

SELECTIVE HARVEST OF MOOSE IN THE
OMINECA: SOME PRELIMINARY RESULTS

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Abstract: There is a growing trend to "modernize" moose management programs and hunting strategies. Selective harvesting is being emphasized as a substitute strategy for traditional any age and sex seasons in order to meet biological and recreational objectives for moose. Since 1980, a selective harvest has governed moose hunting in the Omineca region of British Columbia. Through a combination of differential licencing for adult males and females and open seasons on 2 point yearlings and calves, hunting pressure has been shifted onto the non-breeding segments of the herd. Initial results are encouraging. The harvest of calves is approximately 6 times that reported prior to the inception of the program. The harvest pressure on prime breeding bulls of trophy class has been reduced 50 percent from pre 1980 levels. The program continues to gain support with the hunting public and the Guide-Outfitter industry in spite of traditional biases. A continuing educational effort has been instrumental in winning this lobby support in the Omineca. Hunters are becoming more informed of their responsibility to the resource and the importance of their choice-of-target.

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Since the Bubenik challenge (Bubenik 1972, 1981), there has been a gradual though steady change in the complexion of moose management programs across North America. In Canada a number of Provinces have announced a "modernization" of their moose management programs during the last 5 years. These include Quebec (Crete et al. 1981), Saskatchewan (Stewart and MacLennan 1977), British Columbia (Macgregor and Child 1981), Nova Scotia (Patton 1982), and most recently Ontario (Euler 1983; Gollat and Timmerman 1983). Alberta has indicated that some changes may be necessary also in some areas of the Province (G. Lynch 1982; pers. comm.).

In British Columbia, Provincial moose management objectives emphasized increased populations, better quality carcasses and trophies, and a corresponding increase in recreational hunting opportunities (Anon. 1979). Coupled with these planning goals, increasing public demands for protein and trophies necessitated a review of traditional moose management strategies and harvesting practices within the Omineca subregion of the Central Interior if, in fact, regional management and operational planning objectives were to be met (Child 1981; Macgregor and Child 1982). In 1981 a selective harvest program for moose was announced and implemented in the Omineca on an experimental basis in order to: a) optimize harvests and maximize recreational hunting opportunities, b) restore and maintain herd social structure thereby improving herd productivity and c) raise the quality of both trophy and carcass.

This departure from traditional management practice, especially the institution of controlled harvest strategies for moose, has pre-

sented many new challenges. But after three short years, the initial results are encouraging.

METHODS

Program Objectives

The moose management program in the Omineca addresses three objectives that compliment similar programs reported elsewhere (Stewart and MacLennan 1977; Lykke 1974). These include:

1. To protect and increase the number of prime breeding animals, especially females, in order to enhance production of calves.
2. To optimize annual harvests by directing hunting pressures towards the non-productive segments of the population such as young males and calves.
3. To provide high quality recreational opportunities (trophy) for both the resident and non-resident hunter.

Administration

Regulations were designed to selectively direct hunting pressures on the population (Table 1). Traditional open seasons on any bull and antlerless animals were modified. A cow or calf season was introduced in a two week period in mid-October. Hunters must be selected by a computer lottery each year. Successful candidates are encouraged to be selective of calves whenever they encounter a cow-calf pair. An open season on calf moose is advertised to overlap the cow or calf

Table 1. Summary of Selected Harvest Strategies and Hunter Options for Moose in the Omineca, 1983.

Hunt Type	Draw Required	Hunter Options	Season Timing
Immature (2-point) Bulls*	No	Calf	Sept. 15 - Nov. 15
Adult Bulls (3 or more points)	Yes	Calf or 2-point bull	Sept. 15 - Nov. 15
Cow or Calf	Yes	Cow, calf or 2-point bull	Oct. 8 - Oct. 23
Calf	No	2-point bull	Oct. 8 - Oct. 30
Antlerless Moose	Yes	Cow, calf or antlerless bull	Nov. 26 - Dec. 1 Dec. 3 - Dec. 8

* Season open only for bull moose having no more than 2 tines on one antler (see Figure 1).



Figure 1. Legal immature bull moose in the Omineca.

season. Adult bulls, like cows, are awarded only to those hunters who are selected by lottery each year. Unsuccessful applicants can hunt for yearling 2-point bulls and calves only. Successful applicants, on the other hand, have more options for targets but are limited by licence type to shoot either an adult bull (any bull having 3 or more tines on either antler) or cow or calf. But all hunters regardless of licence type or draw status are eligible to hunt for 2-point bulls and calves. The annual bag limit is one moose regardless of age-class or sex. Licences for adult bulls or cows are automatically cancelled whenever the licensee kills a 2-point bull or calf.

A post-season antlerless hunt is advertised each year. Hunters again must be selected by a computer draw to participate in this hunt. Hunters are similarly encouraged to be selective of calves in their hunt but can shoot either a cow, calf or bull provided the latter is antlerless. Hunters participating in these late season hunts are required to collect and submit for examination incisor teeth from any animal killed and the complete reproductive tract from cow moose.

Program Evaluation

Changes in harvest sex ratios, age class structure and adjustment in the frequency of social-maturity classes (Bubenik and Timmerman 1982) were monitored by analysis of annual harvest data. It is relatively easy to monitor hunter response to regulation changes as indexed by these statistics, but it is difficult to determine the response of the resource to this strategy change. Examination of reproductive tissues collected in the late antlerless season has become an integral

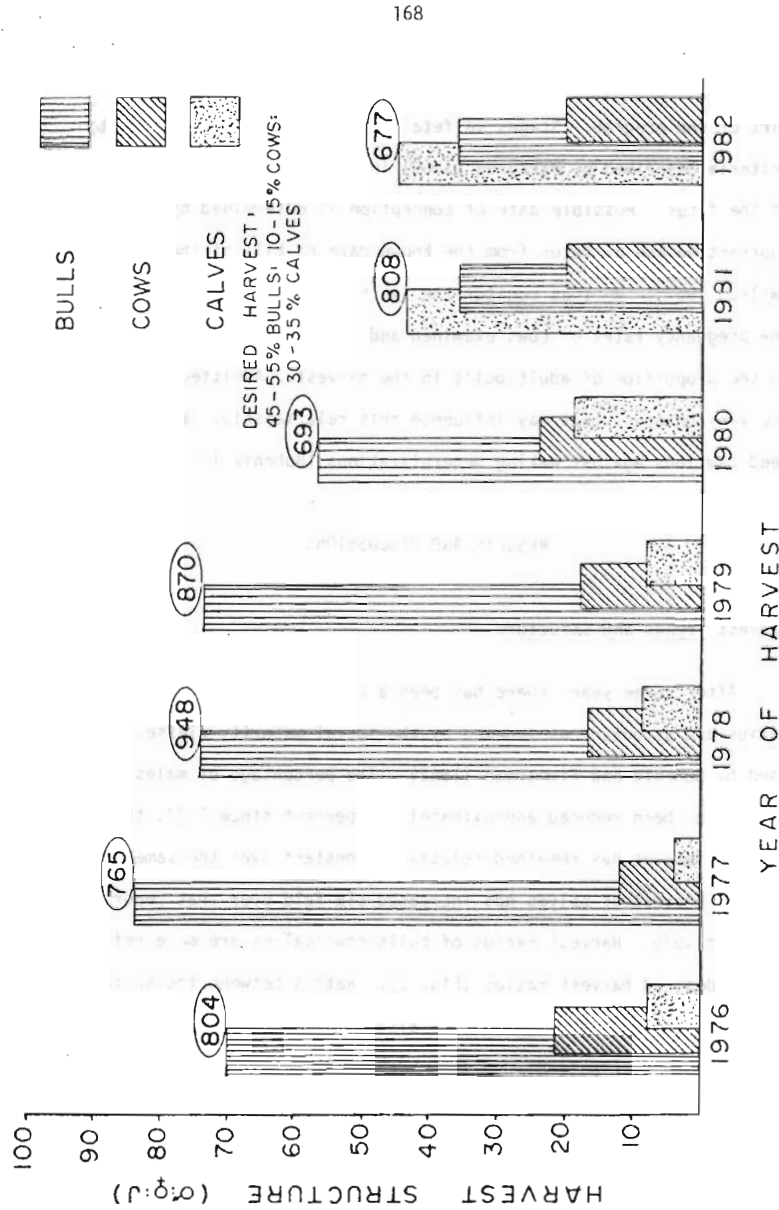


Figure 2. Sex and age structure of reported moose harvests in the Omineca, 1976 - 1982. (Data from Hunter Sample.)

part of the program. Stages in fetal development are identified by criteria described by Markgren (1969) in order to determine an age of the fetus. Possible date of conception is determined by simply subtracting age of fetus from the known date of kill of the cow (Wilson 1967). We then monitor the synchrony of the rut by relating the pregnancy rates of cows examined and estimated time of conception to the proportion of adult bulls in the harvest. Admittedly there are many unknowns that may influence this relationship. We are indeed cautious against making generalizations (Bubenik 1981).

RESULTS AND DISCUSSIONS

Harvest Trends and Structure

After three years there has been a change in harvest sex and age ratios and structure as indexed by the social maturity classes proposed by Bubenik and Timmerman (1982). The percentage of males harvested has been reduced approximately 50 percent since 1977, the harvest of females has remained relatively constant over the same period and the harvest of calves has increased six fold over that reported prior to 1980. Harvest ratios of bulls:cows:calves are more reflective of desired harvest ratios (Fig. 2). Ratios between the social maturity classes amongst bulls has also changed and show an improvement since 1981 (Table 2). Although the total harvest of moose in the Omineca reported in 1980 was less than that reported over the previous four years, subsequent harvests have increased to former levels and structures have been adjusted to favour the calf component. This

Table 2. Structure of reported bull harvests in the Omineca by Social Maturity Classes, 1976 - 1982.

Year of Harvest (N)	Social Maturity Classes (%) (after Bubenik and Timmerman 1982)			
	Calves (0.5 yrs.)	Teens (1.5 - 4.5 yrs.)	Primes (5.5 - 10.5 yrs.)	Seniors (11.5+ yrs.)
1976 (188)	27.1	48.4	20.2	4.2
1977 (181)	7.2	63.5	23.8	5.5
1978 (193)	3.6	66.8	23.8	6.2
1979 (161)	8.1	70.2	16.1	5.6
1980 (81)	6.2	77.8	11.1	4.9
1981 (106)	33.0	50.9	10.4	5.7
1982 (260)	22.7	62.6	11.6	3.1
Desired Harvest Ratio	20.0	40.0	30.0	10.0

preponderance of calves in the harvest has continued since selective harvest strategies were implemented in 1980 and when an open calf season was first initiated (Figure 2).

The Calf Harvest

The principle of selective harvesting as a management strategy for moose has been generally accepted by the hunting public. Initially much skepticism was voiced over the shooting of calves but hunters have accepted the calf hunt as an alternative to an older bull or cow. Education efforts to inform the hunter about the biological aspects of moose management are continuing and have no doubt played an integral part in allaying fears of people that the shooting of calves would hasten population declines. The increasing harvest of calves in the Omineca is testimony to the hunter's continuing acceptance of the calf season and the management principles of selective harvest.

Quality Recreation: Trophy Management

Selective harvesting emphasizes the need to identify qualitative differences amongst individual males and females in a population. Management objectives for moose in the Omineca address quality recreation or trophy management. Several people have studied antler characteristics in moose in order to describe age-related growth differences amongst bulls (Bubenik et. al. 1978; Child 1982; Timmerman 1971; Gasaway 1974). Although antler structures do change with increasing age the definition of a trophy class for selective harvest is

difficult. The antlers of bull moose in the 5 to 10 year age-classes have been selected for such purposes however (Smith et. al. 1979). We are continuing our investigations on definition possibilities. In the interim we treat all bulls greater than 5 years of age, regardless of antler size or shape, as trophy animals.

Biological Assessment

We are attempting to monitor the responses of moose to this strategy change through studies of reproductive performances of cows and it's relationship to the proportion of adult bulls in the annual harvest. Since 1977 rutting activities are seemingly becoming more synchronous (Figure 3). The peak of the rut is somewhat later than rut schedules reported for British Columbia (Ritcey 1974). The majority of females are being bred by their second estrous which is approximately two to three weeks later than that reported by Ritcey (1974). These observations suggest that, although synchrony may be improving, an earlier onset of the rut may be a function of the proportion of prime males in the population as stated by Bubenik (1972). However, we hesitate to draw any conclusions at this time since these studies are continuing.

CONCLUSIONS

Any departure from tradition carries with it many new challenges; some expected and remembered, others unwanted and quickly forgotten. So it has been with the introduction of selective harvesting strategies

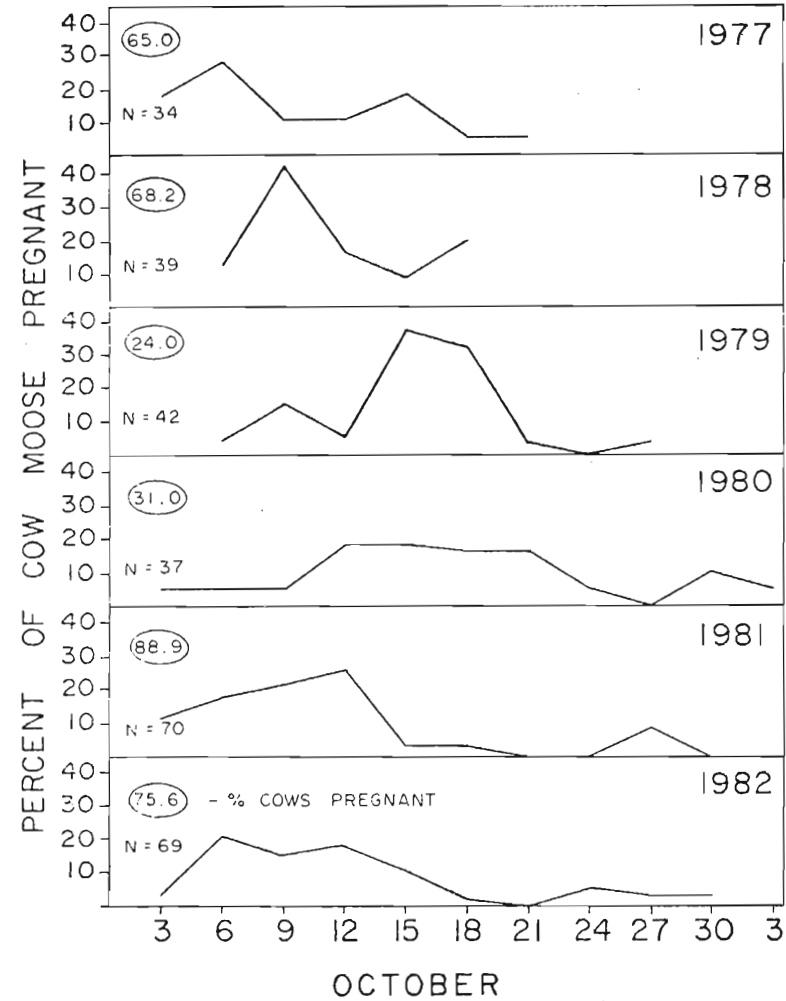


Figure 3. Change in Pregnancy rate of cow moose examined from 1977 to 1982.

for moose in the Omineca. After three years, the initial results are promising and encourage us to continue to practice this management system. On a positive note, we have seen a change in harvest ratios and both age and social structures of the harvest which together speak of an improvement in both hunter compliance and possibly resource condition. The rut is becoming more synchronous but whether or not a time shift to an earlier onset and/or peak of activity will occur remains to be seen. Reproductive studies will be continued in order to describe this phenomenon and its relationship to the proportion of adult males in the population.

Our greatest challenge experienced to date has come from the public arena. Hunters although initially skeptical for fear of loss of hunting rights are becoming increasingly supportive of the program once they fully understand its biological reality. Most importantly, hunters have faced a measure of accountability once they have accepted the fact that their choice-of-target has biological implications and long term effects on their hunting opportunities. The need for public and hunter education is of paramount importance if controlled hunting systems are to receive public and political support as an acceptable alternative to the traditional free-choice hunting practices for moose. However, what we have experienced to date encourages us to continue along this management course as we expect to realize benefits to both the resource and its various user groups.

There is a negative side unfortunately. As we strive to modernize our management efforts and fine-tune our techniques the need to assess the condition of the resource becomes the fundamental issue.

We are able to govern hunter's involvement by regulation but will the resource respond favourably to these adjustments also? We have been given enough reason to believe so. But the full benefits of this Omineca program could be better assessed if a) a monitoring program, relatively free of fiscal uncertainties, was in place to quantify population changes, b) a compulsory reporting system was in operation to secure a more accurate summary of annual harvest statistics and c) an educational effort was active in order to compliment our management efforts and encourage hunter compliance. Otherwise, I see our current efforts will not progress too rapidly beyond the experimental stages of trial and error. In spite of these shortcomings, controlled hunting strategies may offer us the better option to follow, if we are to achieve the program objectives of increased numbers of animals, optimum harvests, maximum recreational opportunities and improvement in recreational hunting experiences (Edie and Child 1982).

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