# BEVERLY AND KAMINURIAK CARIBOU MONITORING AND LAND USE CONTROLS, 1984

M. BRADLEY
DEPARTMENT OF RENEWABLE RESOURCES
GOVERNMENT OF THE NORTHWEST TERRITORIES
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# ABSTRACT

The objective of the 1984 Caribou Monitoring Program was to monitor movements and distribution of the cow and cow/calf segments of the Beverly and Kaminuriak populations of barren ground caribou (Rangifer tarandus groenlandicus). This is required to provide advice to land use inspectors pertaining to caribou protection, Caribou Protection Areas and the 1984 Caribou Protection Measures. The monitoring area included the 1984 Caribou Protection Areas and post-calving migration routes for the two caribou populations. Aerial reconnaissance was used to collect the information.

The Beverly cow caribou first entered the Protection Area prior to 18 May. Most cows were inside the Protection Area by 23 May. Migration was through the southwest corner of the Protection Area. The calving ground was located from just south of Sand Lake, north of the Garry Lakes and from the Upper Garry River in the west to 99°10'W in the east. Post-calving aggregations were forming by 12 June.

On 19 June, the Beverly cows were distributed from just north of Sand Lake up to the Garry Lakes and from 100°45'W eastward to the shores of the Pelly and Upper Garry lakes. By 4 July, they had moved westward out of the Caribou Protection Area.

The Kaminuriak cows were inside the Protection Area prior to 19 May. Migration into the Protection Area was from the south. The calving ground was located from Victory Lake in the south, to Blakely Lake in the north, and from Banks Lake in the east, to 40 km west of Kaminuriak Lake. Post-calving groups were formed by 12 June.

On 21 June, the Kaminuriak cows were distributed from Parker Lake south to Victory Lake, and from Duffey Lake west to 96°00'W. On 28 June the cows had moved eastward to form a migration axis stretching from Bissett Lake to south of Maze Lake. By 5 July most of the cows were distributed from the Ferguson River system south to just north of Maguse Lake.

There were two requests for early release of land use sites in the Beverly Protection Area. Urangeschellschaft applied for and was granted early release for land use site N83N873 on 10 June. The company moved in on 19 June. Kidd Creek Ltd. was denied early release for land use site N81C506 on 6 June. Early release of this site was granted for 26 June, but the company did not move in during the monitoring period. The NWT Department of Renewble Resources maintained a camp at land use site N84N094 from 5-13 June as a base for the 1984 Beverly population census.

There were no requests for early release of land use sites in the Kaminuriak Caribou Protection Area, nor were

there any active land use sites near the Protection Area during the 1984 monitoring period.

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# INTRODUCTION

In mid-May, the NWT Department of Renewable Resources initiated the 1984 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), Clement (1982, 1983), and Bradley and Gates (1984). The objective of the program was to monitor movements and distribution of the cow and cow/calf segments of the Beverly and Kaminuriak caribou popultions. This data was used to provide advice to INAC land use inspectors on matters of caribou protection, the Caribou Protection Areas, and the 1984 Caribou Protection Measures (Appendix A). In addition, data were collected to add to the information base on the distribution and movements of 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.

This report provides a summary of information collected during monitoring flights carried out between 18 May and 5 July, and also information obtained from other studies and from pilots flying in the area. Requests for land use releases are reported, as are land use activities observed in, and adjacent to, the Caribou Protection Areas.

# METHODS

The 1984 monitoring area included the 1984 Caribou Protection Areas, and portions of the spring and post-calving migration routes of the Beverly and Kaminuriak populations (Fig. 1). Under the auspices of the 1984 Caribou Protection Measures, companies with land use permits within the Caribou Protection Areas are required to suspend operations between 15 May and 15 July. If there are no cow caribou in the vicinity of the site as determined from monitoring observations, a land use inspector may grant early release of that site before 15 July. Early release of a site means that the permitee may then commence operations.

Aerial reconnaissance was used to collect information on movements and distribution of cow/calf segments of the two caribou populations. The aircraft used was a DeHavilland Beaver flown at 300 m agl and 160 kph. Additional observers were used, but many flights were conducted without such assistance. Caribou sightings, as well as estimated abundance and direction of trails, were used to determine distribution, relative abundance and migration patterns of the two populations. 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 age and sex

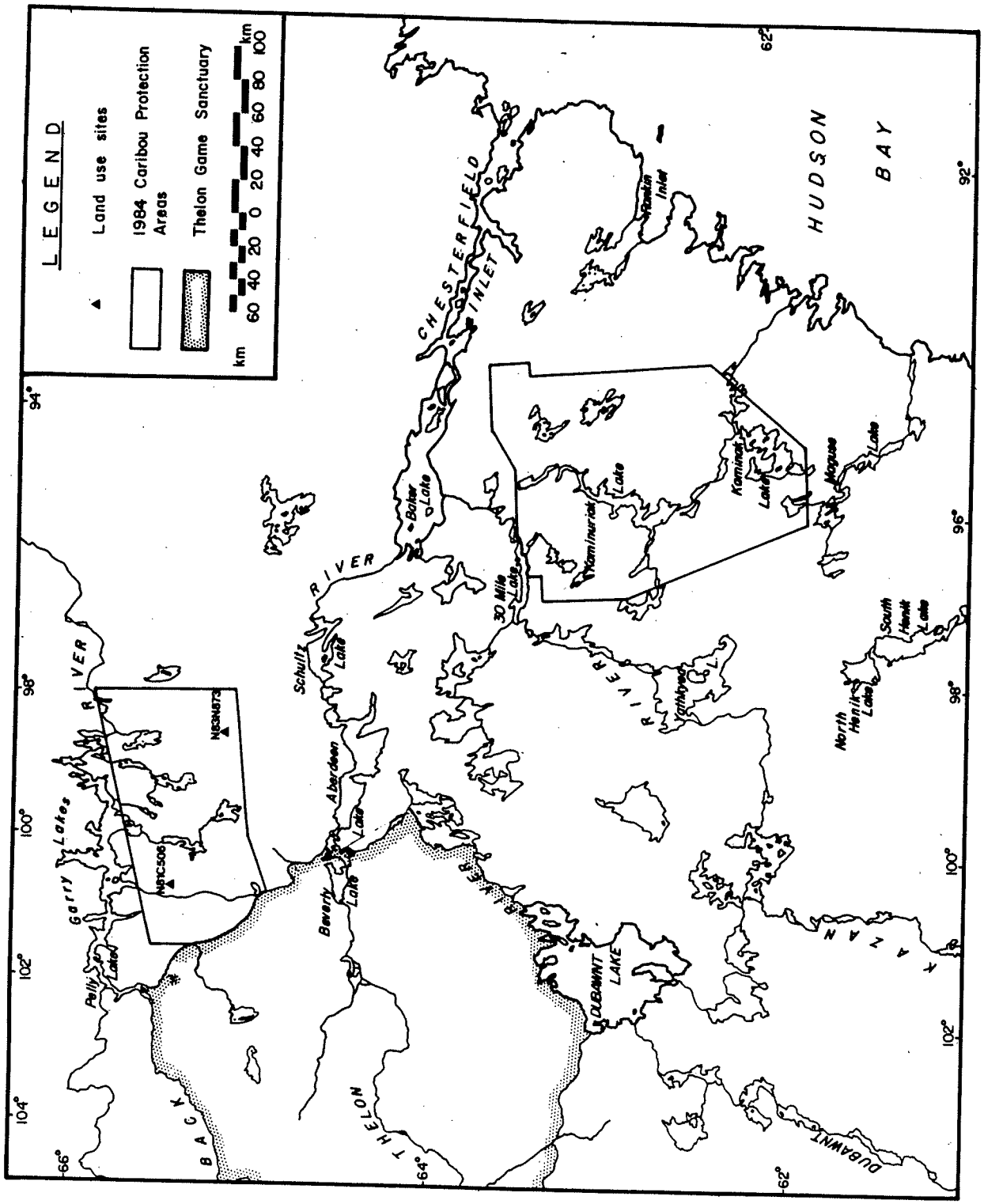


Figure 1. The caribou monitoring area and relevant land use sites in 1984.

categories were combined. Any numbers or percentages mentioned in this report were determined by gross visual estimates. Notes on occupancy of land use sites, other human activities, ice and snow cover, and other wildlife species were also taken. In addition, information was solicited from workers involved in other studies, as well as from pilots flying over the area.

The 1984 Kaminuriak calving ground was delineated using a technique similar to standard monitoring procedures. An initial reconnaissance flight was flown on 2 June, and the delineation of the calving grounds was completed on 6 June. The flight lines ran approximately perpendicular to the edge of the calving ground as observed on the 2 June reconnaissance. These flight lines were not transects. An altitude of 300 m agl was maintained except where classification of caribou became difficult. In such cases, altitude was reduced to complete the classification. Every attempt was made to classify all groups as either breeding cows or others (e.g., yearlings, bulls, etc.). Breeding cows were identified by the presence of hard antlers and/or accompaniment by newborn calves. Flight lines which entered the calving grounds were continued only until it was determined that breeding cows were present. A new flight line was then initiated to intersect the calving boundary at a point approximately 5-10 km away from the previous intersection. The flight lines which left the calving

grounds were continued until the plane was approximately 5 km past the last breeding cow. This back and forth pattern was continued until the entire calving ground boundary was mapped.

The 1984 Beverly calving ground was mapped using transect data from the NWT Department of Renewable Resources' calving ground census. Census transects were flown from 6 to 8 June. The calving ground boundary was drawn so as to include observations of all caribou on these transects. The length and position of the transects were designed to enclose the area occupied by breeding cows. The transects were planned using systematic reconnaissance data obtained during the period of 4-6 June. The southwest corner of the area covered by transects is not included in the calving ground, as researchers with the Beverly population census program determined that the caribou near their camp were not breeding cows.

Observations were plotted on 1:500,000 scale topographical maps, and were then transferred to 1:1,000,000 scale summary maps. Summary maps were included in flight reports filed with the INAC District Office in Rankin Inlet after a monitoring flight. Flight reports for the Beverly population were also provided for the 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.

Information from other studies came from the Department of Renewable Resources' Beverly population calving ground census and from an INAC charter flight to Cullaton Lake.

Recommendations regarding early release of land use sites were based on guidelines outlined by Darby and Williams (1979). Early release of a land use site was denied if a substantial number of cow caribou were within 5 km of that site, or were considered likely to move within 5 km of that site. A substantial number of caribou means 1000 caribou occupying an area of 500 $km^2$ or less. One thousand caribou may mean 500 cows and 500 calves (Darby and Williams 1979).

# RESULTS AND DISCUSSION

The monitoring period was divided into two parts: 18 May to 12 June, and 13 June to 15 July. An interim report was prepared for each part.

Nine flights were conducted during the first part of the monitoring period for a total of 61 hours (Table 1). Poor weather resulted in the cancellation of several flights, including the initial flight which was delayed from 15 to 18 May. Aircraft problems forced the Monitor to abandon the flight on 30 May.

Seven flights were conducted during the second part of the monitoring period, for a total of 48.3 hours (Table 1). Inclement weather forced the Monitor to shorten the flight on 28 June. Maps showing monitoring flight lines are filed at the Renewable Resources office, Rankin Inlet, NWT and the INAC at that location.

## Beverly Population Movements

### Spring Migration and the Calving Ground

The Beverly population wintered in two areas during 1983-84. One group stayed near the east arm of Great Slave Lake, moving back and forth across the tree line throughout the winter. The second group wintered in the Porter

Table 1. Summary of 1984 monitoring flights

| Date | Hours | Purpose |
|---|---|---|
| 15 May* | - | INAC charter to Cullaton Lake; used to obtain incidental caribou sightings for the Kaminuriak population. |
| 18 May | 8.3 | To monitor spring migration of Beverly population. |
| 19 May | 5.5 | To monitor spring migration of Kaminuriak population. |
| 23 May | 11.2 | To monitor spring migration of Beverly population. |
| 25 May | 6.7 | To monitor spring migration of Kaminuriak population. |
| 30 May | 4.9 | To monitor spring migration of Beverly population. Aircraft problems shortened this flight. |
| 02 June | 5.2 | To roughly determine the Kaminuriak population distribution before the peak of calving. |
| 05 June | 4.3 | To check the Beverly population distribution in relation to land use site N83N873 and N81C506 (early release requests). |
| 06 June | 8.4 | To delineate the 1984 Kaminuriak calving grounds. |
| 12 June | 6.5 | To monitor post-calving movements of the Kaminuriak population. |
| 19 June | 10.2 | To check land use site N83N873 and to monitor post-calving movements of the Beverly population. |
| 21 June | 6.3 | To monitor post-calving movements of the Kaminuriak population. |

Table 1. Summary of 1984 monitoring flights (cont'd).

| Date | Hours | Purpose |
|---|---|---|
| 26 June | 8.9 | To check land use site N83N873 and to monitor post-calving movements of the Beverly population. |
| 28 June | 5.7 | To monitor post-calving movement of the Kaminuriak population. |
| 4 July | 9.7 | To check land use site N83N873 and to monitor post-calving movement of the Beverly population. |
| 5 July | 7.5 | To monitor post-calving movements of the Kaminuriak population. |

TOTAL HOURS = 109.3

* Denotes that flight which was not part of the monitoring program, but which contributed to this report's data.

Lake/Manchester Lake area. Very few Beverly caribou wintered in Saskatchewan (D. Heard, pers. comm.).

The first monitoring flight to the Beverly Caribou Protection Area was completed on 18 May. By this time many of the Beverly cows were already inside the Protection Area, mostly from Sand Lake north to the Garry Lakes and west to the Caribou Protection Area boundary. A large number of cows were also seen between the southwest corner of the Caribou Protection Area and Beverly Lake. The majority of migrating caribou moved through this area (Fig. 2). A smaller segment of the population may have entered the Protection Area from the east. West and southwest trails, as well as a small number of westward-moving cows with yearlings, were seen in the Deep Rose Lake area on 18 May. The people of Baker Lake reported that a group of caribou wintered just north of Tehek Lake (R. Toews, pers. comm.). It is possible that some of these caribou migrated westward into the Protection Area. If the monitoring program had started before 15 May, these movements could have been confirmed.

The observation of trails on the flight of 23 May confirmed the southwest corner of the Protection Area as the area through which the majority of Beverly cows migrated. Other tracks showed that a small number of cows entered the Protection Area from the west (Fig. 2). This pattern is very similar to the spring migrations observed in 1978,

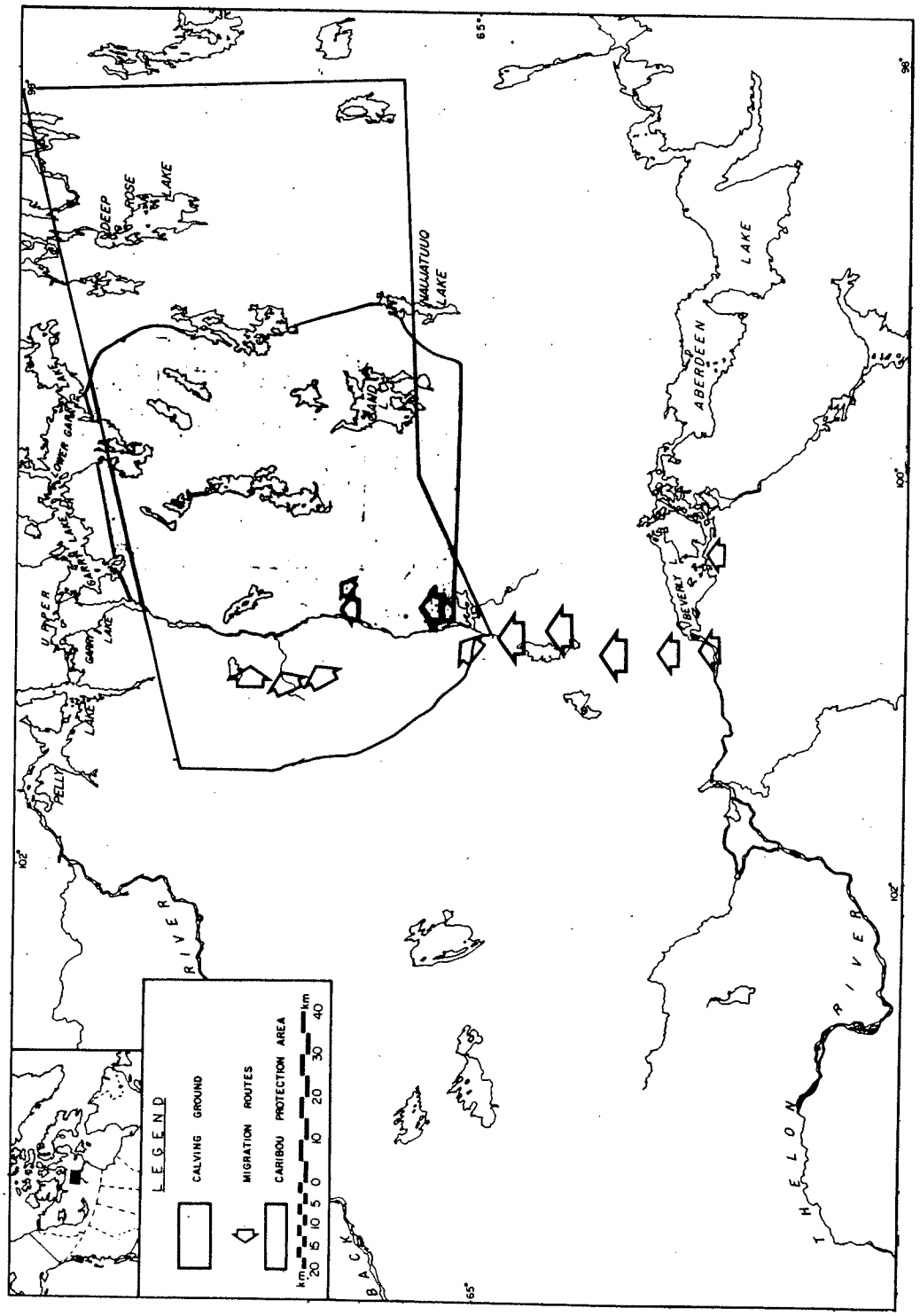


Figure 2. Spring migration routes and calving ground of cows from the Beverly caribou herd, 1984.

1980, 1981, 1982 and 1983 (Darby 1978, Cooper 1981, Clement 1982, 1983, Bradley and Gates 1984). However, there was no evidence of large numbers of caribou migrating from the north, as was found in 1983 (Bradley and Gates 1984).

Although some caribou of both sexes were seen outside the Caribou Protection Area, most, if not all of the Beverly cows were inside the Protection Area by 23 May. The cows seen in the southern part of the Protection Area were moving southwest, while the cows in the northern section were moving east. The arrival of the Beverly cow caribou was earlier this year than is usual, but corresponds roughly to the arrival dates observed in 1980, 1981 and 1982 (Cooper 1981, Clement 1982, 1983). In 1978, 1979 and 1983, migration was later (Darby 1978, 1980, Bradley and Gates 1984).

On 30 May, a large number of cows were seen between Sand Lake and the Garry Lakes. These animals were moving to the east and southeast.

The 1984 Beverly calving ground extended from the Garry Lakes in the north to just south of Sand Lake in the south. The western edge was the Upper Garry River, and the eastern edge was approximately 99°10'W (C.C. Gates, pers. comm., Fig. 2). The Beverly cows remained distributed this way from 6 June to 12 June (C.C. Gates, pers. comm.). By 12 June, the caribou were starting to form post-calving aggregations.

The shape of the 1984 calving ground was unusual in that its east-west dimensions were shorter than in past years. Previous calving grounds extended either further west to Deep Rose Lake (Clement 1982, Bradley and Gates 1984), or further east to the Thelon Game Sanctuary (Darby 1980, Cooper 1981), or both (Darby 1980, Clement 1983). Also unusual was the fact that this year's calving ground included areas both north and south of the Caribou Protection Area (Fig. 2).

## Post-Calving Movements

The Beverly cows were still on the calving ground on 19 June (Fig. 3). The southern edge of the distribution was just north of Sand Lake. Most of the cows and calves were concentrated within 40 km of the Garry Lakes. The cows in the northeast section of the distribution were moving to the northeast, while cows in the rest of the distribution did not appear to be migrating. All cows observed were in large post-calving groups.

By 26 June, the distribution of cow caribou had shifted to the northwest (Fig. 3). The main concentration was along the southern shores of the Pelly and Upper Garry lakes, although small numbers of cows with calves were seen east of Lower Garry Lake and south of Upper Garry Lake (Fig. 3).

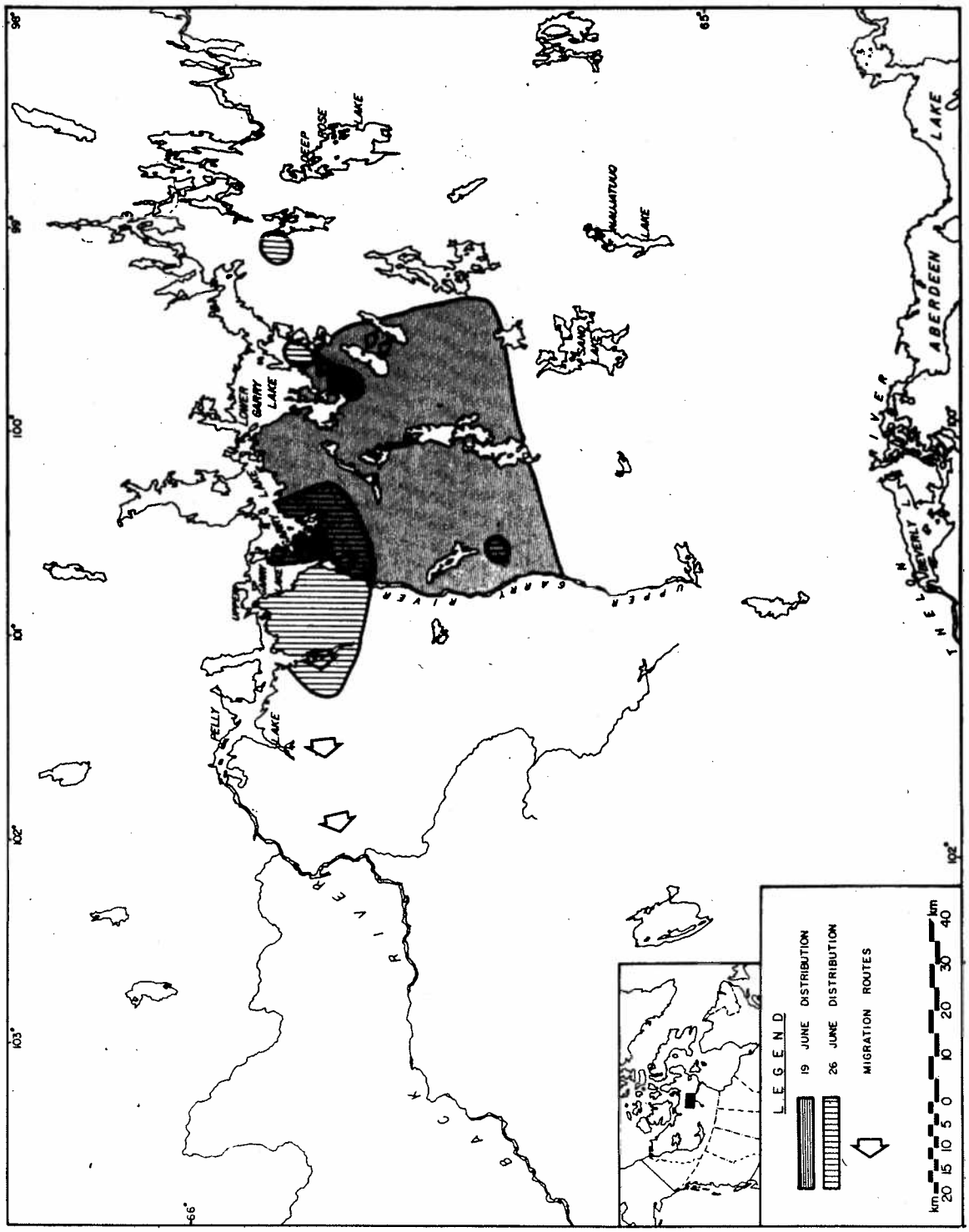


Figure 3. Post-calving movements of cows from the Beverly caribou herd, 1984.

The majority of Beverly cows and calves were outside the Caribou Protection Area by this time.

This north and then west pattern of post-calving migration appears to be unusual compared to that observed in recent years. Previous caribou monitors reported a south or southwest migration fairly soon after calving (Darby 1978, 1980, Cooper 1981, Clement 1982, 1983, Bradley and Gates 1984). The timing of the 1984 post-calving migration (i.e., the majority of cows off the calving ground and outside the Protection Area by 4 July) is approximately the same as that reported by previous monitors.

Few groups of caribou containing both bulls and cows were observed in 1984. Very few bulls were seen in the Caribou Protection Area at all.

## Kaminuriak Population Movements

### Spring Migration and the Calving Ground

On 24-30 March, 15,619 Kaminuriak caribou were classified by Department of Renewable Resources staff. These caribou were distributed just inland from Hudson Bay, from Eskimo Point north to at least the Copperneedle River (G. Stenhouse, pers. comm.). These caribou were moving north. On 30 April, Peter Suwaksiork (pers. comm.) saw a large number of caribou in the vicinity of Kaminak Lake.

During an INAC charter flown on 15 May, the caribou monitor found no cow caribou south of Kaminak Lake, but did find some cows already in the Protection Area.

The first Kaminuriak monitoring flight on 19 May showed that most, if not all, of the cows were well within the Protection Area and moving to the north and northeast. They were distributed from Victory Lake in the south to Blakely Lake in the north. Trails indicated that the majority of caribou entered the Protection Area from the south, past Kaminak, Victory and O'Neil lakes (Fig. 4). A small number of caribou may have entered the Protection Area from the west, but no evidence of migration from the east or north was observed.

This year's spring arrival of the Kaminuriak cows was approximately 10 days earlier than that noted in 1983 (Bradley and Gates 1984). This early migration corresponds roughly to those migrations observed in 1978, 1979 and 1980 (Darby 1978, 1980, Cooper 1981). The timing of the 1981 spring migration (Clement 1982) was similar to that documented for 1983.

The pattern of this year's migration was north past Eskimo Point and then northeast past Kaminak Lake to the calving grounds. This is similar to the patterns observed in 1978, 1979, 1980 and 1983 (Darby 1978, 1980, Cooper 1981, Bradley and Gates 1984). Parker (1972) noted a fairly similar spring migration pattern in 1967 and 1968, as did

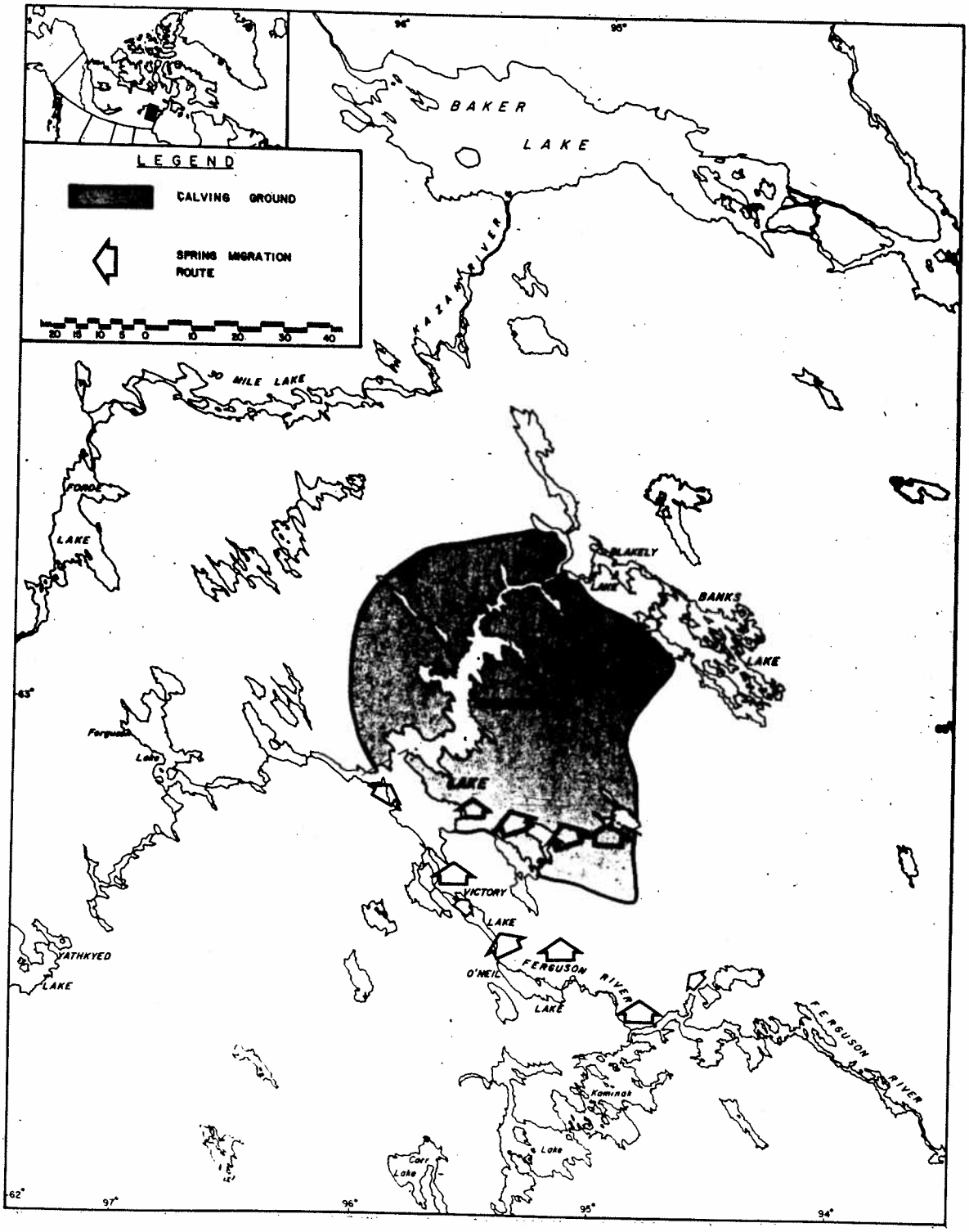


Figure 4. Spring migration routes and calving ground of cows from the Kaminuriak caribou herd, 1984.

Banfield (1951) in 1948. In 1981, the Kaminuriak population wintered on the tundra and migrated to the calving ground from the north; while in 1982, the population was split, with one segment wintering to the north of the calving ground, and another segment wintering to the south.

The distribution of cows on 25 May was approximately the same as on 19 May, except that the majority of caribou were moving to the southeast. A heavy concentration of cows was seen on the Ferguson River just north of Kaminak Lake. A few groups of bulls were seen in the northern part of the Protection Area.

On 2 June, the first newborn calves were seen. Approximately 10-20% of the cows observed were accompanied by calves. Distribution was approximately the same as on 19 and 25 May, but the caribou were not migrating.

The calving ground was delineated on 6 June (Fig. 4). Approximately 80% of the cows observed were accompanied by calves. Some of the cows with calves had already shed their antlers.

This year's calving ground was similar in shape to last year's, but had shifted a little to the east. In addition, the southern edge of the calving ground was farther north than in 1983 (Bradley and Gates 1984). Size and location of the Kaminuriak calving ground has varied somewhat over the years, but this year's calving ground is fairly typical (Darby 1978, 1980, Cooper 1981, Clement 1982, 1983, Bradley and Gates 1984).

## Post-Calving Movements

During a monitoring flight on 12 June, the monitor found a cow/calf distribution very similar to that seen on 6 June, except that the eastern and western edges had moved in closer to Kaminuriak Lake. The majority of cows were concentrated in large post-calving groups near the northern end of Kaminuriak Lake. Bulls had started to join the post-calving herds in the southern part of the distribution. A small number of antlered cows were observed unaccompanied by calves.

On 21 June, the Kaminuriak cows and calves were distributed from Parker Lake to Victory Lake (Fig. 5). Generally, the bulls were distributed in an area around the cows. Except for the southeastern section of the distribution, the bulls and cows were in separate groups.

The monitoring flight of 28 June showed that the migration to the south had begun. The cows were distributed as far north as Bissett Lake (Fig. 5). The distribution had also shifted to the east since 21 June, and the cows were now east of Blakely and Duffey lakes, and west of Derby Lake (Fig. 5). The southern edge of the distribution could not be found, as poor weather forced the abandonment of this flight; however, a Keewatin Air pilot flying in the area on

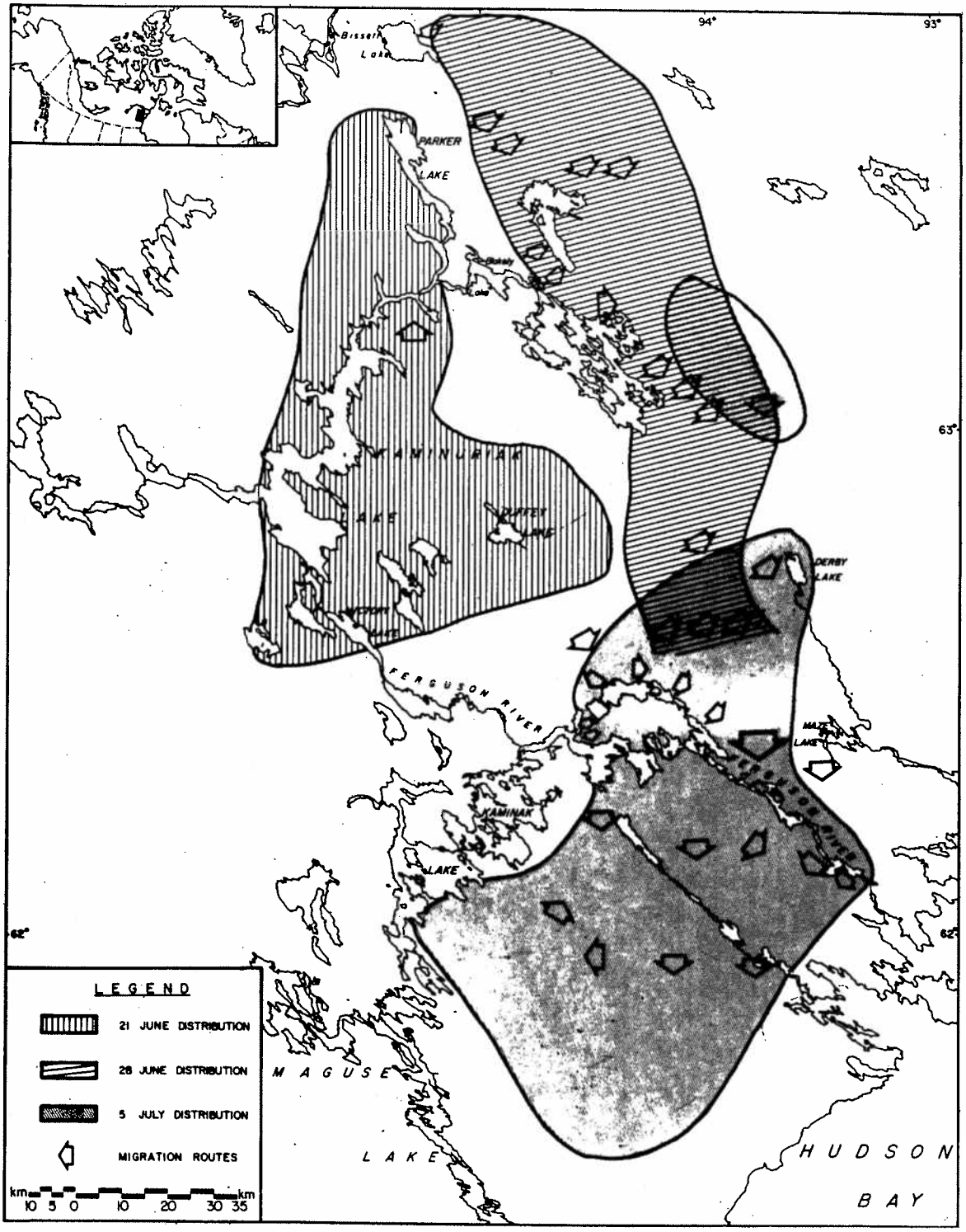


Figure 5. Post-calving movements of cows from the Kaminuriak caribou herd, 1984.

30 June informed the caribou monitor that the caribou were at least as far south as Maze Lake (R. Weldon, pers. comm.). By this time, most of the cows were in large aggregations containing caribou of all sex and age groups.

By 5 July, the main concentration of cows had moved southward. Although there were scattered groups to the north, most of the Kaminuriak cows and calves were distributed from the Ferguson River to just north of Maguse Lake (Fig. 5). One group of caribou was seen heading northeast, but most of the caribou were migrating southward. Most of the Kaminuriak cows were outside the Caribou Protection Area by this time.

The 1984 pattern of post-calving migration (i.e., north to the Bissett Lake area and then southeast and south to the Ferguson River/Maguse Lake area) was similar to that observed in 1983 (Bradley and Gates 1984), and also roughly the same as those migrations noted in 1948, 1967, 1968, 1980 and 1981 (Banfield 1951, Parker 1972, Cooper 1981, Clement 1982). This year, the caribou reached the Ferguson River area about a week earlier than in 1983 (Bradley and Gates 1984).

## Water Crossings

The post-calving migration of the Beverly herd did not take it near any of the designated water crossings (Fig. 6). Tracks were seen at the southern end of Pelly Lake on 19 June, which indicate a major water crossing (Fig. 6). The caribou must have crossed the Upper Garry River, although the point of crossing could not be found.

Designated water crossings 6, 7, 8, 9 and 10 for the Kaminuriak herd were checked on 21 June (Fig. 7). Water crossing 6 had been used (a small number of caribou moved from west to east), while crossings 7, 8, 9 and 10 had not been used. Water crossing 8 was still frozen.

Trails indicating a water crossing on the Copperneedle River were found on 5 July (Fig. 7).

## Land Use Activities

The level of industrial activity in and around the Caribou Protection Areas continued to be low in 1984. There were two requests for early release of land use sites in 1984; comparable to the three requests in 1983. In 1982, there were ten requests for early releases.

The two release requests were for the Beverly Caribou

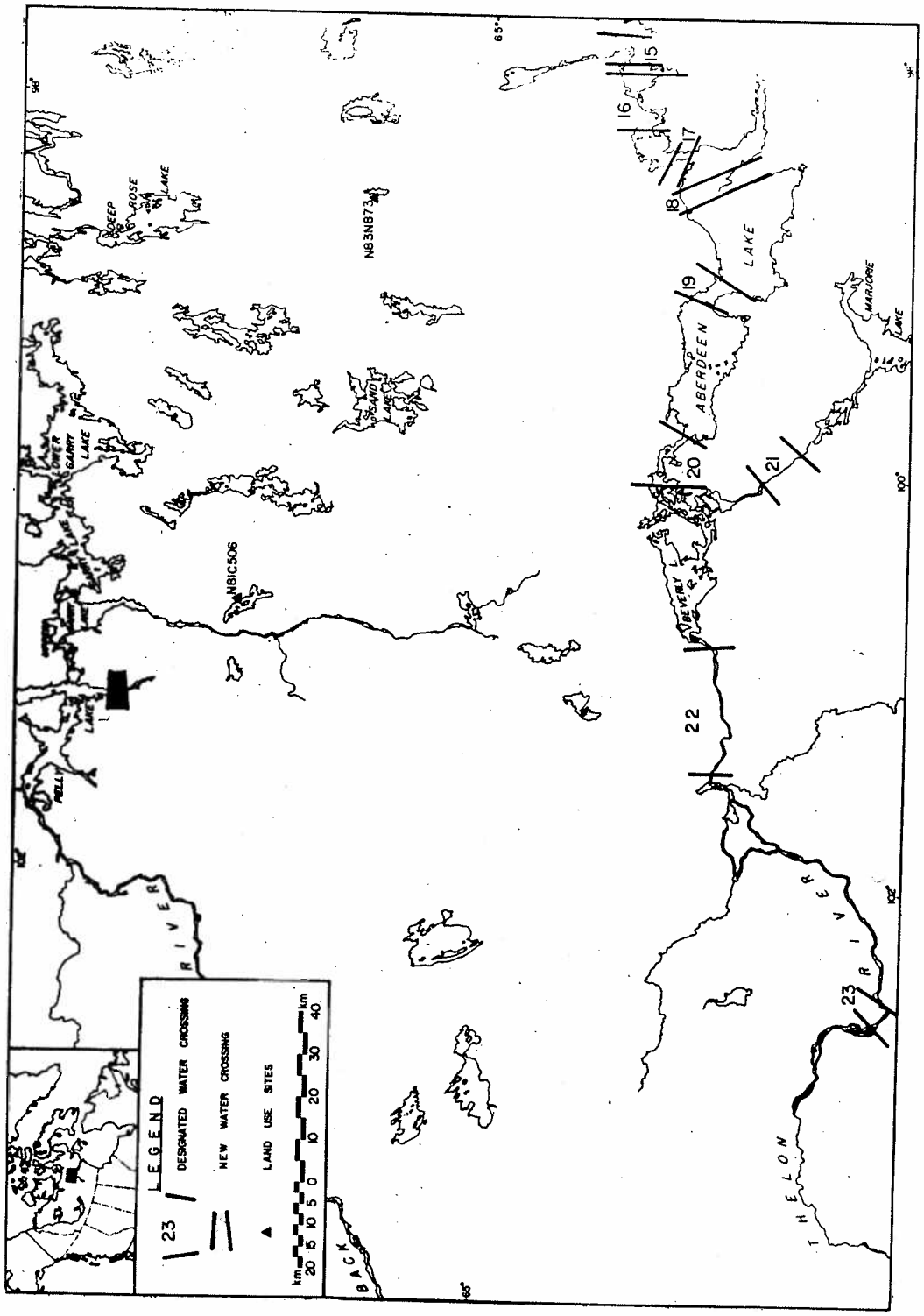


Figure 6. Designated and observed water crossings of the Beverly caribou herd and land use sites for which early release was requested in 1984.

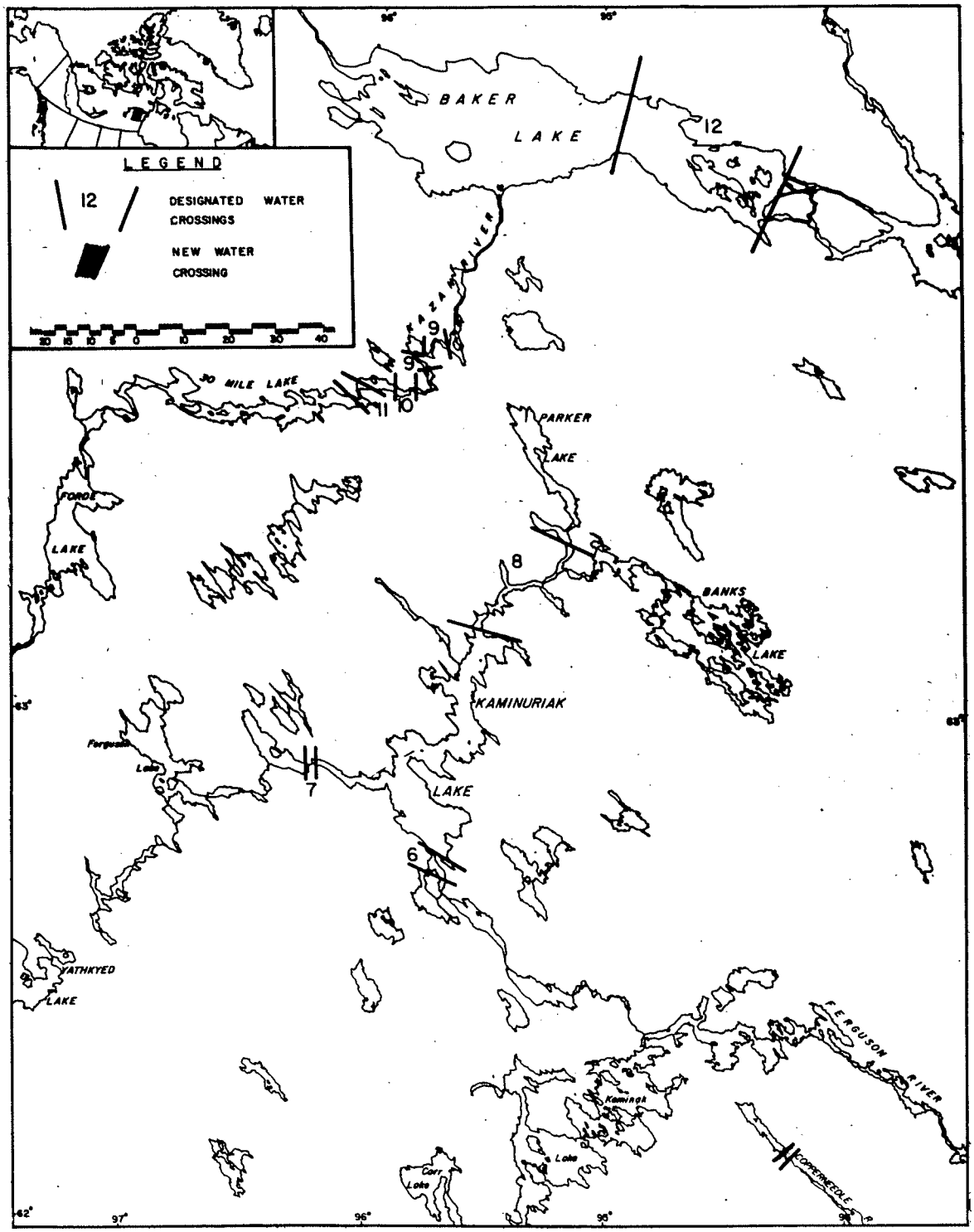


Figure 7. Designated and observed water crossings of the Kaminuriak caribou herd, 1984.

Protection Area (Fig. 6). Urangesellschaft requested release of land use site N83N873 for 10 June. A monitoring flight of 5 June showed no caribou near the site; therefore, early release was recommended to INAC for the date required. Subsequent monitoring flights found no large numbers of caribou near the site during the monitoring period. Urangesellschaft moved into the site on 19 June.

Kidd Creek Ltd. applied for early release of land use site N81C506 for 6 June (Fig. 6). During the monitoring flight of 5 June large numbers (more than 1,000) of cow caribou were seen in the vicinity of the site; therefore, early release was denied. A subsequent monitoring flight on 26 June cleared the site for early release. Kidd Creek Ltd. did not use the site during the monitoring period.

The Department of Renewable Resources maintained a camp at land use site N84N094 from 5-13 June as a base for the 1984 Beverly population census. Based on previous years' calving distributions, the camp was located outside the calving ground and the Beverly Protection Area. After the census, it was determined that the camp was close to the calving ground; however, there were no breeding cows within 5 km of the camp (C.C. Gates, pers. comm.).

There were no requests for early release of land use sites in the Kaminuriak Caribou Protection Area, nor were there any active land use sites near the Protection Area during the 1984 monitoring period.

No interactions were observed between land use activities and caribou in 1984.

# ACKNOWLEDGEMENTS

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I would also like to thank R. Weldon for his piloting, as well as for his navigation and caribou spotting.

G. Stenhouse, A. Gunn, L. Mychasiw, K. MacInnes and P. Gray reviewed earlier drafts of this report.

## PERSONAL COMMUNICATIONS

Gates, C.C. Government of the Northwest Territories, Department of Renewable Resources, Fort Smith, NWT.

Heard, D. Government of the Northwest Territories, Department of Renewable Resources, Yellowknife, NWT.

Stenhouse, G. Government of the Northwest Territories, Department of Renewable Resources, Rankin Inlet, NWT.

Suwaksiork, P. Eskimo Point, NWT.

Toews, R. Government of the Northwest Territories, Department of Renewable Resources, Baker Lake, NWT.

Weldon, R. Keewatin Air, Rankin Inlet, NWT.

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# APPENDIX A. 1984 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.

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 Protecton 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.