An Evaluation of Moose Habitat In South Western Nova Scotia (1981)

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Introduction

The following survey was conducted in response to public concern over uranium explorations by Aquitaine Company of Canada Limited and over possible mining operations in the inaccessible central portion of South Western Nova Scotia. Of immediate concern was the proposed construction of an access road into the inaccessible Moosehide Lake area of Digby County and the impact of access and mining on a remnant moose population in that area.

Objectives

The primary object of this study was to establish the importance of this area to wildlife with special emphasis on the moose population. Having established the area importance, consideration was given to the probable impacts of accessibility and mining.

Methods

The first step was to identify preferred moose habitat and to map it in relation to the proposed access road location and in relation to the exploration lease area. The preferred habitat was identified by referring to past observations by Lands and Forests personnel, public reports and wildlife surveys (aerial and ground). These sightings of moose and/or sign were plotted on a Land Inventory Map 3 as prepared by G. E. Mailman (1975) for the Tobeatic Resource Management Area.

An area of moose concentration was also mapped in relation to the exploration lease. This was done by referring to past aerial reconnaissance flights which were made to plot moose concentration areas and moose population distribution.

An evaluation of the relative density of moose in relation to accessibility and habitat was also carried out during the last third of September, 1981. This was done by monitoring moose sign by ground checks of 74 bogs. Bogs were assumed to be an important part of moose habitat. Access was provided by helicopter. All the bogs within a continuous strip of land two miles wide and 20 miles long were selected. It was assumed that one mile on each side of a road would be considered accessible. Therefore the first six miles of the strip were considered accessible since it covered a one mile width on each side of a secondary road. The next eight miles of the strip would be made accessible by the proposed access road to a base camp at Moosehide Lake. The last six miles of the strip was selected through the middle of the exploration lease area. For comparative evaluations of access and habitat, the 20 mile strip was subdivided into 10 blocks, each with dimensions approximating 2 miles x 2 miles. All the bogs within each block were grouped together for data analysis.

Data collection at each bog was carried out in the following manner: Reference to aerial photography identified the bogs and their locations. The centre of the bog and/or the spot where the helicopter could land marked the point from which measurements were made: Three observers then left the helicopter on foot to look for moose sign in three different (directions) locations. Having found unmistakable moose sign (tracks, droppings, etc.) the observer counted paces for the distance from sign to the helicopter and the information was recorded. Negative findings

were also recorded. The search for sign was limited to a maximum of 10 minutes duration and limited to the confines of the bog. For the purpose of this study, the line of an observer's search was called a transect.

Results

see map (moose Distribution)

The plotting of moose observations and moose sign locations on Land Inventory Map 3 indicated that these animals are almost exclusively found on or adjacent to the semi-barren areas which are often called "brush barrens". Mailman (1975) describes the vegetation in these areas as "scrub growth of white pine, aspen, black spruce, red pine, red maple and red oak. Common vegetation in imperfectly drained areas is mainly black spruce, red maple, and larch in varying percentages. Ground vegetation on barren and semi-barren areas is dominated by Gaylussacia, Pteridium, Kalmia, Viburnum, Alnus on the granitic soil area, creating in many areas a "jungle type" vegetation".

By referring to the land unit descriptions of Map 3, the semi-barrens were colour marked (orange). On this map (attached) one can see that the semi- barren moose habitat is found in many land systems and covers about one half (approximately 200 square miles) of the Tobeatic Resource Management area. The Flintstone Land System contains the most extensive semi-barren areas. Mailman (1975) describes this system as "very poor in capability, due to the coarse granitic soil, its shallowness and the presence of the indurated iron pan, which restricts downward movement of water and roots and the heavy concentration of large surface boulders". He also describes the vegetation as follows: "The Flintstone system is basically barren to semi-barren. There are few if any commercial stands of timber on the

system"..... The better drained areas support only a scrubby sparse growth of white pine, black spruce and a heavy cover of tall ericaceous shrubs ..... On the side slopes and areas of imperfect drainage, the vegetation turns abruptly into a heavy dense growth of Gaylussacia, Alnus, Myrica pensylvanica, Nemopanthus mucronata, Ilex and Pteridium. This forms a jungle type growth which makes travel almost impossible. This type of vegetation is dominant throughout most of the system".

Referring to the map one can see how the proposed access road location and the exploration lease (bordered in blue) almost completely overlap the Northern portion of the semi-barren moose habitat. The Northern and Southern portions are separated by the Buckshot Land System, locally referred to as the "Big Den". This system has a fairly dense cover of vegetation (black spruce, white pine, fir, larch, and red maple - according to Mailman 1975).

The inaccessible Northern portion of the semi-barren habitat has a much greater concentration of moose than the more accessible Southern portion. This has been established many times by aerial surveys. In the winter of 1976-77, Department of Lands and Forests personnel made an aerial survey to determine the concentration areas and distribution of the South Western Nova Scotia moose population. A few moose were found throughout the entire semi-barren areas of the Tobeatic Resource Management Area. However, by far the greatest concentration was found in a 70 square mile area (bordered in purple on map) in the Northern portion of the semi-barrens and in the sparcely wooded Northern section of the Flintstone Land System. Please note that much of this area has been leased for exploration (refer to blue border on map).

The results of the bog survey are presented in Table I. The location of the bogs within their blocks are presented in green on the map. Block #1 has been accessible for the longest period of time and is the farthest removed from the preferred semi-barren habitat. The least amount of moose sign was found in this block. Only two out of seven bogs had moose sign and only two (10%) out of 21 transects revealed sign. Also the greatest distances required to find sign were paced in this block.

Block #2 is also accessible and removed from the semi-barren habitat type. Three out of six bogs had sign but only three (17%) out of 18 transects revealed sign and it was all old sign. The distance travelled to find sign was still relatively long.

Block #3 is adjacent to the semi-barrens and has only recent access. Here five out of six bogs and 50% of the transects showed moose sign with 67% of it being fresh. However, observers still travelled relatively long distances to find sign.

In Block #4, seven out of eight bogs and 67% of the transects revealed moose sign with 94% of it being fresh. Shorter distances were required to find sign. This block is the first inaccessible one and the first to contain the semi-barren habitat type.

In the remaining inaccessible blocks (#5 to #10) all the bogs (47 in number) contained moose sign with 67 to 97% of the transects being positive. Most of the sign was fresh and within short distances of the helicopter landing spot (except block #7).

Blocks #5, 6, 7, 8, and 9 were all of the semi-barren type while block #10 could be described as being of a semi-barren type with denser forest cover, since

it falls into the Flintstone Land System.

The greatest concentrations of moose were found in blocks #6 and #10 which contained a relatively large number of bogs (11 and 8 respectively). All the bogs and almost every transect (96 and 97%) revealed moose sign. All the sign was fresh and very short distances were required to find it.

Discussion

In this study, moose concentrations increased with the presence of the semi-barren habitat and with inaccessibility. These factors should be looked at individually.

Other studies have indicated that moose are confined to habitats with low deer densities due to the "moose disease" which is spread by deer. G. R. Parker in 1966 found that "the main factor involved in our moose herd being generally restricted to highland areas is the deer moose separation in late winter and early spring ..... It appears moose may slowly increase over such areas as South Western Nova Scotia where deer numbers have dropped sharply from their high densities in the 1940's. This increase, however, will be slow and dependent upon maintaining low deer densities."

This "moose disease" aspect explains why the moose in this area are confined to the infertile, shallow soiled, semi-barrens where very few deer exist. The forested areas have denser deer populations but very few moose.

The moose are, therefore, restricted to some of the most infertile soils in South Western Nova Scotia. One would, therefore, expect their productivity to be low and their density to be below average for the province. Therefore, the

relatively dense moose population, located in the 100 square miles of habitat in the Northern portion of the study area, cannot be expected to number more than 100. A density of one moose per square mile is considered to be high for the province.

In the more accessible Southern portion of the study area, poaching is sometimes blamed for the lower density of moose. It stands to reason that an increase in access bring about an increase in poaching. D. W. MacLean (1975) in his Conceptual Plan of the Tobeatic Resource Management Area felt that inaccessibility in this area was important to wildlife when he stated that "In general, the wildlife capability is below average for the province and the rivers and lakes are infertile. Despite this, the area is valued for hunting and fishing. The fish and wildlife resource has been maintained because of relative inaccessibility and effective management".

The Northern portion of this study area is unique in that it is probably one of the last inaccessible "pocket wilderness" areas in the province. Access roads to the west and east are separated by 14 miles of wilderness with no human trails.

Conclusions

It can be concluded that a relatively dense population of moose is confined to a relatively small wilderness area with no access. The area is very fragile in that the soils are very shallow. Mining disturbances would certainly destroy its value to wildlife.

Since the exploration lease takes in most of this sensitive pocket wilderness, it is obvious that mining would have a detrimental effect on wildlife,

especially on a moose population that has no where else to go.

Poaching of this slow reproducing moose population would certainly result from the construction of an access road and, therefore, threaten these isolated animals.

The small size of this unique area cannot provide for both mining and wildlife interests. Decision makers will have to make a choice.

Recommendations

Since this study was conducted with wildlife interests in mind, it is recommended that mining operations and access roads be discouraged in this unique wilderness area.

It is also recommended that the area be declared and protected as one of the last "wilderness" areas in Nova Scotia.

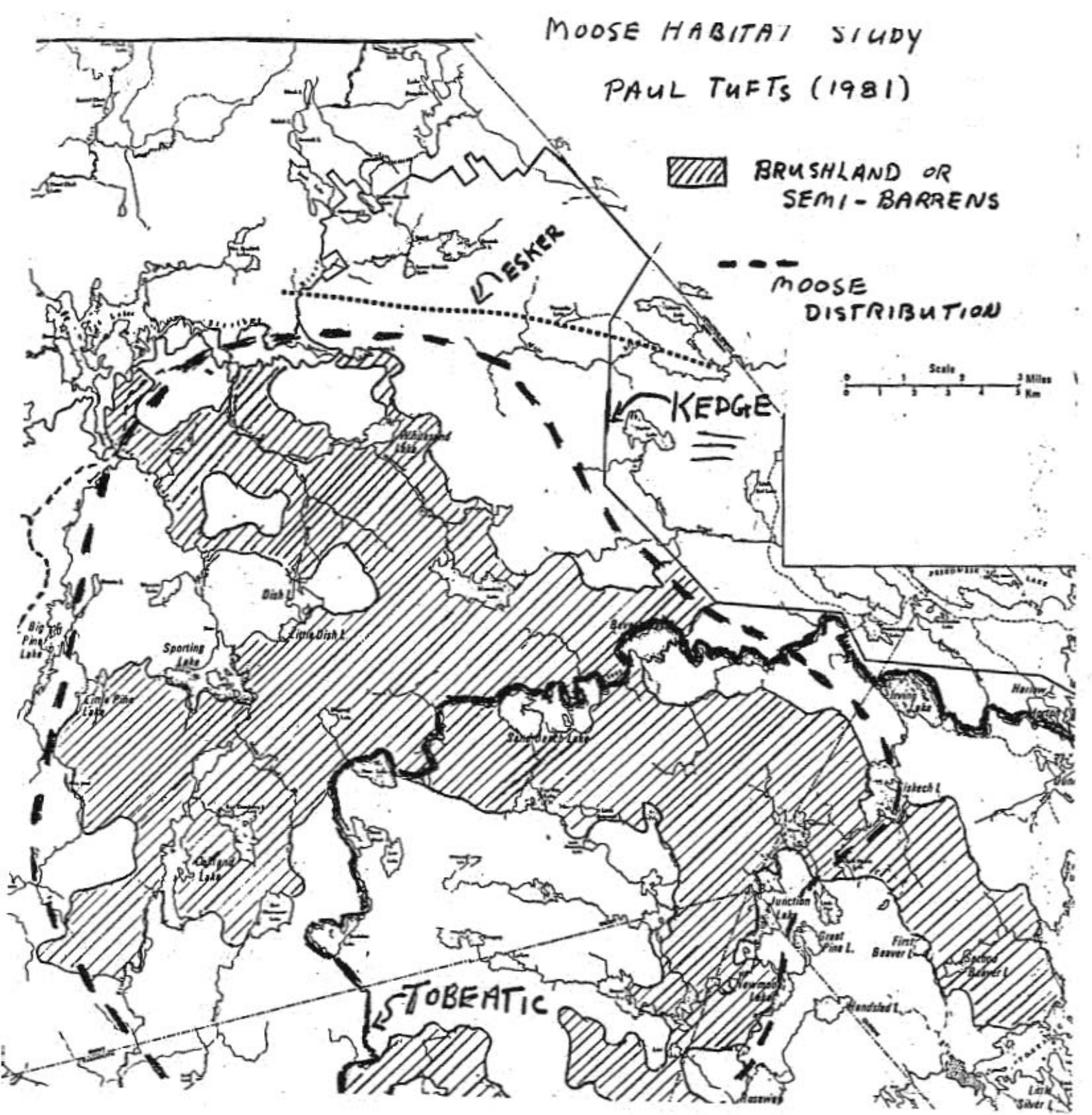
It is recommended that more studies be conducted in the area to establish a more exact moose population density.

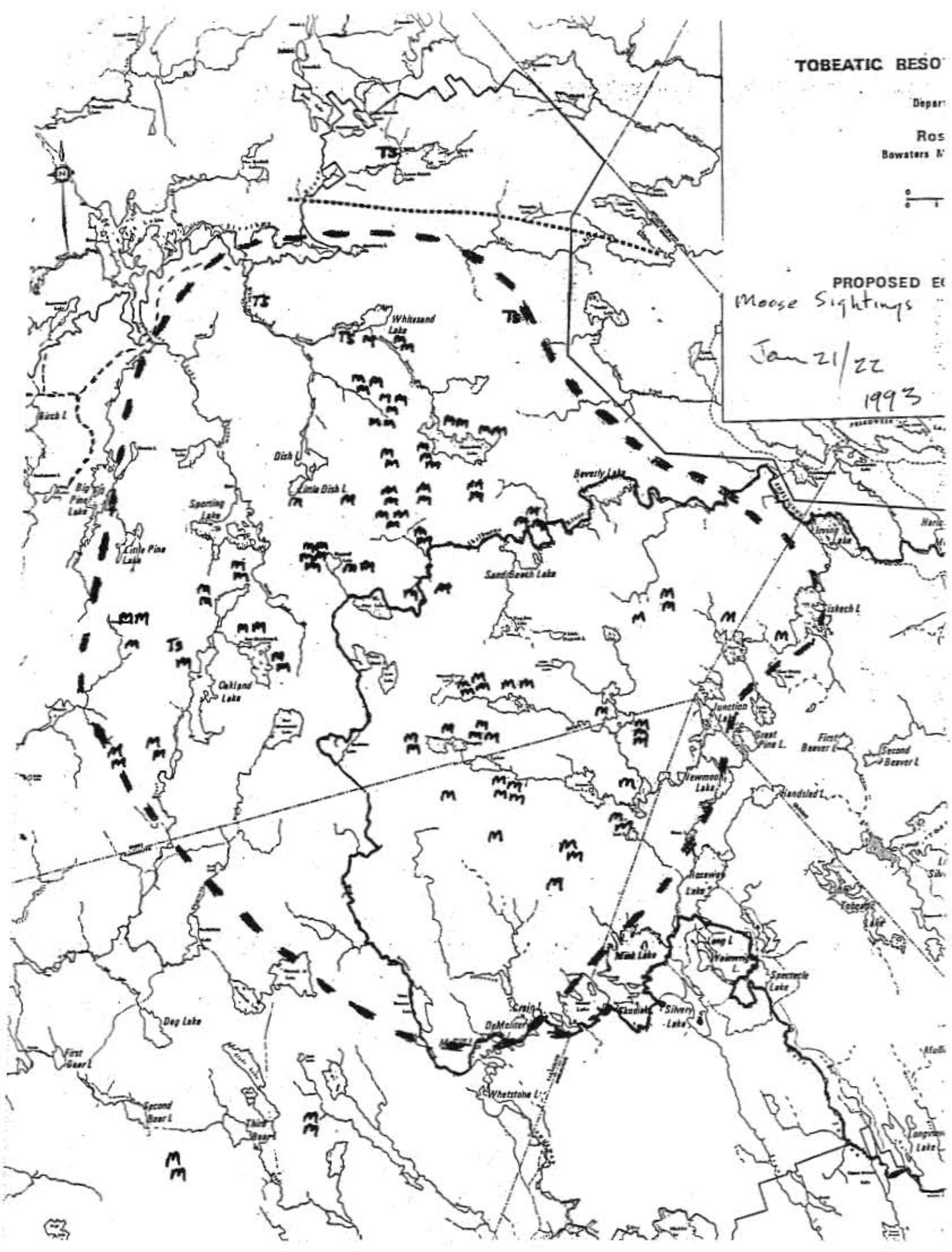
References

MacLean, D. W. 1975. Tobeatic resource management area conceptual plan. Maritimes Forest Research Centre, Fredericton, New Brunswick. 115 pp.

Mailman, G. E. 1975. Tobeatic resource management area land inventory. Nova Scotia Department of Lands and Forests. 98 pp.

Parker, G. R. 1966. Moose disease in Nova Scotia; gastropod-nematode relationship. M. Sc. Thesis, Department of Biology, Acadia University, Nova Scotia.


MOOSE HABITAT STUDY
PAUL TUFTS (1981)
BRUSHLAND OR SEMI-BARRENS
MOOSE DISTRIBUTION
ESKER
KEDGE
TOBEATIC
Scale
Miles
Km
Big Pine Lake
Little Pine Lake
Sporting Lake
Dish L.
Little Dish L.
Junction Lake
Great Pine L.
First Beaver L.
Second Beaver L.
Handshed L.
Isbech L.
Harlow L.
Irving Lake
Silver L.


TOBEATIC RESO
Depar
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Bowaters N
PROPOSED E
Moose Sightings
Jan 21/22
1993
Whitesand Lake
Birch L
Dish
Little Dish L
Beverly Lake
Big Pine Lake
Sporting Lake
Little Pine Lake
Sand Beach Lake
Oakland Lake
Junction Lake
Great Pine L
First Beaver L
Second Beaver L
Newmoon Lake
Sandsled L
Rosewood Lake
Mink Lake
Spectacle Lake
Silvery Lake
Dog Lake
First Bear L
Second Bear L
Whetstone L
Longmire Lake