

19. MOOSE

Alces alces

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SUMMARY

Moose are large animals that are well adapted to the thick forests and deep snow found in the mountains and highlands of Vermont. They are generally solitary and males may roam great distances during the fall rut. Moose are semi-aquatic and require ponds, bogs, and stream habitats for food and to maintain body temperature in the summer. They also require regenerating forest for food, upland hardwoods for food and cover, and thick softwood stands for wintering habitat.

NATURAL HISTORY

Moose are Vermont's largest wild animal. Adults may stand 6 feet or taller at the shoulder and weigh between 600 and 1,200 pounds. Moose are able to lift their feet nearly shoulder high to move easily over fallen trees or through deep snow.

Historically, moose were plentiful in Vermont until the nineteenth century when widespread clearing of forests and subsequent conversion to farmland eliminated most of the state's moose habitat. Moose became so rare in Vermont that by 1896 the Legislature afforded the animals complete protection. The moose population has since responded to the re-growth of forests and now occupies three-quarters of the state. The best moose habitat in Vermont occurs in the forests of the Northeast Highlands and along the entire spine of the Green Mountains.

Moose generally occupy distinct seasonal home ranges to which they return from year to year. Summer ranges are about 4 to 10 square miles in size. Home ranges may expand during the fall mating (rutting) season and decrease in the winter. Moose are not territorial and individual ranges overlap considerably.

Moose are not as gregarious as deer and, although it is not uncommon to encounter several moose together during the post-rut period, by late winter moose are usually seen as solitary animals or in groups of two or three. Bull moose generally do not associate with cows except during breeding season (September to November). Although usually one bull is seen with a cow, occasionally two or more bulls follow a cow in heat.

Bulls in their prime (ages 6 to 9 years) reach the peak of the rut earlier than younger bulls, and due to their size, strength, and social dominance, are more successful breeders. The larger antlers of prime bulls are shed after the rutting season, usually in late November or December. Young bulls may retain their smaller antlers as late as mid-April.

Calves are born from mid-May through early June. Younger cows (ages 2 and 3 years) generally give birth to a single calf, but twins are common for older cows if adequate browse is available. Just prior to calving, pregnant cows drive away their offspring of the previous year.

Moose are mainly browsers, eating new leaves and the twig growth of trees and shrubs, but they also graze on grasses, forbs, lichens, and mushrooms. Tender shoots of water lilies and other aquatic plants are sought during the summer because of their high concentrations of sodium, a mineral necessary for lactation, antler growth, and rapid body growth of calves. Moose are excellent swimmers and occasionally dive to feed on plants in deep waters. An adult moose may eat up to 100 pounds (green weight) of high-quality food per day in the summer. After the fall frosts and winter snows either kill or cover up herbaceous foods, moose turn to woody twigs for food until the next spring.

Winter browse is neither very nutritional nor easily digestible. Consequently, moose on winter range usually lose weight and must rely on fat reserves to survive harsh winters. Moose in the Northeast browse on aspens, maples, birches, willow, ash, pin cherry, hobblebush, and balsam fir. Scars from winter bark stripping remain on trees for many years.

HABITAT REQUIREMENTS

The moose is a northern forest species and utilizes different habitats during various seasons of the year. In general, moose prefer thick, brushy habitat for concealment and as sources of abundant food.

Lowland softwood forests, beaver ponds, and other shallow bodies of water are favorite spring and summer habitats for moose. During the hot summer months, moose can suffer from overheating and must have access to dense shade or water for cooling. Moose also use ponds to escape biting insects and predators.

Upland hardwood or mixed forests are frequented by moose during the fall and winter. Younger age classes of these forest types provide abundant browse, especially in recently logged areas. Optimum year-round moose habitat for their region consists of:

- 40 percent feeding grounds (regenerating forest less than 20 years old),
- 10 percent winter cover (spruce and fir stands more than 20 years old),
- 40 percent hardwoods or mixed forest greater than 20 years old (for both food and cover), and
- 10 percent wetlands (for summer feeding and cooling).

These conditions are believed capable of supporting a density of five moose per square mile.

In Vermont, increasing moose densities from 1980 to 2005 resulted in growing conflicts with humans, namely collisions with motor vehicles and damage to livestock fencing and maple sap tubing. During this same time period, in the Northeast Kingdom, moose densities greater than three per square mile caused widespread damage to regenerating forests. Not only did this heavy browsing reduce future economic returns for forest landowners, but habitat conditions for many other species of wildlife that utilize shrubs and dense forest understory for feeding, nesting, brooding, and escape cover were negatively affected.

Experience has shown that because of these conflicts with human land uses and damage to the environment, moose densities throughout Vermont shouldn't be higher than two moose per square mile, and public surveys indicate that less than one moose per square mile is generally more acceptable. Adequate forage for moose at these lower densities can be provided by lowering the amount of regenerating forests to 10 to 20 percent.



Figures 19.1
Moose feeding in a wetland



Figures 19.2
The combination of wetlands, softwoods, and hardwoods makes good moose habitat. Courtesy of Eric Sorenson, VFWD.



Figures 19.3
Aerial photo of moose habitat showing wetlands and softwood forest. Courtesy of John Hall, VFWD.



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MANAGEMENT PRACTICES

Managing habitats specifically for moose is difficult because of the animal's large home range. Few landowners have the ability to control habitat management over an animal's entire 8 to 16 square miles. Nonetheless, you can maintain or improve specific moose habitat attributes under your control by applying a few general guidelines:

1. Moose generally benefit from the abundant browse that grows on recently logged areas. Ten to 20 percent of moose range should be in regenerating forest (trees up to 20 years of age).
2. Although clearcuts provide plenty of food, moose prefer to remain close to cover and their use of browse in the interior of large cut areas is low, particularly during the winter. Square clearcuts, therefore, should not exceed 10 acres in size. Larger rectangular or irregularly shaped clearcuts are acceptable as long as the maximum width is kept below 200 yards.
3. Softwood stands managed as winter shelter should comprise 5 to 15 percent of a moose's home range and should be located adjacent to regenerating hardwood or mixed forest (browsing areas) at elevations higher than 1,000 feet (where most Vermont moose winter). These shelter areas should be at least 10 acres in size with a moderately dense overhead canopy and average tree heights of at least 35 feet.
4. You should also protect any existing shallow wetlands, such as beaver ponds, used by moose. Manage these wetlands as indicated by Chapter 24, "Beaver."

Figures 19.4 ▶

Recent clearcut with good regeneration

