BEVERLY AND KAMINURIAK CARIBOU MONITORING AND LAND USE CONTROLS, 1983

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ABSTRACT

The objective of the 1983 Caribou Monitoring Program was to monitor movements and distribution of the cow and cow/calf segments of the Beverly and Kaminuriak caribou herds as required to provide advice to land use inspectors pertaining to caribou protection, Caribou Protection Areas, and the 1983 Caribou Protection Measures. The monitoring area included the 1983 Caribou Protection Areas and post-calving migration routes for the two caribou populations. Aerial reconnaissance was used to collect the information.

The taiga wintering segment of the Beverly population moved into the Protection Area about 25 May, reaching the calving ground by 2 June. Another segment of the population migrated south across the Back River drainage to the calving ground. The calving ground was located from Sand Lake to Deep Rose Lake. By 17 June post-calving aggregations were forming on the calving ground and by 4 July the majority of the Beverly population had moved west and southwest out of the Caribou Protection Area.

The Kaminuriak population overwintered in the taiga. Most of the migrating cows arrived at the calving area on 2 June. The calving ground included the northwest side of Kaminuriak Lake and an area east of Kaminuriak Lake from Blakely Lake south to Kaminak Lake. Post-calving movements represented a clockwise circle starting at the calving ground on 27 June, moving past Helika Lake and ending just west of Kaminak Lake on 22 July.

The level of industrial exploration activity in and near the Caribou Protection Areas was substantially less in 1983 than in the previous year. There were three requests for early release of land use sites in the Beverly Caribou Protection Area. There were no requests for early release in the Kaminuriak Caribou Protection Area. Calving in both herds occurred within the 1983 Caribou Protection Areas and no interactions were documented between land use activities and caribou in 1983.

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INTRODUCTION

In mid-May the NWT Wildlife Service initiated the 1983 caribou monitoring program, operating on funds provided by Indian and Northern Affairs Canada (INAC). This project continued the work carried out in previous years by Darby (1978, 1980), Cooper (1981) and Clement (1982, 1983). The objective of the program was to monitor movements and distribution of the cow and cow/calf segments of the Beverly and Kaminuriak caribou populations as required to provide advice to INAC land use inspectors pertaining to caribou protection, the Caribou Protection Areas, and the 1983 Caribou Protection Measures (Appendix I). In addition, data were collected to add to the information base on the distribution and movements for these populations. Improvement of the data base will permit greater understanding of the variability in seasonal movement patterns and will aid in predicting caribou movements in relation to planned land use activities.

The boundaries of the 1983 Caribou Protection Areas included the areas used for calving and early post-calving by the two herds during the last 5 years. Protection areas are subject to annual review.

This report provides a summary of information collected during monitoring flights carried out between 18 May and 15 July, and also information obtained from other studies and from pilots flying in the area. Requests for land use releases and land use activities observed in and adjacent to the Caribou Protection Areas are also reported.

METHODS

The monitoring area included the 1983 Caribou Protection Areas, portions of the spring migration routes and post-calving migration routes of the Beverly and Kaminuriak caribou populations (Fig. 1). Under the 1983 Caribou Protection Measures, companies requiring land use permits within the Caribou Protection Areas were required to suspend operations between 15 May and 15 July. If there were no cow caribou in the vicinity of a land use site, as determined from monitoring observations, a land use inspector could grant an early release of that site before 15 July. Early release of a site means that the permittee may then commence operations.

Aerial reconnaissance was used to collect information on movements and distribution of cow/calf segments of the two caribou populations. Caribou sightings, estimated abundance and direction of trails were used to determine distribution, relative abundance and migration patterns of the herds. When possible, groups of caribou were classified as containing primarily adult males and juveniles, cows with juveniles, cows with calves or as mixed groups in which all sex and age categories were combined. Group size was estimated visually. Notes on occupancy of land use sites, other human activities, ice and snow cover, and other wildlife species were also taken. Information was also solicited from workers involved in other studies and pilots flying over the area.

Observations were plotted on 1:500,000 scale topographical maps, then were transferred to 1:2,000,000 scale summary maps.

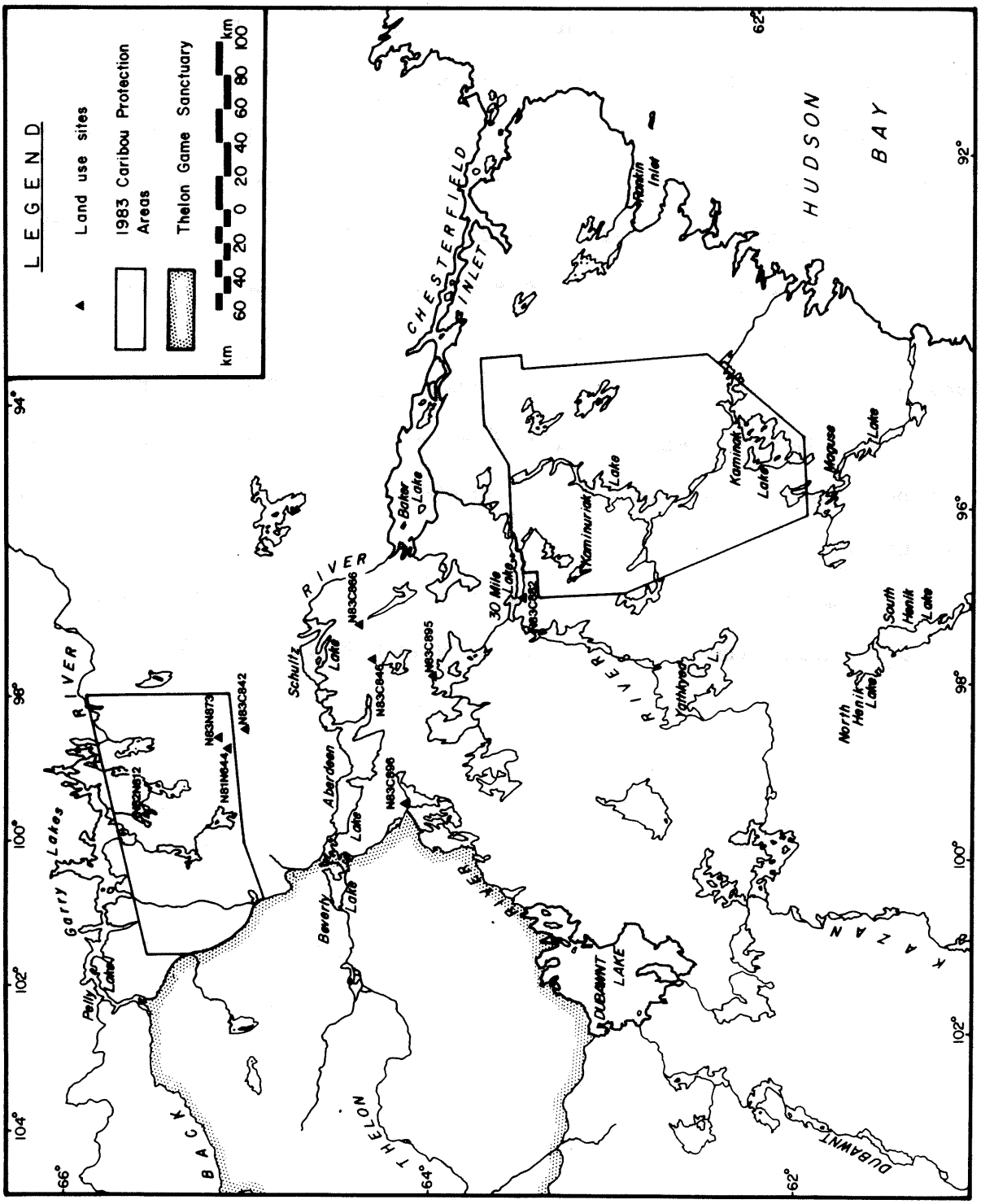

Figure 1. Caribou monitoring area and relevant land use sites in 1983.

The summary maps were included in flight reports filed with the INAC District Office in Rankin Inlet within 48 hours after a monitoring flight (Appendix II). Flight reports for the Beverly population were also provided to the INAC land use inspector in Baker Lake. Flight reports included notes on all observations pertaining to caribou as well as records of flying time, weather conditions, and recommendations regarding land use sites.

The aircraft used was a Beech 18 flown at 300 m agl and 240 km/hr. Additional observers were often used but many flights were conducted without such assistance. Information on caribou movements and distribution collected by the Government of the Northwest Territories Wildlife Service (GNWT WS) during calving and post-calving censuses of the Kaminuriak population is included in this report.

Recommendations regarding early release of land use sites were based on guidelines outlined by Darby and Williams (1979).

RESULTS AND DISCUSSION

The monitoring period was divided into two parts, 15 May to 17 June, and 18 June to 15 July. An interim report was prepared for each part.

Seven flights were conducted during the first part of the monitoring period for a total of 48.1 hours (Table 1). Poor weather precluded flying on 13 days during this period and the aircraft was not available for another 8 days. Frequently, it was possible to fly in the range of the Kaminuriak population but not in the Beverly area because of unfavourable weather. During the last week of this period, it was finally possible to monitor the Beverly population adequately. Low cloud cover forced abandonment of the 18 May flight of the Kaminuriak area and hampered the flight on 2 June of the Beverly area.

Seven flights were conducted during the second part of the monitoring period between 18 June and 15 July, for a total of 39.2 hours. Poor weather delayed a flight planned for 3 July until 4 July and aircraft maintenance delayed a planned 13 July trip until 14 July.

Beverly Population Movements

Spring Migration and the Calving Ground

On 3 May the leading edge of the Beverly caribou migration was in the vicinity of the Clark, Hanbury, and Thelon Rivers. The cows were migrating northward on the west side of the Thelon River. The remainder of the herd was scattered over a large area

Table 1. Flights which contributed information to the 1983 Caribou Monitoring Program.

Date	Hours	Purpose
11 May*	-	INAC charter to Cullaton Lake Gold Mine; used to obtain incidental caribou sightings for the Kaminuriak population.
18 May	2.5	To monitor spring migration of the Kaminuriak population. Flight was abandoned due to poor weather.
19 May	6.2	To monitor spring migration of the Kaminuriak population.
25 May	8.5	To monitor spring migration of the Beverly population.
29 May	5.2	To determine the pre-calving distribution of the Kaminuriak population.
30 May	3.1	To confirm the western edge of the distribution of breeding females of the Kaminuriak population.
2 June	7.6	To delineate the Beverly calving ground.
7 June	7.0	To check land use sites N83N873 and N81N644; to delineate the Beverly calving ground.
17 June	8.0	To recheck the land use sites (above) and to delineate the Beverly calving ground.
27 June	6.7	To determine post-calving distribution of the Kaminuriak population.
4 July	8.6	To check land use site N82N812 for early release and to monitor distribution of Kaminuriak and Beverly populations.
9 July*	5.0	Reconnaissance flight for photographic census of the Kaminuriak population (GNWT WS).
11 July*	3.0	Reconnaissance flight for photographic census of the Kaminuriak population (GNWT WS).
12 July*	4.3	Reconnaissance flight for photographic census of the Kaminuriak population (GNWT WS).

Table 1 continued

Date	Hours	Purpose
14 July*	3.0	Reconnaissance flight for photographic census of the Kaminuriak population (GNWT WS).
15 July	8.6	To confirm early release decisions on sites N81N644, N83N873, and N82N812. Also to determine distribution of the Beverly population.
19-22 July*	43.0	Flights for a photographic census of the Kaminuriak populations (GNWT WS).

* Denotes those flights which were not part of the monitoring program but which contributed to this report's data.

which extended south to below treeline (D. Thomas and D. Heard pers. comm.). The first flight for the Beverly herd was conducted on 15 May. By this time the migrating cows and juveniles had moved northeast to an area just west and northwest of Beverly Lake. Trails southwest of Beverly Lake indicated that caribou had moved through the area, although very few caribou were present. There were no caribou or trails between Deep Rose Lake and Beverly Lake, indicating migration through that area had not occurred yet. In the vicinity of Deep Rose Lake cows and juveniles were present but did not constitute a major portion of the Beverly population. These caribou were not migrating and may have resided in this area during the winter or had moved in earlier, possibly from the north.

By 2 June cows and non-breeders occupied most of the Caribou Protection Area. Trails and unidentified caribou were seen heading from about 80 km north of Upper Garry Lake southward toward the Caribou Protection Area (Fig. 2). The caribou which had moved up from the taiga were still migrating northwest although movements were becoming less directional.

Arrival of caribou on the calving ground in 1983 was later than in the previous 2 years when migration was already finished by the last week in May (Clement 1982, 1983). Since caribou were still moving toward the calving ground on 2 June additional reconnaissance was required to delineate the calving area. On 7 June the eastern half of the calving ground was delineated (Fig. 2). The caribou seen near Lower Garry Lake on 2 June had apparently moved south to an area from Deep Rose Lake to Sand Lake and were beginning to calve.

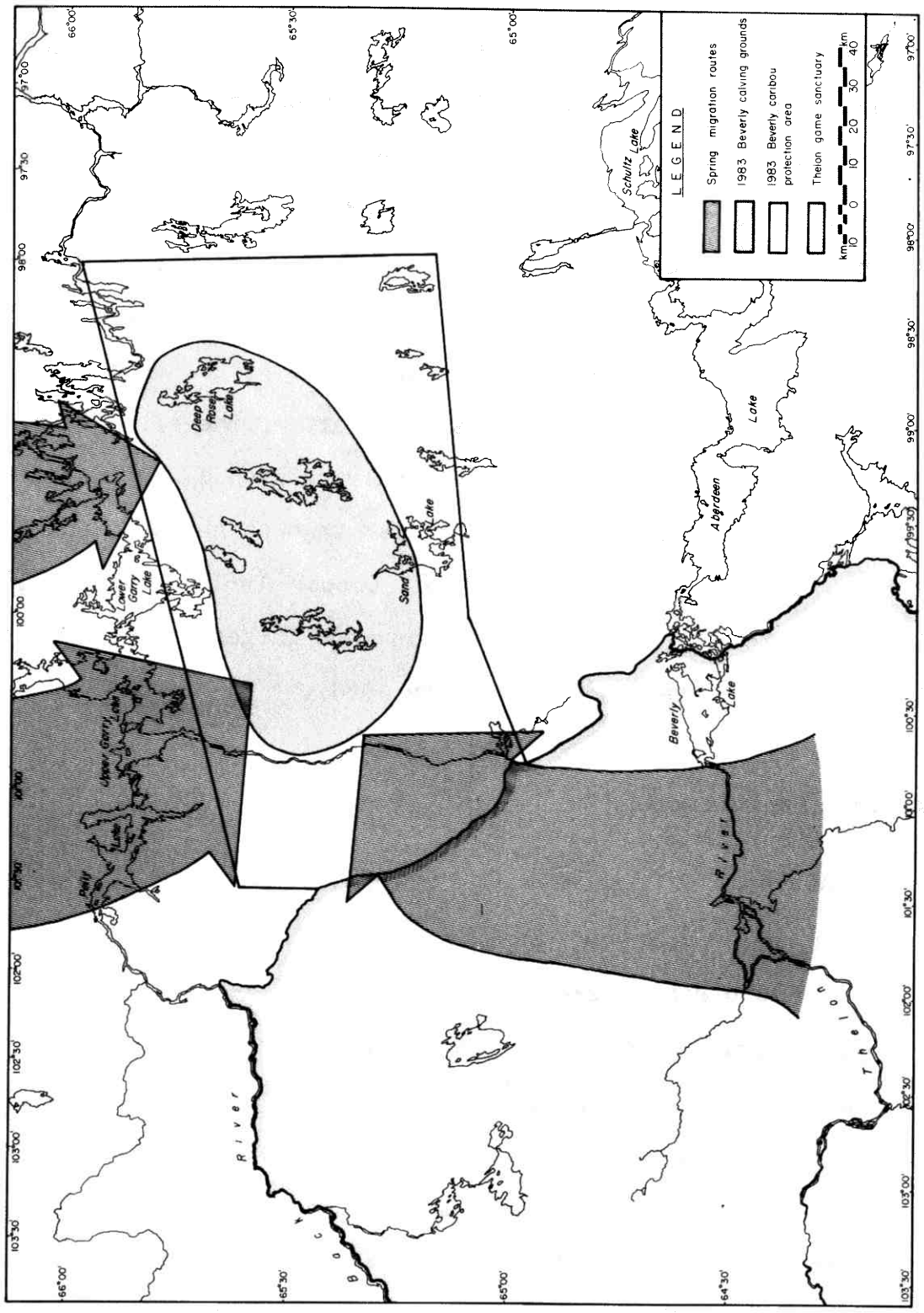

Figure 2. Spring migration routes and calving ground of the Beverly caribou population in 1983. Shaded arrows indicate movement routes, not relative numbers of caribou.

On 17 June a monitoring flight was undertaken to delineate the western and southern boundaries and to recheck the eastern boundary in relation to land use sites. The western edge of the calving distribution was at 100°50'W, the southern boundary was at Sand Lake (Fig. 2). Caribou seen along the western edge of the calving ground were mostly yearlings and other nonbreeders. The eastern edge of the calving ground had shifted about 15 km west from Deep Rose Lake. A large number of calves were seen on this flight and cows had started to aggregate into large herds of up to several thousand caribou in the eastern half of the calving area.

The location of the 1983 Beverly calving ground was inside the 1983 Caribou Protection Area and similar to what had been found in 4 of the past 5 years (Darby 1978, Cooper 1981, Clement 1982, 1983). In 1979 the calving ground was much larger, extending well into the Thelon Game Sanctuary (Darby 1980).

Post-calving Movements

A monitoring flight on 4 July found that most of the Beverly population had moved out of the Caribou Protection Area. An estimated 500 caribou were seen in an area from Beverly Lake in the south to Lower Garry Lake in the north. Most of these caribou were in two groups seen at approximately 65°30'N, 99°00'W. Although the northwest part of the protection area was not searched, information obtained from a helicopter pilot (B. Lauren pers. comm.) indicated that no caribou were in the area on 3 July. Tracks heading south and southwest were seen at Sand Lake, at the southwest corner of the protection area, and at the Thelon River

near Beverly Lake. Evidently some of the caribou moved southwest past Sand Lake and Beverly Lake and into the Thelon Game Sanctuary. A few caribou crossed south between Aberdeen and Beverly Lakes and then moved west to the Thelon River before 4 July. Departure from the Caribou Protection Area by post-calving aggregations occurred at the same time as in previous years of the monitoring program.

The 15 July flight found no caribou in the protection area and found few caribou north of 64°00'N. A group of 800 and a group of 1,000 were seen about 60 km northwest of Beverly Lake and another group of 1500 caribou were seen at the same latitude but about 150 km west of there (these groups contained all sex and age classes). These caribou, in addition to the observation of trails, indicated that some of the population migrated southward past the southwest corner of the protection area, past Beverly Lake and continued up the Thelon River. Some of these caribou may have gone south after crossing the Thelon River instead of following it. Another segment of the population travelled westward out of the protection area and continued until reaching approximately 103°00'W. These caribou then turned south and travelled to the Thelon River which they followed upstream (Fig. 3).

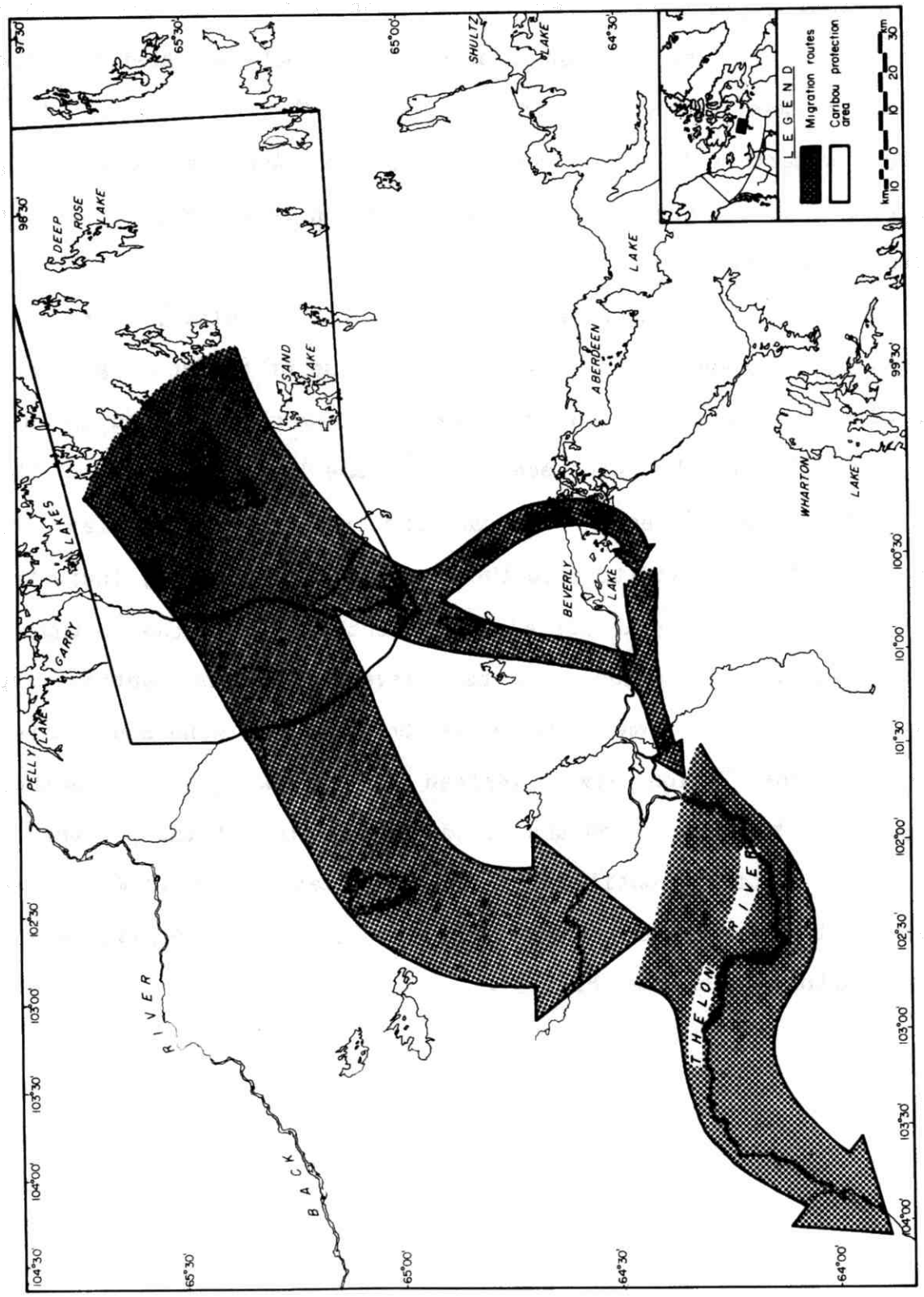

Figure 3. Post-calving migration routes of the Beverly caribou population during 17 June to 15 July 1983. Shaded areas indicate migration routes, not relative numbers of caribou.

Kaminuriak Population Movements

Spring Migration and the Calving Ground

Information on early spring migration of the Kaminuriak population was obtained by the NWT Wildlife Service. The majority of the Kaminuriak population wintered in the taiga. Caribou were scarce in coastal areas throughout the winter and there was no evidence of migration south from the Baker Lake region in late winter. In March and April there was a major movement of caribou from northeastern Manitoba past Eskimo Point and then toward Kaminak Lake. Another migration route was evident originating from Edehon Lake and Nuelten Lake, north toward Kaminak Lake (Fig. 4). Personnel at Cullaton Lake Gold Mine reported that caribou had moved through their area during early May. On 11 May, caribou were still evident in the Cullaton Lake area.

A monitoring flight on 19 May established that the caribou were still migrating northward from as far south as the treeline near Ray Lake. The majority of animals seen were along a migration axis from Ray Lake to Happotyik Lake. On 25 May caribou had still not arrived at the Kaminuriak Lake calving ground (D. Heard pers. comm.). Information from a monitoring flight on 29 May indicated that caribou were rapidly moving north through the Kaminak Lake area toward Kaminuriak Lake. Caribou between the Ferguson River and Blakely Lake were moving rapidly toward the same area (Fig. 4). A monitoring flight on 30 May confirmed the 29 May distribution and also confirmed that there was no movement from the north toward the calving ground.

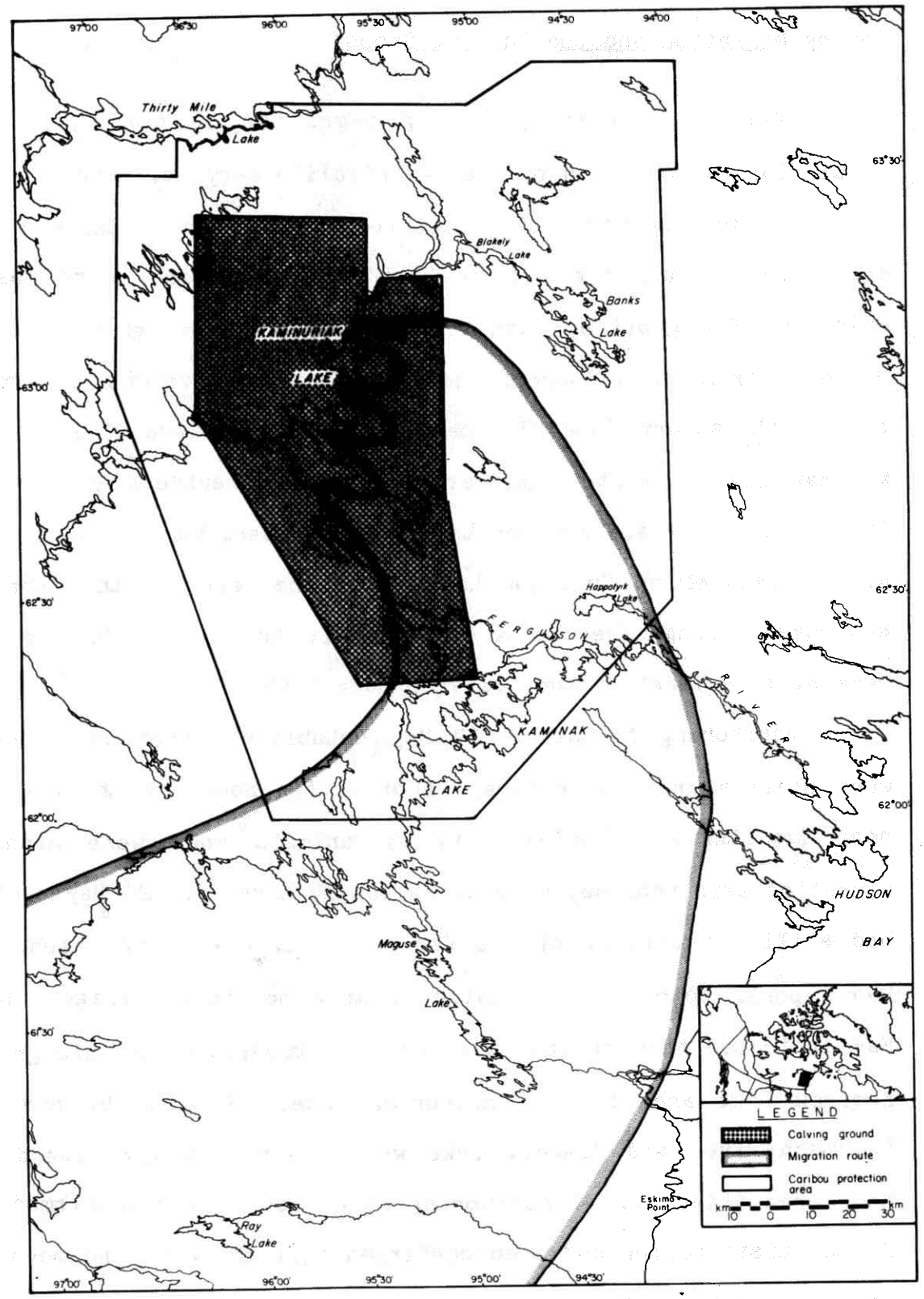

Figure 4. Spring migration routes and calving ground of the Kaminuriak caribou population 1983.

Migration routes followed in spring 1983 were consistent with the normal pattern for the Kaminuriak population as established by Banfield (1954) in the 1940-50 era and documented again by Parker (1972) in the 1960's. In several years since 1973 a major segment, or segments of the population has wintered in the area around Baker Lake and Chesterfield Inlet (Gates 1983a). This pattern and subsequent migration south to the calving ground in the spring was not evident in 1983.

Information was collected during a census of the Kaminuriak population conducted by the NWT Wildlife Service in early June (Gates et al. 1983). On 2 June a major concentration of caribou was seen on the west side of Kaminuriak Lake in the same area occupied during the calving period in 1982 (Gates 1983b). Caribou were moving west across Kaminuriak Lake and, considering the distribution observed on the monitoring flight of 30 May, it was evident that the caribou moved into this area during 31 May to 2 June. Cows were also distributed from Blakely Lake south to Maguse Lake but caribou density was lower there than on the west side of Kaminuriak Lake (Fig. 4). Caribou in this southern area were still moving north towards Kaminuriak Lake. By 6 June very few caribou remained south of the north end of Kaminak Lake. The peak of calving took place about 9 June and by 16 June the caribou had moved into a small area centering on Kaminuriak lake and were beginning to aggregated into large groups.

The location of the 1983 calving ground was within the Caribou Protection Area and was similar to what was found in 1982 (Gates 1983b) and 1980 (Heard 1980) and almost identical to the area used in 1979 (Darby 1980).

Post-calving Movements

On 27 June the Kaminuriak population was distributed over a wide area, from Bissett Lake in the north to south of Maguse Lake. Groups of caribou seen from Parker Lake south to O'Neil Lake were of mixed composition and represented the densest portion of the distribution. The caribou along Thirty-Mile and Bissett Lakes and those south of O'Neil Lake were bulls and yearlings (Fig. 5). There were also some bull and yearling gorups along the east and west peripheries of the dense mixed caribou distribution.

The monitoring flight of 4 July covered the northern part of the Kaminuriak distribution (Thirty-Mile Lake and north). On the 17 June flight, bulls in this area had moved north to the south shore of Baker Lake (Fig. 5). There were still a few bulls in the Thirty-Mile Lake area but they were moving east towards Parker and Bissett Lakes, an area now occupied by mixed herds of up to 200 caribou in size. A similar pattern of movement was observed in 1978 (Darby 1978).

By 9 July, the large concentration of mixed groups of caribou seen in the northwestern section of the Caribou Protection Area on 27 June had moved northeast past the northern tip of Parker Lake and then travelled southeast to an area from Banks Lake to south of Wallace River (Fig. 5). These animals were still moving south. Small groups of mixed caribou were scattered from Baker Lake down to Banks Lake.

On 11 July the herds had moved south and east to an area between Maze lake and south of the Wallace River, with the densest aggregation on the north shore of Maze Lake. A large group of

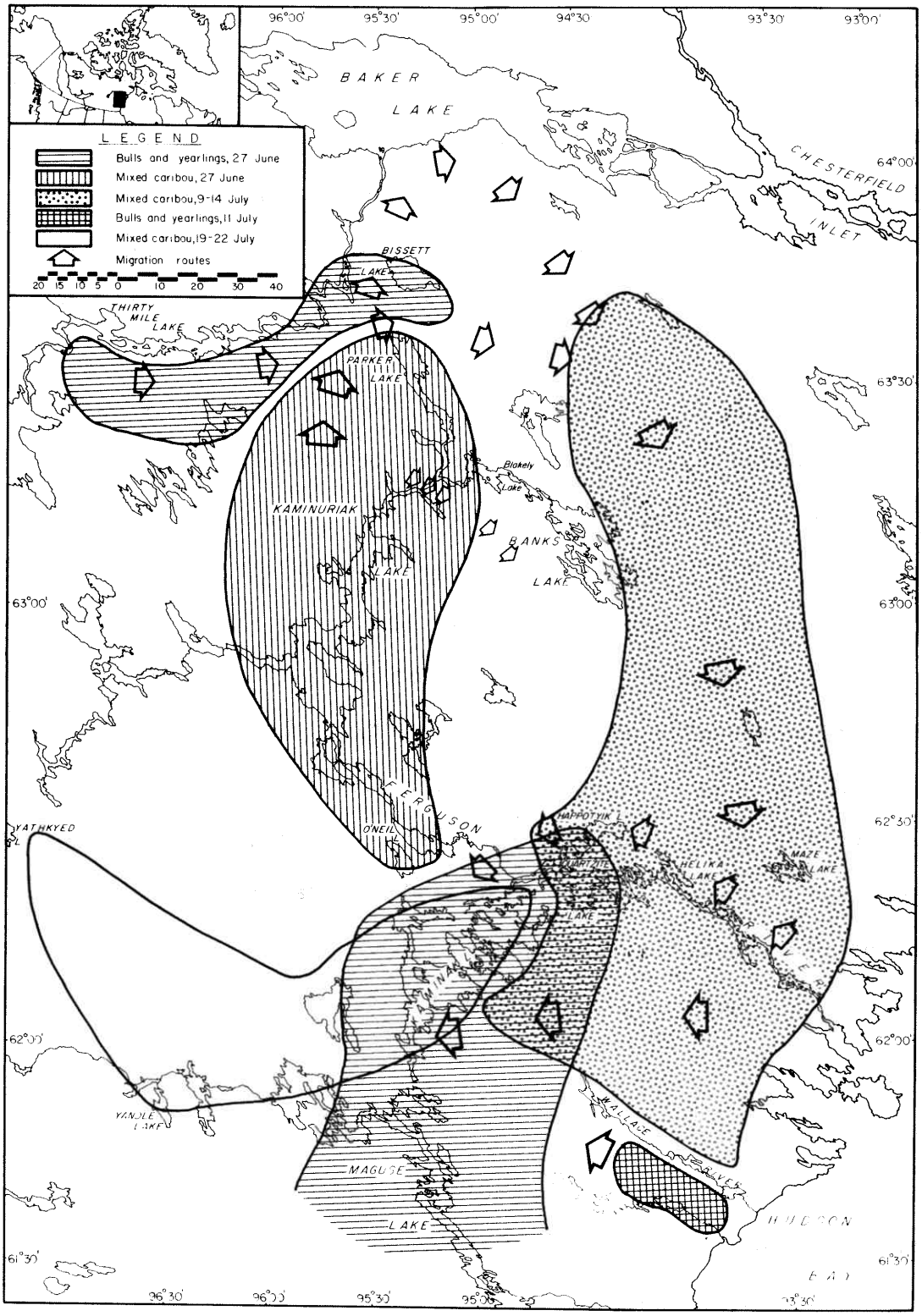

Figure 5. Post-calving migration routes of the Kaminuriak population during 27 June to 22 July 1983. Arrows indicate movement routes not relative numbers of caribou.

caribou seen south of the Wallace River contained mostly bulls and yearlings. Small groups of caribou were seen north of Maze Lake all the way up to Chesterfield Inlet. The caribou between Banks Lake and Maze Lake were travelling south.

On 12 July the distribution of mixed groups seen on 11 July at Maze Lake had shifted west to the north shore of Helika Lake. These caribou were moving northwest along the north shore of Helika Lake.

By 14 July the caribou from Helika Lake had moved to an area which extended from the north shore of Quarzite Lake to about 20 km north of Happotyik Lake and were moving west. Other large aggregations of caribou were seen southwest of Kaminak Lake. Some of these caribou were moving south.

Between 19 and 22 July a major part of the Kaminuriak population occupied an area from Quartzite Lake to Yandle Lake and northwest up to the southern tip of Yathkyed Lake (Fig. 5). Twenty-five groups of caribou were photographed and mean group size was about 2000, based on visual estimates.

At no time during the second half of the monitoring period did all of the Kaminuriak cows leave the 1983 Caribou Protection Area.

Water Crossings

During monitoring flights for the Beverly population, designated water crossings 14, 15, 20, 21, 22 and 23 were checked for use by caribou (Fig. 6). On 4 July designated water crossings 14, 15, 20 and 22 were inspected. No evidence of crossing was found, but crossings 20 and 22 may have been used because tracks

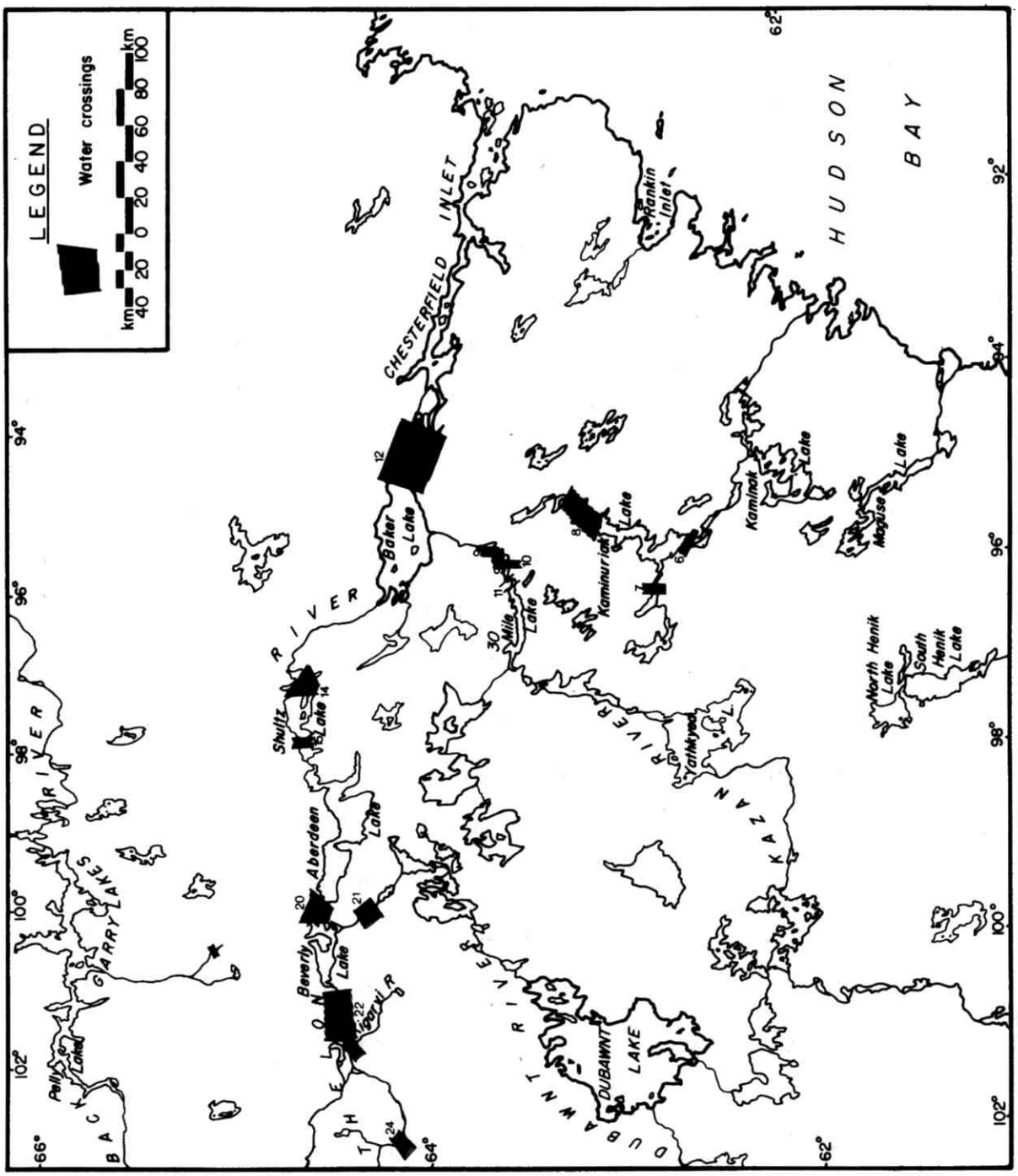

Figure 6. Designated water crossings and observed water crossings investigated during the 1983 monitoring period. Numbers indicate designated water crossings.

were seen on the south shores of Beverly Lake and the Thelon River. The area east of crossings 20 and 22 was checked on 15 July and no caribou or evidence of caribou migration was found, therefore, the assumption that crossings 20 and 22 were used is supported. A water crossing used between 27 June and 4 July was found in the southwest corner of the protection area on an unnamed river (Fig. 6). This crossing site is not a designated crossing. The river is quite large (approximately 25 m wide); several hundred caribou were estimated to have crossed it.

On 15 July designated crossings 15, 21 and 23 were checked. Crossing 23 and the Kigarvi River were crossed prior to 15 July (Fig. 6). The Kigarvi River crossing is not a designated water crossing.

While monitoring the Kaminuriak population, designated water crossings 6, 7, 8, 9, 10, 11 and 12 were checked for use during the monitoring period (Fig. 6). On 27 June designated crossings, 6, 7, 8, 10 and 11 were inspected. No evidence of crossing could be found, but bull caribou were seen on both sides of the river near crossings 9 and 10; crossing may have occurred there.

A flight on 9 July found that caribou had travelled across crossing 8. Distribution of caribou on this date and on previous flights indicated that movement had been in an easterly direction. Judging from the number of trails, this crossing was not heavily used.

On 12 July a flight was made along the southeastern shore of Baker Lake (designated crossing 12). No evidence of use of this crossing site was found. Designated water crossing 11 was checked on 15 July, but no indication of activity was found.

Land Use Activities

The level of industrial exploration activity in and near the Caribou Protection Areas was substantially less in 1983 than in the previous year. In 1982, 22 land use sites were active while only five were active in 1983 (Fig. 1).

There were three requests for early release of land use sites in the Beverly Protection Area. Urangesellschaft Canada Ltd. (U.G.) requested early release for site N83N873 for 10 June. Geological survey of Canada (G.S.C.) requested early release of sites N81N644 and N82N812 for 11 June and 5 July, respectively. Sites N83N873 and N81N644 were inspected on 7 June and release was recommended for the dates requested as the nearest caribou were 10 km distant and moving away from the sites. A subsequent flight on 17 June confirmed that this decision was justified. Field operations began at site N83N873 on 16 June. Caribou were never seen near this site.

A monitoring flight on 4 July found that no cow caribou were near G.S.C. site N82N812. Consequently, early release of this site was recommended to INAC. The monitoring flight on 4 July, found two men, a helicopter and some fuel drums at the site, 1 day before release of the site was requested. This activity turned out to be an emergency refuelling. Site N82N812 was never actually used by G.S.C. during the monitoring period.

G.S.C.'s land use site N81N644 at Ifo Lake (Fig. 1) which was granted early release for 11 June, was checked on 17 June and on 4 and 15 July. No cow caribou were found in the vicinity of this site. Field operations commenced on 18 June.

The Canadian Wildlife Service research camp at Itza lake (land use permit no. N83C842) ceased operations on 22 June. Information obtained from research personnel and from monitoring flights which passed near the camp indicated that few caribou ever came close to the site.

Other active land use sites near the Beverly population's summer range were U.G.'s sites N83C846 and N83C866 and P.N.C. Exploration (Canada) Ltd.'s site N83C896. Site N83C846 was checked on 4 July and there were no caribou near it. Site N83C896 was checked on 15 July and there were no caribou. Monitoring information on the general movements of the Beverly population during the monitoring period indicated that no substantial numbers of caribou passed close to any of these sites.

There were no requests for early release of land use sites in the Kaminuriak Caribou Protection Area in 1983 but U.G.'s site N83C882 was near the protection area. It commenced operation on 7 June. A monitoring flight on 27 June showed large numbers of bull caribou in the immediate vicinity of this land use site. On 4 July most of those caribou had left the area of the camp and by 9 July all caribou had moved away from the area.

No interactions were observed between land use activities and caribou in 1983.

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We would like to thank the residents and administrators of the Arctic Research and Training Centre for providing Mark Bradley with a comfortable and hospitable home during the monitoring period.

PERSONAL COMMUNICATIONS

D. Heard, Government of the Northwest Territories, Wildlife Service, Yellowknife, N.W.T.

B. Lauren, Custom Helicopters, on contract to INAC, Keewatin.

D. Thomas, Canadian Wildlife Service, Edmonton, Alberta.

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Appendix I. 1983 Caribou Protection Measures.

CARIBOU PROTECTION MEASURES
(KAMINURIAK AND BEVERLY HERDS) 1983

CARIBOU PROTECTION AREAS

1. (a) The Permittee shall not, without approval, conduct any activity between May 15 and July 15 within the Caribou Protection Areas depicted on the map certified by the Engineer as the "Caribou Protection Map" annexed to this Land Use Permit.

(b) A Permittee may, upon approval by the Land Use Inspector, operate within the said Caribou Protection Areas beyond the May 15 deadline set out in 1(a), provided that when monitoring information indicates that caribou cows are approaching the area of operation, the Permittee will implement 1(c).

(c) On cessation of activities pursuant to 1(a) or 1(b), the Permittee will remove all personnel from the zone who are not required for the maintenance and protection of the camp facilities and equipment unless otherwise directed by the Land Use Inspector.

(d) The Permittee may commence or resume activities prior to July 15 within those parts of the Caribou Protection Areas released by the Land Use Inspector for the reason that caribou cows are not expected to use those parts for calving or post-calving (note 1).

CARIBOU PROTECTION GENERAL

2. (a) In the event that caribou cows calve outside of the Caribou Protection Areas, the Permittee shall suspend operations within the area(s) occupied by cows and/or cows and calves between May 15 and July 15.

(b) In the event that caribou cows and calves are present the Permittee shall suspend:

(i) blasting,

(ii) overflights by aircraft at an altitude of less than 300 metres above ground level, and

(iii) the use of snowmobiles and ATV's (all-terrain vehicles) outside the immediate vicinity of the camp.

3. (a) During migration of Caribou, the Permittee shall not locate any operations so as to block or cause substantial diversion to migration.

CARIBOU PROTECITON MIGRATION

(b) The Permittee shall cease activities that may interfere with migration, such as airborne geophysics surveys or movement of equipment, until the migrating caribou have passed.

4. (a) The Permittee shall not, between May 15 and September 1, construct any camp, cache any fuel or conduct any blasting within 10 km of any "Designated Crossing" as outlined on the map certified by the Engineer as the "Caribou Protection Map" and annexed to this Land Use Permit.

CARIBOU CROSSING

(b) The Permittee shall not, between May 15 and September 1, conduct any diamond drilling operation within 5 km of any "Designated Crossing" as outlined on the map certified by the Engineer as the "Caribou Protection Map" and annexed to this Land Use Permit.

NOTE

1. The Land Use Inspector's decision will be based on the existing caribou information.

2. Concentrations of caribou should be avoided by low level aircraft at all times.

Appendix II. 1983 Caribou Monitoring Flight Report.

CARIBOU MONITORING FLIGHT REPORT 0711M

Date July 11/83

Aircraft Beech 18 Pilot Jim Smith Passengers Doug Heard, Mark Bradley

Wind Light Temperature Visibility 15 miles

Snow Cover None

Ice Conditions Only the largest lakes are open.

Observations The numbers correspond to numbers on the flight map.

1. 17 unknown

2. 17 unknown

3. 6 unknown

4. 5 unknown

5. 18 unknown

6. 11 unknown

7. 10 unknown

8. 6 unknown

9. 10 unknown

10. 3 unknown heading south-east

11. South and south-east trails

12. 4 unknown heading south-east, south trails

13. 4 unknown, south trails

14. 157 unknown, south trails

15. 100 unknown

16. 35 unknown, heading south-west, south-west trails

17. - 18. 12,000 mixed scattered around

19. south-east trails

20. south-west trails

21. 1500 mixed

22. 280 mixed

Observations...cont. 23. 5,000 bulls

24. 4 unknown

Points 17 to 22 were mostly cows and calves with some bulls and yearlings.

Totals

unknowns	407
mixed	13,780
Bulls	5,000
Total	19,187

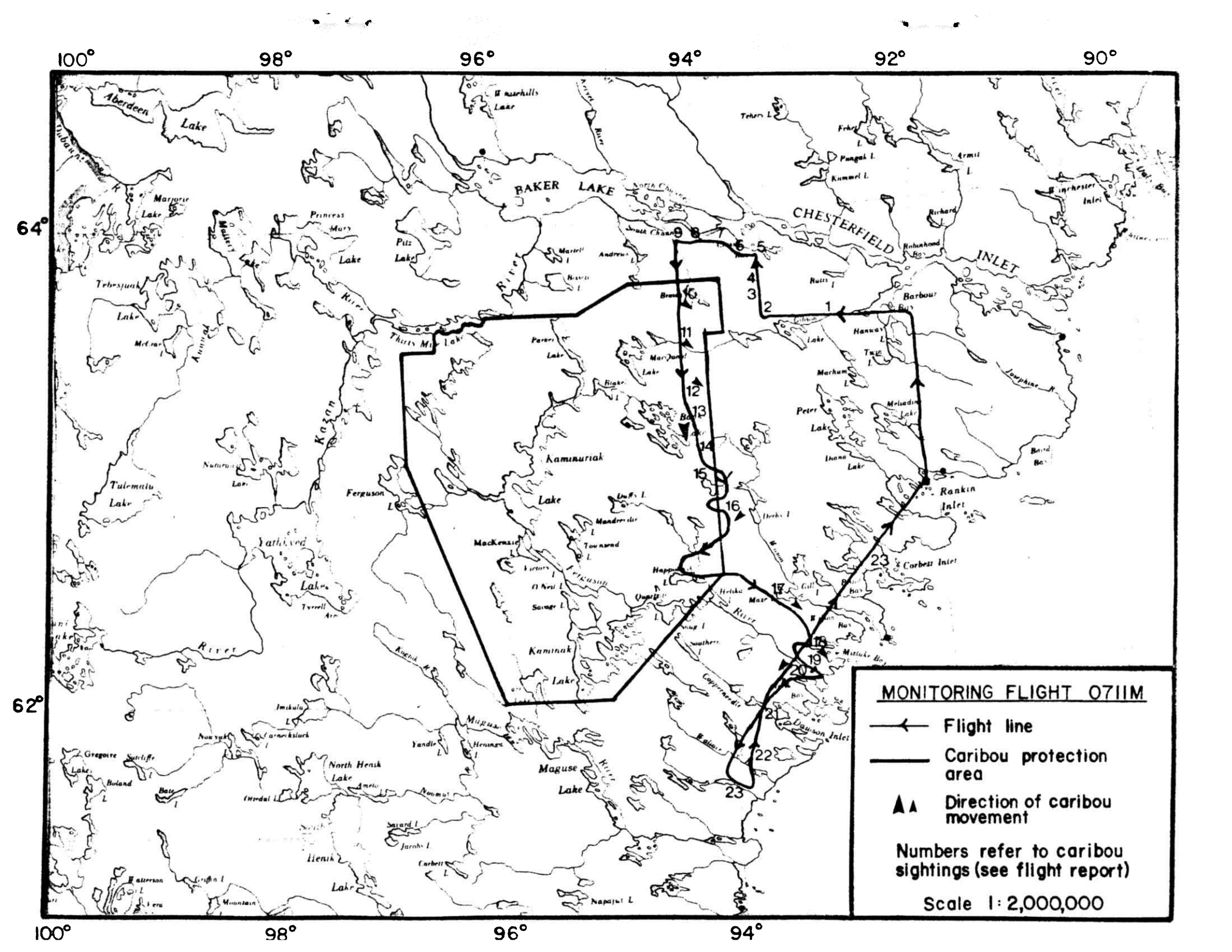
This flight was reconnaissance for Doug Heard's aerial photography census. Information from this flight shows that the caribou have shifted south and east a little since flight 0709L. The main concentration starts at Maze Lake (Point 17) and ends somewhere south of point 23. Caribou at points 11 to 16 appear to be moving south. Cows and calves are mostly between points 17 to 22. No calves were seen at points 1 to 16 or at point 23.

Land Use Sites (# + Activities) Not checked.

Other Human Activities

Water Crossings None observed

Flying Time	Hours	Cost
15:30 - 18:30	3 hrs.	None


100°
98°
96°
94°
92°
90°
64°
62°
BAKER LAKE
CHESTERFIELD INLET
Rankin Inlet
Kamuniuak Lake
Kaminak Lake
Maguse Lake
Ferguson Lake
MONITORING FLIGHT 071IM
Flight line
Caribou protection area
Direction of caribou movement
Numbers refer to caribou sightings (see flight report)
Scale 1:2,000,000