

HUNTING SEASON REPORT WELLS GRAY PARK 1952
R. W. Ritcey January 1953

INTRODUCTION

The first step in the management of wildlife of Wells Gray Provincial Park was made this year with special amendments to the Game Regulations applying to hunting in the park. The major change in regulations allowed the hunting of moose of either sex over one year of age during the period September 20th to November 30th. The purpose of this regulation was to allow hunters to harvest a greater number of moose from the park herd and thereby attempt to check the rapid increase of moose which are endangering their own well-being by depleting their food supply. This report deals with the results of studies made in Wells Gray Park during the fall hunting season.

To make a complete inventory of the kill and to further biological knowledge of the game in the park, four checking stations were set up, one each at the regular Forest Service headquarters at Hemp Creek, Mahood, Clearwater and Murtle Lakes. The Hemp Creek checking station was manned by Park Ranger L.E. Cook, D. McQuaig, M. Monteith, R. Webb (one week only), and R. Ritcey. Regular Park Patrolmen C. Gaglardi, J. C. Norman, and R. Miller operated the lake checking stations. Each checking station was supplied with forms to be filled out from information received from the hunters.

As well as questioning hunters, the personnel at each station gave as much assistance as possible to persons asking questions concerning areas to hunt, guides, packers, accommodation available, etc. At Mahood and Clearwater Lakes, Patrolmen Gaglardi and Norman assisted many hunters. At little hunted Murtle Lake, Patrolman Miller carried out wildlife studies by live trapping mink and marten, and studying the fall distribution of caribou.

Tagging regulations required special park tags to be placed on all moose shot in the park. For this reason, checking stations were manned daily throughout the entire season.

Moose sub-alpine summer habitat

Meadows to the north of Murtle Lake

Fall hunting grounds on moose early winter range

WEATHER

Weather plays an important part in determining the number of animals killed by hunters in mountainous regions. The usual course of events is for the game to stay in their summer habitat until driven out by deep snows which cover their food supply. They then begin to concentrate on their early winter range, where most of the hunting takes place. When the animals remain on their remote summer ranges during the hunting season, the hunter fares badly.

The fall was unusually mild and dry. Snow did not come in the high country until late October. For this reason, the moose did not begin to leave their sub-alpine habitat for the lowland valleys until about a month later than usual. Mr. Miller, at Murtle Lake, reported that only about a third of the moose in that region had left for the wintering grounds by early November. To compensate for the unusually late arrival of the moose, the hunting season was extended for two weeks into December. The kill was increased by approximately one third in the extension.

The dry fall was not entirely without benefit to the hunter. The road into the park remained in fairly good condition throughout the season. With normal fall weather and the heavy traffic of this fall, the road would have been next to impassible. Many of the hunters would have been unable to reach the hunting grounds at the very best hunting period. It is imperative that the road into the park be made an all-weather road if we are to have an adequate kill each season. This will mean that a solid road bed with proper drainage will have to be constructed where mud holes form, and that snow-plowing facilities will have to be available where needed.

Typical moose winter range

Small lake which offers excellent fishing. Trail to French Meadows

Solid willow regeneration in the French Meadow burn. Pyramid Mountain in the background

HUNTING AREAS WITHIN THE PARK

The general moose hunting territory available to hunters operating in the south central portion of the park consists mainly of two burns. The older and more northerly of these burns was burned in 1895, the younger in 1926. The 1895 burn has regrown to a mixture of deciduous and coniferous cover and, in most places, offers little open country. The only openings of any size are to be found in abandoned beaver meadows and around lake edges. Some dry side hills also have a fair amount of good visibility. The 1926 burn, on the other hand, has many places where one may hunt fairly open country. Here openings are found in places where re-burning has taken place in the original burn, as well as in sites where succession has been slow. Some large natural meadows are also found in the Murtle River flats. Emphasis is placed upon openings and burns

as hunting areas because hunting in the mature coniferous forest of this region is very difficult. Only chance encounters of moose are made in mature cover.

Hunting within the 1925 burn takes place in four more or less distinct localities. The most popular of these is the Pyramid area. This area consists of a stretch of burn immediately west and north of the Murtle River, which extends between the river and the Clearwater Lake road. The burn is broken with scattered patches of coniferous growth which escaped the fire. At the eastern edge of the burn lies the Pyramid mountain, from which it is possible to see large stretches of burn. A fair trail leads into this hunting ground, and its proximity to the road makes it a favoured spot to hunt. Two hundred and twenty-seven hunters took twenty-four moose from this area. Heavier hunting pressure in this area would probably result in no more moose being shot here, and may even result in fewer being taken due to disturbance of the animals by the large number of people.

Lying to the north of the Pyramid about three miles is an open burn stretching to the foot of the Kilpil Mountain. This burn is broken by several large meadows and some patches of mixed coniferous growth which escaped various fires which have swept this area. The burnt hillsides are regenerating to almost solid willow and this is one of the favoured moose feeding grounds in the fall. Thirty-one hunters shot twenty-six moose in this region during the season. The reason that so few people hunt in the area is that it is almost necessary to hire a packer or guide to hunt there in comfort. The only cleared trail into this, the French Meadow country, follows the south bank of the Murtle River and then crosses by a ford to reach the north bank. Extension of the Pyramid trail for another three miles would allow foot hunters to walk to the beginning of French Meadow hunting grounds in three hours from the road. This would alleviate congestion at the Pyramid, and bring hunters without a packer into some of the better moose hunting territory. It would also allow packers to take horses up the north bank and eliminate the ford that is dangerous in late fall with icy rocks. The extension of this trail has been previously recommended to open two small lakes to fishermen. These lakes offer excellent fishing during the early part of the hunting season.

On the south bank of the Murtle, a trail leads into the area known as the Blackwater - Kings Meadow country. It is accessible as the Pyramid area, but is not hunted so heavily as visibility is generally poor. One hundred and nine hunters shot twelve moose in the region, having roughly as good hunting as Pyramid hunters.

Large buck shot on Green Mountain in November

Continuous with the Blackwater country but separated from it by reason of accessibility is the MacLeod Hill hunting ground. A large part of MacLeod Hill is outside the park, and people hunting there can enter by trails from points south of the Ranger Station. Because of this, it was impossible to keep an accurate check on the number of hunters in this area. However, hunting success was very high with thirteen moose shot inside or near the park boundary and only thirty hunters reported visiting the hill. When and if park boundaries are extended to include the whole of this area, it may be advisable to extend a trail around the north side of the hill. Until such time as this is done, no improvements are recommended.

Green Mountain and the adjacent flats of Hemp Creek offer fair deer and moose hunting in late fall. Sixty-two hunters in these regions bagged ten moose and ten deer during the season. No additional trails are necessary, but brushing out of the Green Mountain lookout trail and re-routing of the steeper grades would facilitate the packing of moose from the mountain top.

In the 1895 burn, the only center of hunter activity is the Ray place. This is largely chosen as a hunting headquarters because of its good camping sites rather than for its excellence as a hunting territory. One hundred and six hunters shot only seven moose near here during the season.

Two other hunting areas could be made available in this general region with little expense. The first is the Deer Creek burn where a trail already exists, but is in need of clearing out and re-blazing. The second is meadow country around Lone Spoon and Five Finger Lakes. These lakes will be hunted easily from the road when it is extended to Clearwater Lake, but trails will be required for transport of hunters' kills.

Table I shows the total numbers of game animals shot in the park or near the park borders. It is seen that moose was by far the most abundant game species, and that the great majority of game was taken in the region served by the Hemp Creek checking station. Since this portion of the park's game is the only part under intensive study, the Hemp Creek results are referred to throughout the report unless otherwise specified.

As a direct result of opening the season on moose of either sex, the legal hunting take of this species was more than tripled in the south central part of Wells Gray Park. Hunters directly benefited by the legislation which made possible an increase in the moose kill while in the province as a whole the take was considerably below that of last year.

With a take of little more than one hundred animals, one might well enquire if enough moose were taken from a herd estimated at more than two thousand animals (An Aerial Moose Census, R.Y. Edwards, 1952). Reproduction and survival figures indicate that the kill may be at least four times that of this fall, and still maintain a stationary population. There is but one fault in making such a calculation, and that is due to the fact that we do not know what proportion of the winter herd is made up of the animals we hunt in the fall. In other words, if the wintering herd which gave a count of two thousand was made up of several discrete summering herds, and we hunted only one of two of these herds, we may be actually overhunting some parts which the wintering herd as a whole is being under-harvested. Suppose, for example, the wintering herd were made up of herds which summered on Trophy, Table, and Battle Mountains; on the plateau to the west of the Clearwater River; in the highlands of Indian Valley, South Plateau, Murtle Lake, and Kilpil. And suppose we harvested only from the herds coming from Murtle Lake and the Kilpil, might we not be actually taking more than enough from these segments, which the main herd is increasing more rapidly than desired? While this may not be the case, such a situation could conceivably come about with several seasons of hunting concentrated in the Murtle River flats, as is now the practice. For this reason, it is desirable to have the park boundaries extended as soon as possible to include the hunting areas to the south of the present boundaries. If this is not feasible, it would be advisable to have future game regulations to include the Clearwater Valley north of the proposed extended boundaries in all future park hunting regulations. Marking of animals on both summer and winter ranges is urgently required to find out migration routes and to discover what proportion of the wintering herd is being hunted in the fall.

TABLE I
SUMMARY OF GAME CHECKED BY WELL GRAY PARK CHECKING STATIONS, FALL 1952

HEMP CREEK CHECKING STATION

		Male	Female	Not sexed
Moose	101	37	64	
Deer	15	15		
Black bear	3	1	2	
Grouse	54			54
Illegal	1 doe deer, 4 calf moose			
Visitors	700			

MAHOOD LAKE CHECKING STATION

		Male	Female	Not sexed
Moose	5	3	2	
Deer	2	2		
Black bear	1			
Grizzly bear	2			2
Mountain goat	1	1		
Grouse	30			30
Visitors	117			

MURTLE LAKE CHECKING STATION

		Male	Female	Not sexed
Moose	3	3		
Grouse	1			1
Duck	1			1
Visitors	11			

TOTAL FOR PARK

		Male	Female	Not sexed
Moose	109	43	66	
Deer	17	17		
Black bear	4	2	2	
Grizzly bear	2			2
Mountain goat	1	1		
Grouse	85			85
Duck	1			1
Visitors checked	828			

CRIPPLING LOSS AND ILLEGAL KILL

Besides the animals which are killed and brought out from the hunting grounds, a certain percentage are shot to later recover or waste away and die. Another source of loss is the animals

which fall to the guns of hunters who later discard them, having found they have shot an illegal animal. Both types of loss are difficult to assess.

Front half of calf moose, November 1952. Note height beside six foot man.

Only one hunter answered yes when asked whether or not he had crippled any animals. Despite this fact, two moose were shot that had been previously wounded by rifle fire, and one autopsied moose on the wintering range had been previously hit by a high speed bullet. Five hunters stated that they had fired on moose and missed. Some of these may have been crippled. With careful questioning and by study we will probably be able to assign a percentage crippling loss to add to the kill when calculating annual take from the herd. The loss will probably not be high, for moose very often stand after they are hit, allowing the hunter ample time for a finishing shot.

The illegal kill is even more difficult to assess. It is definitely known that five calves were illegally killed and it is assumed that more were shot of which we have no knowledge. It is difficult for novice hunters to distinguish between calves and mature animals. When the calf is alone and there is no other animal to compare it with it is especially difficult to determine the age. The regulations should be amended to allow the shooting of any moose rather than of either sex over one year of age. It is undoubtedly wasteful to shoot calves for their meat is rather tasteless and they will dress out at approximately half as much as yearlings at the same season of the year. However, the waste occasioned by hunters leaving calves in the field is probably much greater.

As well as illegal kill during the season, the homesteaders on the moose winter range have come to depend on moose as part of their yearly food supply. The take by these people is not excessive, and can be ascertained with fair accuracy. It would be unwise to try and prevent this part of the kill. There is little waste involved and the homesteaders are entitled to some recompense for moose damage to fences, haystacks, fruit trees, and berry canes.

COLLECTION OF UTERI

Uteri were collected through the cooperation of hunters and guides. Hunters were given plastic pliofilm bags sealed with an elastic band, and were requested to remove uteri for all cow moose. Instructions for finding the uterus and how to preserve it were attached to each container. Plioilm bags 9" x 4" were used in the early part of the season but were too small after the animals became pregnant. During the latter part of the season, plastic bags 5" x 14" were used. These proved to be too small for pregnant uteri collected in December. At this time of the year, it would probably be more satisfactory to collect only the embryos, ovaries, and non-pregnant uteri. The bags were generally watertight but a few leaked and placental fluid soaked through. Placing one bag inside another, giving double strength, with probably make a foolproof uterus container.

Most of the uteri were collection through the cooperation of the following guides and packers: Ted and Roy Helset, L. Ludtke, John and Henry Hogue. Next season it would be wise to rely completely on the cooperation of guides and trappers in the collection of uteri. The small percentage of returns from the hunters is not worth the effort and expense put out in obtaining them.

Forth-three uteri were collected, of which thirteen or thirty percent where from non-breeding 18 month old animals. Of the remaining 30, 25 or 83% were pregnant. Of the 25 pregnancies, 8 or

32% were twin pregnancies; percent of cows pregnant after October 31st: 93%. The number of embryos per pregnant cow was 1.3. The sex ratio was equal in 24 embryos.

Twenty-one cows over 18 months of age were classified as 2.5 years old, or as older than 2.5 years, on the basis of old corpora lutea, uterus size, caruncle condition, and observations of the animal when shot. This classification may not be fully accurate, but the results are of interest. Of this group, one third appeared to be 2.5 years old. The hunted female herd thus consists of:

over 2.5	46%
2.5	24%
1.5	30%

Sinking deeper into the realm of possibility, the 46% were the calf producers the previous spring. Using the above data, every 100 huntable cows produced $46 \times 93\% \times 1.3 / 2$ female calves, or 44 female calves. If mortality was 25%, 33 calves would remain in the fall. Therefore, one **female** herd would consist of:

over 2.5 years	35%
2.5 years	18%
1.5 years	22%
0.5 years	25%

100%

SEX RATIOS OBTAINED FROM HUNTER SIGHTING REPORTS

TABLE II
Game Sighting Record of Hunters Passing Through Hemp Creek Checking Station

Moose		Deer	
Bulls	173	Bucks	76
Cows	294	Does	157
Calves	90	Fawns	20
Unidentified adults	16	Unidentified adults	9
Unidentified moose	185	Unidentified deer	26
Total	758	Total	288

On inspection of the sighting data, it is seen that of the identified adult moose, cows made up 63% and bulls 37% of the total. This is almost identical with the sex ratio of the kill, where sixty-four of one hundred and one animals were cows. The evidence shows that hunter prejudice against killing female animals was not greatly instilled in the hunters visiting the park. It is not safe to assume that the kill represents a true picture of the sex ratio of the herd. In any event, sex ratios obtained from the kill and from hunter sighting will probably be a valuable aid in filling gaps in the vital statistics of the herd.

Besides moose and deer, there were six wolf, sixteen coyote, and two cougar sightings. Hunters also saw beaver, mink, fisher, marten, fox, black bear, and weasel. Tracks of wolverine, bobcat,

lynx, and grizzly were also seen. Several hunters commented on the diversity and abundance of wildlife in the park.

It is noted that of identified moose, calves make up only 16%. However, when questioned whether or not the cows which were shot had calves, it was ascertained that roughly forty percent of the cows had calves with them when shot. Calculating on this basis, calves would make up approximately 22% of the herd. It is therefore assumed that calves were mistaken for adults when seen at a distance by the hunters.

GRAPH I: Age Determination of Moose Kill as Determined by Hunter and Guide Estimates

AGE DISTRIBUTION OF MOOSE KILL

Hunters were asked to estimate the age of the moose which they shot. Graph I shows the age distribution of moose killed compiled from hunter and guide estimates. It is seen that the number of yearlings is smaller than the number of two year olds, and the two year olds are in turn outnumbered by the three year olds. If this is an accurate representation of the age groups in the population, the herd is stationary or decreasing. All studies in the park to date suggest the contrary. There is a possible explanation of the small percentage of yearlings in that some hunters passed up yearlings believing them to be calves. Estimates made by hunters of animals past the yearling stage are likely to be inaccurate. Next season, a collection of jaws should be made so a more accurate estimation of age distribution may be made.

Antler measurements give some indication of age distribution, although in themselves they are a poor criterion of determining exact age. Mean antler spread tends to be greater in a population with a large number of older animals and decreases as hunting pressure increases. The mean antler spread of moose taken in the park this year was 31". The maximum spread was 57". Several sets of antlers measured over 40", showing that we have a herd that will interest trophy hunters as well as those primarily interested in taking home a supply of meat.

Bull moose with "average" spread of antlers. This set measures 31 3/4".

By keeping check on antler measurements, we can see how hunting pressure is acting upon the population. The small sample of deer shot this year indicated that the deer population has a large proportion of older animals. The mean spread was 18.4" with the maximum being 24".

HEALTH AND GENERAL CONDITION OF MOOSE KILLED

The condition of moose carcasses passing through the Hemp Creek checking station can only be described as excellent. The cows, both those with calves and those without, had abundant fat deposits in the body cavities, and in the subcutaneous tissue. One cow had more than two inches of fat over the rump. In most case, the mature cows could be favourably compared with medium

fat beef. The bulls had their summer fat somewhat depleted by the rut, but as a general rule, it appeared that they would have had enough reserves to enter the winter in good shape.

Front quarter of cow moose shot in November. Note fat deposits.

It is difficult to obtain figures on parasite and disease incidence from hunters, as only the most obvious cases are noticed. With the aid of guides, some idea of parasite incidence was obtained. Twelve moose had hydatid cysts in the lungs, and twenty had larval tapeworms on the mesenteries or liver. These figures are minimum and suggest a rather high incidence of hydatid disease. Eight bulls had been previously wounded by fighting and four cows had also received wounds of unknown origin. Other abnormalities noted by hunters included three cases of fibromatosis (warts) and two cow moose were noted with engorged ticks on them in late November. Such information on animal condition and parasite incidence is a useful addition to information obtained through sample autopsies carried out on animals throughout the year.

GRAPH II: Moose killed per day during two week periods through the hunting season.

GRAPH III: Times at which moose were killed during the hunt.

HUNTER SUCCESS

In terms of days hunter per moose obtained, the hunters in the park had a higher success ratio than moose hunters throughout the province as a whole. Twelve and a half days were hunted for each moose killed. This compares very favourably with the Cariboo where it took approximately twenty days hunting to kill a moose. Approximately one in five park hunters were successful in bagging a moose, mule deer, or black bear. The hunting success was much higher than this during the latter part of the season. Graph II shows that the best hunting results were obtained in late November and early December. This is due chiefly to three causes: (1) Animals started to concentrate on winter range at this time. (2) Visibility was at a maximum because leaves had fallen from deciduous growth in the burn. (3) Snow permitted tracking.

The largest number of moose were killed between the hour of ten A.M. and noon (Graph III). While this fact may be correlated to hunter activity, it also suggests a peak of moose activity during this period. When records are available for a period of years, it may be possible to show definite activity periods throughout the day, when hunters are most likely to be successful.

There was a differential kill of the sexes throughout the season. From September 20th to October 23rd, twelve bulls had been killed with only one cow taken. From October 23rd onwards, there was a steady increase in the percentage of females taken until, at the end of the season, sixty-four

cows and thirty-seven bulls had been shot. The high percentage of males taken in September and early October illustrates that the bulls are very vulnerable to hunting in the rutting season. With heavy hunting pressure, the killing of bulls at this period may seriously interfere with breeding success. It is of interest to note that, of the fifteen bucks checked through Hemp Creek, thirteen were shot in November, the time of the deer rutting season.

Hunters in the early part of the season were mainly novices who expected to find their moose close to the road without much trouble. This misconception was due in a large part to the fact that many of them believed that Wells Gray Park had been a game reserve until this year, when it was being thrown open to kill off an over-supply of moose. This group of hunters believed that the toughest part of the hunt was over when they had driven the stretch of road from Clearwater into the park. After the initial rush of this type of hunter, a more experienced group began to appear. The latter group were well satisfied with the park as a hunting territory and the great majority of them planned on a return trip in the future. During the season, three hundred and twenty-five of the seven hundred visitors signified their intention of returning next season or in seasons following. This indicates that the park will continue to enjoy a fairly high hunting pressure and that development work in the park, designed primarily for hunters, is justified.

SUCCESS OF GUIDED AND UNGUIDED HUNTERS

It was very difficult to compare hunter success of guided and unguided hunters. Many hunters employed guides as packers, but actually a guiding service was being rendered when the guide showed them where to hunt. Persons hiring a packer to take them into the back country did not report hiring the packer as a guide. Mr. Helset reports that forty-five of fifty hunters which used his services and facilities were successful in obtaining their moose. Mr. Ludtke also reports a high success ratio among his hunters. It is likely that guided hunters enjoy from three to four times the hunting success that non-guided hunters do. About sixty percent of the moose taken in the park were killed by hunters employing a guide in some capacity to help him get his moose. As mentioned elsewhere, over eighty percent of the hunters hired packers to transport their moose. These figures show that the majority of the moose killed in the park will be killed by persons employing someone to take them into hunting territory back from the road. Even the persons operating from the road will usually require the services of a packer to transport their kill. These facts should be given proper recognition and publicity, so people will not come into the park expecting to kill a moose beside the road, and drag it a few hundred yards to their vehicle. We must also take these figures into consideration when we think of increasing our moose kill. Proper trails should exist for packers to travel with hunters' equipment and hunters' kills. Trails should be made to take the hunters into the major hunting areas. These trails need not be class one trails, but they should be windfall free and brushed out occasionally.

TRANSPORT OF HUNTERS' KILLS AND ACCOMMODATION AVAILABLE

Of one hundred and one moose killed in the south central area, only seventeen were brought out without the aid of horses. Nine of the fifteen deer shot were packed out on back or skidded out. Moose were packed out without horses only when there were in the near vicinity of a road or if they were in a position to be skidded downhill for a large part of the distance to be covered. Packers charged from \$24.00 to \$30.00 for packing out moose. These rates were posted at the Ranger Station and were available to anyone wishing to hire a packer. The rates were considered reasonable by most hunters. Horses were available most of the time, and service to the hunters was good. No meat was spoiled because of lack of transport facilities. One part of hunters left the choice part of their moose to spoil beside the Pyramid trail because they did not wish to hire a packer to transport the kill, and they found it too much of a job to do themselves. Such wastage is not good ethics but it would be unwise to bring utilization laws into effect unless such incidences become widespread.

Hunter skidding hindquarters of moose to waiting vehicle.

Back, loins, and ribs of moose left on Pyramid trail.

Problems of transport may arise next year when guides will probably be engaged in catering to American hunters. This year, because of the embargo against Canadian meat, there was only one American hunter in the district. Next year also the extension of the road to Clearwater Lake will open new hunting grounds to the north, and there will be a need for horses to be available in the vicinity of the Ray property or at Clearwater Lake outlet. This need will probably be met locally but, if not, outside applications for guiding or packing privileges in this region should be welcomed.

In the early part of the season, the majority of hunters were content to pitch camp along the roadside or to sleep in their vehicles. Popular camping spots included the Ray property, the Horseshoe camp, the site of the old road camps, and the Mushbowl. There were crowded in the early fall and many other camping spots were used as well. Garbage disposal and toilet facilities are lacking in all camping spots, and the mess left behind by the hunters was unsightly. It would be advisable to provide garbage disposal and toilet facilities at these spots as a bare minimum. Construction of picnic tables and of tent frames would also help to prevent the destruction of green trees which are being used for camp construction at present.

Meat and hides of two cow moose shot by hunters staying at Helset cabin near park.

Hunters' cars park at the start of the Murtle Trail.

In the latter part of the season, snow and cold prevented all but the most hardy from camping out. Hunters then turned to cabin accommodation available just outside the park boundary. Three cabins were available at Hogue's, and one at the Helset's. These cabins were filled from mid-November onwards, and several hunters left the park because there was no cabin accommodation available for them. It is expected that the situation will be alleviated next year, when the Hogue brothers will have completed their new lodge.

Horses were not generally available for hire to the general public. Residents of the valley find it unprofitable to rent horses, as many animals are injured by persons not taking proper care of them. With a short season open to packing and guiding, the guides keep horses only for use by themselves or for use of persons known to them. Several complaints were heard because horses

were not available, but this situation is not thought to be serious. If there is enough demand for horses, it is thought that the guides will increase their stock, keeping horses expressly for the purpose of renting them out.

SIGNS

A number of signs were used to assist hunters. These consisted of several mileage signs along the Clearwater road, of small signs indicating where trails left the park road, of a sign warning of the danger of shooting horses for moose, and of a sign at the Hemp Creek checking station. Some of these are illustrated. Both the Game Department and hunters commented upon the efficiency of this signing system.

Sign ten miles south of the park.

Sign at the major road fork.

Sign at the Ranger Station.

Sign at the start of the Pyramid trail.

SUMMARY AND RECOMMENDATIONS

The opening of a cow moose season in the park was effective in tripling the legal take of moose. This benefitted the hunter but did not reduce the herd, and not even harvest the annual increase. The general condition of the moose was excellent.

Hunting pressures in the park are localized and efforts should be made to effect a better distribution of hunting. This is necessary to ensure a greater kill and will result in higher hunter success ratios. The completion of the new road to Clearwater Lake will help to spread hunting pressure. Some new trails should be opened and the ones now in use be cleared out.

There is a definite need for better camping facilities along the roadside.

The moose hunting season next year should be open from September 20th to December 15th and should allow the hunting of any moose.

Hunting of grouse, deer, and black bear is probably not intensive enough to warrant special regulations except for experimental purposes. Black bear should continue to receive some measure of protection as a park attraction, and the present regulation prohibiting summer hunting should remain in effect.

The checking stations which operated this fall should remain in operation. The Patrolman at Murtle Lake, where hunting is light, can be employed in marten and caribou investigations during slack periods.

A few minor changes in the questionnaire should be made. These will be worked out before next hunting season.

The collection of uteri next fall should be made with the help of the guides and packers.