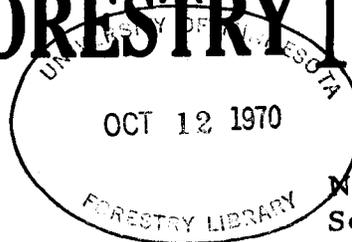


MINNESOTA FORESTRY NOTES



No. 21
September 15, 1953

EFFECT OF CUTTING MOUNTAIN MAPLE ON THE PRODUCTION OF DEER BROWSE

Laurits W. Krefting (1)

Much has been written on the subject of overbrowsing by deer but comparatively few studies have been made on how to increase the browse supply. Biologists recognize the importance of keeping the deer population and available winter browse within balance. One way of doing this is by means of cuttings designed to increase the food supply.

In 1935 and again in 1937 investigative work on the effect of cutting shrubs and young trees to induce sprout growth was initiated in Cook County, Minnesota, on the Superior National Forest. The experiments were established with two broad objectives: 1) to determine the annual growth of several species of deer browse by various methods of cutting to induce sprouting; and 2) to evaluate the practicability of such methods as a means of increasing the food supply. The species tested were trembling aspen (Populus tremuloides), paper birch (Betula papyrifera), beaked hazelnut (Corylus cornuta), Canadian honeysuckle (Lonicera canadensis), redosier dogwood (Cornus stolonifera), and mountain maple (Acer spicatum) (2). Twenty-six plots were established in the vicinity of Lutsen, Minnesota, within the Onion Mountain and Jonvick deer yards. In these areas the main browse species had to a very great extent grown out of the reach of deer.

On the test plots, the trees and shrubs were cut either at ground level in the spring or at snow level (2-3 feet) in mid-winter. The winter-cut plots had the advantage of making the tops available for food at a time when good browse was not abundant.

Of all the species tested, mountain maple, a shrub of no commercial importance, produced the most browse. It also has the advantage of being a staple and highly preferred deer food of wide distribution in northern Minnesota. The species reaches its best growth in the northeastern section of the state on the lake-washed till soils left by glacial Lake Duluth along the North Shore of Lake Superior. The shrub prefers moist woods and thrives best in the partial shade of other trees. Apparently the selective cutting of timber in this area at various times since 1910-1911 has created openings favorable to its growth habits in the chiefly pole-size white spruce and balsam fir forest canopy. At times the species reaches a height of 15 feet or more and a maximum diameter of approximately 3 inches. Limited checks reveal that the shrub reaches ages of 25 to 30 years or more.

- (1) Biologist, U. S. Fish and Wildlife Service, 204 Green Hall, University Farm, St. Paul 1, Minnesota.
(2) Krefting, Laurits W. 1941. Methods of increasing deer browse. *Journal of Wildlife Management*, 5(1):95-102.

In the spring of 1937 the clumps of mountain maple on several 2-acre test plots were cut at ground level to induce sprouting. In the fall after the first growing season, browse production on the area was determined by measuring the annual growth on 50 test clumps of mountain maple selected at random within these plots. These test clumps were found to produce twice as much browse as the untreated clumps in the same general area. A remeasurement in 1952 of 50 test clumps also taken at random has shown that the amount of available deer browse remained high sixteen years after cutting. Only 1.8 per cent of the main shoots had grown out of reach of deer (7 feet), while overbrowsing caused the death of 18 per cent of them. The results of the study are shown in the following tabulation:

Year	Mountain Maple Clumps		
	No. measured	Average no. new stems annual growth	Average length new stems annual growth (inches)
1937	50	116	18
1952	50	114	9

These results show that the average number of annual stems per clump remained about the same but that the length per stem decreased by 50 per cent. Since the original measurements (1937) represent first year sprouts, the length decline in 1952 indicates the probably normal growth characteristics of the mature plant after the root system has adjusted to the smaller crown area. The nutritional quality of the browse, which is centered in the tips, remained high because the number of stems was about equal both years.

Tests on the practicability of cutting mountain maple using hand tools (axes and brush scythes) indicated that the number of man-days required to treat an acre was 2.5 by the "snowline" method and 4 by the "ground line" system. Comparable sprout growth tests made on the Chippewa National Forest in 1951, resulted in a cost of \$3.87 per acre using power equipment (cut-a-way disk pulled by a T-D-9 bulldozer) (3).

The study has demonstrated that cutting older clumps of mountain maple to induce sprout growth, and thereby producing nutritious deer food within easy reach, may be regarded as a satisfactory method of increasing deer browse.

(3) Petraborg, W. H. and V. E. Gunvalson. 1952. Experimental browse study plots, Cut-Foot Sioux Area. Minnesota Division of Game and Fish, Pittman-Robertson Game Research Project, Quarterly Progress Report, Volume II, No. 4, pp. 150-158.