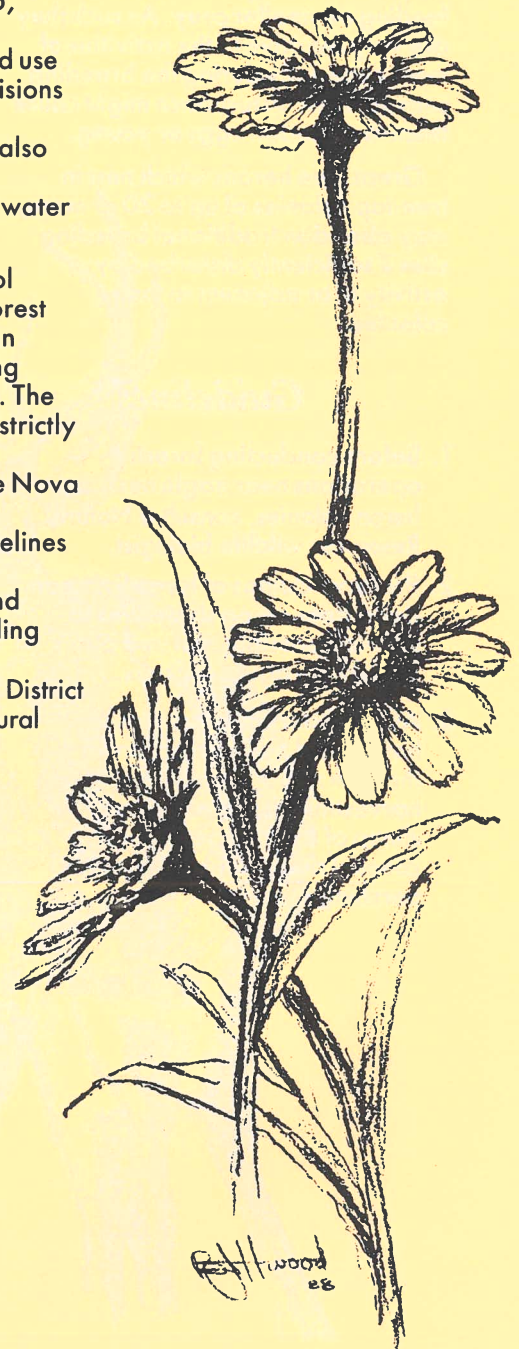
The Special Places Protection Act of 1980 provides for the protection of ecological reserves which include high value habitats for plants and animals. The Nova Scotia Museum Complex (Nova Scotia Department of Education), is responsible for implementing this statute. The Department of Natural Resources cooperates closely with the Museum in the identification, protection and management of special places, especially where these are on Crown lands. At the time of writing there are more than 70 sites identified in the province, of which 20 or more are partly or wholly on Crown land.

No forest management activities should occur in or near ecological reserves or candidate special places on Crown land. Private landowners should be made aware of such sites on their own properties when considering forest management activities.

In some cases the boundaries or status of these sites may be ill-defined. If doubtful, contact the Curator of Special Places at the Nova Scotia Museum, 1747 Summer St., Halifax, N.S. B3H 3A6.

The Nova Scotia Land Use Policy Committee drafted *The Provincial Policies for the Conservation of Wildlife Habitat in Nova Scotia*. These policies, adopted in 1985, incorporate wildlife habitat conservation principles into land use planning and management decisions made by other government departments. The Committee is also developing policy guidelines concerning forestry activities in water supply watersheds.

The availability of pest control products in Canada provides forest managers with a valuable tool in reducing losses due to competing vegetation, insects and disease. The storage and use of pesticides is strictly regulated by legislation and regulations administered by the Nova Scotia Department of the Environment. All pesticide guidelines and regulations issued by the Departments of Environment and Health must be followed, including those in the *Pesticide Safety Handbook* available at the local District Office of the Department of Natural Resources.



Further Readings

A Guide to Trout and Salmon Habitat for Loggers

Fisheries and Oceans Canada 1982
Minister of Supply and Services Canada 9pp.
Cat. No. Fs 23-34/1982 E

Improving Wild Apple Trees for Wildlife (folder)

* Nova Scotia Department of Lands and Forests.
1988.

More Wildlife on Your Woodlot (folder)

Nova Scotia Department of Lands and Forests.
1988.

Notes on Nova Scotia Wildlife

Nova Scotia Department of Lands and Forests.
1988. 92pp.

Nova Scotia's Snowshoe Hare: Life History and Management

D.G. Dodds 1987
Nova Scotia Department of Lands and Forests.
73pp.

Shrubs for Wildlife (folder)

Nova Scotia Department of Lands and Forests.
1988

Trees of Nova Scotia

Gary L. Saunders. (revised 1989).
Nova Scotia Department of Lands and Forests.
101 pp.

Wildlife Management on Your Land

C. L. Cadieux 1985
Stackpole Books, Harrisburg, Pa 17105. (310pp)

* Nova Scotia Department of Natural Resources.
P.O. Box 68, Truro, N.S. B2N 5B8



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