

Introduction of Sex and Age Specific Hunting
Licenses for the Moose Harvest in Saskatchewan

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Abstract

Two types of licenses were available to Saskatchewan resident moose hunters in 1977, one allowing the harvest of one animal of any sex or age in a single management area (SPECIAL) and the other restricted to either a bull or a calf (REGULAR). The regular moose license was available from any vendor and had no management zone restrictions. In the northern provincial forest, resident license sales were 66.8% above 1976 levels and man-days recreation increased by 93.6%. From 1973 to 1976, all moose licenses were allocated through a controlled lottery type draw with successful applicants being restricted to specific management zones. The 1977 harvest was 59.3% higher than in 1976 and was comprised of 52.2% adults and 47.8% calves and yearlings. Bulls accounted for 67.2%, cows 12.4%, and calves 20.4% of the kill.

A new moose management program was introduced to Saskatchewan in the fall 1977 hunting season with the objectives of exerting:

- 1) high hunting pressure on calves
- 2) moderate hunting pressure on bulls; and
- 3) light pressure on cows.

A change was believed necessary because the moose population was not responding adequately to a system of harvest designed primarily to control the magnitude but not the composition of the harvest (Stewart and

MacLennan 1977). In addition, the restrictive draw regulations employed from 1973 through 1976 permitted only half of the moose hunters in the province to partake in this recreational pursuit in any one year.

The objectives of the new system were to protect and increase the existing moose populations, and to provide the sportsmen of the province with maximum recreational opportunities.

METHODS

Operational Model of the 1977 System

Stewart and MacLennan (1977) outlined the general characteristics of the license allocation system employed for the 1977 moose season. In review, one of two main license types was made available to each Saskatchewan resident hunter.

Special Moose License

This license was allotted to applicants on the basis of a non-priority computer draw. A limited number of licenses was available for each game management zone. Successful applicants were restricted to hunting in the management zone which they had designated to be their preference on the application form, but were entitled to harvest an animal of any sex or age class. The license was valid for both an early pre-rut (September 12-24) and late (November 7-19) season. Approximately 4,100 licenses were available for 15 game management zones in the northern provincial forest. An additional 625 special licenses were allotted for some provincial parks and specific game management areas in the province, but as these areas were not affected by the new management pro-

gram they will not be dealt with in this paper.

Regular Moose License

The regular moose license was not restrictive by zone, but was valid for either a bull or calf moose only; cows were afforded complete protection. This permit was available for purchase from any of the licensed vendors in the province and could be bought at any time during the season.

An early post-rut (October 10-22) and late (November 21 - December 3) season were scheduled. In five game management zones in which moose were particularly vulnerable to overharvesting, somewhat shorter seasons were legislated (October 10-15 and November 21-26).

Guided Moose License

In addition to the resident-designated licenses, 600 guided moose licenses were available to residents and non-residents alike. License holders were required to use the services of a registered guide, and could harvest a bull or calf moose only. The season dates generally coincided with those of the regular and special license dates.

Data Collection

Hunter Survey Questionnaire

Questionnaires were sent to a random sample of hunters in the province to solicit information relative to both biological and social as-

pects of their hunting activity.

For 1977, hunter replies pertaining to moose were used to determine estimates of total harvest, hunter success, sex and age composition of the kill, and man-days of recreation.

Game Checking Station Data

Eight game checking stations were operated throughout the northern provincial forest. Information was collected from moose carcasses which would provide a second estimate of the sex and age structure of the 1977 harvest.

Resource Officer Questionnaires

Resource officers responsible for the enforcement of the new management program were each sent a questionnaire which requested feedback on their attitudes towards the new system. Particular emphasis was placed on illegally killed cows, season lengths, hunter response, and changes which would improve the 1978 season.

RESULTS AND DISCUSSION Hunter Survey Questionnaire

Approximately 11,885 "active" resident hunters, 9,047 with a regular license and 2,838 with a special license, participated in the 1977 moose season in the northern provincial forest, and represented an increase of 63.0% over 1976 levels. License sales were 66.8% higher than the previous year. Stewart and MacLennan (1977) had predicted 10,000

hunters would participate in the regular season but inclement weather conditions during both the early and late season probably contributed to the reduced numbers observed. The wet and cold weather experienced during late September - early October delayed agricultural crop harvesting and reduced the opportunity for farmers to participate in the early season hunting. The late regular season was characterized by bitter cold which also may have deterred some interest in the hunt during that season.

Participation in the special moose season was also below predicted levels. Of the 4,100 licenses offered in the northern management zones, 3,019 were filled, but only 2,838 hunters participated in the hunt. The quotas for only five of the fifteen northern management zones were filled. Hunters were required to designate zones of preference on the special season application form. In most cases hunters indicated they would only accept a single designated zone as they retained the option to purchase a regular license should they be unsuccessful in the computer draw. As a result, most of the hunters indicated preferences in the five most popular hunting areas. The small number of applications received overall was probably also related to some misunderstanding of the new program at the time of the deadline for receipt of special license applications in early July 1977. Details pertaining to the new program were not well publicized that early in the year.

The estimated harvest of 3,979 moose was an increase of 59.3% above the 1976 estimated kill of 2,498 animals, and was the highest recorded since 1972 (Fig. 1). In addition, the 50,296 man-days of recreational moose hunting for the northern forest zones was 93.6% above the previous year's level. Hunter success was 38.0% and 31.9% for the special and late seasons respectively; combined success for both seasons was 33.5%,

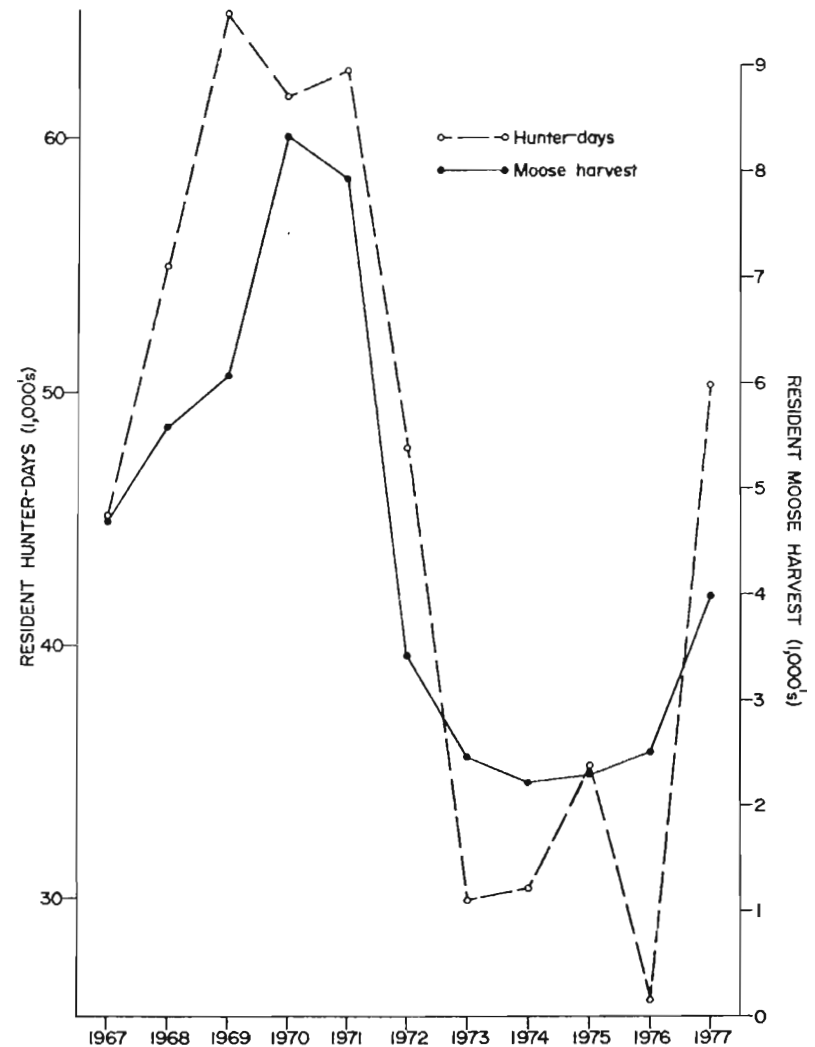


Figure 1. Resident moose harvest and hunter-days recreation for the northern provincial forest zones of Saskatchewan, 1967-1977.

a slight decline from the 34.4% recorded in 1976.

The reported sex and age ratio of the harvest is presented in Table 1. Some errors were prevalent when forms were completed by the hunter in 1977, particularly in not assigning calf or adult status to particular sexes of animals. For purposes of this paper, animals that were not designated as calves were lumped into either the adult male or female category. The reader should be aware that the percentage of calves in any compilation may be slightly higher than indicated.

The special season harvest estimate of 50.8% bulls, 37.5% cows, and 11.7% calves is similar to the estimates for harvest compositions in previous years. The 73.3% adult male and 23.7% calf kill reported during the regular season was a radical departure from any former harvest estimate. The combined seasons kill was 67.2% adult males, 20.4% calves and 12.4% adult females which represented the highest percentage estimate of bulls and calves, and lowest for cows ever obtained from hunter questionnaire replies. The calf harvest was 10.8 animals/100 hunters during the late regular season compared to only 1.7 animals/100 hunters for the early regular season. Stewart and MacLennan (1977) expected a higher bull vulnerability during the early regular season which began after the end of the peak of the rut; however, the magnitude of the difference was not anticipated.

The estimated adult cow harvest was 493 animals, a 38.4% decrease from 1976. Of these, 87 were killed illegally during the regular moose season. The resource officers responsible for enforcement of the regulations generally agreed that the number of "undiscovered" illegal cow moose left dead in the bush was small in comparison to the number found. This belief has not been substantiated.

Table 1. Bulls and calves per 100 cows in the harvest as determined from the hunter questionnaire survey and checking station data.

| Year | Hunter Questionnaire Survey | | Check Station Data | |
|--------------------|-----------------------------|-----------------------|--------------------|-----------------------|
| | Sample Size | Bulls/100 cows/calves | Sample Size | Bulls/100 cows/calves |
| 1970 | 1710 | 207/100/50 | 2117 | 119/100/37 |
| 1971 | 2146 | 174/100/28 | 2174 | 109/100/38 |
| 1972 | 3606 | 102/100/24 | 1159 | 125/100/25 |
| 1973 | 3682 | 126/100/31 | 951 | 107/100/28 |
| 1974 | 3997 | 138/100/47 | 867 | 119/100/26 |
| 1975 | 3331 | 137/100/32 | 752 | 130/100/29 |
| 1976 | 2878 | 175/100/42 | 636 | 201/100/55 |
| 1977 Special* | 1261 | 136/100/31 | 329 | 170/100/53* |
| Regular* | 1665 | 2434/100/789 | 438 | 1514/100/485 |
| Combined (1977) | 2926 | 540/100/165 | 777 | 399/100/132 |

* Guided moose licensed hunters (non-residents) were restricted to harvesting a bull or a calf, but much of the season coincided with the special moose license.

Checking Station Data

Seven-hundred and seventy-seven moose were checked through big game checking stations in 1977, 329 of them during the special moose seasons. Incisors were collected from 684 animal carcasses.

The composition of the 1977 harvest was similar to that observed in 1976 with respect to the proportions of calves plus yearlings to adult animals (Fig. 2). Adults comprised 51.8% of the 1976 check station sample compared to 52.2% in 1977. Early in the decade harvests were heavily biased in favour of adults (>70%) at a time when population estimates were low. The check station samples consisted of 63.2% bulls, 20.9% calves and 15.8% cows, similar to estimates obtained from the hunter survey questionnaire (Table 1).

The estimated proportion of bulls in the kill is high relative to the proportions observed in past years. Baker (1975) warned that excessive male harvests may eventually result in a distortion of the sex ratio in favour of females and a reduction in the average age of bulls, assuming even sex ratios at birth. However, less than 23% of the total harvest consisted of mature animals (4½ yr. and older). A mid-December sex and age survey resulted in an estimate of 80.3 bulls and 59.20 calves per 100 cows (n=1376). For 1,738 moose classified in 1976 the ratio was 58.60 bulls and 63.70 calves per 100 cows. It does not appear the 1977 moose harvest had a severe negative influence on the sex ratio of the Saskatchewan moose herd.

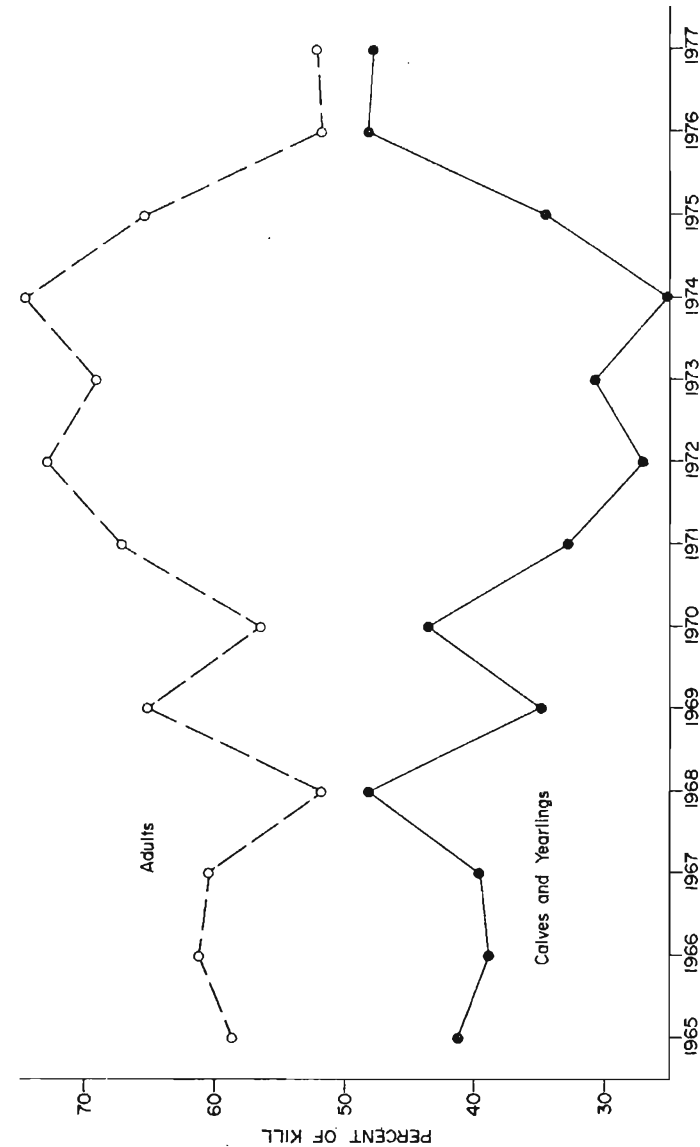


Figure 2. Age structure of moose harvested in Saskatchewan, 1965-1977, as determined from checking station samples.

Resource Officer Questionnaire

The results of the field enforcement staff questionnaire are presented in Table 2. Sixty-three percent of the resource officers responding handled 87 cases of known, illegally harvested cows. Forty percent of the hunters involved in killing a cow by error reported the incident to department officials. Legal charges were laid against an individual if it was obvious sufficient caution and judgement were not employed. Of the 52 adult females shot and not reported, investigators managed to lay 11 charges. Fines of \$50.00 - \$175.00 were levied against convicted hunters and all hunting privileges were suspended for one year.

Most field officers believed the season length to be adequate, but 37% indicated they felt it to be too long. Eleven of the 15 who responded "too long" handled three or more illegal cow kills each, and only one individual was not directly involved in any such cases. Most of these men suggested either shorter seasons or elimination of all early season hunting.

Most field officers regarded the initial year to have been moderately successful (87.8%), and fair in light of the responsibility the hunter should have to the resource (95%).

Improvements were strongly suggested in some areas of the program for 1978. About one-third of the enforcement staff believed that less than 70% of the hunters encountered had a good knowledge of the new system, and that educational and awareness programs should receive more attention in 1978. The use of television as the medium was referred to frequently.

An important consideration suggested for 1978 was the use of salvage crews to retrieve illegally killed cows in areas where hunter den-

Table 2. Resource officer response to 1977 Saskatchewan moose season

| | | | |
|---|---|--|----------------|
| 1. Did you have any cow moose shot in your district during the regular moose season? | YES | NO | 11 |
| 2. If yes, how many? | | | 87 |
| 3. Of those, how many were reported by the hunter responsible? | | | 35 |
| 4. How many of those were charged? | | | 11 |
| 5. How many were convicted? | | | 7 |
| pending? | | | 3 |
| dropped? | | | 1 |
| 6. How many hunters were charged who did not report their illegal kill? | | | 11 |
| 7. How many were convicted? | | | 6 |
| pending? | | | 4 |
| 8. What fines were imposed? | | | \$50.00-175.00 |
| 9. Did you feel the moose season was: | a) too long | | 15 |
| | b) too short | | 1 |
| | c) adequate | | 25 |
| 10. If too long please provide positive suggestions. | | | |
| 7 - shorten seasons | 5 - eliminate early season | 1 - do not overlap with deer season | |
| 1 - reduce Guided Moose License season | 1 - increase season in the north | | |
| 11. Do you believe the new moose management program: | a) places too much responsibility on the hunter? | | 2 |
| | b) is fair in light of the responsibility the hunter has to the resource? | | 39 |
| 12. Would you rate the initial year: | a) highly successful | | 5 |
| | b) moderately successful | | 36 |
| | c) unsuccessful | | 0 |
| 13. What percent of the hunters encountered had a good knowledge of the program? | | | |
| a) 95-100% | 11 | b) 90-95% | 8 |
| d) 70-80% | 6 | c) 80-90% | 3 |
| e) less than 70% | 13 | | |
| 14. Has your attitude changed toward the new moose management program following the first season? | YES | NO | 26 |
| 15. If your attitude has changed, please elaborate on how. | | | |
| 10 - program was more successful than anticipated. | | | |
| 1 - calves were more difficult to identify than first anticipated. | | | |
| 16. What did you find most disappointing about the 1977 season and what suggestions do you have for improvements in 1978? | | | |
| <u>Disappointments</u> | | <u>Improvements</u> | |
| 7 - Lack of hunter responsibility for cows shot. | | 10 - expanded educational programs. | |
| 2 - insufficient spots in zone to warrant a season. | | 7 - shorter hunting seasons. | |
| 1 - mostly young hunters shot cows accidentally. | | 4 - salvage crews needed to help handle dead cows. | |
| 1 - charging a hunter for an honest error of judgement. | | 3 - charge all violators & let courts decide guilt. | |
| | | 3 - be more lenient with hunters reporting their cow kill - i.e. license suspension. | |
| | | 2 - bulls-only seasons would lighten responsibility. | |
| | | 2 - include treaty Indians in educational program. | |
| | | 1 - lengthen season. | |
| | | 1 - return to "open" season hunting. | |
| | | 1 - eliminate all cow harvest. | |
| | | 1 - mandatory checking stations. | |
| | | 1 - encourage more hunters to use less popular areas. | |
| | | 1 - separate late special and late regular season by more than one day. | |



sities are high. Some field officers complained that enforcement was critically limited by time required to salvage meat.

CONCLUSIONS

The sex and age specific harvesting program introduced in 1977 was modelled after management programs used in both Norway and Sweden. In Sweden alone, moose harvests have increased from less than 2,500 in the mid-1920's (Lykke 1974) to in excess of 70,000 animals by 1977 (Hansson and Malmfors 1978). Major habitat changes coupled with a hunting system which increased the hunting pressure on calves, and changes in the sex ratio among the adult animals are probably the main reasons for the population explosion (Aspers et al. 1978). A harvest of 50-60% bulls and a high proportion of young moose including calves was the object of the Scandinavian management experience (Lykke 1974). The 1977 moose harvest in Saskatchewan represented a harvest trend in this direction.

The 1978 management plan was designed to decrease the proportion of adult bulls and increase the proportion of calves in the harvest. Our goal is to reduce the bull harvest to 55-60% from the 1977 level of 67.2% while at the same time increase the calf harvest from 20.4% to the 25-30% range.

For most areas of the northern provincial forest the early regular season will be reduced to one week (October 9-14) in an attempt to reduce the proportion of adult bulls in the harvest. It is also anticipated that more hunters will choose to hunt during the late regular season (November 20 - December 2), a time during which calves are more

vulnerable. In areas where moose populations are highly susceptible to hunting pressure the late regular season will be only one week long (November 20-25).

The total number of special licenses available will be similar to levels allowed in 1977, but some changes in individual zone allotments will be implemented to control hunter distribution. The early special season will encompass one week (September 18-23) and the late season two weeks (November 6-18) in most areas. This is a reduction of one week from 1977, but the low hunter densities per zone each day do not warrant extended season lengths. In one special management area with high moose densities where no early season hunting (regular or special license) is permitted, special license holders may hunt during the week of December 4-9.

The problems of moose management in Saskatchewan are quite different than those experienced in Scandinavia. There is a basic difference in attitude towards resource use between the two jurisdictions which results in a significant difference in the status of moose. The Scandinavian countries do not have large predator populations nor special interest groups utilizing their moose resource in an uncontrolled manner. In Saskatchewan large unknown numbers of moose are harvested by native peoples, trappers and poachers. In addition, wolves are permitted to function within the ecosystem without massive control programs. Given these basic differences, the response of the Saskatchewan moose herd to the new management program will not be as dramatic as experienced in Norway and Sweden.

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