

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF BIOLOGICAL SURVEY
NORTHEASTERN FOREST EXPERIMENT STATION
935 PROSPECT ST., NEW HAVEN, CONN.

IN REPLY REFER TO

March 8, 1939

Superintendent,
Acadia National Park,
Mt. Desert Island,
Maine

Dear Mr. Hadley:

Attached is the joint report made by Mr. Aldous
and me on the recent inspection of deer browsing.

I am sure Mr. Aldous will be very glad to
discuss any further questions you may have.

Very sincerely yours,



JOHN PEARCE,
Assistant Biologist
Section of Wildlife Surveys

JP:HW

DEER BROWSING CONDITIONS IN ACADIA NATIONAL PARK AND
ADJACENT AREAS OF MT. DESERT ISLAND

January 30 - February 1, 1939

C.M. Aldous, Associate Biologist
John Pearce, Assistant Biologist

March 8
1939

This report is a follow-up on the one made to Superintendent
Hadley, June 24, 1938. It was stated then that a mid-winter examina-
tion of browsing would be necessary to obtain more information on
browsing during the winter season when conditions would be critical.

Itinerary and Party

January 30 - Wildlife Technician O.B. Taylor, Ranger Thompson,
Warden Lyle Smith, Park Naturalist Maurice Sullivan,
and Biologists C.M. Aldous and John Pearce. The
route for the day is outlined on the attached map
as areas No. 1-5.

January 31 - Party as for January 30. Route shown on attached
map as area No. 6.

February 1 - Party as for January 30, except for Warden Smith.
Route shown on attached map as areas Nos. 7 and 8.

PRESENT BROWSING CONDITIONS

Browsing during the current winter season ranged from light
to very heavy. The following table shows the approximate degree of

browsing on the areas visited:

Name of Area	Date	Map No.	Degree of browsing
Southwest Valley	1/30	1	Moderate - Very heavy
Parkman and Sargent Mts.	"	2 & 3	Heavy - Very heavy
Witch Hole	"	4	Moderate
Great Hill	"	5	Light
Pretty Marsh	1/31	6	Light - Moderate
Trailer Camp	2/1	7	Moderate - Heavy
Great Meadow	2/1	8	Light - Moderate

In three of the sections visited, Southwest Valley, Parkman and Sargent Mountains, and the vicinity of the Trailer Camp Ground, there are places where winter deer browsing is interfering with the growth of trees and shrubs to a significant degree, that is, browsing is enough of a factor to cause more or less pronounced changes in normal plant succession. This condition is especially true in the regenerating cut-over and burned areas. The most striking example encountered was the clear-cut area overlooking Aunt Betty's Pond which since its cutting has sprouted abundantly, but very few of the sprouts have escaped beyond the customarily designated "escaping height" of 6 feet. Oak (*Q. borealis*) has not escaped in a single instance while the sprouts have been so persistently eaten down year after year that they are dying out. We were informed that the cutting is 5 years old. This age

appears correct and under ordinary conditions a dense stand of sprout growth well above 6 feet should be covering the area instead of the browsed down stubble of sprouts about many of the stumps. In the case of the oak, which seems unable to resist such severe browsing so well as the red and striped maple, we have a highly desirable species being suppressed if not entirely eradicated. Red oak is undoubtedly the most useful tree species producing game food on the Island, and every effort should be made to increase the ineffectual remnant now present.

The information given us that oak formerly supplied cooperage stock and ship timbers is encouraging. It indicates that at least one species of oak once flourished on the Island and could probably be gradually brought back to some of its former importance.

On all three districts, Mountain Ash, a tree both ornamental in its flowers and fruit, and useful to birds and game because of fruit and browse, is in an unsatisfactory state. Specimens are few and are badly damaged from browsing.

White cedar, wherever it occurs in these same sections is rather generally over-utilized. This is especially true on Parkman and Sargent Mountains. This tree is the staple winter deer food over most of the island. It is important that browsing on it be kept within annual increment. When this plant is depleted other species will be more heavily utilized, and at the same time the deer herd will suffer because few winter browse plants have nutritive value for deer equal to the cedar.

Canada Yew (Ground Hemlock) is being killed out in the Trailer Camp Ground section -- the only one where it was observed. This species also seems very palatable to deer locally and has rather limited resistance to browsing damage. The plant is also very sensitive to ground moisture changes and is easily injured by relatively light thinnings of the forest canopy. In this instance it appears that the present critical state of Yew at the Camp Ground is due to the combined influence of moderately heavy browsing and disturbance of the over-story.

Witch hobble has also been severely browsed in the Camp Ground Section which was the only place we found it important. However, it is not in such great danger of disappearing as the yew.

Beech reproduction was also observed heavily browsed in a few instances. This is unusual, beech not often being browsed to any appreciable extent. Since the tree is a mast producer, growth checks probably serve to prolong the period of pre-fruitlet development and would therefore be objectionable.

Other species on which browsing was observed were:

<u>Heavy</u>	<u>Moderate</u>	<u>Light</u>
Striped maple*	White ash	Service berry
Sweet fern*	Red maple	Balsam
	Blueberry (low bush)	Hemlock
	Wintergreen	White pine
	Raspberry	Wild raisin
	Yellow birch	Blackberry
	Honeysuckle	Alder
	Staghorn sumac	Red pine
		Grey birch

* Heavy browsing on these not general.

Browsing on these remaining species appears to be relatively unimportant. Both striped maple and sweet fern are able to persist in spite of continued browsing, and the remaining species should be well able to withstand the present browsing pressure.

The causes, and full significance, of the unbalanced distribution of winter browsing on the Island is puzzling. It is essential that both be investigated and thoroughly understood. The key to future proper handling of the herd may rest upon them. The Pretty Marsh, and, to a lesser extent, the Great Hill Section, are fine wintering grounds for deer with an abundance of cedar browse, yet it has not been regularly utilized except for restricted portions. Poaching on some areas and the absence of it on others is one of the first reasons that came to mind. This thought should be considered with some caution, for with an active Warden on the Island, aided by the Park Ranger, the Island certainly has more than average protection against deer poaching. However, it must be confessed that any other reason within our present knowledge is highly theoretical. Some of those which might be considered are the location of cutting and burns, which offer more attractive browse than is realized, soil differences and unrecognized topographic or cover differences.

At any rate, it is certain that with no legal hunting and browse conditions already verging on the critical state on the wintering areas only a drastic natural check such as disease or winter loss through exceptionally heavy snowfall can avert more serious disturbance of the vegetation. Possible eradication of several plant species and reduction in the value of the shrubs and young growth for aesthetic and wildlife values are definitely indicated on numerous areas. To depend on heavy snows or disease to check the impending increase is decidedly uncertain. A more positive method within full control of man is more logical.

Regarding the scarcity of immature deer tracks seen in June, observations judging from this present inspection, roughly indicate this condition is not serious, if present at all. A census of the deer population would probably settle this point.

Recommendations:

1. The deer population of the Island should be carefully investigated for numbers now present, distribution, rate of increase, effects of browsing, reasons for uneven distribution, and the extent to which deer wander back and forth from the mainland. The importance of the entire deer situation leaves no doubt in our minds that it should be studied thoroughly by a capable wildlife technician able to devote all or most of his time to the problem for the next year or two. The delicate matter of a deer season, should it prove necessary, can best be advocated on the basis of a sound investigation.

2. Present numbers can be censused by C.C.C. labor under proper supervision. This is an important preliminary step and should consist of a series of drives on selected key areas. These are not to be all of those of highest deer concentration, but rather fair representative samples of the principal areas divided according to deer use or fair samples of the different cover types.

3. The planting of sprouted acorns as a method of increasing the red oak on the Island was discussed on the ground by the entire party. This appears to be a worthwhile project and should be attempted, at least on an experimental scale, as soon as possible. Plantings in

various types of out-over, burn, young stands or old fields, and in areas of varying deer concentrations are suggested. The acorns will naturally need very careful handling, but details for this can be worked out with foresters. There is also the possibility of fall planting before sprouting takes place. Effort of some sort toward oak planting is desirable because of the food quality of acorn mast for many species of wildlife. The need is made more pressing by the large percentage of spruce and fir in the young growth coming in on many areas. Neither of these species will provide suitable deer food; unless active steps are taken to balance the excess areas in spruce and fir by such species as oak, the future deer capacity of the Park will be materially impaired.