

The Caribou of Baffin Island,
an unknown quantity?

A.H. Macpherson



Introduction

Concern has been expressed increasingly over the last several years over the rising kill of caribou on Baffin Island. More serious than the possibility of over-exploitation, however, is the possibility that the population is increasing to the extent that it might damage its range unless the increase is halted. This report will attempt to review our information on numbers and distribution, and to indicate the present status of the Baffin Island caribou population. A glance at the published literature has yielded sufficient data to enable a brief and sketchy history of the Baffin Island caribou population and a map of their seasonal ranges to be compiled. Recent trends will be discussed, relying largely on the statistics furnished annually by Royal Canadian Mounted Police detachments. Canadian Wildlife Service investigations concerning Baffin Island caribou, namely four aerial surveys, will be reviewed from the perhaps over-critical point of view of a non-participant. Finally, the results of the review will be discussed.

1. History of the Baffin Island caribou herd

Caribou have been present on Baffin Island since before the beginning of historic times. Kill statistics have only been available since the 1930's. Inference and speculation must be relied upon for a description of the herd before that period.

Eskimos, even the most coastal, tend to become caribou hunters whenever the opportunity offers, and the distribution of Eskimo dwellings in areas where only caribou can supply a staple food source will be indicative of the status of the caribou of the region. Thus, on the mainland Barrens, people became more numerous when the availability of caribou rose (the advent of firearms, etc.) and decreased when the caribou began to decline. The dating of Eskimo dwelling-sites around the large lakes of Baffin Island, or even on the west central coast, might hint at the ancient population changes of the Baffin Island caribou. Manning (1943:47), commenting on the absence of Eskimos from the Foxe Basin coast for perhaps a hundred years, suggests that, "a failure of the caribou is the most likely reason" for the disappearance of the ancient inhabitants. This remark at least suggests the possibility that the caribou of Baffin Island are unstable numerically and prone to high-amplitude fluctuations in number. This condition may well be characteristic of Arctic insular ungulate populations, and has been documented for both caribou and muskox populations in Canada (Manning and Macpherson, 1958:66-7; Macpherson, 1961:11-12,15).

Local decreases have been recorded more recently. Kumlien (1879:54) mentions a reported decrease "over the last few years" in the Cumberland Peninsula ("Penny Peninsula") area, although at that time he heard of "no apparent diminution of their numbers to the west and southwest ... where they are reported as very abundant." This local decrease may be attributable to hunting pressure from the settlement of Pangnirtung: by Soper's time it was said that "for long years they have been absent from

the mountains of the east side [of Pagnirtung Fiord] (Soper, 1928:64). At the same time, some diminution also appeared to have occurred around Eclipse Sound, and near the mouth of Amadjuak River on Nettilling Lake, and also in the Cape Dorset district (Soper, 1928:64,65,67). Regarding the latter area, Archdeacon Fleming's observations (Millward, 1930:41-2), made in the Nuwata region in February, 1915, indicate that caribou were then reasonably abundant in western Foxe Peninsula, they had declined severely by the late 1930's, when Tweedsmuir (1951:106) wrote, "Plants had grown over the antler, which must have laid [sic] there a long time, because the Eskimos have shot out all the caribou that used to browse in hundreds near the Post. You have to track [sic] over two hundred miles farther on to find them now." Manning (1943:50) substantiates the above as follows: "A few caribou were shot by the natives to the northwest of Chorkbok Isle. The natives say that they were once very numerous in the Nuwata district, but now they have been exterminated from all but the extreme eastern part of the peninsula." The population of the whole of Baffin Island must have indeed been large about 1925, when L.P. Burwash said that it consisted of five main herds, each of which included many thousands, and when William Duval, formerly of Pagnirtung, guessed its number to be a million, saying that he himself had seen a herd of forty or fifty thousand ten years earlier, and one of twelve thousand since (Advisory Bd. on Wildlife Protection, Minutes of January 15 and December 2, 1925).

Kelsall (1949) briefly mentions the presumable reason for the survey which he made in March, 1949, as follows: "Caribou are at present scarce on much, if not all, of Baffin Island in comparison with the early 1900's and before, and in some areas have disappeared completely." There

did appear to have been a decrease in the 1940's. Kelsall's excellent graphs clearly show both decreases in the total kills and in the number taken per hunter. The total kill declined from an average of nearly a thousand a year (and between 1936-7 and 1939-40, nearer 1,500 a year) to five or six hundred in the late 1940's. When we recall that this decline was paralleled roughly by a decline in the value of fox pelts (Anon, 1962:11), and consequently presumably with an increase of hunting effort, we must, I think, acknowledge that it indicates a real decline in the caribou population.

A series of more recent kill figures, compiled largely from RCMP Police game reports, is shown in Table 1. A comparison with Kelsall's data shows that the present kill is two or three times that of the late 1940's. Further, of 52 game reports in the present series, about half specifically mention an increase in the region reported on; only one (Frobisher Bay, 1955-56) reports a decrease, and that contradicted in a later report. Reports have been received since 1960 of very large numbers of caribou seen inland:

Table 1. Caribou kills reported from Baffin Island settlements, 1955-56 to 1962-63. From RCM Police Game reports unless otherwise indicated.

	55-56	56-57	57-58	58-59	59-60	60-61	61-62	92-63
Pond Inlet	105 ²	125 ²	75 ²	124 ²	138	90 ³	100 ²	150 ¹
Arctic Bay		54	25	50	12			
Igloolik	222	200	227	338	350	2		
Cape Christian	80 ²	100	200 ⁶	25 ⁶	100 ²		328 ²	200 ²
Pangnirtung	378	500 ¹	500 ²	500 ²	200 ²		300 ²	425 ²
Frobisher Bay	⁴	100 ²	175-200 ²	160 ²	400 ²	100 ⁵	182 ²	399
Lake Harbour	53 ⁶	25 ⁶	26 ⁶	26	15		22 ²	41 ²
Cape Dorsot		180 ⁶	400 ⁶	350 ⁶	160			120
Totals *	1,764	1,264	1,635	1,573	1,375		1,489	1,650

* Using average settlement figures where blanks occur.

¹ caribou reported as numerous. ² caribou reported as increasing.

³ decrease in kill reported as due to pressure from whites for conservation.

⁴ caribou reported as decreasing. ⁵ fewer Eskimos hunting. ⁶ figure obtained from Tener and Solman, 1960: source unknown.

In 1960 the prospector "Baldy" Turner estimated a herd he saw near Anadjuak Lake at around 30,000 and the Eskimo Etunguat calculated that some 15,000 passed his camp at Hantzsch River from May to October, 1961 (vide W. Berry, February 21, 1962, File WLU 228). The very fact that Etunguat was living in that country, where no-one lived in the 40's and 50's indicates a

resurgence of the caribou. I have also heard of families re-occupying old camp sites on Nettilling Lake in the early 1960's: there were Eskimos living inland in the early 1940's (Wright, 1944:6), but probably not since.

In summary, it appears that the Baffin Island caribou may have declined in the first half of the 18th century to a low number. No evidence of a further decrease, except purely local ones, is available until the 1940's, before which time the population must have been very large. Since the early 1950's the herds have been increasing rapidly. Foxe Peninsula has been void of large numbers of caribou since about 1920.

A very high population in the 1920's and 1930's was followed by a severe decline in the late 1940's. If, as seems possible, the decline was a consequence of the high level which the population attained, it behooves us to take what steps we can to detect a repetition of the casual chain and interrupt it, if it ever again begins.

2. Aerial Surveys of the Canadian Wildlife Service

The Canadian Wildlife Service has flown aerial surveys of the Baffin Island caribou population four times in the last fifteen years. The chief quantitative data obtained by the survey parties is summarized in Table 2.

Table 2. Aerial caribou survey data from Baffin Island. Surveys No. 1 and 2 were flown largely by R.C.A.F. aircraft with Canadian Wildlife Service observers. The two later surveys were made by chartered aircraft.

Survey No.	Year	Month	No. of miles flown	No. of caribou seen	Population estimate
1	1949	April	3,000	97	4,500-6,500
2	1954	April	?	504	10,000 ¹
3	1960	March	4,021	763	7,725
4	1961	March	?	?	nono

¹ Report not located: information from memo of February 7, 1957, on file WLU 228.

It would be rash to compare the estimates obtained directly, for the survey methods of 1, and 3 (the only ones for which descriptions were found on file) differ considerably, and Survey 3, probably the most extensive, has apparent shortcomings.

Kelsall (1949) on Survey 1, counted all visible animals and assumed an average census strip of one mile. Some six hundred miles were flown in a Norseman with one set of observers, and some three thousand in a Dakota with another. Kelsall corrected his estimate to exclude areas in which animals were not expected, confining the survey, in fact, to winter range (as deduced from survey results). His two limits are the approximate results of the two calculations.

The report of Loughrey (1954) on Survey 2 has unfortunately not been located at the time of writing. Tener and Solman (1960) based their Survey 3 estimate without comment on a strip width of two miles: the

altitude of their flights and those of Kelsall were probably both similarly variable, for Kelsall (1949:2) says, "in still other places ... the aircraft would be skimming a mountain top at one moment and be over thousands of feet of air the next. His remark is doubtless particularly applicable to the broken country of much of the preferred winter range, and the conditions are therefore such as to make accurate strip-census work impracticable. The estimate of Survey 3 was not adjusted to include flights over winter range only, as was that of Survey 1. The estimate of Survey 3, however, contains an even more serious defect, namely the removal of the Inuktorfik Lake flight from what was supposedly a set of random samples, on the basis of its high caribou count, and the addition of this separately-calculated data to an estimate based on the rest. Survey 4 was abortive and no estimate could conceivably have been based on the few observations made (Tencer, 1961).

To these estimates we should add that of Manning (1943:51), based on observations made in 1938, 1939 and 1940 in west central Baffin Island. He extrapolated the number observed per square mile on summer range over its whole extent to arrive at an estimate of 10,000. To his estimate we would have to add the other groups on Baffin Island, on at least an estimate based on the extent of their ranges. In this manner Wright (1944:9) estimated a total population of at least 25,000.

A quickly drawn sketch map of the probable seasonal distribution of caribou on Baffin Island is presented as Figure 1. It is based principally on the data in Appendix 1. If the maps presented in the reports of Surveys 1 and 3 are compared with the map of the seasonal distribution, it will be observed that these surveys were not designed to sample systematically the winter range of the caribou, and in fact

the areas where concentrations could be expected were very inadequately sampled.

It was hoped that a section could be devoted here to a recalculation of the estimates of Canadian Wildlife Service survey parties, in order to make them more directly comparable and thus to see if any further evidence of a trend in numbers could be found. This, however, proved impossible: in the case of Survey 1 because it was doubtful what results could be expected from the northern survey, flown at 2,000 ft., and because the southern party failed to sample much of the supposed winter range (Kelsall, 1949), and in the case of Survey 3, because the data of the report (Tener and Solman, 1960) are too much summarized, as well as for the reason that putative winter range was poorly sampled.

The latter shortcoming could to some extent be rectified (but with several unjustified assumptions) by lumping the Inuktorfik Lake flight with the rest. Using the total area of Baffin Island, or 191,000 square miles, instead of the 94,000 square miles of "total potential caribou range" of the survey report, an estimate of 17,387 caribou is derived, or over twice the size of the original estimate. Since Survey 3 examined little of the best winter range we could consider the newly calculated figure to be an underestimate of the total population. At a guess, this might run to twenty-five or thirty thousand animals.

3. Discussion

Data on file resulting from Canadian Wildlife Service aerial surveys of the caribou of Baffin Island are insufficient to establish trends in that population. The major shortcoming in the aerial survey work has been insufficient knowledge about the position of caribou

winter range on that island. It would seem that aerial survey should preferably be undertaken when the caribou are on their summering grounds, first because these are perhaps of lesser extent than the winter ranges, second because caribou are more easily and more systematically counted on flat or rolling country than on broken, mountainous areas, and third because the counts could be undertaken with far less risk than would be the case if the winter ranges were to be adequately sampled. Aerial survey, with all its pitfalls, remains one of the very few means by which some idea of population size can be obtained in remote areas. The greatest care should be taken in planning such surveys if they are expected to yield meaningful results.

In spite of the lack of aerial survey data, it appears that the caribou of Baffin Island are increasing rapidly, and merit full-scale investigation for this reason. With sufficient staff, data of the greatest interest in caribou management could be obtained. Without such full-scale investigation we will not be able to recommend management procedures unequivocally. For the moment, the safest course will be to recommend that the hunters be encouraged to obtain as many caribou as they want, and firmly to discourage predator control on the island. It is probable that even if it were known that caribou were about to damage their Baffin Island range, it would be impossible to prevent this effectively.

Appendix 1Seasonal caribou distribution on
Baffin Island

Soper (1928:63-3) gives many caribou records for southern and central Baffin Island, and a few for the northern part from informants. It seems evident that, in general, caribou frequented the western lowlands and central lake basins by preference in summer, and retreated to the eastern highlands for the winter, arriving as early as late August at Blacklead Island, and in early October at Pangnirtung, and leaving the vicinity of the head of Cumberland Sound in April or May. Other migrations took place in the south and southeast: the majority of the Meta Incognita and Amadjuak animals summered in the neighbourhood of Mingo and Amadjuak Lakes, returning southeast and south in the late fall. Caribou were common west of Nettilling Lake in August and September, though absent from this extreme western region in winter.

Little was known about Brodeur Peninsula ("Cockburn Land") but some information was available about Borden Peninsula. It appears that the caribou probably wintered in the highlands throughout the area in small numbers, perhaps chiefly inland from Arctic Bay ("Arctic sound"). They summered chiefly around Tay Sound and between there and Murray Maxwell Bay.

Manning (1943:49-53) travelled extensively through some of the best summer range in 1938-40, particularly around Hantzsch Bay, and repeatedly visited points between Harbour Bay near Ege Bay and Cape Dorset. His observations indicated that the southern part of the Foxe Basin coast was devoid of caribou in winter, though they occurred in numbers inland,

particularly at the headwaters of Mantzsch River, and also north of Wordie Bay. Around Harbour Bay caribou were found only in winter. On the basis of the Nauja expedition observations in 1949, the large islands of Foxe Basin supply extensive contiguous areas of summer range. Wright (1944:8) gives an interesting interpretation of caribou migration reports for the western herds, without much altering our understanding of seasonal distribution.

The writings of Soper and Manning give a good description of the seasonal distribution of caribou in the southern and central parts of Baffin Island. Less is known of their distribution in the northern region. Data compiled by Harrington (file WLU 228, March 7, 1962) while on a winter trip to the Cape Christian region indicates that some caribou are to be found at the heads of the fiords at all times of the year, but that the animals are much more common in winter than in summer, and that additional wintering areas are "around Nottilling Lake" [the head of Cumberland Sound?], and the eastern margins of the Barnes icecap.

Further north, Dr. R.G. Blackadar spent the summer of 1963 on aerial transect work in the region west of Pond Inlet and Steensby Inlet, including Borden and Brodeur Peninsulars. He found caribou extremely scarce in the whole region, seeing a few only at the head of Admiralty Inlet and another small group in a broad valley near the ice-caps west of Navy Board Inlet. Yet in the whole area, with the possible exclusion of Brodeur Peninsula, caribou are hunted successfully by the Eskimos: however, "they only hunt during the fall and winter months" (Cpl. C.S. Pilot, RCM Police, "Game Conditions", Pond Inlet 1962-3).

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NOTE: This report transcribed from very poor xeroxod copy.