

MOOSE HUNTING CLOSURE IN A RECENTLY LOGGED AREA

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Abstract: In Ontario, overharvesting of moose is often associated with extensive access for hunters and lack of cover for moose in recently logged areas. These areas are relatively small and cannot be protected by regulations designed for entire Wildlife Management Units. One such area, northeast of Lake Superior, was cutover for conifer species from 1975 to 1979, and closed to hunting during this period. Individual clearcuts ranged from 10 to 2270 ha and totalled 4940 ha. Hunting was reopened in 1979 and the harvest was extremely high (0.20 moose/km²). The area was closed again in 1980 to protect the moose until cover has regenerated and access has deteriorated. This paper describes the technique of closing a small area to hunting for intensive moose management. Legislation, administrative procedure, public participation, advertisement, enforcement, assessment, and optimization of benefits are discussed.

In Ontario, hunting has been identified as the main factor associated with the decline of moose (*Alces alces*) populations (OMNR, 1979). Harvest pressure is directly related to access, and is particularly heavy in recently logged areas where road networks are extensive and cover for moose has been greatly reduced. Although

overharvesting in easily accessible areas has been recognized for some time, we are not aware of any attempts in Ontario to manage specific areas where this problem occurs. Present harvest management in Ontario is based on relatively large Wildlife Management Units which do not permit intensive management of individual logged areas. This paper describes our attempt to protect a moose population in a recent cutover by closing the area to hunting until cover has regenerated and access roads have deteriorated. Although we are still in the early stages of the project, we would like to introduce the technique to other managers and stimulate some discussion of the problem.

STUDY AREA

The Abitibi-Price Camp 1 cutting area lies 20 km south of White River, in the boreal forest region of north-central Ontario (Figure 1). Topography of the area varies from flat and gently rolling to hilly, with elevations from 390 to 610 metres. Large stands of black spruce (*Picea mariana*) dominate low lying areas, with large stands of jack pine (*Pinus banksiana*) on well drained flats. Upland slopes are dominated by white birch (*Betula papyrifera*) and trembling aspen (*Populus tremuloides*).

The study area can be divided into four sections based on cut history and closures to hunting (Figure 2):

1. Camp 1 Area: This is the main area of interest. It was cutover between 1975 and 1979 using a clearcut system with only conifer species removed. This resulted in continuous clearcuts ranging from approximately 10 to 2270 ha and

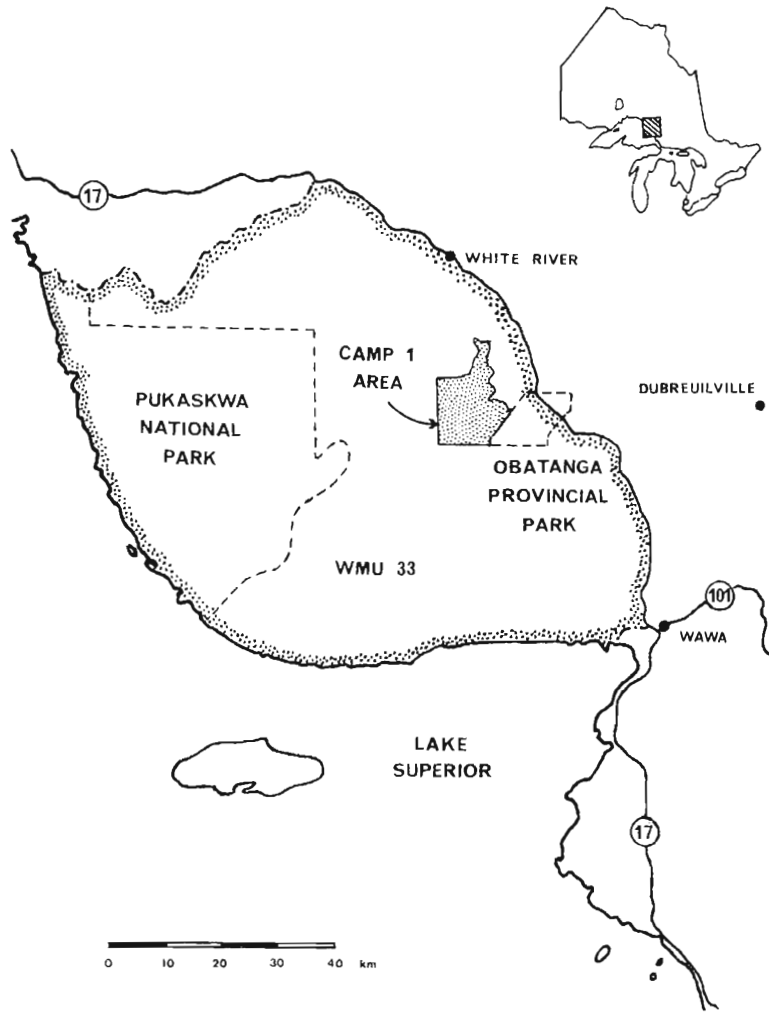


FIGURE 1. Location of study area in north-central Ontario.

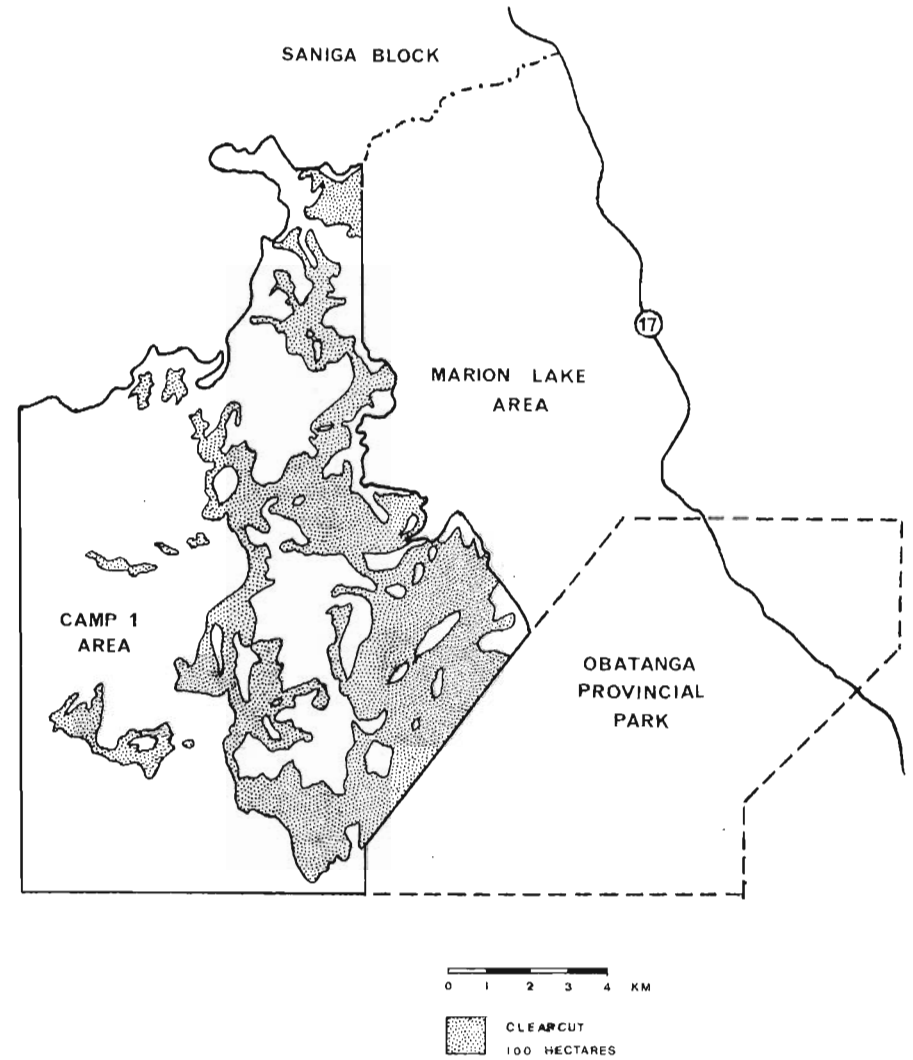


FIGURE 2. Detail of the study area showing extent of cutovers (1975-1979) in the Camp 1 area, the area closed to hunting.

totalling 4940 ha (Figure 2). The cut was broken up by hardwood stands and stands on steep slopes. Most cuts were over 0.5 km wide with some exceeding 1.5 km. The cuts were accompanied by an extensive network of roads (168 km). During the cutting operations the area was closed to hunting for the safety of the loggers. The area was reopened to hunting in the fall of 1979, then closed again in 1980.

2. Marion Lake - Obatanga Park: This area lies along Highway 17, east of the Camp 1 area. The Marion Lake area was cutover during the 1960's in a manner similar to the Camp 1 area. This area was not closed to hunting during logging and has remained open since then. The portion of Obatanga Park west of Highway 17 had a small amount of logging in the 1960's and has been hunted continuously.
3. Saniga Lake Block: Cutting began north of the Camp 1 area in 1979. This area was closed to hunting in 1980.
4. South and west: The remainder of the area south and west of the Camp 1 area is uncut forest which has not been closed to hunting.

The winter population for Wildlife Management Unit 33 (Figure 1), which contains the Camp 1 area, was estimated at 0.11 moose/km² in 1978-79 and 0.24 moose/km² in 1975-76 using random plot aerial surveys. The 1978-79 estimate was felt to be low because snow conditions were not good for tracking moose, and the 1975-76 estimate may have been relatively high because it included Pukaskwa National Park. The actual population in the Camp 1 area before the 1979 hunt is unknown. However, the area probably supported a higher population density than the average for Unit 33 because of the closure to hunting and the habitat left by cutting. The population immediately after the 1979 hunt is also unknown because we were not able to do an aerial inventory of the

area until the winter of 1980-81. The population after the 1980 closure (and a year after the 1979 hunt) was estimated at 0.16 moose/km² using a total coverage transect survey. The population in adjacent hunted areas was estimated at 0.10 moose/km² after the 1980 hunt.

A minimum estimate of the harvest in the study area is provided by the provincial voluntary jaw collection program. The harvest data are recorded by 100 km² mercator block, and the Camp 1 area falls on parts of four of these blocks. During the 10 years prior to 1979 an average annual harvest of 9.5 moose (ranging from 1 to 19) or 0.02 moose/km² was reported for the four mercator blocks. The initial closure of the Camp 1 area (approximately 150 km²) from 1975 to 1978 had no apparent effect on the recorded kill, indicating that few moose were being taken from the Camp 1 area prior to logging. However, when the Camp 1 area was opened in 1979, 39 jaws or 0.10 moose/km² were recorded from the four mercator blocks. Reports from hunters indicated that most of these moose were taken in the Camp 1 area. Therefore, the harvest in the cutover was probably closer to 0.20 moose/km². In 1980, the Camp 1 area was closed again, and 5 moose or 0.01 moose/km² were recorded from the four blocks.

Although the number of moose left in the Camp 1 area after the 1979 hunt was unknown, it was clear that the population could not support a harvest of 0.20 moose/km². This problem was also recognized by local hunters who registered several complaints about the "slaughter" which had taken place. We felt that the population, and therefore the allowable yield, had been seriously reduced. Closing the Camp 1 area to hunting appeared to be the only alternative if we were to rebuild the herd.

METHOD

In Ontario, moose seasons are set by Wildlife Management Unit. This is done annually and is an involved procedure requiring recommendations from District Offices and approval by Regional Office, Main Office, and eventually the Lieutenant-Governor in Council. To close the season only in the Camp 1 area would also require subdividing Wildlife Management Unit 33. There was not enough time to complete these steps prior to the 1980 hunt, and we began to look for other methods to close the area.

The Camp 1 area was previously closed to hunting, for the safety of loggers, using Section 18(1) of the Game and Fish Act, Revised Statutes of Ontario, 1970, Chapter 186. This section is rather broad, allowing any landowner to prevent hunting or fishing on his property for any reason. Implementation on Crown Land can be carried out by District Managers at the local level of the Ministry of Natural Resources. Section 18(1) is an effective and expedient method for establishing relatively short term closures on small areas; and it is quite appropriate for solving problems which do not warrant regulation revisions. This method appeared to be ideal for protecting the moose population on a small area.

It is Ministry policy to include public participation in the moose management program. Therefore, prior to proceeding with the closure we solicited public opinion and support for the project. We advertised a series of public meetings using the local newspaper and radio. The meetings were held in early September 1980 in the communities surrounding the Camp 1 area (White River, Dubreuilville, and Wawa). The public supported the closure, and we proceeded with implementation.

A news release was issued outlining the results of the meeting and confirming the closure. This was initially carried by the local media and eventually received some provincial coverage. Maps outlining the closure were distributed to outfitters, fly-in operators, and retail outlets in the area. "No Hunting" signs and a map were also posted on the three access roads to the closed area.

A 154 km² area surrounding the 1975-79 cut was closed (Figure 2). The boundaries of the closed area were established using waterways, township lines, and the Obatanga Park boundary. The cuts and the road system were completely enclosed to simplify identification and enforcement of the area. To meet legal requirements for the closure, a metes and bounds description was also drawn up.

The older cuts east of the Camp 1 area were not closed because they had been open to hunting and excessive kills had not occurred. This was probably because moose population was kept low by hunting and because cover for moose has regenerated in recent years.

During the hunt a moderate enforcement effort was expended on the closure. Conservation officers patrolled the area an average of four times per week during the moose hunt (October 18 to November 15).

To begin assessing the effect of the closure, an aerial census was conducted on the area in December 1980. The census was done as soon as snow conditions were suitable, to provide an indication of the number of moose in the area during the fall period. The entire closed area was flown on transects 0.5 km apart for complete coverage. An adjacent open area was also flown as a control.

RESULTS AND DISCUSSION

Small areas in Ontario have previously been closed to hunting under Section 18(1) for the safety of loggers, but this is apparently the first time that the technique has been used to manage wildlife. The system proved to be effective. Because control existed at the local level, the closure was implemented quickly and in time for the 1980 hunting season. For the Camp 1 closure, preparation began in August and required 11 man-days, including data preparation, internal and public meetings, news releases, and sign preparation and posting. In subsequent years, preparation time for this closure can probably be reduced to less than 3 man-days. Closures can also be focused directly on problem areas. In this case, hunting was restricted only within one cutover area and only during the moose season. Moose could still be hunted in other areas; and bear, small game, and waterfowl could be hunted in the Camp 1 area outside of the moose season.

Public support for the closure was strong. About 90 people attended the public meetings, and no one was opposed to the closure. However, concerns were expressed that the practice should not become widespread, eliminating hunting from large sections of the District or, ultimately, the province. It was generally felt that the technique should be used only in areas where excessive kills could be expected because of large cutover size, easy access, and high moose numbers. The hunters were also concerned that clearcut sizes be reduced to prevent similar problems from occurring in the future.

The public participation phase was also very important to the success of the method. Programs are accepted much more readily and

enforcement problems are reduced if hunters understand the proposals and have input to them. In addition to gaining an understanding of what hunters felt was acceptable, we were able to correct some misunderstandings about the extent of the closure.

Our modest attempt at advertising the public meetings and the closure itself were apparently adequate. No complaints were received from hunters not knowing about the closure.

Conservation officers did not encounter any problems in the closed area during the 1980 hunt. Hunters were reported in the area on four occasions. However, they were not located, and it was not clear if they were actually hunting. The fact that firearms were not permitted in the area eliminated many potential problems.

During the aerial census of the study area in December 1980, 25 moose or 0.16 moose/km^2 were estimated to be present in the Camp 1 closure. A density of 0.10 moose/km^2 was estimated on the adjacent open area, which is similar to the Unit average of 0.11 moose/km^2 . The exact effect of the closure cannot be determined because the population size after the 1979 hunt is not known. The density of moose in the closed area is already greater than in the adjacent areas open to hunting. However, the population is still lower than the estimated 1979 harvest of about 0.20 moose/km^2 , so there is still some rebuilding to do. Productivity appears high -- there were seven calves to nine cows in the closed area. Cows outnumbered bulls nine to three. We plan to continue the aerial surveys annually to examine changes in population size and sex-age structure during the closure and subsequent reopening of the hunt. This should improve our understanding of the effects of exploitation on moose populations and enable us to predict the effect of a small area closure on a population.

To help determine when the area can be reopened for an annual hunt, we will be conducting ground surveys of the cover available to moose. This will be done in the fall after the leaves have dropped and moose are most visible to hunters.

At present, it is expected to take at least ten years for the visual cover to regenerate enough to allow an annual hunt without fear of decimating the herd. The closure will protect the moose population during the period of greatest vulnerability to hunting, but this strategy will not optimize the benefits from the herd. As browse regenerates, cutovers often become very productive moose habitat and should be able to provide a high yield of moose. Assuming a fall density of 0.30 moose/km² and a harvest rate of 15%, there should be a sustainable yield of 7 moose/year from the Camp 1 area. This ignores immigration from adjacent unhunted areas. Therefore, a 10 to 15 year closure could prohibit the harvest of 70 to 105 animals. Some of these animals would emigrate to adjacent hunted areas and some would be taken when the Camp 1 area is reopened, but to optimize benefits a method is needed to maximize the long term yield.

At present we plan to keep the Camp 1 area closed until the population increase appears to level off. At this point the potential yield should be greatest. The problem is to restrict the harvest to the maximum sustainable level until the visual cover regenerates and the moose are less vulnerable. A number of alternatives for achieving this objective are available:

1. Controlled hunt: Ideally the allowable yield could be taken each year in a small controlled hunt similar to the one held in the Larose Forest near Ottawa (Van Wout, 1979). Each day a limited number of

hunters is selected by lottery, and the hunt is ended when a pre-determined number of animals are taken. This method allows tight control over harvest and provides a high quality hunt. It is, however, quite expensive in relation to the small number of moose harvested because a check station would be required. Costs could be reduced by holding the hunt every two or three years and harvesting more animals. This small controlled hunt will also complicate the regulations for hunters -- a completely different set of rules would apply in the Camp 1 area than in the remainder of the Wildlife Management Unit. In addition, this method would be unacceptable if province-wide controlled hunts are instituted on all Wildlife Management Units. Hunters should not have to participate in two draws. It should be noted that controlling hunter numbers on the Wildlife Management Unit as a whole will probably not prevent over-harvesting in the Camp 1 area. The moose will still be highly vulnerable in the clearcuts, and a large number of hunters would still be able to hunt the area.

2. Season adjustment: The allowable yield from the Camp 1 area could probably be taken in a two or three day hunt. The area could be closed under Section 18(1) for the remainder of the season. This system should provide good control over harvest, and it is relatively inexpensive and easy to implement. A check station would not be necessary, although it would be useful in assessing the effect of the hunt -- this applies to all of the following methods. Additional effort would be required to advertise the hunt and enforce the closure afterwards. The short season and unlimited hunter numbers may reduce the quality of the hunt. However, a slightly longer season could be

allowed if a hunt was not held every year, or the hunt could be held in the last part of the season when hunting pressure has dropped off. Like the controlled hunt, the short season would also complicate the hunt with additional regulations.

3. Partial opening: Based on the three access roads from Highway 17, a third of the Camp 1 area could be left open each year on a rotational basis. If more than the allowable yield for the whole area was removed, the next sector would not be opened until recovery occurred. This method gives somewhat less control over the kill than the preceding methods, but it is relatively inexpensive and easy to implement. Because the closed areas change from year to year, this method may be somewhat confusing for hunters and would require additional advertisement and enforcement. There may also be some reduction in the quality of the hunt because of crowding.
4. Age and sex specific hunt: Restricting the harvest to a particular age and sex class (for example, bulls only) would still result in more than the allowable harvest, based on the size of the 1979 kill. However, a hunt could be held every two or three years to allow for this. This system would require a substantial enforcement effort and special legislation, again complicating the regulations. In addition, a bulls only season would eventually skew the sex distribution and productivity would decline. The only solution to this is a specified harvest of each sex under a controlled hunt.
5. Archery hunt: The Camp 1 area could be opened on an annual basis for archery weapons only. Because of the lower success rate of this type of hunt, the allowable yield would not likely be taken. This method would be relatively easy and inexpensive to implement, and a high quality hunt would result. Some opposition to this method may

come from rifle hunters.

6. Periodic opening: If no special restrictions are placed on the Camp 1 area, a heavy harvest would again be expected when the area is reopened after the herd rebuilds. The area would then be closed again until the population recovered a second time. This cycle would be repeated until the sustainable yield is not exceeded and an annual hunt can be held. This method is inexpensive, and also the least complicated because no additional regulations are required. The main drawback is the drastic reduction in breeding stock after each hunt, which reduces long term yields. However, in the Camp 1 situation, recovery will be aided by immigration from the relatively unhunted areas to the west and east. By reducing the recovery time between hunts, more hunts can be held and long term yield increased.

The number of feasible harvest strategies is limited. The harvest system should be as simple as possible to avoid hunter confusion by complicating the moose regulations unnecessarily. The system must also be inexpensive because District budgets are declining each year and we are not able to fund additional projects. At present, the partial opening and the periodic opening seem to fit these criteria best. When an area is open under these systems, the regulations are exactly the same as for the rest of the Wildlife Management Unit. Both systems are inexpensive, and both utilize the technique of small area closures under Section 18(1). The partial opening may provide better harvest control and therefore higher long term yield. The periodic opening may offer a better quality hunt (less crowded), and is slightly less complicated because the closed areas do not rotate.

Although still experimental, the technique of small area closures

appears useful for intensive harvest management on localized problem areas. As such, it complements the broader strategies of the provincial moose policy (Stefanski, 1981). It may in fact become an important strategy if cutover habitat cannot be managed to reduce the vulnerability of moose to hunting.

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