BEVERLY AND KAMINURIAK CARIBOU MONITORING AND LAND USE CONTROLS, 1986

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GOVERNMENT OF THE NORTHWEST TERRITORIES

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ABSTRACT

The movements and distribution of the cow and cow/calf components of the Beverly and Kaminuriak caribou herds are monitored for Indian and Northern Affairs Canada (INAC) land use inspectors during the spring migration, calving and immediate post-calving periods. The information summarized in this report pertains to the maintenance of the Caribou Protection Areas and the enforcement of the 1986 Caribou Protection Measures from 15 May to 15 July.

By 16 May, small groups of cow and yearling caribou had entered the Beverly Protection Area from the Thelon Game Sanctuary. On 10 June, approximately 75% of the cows observed were accompanied by calves. The 1986 calving ground was located between the Upper Garry River and a large unnamed lake (65°30' N, 100°02' W). By 23 June, post-calving aggregations observed by the Upper Garry River were migrating south towards the Thelon Game Sanctuary. On 5 July, aerial observations suggested that the majority of post-calving cows and calves had left the Beverly Protection Area.

By 15 May, cow and yearling caribou were observed in small bands within the Kaminuriak Caribou Protection Area. On 16 May, a large concentration of caribou was located in the area of MacQuoid Lake and Banks Lake. The 1986 calving ground was situated in the Kaminuriak Lake region and the peak of calving occurred around 7 and 8 June. On 1 July, thousands of post-calving cow caribou occupied a region to the southeast of the calving ground. Smaller post-calving cow caribou occupied a region to the southeast of the calving ground. Smaller post-calving groups were located to the west between Kaminak Lake and Kaminuriak Lake. By 15 July, large groups of post-calving cows and calves, now joined by non-calving portions of the Kaminuriak herd, had moved south of the Protection Area.

There were no requests to release land use sites, within the Beverly Protection Area, from suspended operations. Two requests for early release of land use sites in the Kaminuriak Protection Area were received.

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INTRODUCTION

Special protective land use conditions, the Caribou Protection Measures, (Appendix A) apply to the traditional spring and summer ranges of the Beverly and Kaminuriak barren ground caribou (Rangifer tarandus groenlandicus). The primary objective of these conditions, developed by Indian and Northern Affairs Canada (INAC), is to minimize human disturbance to the cow and cow/calf segments of the Beverly and Kaminuriak caribou herds.

Preliminary studies by Darby (1978) and Interdisciplinary Systems Ltd. (1978) resulted in the designation of the Beverly Caribou Protection Area and the Kaminuriak Caribou Protection Area which enclose the calving and immediate post-calving grounds. Unless officially released from deferred activities, no land use operation was permitted within these areas, for the period of 15 May to 15 July 1986, when the Caribou Protection Measures were in place. These restrictions also apply to land use sites outside protection area boundaries while concentrations of cows or cows and calves are in the vicinity.

Since 1978, the monitoring program has provided INAC and the Department of Renewable Resources, Government of the N.W.T. with information regarding the movements and distribution of Beverly and Kaminuriak caribou (Darby 1978, Darby 1980, Cooper 1981, Clement 1982, Clement 1983, Bradley and Gates 1984, Bradley 1985, Duquette 1985). The information provided is required annually to assess and

revise Protection Area boundaries, to enforce land use controls, and to release land use activities from suspended operations. Revisions to both the Kaminuriak and Beverly Caribou Protection Area boundaries have been made since the 1985 caribou monitoring period. The initial 5 year period of the caribou monitoring program has been reviewed by Mychasiw (1984).

The caribou monitoring program objectives are:

1) to identify the late spring migration routes of cows to the calving grounds;
2) to delineate the calving grounds; and
3) to monitor the initial post-calving movements of the cow/calf sectors of the Kaminuriak and Beverly caribou herds, in relation to the Protection Areas and land use sites.

This report summarizes the information obtained from 10 caribou monitoring flights, incidental caribou sightings made while participating in other Renewable Resources and INAC surveys, supplementary reports from the Department of Renewable Resources and INAC, and communication with local residents and pilots working in the Keewatin.

METHODS

The spring migration and distribution pattern of the Beverly and Kaminuriak herds were surveyed during the enforcement period of the 1986 Caribou Protection Measures (Table 1). The region surveyed included the Caribou Protection Areas and outlying areas (Figure 1). Land use sites were monitored in response to early release requests and to determine compliance with land use permit conditions.

The criteria used to select the flight path, for each monitoring survey, included:

1) the existence of active land use sites or early release requests;
2) knowledge of recent caribou activity; and
3) traditional migration routes and calving grounds.

The flight path was altered due to inclement weather and was also influenced by changes in the frequency of caribou sightings. Flight lines for the reconnaissance surveys are illustrated in Figures 2 and 3.

Non-systematic aerial surveys were flown with fixed-wing aircraft at an altitude of 300 metres above ground level and at approximate airspeeds of 160 to 260 kilometres per hour. Monitoring flights were scheduled every ten days to establish patterns in caribou movements and distribution over time. A total of 52.1 survey hours were expended for the 1986 caribou monitoring program. Flights were occasionally postponed due to inclement weather and mechanical difficulties with the aircraft. Both the Beechcraft Queen

Table 1. Schedule of the aerial reconnaissance surveys contributing to the 1986 caribou monitoring program.

Date	Hours	Caribou Herd	Objectives
15 May	2.8	Kaminuriak	To survey a land use site for which a verbal release request had been received, identify caribou movements towards the calving grounds, and determine the distribution of cow caribou.
16 May	5.8	Beverly & Kaminuriak	To document movements towards the Beverly calving grounds and determine the distribution of cow caribou in the Beverly Protection Area and in the northern section of the Kaminuriak Protection Area while on route to the Beverly range.
26 May	3.2	Kaminuriak	To investigate a land use site released from suspended activity and document the progression of cow caribou towards the calving grounds.
31 May	5.8	Beverly	To locate pre-calving concentrations of cow caribou and identify migratory routes to the calving grounds.
7 June	3.8	Kaminuriak	To locate concentrations of calving caribou and approximate the calving ground boundary.
9 June	*	Kaminuriak	To locate calving cow caribou.
10 June	9.3	Beverly	To locate concentrations of calving caribou and delineate the calving ground boundary.
21 June	4.4	Kaminuriak	To locate post-calving aggregations of cows and calves and monitor the western periphery of the protection area.
23 June	7.0	Beverly	To locate post-calving aggregations of cows and calves and monitor the eastern section of the protection area.

Table 1 (cont'd)

Date	Hours	Caribou Herd	Objectives
1 July	*	Kaminuriak	To monitor land use sites for which early release requests had been received and to obtain incidental sightings of post-calving cow caribou.
5 July	5.5	Kaminuriak & Beverly	To monitor a land use site for which a release request had been received and locate post-calving concentrations of cows and calves.
11 July	*	Kaminuriak	To monitor land use sites for which early release requests had been received and to obtain incidental sightings of post-calving cow caribou.
15 July	4.5	Kaminuriak	To investigate a land use site for which an early release request had been received, locate post-calving groups of cows and calves and determine the adequacy of the southern Protection Area boundary.

Note: The * indicates that the flight was not a caribou monitoring charter, but the entry contains data collected by the caribou monitor contributed to the documentation of caribou distribution and movements.

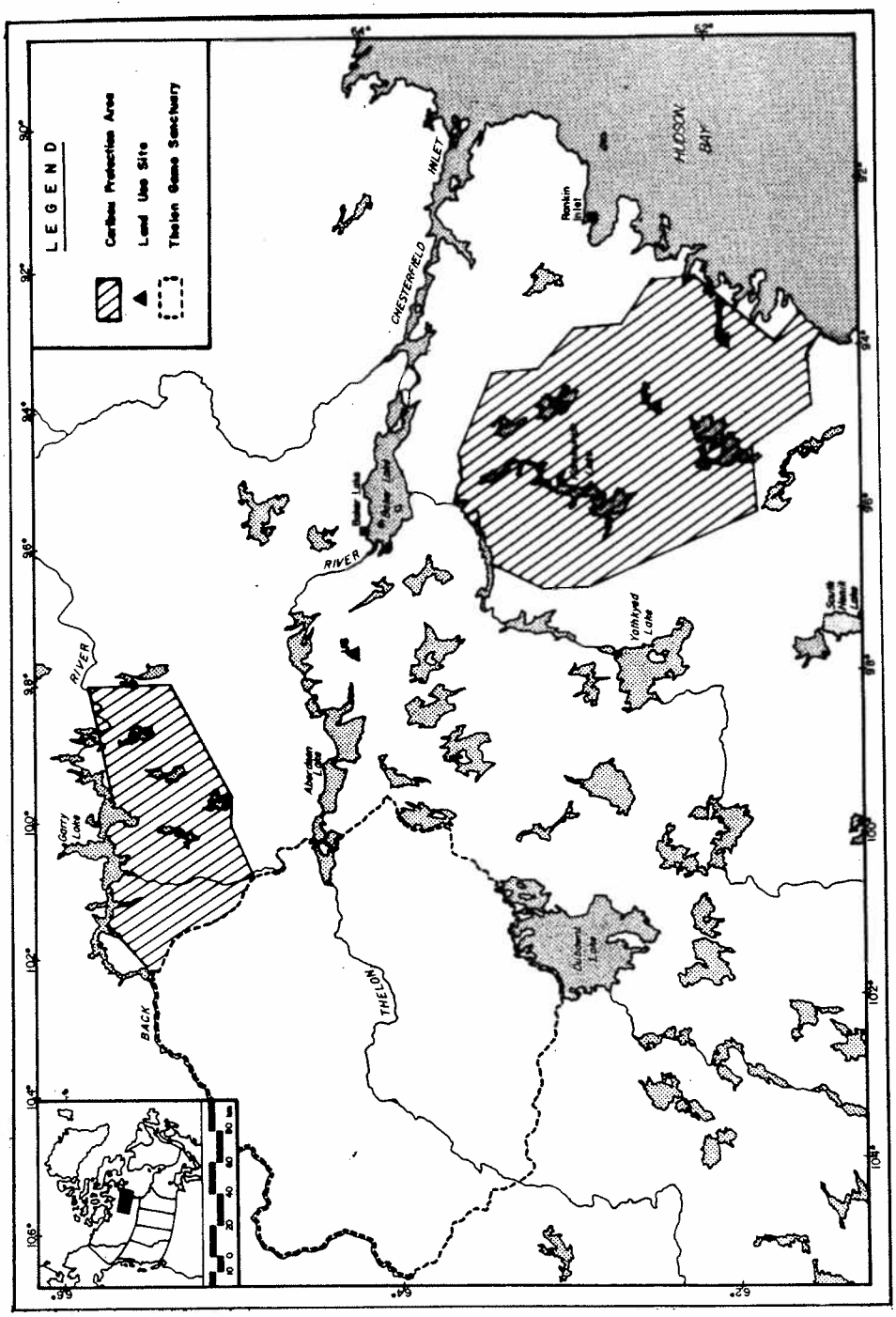

Figure 1. The 1986 Caribou Protection Areas and land use sites.

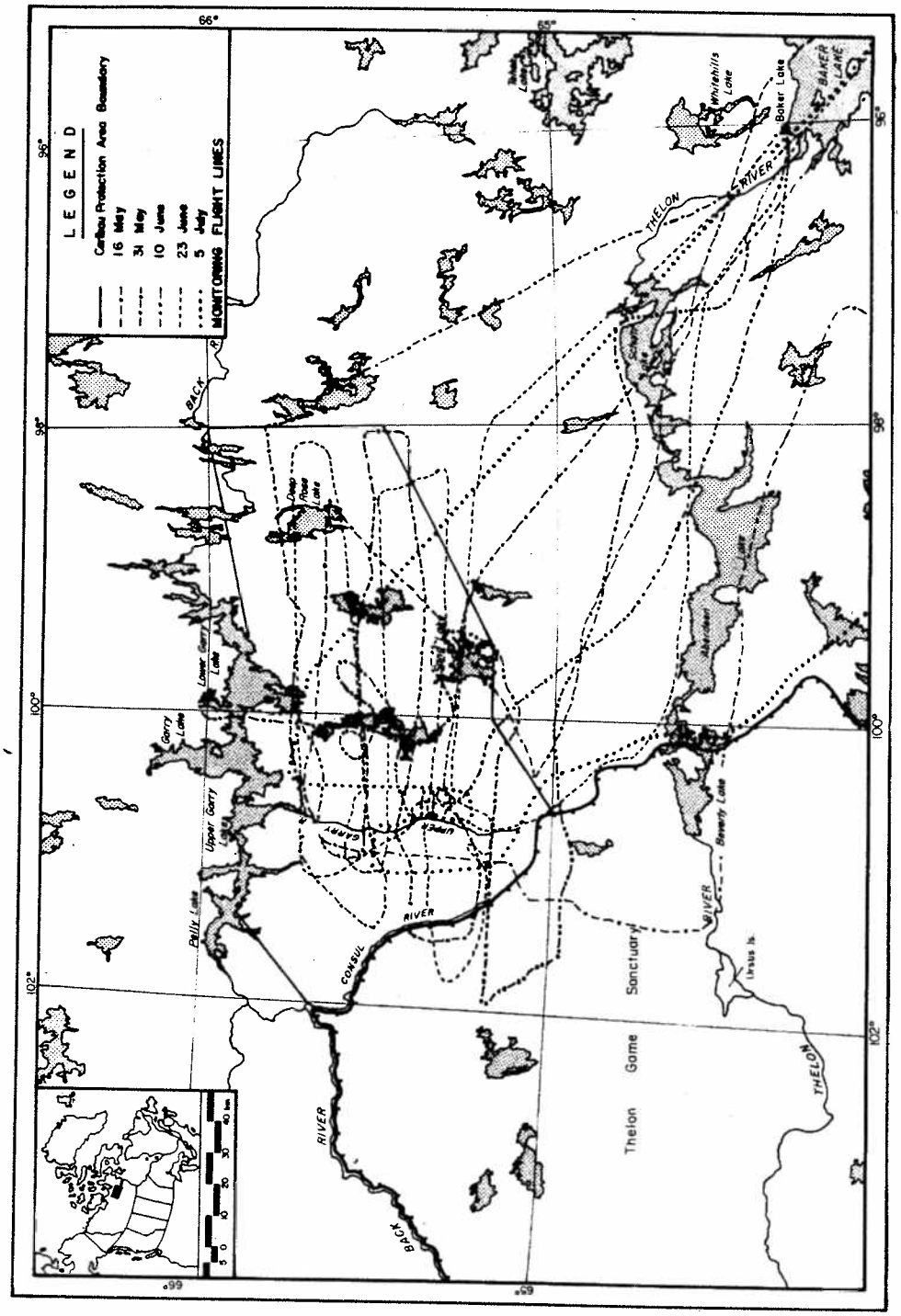

Figure 2. 1986 monitoring flight lines within the range of the Beverly cow caribou population.

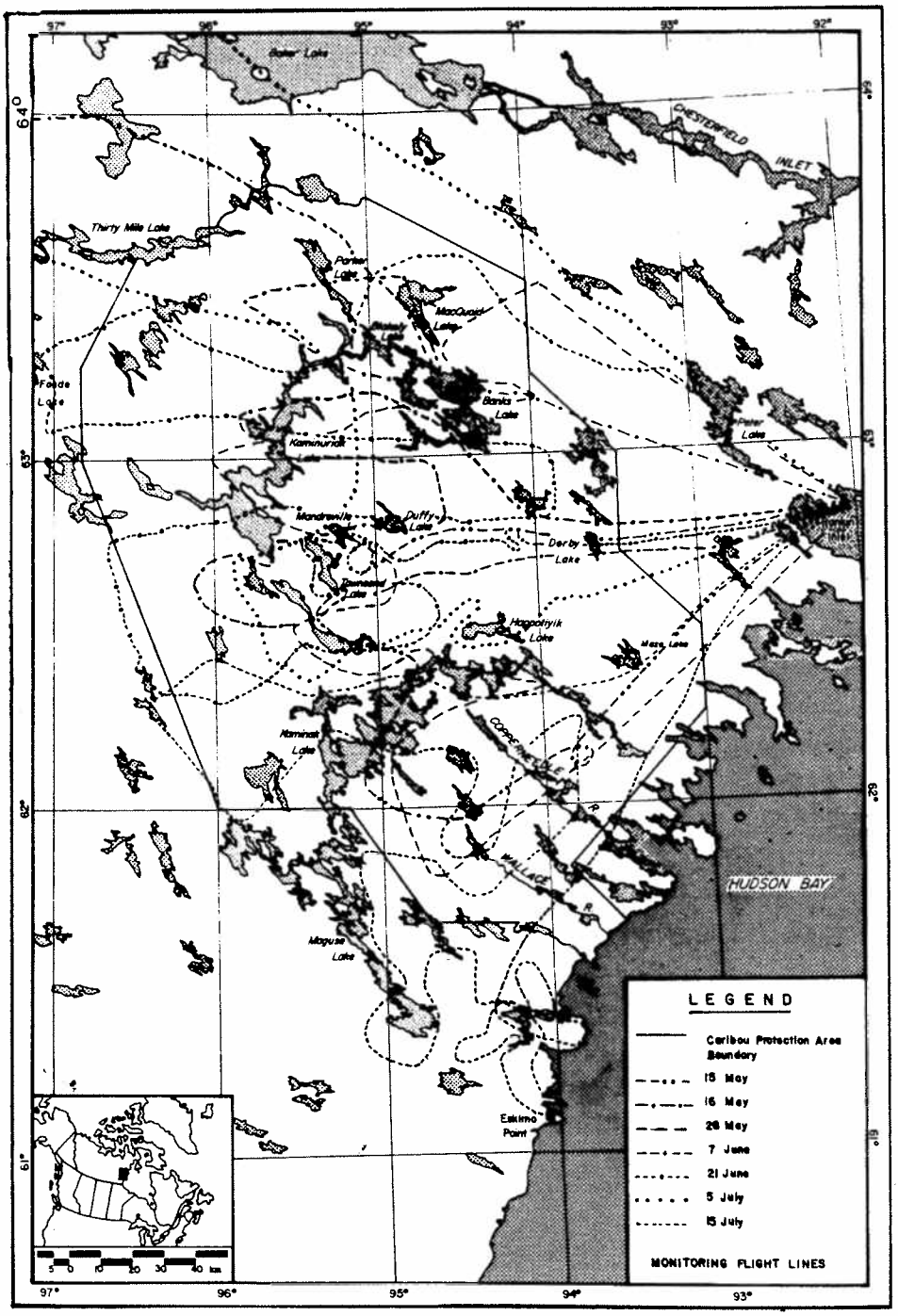

Figure 3. 1986 monitoring flight lines within the range of the Kaminuriak cow caribou population.

Air and DeHavilland Beaver aircraft were chartered for monitoring flights. The advantages of the Queen Air over the Beaver included an Omega navigation system which provided location by latitude and longitude, and a greater flight range. The Omega was particularly useful during the initial survey weeks when landmarks were concealed by snow cover. Navigation in the Beaver required constant orientation by landmarks.

Caribou sightings, visual estimates of abundance and observations of tracks constituted the data base from which interpretations of caribou movement and distribution were formed. The survey effort was directed towards the documentation of cow and calf caribou locations. Data related to yearlings and bulls were collected opportunistically.

Wherever possible, caribou groups were classified according to the most representative sex and age composition defined by cow, calf, yearling, and bull components. Calves were not included in the relative estimates of abundance since they were not as easily observed as adults and yearlings.

If caribou were widely distributed and clumping was not evident, estimates of abundance were made without deviating from the flight plan. Large concentrations of caribou were further investigated in order to define outer limits to the distribution and to obtain a more precise estimate of numbers.

Observations of caribou tracks were categorized as:

i) Light tracks = less than 50 trails or caribou travelling through the area;

ii) Moderate tracks = 50 to 100 trails;

iii) Heavy tracks = more than 100 trails; and

iv) Extensive tracks = widespread observations of heavy tracks.

This was recognized as a tenuous measure of caribou movement. Many animals often travel on a single trail. Trail orientation was recorded and the direction of travel was noted if migrating caribou were observed.

Renewable Resources biological staff would often accompany the monitor and assist with visual observations of caribou while radio-tracking collared Kaminuriak and Wager Bay cow caribou. Pilots also contributed with additional observations.

During reconnaissance flights, observation points were marked on 1:500,000 scale topographic maps. Corresponding details regarding caribou were recorded on monitoring flight report forms (Appendix B). Survey flight reports and reconnaissance maps pertaining to caribou distribution and movements were regularly filed with the INAC district office in Rankin Inlet. These reports included notes on weather and ground conditions, human activity and other wildlife species sighted.

RESULTS AND DISCUSSION

Beverly Caribou Herd Population Movements

Spring Migration and Calving Grounds

In February and March 1986, D. Thomas (pers. comm.) observed thousands of caribou wintering east of Great Slave Lake, from the Snowdrift River south to the Saskatchewan border. Kearney (pers. comm.) received hunter reports of large groups of caribou coming from the west-northwest and moving into the areas of Kasmere Lake and Neultin Lake in Manitoba in the winter of 1985/1986. These are thought to have been Beverly herd caribou.

Hundreds of caribou overwintering near Tehek Lake and north of Schultz Lake were reported by Baker Lake hunters in 1986 (R. Toews pers. comm.). The origin of these caribou is unknown. They may have been Beverly, Kaminuriak or Wager Bay caribou. The direction of their movement out of this area was not documented.

The first caribou monitoring flight to the Beverly range was conducted on '16 May 1986. Caribou were widely dispersed across the Protection Area. Small bands of cow and yearling caribou were observed infrequently along the flight path. Trails oriented in a north/south direction crossed the Thelon River west of Beverly Lake and continued up into the Beverly Protection Area, whereupon the direction shifted to an east/west orientation (Figure 4).

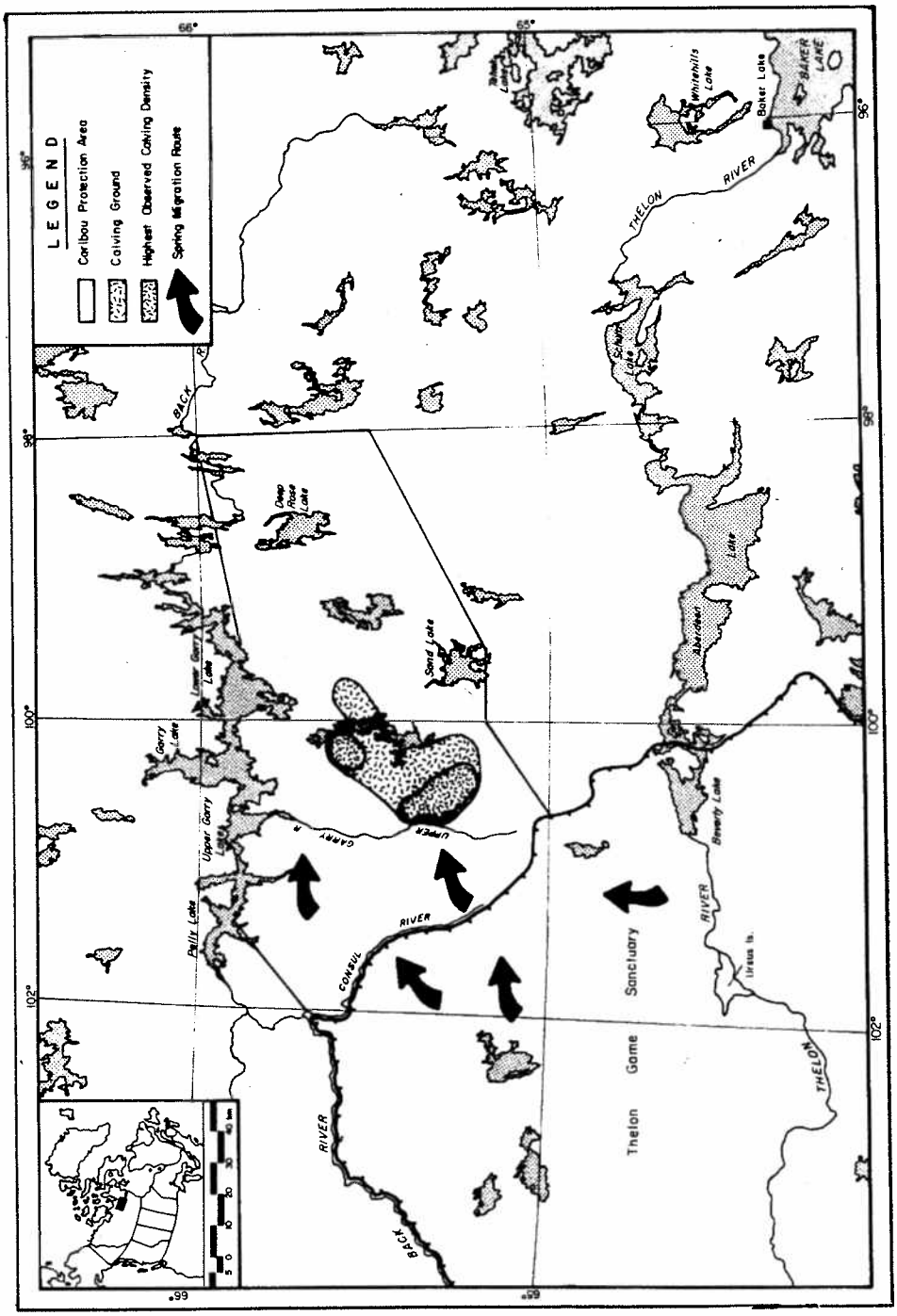

Figure 4. Beverly caribou herd spring migration routes and calving grounds, 1986.

Subsequent monitoring flights located extensive trail systems which showed similar track patterns and indicated continued movement throughout the area. The observed orientation of trails conformed to traditional spring migration routes outlined by Mychasiw (1984).

On 31 May, cow and yearling caribou were observed in greater frequency. The pattern of wide dispersal throughout the Protection Area remained unchanged. Cows and yearlings were primarily observed individually or in small groups. The largest group of caribou observed, estimated at 400 individuals, was situated just south of Lower Garry Lake.

The peak of calving, the date by which half of the cows are observed with calves, had occurred by 10 June 1986. Approximately 75 percent of the cows observed on that date were accompanied by newborn calves. The 1986 calving grounds (Figure 4), as defined by this single reconnaissance survey, was located centrally within the interior of the Beverly Protection Area, from the Upper Garry River east to an unnamed lake (65° 30'N, 100° 02'W). This area overlaps with the designated 1985 calving ground (Duquette 1985), but in general it was situated to the west. The 1986 calving ground may have stretched further east than the 10 June 1986 survey indicates. A large region, traditionally used as calving grounds, between Deep Rose Lake and Sand Lake was not surveyed due to a noticeable drop in frequency of cow/calf sightings, navigation difficulties, and range limitations of the Beaver aircraft.

Post-calving Movements

All observed post-calving aggregations of cows and calves located on the 23 June survey were clustered east and west of the Upper Garry River (Figure 5). Approximately 20,000 cow caribou were seen in this region. Four separate observations of post-calving groups of greater than a thousand cow caribou were made (8000, 6000, 2000 and 1500 animals). Post-calving groups ranging from 100 to 1,000 cows were more commonly observed. The majority of cows were accompanied by calves. Many of the observed caribou were moving south towards the Thelon Game Sanctuary. Bulls and yearlings were seen occasionally on the fringes of post-calving groups. With the exception of one bull, no caribou were observed in the eastern half of the Protection Area.

On 5 July, only one group of 50 cows, accompanied by calves, was located south of Garry Lake. Their direction of travel could not be established. Considering post-calving migrations in recent years, the observed direction of cow/calf movements on 23 June, and the relative absence of post-calving groups within the Protection Area on 5 July, it was concluded that the post-calving cows had likely entered the Thelon Game Sanctuary. Land use activity is not permitted within the Thelon Game Sanctuary, consequently, no further monitoring of Beverly herd caribou was undertaken.

As in 1978 - 1983, post-calving Beverly cows and calves were observed moving west and southwest of the calving

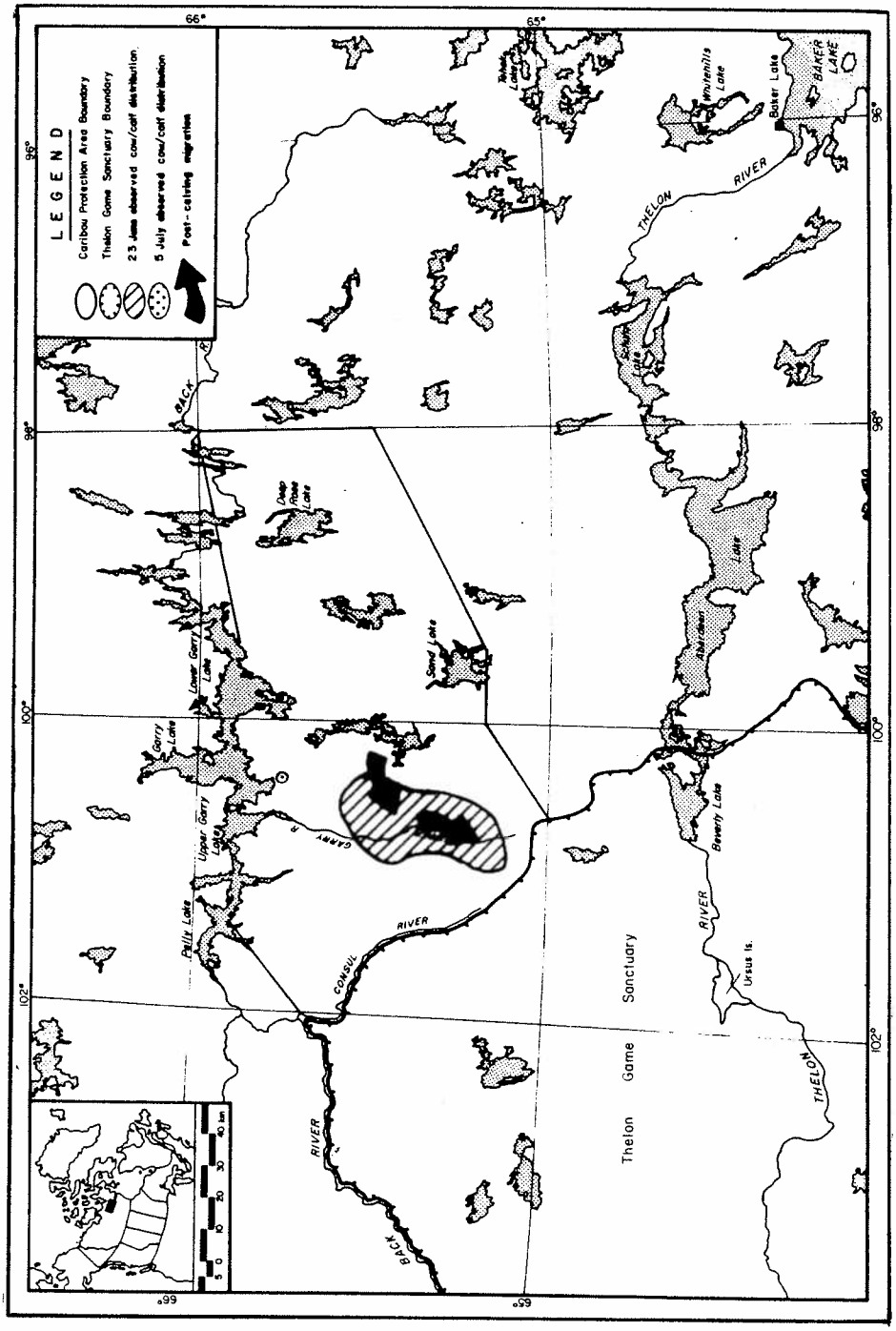

Figure 5. Post-calving movements of Beverly cow caribou, 1986.

grounds towards the Thelon Game Sanctuary (Mychasiw 1984, Bradley and Gates 1984). This movement differs somewhat with observations in 1984 (Bradley 1985) and 1985 (Duquette 1985) which indicated a post-calving migration that followed a northwest and west heading away from the calving grounds.

Kaminuriak Caribou Herd Population Movements

Spring Migration and Calving Grounds

By mid-October 1985, thousands of caribou had arrived in Manitoba. During the winter of 1985/1986, caribou were observed in greater abundance and further south in Manitoba than previously recorded over the past ten years. Caribou were seen within 10 miles of South Indian Lake, Manitoba (S. Kearney pers. comm.). In late March 1986, radio-collared Kaminuriak cows were located as far south as Tadoule Lake, Manitoba (G. Stenhouse pers. comm.). The spring migration northwards was first noted in March. Low numbers of caribou were still observed near Tadoule Lake in early May and the last reported caribou sightings in Manitoba occurred in mid-May (S. Kearney pers. comm.).

Between mid-March and early April, thousands of Kaminuriak caribou migrating northwards from the Manitoba border, passed South Henik Lake and Maguse Lake in the Northwest Territories. Cows, yearlings and mature bulls were observed. According to Eskimo Point residents the spring arrival of caribou was late this year (B. Kovic pers. comm.).

The April to May 1986 Renewable Resources Kaminuriak spring recruitment survey, conducted west of Eskimo Point, classified nearly 9,000 caribou. Between 12,000 and 15,000 caribou were observed, but the main spring movement was not identified (G. Stenhouse pers. comm.).

An influx of several thousand caribou into the Kaminuriak range also came from the north in late April and early May, crossing Chesterfield Inlet near the Bowell Islands and the eastern end of Baker Lake by Lofthouse Point (J. Niego pers. comm.). Spring migrations from wintering areas north of Chesterfield Inlet and Baker Lake have been reported previously in 1981 and 1982 (Clement 1982, Clement 1983).

The first 1986 monitoring flight was conducted on 15 May. Caribou group sizes ranged from 3 to 100 cows and yearlings, although the average group size was 30 individuals. Approximately 75 percent of the caribou observed were yearlings. Caribou were found in three general areas: Kaminak Lake, Derby Lake, and Duffy Lake.

On 16 May, while on route to the Beverly range, the northern section of the Kaminuriak Protection Area was surveyed. A major concentration of cows and yearlings was located across a 35 kilometre stretch, along the west shore of MacQuoid Lake and south to Banks Lake. This area was unapproachable on 26 May, due to inclement weather conditions.

On 26 May, observations of tracks and caribou indicated a major movement from the northeast to the

southwest towards Kaminuriak Lake. Two concentrations of predominantly cow caribou were located. The first was noted near Mandreville Lake (1,500 caribou) and a second concentration was observed 2 kilometres west of Mandreville Lake, near Kaminuriak Lake (800 caribou). The caribou sighted previously on the 15 May monitor flight appeared to have left the Kaminak Lake region. An absence of caribou and recent tracks indicated a movement out of the area along a north/south axis.

On 7 June, approximately 20 percent of the cow caribou observed were accompanied by calves. Subsequent Renewable Resources radio-telemetry surveys, within the Kaminuriak Protection Area on 8 and 9 June, provided additional information used to define the 1986 calving ground boundary and determine the peak of calving. The 1986 calving grounds were located in the region of Kaminuriak Lake, Mandreville Lake and Duffy Lake (Figure 6). The highest densities noted were east of Kaminuriak Lake but some calving did occur to the west of the lake. Approximately 90 percent of the relocated radio-collared cow caribou were found in the area identified as "highest observed densities of calving" in Figure 6 (G. Stenhouse pers. comm.). The 1986 calving ground in the Kaminuriak Lake area corresponds with calving grounds observed previously. Since 1978, the calving grounds have been located to the east and southeast of Kaminuriak Lake. The calving grounds documented from 1979 - 1985, with the exception of 1981, have typically extended west of Kaminuriak Lake (Duquette 1985). The peak of calving occurred between 7

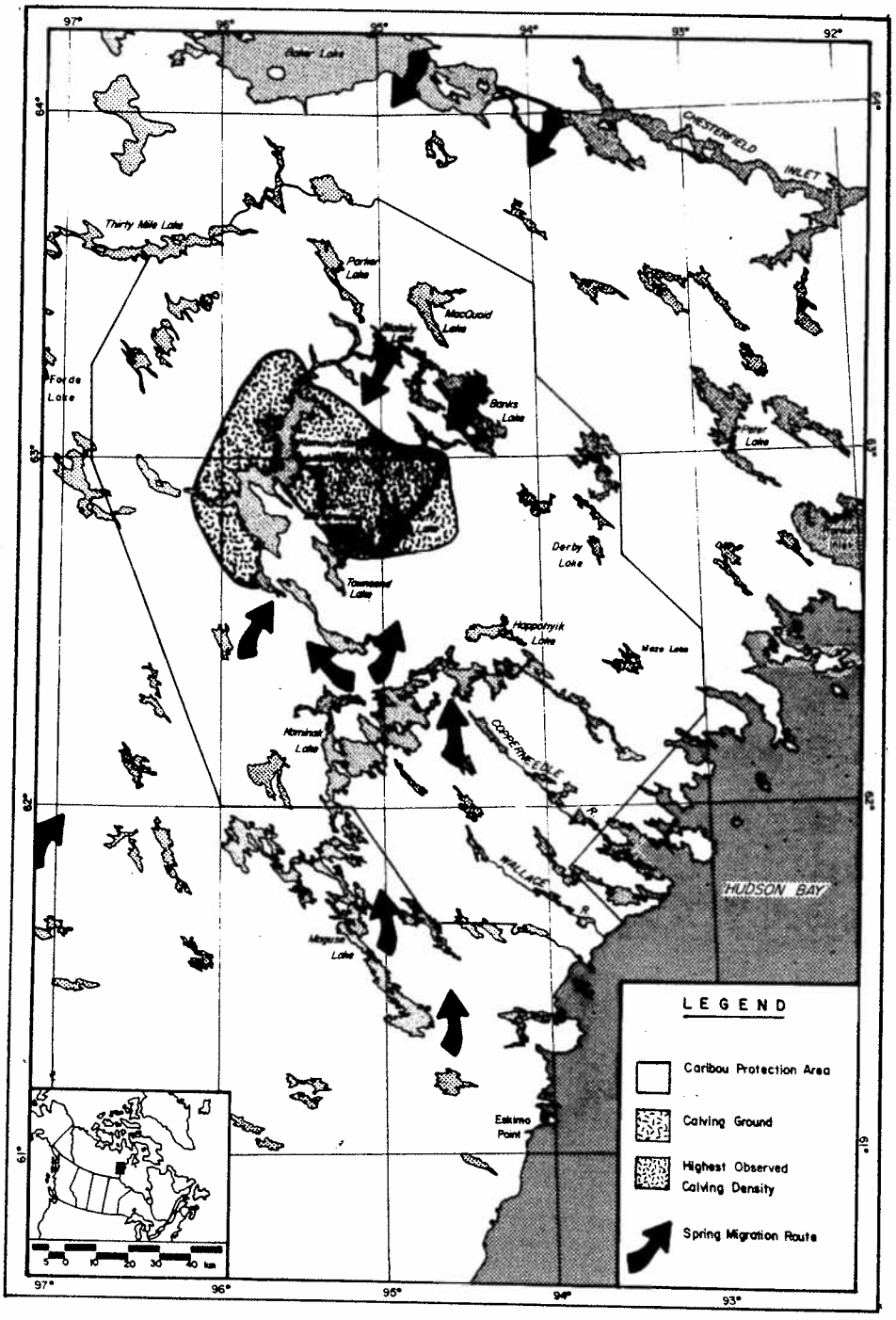

Figure 6. Kaminuriak caribou herd spring migration routes and calving grounds, 1986.

and 8 June. Approximately 90 percent of the 5,000 cows observed between Duffy and Banks lakes, were paired with calves on 9 June.

Post-calving Movements

The post-calving cow and calf distribution, observed on 21 June, was located to the south and east of the 1986 calving ground (Figure 7). Post-calving associations noted ranged from 100 to 5,000 cows. Typically, group size was under 1,000 cows. Approximately 30,000 cows were observed on this survey. Most yearling and bull caribou were sighted along the western and northwestern periphery of the Protection Area, though by this time, yearlings and bulls were dispersed throughout the area surveyed, usually in small groups of less than 10 individuals.

By 5 July the cow/calf caribou distribution had separated into four relatively distinct post-calving associations. A group of 10,000 to 15,000 cows accompanied by calves was located approximately 5 kilometres south of Derby Lake. Approximately 7,000 cows with calves were located in the vicinity of Happotiÿik Lake. Over 2,000 cows with calves were sighted between Kaminak and Kaminuriak lakes. Large groups of bulls and yearlings were interspersed with cow/calf associations. Larger caribou groups (2,000+) were composed of all sex and age classes.

Incidental caribou sightings made on 1 July and 11

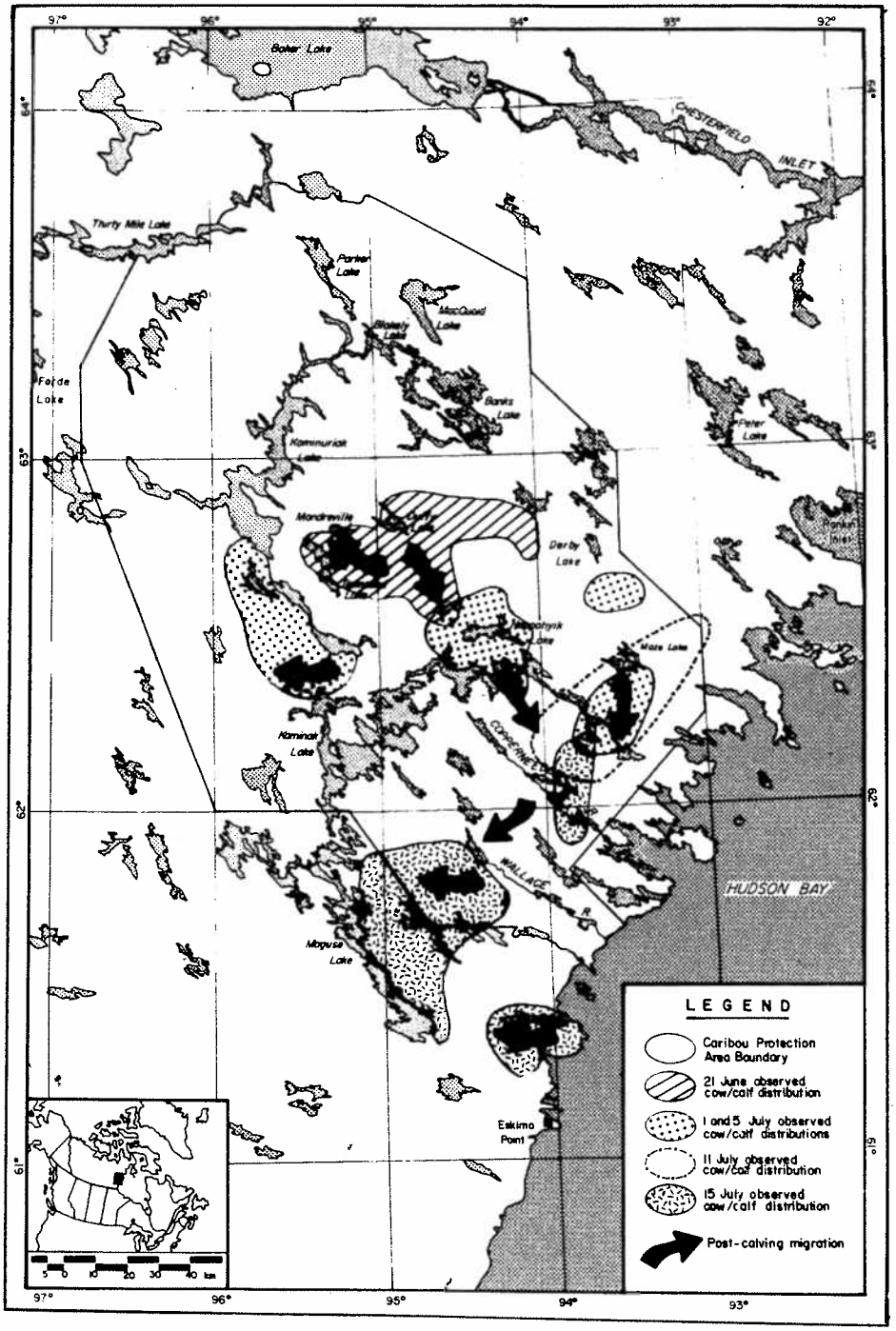

Figure 7. Post-calving movements of Kaminuriak cow caribou, 1986.

July by INAC staff revealed that major concentrations of post-calving cow caribou with calves were situated between Maze Lake and the Copperneedle River. The highest observed density was located by Maze Lake but cows and calves were distributed throughout the entire region and were clearly trailing to the south. By 11 July, cows and calves moving south, had vacated the Happotiyik Lake area.

On the 15 July flight, three distinct groups of cows and calves, were located:

1) Over 60,000 caribou, represented by all age and sex categories, were sighted in the Austin Island area, approximately 20 kilometres south of the Kaminuriak Caribou Protection Area. The observed distribution was almost continuous throughout the area.

2) Numerous distinct groups of caribou were sighted in the area between the Wallace River and Maguse Lake. Approximately 17,000 adults and yearlings were observed in the area, roughly 20 percent of which were bull caribou. Group size estimates ranged from 500 to 5,000 adults and yearlings. A large proportion of cows observed were accompanied by calves.

3. The occupied area near the Copperneedle River encompassed three distinct groups of mixed age and sex, including cows with calves. Group size ranged from 150 to 500 adult caribou.

The migration route to the southeast of the calving ground has been previously reported by the caribou monitoring program (Mychasiw 1984, Bradley and Gates 1984, Bradley 1985,

Duquette 1985). Post-calving cows have traditionally moved towards the Hudson Bay coast and the Maguse River. This has been documented from 1979 to 1982 (Mychasiw 1984) and in subsequent years (Duquette 1985, Bradley 1985, Bradley and Gates 1984).

On 17 July, thousands of caribou, including cows with calves, were observed on the southeast shore of Kaminuriak Lake (L. Vergnano pers. comm.). This observation, together with previous observations of extensive east/west tracks leading away from the 1986 calving ground confirms a post-calving migration movement to the west. This pattern of movement was also observed in 1980 and 1981 (Mychasiw 1984).

On 23 and 24 July, Renewable Resources biologists identified a movement of approximately 20,000 caribou, cows and calves included with bulls and yearlings, heading north along the east side of Forde Lake (R. Mulders pers. comm.). Residents of Baker Lake reported thousands of caribou along the south shore of Thirty Mile Lake during the latter half of July (J. Niego pers. comm.). A similar post-calving movement was documented in 1981 and 1982 (Mychasiw 1984).

Land Use Activities

Beverly Protection Area

There were no land use sites within the Beverly Protection Area requesting release from suspended activities during this reporting period. One land use site south of the

Beverly Caribou Protection Area, operated by Urangesellschaft Canada Ltd. (UG), was investigated (Figure 1). No concentrations of cow caribou were observed on monitoring flights nor reported to be in the general vicinity of the exploration camp between 15 May and 15 July. This area, south of Schultz Lake, was surveyed on 10 June and 23 June.

Kaminuriak Protection Area

Two requests for early release of land use sites in the Kaminuriak Caribou Protection Area were received.

1) Borealis Exploration Ltd. verbally requested release from suspended land use activities, for permit N85C476 (Figure 1), in early May. The 15 May monitoring survey found no indication that cow caribou concentrations were in the vicinity of the camp and early release was recommended to INAC. A subcontractor took occupation of the site in late May for the purpose of upgrading the camp facilities. Land use operations were officially suspended at the Borealis site on 1 July as post-calving concentrations of cows accompanied by calves were observed migrating through the land use site. Thousands of cows with calves were observed within 20 kilometres of the site by the caribou monitor on 1 and 11 July. On 15 July, more than 600 post-calving cows accompanied by calves, were observed within 10 kilometres of the site. Borealis was given permission to fly in once to check the

camp and did so on 11 July. Borealis, however, flew into the camp and the surrounding work area by helicopter on 12 and 13 July without authorization. INAC repeatedly ordered Borealis staff and subcontractors to leave the work area which was in close proximity to concentrations of post-calving caribou (P. Kusugak pers. comm.). Borealis resumed land use operations on 16 July, once the Caribou Protection Measures were no longer in effect.

2) Noble Peak Resources (NPR), verbally requested early release of the land use site, N86N579, northwest of Happotiyik Lake on 4 July. They also requested that the monitor recommend potential alternative camp sites on the south shore of Happotiyik Lake. An overflight inspection of the area on 5 July, located thousands of cows with calves in the vicinity of the land use site and Happotiyik Lake. Early release of the site was not recommended nor could an alternative site near Happotiyik Lake be recommended. On 11 July, the monitor inspected the land use site and found that the caribou had vacated the area. Release of the land use site was recommended to the land use inspector, in Rankin Inlet, on 11 July. Noble Peak Resources took occupation of the land use site on 13 July (P. Kusugak pers. comm.).

Water Crossings

Designated water crossings (Darby 1980) within the

summer range of the Beverly and Kaminuriak cow caribou populations were ice-covered until early to mid-June.

The observed post-calving migration of Beverly cows and calves did not approach any designated water crossings. On 23 June, post-calving aggregations of cows and calves had crossed the Upper Garry River although no water crossings on the river were located. On 5 July, observed trails indicated a minor water crossing at location C in Figure 8, south of Lower Garry Lake.

Two new water crossings were identified by observations of trails, on 11 and 15 July, within range of Kaminuriak post-calving cows and calves. Trails observed on 15 July, indicated a water crossing at location A on Kaminak Lake (Figure 8). Extensive trails at water crossing B cut across the Wilson River system to the east of Maze Lake. Water crossing B was first identified on 11 July. Several thousand cows accompanied by calves were observed within 10 kilometres to the south of this water crossing at that time. The main post-calving movement travelled to the southeast of the 1986 calving grounds. Designated water crossings on Kaminuriak Lake were situated to the west of the observed calving grounds. Designated water crossing 8 was checked on 5 July. There was no evidence suggesting use by caribou.

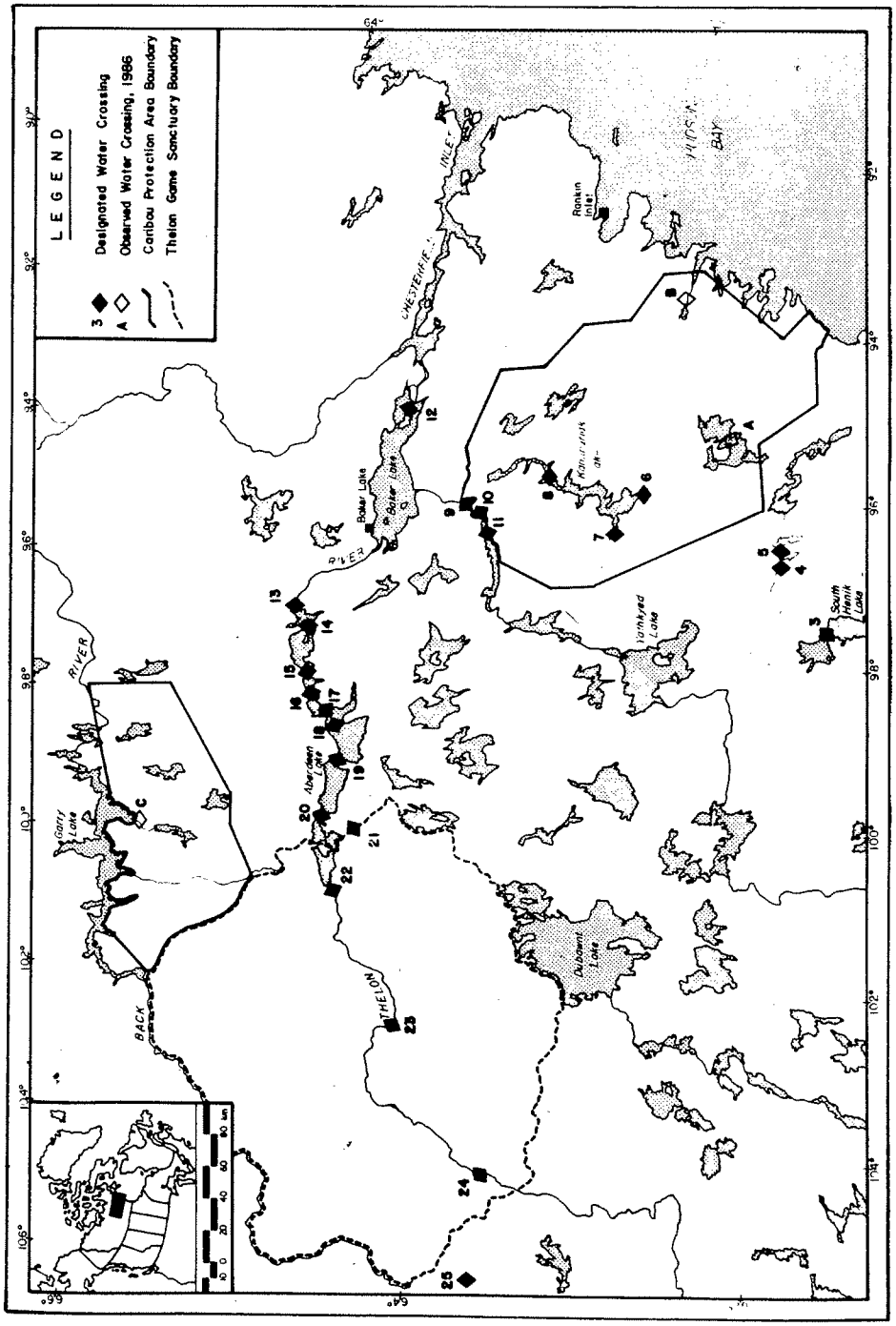

Figure 8. Designated and observed water crossings within the spring/summer range of the Beverly and Kaminuriak cow caribou populations.

RECOMMENDATIONS

1) Beverly Caribou Protection Area

The findings of the 1986 monitoring program indicated that post-calving associations of cow and calf caribou had left the Beverly Protection Area before 15 July; however, the caribou appeared to have migrated into the Thelon Game Sanctuary where no mineral exploration is permitted. The 1986 Beverly Protection Area boundary adequately enclosed the movements of cow and cow/calf concentrations in relation to land use activities during the time period 15 May to 15 July. No extensions to the Protection Area are suggested.

2) Kaminuriak Caribou Protection Area

Based on the results of the 15 July monitoring flight, it is recommended that the southern boundary of the Kaminuriak Protection Area boundary be extended to include the areas of concentrations of cows and calves on 15 July (Figure 7). Slight modification to the eastern boundary might also be considered to reflect more accurately the observed 11 July distribution of post-calving cows and calves.

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Robert Mulders, Nicholas Lunn, Steve Matthews and Alison Welch reviewed drafts of this report, and Sinni Tong typed those drafts.

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APPENDIX A. The 1986 Caribou Protection Measures

CARIBOU PROTECTION MEASURES
(KAMINURIAK AND BEVERLY HERDS)

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).

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.

APPENDIX A. (cont'd)

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

CARIBOU MONITORING FLIGHT REPORT

Date: Caribou Herd:
Flight Number:
Aircraft:
Observers:
Pilot:
Copilot:
Cloud Cover:
Visibility:
Temperature:
Wind:

LAND USE RATIONALE

SNOW COVER

ICE CONDITIONS

OBSERVATIONS

Numbers refer to observation points on the attached flight map.

Light tracks = less than 50 caribou travelled through the area.

Moderate tracks = 50 - 100 caribou.

Heavy tracks = more than 100 caribou.

Extensive tracks = many heavily used trails in the area.

1.
2.
etc.

LAND USE ACTIVITY

OTHER HUMAN ACTIVITIES

WATER CROSSING

SUMMARY

Flying Time: