

How Various Forest Types Affect Wildlife

Aspen

Game Species

Ruffed grouse utilize aspen stands of all ages. Juvenile sucker stands at age two (12,000 to 14,000 stems per acre) up to about age ten (6,000 to 8,000 per acre) are important brood habitats for grouse. Saplings and pole stands aged 10 to 25 are preferred over-wintering and breeding cover. Aspen stands older than age 25 (when stem densities usually fall below 2,000 per acre) are devoid of breeding grouse but serve as nesting cover and as a very important food source. A primary year round food of grouse is aspen leaves and buds, best provided by stands nearing maturity. The staminate (male) flower buds of aspen are the most important nutritive source for grouse. Some male clones preferred by grouse may be 30 percent richer in proteins than male clones that are not eaten. Finally, snow accumulates earlier and deeper in aspen stands than in conifer stands. This provides burrowing cover, which is very important during most winters.

To increase ruffed grouse, aspen should be clearcut on a 40 to 50 year rotation, in patches no larger than 10 acres in each 40 acres, and at 10 year intervals. Male clones that grouse prefer should be favored during intermediate thinnings and during regeneration cuts. Intermediate thinnings or short rotations are not recommended for grouse management.

White-tailed deer rely heavily on the aspen type, especially for spring and fall range, and for winter range within a half-mile of winter cover types. Herbaceous and shrubby growth associated with aspen is usually more

abundant because the intolerant aspen admits more sunlight to the forest floor than do the more tolerant hardwoods and conifers. The quality and availability of herbaceous vegetation in the spring and fall greatly affect the vigor of northern deer herds. Conifer cover during winter to minimize body heat loss is even more important. Pure aspen or hardwood stands offer poor insulation and protection from wind compared to dense stands of lowland conifers (especially northern white cedar), balsam fir, or pines.

Deer populations can be increased by limiting aspen clearcuts to 40 acres (preferably 20 acres) and by short rotation management (25 to 30 years on 5 to 10 year intervals) of aspen stands within ½ mile of winter deer yards. (The cutting schedule recommended for grouse could also be applied for deer, with somewhat reduced benefits.) Ideal deer range should be 15 to 20 percent scattered conifer stands, and 5 to 10 percent sodded and brushy openings (which are important spring and fall feedings areas). Hardwood forest types should contain 25 to 35 percent of their area in aspen stands, and 25 percent of the aspen should be 1 to 10 years old.

Moose are dependent upon the aspen community to provide a large amount of browse. For moose management, clearcuts can be up to 100 acres; the stand composition should be similar to that for deer. Willow is a preferred browse for moose.

Rare and Endangered Species

Three rare or endangered species using the aspen type are the bald eagle, osprey, and eastern timber wolf. All are protected by Federal and State laws. The following tabulation lists restrictions on management activities for osprey and eagle nest trees:

Federal Activity Restriction Table for Osprey and Eagle Nest Sites

Distance from Nest	Osprey Nests	Eagle Nests
Up to 350 ft.	No activity anytime	No activity anytime
350 to 650 ft.	No activity March to July	Thinning and pruning OK (no clearcutting) October to mid-February; no activity rest of year
700 and beyond	Normal activities OK	Normal activities October to mid-February only; no activities rest of year
700 ft. to ¼ mile	Normal activities OK	If areas more than ¼ mile away are visible from the eagle nest, the outer zone can be extended to ½ mile in that direction. Roads and trails within ¼ mile of eagle nests should be closed where possible. Scattered old growth trees, particularly the pines, should be reserved as much as possible for future nest trees.

Black Spruce

The black spruce type is utilized to some extent by many wildlife species. New harvest areas and young stands certainly produce different or more abundant browse and other wildlife food than mature black spruce stands. Therefore, shrubs and hardwoods should not be killed back with herbicide spraying until black spruce reproduction definitely needs release. And even then, all dogwood, willow, quaking aspen and other hardwoods should not be killed because some mixture of these shrubs and trees with black spruce probably enhances wildlife habitat.

The spruce grouse is of special interest because it depends on the black spruce type for most of its habitat needs. Spruce grouse apparently use non-commercial black spruce sites more than commercial sites, so their habitat may be only moderately affected by timber management. However, spruce grouse habitat can probably be maintained or enhanced on commercial sites by having the

following kinds of black spruce stands within compartments of 160 acres or less:

1. Mature stands with high basal areas (more than 150 square feet per acre) are important as display habitat for male grouse in late spring. These stands are characterized by little or no undergrowth and a ground cover of feather moss.
2. Young stands of black spruce 10 to 15 feet tall with dense shrub and herbaceous layers are used by female grouse for cover and feeding before and after nesting. Labrador tea and leatherleaf are usually the dominant species of the undergrowth and sphagnum moss of the ground cover.
3. Mature spruce stands with moderate basal areas (80 to 100 square feet per acre) and little or no undergrowth, as well as young spruce stands with a dense shrub cover, are used for nesting.
4. Black spruce stands with trees 20 to 60 feet tall and about 150 square feet of basal area per acre are important habitat for both sexes in fall and winter.

Therefore, to provide the overall habitat needs of spruce grouse, harvesting of black spruce should be planned carefully so that each compartment will have the kinds of stands just described. This can be done by clearcutting in strips or patches that are well distributed in the compartment and over time. Further, the objective should be to break up extensive, pure stands of black spruce because transition zones with other forest types and some mixture of tamarack seem to benefit spruce grouse. Recording the kind and density of undergrowth in spruce stands during forest inventory would aid the manager interested in coordinating timber and grouse management.

Oaks

Oak forests provide habitat for numerous wildlife species. The principal game species include white tailed deer, turkey, fox and gray squirrels, and in some areas, ruffed grouse. Other important species include raccoon, opossum, red fox, bobcat, skunk, and a host of birds.

Creating and maintaining diverse vegetation is the key to providing a large variety of wildlife with suitable habitat. Regeneration clearcuts should be planned for a whole rotation and dispersed throughout a compartment or group of compartments to provide a well regulated range of age classes. This will result in several vegetation stages ranging from open, recently clearcut regeneration areas, through areas of saplings, poles, immature sawtimber, and mature sawtimber. Each of these stages contributes to the habitat requirements of different groups of wildlife species.

Even so, special measures to enhance the habitat for species with specific requirements may sometimes be needed. Many of these measures will result in lower

timber yields, but to what extent is unknown. During thinning operations, a few defective trees can be left to provide cavities or potential cavities for hole nesting wildlife species. About 30 cavity nesting bird species inhabit oak forests. In addition to cavities, some of these birds need an open overstory and a well developed mid story – conditions often found in old growth or overmature stands. Retaining selected stands beyond the normal rotation age will provide these conditions.

Leave dead snags standing in clearcut areas and kill unmerchantable trees during thinning operations instead of cutting them, so as to provide sites for hole nesting species. This should have little or no effect on timber production.

One of the most important contributions to wildlife from oak stands is mast, or acorns. Acorns are, of course, vital for regenerating oak, and any measures that will increase or optimize acorn production in a particular stand will benefit both wildlife and timber production. In general, thinnings that increase tree growth will also stimulate acorn production. Maintaining 40 to 60 percent of the area of each compartment in stands of mast bearing age will be optimum for wildlife. In compartments that contain a relatively high proportion of poor sites that would produce more timber if converted to pine, this may mean foregoing conversion and the higher yields it would bring.

High populations of acorn consuming wildlife can be detrimental to establishing oak reproduction. Even in good acorn years, essentially the entire crop may be lost in such areas. Acorns not damaged by insects will be eaten by squirrels, turkey, deer or other acorn consumers, and thus not be available for reproducing the oaks.

Northern White Cedar

Deer yard management in the northern white cedar type is affected by the interaction of several factors such as yard size and condition, deer density, winter severity, and availability of browse in and around the yard. These factors vary substantially in different parts of the Lake States and are often difficult or impossible to control. Further, considerable knowledge on managing deer yards in the white cedar type is based on experience rather than research, because the latter has been done mainly in areas with large yards and deep snow in upper Michigan. So, for these reasons, the present recommendations tend to be general and often cannot be applied directly to the various yarding situations found in the white cedar type. This means that to obtain desired results the manager must use good judgment and modify the recommendations to fit local conditions.

Whenever possible, deer yard management should be concentrated on areas that have: (1) special importance as traditional or potential yards: (2) deer densities that do not exceed the carrying capacity: (3) a site index of 30 (medium) or higher for northern white cedar: and (4) enough timber for commercial cutting.

In large deer yards (200 acres or more), the long range objective should be to organize compartments that contain five age classes each, with 15 to 20 years between classes, in patches of 40 to 160 acres. The size and distribution of these patches should be planned carefully so that adequate deer shelter and browse will always be available on separate patches within each compartment. Cutting of any kind should be done in as many compartments as possible to distribute the deer herd more and to rehabilitate vital yards

faster. Of course, northern white cedar and hardwoods should be cut only during winter to provide deer with browse. Annual cutting is necessary to adequately feed deer where deep snow normally keeps them yarded most of the winter. Such cutting is also desirable where deer can move about more because it tends to attract them away from patches of young white cedar, which is vulnerable to over-browsing.

The main objective in small, isolated yards (less than 200 acres) should be to obtain and maintain a closed evergreen canopy for optimum deer shelter. Browse is usually scarce in small yards, so removal of hardwoods or northern white cedar should be done only by cutting during severe winters. This means most browse will have to come from young stands and winter cutting of other forest types in the surrounding area.

In areas where small yards are vital for deer shelter, the rotation can be extended well beyond the longest ones because northern white cedar is long lived. Eventually, however, these yards will need to be rehabilitated. Since they are probably too small to handle the series of age classes recommended for large yards, the whole yard should be reproduced as a single even aged stand by strip cutting. The time when a small yard is cut should be planned carefully so that, if possible, adequate deer shelter will be available elsewhere in the vicinity.

The white cedar type is utilized to some extent by many wildlife species besides white tailed deer. New openings and young stands certainly produce different or more abundant wildlife food than mature white cedar stands. For example, young stands should support substantial populations of snowshoe hare and their accompanying predators as soon as the tree crowns begin to close. Therefore, shrubs and hardwoods should not be killed

back with herbicide spraying unless the growth or proportion of white cedar reproduction definitely needs to be increased. And even then, all stems should not be killed because a mixture of shrubs and hardwoods with white cedar and other conifers probably enhances wildlife habitat in general.

Some trout streams have their source in areas occupied by the northern white cedar type or they pass through such areas. So, to keep the water cool, areas cleared for new stands should probably: (1) have an uncut border between them and the streams; (2) not exceed 40 acres each; and (3) total only a small proportion of the surrounding watershed.

Red Pine

Red pine stands are generally considered poor habitat for game birds and animals but they provide cover and nesting sites for many species of wildlife. Large old growth trees are used by the American bald eagle as well as many songbirds.

Although red pine stands offer good shelter for wildlife, many of the favored food plants are not found in the understory of dense stands. Managing stands near the minimum recommended stocking will favor a greater variety of understory plants. Prescribed burning may also be effective in developing a more favorable understory for wildlife food. Carefully planned landings can serve as wildlife openings providing some of the food plants needed. Landings should be at least 1/2 acre for an effective wildlife openings.

Northern Hardwoods

Northern hardwood types, harbor numerous kinds of birds and animals, both game and non-game. In northern hardwoods as in other

forest types, diversity of species and size class leads to wide representation of animals and birds. Normal forest management can produce sufficient diversity to suit many wildlife species. In some cases, however, a single tree species must be favored because of its special benefit to wildlife.

In areas of deep snow and intense cold, coniferous species provide essential cover for white tailed deer. In some portions of the Lake States, for example, eastern hemlock provides a significant amount of cover and browse so that the regeneration and maintenance of this species is an important part of management.

Hemlock is a long lived, very tolerant species that requires mineral soil seedbeds for regeneration. The same general procedures used for regeneration of yellow birch can be used for hemlock, except that hemlock should be seeded. It is necessary to seed this species in the fall or stratify seed artificially for 90 days before spring seeding. Because of the long life of hemlock, long rotations and small annual cutting areas are possible.

Where tolerant northern hardwoods border conifer swamp deer yarding areas, the amount of browse can be increased by increasing the frequency of cut and reducing residual stocking levels. Where even age management is used, a three cut shelterwood can be employed to increase the length of time that browse is available.

Some rules of thumb for management of browse for wildlife are: selection cutting produces small amounts of browse per acre over a short period of time and relatively many plant species, but the requirements for producing good timber are frequently not met: shelterwood produces as much browse as clearcutting and meets timber production

requirements but encourages fewer plant species.

A forest manager need not always modify practices in northern hardwoods to increase wildlife browse or shelter if other forest types that border or are interspersed with the northern hardwoods can provide these wildlife requirements.

Extensive heavy cutting in the past has resulted in large, unbroken areas of pole-size northern hardwoods whose understories are barren and poor habitat for birds and animals. Although small openings usually re-vegetate quickly and lose value for wildlife, their life can be extended to 20 or 30 years by: (1) cutting them in stands 50 years old or less where there is little or no advanced reproduction: (2) cutting them on either excessively well drained or poorly drained soils, or on soils that are shallow or in frost pockets. Openings should be at least an acre in size, not more than 10, and irregularly shaped.

Northern hardwoods frequently border streams and lakes where they may influence water quality, water temperatures, and fish populations. Silvicultural practices to enhance or preserve these features probably do not vary from those used in other forest types.

Jack Pine

Jack pine is generally considered a medium preference deer food, the same as aspen. Young trees may be heavily browsed where deer populations are high. Dense sapling and pole stands offer some wind protection and winter shelter but generally jack pine stands do not provide as good winter shelter as most other conifers. Because older stands of jack pine are usually less dense than other conifers, the understory shrubs and herbaceous plants have better growth and thus provide a better food supply.

Some wildlife species benefit from special stand conditions such as the excellent cover that dense young stands of jack pine provide for hares. Clumpy stands of young trees with branches reach the ground provide nesting sites for endangered Kirtland's warbler in the Lower Peninsula of Michigan. Most wildlife species that find food or shelter in jack pine forests will benefit from management efforts to provide a good distribution of age classes.