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Preliminary surveys of Peary caribou and muskoxen on Melville, Eglinton, and Byam Martin Islands, Northwest Territories, 1972

by Frank L. Miller,[1] Richard H. Russell,[1] and Douglas R. Urquhart[2]

Abstract

Aerial surveys of Peary caribou (*Rangifer tarandus pearyi*) and muskoxen (*Ovibos moschatus*) were carried out on Melville, Eglinton, and Byam Martin islands during March–April and August 1972. Only the eastern half of Melville Island, plus Eglinton and Byam Martin islands, were surveyed in August.

A standard strip aerial survey method was used. All flights were made at 500 feet above the ground. An observer on each side of the aircraft counted animals on ½-mile strips for 25 per cent coverage of the three islands. Estimates of 685, 553, and 4 caribou were obtained for Melville, Eglinton, and Byam Martin islands, respectively, for March–April. Data obtained in August, however, indicated a marked change for Melville (2,580) and Eglinton (79). The observers were unable to recognize short yearling caribou in March–April and saw no calves in August.

In March–April, populations of muskoxen on Melville, Byam Martin, and Eglinton islands were estimated at 3,408, 147, and 24. The muskoxen population on the eastern half of Melville Island was estimated at 972 in March–April and 999 in August. The percentage of short yearlings to total muskoxen in March–April was 13.3 per cent and calves to total muskoxen in August was 10.5 per cent. The percentages of muskoxen observed within 2 miles of the seacoast were 67 per cent in March–April and 43 per cent in August: the decrease in summer was significant ($P<0.01$). Caribou showed an affinity for the drier inland lichen areas during both surveys.

Résumé

Des dénombrements aériens du caribou de Peary (*Rangifer tarandus pearyi*) et du boeuf musqué (*Ovibos moschatus*) ont eu lieu dans les îles Melville, Eglinton et Byam Martin, au cours des mois de mars, avril et août 1972. L'étude faite, en août, n'a touché que la moitié de l'île Melville, en plus des deux autres endroits.

On s'est servi de la méthode ordinaire de dénombrement par virée transversale. Tous les vols ont été effectués à 500 pieds d'altitude. Dans l'appareil, deux observateurs (l'un à droite et l'autre à gauche) ont compté les animaux rencontrés sur des bandes d'un demi-mille, couvrant 25% des trois îles. En mars et avril, les estimations pour les îles Melville, Eglinton et Byam Martin ont été respectivement de 685, 553 et 4 caribous. Les données rassemblées, au mois d'août, ont cependant révélé un changement marqué dans le cas de l'île Melville (2,580) et de l'île Eglinton (79). Les observateurs ont été incapables de reconnaître de caribous de près d'un an, lors des vols en mars et avril, et n'ont aperçu aucun jeune, en août.

En mars et avril, les populations de boeufs musqués des îles Melville, Byam Martin et Eglinton ont été évaluées, dans l'ordre, à 3,408, 147 et 24 sujets. Le nombre estimatif de boeufs musqués dans la moitié est de l'île Melville était de 972, en mars et avril, et de 999, en août. Par rapport à la population totale, la proportion des animaux de près d'un an, pour ce qui est de mars et avril, était de 13.3% et celle des jeunes, pour le mois d'août, de 10.5%. Le nombre de boeufs musqués observés, à moins de deux milles de la côte, équivalait à 67%, en mars et avril, et à 43%, en août. La diminution au cours de la saison estivale a donc été importante ($P<0.01$). Lors des deux études, les caribous se sont montrés attirés par les zones intérieures sèches où pousse le lichen.

Introduction

In 1972 the Northwest Territories Game Management Service asked the CWS to evaluate the potential effect of a plan to allow Eskimos to harvest Peary caribou on Melville Island (lat. 75°30′N, long. 111°00′W). CWS therefore conducted an aerial survey in March and April 1972 on Melville Island and the adjacent islands of Byam Martin (lat. 75° 20′N, long. 104°20′W) and Eglinton (lat. 75°45′N, long. 118°30′W). Because caribou seen in that survey were scattered and in small numbers, harvest attempts were deemed inadvisable. However, the NWT Game Management Service asked that CWS continue to study the ecology of caribou and muskoxen on Melville to help guide management decisions on Banks Island where both species are harvested. Information on the distribution, numbers, and movements of muskoxen and caribou on Melville and adjacent islands has a new significance in view of the probable construction of a natural gas pipeline on Melville Island and its capacity to disturb key areas or interrupt migrations. This paper will report on the survey in March and April and subsequent surveys in May and August 1972.

The only extensive previous aerial survey of muskoxen and caribou on the Queen Elizabeth Islands, NWT, was conducted by CWS in the summer of 1961 (Tener, 1963). Tener (1963) estimated that in July 1961 almost half of the total Peary caribou on the Queen Elizabeth Islands were on Melville Island.

Study area

Melville, Eglinton, and Byam Martin islands are southwesterly islands of the Parry Islands group of the Canadian Arctic Archipelago. They are between latitudes 74° and 77° north and longitudes 103° and 120° west.

Melville Island is 16,304 square miles in area. Most of the

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island east of 112° west longitude is below 1,000 feet in altitude. Western Melville is mainly plateau ranging from 1,000 to 2,000 feet elevation with a few isolated peaks rising to 3,500 feet. Geologically, Melville is divided into three structural provinces (Thorsteinsson and Tozer, 1960): (1) Sverdrup Basin—the area north of a line from McCormick Inlet to Marie Bay and the Sabine Peninsula; (2) Arctic Lowlands—the Dundas Peninsula north to a line from Winter Harbour to Chevalier Bay; (3) Franklinian Miogeosyncline—the remainder of the island.

Eglinton Island (597 square miles) is an eroded peneplain rising to about 800 feet elevation. The northern part is a nearly vegetation-free desert (Tozer, 1956). Both the east and west coasts of Eglinton appear as well defined fault-line scarps (Thorsteinsson and Tozer, 1960).

Byam Martin Island (446 square miles) is a continuation of the anticlinal area of east-central Melville Island lying mostly below 300 feet elevation. Both Eglinton and Byam Martin islands come within the Franklinian Miogeosyncline (Thorsteinsson and Tozer, 1960).

Methods

The islands were surveyed using a standard strip survey method. Parallel flight lines were drawn at 4-mile intervals on 1:250,000-scale topographical maps. On Eglinton and Byam Martin islands the flight lines were oriented east–west. On the much larger Melville Island we divided the land mass into strata based on the major land units. The flight lines were oriented either east–west or north–south in each stratum to provide maximum contact with the coast for accurate navigation.

A Helio-Courier fixed-wing aircraft was used for the first survey which was in March and April. Subsequent surveys in May and August were flown in Hiller 1100 and Bell 206 turbo-helicopters.

Caribou and muskoxen occurred at low densities on most areas, so we increased the strip width to ½ mile from the standard ¼ mile. This doubled the coverage from 12.5 per cent to 25 per cent. When using the Helio-Courier the ½-mile strip was divided into two ¼-mile strips. To determine the efficiency of observing, we recorded sightings as being within the first ¼-mile strip (closest to the aircraft), within the second ¼-mile strip, or outside both strips (off transect).

To mark the boundaries of each strip on the Helio-Courier, wires were strung from an eye-bolt on the wing to one on the fuselage. Lines marked on each observer's window were aligned with corresponding tabs on the wires. At an altitude of 500 feet above ground (agl), these tabs were checked against fuel drums located at ¼- and ½-mile intervals on the ground. Allowance was made for the blind spot beneath the aircraft so that an entire ½-mile strip was visible on each side of the aircraft.

When using helicopters it was not possible to delineate such boundaries as accurately, so the observers estimated only whether or not an animal was within the ½-mile strip.

The second survey of Byam Martin was flown at 400 feet agl. All other survey flights were flown 500 feet agl at speeds ranging from 70 to 110 mph, depending on the type of aircraft and the number of animals encountered. All observations were marked on the survey maps and described on tape. At the end of each day the sightings were transcribed and replotted on a second map.

An attempt to identify short-yearling caribou in March–April was abandoned as they were not readily distinguishable by size or behaviour. Caribou calves of the year could readily have been recognized in August if any had been seen. Short-yearling muskoxen and 1972 calves were segregated during the March–April and August surveys, respectively.

The population of each geographic unit was estimated by extrapolation from the number of animals tallied on the survey strips within it. Group sizes were determined for animals both on and off survey strips.

In addition to the sources of error outlined by Tener (1963), several problems were encountered in 1972. In March–April, caribou were not as highly visible as muskoxen against the background of snow. Ice fog (suspended ice crystals) also made spotting caribou difficult. The Helio-Courier pilot could not navigate satisfactorily, requiring frequent assistance from the observer on the right side, which may have reduced his efficiency as an observer.

The first survey began on March 17, and full coverage of Melville, Eglinton, and Byam Martin islands was completed on April 7, 1972. Observers were D. R. Urquhart, NWT Game Management Service, and R. H. Russell, CWS. Byam Martin and two-thirds of Melville Island (Strata I–VIII) were surveyed from Rea Point, and Eglinton and the remainder of Melville (Strata IX–XIII) were completed from Mould Bay.

A spring survey was attempted between May 17 and May 31, 1972, by E. Broughton, F. L. Miller, and R. H. Russell, CWS. Continuous fog over Melville made it impossible to fly the flight lines and the survey was abandoned with only Byam Martin Island surveyed.

On August 7, a third survey was begun by D. R. Flook, C. J. Jonkel, and R. H. Russell, CWS. Flook and Jonkel were relieved by Broughton and Miller on August 15 for the duration of the survey which terminated on August 25, 1972. The Dundas Peninsula, that portion of Melville east of 111°00′W longitude (Strata I–VI), and Byam Martin Island were surveyed from Rea Point, and Eglinton Island was surveyed from Mould Bay. West Melville was not surveyed owing to lack of funds and time.

Results

Linear miles flown, square miles surveyed, and total areas of the strata and islands surveyed in 1972 are summarized in Table 1. The March–April survey flights were flown on 13 days between March 18 and April 7. Temperatures ranged from −45°F to −5°F, and snow cover was 100 per cent in most regions. Only mountainous terrain and some wind-blown ridges were relatively free of snow. We met ice fog and high winds on the Sabine and Dundas peninsulas, but surveying conditions were generally good elsewhere. Surveys were flown on 8 of 20 days in August in temperatures ranging from 25°F to 45°F. Snow remaining from the previous winter amounted to less than 5 per cent coverage. Fresh snow fell on August 12 and 20 but most of it melted

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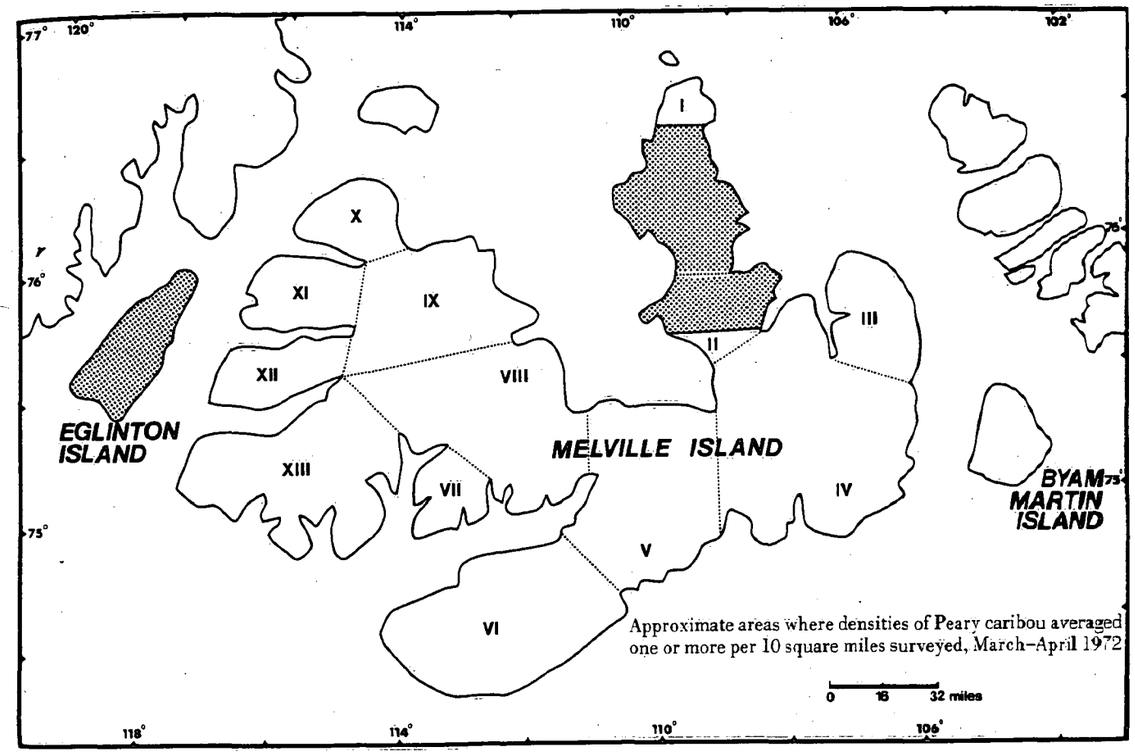

Figure 1

soon after deposition. Surveys were flown under generally clear skies.

Peary caribou

Melville Island

March–April survey. Peary caribou were concentrated only on the Sabine Peninsula (Strata I and II) (Fig. 1). Areas of much lower densities were found south of Weatherall Bay (Strata III and IV), and on the highlands east of Murray Inlet (Strata VII and VIII). Those strata accounted for all but 16 caribou seen on the island.

Caribou were scattered singly or in small groups throughout the Sabine Peninsula and showed no apparent preference for coastal or inland areas. The population estimates for caribou in March–April and in August are summarized in Table 2.

August survey. A great many more caribou were observed on Melville Island in August than in March–April (Table 2). Only 9 of the 1,414 caribou seen in August, however, were on the Sabine Peninsula. Figure 2 illustrates the observed August distribution of caribou. Strata VII through XIII were not surveyed in August. Caribou were mainly inland and were more clumped in distribution than in March–April. Surprisingly, throughout the entire survey, not a single calf was seen.

Eglinton Island

Eglinton Island had the greatest density of caribou of all areas surveyed in March–April, but relatively few caribou in August (Table 2). During March–April caribou were rather uniformly distributed except for the "desert" at the north end of the island where no caribou were seen. As on Melville, no calves were observed in August.

Byam Martin Island

Only one caribou was seen during the March–April survey, though 40, none of which were calves, were observed in August (Table 2). No caribou were seen during the survey flown on May 24.

Muskoxen

Melville Island

March–April survey. Though muskoxen were found in all strata, 72 per cent (1,496) were in Strata VII through XIII on western Melville (Table 3 and Fig. 3). The percentages of short yearlings to total muskoxen were 12.8 per cent for Strata I–VI, 13.6 per cent for Strata VII–XIII, and 13.3 per cent for all of Melville. No calves of the year were seen during the March–April survey on Melville or the other islands surveyed. Muskoxen showed a marked affinity for coastal areas (Table 4).

Carcasses of four adults and one calf were found. The calf and one adult had not been fed upon by wolves (*Canis lupus*), and may have died of other causes. Fifteen wolves were seen at one carcass, and wolf tracks were visible at the remains of two other muskoxen. We were not able to land at the sites for closer inspection.

August survey. The August survey did not include Strata VII through XIII in which the greatest number of muskoxen were observed in March–April. In Strata I to VI muskoxen were located in the same general areas where they were found in March–April, though their association with the coast was not as pronounced in August (Table 4). The percentage of calves to total muskoxen was 10.5 per cent (n = 466). Table 3 summarizes survey statistics and gives population estimates. Only two muskoxen carcasses were found.

Eglinton Island

Nearly the same number of muskoxen was tallied in both surveys on Eglinton Island (Table 3). The low numbers of muskoxen on transects during both surveys resulted in population estimates of fewer muskoxen than were actually seen (Table 3). Among 11 muskoxen seen in March–April, one was a short yearling, and among 14 seen in August one was a calf.

Byam Martin Island

A relatively large number of muskoxen is resident on Byam Martin as compared to Eglinton Island (Table 3). The highest total count (52) was obtained on May 24. No short yearlings were seen during either the March–April or May surveys, but there were 2 calves (4.8 per cent) among the 28 muskoxen seen in the August survey.

Other species

Wolves

On March 22, a pack of 15 wolves was observed feeding on a muskox carcass about 6 miles east of Sabine Bay: 12 were whitish-grey and 3 were dark grey. Two wolves, one almost black and the other off-white and with a closely bobbed tail, were seen on the south end of Byam Martin Island on March 23. They were digging at the site of an old muskox carcass.

Wolves, ranging in numbers from 3 to 15, were frequently observed in the vicinity of Rea Point from May 20 to mid-June. During that period one or more were often seen in close association with three husky dogs (*Canis familiaris*), pets of camp residents.

Discussion

Peary caribou

Melville Island

The number of Peary caribou observed within Strata I–VI varied greatly between the March–April and August surveys (Table 2). Although the cause of the disparity could not be determined, three main possibilities should be considered.

1. The observers might have missed a large number of caribou against the background of snow. All evidence refutes this possibility. A total of 156 caribou was seen on the Sabine Peninsula, while few or no caribou were spotted in other strata under similar or more favourable surveying conditions. When caribou were sighted, their feeding craters were also seen, and no extensive areas of cratering were observed in the absence of caribou. On April 4, 178 caribou were sighted on Eglinton Island. No caribou, however, were seen on April 5 in Strata IX and X on northwestern Melville under ideal surveying conditions. Therefore, we conclude that observer error is not responsible for the difference in results of the two surveys.

2. Many caribou could have been off transect and tightly clumped in blind spots. The element of chance argues against such a happening as there was a complete absence of observations within most strata. The unequal distribution of observed caribou, the large number of lone individuals, and the small group sizes in March–April help refute this possibility.

3. Many caribou could have moved to Melville between the March–April and August surveys, perhaps on a seasonal migration. Eglinton Island is relatively small (610 square miles): 178 caribou were seen on a background of snow in April and only 27 were seen in August during the period of maximal background contrast. This difference indicates a substantial movement of caribou from Eglinton during the intervening period. As Eglinton is about 15 miles from both Melville and Prince Patrick islands the caribou may have moved to either of the larger islands. We tentatively accept inter-island movement as the explanation for the observed differences in survey results.

Although major movements of caribou between islands of the Queen Elizabeth group have not been documented, there are few or no true physical barriers to them. Manning (1960) thought that McClure Strait and Viscount Melville Sound, separating Prince Patrick and Melville from Banks and Victoria islands, were too wide and freeze-up too late to permit more than occasional north–south interchange of caribou. He pointed out, however, that the narrow channels separating the Queen Elizabeth Islands could not be considered serious barriers to free movement of caribou and reported that morphological characteristics indicated a fairly homogeneous population (Manning, 1960). Eskimos believe that Peary caribou cross between Somerset and Prince of Wales islands (Banfield, 1961). Crewmen of the *Investigator*, which was trapped in ice in Prince of Wales Strait, twice saw caribou crossing between Banks and Victoria islands in 1850–51 (Armstrong, 1857). Spring and autumn migrations of caribou between Victoria Island and the mainland via Dolphin and Union Strait were recorded by Rae (1852), Collinson (1889), and Hoare (1927). The distribution (Table 2 and Figs. 1 and 2) of caribou on Melville also differed between surveys in 1972. While the Sabine Peninsula was the only extensive wintering area, in summer distribution of caribou shifted to other areas of eastern Melville and to the Dundas Peninsula. The August distribution in 1972 in Strata I–VI was similar to that found in 1961 by Tener (1963).

Only eight caribou were sighted in Strata VII–XIII during the March–April survey. Although those strata were not flown in August, 25 caribou were seen within Strata VII–

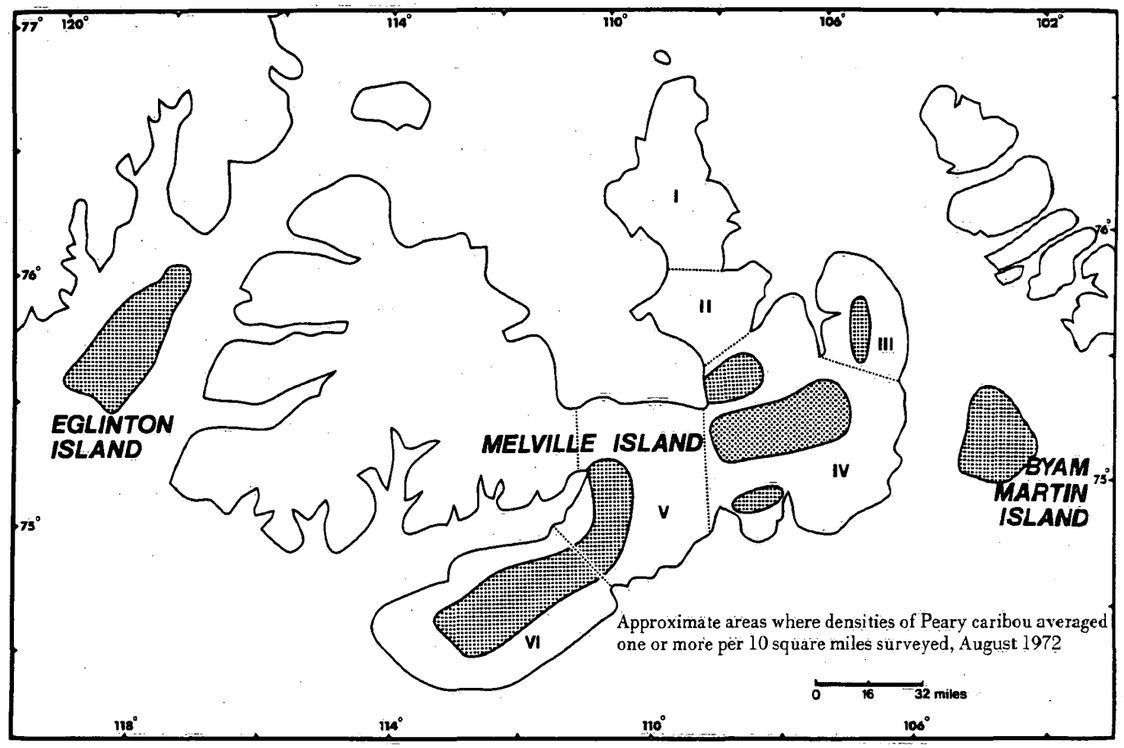

Figure 2

XIII during a flight to and from Eglinton Island in August. Additional reports from oil exploration personnel suggested that caribou were common in the vicinity of McCormick Inlet (Strata VIII and IX) in mid-summer, 1972. These reports, together with the results of the July 1961 survey by Tener (1963), suggest that western Melville is also a major summering area for caribou. In view of the 1972 data there must have been an ingress of caribou to Melville between surveys or else a great many were missed in the March–April survey. As stated earlier we tentatively accept the former explanation.

The estimates of the numbers of caribou on Melville and Eglinton islands in March–April derived from the ¼-mile (12.5 per cent) strips were higher than those derived from ½-mile strips (Table 2). We believe that this can be attributed to the greater visibility of caribou closest to the aircraft. If so, the higher estimates are more accurate.

The most unexpected finding of the August survey was the total absence of calves among 1,481 caribou seen on survey flights (plus several hundred observed during non-survey flights) over the three islands. Tener (1963) estimated a calf crop of 19 per cent (calves to total number of caribou) on Melville Island in 1961. The loss of the calf crop may have been due to adverse spring weather: the spring of 1972 was one of the coldest on record in the Canadian Arctic. Alternatively, it may have been the indirect result of the severe winter of 1970–71, that appeared to have caused significant mortality among adult caribou on Banks Island. Manning and Macpherson (1958) suggested a similar relationship between a winter kill and subsequent scarcity of calves on Banks Island in 1951–52. They observed that in 1952 only 3 calves were seen among 174 caribou and in 1953 no calves among 142 caribou. The Sachs Harbour Eskimos could find no fetuses among caribou killed during the winter and spring of 1952–53. Perhaps after a difficult winter in the High Arctic the recovery of caribou is slow enough that estrus is inhibited the following autumn. Also, during difficult winters pregnant cows may not be able to produce large enough young to prevent hypothermic reactions under adverse weather at calving time.

Eglinton Island

The highest density of caribou was found on Eglinton Island in the March–April survey (Table 2): 86 per cent as many caribou were observed there as were seen on all of Melville. In August, however, only 27 caribou were sighted: less than 2 per cent of the number seen on eastern Melville Island in August. Even if some caribou were missed in August due to their less uniform distribution over the island, that could not explain the variation in survey results. The data suggest that most of the caribou left Eglinton between April and August. Periodicity of such movements cannot be evaluated

until additional data are obtained.

Staff of the Atmospheric Environment Service at Mould Bay, Prince Patrick Island, reported that caribou were in their vicinity for only 2 to 3 weeks in October 1971, and again in July 1972. Opinions varied as to whether the caribou were migrating and in which direction. As Manson Point, 12 miles south of Mould Bay, is only 15 miles from Eglinton the caribou might have crossed there. As Melville Island is only 15 miles from the east side of Eglinton, the direction of travel is questionable.

A seismic exploration program was carried out on Eglinton from mid-April until mid-June, 1972. The possibility that human activity disturbed the caribou and caused the movement off Eglinton cannot be excluded.

Byam Martin Island

Only one caribou was seen in March and none in May. However, 40 were observed in August, suggesting that caribou migrated to Byam Martin some time between late May and early August. Both Bathurst and Melville islands are visible from Byam Martin at distances of 25 miles and 17 miles respectively. Tener (1963) did not survey Byam Martin in 1961.

Muskoxen

Melville Island

It is unlikely that more than a few muskoxen were missed on transect in March–April as they were highly visible against snow. Though muskoxen do not show up quite as well in summer, they are readily seen under clear skies. The number of muskoxen seen on and off transect in Strata I–VI in 1972 was very similar on both surveys (Table 3).

Muskoxen have apparently expanded their range and increased in numbers since 1961. Whereas Tener (1963) saw 525 muskoxen on all of Melville Island and none on the Dundas Peninsula in July 1961, we tallied 2,067 for the island including 266 on the Dundas Peninsula in March–April 1972. There were an estimated 1,000 muskoxen on Melville in 1961 compared to an estimated 3,408 in 1972. A similar increase in muskoxen has occurred on Banks Island. Manning and Macpherson (1958) estimated there were only a few muskoxen on Banks Island in 1951–53. In 1967 Williams (1967) estimated 800 muskoxen on Banks. Urquhart (1973) put the current number at close to 3,800.

The proportion of muskoxen calves born in the spring of 1971 that survived to April 1972 was 13 per cent of the total population. In August, 3- to 4-month-old calves comprised only 11 per cent of the total population. The apparent lowering of the calf crop in 1972 may reflect either differences in mortality between years or changes in rates of fecundity.

Over 70 per cent of all muskoxen observed on and off transect on Melville were located in Strata VII–XIII—about 44 per cent of the total land mass (Fig. 3). The largest concentration was found near Bailey Point (lat. 75°00′N, long. 115°00′W) (Fig. 3) where there were 475 muskoxen within a 100-square-mile area, a density of almost 5 muskoxen per square mile—35 times greater than the average density for the island. Unfortunately, we were unable to make ground observations on Bailey Point Peninsula in April or August. The southern exposure and the protection from prevailing northwest winds afforded by rugged highlands to the north may allow more favourable wintering conditions. This sheltered habitat may also greatly enhance the growth of vegetation in summer.

A large discrepancy appears when population estimates for muskoxen on Melville based on counts from ¼- and ½-mile strips are compared. The apparent difference in total muskoxen observed between inner and outer ¼-mile transect strips (Table 3) is related to the strata with high numbers of muskoxen, especially Stratum XIII (108 vs. 230 muskoxen). Muskoxen observed in ½-mile strip minus muskoxen observed in ¼-mile strip (Table 3) equals muskoxen in outer ¼-mile strip. The number of muskoxen seen was greater in the outer ¼-mile strip than in the inner ¼-mile strip for 9 of the 13 strata. But the resultant observations are not significantly different from the number of muskoxen expected in the ¼-mile strips by chance ($P>0.05$). There is, however, a possibility that the discrepancy reflects a type of density-dependent, contagious flight behaviour. In strata of high densities many muskoxen within ¼-mile of the aircraft tended to run outwards as the aircraft approached, thus groups which might have been recorded within the inner ¼-mile strips were instead within the outer ¼-mile strips as the plane passed by. Apparently the aircraft did not noticeably disturb muskoxen near the ½-mile markers. We believe that the estimates based on counts to the ½-mile markers are, therefore, more accurate.

Unlike caribou, muskoxen were found on the same general areas in August as in March–April (Table 3). However their distance from the seacoast changed (Table 4). The percentage of muskoxen situated within 2 miles of the seacoast was significantly higher in March–April than in August (Table 4, 67 per cent vs. 43 per cent) $X^2=64.8$ with 1 df, $P<0.01$. There was no significant increase in the number located within 10 miles of the coast between March–April and August (Table 4: 94.9 per cent vs. 95.3 per cent, $P>0.05$). About 20 per cent and 78 per cent of the land mass of Melville is within the 2-mile and 10-mile coastal strips respectively. Therefore, the number of muskoxen observed within the coastal strips greatly exceeds the expected occurrence had the muskoxen been randomly distributed ($P<0.01$ for the four comparisons).

In both March–April and August most muskoxen were found where the growth of sedges and willows is apparently greatest: along the coast and in adjacent low valley bottoms. Most of the interior of Melville is a relatively dry plateau and not productive of sedges or willows. The movement a few miles inland by muskoxen in summer is likely due to the attraction of new growth of vegetation as the snow melts. Caribou showed an affinity for the drier inland lichen areas. Although caribou might use the coastal sedge areas during different periods of the year, it is very unlikely that muskoxen would seek the relatively unproductive lichen areas. Therefore, the question of interspecific competition remains unanswered.

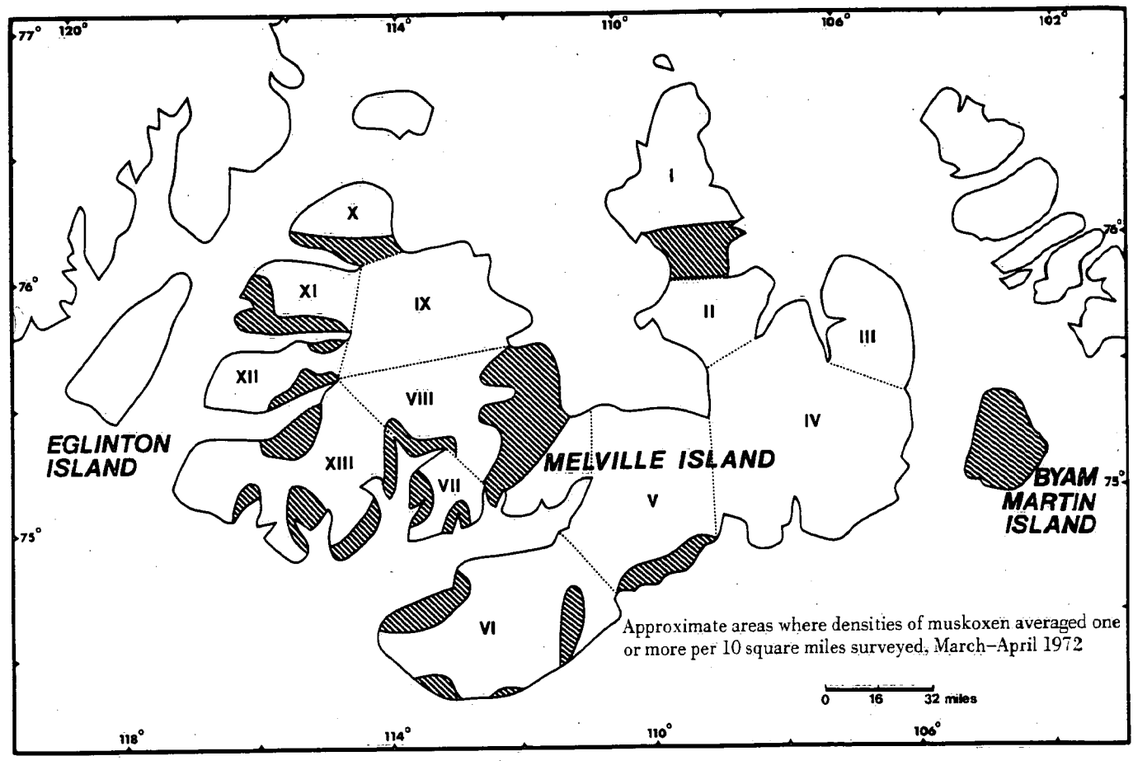

Figure 3

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Table 1
Stratification and coverage for surveys of Peary caribou and muskoxen on Melville, Eglinton, and Byam Martin islands, Northwest Territories, 1972

Island	Stratum	Stratum name	Area (sq mi)	Square miles surveyed*		Percentage surveyed	
				March–April	August†	March–April	August
Melville	I	Upper Sabine Peninsula	1,136	238	282	21	25
	II	Lower Sabine Peninsula	668	170	170	25	25
	III	Domett Point	748	187	187	25	25
	IV	Rea Point	2,803	701	701	25	25
	V	Central Melville	1,760	395	443	22	25
	VI	Dundas Peninsula	1,969	464	500	24	25
	VII	Savage Head	397	98	–	25	–
	VIII	South McCormick	1,968	498	–	25	–
	IX	North McCormick	1,287	334	–	26	–
	X	Sandy Point	538	143	–	27	–
	XI	Canrobert Peninsula	646	158	–	24	–
	XII	Stevens Head	541	135	–	25	–
	XIII	Cape Russell	1,843	476	–	26	–
	I–VI	Eastern Melville Is.	9,084	2,155	2,267	24	25
	VII–XIII	Western Melville Is.	7,220	1,842	–	25	–
	I–XIII	Melville Is.	16,304	3,997	–	25	–
Eglinton	–	Eglinton Is.	597	150	150	25	25
Byam Martin	–	Byam Martin Is.	446	112	112	25	25

*Square miles surveyed equals linear miles flown.
†Only Strata I–VI surveyed on Melville Island in August 1972.

Table 2
Estimate of Peary caribou numbers obtained from two aerial surveys of Melville, Eglinton, and Byam Martin* islands, Northwest Territories, 1972

		March–April						August			
		¼-mile strip census†			½-mile strip census†			½-mile strip census†			
Island	Strata‡	Total caribou observed	Caribou observed	Caribou/100 sq mi	Estimated caribou	Caribou observed	Caribou/100 sq mi	Estimated caribou	Total caribou observed	Caribou observed	Caribou/100 sq mi	Estimated caribou
Melville	I	55	22	18.5	210	43	18.1	206	9	9	3.2	36
	II	101	56	65.9	440	79	46.5	311	–	–	–	–
	III	4	1	1.1	8	2	1.1	8	38	34	18.2	136
	IV	23	4	1.1	31	22	3.1	87	689	227	32.4	908
	V	1	–	–	–	1	–	1	239	114	25.7	452
	VI	14	8	3.4	67	13	2.8	55	439	259	51.8	1,020
	VII	4	3	6.1	24	4	4.1	16	–	–	–	–
	VIII	3	1	0.4	8	2	0.4	8	–	–	–	–
	IX	–	–	–	–	–	–	–	–	–	–	–
	X	–	–	–	–	–	–	–	–	–	–	–
	XI	1	1	1.3	8	1	0.6	4	–	–	–	–
	XII	–	–	–	–	–	–	–	–	–	–	–
	XIII	–	–	–	–	–	–	–	–	–	–	–
	I–VI	198	91	8.4	763	160	7.4	672	1,414	643	28.4	2,580
	VII–XIII	8	5	0.7	51	7	0.4	29	–	–	–	–
	I–XIII	206	96	4.8	783	167	4.2	685	–	–	–	–
Eglinton	–	178	82	109.3	653	139	92.7	553	27	20	13.3	79
Byam Martin	–	1	–	–	–	1	0.9	4	40	21	18.8	84

*See text for May survey of Byam Martin Island.
†Both sides of aircraft.
‡Strata VII–XIII on Melville Island were not surveyed in August 1972.

Table 3
Estimate of muskoxen numbers from two aerial surveys of Melville, Eglinton, and Byam Martin* islands, Northwest Territories, 1972

		March–April						August			
			¼-mile strip census†			½-mile strip census†				½-mile strip census†	
Island	Strata‡	Total muskoxen observed	Muskoxen observed	Muskoxen/100 sq mi	Estimated muskoxen	Muskoxen observed	Muskoxen/100 sq mi	Estimated muskoxen	Total muskoxen observed	Muskoxen observed	Muskoxen/100 sq mi	Estimated muskoxen
Melville	I	40	7	5.9	67	26	10.9	124	15	15	6.3	72
	II	5	–	–	–	5	2.9	19	46	10	5.9	39§
	III	12	7	7.5	56	7	3.7	28	5	–	–	–
	IV	149	7	2.0	56	68	9.7	272	138	67	9.6	269
	V	99	10	5.1	90§	43	10.9	192	101	35	8.9	139
	VI	266	10	4.3	85§	81	17.5	345	273	122	24.4	480
	VII	67	18	36.7	146	29	29.6	118	–	–	–	–
	VIII	315	42	16.9	333	126	25.3	498	–	–	–	–
	IX	46	4	2.4	31§	10	3.0	39§	–	–	–	–
	X	56	26	36.4	196	33	23.1	124	–	–	–	–
	XI	125	15	19.0	123§	49	31.0	200	–	–	–	–
	XII	77	13	19.3	104	21	15.6	84	–	–	–	–
	XIII	810	108	45.4	837	338	71.0	1,309	–	–	–	–
	I–VI	571	41	3.8	345§	230	10.7	972	578	249	11.0	999
	VII–XIII	1,496	226	24.5	1,769	606	32.9	2,375	–	–	–	–
	I–XIII	2,067	267	13.4	2,185	836	20.9	3,408	–	–	–	–
Eglinton	–	24	3	4.0	24	3	2.0	12§	20	1	0.7	4§
Byam Martin	–	44	7	12.5	54	37	33.0	147	28	15	13.4	60

*See text for May survey of Byam Martin Island.
†Both sides of aircraft.
‡Strata VII–XIII on Melville Island were not surveyed in August 1972.
§Calculated estimates were less than observed numbers of muskoxen.

Table 4
Distribution of all muskoxen observed during survey flights on Melville Island, Northwest Territories, 1972

		Miles from seacoast						
		<2	>2–4	>4–6	>6–8	>8–10	>10	Total
Survey period	Strata	%	%	%	%	%	%	muskoxen
March–April	I–VI	66.7	16.1	1.9	6.9	3.3	5.1	571
	VII–XIII	54.4	30.2	6.7	4.5	1.9	2.3	1,496
	I–XIII	57.8	26.3	5.4	5.2	2.3	3.0	2,067
August	I–VI	43.1	19.9	10.4	11.7	10.2	4.7	578