CHANGES IN MOOSE MANAGEMENT IN BRITISH COLUMBIA

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Abstract: Moose taken by hunters in British Columbia increased from 4,300 in 1950 to a peak of 25,754 in 1968. Since 1968 the harvest has dropped rapidly, and fluctuated between 12,500 - 14,500 animals during the last six years. In 1968 the harvest was comprised of 55% males, 35% females and 10% calves. In 1979, 72% of the hunter take was males, 21% females and 7% calves. There has been a decrease in hunting success and the mean age of the bulls taken by hunters. The provincial moose management plan calls for an increase in the present moose population from an estimated 240,000 to 300,000 and provide for an annual sustained kill of 30,000. New regulations and selective harvest strategies are being implemented and are designed to direct hunting pressure to calves to restore normal sex ratios and social structure of the populations and protect the prime breeding segment of the herd.

Moose Alces alces are found throughout most of British Columbia except for the coastal area. Three sub species of moose are found in the province. Alces a. gigas is found in the north western corner, Alces a. shirasi is found in the extreme southeastern corner and the majority of the province is populated with A. a. andersoni (Cowan & Guiguet, 1965).

Prior to 1860 moose were absent from the interior of the province (Fig. 1). This is substantiated by the fact that the Indians in this area had no name for moose. The spread of moose into these now important moose areas was reported by Hatter (1950). Since the 1920's, moose have expanded their range westward. This expansion in range was likely the result of the growth of suitable foods where such foods did not exist before. This emanated from heavily forested areas being opened up by cutting and burning activities of early settlers and miners. Willow (Salix sp.), aspen (Populus tremuloides), serviceberry (Amelanchier alnifolia), maple (Acer glabrum), birch (Betula sp.), red osier dogwood (Cornus stolonifera), and false box (Pachystima myrsinites) increased and moose moved in. The present distribution and former peak in moose numbers was sustained by a variety of land use practices, such as logging and land clearing for agriculture. Moose reached peak numbers in the mid-fifties to mid-sixties then began to decline until the early seventies due to a combination of factors including: decrease in high quality browse; improved forest fire protection which reduced the amount of new browse; increased access and hunting pressure; increased predation by man and wolves; and increased land alienation and destruction, especially of critical winter ranges (B.C. Fish and Wildlife Branch, 1979).

HARVEST

The increase in moose is reflected in the hunter harvest data shown in Fig. 2. and Table 1. from 1950 to 1980. The harvest figures are based on guide returns filled out for all non-resident hunters and a hunter questionnaire which was sent out to 50% of the resident moose tag buyers. Finegan (1967) described the methods used in calculating the estimated

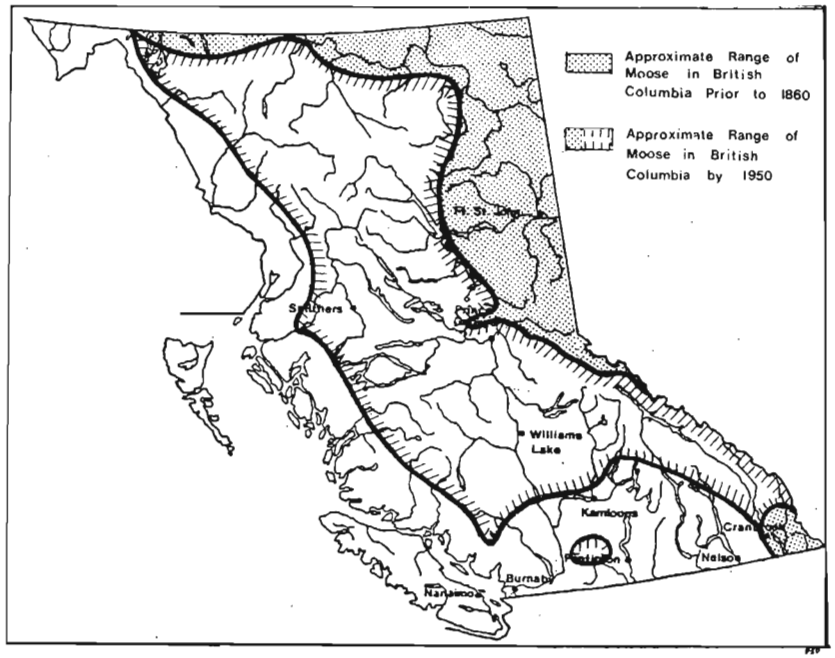


FIGURE 1. PAST DISTRIBUTION OF MOOSE IN BRITISH COLUMBIA, 1860 TO 1950 (AFTER HATTER, 1950).

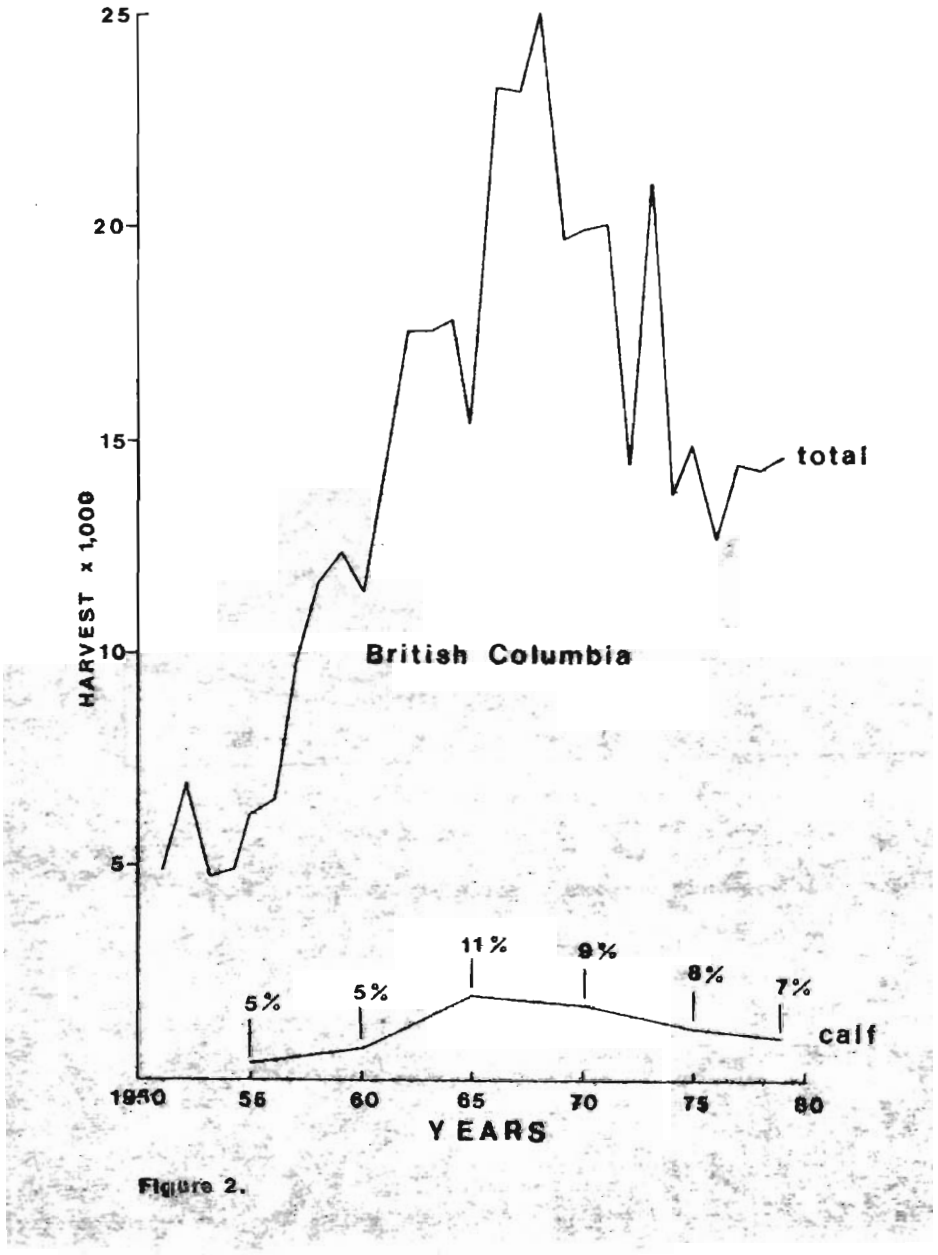


Figure 2.

kill. These figures show that the moose take increased almost four fold from 7,000 in 1955 and 1956 to over 25,000 in 1968. During the same period the number of moose hunters doubled from 20,000 to 43,000. In addition the branch operates field check stations, one of which the Cache Creek station has been operated since 1946. In 1979 21% of the total estimated moose harvest was checked at this station. This is down from earlier days as a greater percentage of the population now resides north of Cache Creek. In 1980 these were 2,173 moose checked and age information gathered on 1,264 animals at this station.

able 1. British Columbia moose harvest.

Year	# Moose checked at Cache Creek	% Males	% Females	% Calves	Total harvest	Total moose licences
1950					4,342	
1951					6,269	
1952					6,982	
1953					5,905	
1954					5,908	
1955	2,385	73	22	5	7,362	-
1956	2,622	71	23	6	7,747	26,869
1957	2,788	65	27	8	11,188	29,552
1958	2,815	68	26	6	12,814	33,659
1959	2,670	73	21	6	13,568	35,244
1960	2,923	77	18	5	12,942	40,118
1961	4,159	64	27	9	17,132	42,671
1962	4,772	58	32	10	18,722	48,848
1963	5,456	58	34	8	18,946	52,351
1964	5,525	56	34	10	20,363	41,024
1965	5,931	55	34	11	18,006	43,075
1966	7,261	55	35	10	23,169	47,898
1967	7,258	54	34	11	22,725	51,491
1968	6,650	55	35	10	25,754	50,135
1969	5,768	58	32	11	18,463	54,843
1970	5,153	55	36	9	19,500	54,040
1971	5,412	60	31	8	20,159	51,922
1972	4,503	63	31	7	14,319	55,019
1973	5,707	67	26	7	21,103	69,180
1974	4,435	65	28	7	13,516	53,656
1975	4,546	65	27	8	14,911	50,026
1976	3,305	60	27	13	12,519	48,352
1977	3,287	75	20	5	14,486	50,363
1978	2,922	76	19	5	14,367	57,553
1979	3,114	72	21	7	14,586	62,700
1980	2,893	73	21	6	-	-

Following the peak hunter kill in 1968 the harvest dropped rapidly and since 1974 has varied from 12,000 - 15,000 moose per year. In 1968 and the four preceeding years 55% of the harvest was composed of bulls, 35% cows and 10% calves. In the most recent four year period 1977-1980, the harvest has been 72-76% bulls, 19-21% cows and 5-7% calves.

The mean age of bulls over 1 year old has dropped from 4.4 in 1977 to 3.7 in 1980. The average number of days spent to kill a moose has risen from 11.3 in 1971 to 19 in 1980. This indicates that it is becoming more difficult for hunters to bag a moose.

HUNTING REGULATIONS

Historical

The history of British Columbia moose hunting regulations is summarized in Table 2. In most of the Province from 1970 - 1980 there were general seasons where any bull moose including male calves could be taken. Opening dates varied but generally were August 15 in the northern units, September 6 to September 13 in central units and August 30 and September 16 in southern units. There were a variety of closing dates in October and early November; a few areas were open until late November and one permit, either sex, hunt was held in January.

There have been shorter antlerless (female or male calves) seasons in October or November in most units.

The exact dates and nature of the earliest regulations are obscure, but legislation was gradually introduced in the 1900's limiting the harvesting of moose. It was generally recognized that the moose should be protected from overhunting while increasing its numbers and range. However, moose management did not really occur until 1952 when the first cow or antlerless seasons were introduced.

Table 2. History of British Columbia Moose Hunting Regulations

Year	Season	Area	Bag Limit	Remarks
1892	Sept 15 - Dec 15	Eastern District	2 bulls	
1935	Sept 01 - Dec 15	Eastern and Western District	1 bull	West District opened
1948	Sept 01 - Dec 15	North	1 bull	Res. moose tag $1.00
	Sept 23 - Nov 30	Cariboo	1 bull	Non-resident trophy fee $60
	Sept 15 - Oct 31	Kootenay	1 bull	
1952	Sept 01 - Dec 15	North	1 bull	
	Sept 20 - Nov 30	Cariboo	1 bull	
	Oct 01 - Oct 31	Kootenay	1 bull	
	Sept 20 - Dec 14	Wells Gray Park	1 bull or 1 cow	first cow season
1956	Sept 01 - Dec 15	North	1 bull	Province divided into 21 Game Management Areas
	Dec 12 - Dec 15	North	1 cow	
	Oct 01 - Dec 02	Cariboo	1 bull	
	Nov 24 - Dec 02	Cariboo	1 cow	
	Sept 15 - Dec 02	Kamloops	1 bull	
	Nov 01 - Dec 02	Kamloops	1 cow	
1968	Opening dates			
	Aug 03 - Nov 09		1 bull	
	Oct 05 - Nov 09		cows	28 Game Mgt. Areas
				Reg. Moose Tag $6.00
	Closing dates			
	Nov 24 - Dec 31		bulls & cow	
1975	Opening dates			
	Aug 15	North		
	Sept 06 -Sept 13	Central		
	Aug 30 -Sept 16	South		
	Province divided into 219 Wildlife Management Units for management and regulations. First limited entry (only persons receiving a special hunt permit) season for moose. Res. Moose licence - $10.00. Non-Res. - $100.00			
1980	Only bulls with 2 pts. or less on one antler legal in first part of season in north central part of Province.			

Recent

There has been a trend in the last three years to control the taking of antlerless moose in heavily hunted areas by limited entry permits. Only hunters obtaining such a permit may take an antlerless moose in these designated areas.

In 1979 there were 686 permits issued and 142 moose taken, in 1980 there were 1470 permits issued and 228 moose taken, in 1981 there will be 6010 permits available.

DISCUSSION

The new moose management plan (B.C. Fish and Wildlife Branch, 1979) for the Province calls for an increase in the present moose population from an estimated 240,000 to 300,000 and provide for an annual sustained kill of 30,000. In order to meet this objective we are implementing regulations to direct more of the harvest to the non-breeding segment of the population.

Because the harvest has been largely bulls the percentage of the herd composed of bulls, particularly mature or prime bulls, has decreased. This decrease is reflected in the scarcity of prime bulls seen in aerial counts (Child pers. obs.) and the decline in the mean age of bulls taken by hunters. In the Omineca-Peace area, the mean age of bulls has dropped from 5.5 years in 1976 to 3.2 in 1980 (Fig. 3.). During this same period there has been an increase in the average number of hunter days for each moose killed from 20.7 days in 1976 to 21.7 in 1980. There is some evidence that this distorted sex ratio may have been a factor in prolonging the rut period and not all cows being bred during their first oestrous period. In the Omineca area examinations of embryos has shown

COMPARISON OF MEAN AGES OF MALE AND FEMALE MOOSE HARVESTED IN THE OMINECA PEACE 1976-1980

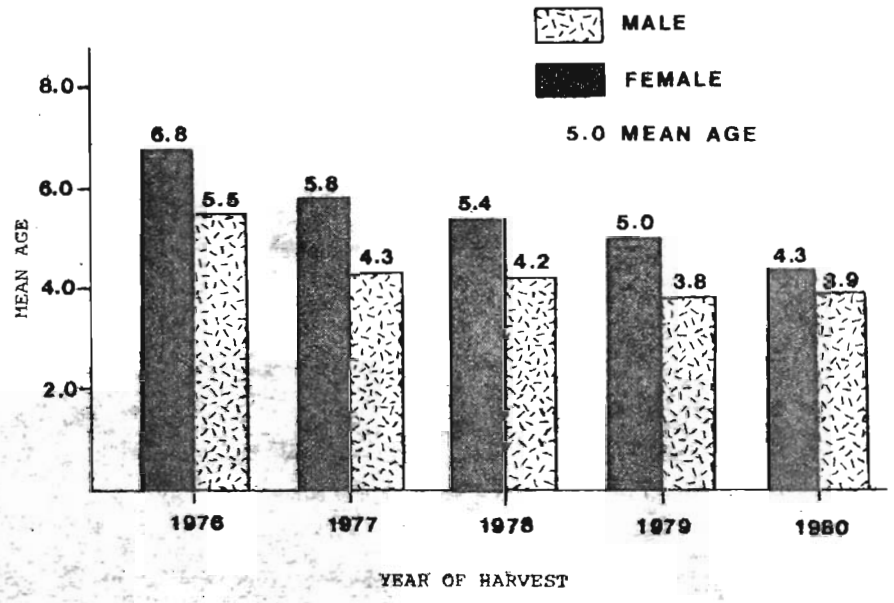


Figure 3.

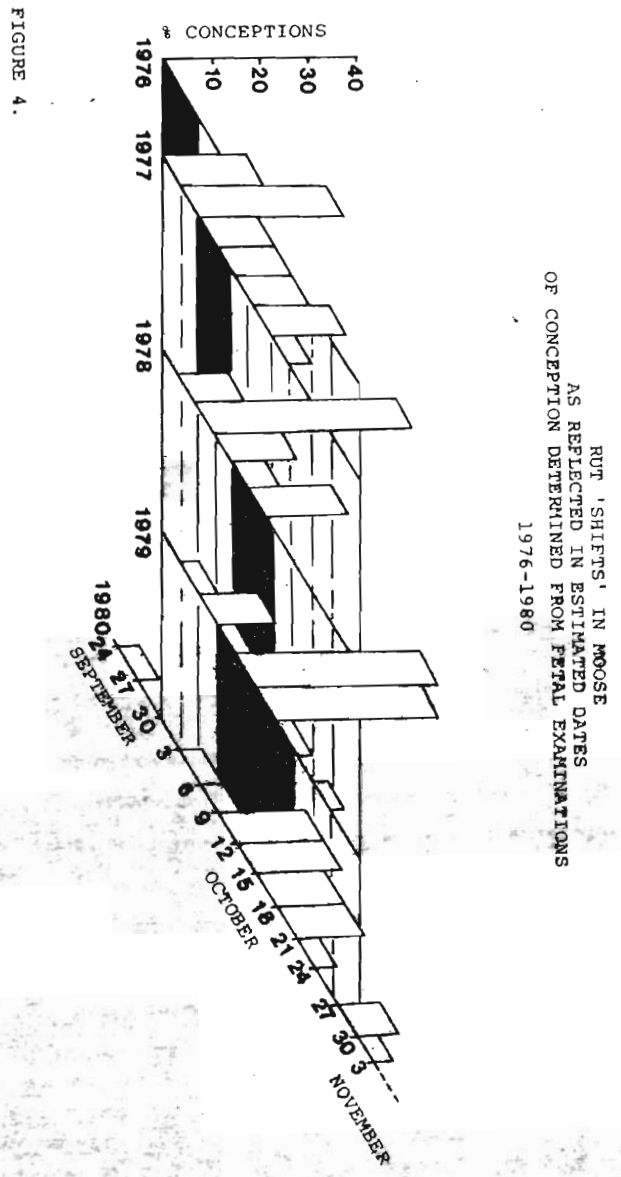
(Fig. 4.) that the rut has been shifting to later dates. In 1977 the embryos were conceived between September 30 and October 18 with a peak during the first week in October. In 1978 the rut took place from October 3 to October 15 with the peak during the second week of October. In 1979 the rut extended from October 3 to October 27 with the peak of the rut occurring between October 9 and October 15. In 1980 an examination of embryos indicated that the rut extended from September 24 to November 3. There was an indication that a few cows (14%) were being bred in the first oestrous in September. The majority were bred in mid October and a few (9%) were bred during late October and early November.

Two different approaches are being tried to provide for improved calf survival and greater protection of the prime breeders.

In the Peace area split seasons have been used where the season is closed during the main rut period. In the Omineca area protection has been by allowing general hunting of immature bulls (2 or fewer points on one antler) until after the rut and requiring a permit to take a mature bull. The number of mature bull permits was limited and was issued on a lottery basis.

This year the take of mature bulls, cows, and calves will be regulated by a combination of limited entry hunt permits and guide allocations. The allowable harvest was determined from population estimates based on moose density and by Canada Land Inventory habitat capability ratings for each management unit and age and sex ratio data from representative units. A harvest rate 15% was used with adjustments by class of animal to reduce the previous heavy harvest of mature bulls and direct a greater proportion of the harvest to the non-breeding segments of the herd (calves and young bulls). This is in line with the

FIGURE 4. RUT 'SHIFTS' IN MOOSE AS REFLECTED IN ESTIMATED DATES OF CONCEPTION DETERMINED FROM FETAL EXAMINATIONS 1976-1980



recommendations of Bubenik (1972) and Stewart and MacLennan (1977).

In addition to these permit hunts where only a limited number of permits will be issued there will be a general open season for immature (less than 2 tines) bulls and a short calf only season. We hope that these regulations will result in a better balanced herd, improved calf survival, a population increase and increased recreational opportunities.

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