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PRELIMINARY DATA
NOT FOR PUBLICATION

The Caribou of Boothia Peninsula

Introduction: The so-called "Boothia Herd" of the barren-ground caribou is one of the least known in Canada. Flights planned to exploit the opportunity provided by my passage between field projects at Baker Lake and on Victoria Island were made over its reputed summer range on August 10 and 11, 1959. Information was obtained at Pelly Bay and at Spence Bay on the abundance and summer distribution of caribou in the areas served by these settlements. Included below is a report on the survey flights and a summary of our knowledge of past and present caribou abundance in the area.

Report on survey flights made in August, 1959.

Objects: When attempting to assess the wildlife resources of Boothia Peninsula in the winter of 1958-59, it became clear that little was known about the abundance and distribution of the local caribou. The flights reported below were made in the hope of obtaining information on these subjects.

Cost: A Wardair Beaver was chartered from Whitefish Lake to pick me up at Baker Lake and, after making the survey flights, to deposit me at Holman Island post, Victoria Island. The cost of the entire trip was $2168.16.

Itinerary: Piloted by Mr. Ken Stockall, I left Baker Lake on the morning of August 10, flying north-northeast to Lat. 66°02', then due north to the junction of Hayes and Back Rivers, and northeast across the base of Boothia Peninsula to Pelly Bay. We landed here to interview the missionary, R.F. Frans Van de Velde,

O.M.I., and local Eskimos, regarding the location and numbers of caribou in the area. We then flew Van de Velde and an Eskimo to a nearby lake, to search for victims of an accidental multiple drowning which had occurred on July 22. We found one corpse and buried it under rocks on a small islet. On our return to the mission we left again for Spence Bay, which we reached at about 2100 hours.

We were hospitably received at Spence Bay by Mr. and Mrs. Eric Mitchell of the Hudson's Bay Company. That evening we discussed caribou distribution and numbers with Mr. Ernie Lyall, company assistant. He has spent many years in the area, has an Eskimo family, and is one of very few whites on the Arctic coast who still hold a trapping licence. As a result of the information received I amended my projected flight-lines to cover certain areas in which caribou were believed present.

The next morning on August 11, we left on a planned flight to Thom Bay and up the east coast to Cresswell Bay, Somerset Island, and back to Spence Bay via Wrottesley Inlet and Josephine Bay. Unfortunately, banks of heavy fog prevented adherence to the planned route, and we were forced to make many alterations in course. Our eventual route is shown on the accompanying map. The thick weather had lasted for many days, and therefore, when we were prevented by fog from flying north of Hazard Inlet, I decided to return to Spence Bay rather than wait

at Oliver Lake for the weather to improve. We arrived back at the post at 1800 hours. Mr. Lyall and R.C.M.P. Constable Giesbracht were taken on the flight as supplementary observers.

We were weather-bound at Spence Bay for the two following days, and I spent the time preparing lemmings and a weasel from Pelly and Spence Bays as specimens, and in recording information. On the 14th we flew to Victoria Island over King William Island and the Royal Geographical Society Islands, taking with us a sick Eskimo for hospitalization at Cambridge Bay.

Results: No caribou were seen on the flights, which totalled about 760 miles. The only evidence of the presence of caribou noted were two tracks together in a marsh east of Pasley Bay (marked "X" on map).

Remarks on the caribou of Boothia Peninsula

Status: The caribou of Boothia Peninsula are said to be similar to the mainland form (Rangifer arcticus arcticus) in all respects, and to exhibit no intergradation with the small, pale island caribou (R.A. pearyi) which occupy adjacent territory on Somerset Island and Prince of Wales Island. A few mainland caribou are said to occur on both these islands: it is therefore presumed that a small number of Boothia caribou occasionally cross the strait to Somerset Island. Occasionally a few caribou of the northern form are found on Boothia Peninsula, indicating a crossing of Bellot Strait from the north. Caribou from Prince of

Wales Island are believed by Eskimos to travel to the high rugged ground along the west coast of Somerset Island for the winter, and it is possible that a few mainland caribou have become involved in the return journey. Mr. L.A. Learmonth (verbal communication) believed that the mainland caribou was by far the more common on southern Somerset Island, but that only the northern form is found around Stanwell-Fletcher Lake and north of Cresswell Bay.

Former and present distribution and abundance

Ross (1835) obtained information from Eskimos and recorded observations made by members of his party on his second voyage in search of a northwest passage in the years 1829-33. He saw tracks and remains of caribou at Port Logan, on northeast Boothia Peninsula, in late August (pp. 130-135), and encountered caribou at Elizabeth Harbour on September 6 and 7, 1829 (pp. 145-146). No more were seen that year, although a few tracks were recorded up until November 22 (pp. 187-223). Eskimos at Felix Harbour informed him that caribou did not reappear on the east coast of Boothia Peninsula until April (p. 252), and in fact it was not until April 21, 1830, that the first two were seen (p. 328), although tracks had been seen on March 18 (p. 295). Three were seen at the same place, the head of Lord Mayor Bay, on April 22. Tracks were recorded on three occasions during May (pp. 373, 376, 377), and a few

caribou were seen on June 1 (p. 384). On June 4, hundreds of caribou were encountered at Willersted Lake, on Boothia Isthmus. Caribou were seen in increasing numbers as the month of June progressed (pp. 424, 432, 438, 443). Caribou with calves were noted near Lord Mayor Bay on June 11 (p. 432), and one was seen killed by two wolves on May 18 (p. 402).

Caribou were not recorded again until May 15, 1831, (p. 529) when the sighting of tracks at Sheriff Harbour indicated that the return migration had begun. On May 20 (p. 533) tracks were noted on Krusenstern Lake. A few caribou were seen next day, and a group of 12 was observed at Josephine Bay on May 26 (p. 537). On May 26 and 30, caribou were observed on Boothia Isthmus (pp. 537, 539), and a number were seen there on June 10 being pursued by a wolf (p. 564). The last caribou seen in 1831 were two at Victoria Harbour on October 31.

In the final spring of Ross' detention in the Gulf of Boothia, the first tracks were seen on March 11 (p. 628), and more were recorded on June 7, 1832 (pp. 628, 646).

James Clarke Ross summarized the faunal observations of the expedition. He believed that the cows arrived in mid-April, and the bulls not until nearly a month later. Most of the caribou migrated again in mid-September, but a few stragglers remained all winter (app. xvii). The Eskimos obtained caribou in spring with their bows, and also killed numbers of calves with dogs. In the autumn caribou were killed from kayaks

after being driven into the lakes.

The next party to visit Boothia Peninsula was that of M'Clintock (M'Clintock, 1859). His sportsmen were far more successful than those of Ross (who managed to secure only one caribou); M'Clintock records the shooting of nine in less than a year. In 1858, caribou were seen in the Bellot Strait region on August 24, September 2 and 5, almost daily in October, and on three dates in November (pp. 184, 195, 204, 205-7, 211, 214). Two were seen on February 3, 1859, on a 7½-hour walk (p. 223), and two more on February 13 (p. 224). Young, who was attached to M'Clintock's party, noted two near Cape Garry in mid-March (p. 242), and two were seen at Brentford Bay in early March (p. 240). Several were seen in June and July (pp. 319, 321, 324), although few were noted toward the end of the latter month (p. 326).

Rae (1850-1855) travelled from Repulse Bay to Lord Mayor Bay in the spring of 1847, and from the same winter quarters to Shepherd Bay in 1854. The only caribou observed by him on Boothia Peninsula in the first year were two on the isthmus connecting Ross Peninsula with the mainland on April 18, 1847 (1850; 116). On his second visit he encountered numerous tracks of caribou between April 23 and 25, 1854, in the country between Simpson Lake and Shepherd Bay (1855; 252) and a caribou was killed in this region in early May (p. 254).

Kennedy (1853), from his winter quarters in Batty Bay, undertook a lengthy journey through Bellot Strait to Prince of Wales Island in the spring of 1852. In mid-April he noted many tracks of caribou on the ice on the south side of the strait.

Hall (Nourse, 1879) crossed lower Boothia Peninsula at the latitude of Simpson Lake in 1869. One of his Eskimos killed a caribou near the lake about mid-April (p. 394).

These observations, made in the period 1829 to 1869, comprise all the known information about caribou on Boothia Peninsula before rifles became common among the Netchiliks. As recorded above, Ross found definite evidence of migration. The cows arrived in mid-April, the bulls in mid-May. Many cows and calves occupied the area in early June. In late June caribou were very common around the large lakes on Boothia Isthmus. Apparently caribou were rare or absent in the area in July and August. A few were seen on the return migration in September, which was said to be the season when the Eskimos killed them in the lakes. Animals recorded in October and later were presumably the 'stragglers' which wintered in the region. M'Clintock, on the northern tip of Boothia Peninsula, recorded most caribou in October, although they appeared plentiful throughout the year with the exception of late July and August. The lack of spring records is inconclusive, as most of the men were absent on sledge-

trips during this period; Kennedy's record of numerous tracks in April suggests that caribou were then common near M'Clintock's winter quarters. The other records were made in southern Boothia Peninsula in early and mid-April, and they indicate that a few caribou were then present. The records as a whole suggest that the Precambian upland which meets the east coast at Lord Mayor Bay and Thom Bay was a fawning-ground of caribou which migrated from the south, and many of which summered around the large lakes of Boothia Isthmus, but that caribou were also resident in Boothia Peninsula and the Murchison River country. The latter animals were most common on the northern tip of the peninsula.

More recent information on caribou movement is scanty. Both Amundsen and Rasmunssen travelled to the area of Ross' magnetic pole, but neither recorded caribou. Larsen wintered the St. Roch in Pasley Bay in 1941-42, but recorded caribou neither at his winter quarters nor on his extended sledge journeys through northern Boothia Peninsula. He did, however, see a few animals near Murchison River (verbal communication). Mr. L.A. Learmonth, formerly of the Hudson's Bay Company, has supplied information on the caribou of Somerset Island and northern Boothia Peninsula gathered during the period when he was resident at or visiting Fort Ross. Patsy Klengenberg wintered the Aklavik in a cove west of Stanwell-Fletcher Lake in 1937-38, and shot seven caribou around the shores of the lake. The rugged ground

between Stanwell-Fletcher Lake and Bellot Straits was good caribou country in the years 1937 to 1950. Mr. Learmonth says that a few caribou could always be found in the country east of Wrottesley Inlet in northern Boothia Peninsula.

The reports of the Royal Canadian Mounted Police detachment at Spence Bay for the years 1954-55 to 1958-59 add little to our knowledge of caribou distribution. They confirm that a few caribou spend the entire year in the interior of Boothia Peninsula and in the country around Murchison River, but fail to supply information on migration. The lack of information on that subject is believed to be a result of the present scarcity or absence of migrating caribou on Boothia Peninsula.

Year	Approximate total kill	Remarks
1954-5	400	70 killed near Cresswell B., 60 in north Boothia, 175 in central Boothia, nearly 100 killed near Murchison R.
1955-6	250	60 killed near Cresswell B., 100 in north Boothia, 20 in area of Spence B., 70 near Murchison R.
1956-7	236	12 killed near Cresswell B., 31 others on south Somerset I., 136 in south Boothia, 57 in Murchison R. area.
1957-8	56+	56 killed on Boothia and Somerset Island, some fraction of 150 in Murchison R. area.
1958-9	15+	About 15 killed around Thom B., several in south Boothia.

Table 1. The caribou kill in the Boothia Peninsula area for the years 1954-5 to 1958-9, from R.C.M.P. game reports.

The information assembled in Table 1 indicates a

severe decrease in annual harvests. That the decrease may not be due entirely to a decrease in the number of caribou populating the area is suggested by the fact that the Eskimos of the region are becoming concentrated in the vicinity of Spence Bay settlement, and have recently abandoned several former camps on northern Boothia Peninsula. It is also suggested that some of the earlier estimates of caribou kills are perhaps exaggerated. Banfield (1951; 8), relying on R.C.M.P. reports and perhaps on other sources of information, estimated a total population of 2,000 animals on Boothia Peninsula. As shown in his range maps (Figs. 5 and 6), summer distribution was limited to a triangular area of about 2500 square miles with Spence Bay, Thom Bay and southern Lord Mayor Bay at its apices. In winter caribou apparently occupied the same region, but spread some thirty miles to the south; as figured, the area occupied is some 3,000 square miles in area.

Mair (1954), on a visit to Spence Bay made in April, 1954, was informed that there were practically no caribou in the region, and that caribou had ~~been~~ become exceedingly scarce many years before the post opened (1947). He was told that a long valley in northern Boothia Peninsula was a favourite haunt of caribou: this plain is probably the one that holds the river flowing into Wrottesley Inlet (Plate 3). Caribou were also said to live in the area between Murchison River and Willersted Inlet.

The small bands of caribou seen by Tener (1957) in mid-March, 1957, in the rugged country at the headwaters of Hay River and Arrowsmith River were apparently travelling in the direction of Lord Mayor Bay. They were perhaps migrant Boothia Peninsula caribou, or more probably scattered residents.

Information obtained at Spence Bay in August, 1959, was similar to the information obtained previously by Mair. I was told that the caribou of Upper Boothia Peninsula were no longer strongly migratory, that they summered in the larger valleys such as those of Wrottesley Inlet and Thom Bay, and on the Paleozoic plains on the southwest and northeast corners of the peninsula. They were said to be very scarce everywhere, and particularly so on the southwest lowlands.

At Pelly Bay caribou are hunted mostly in late fall, from the fishing camps on Kellett River. The country in which they are then found lies south and west of Pelly Bay toward the headwaters of Hayes River. Two families had this year spent the snow-free period inland, camping by lakes between Hayes and Arrowsmith Rivers, and living chiefly on caribou.

Range: It is well known that there were once large numbers of barren-ground caribou wintering at or near tree-line, migrating north in the spring, and crossing in May to Victoria Island and King William Island. It seems apparent that a similar spring invasion occurred on Boothia Peninsula. The

herds crossing to the islands were quickly reduced following the establishment of trading posts on the migration routes, and the migrations ceased in the years between 1920 and 1930. There was, however, a resident caribou on Victoria Island, and this is paralled by the resident remnant of the Boothia herd. The question thus arises: why do the resident stocks remain so small?

The simplest postulate is that these populations are hunted to such an extent that they are unable to increase numerically. This postulate is not altogether satisfactory as it does not explain the biologically anomolous situation obtaining previous to the extinction of the migratory herds: on general grounds it is difficult to understand why the resident animals were unable to occupy their range effectively, to the exclusion of migrants.

The only satisfactory answer to both of these questions seems to be that winter food supply was a far more stringent limiting factor than summer food supply, and that there was consequently a surplus of the latter available to migrants; also, that scarcity of winter food now limits the resident population.

Any attempt to manage coastal caribou populations must be based on a study of the barren-ground ranges. Without quantitative knowledge of the carrying capacity of these ranges any discussion of limiting factors must be largely speculative, as is that which follows.

Physiographically speaking, barren-ground wintering areas are usually rugged, broken Precambrian uplands; summer ranges are Paleozoic lowlands. Examples of the difference in range preference, which involve local movements of caribou, are known from several parts of the Canadian Arctic. The caribou summering on the Great Plain of the Koukdjuak move into the Precambrian uplands of central Baffin Island in late fall. The caribou once summering on Simpson Peninsula wintered in the uplands about the headwaters of Arrowsmith River. We may therefore tentatively equate these physiographic regions with the terms "summer range" and "winter range".

The Paleozoic lowlands of Boothia Peninsula occupy two areas, one lying southwest of a line running from Weld Harbour to Josephine Bay (Plate 2), and the other northeast of a line from Nudlukta Inlet to Cape Palmerston. Their combined area is some 3,500 square miles. Another lowland area, chiefly morainal, of about 1,500 square miles, occurs around the large lakes north of Boothia Isthmus (Plate 1). On upper Boothia Peninsula there thus occurs a total of some 5,000 square miles of presumed summer range. The remainder of the area, about 6,000 square miles, is composed of Precambrian upland (Plate 4), which is presumed winter range. Presumed summer range thus totals 45 per cent of the combined caribou range.

Without reference to quantitative carrying capacity, it might be instructive to compare the relative proportions of Precambrian and Paleozoic country on Baffin Island, where the

caribou have increased surprisingly in the last few years. The present caribou population is probably about 10,000. The Great Plain of the Koukdjuak and the coastal lowland of Foxe Basin occupy some 12,000 square miles, and the remainder of the Paleozoic lowland, most of which occurs on Brodeur Peninsula, totals another 1,200 square miles. The total presumed summer range is thus some 24,000 square miles, or about 14 per cent of the total potential caribou range.

The foregoing admittedly speculative analysis suggests that scarcity of winter food limits the numbers of the resident Boothia Peninsula caribou. It seems probable that a migrant population would be better adapted to life on Boothia Peninsula. The origin of the situation is believed to lie in differential destruction of segments of the earlier population: the migrant animals were more exposed to hunting and were killed off, leaving a small population resident on upper Boothia Peninsula.

Conclusion: The caribou of Boothia Peninsula appear to have declined in recent years. The reduction or destruction of the more numerous migratory section of the population is suggested as a probable cause. It is suggested that the resident caribou of Boothia Peninsula, and perhaps as a corollary those of Victoria Island, are limited by a scarcity of winter range, and not entirely by hunting pressure as might be postulated.

Recommendation: An intensive survey of Boothia Peninsula will be necessary to assess its sparse caribou population. If

management is to be attempted range studies will be essential. Victoria Island, and Melville Peninsula, Adelaide Peninsula and other parts of the mainland coast, where once both migratory and resident caribou populations were found, and now only small resident populations remain, present similar problems. Where caribou populations have changed only in numbers, management is simpler, for the aim of legislation must be to restore the population to its former numbers. In the case of Boothia Peninsula, and the other areas mentioned above, there appears to be an added complication introduced by the destruction of a migratory population segment.

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Plate 1. Rolling morainal lowland north of Middle Lake, Boothia Isthmus, August 11, 1959.

Plate 2. The southwest Paleozoic lowland of Boothia Peninsula, near Josephine Bay, August 11, 1959.

Plate 3. Polygonal marsh-land in the flood-plain of the river entering Wrottesley Inlet from the south, August 11, 1959.

Plate 4. The south shore of Angmaluktok Lake, Boothia Isthmus, in the region of Precambrian upland, August 11, 1959.


WALES
ISLAND
Coulman I.
Four Rivers B.
C. Henry
Otrick I.
Barth I.
Strzelecki Har.
C. John Sibthorpe
Fisher L.
Colquhoun Range
Transition B.
Kennedy B.
De la Roquette Is.
Fitz Roy Inlet
C. Esther
P. Tr.
Fort Ross
C. Bird
Bellot Str.
Brentford B.
Goldsmith B.
C. Eyre
Coningham B.
Point D. Walker
Dixon I.
Guillemard B.
Charles Dickens Pt.
Pt. Foster
C. Swinburne
STRAIT
Nualuhta L.
C. Maguire
Wrottesley Inlet
Pattinson Har.
C. Hobson
FRANKLIN
Tasmania Is.
C. Rendel
Lady Murchison B.
Hartstene Pt.
Weld Har.
Union R.
Creswell Bay
Fury Pt.
McBean B.
PRINCE
C. Garry
Fearnall B.
C. Kaye
Fitzgerald B.
Murray B.
C. Kater
Mt. Senecal
C. Scoresby
Menchikov B.
C. Heytesbury
Babbage B.
C. Airy
Port Logan
Moltke B.
GULF
Leah Pt.
Bourassa B.
Janes Hill
Morin Pt.
Lavoie Is.
Thiboult B.
Easter Cape
Landry Cape
BOOTHIA
PENINSULA
North Magnetic Pole
Athol I.
C. Palmerston
Arbuthnot I.
Elizabeth Har.
C. Allington
Agnew R.
Owen L.
Eclipse Har.
Mary Jones B.
Stanley R.
C. St. Catherine
Mundy Har.
Thom B.
Mt. Maneetkalig
C. Margaret
Victoria Har.
Felix Har.
Krusenstern Lakes
Astronomical Soc. Is.
Lord Mayor Bay
C. Taylor
C. Kjer
Kull I.
Ross Pen.
Middle L.
Lady Melville L.
Willerted L.
Harrison Is.
C. Chapman
C. Berens
C. Alexander
C. Francis
C. Nicholas
C. Adelaide Regina
AUG. 11
AUG. 11
C. Felix
Wall B.
Clarence Is.
C. Victoria
Kent B.
James Ross Strait
C. Sidney
Port Parry
Parry Pt.
Tennent Is.
Prince George B.
Thompson Pt.
KING WILLIAM ISLAND
Amitsag L.
C. Edgeworth
Beverly Is.
F. Norton
Peel Inlet
Latrobe B.
De La Guiche Pt.
Livingstone Pt.
Matheson Pt.
Rae Strait
Stanley I.
Schwatka B.
Douglas B.
Gjoa Haven
Booth Pt.
Tulloch Pt.
Hovgaard Is.
Richardson Pt.
Ogle Pt.
Pechell Pt.
Barrow Inlet
Britannia B.
Pt. Duncan
Montreal Is.
C. Hay
Elliot B.
Chantrey Inlet
C. Barclay
Victoria Hills
Irby and Mangles B.
Gage Pt.
Cockburn B.
L. Franklin
McKay Peak
Mistake R.
McKinney Peak
Hayes R.
Oscar B.
C. Sussex
Josephine B.
Blenky Is.
Hansteen L.
Jekyll L.
Matty I.
C. Landseer
Sullivan B.
C. Hardy
Spence B.
Hall B.
C. Porter
Balfour B.
Hay B.
Ross Hills
C. Colville
Shepherd Bay
Dryden Pt.
Aeland Pt.
Inglis B.
Simpson L.
Frances Hill
Murchison R.
C. Selkirk
Ellice Mtns.
Becher R.
Pelly Bay
Simpson Pen.
Helen I.
Login B.
Ballenden L.
Borrow L.
Keith B.
Cameron L.
Arrowsmith R.
C. Beaufort
Colville B.
Ellice Hills
Pt. Swans
C. Lady Pt. Ha
Curtis R.
Walker L.
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Illustrations

CWS
59-2 Macpherson, A.
The caribou of Boothia
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