

A MOOSE HABITAT STRATEGY FOR ONTARIO

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Abstract: Ontario has a large moose range which encompasses a variety of environmental conditions. Timber harvest is controlled by a planning process carried out by foresters under the guidance of a provincial planning policy. There are specific points within that planning process at which biologists have the opportunity to suggest changes in forest harvesting plans for the protection of fish and wildlife habitat. In order to fulfill their obligations, biologists across Ontario must coordinate their input to these plans and ensure that conflicting instructions to foresters are minimized. A series of provincial habitat guidelines have been developed as a tool for biologists working with foresters (Appendix I). These guidelines have not been wholly successful in changing methods of harvesting. Neither have they been universally accepted by field staff. The reasons for their success and failures are discussed.

The development of a habitat management strategy for moose in Ontario is as insurmountable a task as that faced by Hercules during his struggle with the Hydra. As soon as one problem is solved, two more spring up to take its place. This is not the result of lack of concern or awareness but, instead, of the complexity of the problem.

The habitat management strategy that we have developed faces all the difficulties one would expect in any large bureaucracy. It has not been unanimously accepted. It cannot confront all the issues that it tries to raise, and finally, it attempts to cover a very large area characterized by different biotic and geographic conditions.

To understand the strategy and its problems fully, it is necessary to be aware of forest management planning procedures in Ontario. The three major agents of change in the Boreal Forest are fire, spruce budworm and the wood extraction industry. The first two are considered forces to be controlled with little regard for their natural roles in the ecology of the forest. The extraction industry, however, follows a reasonably well-planned approach to timber harvesting. Foresters are employed either by the Ministry on Crown Units or by the industry on land on which it owns the right to cut timber. It is their responsibility to prepare a Forest Management Plan, using a very detailed set of guidelines that delineate the location, time frame and methodology of timber cutting and regeneration.

The initial objective is an overall management plan which covers a period of approximately 20 years and outlines the general approach to forest management in a particular area. This is followed by a more specific operating plan that places its emphasis on a five to ten year period, providing detailed information about location and sequence of timber cutting. Finally, an annual operating plan delineates the exact placement of roads, stream crossings and other construction sites.

Throughout these planning stages, there are several points at which biologists and other concerned professionals have an opportunity to suggest changes. Both the management and operating plans specify

that these groups should be consulted and the annual plan is made available to resolve any minor problems which may occur at the last minute.

Some foresters and wildlife biologists work well together; some, most definitely, do not. As a habitat ecologist who travels throughout the Province, I often hear complaints from biologists that foresters do not let them participate in the planning process and, by the same token, I listen to foresters allege that biologists refuse to cooperate in the development of management and operating plans. This is neither unusual nor alarming but simply the result of the distinct perspectives of different disciplines applied to a common task.

Within the context of the difficulties inherent in this planning process, the need for a coordinated moose habitat management strategy is clear. A Provincial set of Guidelines is required as Ontario covers a wide variety of habitat conditions for moose. An extract from the current form of these Provincial Guidelines, prepared by four regional moose biologists, the Moose Research Scientist, the Provincial Moose Biologist and the Wildlife Habitat Ecologist, is attached (Appendix I). These directives are not binding on any District or region. However, they do provide a basic identification of suitable moose habitat and an overall framework within which local staff can make decisions about it. Formulation of these directives comprised the first part of our strategy.

The second step was to devise a Provincial policy with which to back up these Guidelines. The policymaking process is a complex one, within which the gap between principle and application, can almost imperceptibly, become very wide. Most field staff desire a policy

that precisely spells out the methodology of forest harvesting, including, for example, the amount of standing timber to be left on a lakeshore and the species composition of forest reserves. Basically, most biologists want a Ministry policy which forces foresters to adhere to principles that benefit wildlife. On the other hand, foresters also want a precise policy but one that expressly maximizes timber production. Both groups cannot have exactly what they want.

In light of these problems, we have elected to propose a policy that is simple and clear. In the state of formal submission, it reads as follows.

It is the policy of the Ministry that forest management activities will perpetuate wildlife habitat by maintaining an interspersion of vegetation type and age classes within a wildlife management unit.

BACKGROUND

The Ministry is committed to a multiple-use concept on the extensive land base it has the responsibility to manage. This clearly implies that fish and wildlife and other forms of outdoor recreation are important and should be enhanced throughout the Province. It is inevitable, however, that, in some cases, timber harvest interferes with wildlife habitat. Deer wintering areas (yards) are sometimes cut, moose habitat has been lost because trees were removed and eagle nesting trees have been lost in forest operations. These have led to local reductions in wildlife populations and associated values. Careful planning and meeting the problems in advance can minimize these

disruptions to wildlife. If harvesting timber reduces habitat quality in one portion of a wildlife management unit, it should enhance it in another area to keep the average value to wildlife unchanged. Local wildlife staff will identify areas of concern. Guidelines for how to manipulate the forest to protect wildlife values are available or in preparation for the various wildlife species. Local wildlife staff will rate habitat and estimate its value to wildlife before and after timber harvest. If timber management maintains the quality of wildlife habitat, over a wildlife management unit at approximately the same level as before timber harvesting began, the intent of this policy will be met.

Unfortunately, a policy of this nature poses very substantial problems. It sometimes requires a tremendous amount of work to qualitatively analyse moose habitat and to estimate the effects of timber harvesting on it. The biologist must clearly understand the habitat requirements of the wildlife species and be able to effectively communicate his/her knowledge to the people involved in planning preparation and review. In some cases, timber harvesting improves wildlife habitat; in others, it does not. It often takes considerable skill to determine the difference.

Obviously, this Policy is not without problems. Nonetheless, its implementation does provide the biologist with many invaluable opportunities to participate actively in the planning process. This Policy can be regarded as a legitimate expression of the government's active concern for wildlife. It gives managers the opportunity to make management decisions based on their professional knowledge of the

situation, not on some rigid set of rules prepared in absentia by other people. It allows for maximum use of the experience and background of local field staff.

HOW HAS THE STRATEGY WORKED?

This strategy has had a mixed success. In some areas, it is working well but in others, not at all. As a result, it has been the subject of some disagreement and criticism. Some people, for example, are concerned that the Guidelines cannot be applied to their particular area. They are convinced that, unless the research on which they were formulated was done within 50 km of their region, it is not relevant. On this basis, some reject studies of moose habitat in neighbouring Minnesota. Work carried out as far away as Alaska is automatically considered useless to Ontario managers, and therefore, is ignored for fear of cluttering the mind with extraneous information.

There is no doubt that it is difficult to integrate a wide range of research on moose habitat. Studies differ and recommendations are not always clear. However, if a forest manager rejects recommendations regarding a change in cutting patterns that would benefit wildlife, on the basis of cost, for example, the excuse of inapplicability of research location is a convenient justification.

Another criticism that has been levelled at the strategy is that its Guidelines are too general. There is nothing a biologist likes better than very precise rules that delineate harvesting procedures with equally clear objectives in mind.

Unfortunately, neither the rules nor the objectives are very clear in a real life context.

The complexity of the animal interactions and weather variables of the Boreal Forest disallow absolute precision and clarity. Local topographical and hydrological conditions and patterns of human activity further complicate the issue.

If Provincial Guidelines are overly specific, they run the risk of being incorrect most of the time. Yet, it is hard for the local manager to recognize that. He/she needs to manage very specific areas and must translate the broad directives into something useful at the regional level.

The fact that the Policy does not provide specific regulations (e.g. a size limit for clear-cuts) is unsettling to some of its critics. This criticism stresses that the Policy represents a broad governmental position that does not facilitate decision-making at the local level. This is undeniable. In fact, it makes it more difficult, especially for the biologist. The Policy, nonetheless, must be general or it will not work. Provincial policy cannot be specific to local areas. The Ministry must participate in its implementation, even if its staff dislikes involvement. The key, of course, is cooperation between forester and biologist.

Despite the problems outlined here, I am optimistic about the long term value of this strategy. General guidelines have to be put in place and smaller management units must adapt them to fit their particular needs. Many Districts are presently doing this and the trend that has been set is encouraging. The end result will benefit moose habitat management in this Province.

APPENDIX I

An Extract from Standards and Guidelines
for Moose Habitat Management in Ontario

Provincial Cutting Guidelines

It is not feasible to provide a rigid set of guidelines which specify precisely how timber should be harvested to provide good moose habitat in each part of the Province. Moose needs are variable, topography and climatic conditions are not the same Province-wide, and the needs of the forest industry vary across the Province. Because there is tremendous provincial variation, the guidelines for use in planning timber harvest are given in a general way. Local managers and planners will have to make judgements about applicability to local situations. In addition, not all areas can be managed to maximize both timber and wildlife production. Thus, compromise and discussion among managers is a vital part of the management process.

The purpose of these guidelines is to demonstrate how to produce good vegetation patterns which moose require. In concert with total management of the forest resource, these guidelines are an integral portion of the management process.

Northern Forest Regions

General Habitat Recommendations

Ideal moose habitat approximates conditions created by a large forest fire of medium intensity. When cutting operations duplicate

patches, and a high diversity of age-class and species composition, moose populations will benefit. In the Boreal Forest where clear-cutting is a common timber-harvesting technique, terrestrial vegetation should be managed to provide a variety of plant communities close to each other. Moose require a diverse series of habitat conditions containing early successional stages for food and late successional stages for protection from weather extremes and predators. In many areas, clearcutting in blocks of 80-130 ha (198-320 acres) with buffer zones between cuts, and scattered clumps of trees within the cutovers, will provide these conditions. The best habitat would also provide conditions such that a moose could not be farther than 200 m (650 feet) from shelter patches at least 6 m (20 feet) high and at least 3 ha (7 acres) in area.

Recommended Cutting Procedure

Table 1 demonstrates a summary of guidelines which will produce good moose habitat and allow proper management of the format.

The number of large clearcuts in any particular gross area is the important consideration and it must be related to the stands left uncut. These large areas may have no influence on total moose potential in an area or they may have a serious influence. Wherever possible and feasible, it would be desirable to reduce large clearcuts into smaller units. This decision must be made by area managers and will vary considerably depending on the overall vegetation patterns. To minimize the detrimental effects on moose, clearcuts greater than 100 ha (250 acres) should have scattered shelter patches within the cut area. This would keep the overall diversity of the area high and still provide a

TABLE 1.
Guidelines to the Size of Clearcuts

SOIL	SIZE
Mineral soil under 8" (20 cm) deep over 50% or more of a forest stand which is over 25 acres. (10 ha)	Clearcut in: <u>Strips</u> not over 5 chains (100 m) <u>Blocks</u> 3 - 10 acres (1 - 4 ha) The more fragile the site, the narrower the strip or smaller the block.
Soil subject to blowing ¹ , in areas in excess of 25 acres. (10 ha)	Clearcut in: <u>Strips</u> not over 5 chains (100 m) <u>Blocks</u> not over 10 acres (4 ha)
Organic soil over 12" (30 cm) in depth.	Clearcut in strips not over 5 chains wide (100 m)
Deep mineral soil having an organic layer of 12" (30 cm) or less.	Individual clearcuts not to exceed an annual average of 250 acres (100 ha) with a maximum of 500 acres (200 ha) from one camp.

¹These are areas with soil particles 0.1 to 0.5 mm in size, unaggregated and with no organic material. Over 60% of the material is in this class size.

reasonable timber harvest. These shelter patches could be of mixed-wood and range from 3-5 ha (7-12 acres) in size, be at least 6 m high, have about 11 m²/ha basal area (50 ft.²/acre) with at least 1/3 in conifer, and be spaced 200-300 m (650-1,000 feet) apart.

Prime Moose Areas

Generally, Prime Moose areas will have a significantly higher number of moose than surrounding areas at certain times of the year. These areas can be identified as being key components of moose habitat on a local basis. They may include mineral licks, winter concentration areas, special high-use areas or other similar sites. The exact number and total acreage of these sites in Ontario will be determined by local managers according to the needs of individual units. Such areas may require more stringent cutting restrictions.

There are two main types of Prime Moose Areas in the northern regions which may require more stringent timber-harvesting techniques than are provided under the guidelines in Table 1. The first type is high-use or concentration areas which are known to be useful to moose for a wide variety of reasons. Timber should be harvested on these areas but under careful regulation to ensure the values important to moose are not destroyed. The second type includes special sites such as mineral licks or aquatic feeding areas which require reserves of timber to protect the special nature of the site. The second type will remove a small percentage of the land base from timber production. The first type will not remove any land timber production but will require more stringent harvesting techniques.

Wildlife and Timber staff should discuss the above areas and outline cutting recommendations to satisfy the targets of area managers. This can only be accomplished by local managers who know the problems associated with the unit.

Aquatic Feeding Areas, Mineral Licks and Associated Corridors

These areas are important to moose because they contain critical components of their diet. Identification of these areas, their shape and importance must be accomplished by District staff.

The shape and extent of the reserve will be determined by the Wildlife staff and unit forester working together. In general, a 120 m reserve should be left around these areas.

Early Winter Concentration Areas

These areas are important to moose for a variety of reasons including abundance of browse, certain mineral elements and protection from weather extremes. The need is to reserve cover to allow the animals to continue to use them.

The shape, abundance and nature of these areas is so variable that each must be treated on an individual basis. Local Ministry staff will evaluate their importance and provide suggested measures to provide adequate protection. A selective cut with shelter patches, as defined earlier, is most appropriate.

High-density Areas

These are areas, usually fairly large in size, where the average moose density is higher than the surrounding area. Timber harvest

should be carried out using the following cutting procedure:

Width of individual cuts should not exceed 400 m (20 chains).

Maximum individual cuts should not exceed 130 ha (320 acres). Average cut size is optimal at about 100 ha.

Shelter patches should be left within clearcuts over 100 ha to provide cover for moose. These should be 3-5 ha in size and have a basal area of at least 11 M²/ha with at least 30 percent of the basal area in conifer species. Maximum distance between clumps should be about 200-300 m.