Progress Notes

Aussi disponible en français

No. 107, January 1980

Inter-island movements of Peary caribou in the Prince of Wales Island–Somerset Island–Boothia Peninsula complex, Northwest Territories, May–July 1979

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Abstract

Locations, directions and origins and destinations of Peary caribou (*Rangifer tarandus pearyi*) trails across the sea-ice of (1) Baring Channel between Mecham and Russell islands and northern Prince of Wales Island, (2) Peel Sound between eastern Prince of Wales Island and western Somerset Island, (3) Franklin Strait between the Boothia Peninsula and southeastern Prince of Wales Island, and Bellot Strait between the northern Boothia Peninsula and southern Somerset Island were obtained during snowmobile treks and helicopter flights from 5 May to 1 July 1979. A total of 103 caribou trails were located on the sea-ice and an additional eight trails were found on the ice of Inner Browne Bay and Young Bay, which indicated that inter-island movements of caribou had taken place. For the first time, west to east inter-island movements by caribou were detected in the spring of 1979 on the sea-ice of Peel Sound between eastern Prince of Wales Island and western Somerset Island, and on the sea-ice of Franklin Strait between the northern Boothia Peninsula and southeastern Prince of Wales Island. Otherwise, the patterns of inter-island movements of Peary caribou in the study area were in agreement with those of 1977 and 1978.

Introduction

The Peary caribou (*Rangifer tarandus pearyi*) is found throughout the Canadian arctic archipelago. Its ecology has received only limited investigation, but work by Miller, Russell and Gunn (1977*a*, 1977*b*) and Miller and Gunn (1978, 1979) indicates that many Peary caribou move from island to island, apparently seasonally. If Peary caribou populations use several islands and migrate regularly between them, this condition must be taken into account in planning population surveys and range evaluations, and in calculating safe harvests.

The springtime movements of Peary caribou between Prince of Wales Island, Somerset Island and the Boothia Peninsula have been documented by Miller and Gunn (1978, 1979). Their observations led to the belief that springtime accumulations of ground-fast ice, while the snow is melting, might be the primary element in the Peary caribou's environment that creates the need for such inter-island movements.

Therefore, in spring and summer 1979 our first objective was to make measurements of the timing, duration and extent of ground-fast ice and ice-layering in the snow cover on eastern Prince of Wales and western Somerset islands. This report deals with our second objective—the continued recording of springtime movements of Peary caribou between Prince of Wales Island, Somerset Island and the Boothia Peninsula.

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Study area

The study area encompassed about 160 000 km^2 of mostly sea-ice with some coastal land areas and small islands (Figs. 1, 2 and 3). It included ice-bound waters of Barrow Strait, Intrepid Passage, Viscount Melville Sound, Baring Channel, Peel Sound, Bellot Strait and Franklin Strait. The coastal land areas included the entire west coast of Somerset Island; the northwest coast of the Boothia Peninsula to just south of Wrottesley Inlet; the east coast of Prince of Wales Island to just south of Guillemard Bay; the entire north coast of Prince of Wales Island; the northwest coast of Prince of Wales Island to Scott Bay; and all coasts of Russell, Mecham, Prescott, and Pandora islands. The small islands included Somerville, Browne, Lowther, Garrett, Young and Limestone islands in Barrow Strait; Hamilton Island in Viscount Melville Sound; Edgeworth, Wadworth, Lock, Vivian Bear and Otrick islands in Peel Sound; and Dixon and Gibson islands and the Tasmania Islands in Franklin Strait.

Methods

We used either snowmobiles (Bombardier Scandic model) or a Bell 206B turbo-helicopter out of Resolute Bay, Cornwallis Island, to search for Peary caribou and their trails on the sea-ice within the study area (Table 1, Figs. 2 and 3). The helicopter flew at 20–40 m asl and about 130 km/h. There were two observers and the front-seat observer plotted the observations on 1:250 000 topographic maps. Whenever caribou trails were encountered while searching with the helicopter, we circled, hovered and/or landed to determine how many caribou had made the trails and which way (or ways) they had been going.

In this report, a "trail" is a series of tracks made by one or more Peary caribou; a "track" is a series of footprints put down by one Peary caribou only. Therefore, a trail may consist of many tracks of different individuals. When such trails separated into individual tracks, we counted the minimum number of individual caribou that travelled along that trail. In some instances, however, because of the caribou's habit of walking one behind the other and stepping in each other's footprints, we often could not readily discern how many caribou actually had made a trail, and we only attempted to do so when it did not take too long. We assume in this report, because we lack evidence to the contrary, that the caribou that crossed the sea-ice from the Boothia Peninsula to Prince of Wales Island were Peary caribou, but they could have been barren-ground caribou (*R. t. groenlandicus*) or crosses of the two sub-species.

Results and discussion

The effort expended in searching for evidence of sea-ice crossings by Peary caribou in May–July 1979 was governed

mainly by the requirements associated with our first objective of establishing sites and measuring snow and ice thickness. Snowmobile travel was entirely in relation to the locations of sample sites, and most of the helicopter flights were to snow/ice sample sites that could not be reached at the right times by snowmobile, or not reached at all.

We travelled a total of 1 875 km by snowmobile during the May–July study period, but only 1 082 km (57.7%) over sea-ice, where evidence for inter-island movements of caribou could be obtained (Table 1). Only 309 km (58.5%) of the 528 km travelled over sea-ice in May by snowmobile and 537 km (96.1%) of the 559 km travelled in June were, however, during periods of good visibility. Snowmobile treks were made on 18 days in May (5–14, 16, 18–20, 24 and 28–30) and 14 days in June (2, 3, 5–7, 10–12, 14, 15–18 and 24).

We flew 8 348 km by helicopter during the study period, but only 5 227 km (62.6%) over sea-ice (Table 1). However, only 2 049 km (75.6%) of the 2 710 km over sea-ice in May and 1 682 km (73.9%) of the 2 277 km over sea-ice in June were flown during periods of good visibility. Helicopter flights were made on 5 days in May (21–23, 25 and 26) and on 5 days in June (8, 9 and 20–22). On 1 July, 925 km were flown; 240 km were over sea-ice, but meltwater covered 50–80% of the surface ice and no trails were seen on the sea-ice.

The greatest numbers of trails were located in zones 6, 7 and 9, in that order (Table 2 and Figs. 2 and 3), but the effort of searching–measured in kilometres travelled per caribou trail located–varied: 34 km/trail in zone 9, 38 km/trail in zone 6, and 66 km/trail in zone 7. The numbers of trails seen, per unit of effort, in the different zones cannot be compared because we searched zones with varying thoroughness and at different times (Table 1). The greatest search efforts were made in zones 7, 6 and 9, in descending order, and the most trails were found by zone in nearly that order, but in exactly that order if the trails on Inner Browne Bay and Young Bay are included in zone 7 (Table 2 and see text). The numbers of trails within each zone are too small to be compared to distances travelled.

In total, we found on sea-ice 103 caribou trails put down by at least 300 individuals, and we actually saw 25 caribou crossing sea-ice (Table 2). Most of the sightings were on the sea-ice of Peel Sound between western Somerset Island and eastern Prince of Wales Island (76 trails put down by at least 219 individuals, and 10 caribou seen) and on Franklin Strait (20 trails made by at least 65 individuals, and 14 caribou seen). To the north, only three caribou trails put down by at least five individuals, and one caribou, were seen on the sea-ice of Baring Channel between Mecham, Russell and Prince of Wales islands. To the south, only four caribou trails made by at least 11 individuals were located on Bellot Strait between Somerset Island and the Boothia Peninsula.

That most inter-island movements should be in zones 6 and 7 is in agreement with findings for both June 1977 (Miller and Gunn 1978) and May–July 1978 (Miller and Gunn 1979). The most marked differences between the inter-island movements of caribou observed in May–July 1979 and those observed in June 1977 and May–July 1978 are the west to eastward sea-ice crossings by caribou of Peel Sound and Franklin Strait. In total, about 28% (21) of the trails found on Peel Sound and 45% (9) of the trails found on Franklin Strait were from west to east. No eastward movements of caribou across Peel Sound and Franklin Strait were detected by Miller and Gunn (1978, 1979) in June 1977 or May–July 1978.

The winter of 1978–79 was open until April–May 1979, when snowfall and snow cover increased markedly, and observations by A. Gunn and D.C. Thomas, CWS (pers. comms.) suggested that in March 1979 there were more caribou on eastern Prince of Wales Island than there had been in March–April 1977 or 1978. Perhaps the accumulation of snow on Prince of Wales Island in April–May 1979 triggered movements of caribou eastward off the island that would have occurred earlier during closed winters. Whether the caribou that moved eastward to Somerset Island or the Boothia Peninsula stayed there for the summer or returned to Prince of Wales Island remains unknown.

The coasts and interiors of the small islands–Hamilton in Viscount Melville Sound; and Browne, Lowther, Garrett, Somerville and Young in Barrow Strait–were searched by helicopter on 25 May and 8 June 1979. Strong winds during both searches caused severe ground drift and no caribou or caribou trails were seen. We cannot say whether or not there were any caribou on or movements of caribou between the small islands of Viscount Melville Sound and Barrow Strait in 1979.

If funded, our work will continue in spring and summer 1980, but it will be restricted to the Savage Point area of Prince of Wales Island. We will concentrate mainly on locating springtime feeding sites and determining the timing and use of wind-blown beach ridges and steep slopes by caribou as foraging sites before, during and after the period when ground-fast ice restricts the availability of forage on the better vegetated, snow covered areas.

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Table 1
Summary of searching effort for evidence of inter-island movements by Peary caribou within the Prince of Wales Island–Somerset Island–Boothia Peninsula complex, NWT, May–July 1979.

Study area zones*	Snow-mobile travel (km)	Heli-copter flights (km)	Search dates
1	–	56	8 June
2	–	125	25 May, 8 June
3	–	357	25 May, 8 June
4	–	465	25 May, 8 June
5	15		snowmobile–30 May, 2 June
		457	helicopter–21, 25, 26 May 8, 9, 21, 22 June
6	317		snowmobile–16–18, 29, 30 May 2, 3, 14–17 June
		1052	helicopter–21–23, 25, 26 May 8, 9, 20–22 June 1 July
7	750		snowmobile–5–11, 13, 16, 18, 24, 28, 29 May 3, 5–7, 10, 11, 14, 17, 18, 24 June
		1092	helicopter–21–23, 25, 26 May 8, 9, 20–22 June 1 July
8	–	423	21 May; 8, 21 June
9	–	758	21 May
10	–	442	21 May

*See Figures 2 and 3.

Table 2
Summary of evidence for inter-island movements of Peary caribou within the Prince of Wales Island–Somerset Island–Boothia Peninsula complex, NWT, May–July 1979

Zones*	Date	Trails seen on sea-ice	Tracks of individuals discerned
Baring Channel			
Between Prince of Wales and Russell islands			
Northward crossings:			
3	8 June	1	1
4	25 May	1	3
Between Prince of Wales and Mecham islands			
Southward crossings:			
3	8 June	1	1
Peel Sound			
Between Prince of Wales and Somerset islands			
Westward crossings:			
5	25 May	2	5
6	25	1	5
	29	2	5
	3 June	1	2
7	21 May	1	7
	25	1	4
	29	1	1
	3 June	1	2
	9	3	14
8	21 May	3	10
	9 June	3	12
	21	2	4
Eastward crossings:			
5	3 June	1	1
6	25 May	3	6
	29	6	21
	2 June	2	2
	3	3	3
7	21 May	1	2
	28	1	1
	29	1	2
Between Prince of Wales and Prescott islands			
Westward crossings:			
6	16 May	1	4
	17 June	5	5
Between Prince of Wales and Pandora islands			
Westward crossings:			
7	5 May	1	4
	13	1	7
	5 June	1	1
	7	2	4
	10	3	12
	18	1	1
	24	2	5

(cont'd)

Table 2 *(cont'd)*
Summary of evidence for inter-island movements of Peary caribou within the Prince of Wales Island–Somerset Island–Boothia Peninsula complex, NWT, May–July 1979

Zones*	Date	Trails seen on sea-ice	Tracks of individuals discerned
Eastward crossings:			
7	5 June	1	5
	7	2	4
	10	1	2
	18	1	2
Between Prince of Wales and Lock islands			
Westward crossings:			
6	25 May	1	1
Between Somerset and Prescott islands			
Westward crossings:			
6	3 June	8	20
7	8	1	6
Between Somerset and Pandora islands			
Westward crossings:			
7	7 June	1	5
Between Prescott and Pandora islands			
Westward crossings:			
7	26 May	1	4
Eastward crossings:			
7	8 June	1	2
Between Prescott and Vivian islands			
Westward crossings:			
6	8 June	1	1
Eastward crossings:			
6	17 June	1	1
Between Vivian and Lock islands			
Westward crossings:			
6	25 May	4	20
Franklin Strait			
Between Prince of Wales Island and Boothia Peninsula			
Westward crossings:			
9	21 May	6	21
	21 June	3	10
10	21 May	2	6
Eastward crossings:			
9	21 May	9	28
Bellot Strait			
Between Somerset Island and the Boothia Peninsula			
Northward crossings:			
9	9 June	3	10
Southward crossings:			
9	9 June	1	1

*See Figures 2 and 3.

Figure 1
Area searched by helicopter and snowmobile for evidence of inter-island movements of Peary caribou, Northwest Territories, May–July 1979

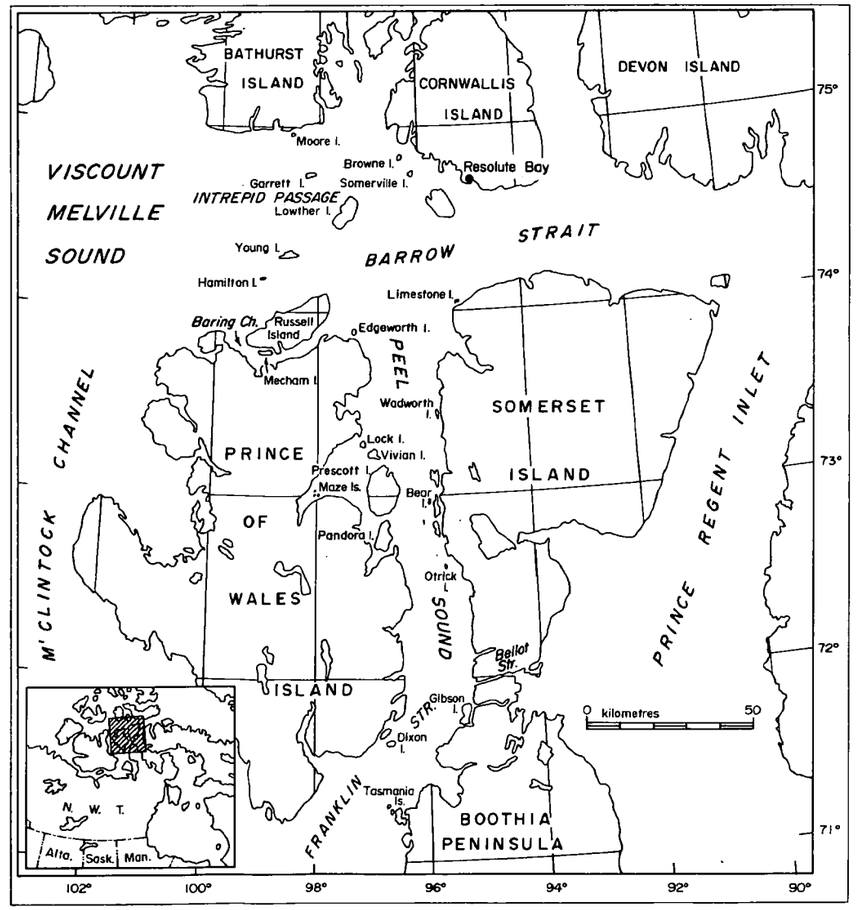

Figure 2
Zones of western section (Prince of Wales Island area) of area searched by aircraft for evidence of inter-island movements of Peary caribou, Northwest Territories, May–July 1979

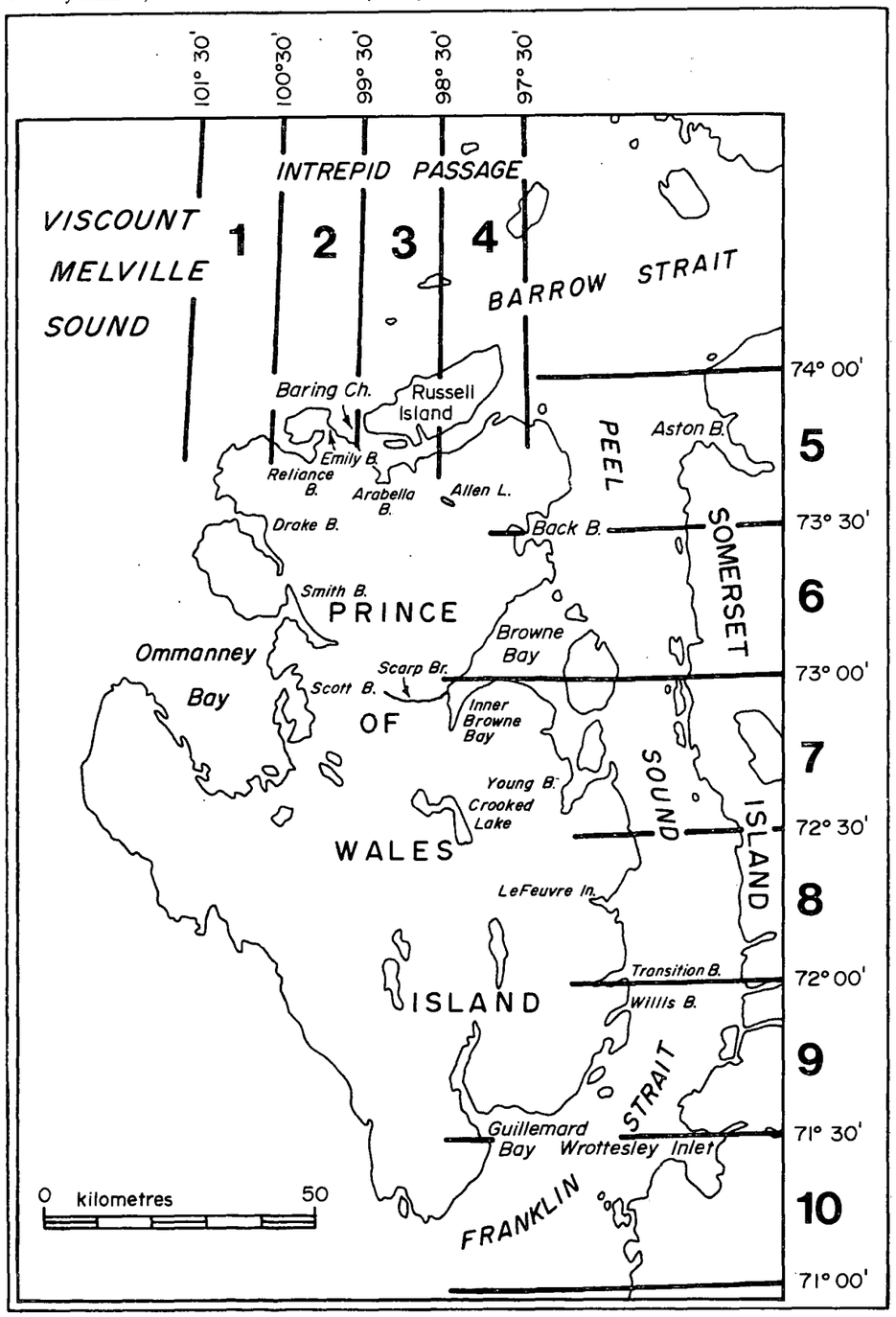

Figure 3
Zones of eastern and southern sections (Somerset Island and Boothia Peninsula area) of area searched by aircraft for evidence of inter-island movements of Peary caribou, Northwest Territories, May–July 1979