

CALVING GROUND SURVEY
HALL PENINSULA CARIBOU HERD
JUNE 1979

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N.W.T. WILDLIFE SERVICE
1979

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ABSTRACT

Survey flights were carried out June 8, 10, and 14, 1979, on Hall Peninsula of southern Baffin Island to document caribou calving areas. During the survey 1,048 caribou were observed, including 96 calves. The animals showed an affinity for valleys and where snow was melting. Six suspected calving areas were delineated though more comprehensive work is required for verification of their boundaries and significance of these initial discoveries.

TABLE OF CONTENTS

| | |
|-----------------------|----|
| ABSTRACT..... | 2 |
| LIST OF FIGURES..... | 4 |
| LIST OF TABLES..... | 4 |
| INTRODUCTION..... | 5 |
| METHOD..... | 7 |
| RESULTS..... | 8 |
| DISCUSSION..... | 21 |
| RECOMMENDATIONS..... | 22 |
| LITERATURE CITED..... | 24 |

LIST OF FIGURES

| | | |
|-----------|--|----|
| Figure 1. | Southern Baffin..... | 6 |
| Figure 2. | June 8 Survey showing flight line, location points and Elliotts' McKeand River Plateau calving area..... | 16 |
| Figure 3. | June 10 survey showing flight line and location points.... | 17 |
| Figure 4. | June 14 survey showing flight line and location points.... | 18 |
| Figure 5. | Suspected calving areas..... | 20 |

LIST OF TABLES

| | | |
|----------|------------------------------|----|
| Table 1. | Survey Data - June 8..... | 10 |
| Table 2. | Survey Data - June 10..... | 11 |
| Table 3. | Survey Data - June 14..... | 13 |
| Table 4. | Survey Data Summary..... | 15 |
| Table 5. | Suspected Calving Areas..... | 19 |

INTRODUCTION

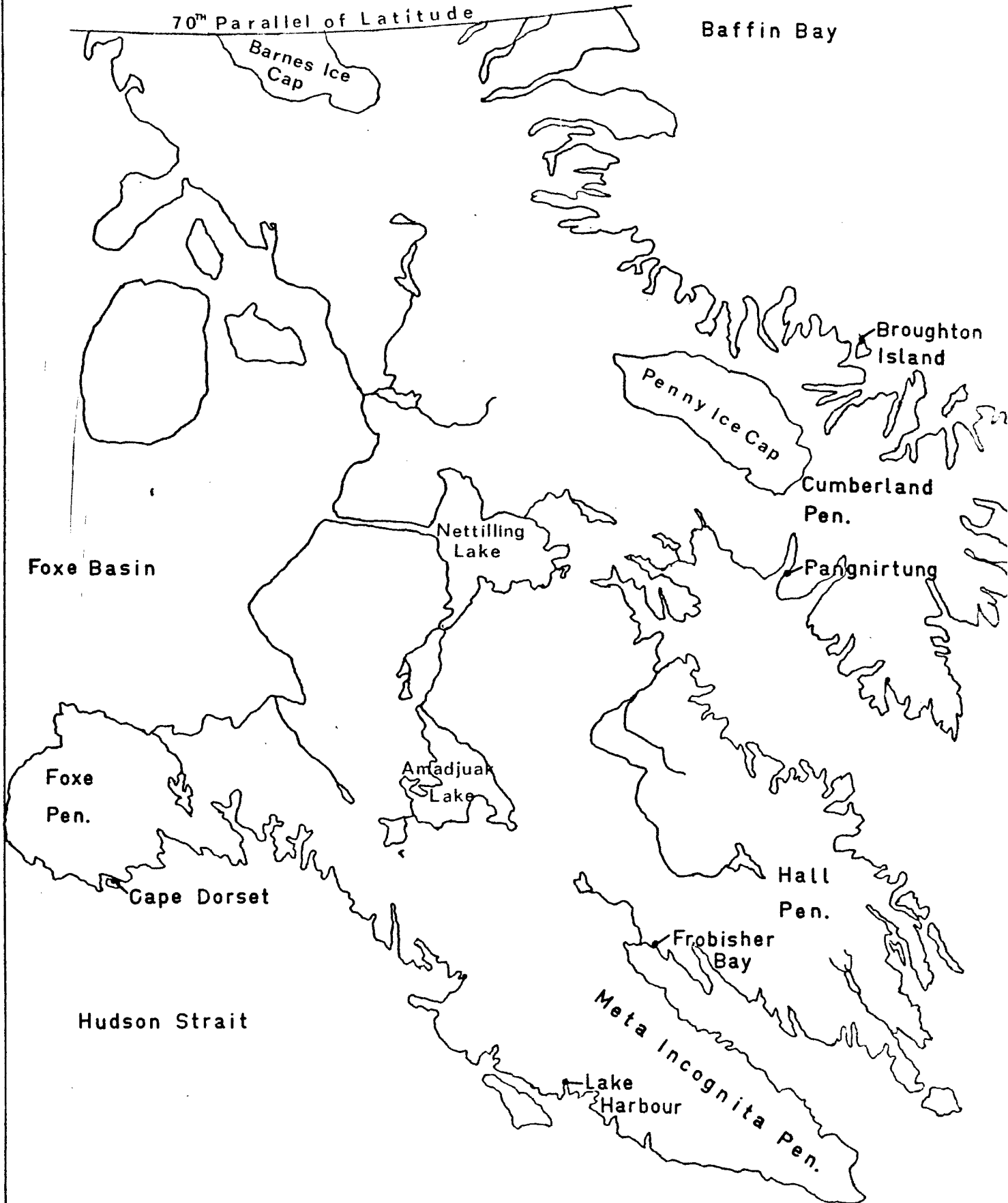
The caribou of Baffin Island are perhaps the most poorly understood in the Northwest Territories. Attempts at surveys to give total population estimates have provided little conclusive information because of the huge and rugged land mass to be sampled. Because of this problem, the general attitude of researchers, since 1972, has been to study the subpopulations separately, starting with those south of the 70th parallel of latitude where the main south Baffin herd occurs.

Although the central Baffin calving grounds of the south Baffin herd have now become fairly well documented, very little is known about the whereabouts or importance of other calving areas. With the exception of a brief reconnaissance by Elliott and Elliott in July 1974, Hall Peninsula had never before been surveyed for caribou calving grounds. The only other survey work that had been carried out was in late summer and fall 1978, by Chowns, on the eastern part of the Peninsula near Brevoort Island where offshore drilling activity is to be based. At that time it became apparent that only a fringe of a population was being sampled, as did the necessity of an entire population inventory and identification of calving areas if critical habitat is to be protected from unnecessary human disturbance.

The June 1979 survey was conducted to confirm whether part of the McKeand River plateau where R. C. Elliott found 22 caribou, including five calves on July 9, 1974, is actually a calving area, and to discover undocumented calving areas.

Figure 1. Southern Baffin Island

Scale 1: 4,000,000



METHOD

The timing of the survey, with a starting date of June 8, was to coincide with the peak of the calving season. It was not designed to observe maternity cows enroute to the calving grounds nor estimate productivity from post-calving aggregations.

For the actual flying, a twin otter aircraft was used, equipped with an Omega navigational device for accurate transects to be 4 kilometres apart, a radar altimeter for maintaining a 120 metre altitude and a bulk fuel tank for extra hours of flying. The windows and wing struts were taped to delineate a 156 metre strip width for the observers.

Three observers were on each side of the aircraft, one to segregate calves from adults, another to photograph caribou with 100 ASA Fugicolor film and a Wildlife Officer to record data. On the right side were Ipeelie Inookee and Pauloosie Lucassie of Allen Island outpost camp and the recorder was Richard Popko. On the left side was Johnny Shoo of the Frobisher Bay Hunters & Trappers Association, Ben Kovic of the N.W.T. Wildlife Service and Tom Chowns as recorder.

Before the survey commenced, it was not known if systematic transects would be used for the entire survey to locate and estimate numbers of caribou or whether conditions would favour non-random reconnaissance aimed primarily at distribution.

RESULTS

June 8

On a south to north transect over a plateau from 65°55'N; 68°00'W to 64°50'N; 68°00'W, the land was 95-100% snow covered and no sign of caribou was observed. After the following two latitudinal transects, it became apparent that the McKeand River plateau, including where Elliott and Elliott (1974) had designated a calving area, was virtually inundated with snow and devoid of caribou.

It was decided to fly in the MaKeand River valley where there was less than 50% snow cover and some tracks were seen. Although only 27 caribou, including three calves, were counted, tracks along almost the entire length of the valley showed up well in melting snow under a clear sky.

The last three longitudinal transects were over land 80 to 100% snow covered, except on the southerly portions which reached into the coastal lowlands of Ward Inlet. There, melting was well advanced and it was also where 30 of the 32 (all adult) caribou were observed. The flying was terminated at this point because of a fog bank.

June 10

It became apparent from the previous flight that systematic transects with a fixed strip width would not be practical. At elevations greater than 450 metres, where the snow had not started to melt as there was little evidence of caribou. Instead, a decision was made to examine the main valleys where the melting was most progressive.

In the valley entering Ward Inlet from the east, 46 caribou were tallied though none were calves. Proceeding west, little caribou sign was observed above the meltline.

In the valleys at the head of Smith Channel, 204 caribou were counted. Of those, 23 were calves. There was little contrast between adult caribou and the grey rock background.

Around Popham Bay, no evidence of caribou was found, the topography being very rugged and treacherous for low level flying.

In the valley entering the north end of Hamelin Bay, 229 caribou were observed, of which 40 were calves. There was poor contrast between the reddish-brown soil and newborn calves.

Returning to Frobisher Bay, 2 adult caribou were spotted in a lowland northwest of Ward Inlet.

Except for low cloud around Smith Channel, visibility for most of the day was excellent.

June 14

On this day, the main valleys on the southern part of the peninsula were flown. A similar attempt was made two days before, but was terminated at Ward Inlet because of weather.

At the heads of Waddell Bay and Noewton Fiord, 14 and 15 caribou were observed respectively, though none were calves. In the largest river valley entering the east side of Newton Fiord, 114 caribou were tallied with only 3 calves.

South of Qamaniqjuaq Lake, 182 caribou were observed, including 9 calves. In the main valley north west of the lake, 182 caribou were counted. Of those, 15 were calves. There, the soil was reddish-brown, similar in colour to the calves. Along the river entering the lake from the north east, only eleven caribou including 2 calves were observed.

In the valley north west of Allen Island, a herd of 8 adults was spotted. Continuing on, the two observers from the outpost camp were taken home, officially ending the survey. For most of the day the ceiling was broken at 900 metres, resulting in difficult track detection.

Table 2. Survey Data June 10, 1979

| Location Point | Left | | Right | | Total |
|----------------|--------|--------|--------|--------|-------|
| | Calves | Others | Calves | Others | |
| 1 | | | 0 | 25 | 25 |
| 2 | | | 0 | 3 | 3 |
| 3 | | | 0 | 5 | 5 |
| 4 | | | 0 | 6 | 6 |
| 5 | 0 | 6 | | | 6 |
| 6 | 0 | 1 | | | 1 |
| 7 | 0 | 1 | | | 1 |
| 8 | 0 | 1 | | | 1 |
| 9 | 0 | 9 | | | 11 |
| 10 | | | 0 | 1 | 1 |
| 11 | 3 | 33 | 0 | 4 | 40 |
| 12 | 4 | 6 | 0 | 2 | 12 |
| 13 | 3 | 3 | 0 | 7 | 13 |
| 14 | | | 0 | 14 | 14 |
| 15 | | | 1 | 5 | 6 |
| 16 | | | 0 | 6 | 6 |
| 17 | 2 | 9 | 0 | 12 | 23 |
| 18 | 0 | 2 | | | 2 |
| 19 | 0 | 5 | | | 5 |
| 20 | 0 | 1 | | | 1 |
| 21 | 0 | 4 | | | 4 |
| TOTALS | | | | | con't |

Table 3 Survey Data June 14, 1979

| Location Point | Left | | Right | | Total |
|----------------|--------|--------|--------|--------|-------|
| | Calves | Others | Calves | Others | |
| 1 | 0 | 4 | | | 4 |
| 2 | 0 | 3 | | | 3 |
| 3 | 0 | 7 | | | 7 |
| 4 | | | 0 | 15 | 15 |
| 5 | 2 | 23 | | | 25 |
| 6 | 1 | 9 | 0 | 1 | 11 |
| 7 | 0 | 38 | 0 | 7 | 45 |
| 8 | 0 | 20 | 0 | 13 | 33 |
| 9 | 0 | 7 | 2 | 4 | 13 |
| 10 | 0 | 38 | | | 38 |
| 11 | 0 | 5 | 1 | 6 | 12 |
| 12 | 0 | 25 | 1 | 34 | 59 |
| 13 | 0 | 8 | 6 | 46 | 60 |
| 14 | 0 | 11 | 3 | 13 | 27 |
| 15 | 0 | 7 | 4 | 21 | 32 |
| 16 | 3 | 25 | 3 | 19 | 50 |
| 17 | 1 | 10 | 1 | 5 | 17 |
| 18 | 0 | 14 | 0 | 2 | 16 |
| 19 | 0 | 7 | | | 7 |
| 20 | 0 | 12 | | | 12 |
| 21 | 0 | 7 | | | 7 |
| TOTALS | | | | | con't |

TABLE 4. SURVEY DATA SUMMARY

| Date | Left | | Right | | Total | | Total |
|---------|--------|--------|--------|--------|--------|--------|-------|
| | Calves | Others | Calves | Others | Calves | Others | |
| June 8 | 0 | 32 | 3 | 24 | 3 | 56 | 59 |
| June 10 | 30 | 176 | 34 | 234 | 64 | 210 | 474 |
| June 14 | 7 | 289 | 22 | 197 | 29 | 486 | 515 |
| TOTAL | 37 | 497 | 59 | 455 | 96 | 952 | 1,048 |

Figure 2. June 8 survey showing flight line, location points (see Table 1) and Elliotts' McKeand River Plateau calving area.

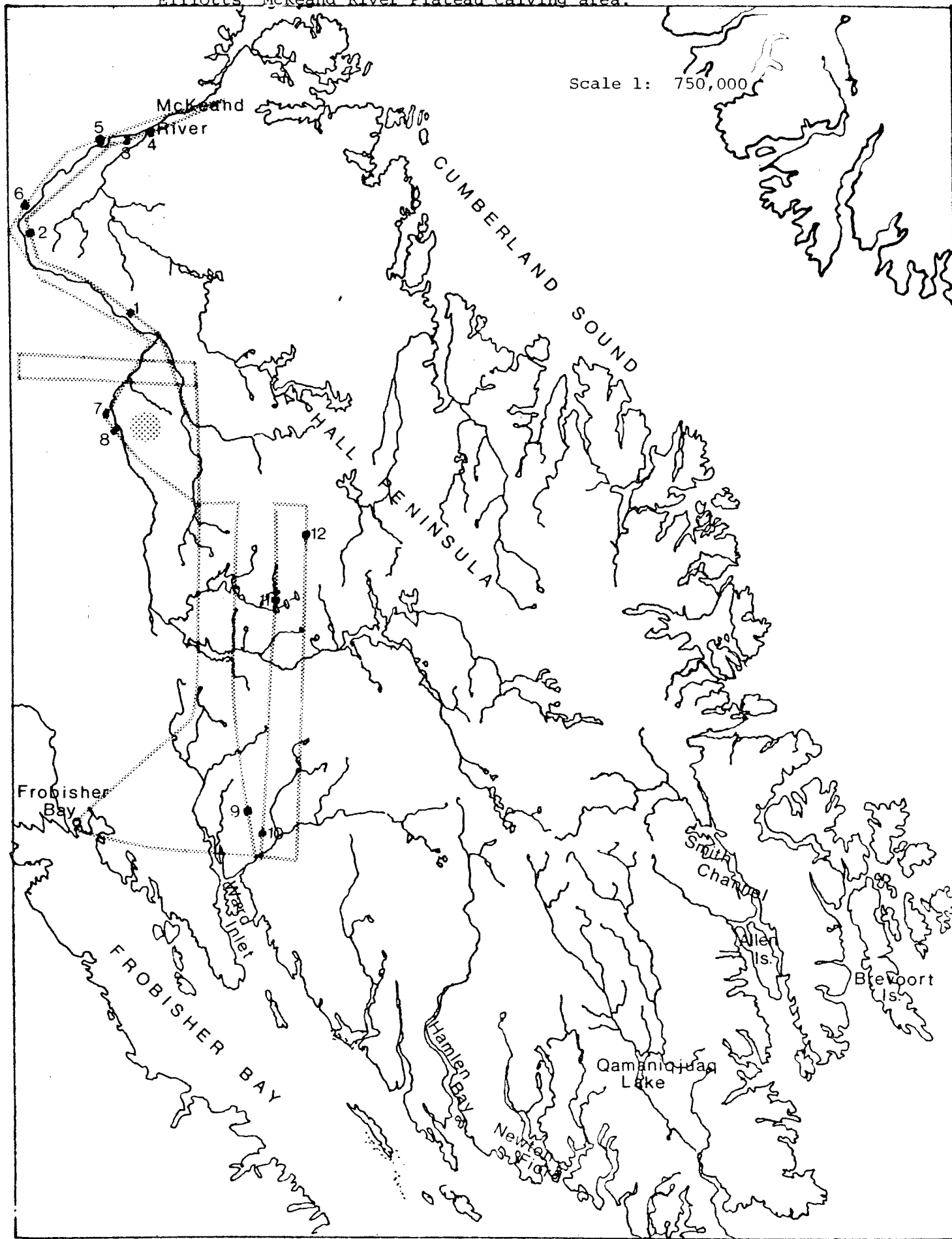


Figure 3. June 10 survey showing flight line and location points (see Table 2)

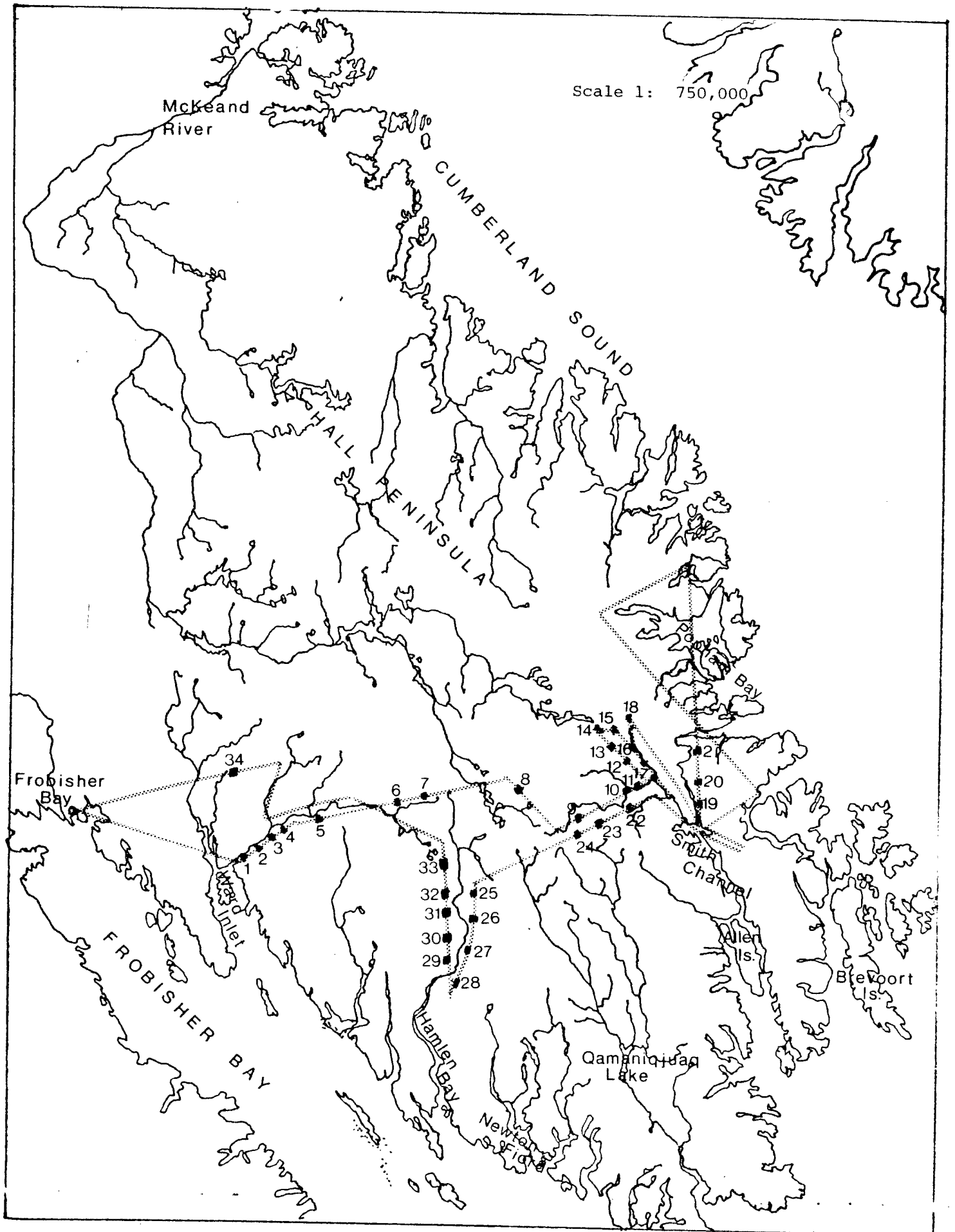


Figure 4. June 14 survey showing flight line and location points (see Table 3)

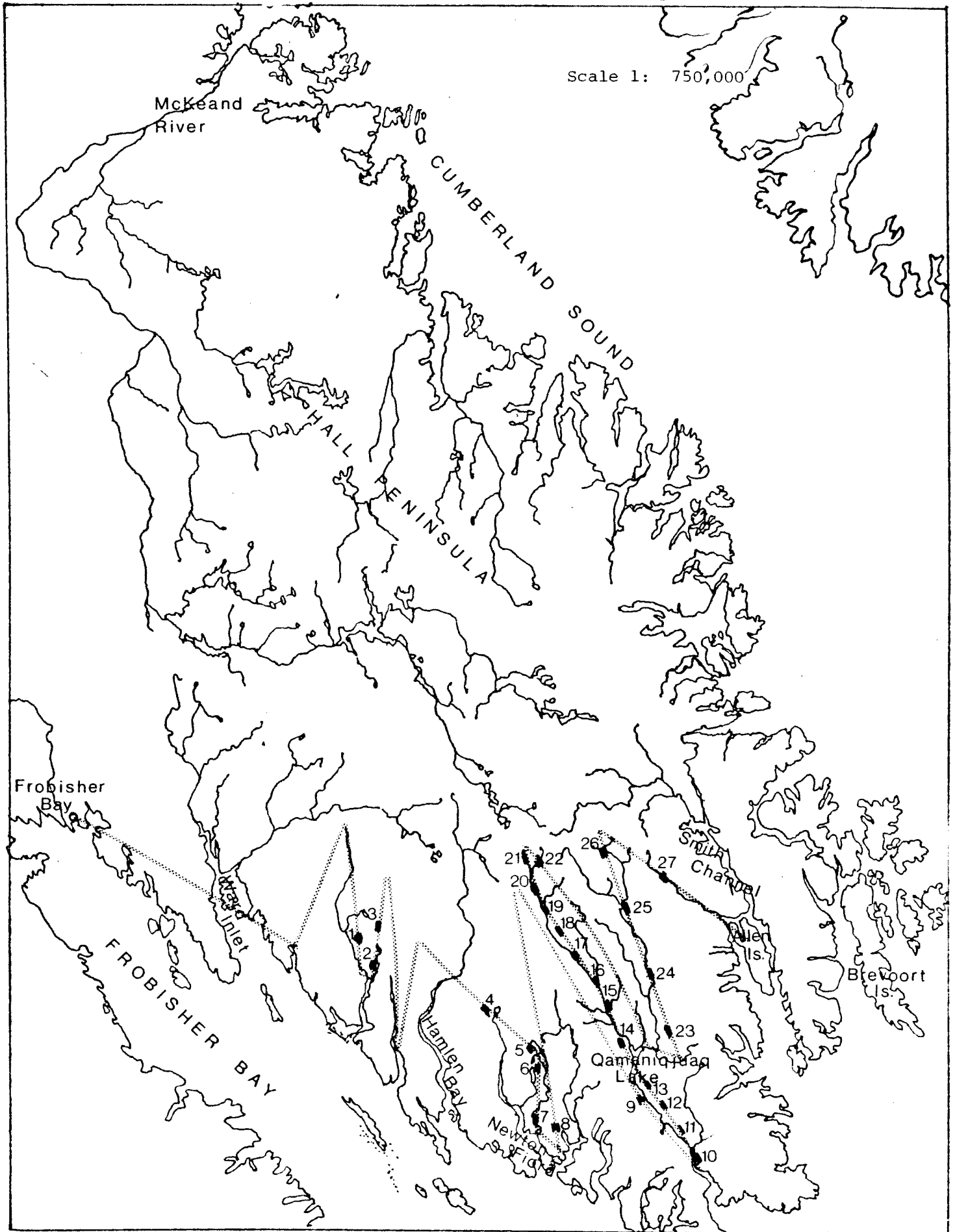
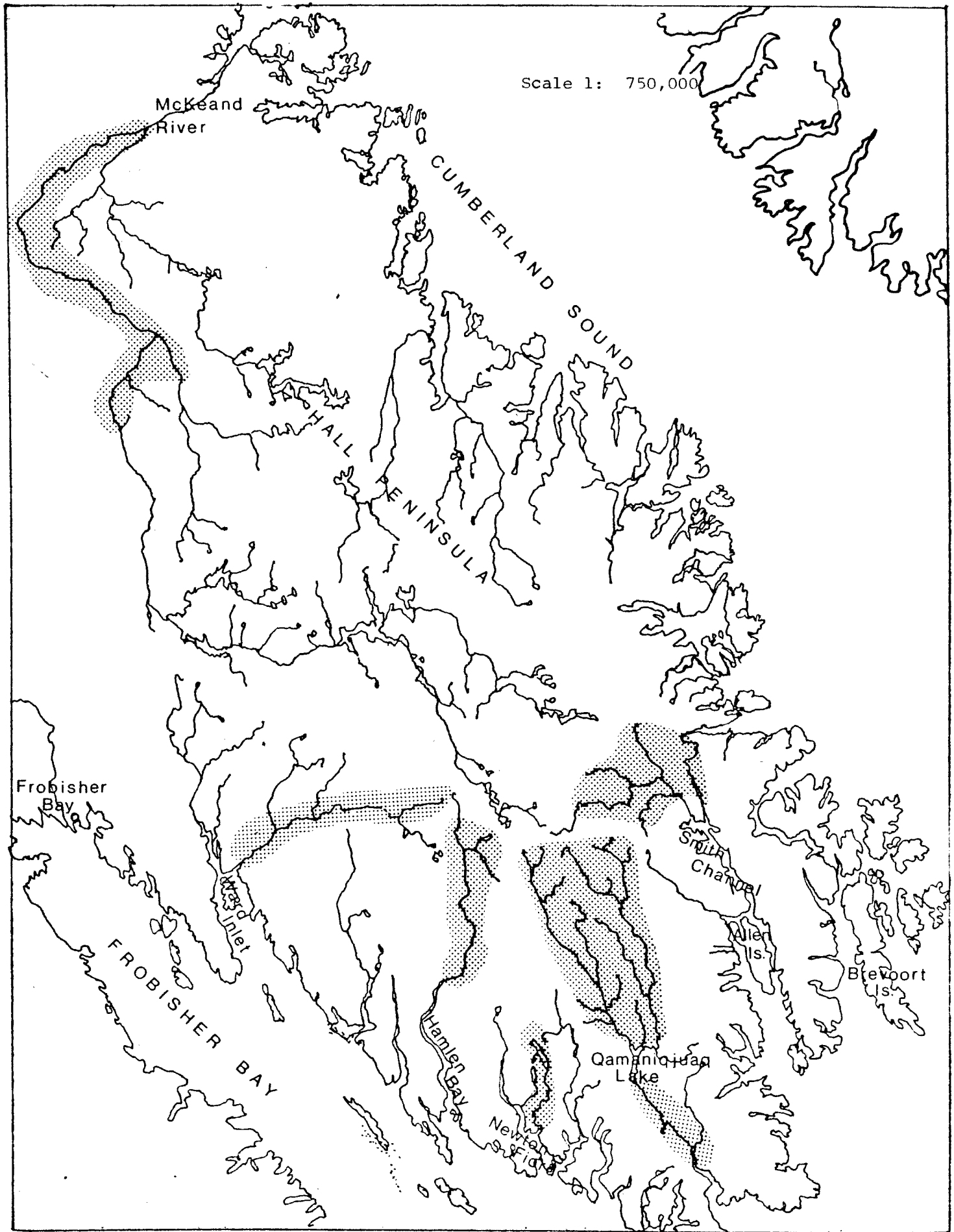


TABLE 5. SUSPECTED CALVING AREAS (See Fig. 5)

| Area | Calves | Adult | Total | % Calf |
|-------------------------|--------|-------|-------|--------|
| Mckeand River | 3 | 24 | 27 | 11.1 |
| Northeast of Ward Inlet | 0 | 70 | 70 | 0 |
| North of Smith Channel | 24 | 181 | 204 | 11.7 |
| North of Hamelin Bay | 40 | 189 | 229 | 17.5 |
| East of Newton Fiord | 3 | 111 | 114 | 2.6 |
| South of Qamaniqjuaq | 9 | 173 | 182 | 4.9 |
| North of Qamaniqjuaq | 17 | 164 | 181 | 9.4 |

Figure 5. Suspected calving areas (see Table 5)



DISCUSSION

The affinity that the caribou had for the valleys at calving time this year on Hall Peninsula is similar to Elliotts' (1974) findings in central Baffin where the greatest concentrations of maternity cows were found in the large valleys of Dewar Lakes, Flint Lake, Amaroktalik River, MacDonald River and an unnamed river. The only exception was the low flat coast of Baird Peninsula. During migration to calving areas, perhaps maternity cows typically ascend to higher ground by following a path of least resistance and adequate forage gradually made available by melting snow. The magnitude of these migrations may be inversely related to the ruggedness of the terrain.

This survey produced little to confirm Elliotts' calving area on the McKeand River Plateau. Since his observations were made on July 9, 1973, he may have been looking at a post-calving aggregation which moved up on to the plateau as the snow disappeared.

Around Ward Inlet, Newton Fiord and south of Qamaniqjuaq Lake, the percentage of calves observed was quite low. A preponderance of bulls may have occurred in these areas. Unfortunately reliable segregation of sexes was not possible because of rugged country and susceptibility of calving females to disturbance.

The main calving grounds appear to be at the head of Smith Channel, in the valley north of Hamelin Bay and the Qamaniqjuaq Lake watershed. It is interesting to note that when the head of Smith Channel was surveyed October 16, 1978, all 243 caribou observed were below the 200 ft. (60.1 metre) contour of elevation (Chowns in prep.). Observations in the June survey show an apparent migration to higher ground.

The significance of 1,048 caribou tallied on this survey in relation to the total population of Hall Peninsula or southern Baffin Island is not known since the figure is not being adjusted for areas or animals missed. Some areas may be negatively biased because of lack of contrast between the animals of the terrain. Also, generally the left side (pilot's side) had the best view of the valleys where the caribou were.

RECOMMENDATIONS

1. Future surveys are required on Hall Peninsula to verify the suspected calving areas. Their boundaries possibly fluctuate annually, depending on snow conditions.
2. Although the main calving areas were probably located, future reconnaissance to find other calving grounds should concentrate in the valleys at elevations below the meltline.
3. When the seasonal movements and distribution are better understood, it will be necessary to design a survey for estimating the total numbers of caribou on Hall Peninsula.
4. It is "common knowledge" that bulls predominantly occupy the coastal areas of Hall Peninsula in spring while the females calve further inland. If the phenomenon has merit, it should be officially documented by ground surveys. These would help define the boundaries of the calving areas and confirm whether those suspected calving grounds with low percentages of calves actually consist of mainly bulls.
5. For photographing caribou under the experienced conditions, 100 ASA Fugicolor film is not adequate. Besides the resolution being too imprecise for calf and sex segregation, only 5 of 8 rolls of film were received from the processing laboratory, the slides were out of order and only one roll had numbered slides.
6. A twin otter with a bulls tank, Omega, radar altimeter and space for three observers on each side is adequate for this type of survey. If strip transect flying is not required and one observer on each side is acceptable, a smaller craft such as a beaver with a belly tank would be cheaper, if it is available.
7. Aircraft probably fly over at least two of the suspected calving areas between Frobisher Bay and Imperial Oil's offshore drilling base at Brevoort Island. Since air traffic is expected to increase, there should be assurance against disturbance of maternity cows during the critical calving period once this is defined.

8. The annual recruitment and mortality should be thoroughly assessed on this Peninsula. Of prime importance is the number of females harvested by hunters from Frobisher Bay, Pangnirtung and at least four outpost camps.
9. Documentation of movements, distribution, total numbers, recruitment and mortality of other subpopulations on Baffin Island must be done before a comprehensive management plan can be soundly implemented.

LITERATURE CITED

- Chowns, T. in prep. Brevoort Island area survey, September to November 1978, N.W.T. Wildlife Service report.
- Elliott R. C. and C. E. Elliott, 1974 Observations of the distribution and migration of caribou on southern Baffin Island July 4 - August 8, 1974. N.W.T. Fish & Wildlife Service unpublished report.



GOVERNMENT OF THE NORTHWEST TERRITORIES
CANADA

PLEASE QUOTE

YOUR FILE

OUR FILE

Frobisher Bay, N.W.T.
28 May 1979

A.L. Bourque,
Regional Superintendent,
Natural & Cultural Affairs,
Government of the N.W.T.,
Frobisher Bay, N.W.T.

Re: Project Proposal - Aerial Survey, Caribou Calving Areas - Hall Peninsula

Introduction:

Information on the caribou of Baffin Island is presently inadequate to use as a base for sound biological management practices. Inuit Folklore, previous surveys and the continuing caribou tagging project have indicated that there are several groups or herds comprising the South Baffin Caribou population.

Previous caribou calving ground surveys focused upon their delineation in the Dewar Lakes, Mid Baffin Area. Tag returns show that those caribou migrating from Dewar Lakes and utilizing the Great Plains of the Koukdjuak as a migration corridor predominantly winter on the Foxe Peninsula. They form only a small percentage of harvested caribou on the Meta Incognita, Hall and Cumberland Peninsulas. This indicates that there must be other migration routes and, or other calving areas.

Members of the Hunters and Trappers Associations in Cape Dorset, Lake Harbour, Frobisher Bay and Pangnirtung have reported a scattering of local calving areas and caribou movements and or migrations. In order to determine the exact location and significance of calving grounds in South Baffin, the authors feel that future surveys should focus upon the peninsulas in South Baffin. Surveys in Mid Baffin are expensive due to the distance from Frobisher Bay based planes, inclement weather conditions in June and logistics. Before productivity surveys in Mid Baffin are undertaken, all calving areas should be identified and if necessary subsequently receive protection as critical areas under the wildlife regulations.

Details of the Proposed June 1979 Aerial Caribou Survey on the Hall Peninsula:

The objective of this survey is to delineate calving areas, segregate caribou observed, and possibly derive a population estimate for caribou on the Hall Peninsula. If this survey substantiates that Mid Baffin is not the only significant calving area for south Baffin caribou, then future June surveys should be done on the other major peninsulas in South Baffin.

Budget restraints determined that total coverage of the Hall Peninsula is not possible, however a large sample area will be covered. The area was divided into five strata or blocks correlated to reports of calving activity. Within each strata east to west transects will be systematically surveyed. If concentrations are depicted then north to south transects will be done over that strata. This grid coverage should provide information for the analysis of caribou densities.

A twin otter equipped with Omega navigational gear and additional fuel tanks will be chartered for the survey from Bradley's Air Services, Frobisher Bay. Rental fee is about \$550.00 per hour. Two wildlife officers and two Inuit persons will do the observations. The total estimated cost of the charter averages at about \$15,000.00. Hopefully, the survey can be conducted from June 11, 1979 to June 15, 1979. The plane will be flown at 400' altitude at 160 km/hr. Observers will cover a $\frac{1}{4}$ mile strip on each side of the plane. Transect lines are to follow to international mercator grid system.

STRATA I

| Transect # East/West | Distance Km. | Transect # North/south | Distance Km. |
|-------------------------|--------------|---------------------------|--------------|
| 1 | 50 | 7 | 50 |
| 2 | 50 | 8 | 50 |
| 3 | 50 | 9 | 50 |
| 4 | 50 | 10 | 50 |
| 5 | 50 | 11 | 50 |
| 6 | 50 | 12 | 50 |
| inbetween lines | 50 | inbetween lines | 50 |
| Total Distance | 350 km | Total Distance | 350 km |

Ferrying time - Frobisher Bay to transect /1 is 75 km
-Transect terminus to Frobisher Bay is 75 km
- Total ferrying distance is 150 km

Total minimum flying time for 500 km is 3.2 hours for transects 1 to 6
Total maximum flying time for 850 km is 5.3 hours for transects 1 to 12

Description:

Strata I was reported to be an active caribou calving area by C. Elliot. The area is inland, dissected by river valleys of the M^CKeand River system, in hilly terrain and elevations in the 2,000 ft. range. This survey will be of comparative value to C. Elliot's report.

STRATA II

| Transect # East - West | Distance km. | Transect # North - South | Distance km. |
|---------------------------|--------------|-----------------------------|--------------|
| 1 | 90 | 11 | 60 |
| 2 | 90 | 12 | 60 |
| 3 | 90 | 13 | 90 |
| 4 | 90 | 14 | 90 |
| 5 | 90 | 15 | 90 |
| 6 | 90 | 16 | 90 |
| 7 | 90 | 17 | 90 |
| 8 | 70 | 18 | 90 |
| 9 | 70 | 19 | 90 |
| 10 | 70 | 20 | 90 |
| Inbetween lines | 100 | Inbetween lines | 90 |
| Total distance | 940 km | Total distance | 930 km |

Ferrying distance to and from Frobisher Bay and Strata II is 125 km.
 Total minimum flying time for 1065 km is 6.7 hours for transects 1 to 10
 Total maximum flying time for 1995 km is 12.4 hours for transects 1 to 20

Description:

This is plateau area in the 2,400' elevation range. It is fairly level highland. Hunters and Trappers Association members from Frobisher Bay and Allan Island Outpost Camp reported this area as an active calving ground in central Hall Peninsula.

STRATA III

| Transect # East - West | Distance km. | Transect # North - South | Distance km. |
|---------------------------|--------------|-----------------------------|--------------|
| 1 | 60 | 7 | 52 |
| 2 | 60 | 8 | 54 |
| 3 | 52 | 9 | 52 |
| 4 | 52 | 10 | 52 |
| 5 | 52 | 11 | 52 |
| 6 | 52 | 12 | 52 |
| Inbetween lines | 50 | Inbetween lines | 50 |
| Total distance | 378 km | Total distance | 364 km |

Ferrying distance to and from Strata III to Frobisher Bay is 250 km.
 Total minimum flying time for 628 km is 3.9 hours from transects 1 to 6
 Total maximum flying time for 992 km is 6.2 hours for transects 1 to 12

Description:

The south-eastern coastal area of Hall Peninsula is rugged hilly, ravinous terrain with a glacier located in the centre of the strata. Elevations range from sea level to 3000' A.B.S. Allen Island Outpost camp members under the direction of Mr. Akeeshoo undertook a reconnaissance survey along the coast by snowmachines in June 1978 and located some active caribou calving areas in the valleys along the coast. This survey will be of comparative value as well as determine the extent of the reported caribou calving areas.

STRATA IV

| Transect # East-West | Distance Km. | Transect # North-South | Distance km. |
|-------------------------|--------------|---------------------------|--------------|
| 1 | 125 | 7 | 20 |
| 2 | 112 | 8 | 40 |
| 3 | 112 | 9 | 40 |
| 4 | 92 | 10 | 50 |
| 5 | 105 | 11 | 50 |
| 6 | 87 | 12 | 50 |
| In between lines | 50 | 13 | 50 |
| | | 14 | 50 |
| | | 15 | 50 |
| | | 16 | 50 |
| | | 17 | 50 |
| | | In between lines | 112 |
| Total distance | 683 km | Total distance | 612 km |

Ferrying distance to and from Strata IV to Frobisher Bay is 275 km.
Total minimum flying time for 958 km is 6.0 hours for transects 1 to 6.
Total maximum flying time for 1570 km is 9.8 hours for transects 1 to 17.

Description:

This is the southern tip of the Hall Peninsula with several fiords. Elevation ranges from sea level to 2000'ABS. This is a known wintering area for caribou. Bulls are expected to be found in groups along the coast. Calving activity is unknown in this strata.

STRATA V

Brevort Island and other offshore islands along the coast of the Hall Peninsula. Allan Island residents have reported that there are increasing numbers of caribou observed on the islands. There probably will not be available time to fly transects, however if a helicopter is available from Northern Affairs then a reconnaissance flight would cover the islands.

Estimating 2 hours of flight amongst the isles and 2 hours ferrying time. No records have been found of caribou calving on the isles.

SUMMARY

| <u>Stratum</u> | <u>Distance</u> | | <u>Flying Time</u> | |
|----------------|-----------------|----------------|--------------------|--------------------|
| | line transects | grid transects | line transect(min) | grid transect(max) |
| 1 | 500 km | 850 km | 3.2 hours | 5.3 hours |
| 2 | 1065 km | 1995 km | 6.7 hours | 12.4 hours |
| 3 | 628 km | 992 km | 3.9 hours | 6.2 hours |
| 4 | 958 km | 1570 km | 6.0 hours | 9.8 hours |
| Totals | 3151 km | 4415 km | 19.8 hours | 33.7 hours |

Budget:

- charter on a twin otter is \$550.00 per hour
- 2 casuals for 1 week minimum is \$600.00

Flight Options:

- minimum coverage, no North-South transects, cost is \$10,890.00
- maximum coverage, total grid pattern, cost is \$18,535.00
- option 1 plus grid pattern on Stratum I, cost is \$14,025.00
- option 3 plus grid pattern on Stratum II, cost is \$15,510.00
- option 4 plus grid pattern on Stratum III, cost is \$17,600.00
- If partial grid pattern per strata containing caribou concentrations located by line transect survey are flown then \$15,000.00 would appear to be the approximate cost of the project.

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RP/jc

