



MANAGING YOUR WOODLAND FOR WHITE-TAILED DEER

Fish and Wildlife Habitat Management Guide Sheet



Natural Resources Conservation Service (NRCS) - Minnesota



White-tailed deer are Minnesota's most abundant and popular big game animal. With a population approaching one million, Minnesota whitetails can be found near river bottoms and farm woodlots in agricultural areas, and in aspen/birch forests of the north. An important part of maintaining high deer populations is providing the proper mix of food and cover, or "habitat." By learning about the basic habitat needs of deer, and through active habitat management, you can enhance your woodland for deer.

The white-tailed deer has been in Minnesota for several thousand years. Deer originally occupied the transition forest of woodlands and prairies in the southern and central parts of the state. Early explorers in our region reported deer were scarce in the northern conifer forests. The northern half of the state was dominated by pine and spruce forests that supported moose and caribou.

During the late 1800s and early 1900s, Minnesota's native pine forests were logged. Logging slash was burned routinely and often caused larger wildfires. The extensive disturbance by logging and fires created a new young hardwood forest consisting of brush and sprouts of aspen (popple), birch, maple, oak, and associated grasses and herbs. This young forest community was excellent habitat for deer, and as a result, whitetail populations expanded rapidly in the forests of northern Minnesota. Early homesteading provided additional habitat diversity.

BEHAVIOR AND HOME RANGE

White-tailed deer make seasonal changes in home range use in response to changing food and cover needs. In most of Northern Minnesota an adult doe's home range is between 150-300 acres. Yearling does establish home ranges near their mother, while yearling bucks are more likely to establish home ranges some distance from their mother's home range. In late summer, adult does, fawns and yearlings gather in social groups, staying together through the winter and spring.

Adult bucks occupy 250-800 acre home ranges and travel extensively during the fall rutting season. Bucks generally live separately except during the fall mating season.

SEASONAL BEHAVIOR AND HABITAT RELATIONSHIPS

Spring

As the snow melts, deer move out of winter cover into edges and open areas to feed on green growth. To recover from winter stress, deer need protein-rich, easily digestible green food. Deer commonly appear on roadsides, forest openings, and in fields during the spring, where the first green vegetation is available. Does give birth in late May or early June, and within a few weeks after birth, fawns begin to supplement their milk diet with leafy greens. These high nutrient foods continue to be important throughout the summer.

Beginning in April, bucks in good health sprout new antlers, which grow more than 1/2 inch per day..... one of the fastest growing animal tissues in the world.

Summer

During the summer months, good nutrition is important as young deer grow; adult does produce milk; and bucks grow antlers. Summer is the season of plenty as deer feed on grasses, buds, blossoms, and leaves of a variety of green herbs, shrubs and trees. Plants selected include asters, clovers, alfalfa, sumac, goldenrod, bush- honeysuckle, jewelweed, and various shrub and tree leaves. Preferred food plants are found along forest edges, in forest openings, and in open growing hardwood forests. In late August, deer begin to store energy and fat, and velvet is shed from bucks' antlers.



Obtaining good summer and fall nutrition is critical to winter survival and to the successful production of healthy fawns the following spring.



Fall

Deer continue to feed heavily as they store energy in the breeding season and stressful winter period that follows. The availability of nutritious foods in fall determines how much fat the deer can store for the coming winter. By late October, bucks are in the rut, sparring with small trees and other bucks. They also paw "scrapes" on the ground to declare dominant buck territory and advertise their presence to does for breeding in November.

Winter

Winter is the season of hardship for deer, and the gradual reduction in daylight hours triggers changes in the deer's metabolism. They enter a period of semi-fasting that results in lower food needs. Deer prefer to remain in conifer cover during periods of severe winter weather instead of expending energy looking for food.

Preferred winter foods include acorns, dogwood, mountain maple, white cedar, ash, willow, and hazel. Woody browse is nutritionally inadequate to maintain a deer's body weight over winter. Although deer need good fat reserves to survive most winters, browse near winter cover gives deer the best chance for survival because it slows weight loss. Plots of unharvested corn provide good winter food in agricultural areas.

A combination of deep snow and cold temperatures over a long period drains a deer's energy. A severe winter often causes malnutrition, and combined with a late spring green-up, may cause starvation and lower fawn production. Periodic severe winters contribute to fluctuating deer populations in northern Minnesota.

HOW TO MANAGE YOUR WOODLAND FOR DEER

Deer are wide-ranging animals, and you may not be able to provide for all their needs on your property. Your efforts will be best rewarded if you assess the habitat on your land, and nearby properties. The surrounding forest habitat, within about a one-mile radius of your property, will influence the management of your property for deer. Decide which habitat components are in shortest supply, such as grassy openings, young regenerating hardwood forest, acorn production, or winter cover; then provide that habitat on your land.

Improving Deer Habitat

In northern forests, mixed aspen/birch is the most important timber type for deer. Other important types are oak, balsam fir, jack pine, upland brush, white cedar, and balsam poplar. During most of the year, they prefer edges, young forests, and open areas for feeding. The goal is to maintain at least 25% of your woodland in an age class of 1 to 10 years. A good diversity of aspen age-classes in close proximity and a good distribution of grassy forest openings throughout your woodland will result in better deer habitat, and greater deer numbers.

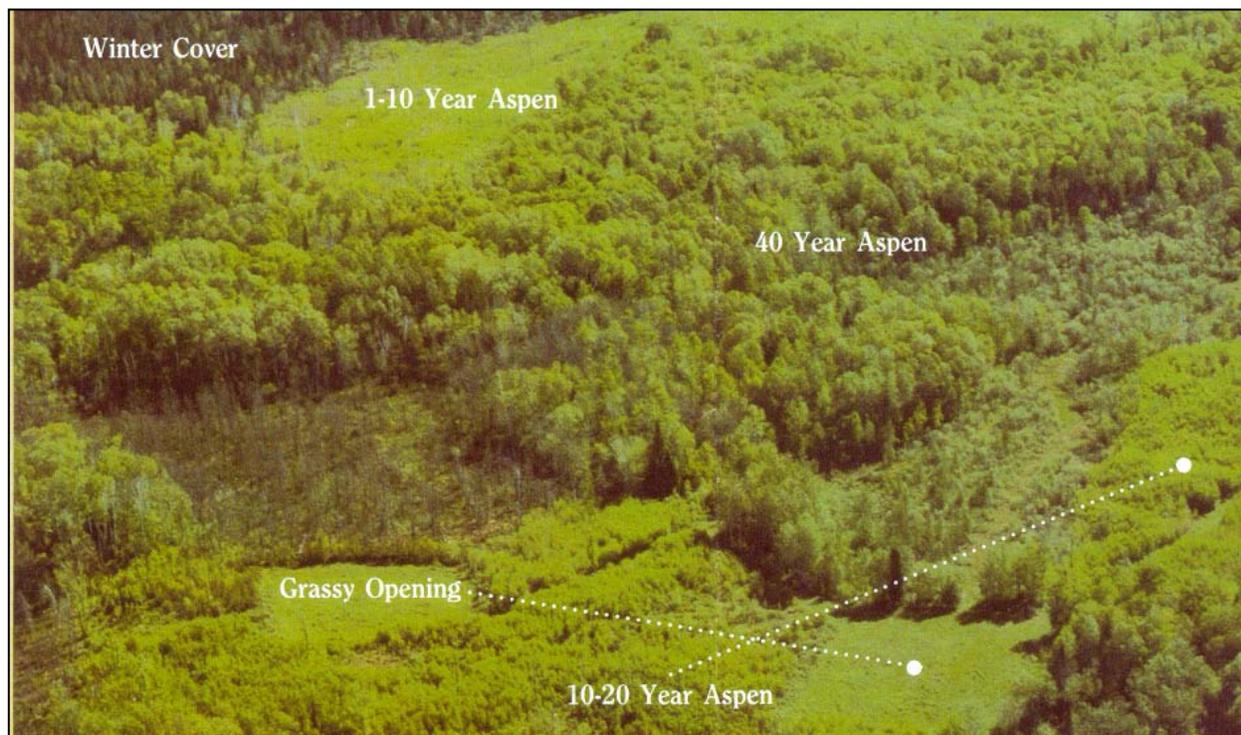
Although deer are adaptable, they require periodic timber management in their environment. The best and most economical method of creating habitat is through timber harvesting.

Timber Harvesting

To improve aspen and mixed aspen/conifer forests as deer habitat, a portion should be clear-cut to set growth back to the aspen-sprout stage. Clear-cutting removes the tree canopy so that sunlight, heat, and rain penetrate to the forest floor stimulating plant growth. Clear-cutting aspen promotes rapid regeneration and ensures an area that will have green lush sprouting in less than six months. Clear-cutting can be accomplished with a commercial timber sale, which benefits wildlife and provides you with income.

The boundaries of a timber sale do not have to be straight lines, the shape can follow topography or other natural features, and be sure to leave tight clumps of balsam fir or jack pine for winter cover. Areas, of new forest growth scattered within a deer's home range provide good deer habitat for 10-15 years.

Whitetails respond best to clear-cuts less than 20 acres in size. To manage for both deer and ruffed grouse, keep timber sale blocks smaller (1-10 acres). Reserve 2-6 standing dead snag and den trees per acre during timber harvest to provide habitat for other wildlife species that use mature trees as perching, nesting, denning, and feeding sites. The goal is to maintain at least 25% of your woodland in an age class of 1 to 10 years. A good diversity of aspen age-classes in close proximity and a good distribution of grassy forest openings throughout your woodland will result in better deer habitat and greater deer numbers.



Aspen/Birch Cutting Methods

1. A recommended aspen or aspen/birch cutting scheme is to clear-cut 1/4 of your acreage every 10 years.
2. If the aspen is 50-60 years old, cut 1/3-1/2 of the acreage every five years to spread the harvest over as long a time as the age and condition of the timber will allow. High quality aspen that is in good condition will allow harvest beyond 70 years old.
3. If your timber is over 60 years old and in poor condition, cut the tract now, but preserve scattered blocks or strips uncut for cover. Design reserve areas as manageable stands to allow them to be harvested when the surrounding cut reaches 10 years old. The ability of aspen to re-sprout is reduced after trees reach 60-70 years old. If aspen dies on the stump, other forest types of less value to deer will replace the aspen stand.
4. If the surrounding area has been heavily cut, delay the harvest on your property until the adjacent cuts are 10-15 years old. If the forest surrounding your land is mature, you should begin cutting your aspen as soon as possible.

Forest Openings

Upland forest openings are a critical component of white-tailed deer habitat in northern forests (see NRCS Biology Job Sheet - Forest Openings for Wildlife Habitat). At least 5%-10% of the upland habitat (2-4 acres per 40 acres) on, and adjacent to your woodland, should be developed into permanent grassy forest openings. Maintain openings by discing, mowing, burning, or with herbicides. If you want to improve the food value of existing openings and old fields, disc the soil and seed it to grasses, clover, oats, wheat, or rye. Repeat this discing and planting process every 5-10 years, and you will be amazed how many deer will feed in that opening during the spring and fall. If your property has an old field, manage it as a forest opening because a field planted entirely to pine or spruce will lose its value to deer as growing trees shade the ground.

Establishment of new permanent grassy forest openings (1/2 to 3 acres) will complement a woodland's attractiveness and value to deer. As a woodland manager, you can bulldoze or cut trees and stumps with herbicides to develop forest openings that provide nutritious green food in early spring and late fall. Often, log landings can be reconditioned to create excellent openings.



Openings serve as an important source of highly nutritious food. Maintain at least 2 acres of forest openings for every 40 acres within extensive woodlands.

Winter Cover

In northern forests, deer need some conifer as winter cover. Because deer are capable of moving several miles to reach suitable winter cover, each section of land does not need to provide winter cover and evergreens should not dominate forests being managed for deer. No more than 10% of your woodland should be conifers because valuable summer habitat will be lost.

Deer select winter cover that includes evergreen stands with closed canopies for protection from cold, wind, and deep snow. This "thermal protection" is preferred over areas that contain abundant browse but little cover. White cedar stands provide the best winter cover in northern regions and should not be cut, because it's difficult to regenerate. Cedar is a slow-growing, long-lived tree and cedar stands can provide good cover for 200 years. Many cedar "deer yards" have been used for decades.

If cedar is not available, balsam fir, mixed aspen/balsam fir, and jack pine stands provide important cover and should be harvested in blocks at intervals to avoid removing all winter cover from an area. Where aspen or birch stands contain good understories of cedar or balsam fir, these stands can be harvested at an advanced age to allow the evergreens to reach merchantable size and provide an additional 15-20 years of winter cover. In areas lacking winter cover, mixed stands should be managed for understory evergreen species to provide needed cover.

OAK MANAGEMENT FOR DEER

Oaks occur throughout the forested areas of Minnesota, but are more common in the central and southeastern parts of the state. Oak acorns are one of the most nutritious natural foods for deer and other wildlife. Oak and other northern hardwoods are more complicated to manage than aspen/birch forests, but their value to wildlife makes the extra effort worthwhile. For deer, the objectives of oak management are to regenerate the stand and provide food. Active management will perpetuate the oak and provide food in the form of browse (saplings), herbaceous plants, and increased acorn production.

Oak woodlands need sunlight to regenerate and higher yields of red and burr oak acorns occur when trees are exposed to sunlight. Oaks and maples readily sprout from the stump, and young saplings provide food and cover for deer and ruffed grouse.

Management Options

Specific management methods depend on a variety of factors: the amounts of young oak (saplings) present; the quality, condition, and age of the timber; and what other trees and shrubs are present. The soil type and the topography influence oak management and the size of your oak woodland and whether the oak is scattered throughout the stand or grows in clumps are also important. Stands less than 10 acres in size need to be managed differently than larger woodlands. Your goal should be to maintain or perpetuate the oak or mixed oak woodlands. After oaks reach 90-100 years of age, they will not sprout and regenerate as vigorously, making it more difficult to maintain old stands.

Timber Harvesting

There are two cutting methods that will produce young seedlings to provide the mix of food and cover required by deer. The option you use depends upon whether there are already small oak trees in the stand, and the age and condition of the trees. Do not harvest oaks without professional advice. To do so invites regeneration failure.

Clear-cuts

Small, scattered 5-20 acre blocks should be cut in oak woodlands at or near maturity, if adequate oak saplings are present. Cutting patterns similar to those for aspen should be used, harvesting 10 to 15 percent of the stand every 5-10 years. Reserve 3 to 6 oak trees per acre in a clear-cut for acorn production. Clumps of oak or aspen saplings more than 3 feet tall should be left standing in clear-cuts. In some oak stands, competition with other trees will cause oak regeneration failure. A forester may recommend selected application of herbicides or prescribed burning to control competition.

Shelterwood Cuts

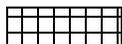
Where oak seedlings are not present, a series of partial cuttings or thinnings are applied to the woodland to open the canopy and encourage acorn production and germination. Up to 40 percent of the canopy is removed to encourage seedling growth. When saplings reach the proper size (about 5 years), a final clear-cut removes the remaining canopy and exposes seedlings to the sunlight they need.

OAK

Cut Year 1



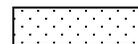
Cut Year 21



Cut Year 41



Cut Year 61



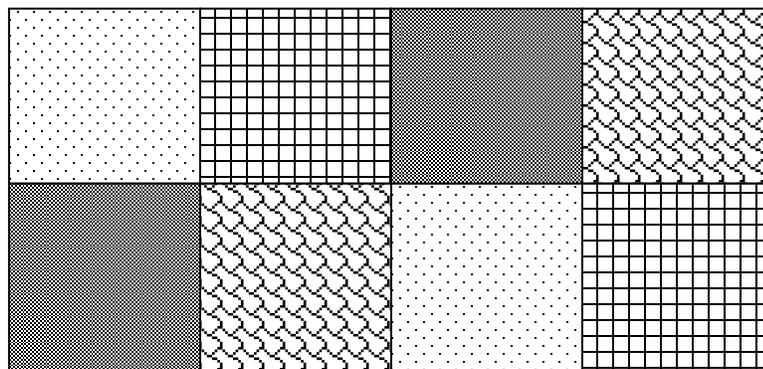
Cut Year 1

ASPEN

Cut Year 11

Cut Year 21

Cut Year 31



A checkerboard cutting pattern for 40 acre aspen or oak stands provide optimum habitat for white-tailed deer. This mosaic of forest habitat can sustain 15-25 deer per square mile of properly managed woodland.

GENERAL MANAGEMENT RECOMMENDATIONS

1. Plan checker board cutting patterns in aspen and other hardwood forest types to provide the maximum amount of edge for deer and ruffed grouse. Smaller blocks of 2-10 acres are best for grouse
2. Cut firewood as 1 acre or larger clear-cuts to promote habitat diversity and aspen regeneration.
3. Shear or doze low quality timber that cannot be sold to regenerate aspen and brush.
4. Manage the edges of winter cover strictly for browse production (50-foot wide area with trees and brush less than 15 feet tall) so deer don't have to travel far to meet their daily winter feeding requirements.
5. Don't cut cedar; it is difficult to re-establish this species after cutting.
6. Leave snag and den trees in clear-cuts.
7. Create upland grassy forest openings in or adjacent to timber. Use log landings in recent cutovers as openings and seed them with clover and grasses.
8. Maintain forest openings by shearing, discing, prescribed burning, or with herbicides.
9. Improve acorn production by removing competing trees near oaks.
10. Plant oak seedlings or acorns in open-growing northern hardwood stands or in old fields where little oak or aspen timber is present.
11. Protect oak seedlings and saplings from deer browsing by using wire screening or fencing.

FOR MORE INFORMATION

Through the Private Forest Management (PFM) Program, the Department of Natural Resources can help you take an inventory of your property and develop a plan for multiple use management, including wildlife habitat, timber stand improvement, timber harvesting and recreation. The PFM Program provides technical advice and assistance in state and federal cost-share programs for landowner participants. Contact your local DNR Wildlife Manager or District Forester for help in preparing a Private Forest Management plan.

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