DENNING SURVEY FOR BARREN-GROUND GRIZZLY BEARS, COPPERMINE, OCTOBER 1984 AND IMPLICATIONS FOR A COMMERCIAL QUOTA ON THE CORONATION GULF MAINLAND

A. GUNN

DEPARTMENT OF RENEWABLE RESOURCES

GOVERNMENT OF THE NORTHWEST TERRITORIES

COPPERMINE, NWT

1991

Manuscript Report No. 46

ABSTRACT

Hunters and trappers have repeatedly reported an increase in sightings of barren-ground grizzly bears (Ursus arctos) in the vicinity of Coppermine, Bay Chimo and Bathurst Inlet; people also expressed concern over increased man-bear conflicts. Their concerns led Renewable Resources to collect reports of sightings and to survey aerially for denning bears in the vicinity of Coppermine, 2-5 October, 1984. Those sightings, along with the observation of 1 bear and 4 occupied bear dens during the aerial coverage (22.5%) over 13 search blocks (512 km² each) indicate denning had started by the beginning of October and that some bears remained active until at least the middle of October. Thin and scanty snow cover hindered tracking of bears, especially west and southwest of Coppermine and contributed to a probable conservative estimate of bear density (1 bear/370 km²). The current annual kill of 3-5 bears in each of Coppermine and Bay Chimo for food and nuisance bears has not apparently led to a decrease in sightings. Any further possible increases in bear harvests will require careful monitoring.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

Hunters and trappers have reported an increase in barren-ground grizzly bear (Ursus arctos) sightings in the 1970s and 1980s in the vicinity of Bay Chimo, Bathurst Inlet and Coppermine. Complaints of bear damage to tents and cabins and sightings were only occasionally reported to Renewable Resource Officers. Bears and bear quotas had been discussed at Hunters' and Trappers' Association meetings (Appendix A). The Department requested assistance to compile records of sightings and indicated that study of the bears would be needed to evaluate their status.

The only previous study of barren-ground grizzly bears was conducted on the Tuktoyaktuk Peninsula and Richards Island (Nagy et al. 1983). The study described densities, home ranges, productivity and mortality of the bears between 1974 and 1978. Although the results were the type of data required for predicting the effects of harvesting bears, the expense and time required precluded their collection at this stage. Instead, the emphasis was placed on collating what was known about bears throughout the mainland Kitikmeot Region and to collect data on denning of bears.

The first step was to determine the areas and habitat used by denning bears and the chronology of bear denning. To cover large areas rapidly, I conducted a search for bears in the vicinity of Coppermine. The survey was essentially unsystematic because, although the search effort was concentrated in 512 km² blocks,

those blocks were not randomly selected but centred on areas of bear sightings, to increase the likelihood of locating bear dens.

METHODS

The study area was defined to include the locations of bear sightings which had been plotted on 1:250,000 topographic maps and areas identified in the Inuit Land Occupancy Project maps as known grizzly bear habitat. Blocks (16 x 32 km) were drawn to cover concentrations of sightings. The number of blocks was divided into the number of flying hours available to partition the search effort approximately equally among blocks.

Two observers sat behind the pilot of the Helio-Courier aircraft and scanned for tracks, dens or bears in an unbounded transect width varying from 0.8 to 1.6 km depending on the terrain and aircraft altitude. The pilot navigated along a predetermined flight path which concentrated the search along river banks and eskers. Airspeed was 110-140 km/h and flight altitude was between 50 and 100 m above ground level. Occasionally the pilot could fly the plane along the backtracks of a bear to ascertain how many bears were involved or whether or not a den was close by. The pilot marked all sightings including caribou (Rangifer tarandus) and muskoxen (Ovibos moschatus) on 1:125,000 topographic maps.

RESULTS

The 13 blocks were surveyed between 2 and 3 October, 1984, and yielded observations of one bear, three occupied bear dens and 10 sightings of bear tracks (Figure 1). One additional bear den was found in the study area (67°20'- 68°30'N, 114°20'-118°00'W) but was outside the survey blocks. A total of 1869 km was flown in the 13 blocks which was 22.5 ± 5.3 (S.D.) mean percentage coverage of each block (Table 1). The 4 bears (1 bear, 3 occupied dens) seen on the 1495 km^2 searched simplistically extrapolates to an estimated density of 1 bear/370 km^2 (assuming only one bear in each den). The blocks were unlikely to be randomly situated relative to bear distribution during the denning season because the blocks were centred on the vicinity of reported bear sightings. The reported bear sightings included sightings from May to October so in fact the blocks covered areas of seasonal use not just areas used in the denning season (October). The estimated density of bears on the survey blocks cannot be extrapolated to the entire study area because the blocks are not a random sample of the area.

The bear sightings reported to the Renewable Resources Office in Coppermine during 1984 (Table 2) refer to a possible count of 19 individuals (including cubs) based on size class, widely separate locations and dates. Except for the sightings along the Tree and Kugaryuak rivers and Hope Lake (Figure 2), 16 sightings are within the study areas (67°20' - 68°30'N, 114°20' - 118°00'W) of the aerial survey. The number of reported sightings in 1984 markedly

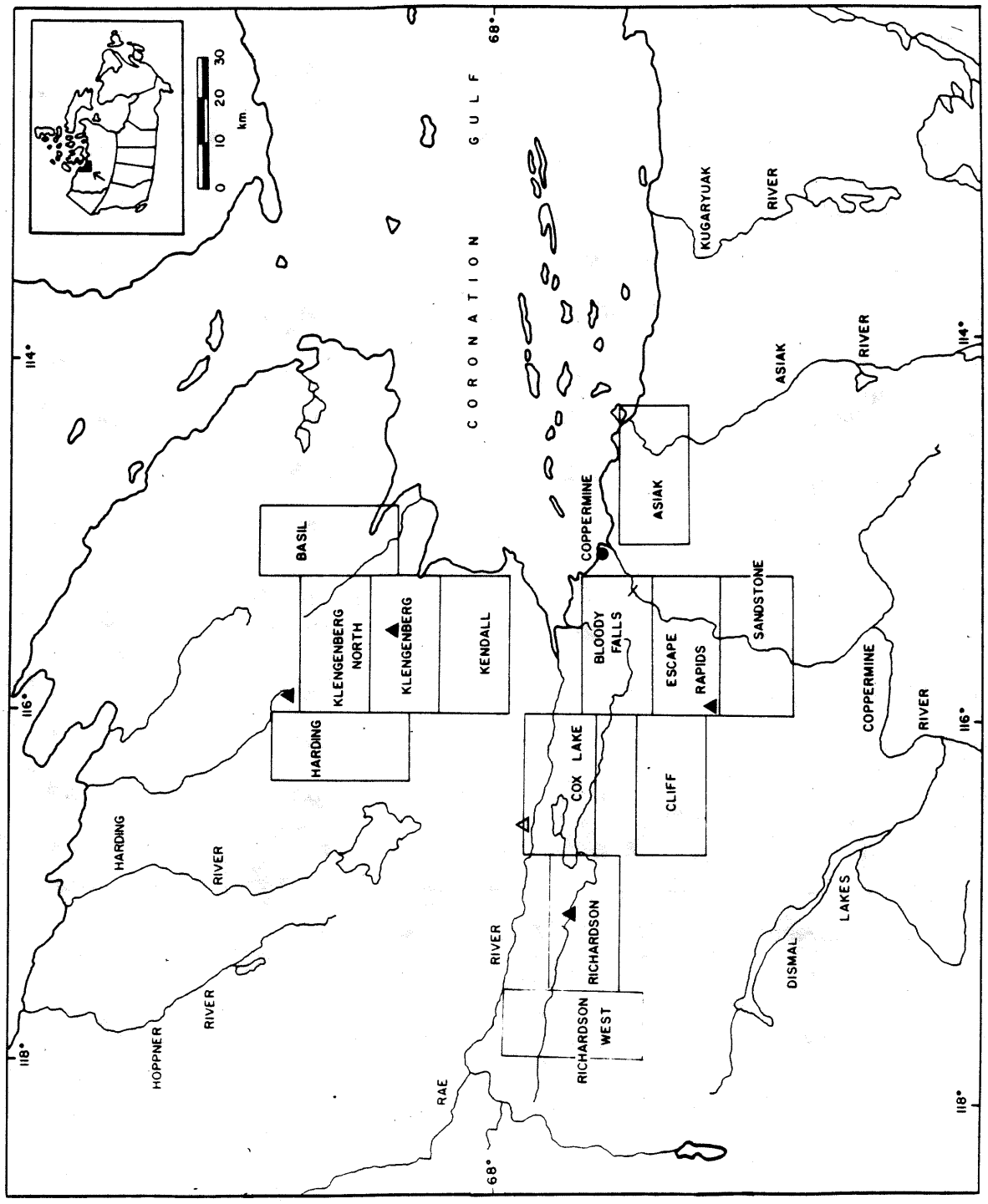

Figure 1. Map of study area around Coppermine showing location of survey blocks and grizzly bear (△) and den (▲) sightings.

Table 1. Coverage of search blocks (512 km²) flown over during the grizzly bear survey, Coppermine, October 1984.

Block Name	Date Flown	Kilometres Flown	% Coverage*
Richardson West	4 Oct.	143	22.3
Richardson	3 Oct.	154	24.1
Cox Lake	3 Oct.	150	23.4
Cliff	3 Oct.	166	25.9
Klengenberg North	3 Oct.	150	23.4
Klengenberg Bay	4 Oct.	179	28.0
Kendall	4 Oct.	166	25.9
Basil Bay	3 Oct.	51	8.0
Harding	4 Oct.	179	28.0
Bloody Falls	2 Oct.	154	24.1
Escape Rapids	5 Oct.	144	22.5
Sandstone	2 Oct.	118	18.4
Asiak	5 Oct.	115	18.0

*Coverage assumes a 0.8 km strip was searched.

Table 2. Grizzly bear sightings reported to the Coppermine Renewable Resources Office, 1984.

No. Bears	Date	Lats/Longs	Location	Comment
1	5 May	6735/11345	Coppermine	Tracks
1	6 July	6743/11415	Coppermine East	Around campsite
1	6 July	6737/11315	Kugaryuak	Too close to cabins
1	11 July	6746/11454	Coppermine	Around campsite
1	15 July	6730/11430	Asiak River	Large bear
1	5 Aug.	6820/11513	Basil Bay	Digging arctic ground squirrels
1	16 Aug.	6745/11504	Coppermine River	Bear destroyed tent
2	13 Aug.	6818/11504	Basil Bay	Young bears close to cabins
2	17 Aug.	6740/11510	Kugaryuak	Large bears close to caribou hunt
2	18 Aug.	6807/11519	Kokak	Close to cabins
1	6 Aug.	6814/11451	Basil Bay	Destroyed tent and equipment
3	18 Aug.	6817/11510	Basil Bay	Female/2 yearlings, close to cabin
2	14 Aug.	6814/11451	Basil Bay	1 large, 1 fairly large bear
3	20 Aug.	6754/11635	Cox Lake	1 female with cubs
1	17 Aug.	6816/11502	Basil Bay	Close to cabins
1	Sept.	6809/10647	Hope Lake	Light colour
1	Aug.	6741/11153	Tree River	Close to camp/fled after rifle shot
1	8 Sept.	6740/11546	Richardson River	Raided caribou cache, large bear
1	8 Sept.	6744/11530	Richardson River	Fled from skidoo
1	30 Sept.	6742/11527	Bloody Falls	Close to fishing camp
1	16 Oct.	6742/11630	S.W. Coppermine	Large bear
2	15 July	6746/11424	Asiak River	Large and smaller bear
1	22 Sept.	6750/11512	Coppermine	Too close to town
1	July	6743/11535	Bloody Falls	Large bear

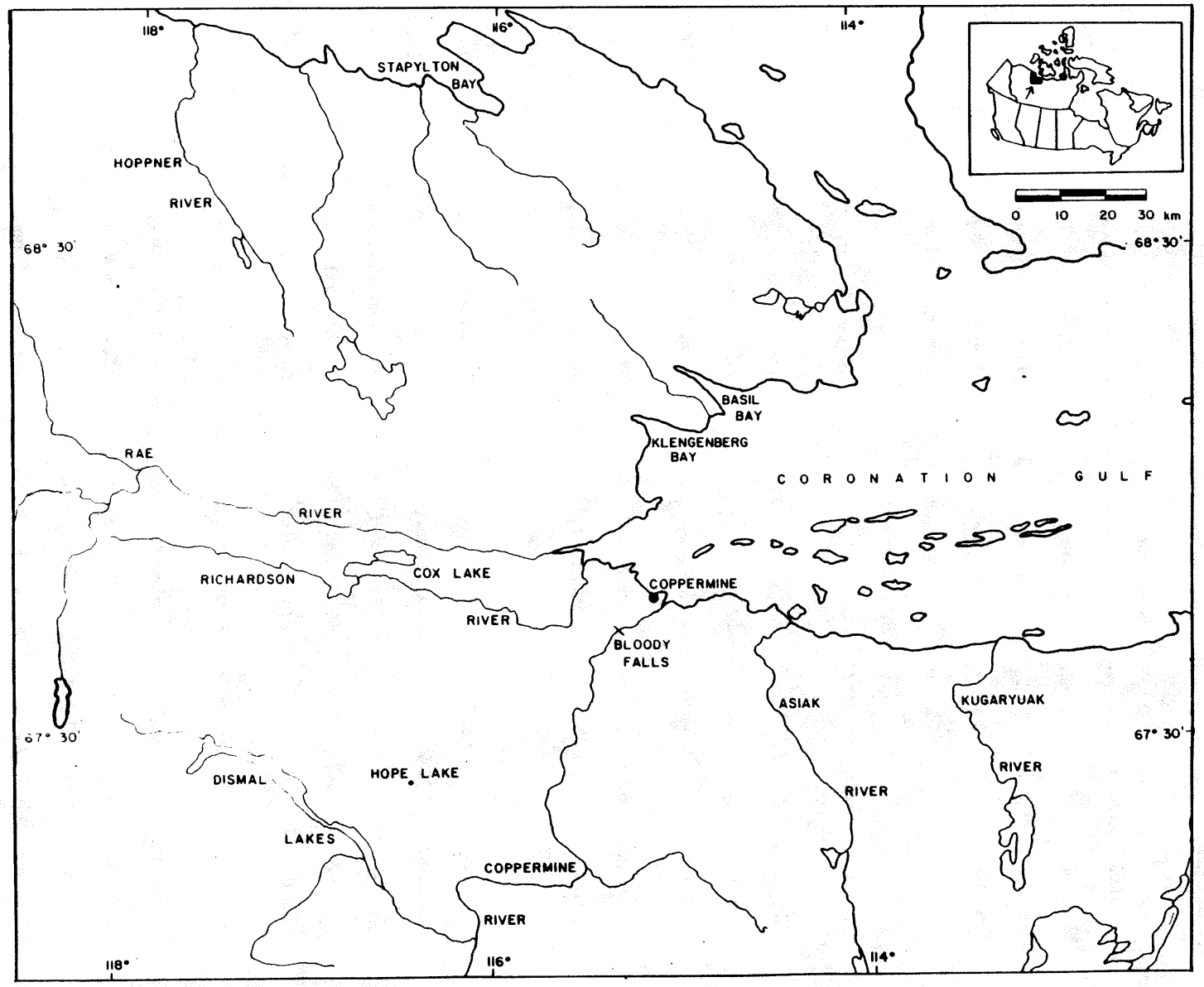

Figure 2. Place names in the vicinity of Coppermine.

increased from previous years (Tables 2 and 3) after the hunters had been asked to report sightings to the Renewable Resource Office.

Table 3. Grizzly bear sightings reported to the Coppermine Renewable Resources Office, 1981-1983.

No. Bears	Date	Lats/Longs	Location	Comment
1981				
1	30 May	6743/11535	Coppermine	Adult
8-	May	-	-	Several reports of bears at camps - no details
1982				
2	13 July	6810/11500	Klengenberg Bay	Stayed in area for one week
1	26 Aug.	6753/11545	Rae River	Destroyed camp
1	1 Aug.	6750/11530	Coppermine	Many reports and an increase in sightings
1983				
7	18 July	6748/11500	Coppermine	All seen at same time
1	31 Aug.	-	Coppermine River	Large bear at camp
3	9 Oct.	6752/11625	Cox Lake	Female with 2 cubs
3	18 Oct.	6754/11656	Rae River	Female with 2 cubs

DISCUSSION

The grizzly bears in the vicinity of Coppermine had begun to dig and use dens by 3 October 1984. The observations of diggings, apparently abandoned dens and tracks around dens suggest that bears were selective in their choice of dens and remained active in the vicinity of the den (snow had fallen within 2-3 days of the beginning of the survey). Craighead and Craighead (1972 cited in Nagy et al. 1983) described bears as remaining active for 1-2 weeks after a den site had been selected and dug. The recorded bear sightings add more details on denning: in 1983 and 1984 bears remained active to mid-October (Tables 2 and 3) including a female and two cubs which usually den earlier than other bears (Pearson 1975 cited in Nagy et al. 1983).

Nagy et al. (1983) found 94% of dens on Tuktoyaktuk Peninsula were among shrubs and 6% were in Dryas tundra areas. Dens among dense willow stands such as occur along the flood plains of the Rae and Richardson rivers would be difficult to observe from the aircraft especially as the snowcover was too sparse to search for tracks. Northeast of the Rae and Richardson rivers and east of the Coppermine River snowcover was more continuous and tracks were conspicuous. Light conditions were variable but broken cloud on 3 and 4 October generally favoured the observation of tracks. The dens found northwest of Coppermine were in windswept, sparsely vegetated, flat areas relieved by sinuous complexes of eskers.

Harington et al. (1962), Macpherson (1965) and Kelsall (1968), have all described the increase in numbers and eastwardly expanding

ranges of the barren-ground grizzly since the 1950s. A similar trend is apparent in the recollections of and comments by hunters on grizzly bears in the coastal mainland of the Kitikmeot Region. Two of the six groups of people now concentrated in Coppermine were specifically identified as having hunted grizzly bears before 1916 (Milton Freeman Research Ltd. 1976). The Akulliakattakmiut wintered near Stapylton Bay and travelled to caribou calving grounds near the Lambert Island and moved inland along the Rae and Richardson rivers to hunt grizzly bears and other mammals.

Hunters' comments for the period between 1916 and 1955 (Milton Freeman Research Ltd. 1976) include the observation that once signs of a bear were seen, the bear would be tracked over a considerable distance. Bears were hunted along the coast at Stapylton Bay and Bernard Harbour. Bears were not common east of Coppermine but were more common to the southeast, and west, especially the Rae - Richardson area. Hunting of bears after 1955 is not described for the Coppermine area, but further east bears were occasionally shot during Period II (1916-55) and more bears were reported after 1955 at Beechey Lake, Bathurst Inlet, Arctic Sound and Daniel Moore Bay (Figure 3). Bears were scarce in the area of the headwaters of the Ellice River (Milton Freeman Research Ltd. 1976) and are not mentioned further east toward Perry River. Gavin (1945), however, cites that an Eskimo encountered 2 bears on the sea-ice 24 km west of the Perry River in March 1938 but there appear to be no subsequent published records.

The apparent rarity of bears east of Bathurst Inlet may be

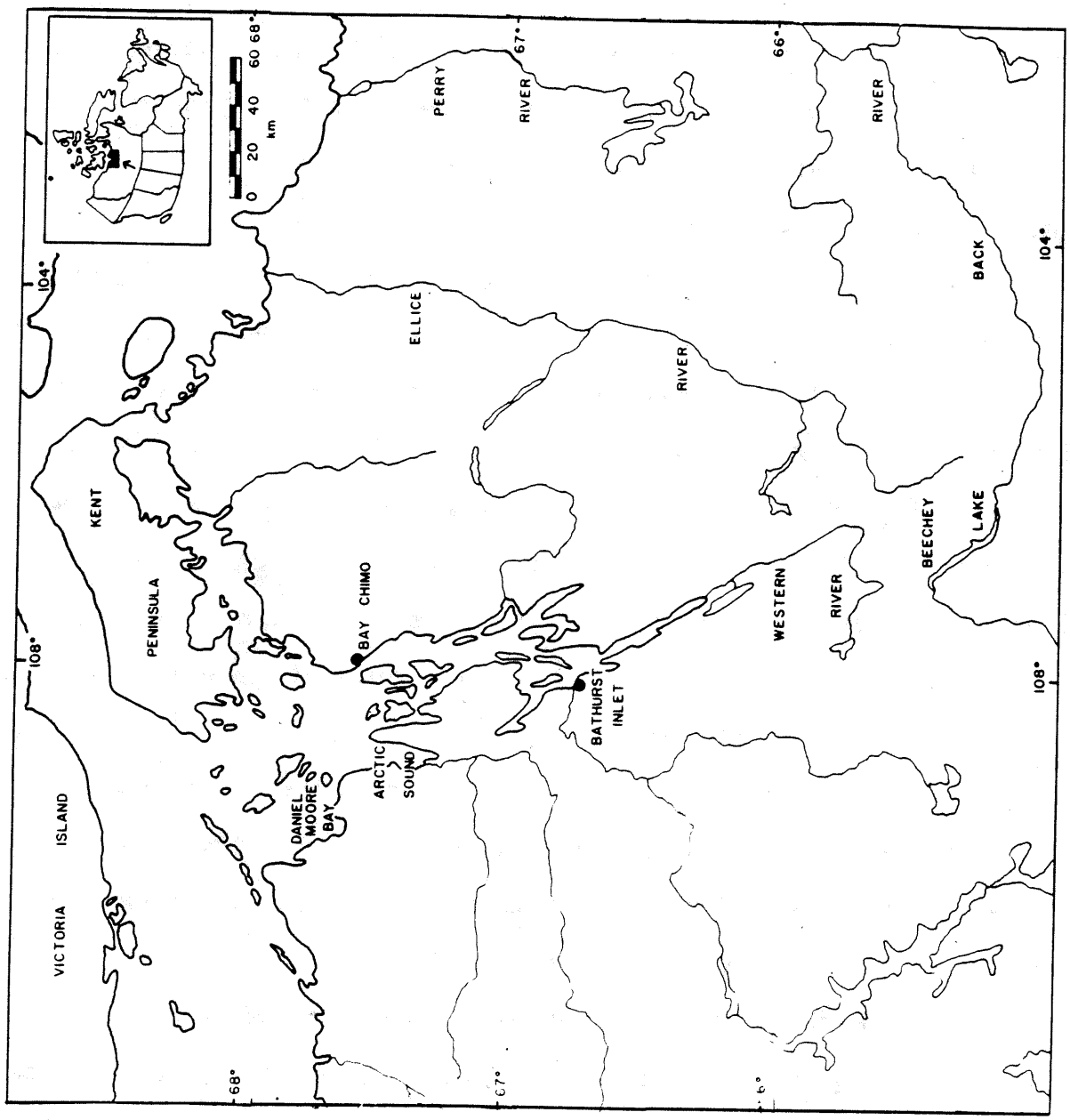

Figure 3. Place names in the vicinity of Bathurst Inlet.

related to geology: Macpherson (1965) commented that bears tend to be associated with sedimentary rock formations. Bathurst Inlet and the Western River are along a major fault separating western sedimentary limestone and sandstone formations from granitic gneiss and schist formations lying to the east. The geology probably manifests its influence on bear distribution through the availability of suitable habitat for arctic ground squirrels (Spermophilus parryii) and denning. Fleck and Gunn (1982), however, reported 1 to 3 bears annually sighted on the caribou calving grounds between Bathurst Inlet and Ellice River in the 1960s and 1970s. Possibly, the colonization of grizzly bears to the northeast is slow rather than completely impeded by geologically-influenced factors. In August 1980, an adult male grizzly was shot as a nuisance bear on the Klutschak Peninsula at the east end of Queen Maud Gulf (Renewable Resource files).

The expected low densities and the possible clumped distribution (by habitat) of grizzly bears predicted that systematic transect surveys would lead to imprecise estimates. The distribution of search effort by blocks was a compromise between a non-systematic search of areas of repeated sightings with an attempt to be sufficiently quantitative that the survey effort and pattern were repeatable. The size of the blocks was chosen to exceed the average size of bear territory (255-262 km^2 on Tuktoyaktuk Peninsula, Nagy et al. 1983), but be small enough so that several blocks could be searched each day thus minimizing possible duplication of sightings.

The difficulty of observing the entrance of a den in thick vegetation or against patchy snowcover probably led to an underestimation of the number of dens and the relative inconspicuousness of the bears themselves may have, to a lesser extent, led to underestimating the number of bears in the blocks.

The estimate of 1 bear/370 km² in the survey blocks is almost certainly low and the actual density may be higher than the density observed on the Tuktoyaktuk Peninsula. The density of bears on the Alaskan North Slope, also a tundra habitat, is higher than the density on the Tuktoyaktuk Peninsula which could either reflect a less productive habitat on the Tuktoyaktuk Peninsula or the effect of the harvest. The habitat in the Coppermine study area is likely more productive and could potentially support more grizzly bears than the Tuktoyaktuk study area. A comparison of climatological data from the settlement of Tuktoyaktuk with Coppermine (Burns 1973) suggests similar plant growing seasons (e.g., 276 and 277 days with frost for Coppermine and Tuktoyaktuk, respectively). A comparison of climatological maps (Burns 1973), however, suggests that at least the northern two/thirds of the Tuktoyaktuk Peninsula has a shorter growing season. There is a relatively steep gradient of 300 to 1000 growing degree days (degree days above 7°C) compared with 600 to 900 days for the Coppermine area. The mean date for when daily mean temperature drops below 0°C is 30 August to 10 September on the Tuktoyaktuk Peninsula compared with 5-15 September in the Coppermine study area. The slightly longer plant growing season may be important to bears building up their fat reserves

before denning, as food quality before denning is especially important for the bear's survival (Nagy et al. 1983). Another factor which may contribute to a greater potential productivity of the Coppermine study area is the availability of carrion for bears. The availability of carrion is a particularly valued food source for bears after emerging from their dens. Caribou and muskoxen winter in the study area and so animal remains may be available from hunting, wolf kills and other causes of death.

An estimated 80 bears inhabited the Tuktoyaktuk Peninsula and Richards Island (17,318 km^2) study area between 1974 and 1978. The estimated density from the block survey and the density from the Tuktoyaktuk study area, indicated that the number of bears in the vicinity of Coppermine would be at least 45 to 75 bears. Again, extrapolating from Nagy et al.'s (1983) data from Tuktoyaktuk, the recommended annual harvest could be in the order of 4-8 bears for Coppermine, but the tenuous nature of these extrapolations cannot be ignored. The extrapolations are only intended as ballpark figures for any harvest of bears and the effect of the harvest.

The harvest of bears at Coppermine is essentially unrecorded. Legally, bears can be shot for food although the hide cannot be sold. Nuisance bears can be shot in defence of life or property and must be reported to the Renewable Resources Office (Table 4), although this may not always happen. The annual kill is at least 3 to 5 bears (Table 4) although as many as 8 to 10 bears may be a more realistic estimate (R. Binne pers. comm.). The annual kill has not resulted in an overall decrease in the number of sightings

Table 4. Reported bear kills and nuisance bears, Coppermine area, 1982-84*

Date	Location	Age (years)	Sex	Comments
1982				
June	Klengenberg Bay	6	M	Food kill
June	east Coppermine	14	M	Food kill, shot 8 km out on sea ice
June	Contowoyto Lake	3	F	Defense kill
July	Richardson Bay	20+	M	Defense kill
1983				
May	Coppermine	Unknown		Food kill
May	Coppermine	Unknown		Food kill
May	Coppermine	Unknown		Food kill
May	Coppermine	Unknown		Food kill
Sep.	Klengenberg Bay	Subad	M	Defense kill
1984				
Aug.	Basil Bay	Subad	F	Defense kill
Sep.	Richardson Bay	Subad		Fatal shooting accident, bear not killed
-	Coppermine - No details			Two bears killed

Records were compiled from Coppermine station complaint forms and C. Adjun and D. Vincent (Renewable Resources).

or in the absence of bears from areas frequented by both bears and hunters such as Klengenberg and Basil bays. The harvesting of bears as soon as the first bear was encountered led to "bear-free" zones within a 30-40 km radius of both Inuvik and Tuktoyaktuk (Nagy et al. 1983). The number of bears killed in the vicinity of Coppermine and the outpost camp at Basil Bay have not yet created bear-free zones.

An obstacle to collecting information on the harvest of grizzly bears has been reluctance by hunters to report all kills through misunderstanding the hunting regulations and fear of prosecution. Under the NWT Act bears may be hunted by Indians and Inuit for food but the hide may not be sold, traded or bartered. If the bear was lawfully killed in defense of life or property, it must be reported and the hide is seized for disposal by Renewable Resource Officers. The hunter may be paid for skinning and cleaning the hide of a defense kill. The regulations governing the hunting of bears may not have been clearly understood by hunters in Coppermine (Appendix A) until October 1984 when the Department of Renewable Resources explained the regulations to a joint meeting of the Hamlet Council and Hunters' and Trappers' Association. The explanation and the recommendation of a commercial quota led to a request from the Hunters' and Trappers' Association for a commercial quota of 8 bears each year. If the current harvest is 5-10 bears, imposition of a commercial quota to sell up to 8 bear hides may not increase the harvest as the quota may be used to sell the hides of bears that would have been killed anyway. The price and

demand for guided sport-hunts, hides and other parts such as gall-bladders or claws could create an incentive for increased harvesting.

Four of 5 nuisance killed bears were subadults and one was an adult male (Table 4). The only two food kills that were identified by sex and age class were adult males. A bear population can likely withstand a greater harvest if more males than females are harvested. Adult male bears will kill bear cubs, but the relatively high average cub survival on Tuktoyaktuk Peninsula was possibly because there were fewer male bears to kill the cubs as male bears were preferentially hunted. The earlier den emergence and greater mobility of male bears increased their vulnerability to hunters (Nagy et al. 1983).

If the hunter's understanding that it is legal to kill bears for food increases the number of bears killed, the earlier emerging male bears will possibly bear the brunt of the harvest which in turn will partially increase cub survival. Subadult bears may be especially vulnerable to being killed as nuisance bears because, being inexperienced, they may have difficulty finding adequate food and thus be more attracted to raiding meat caches and camps (Table 4). Cubs are weaned when 2.5 to 3.5 years old during late May and June when the female comes into heat and the breeding activities help to drive away the cubs (Nagy et al. 1983). When first having to cope on their own, the young and inexperienced bears may be more likely to be attracted to camps and caches and thus becoming nuisance bears.

It is, at best, conjectural to predict the effects of a commercial quota. The interaction of the differing hunting vulnerabilities of various sex-age classes, a possible compensatory increase in cub survival and the change in bear hunting patterns are complex. A first step toward understanding the effect of the harvest will be to obtain reliable harvest data.

Wildlife management in the NWT has mostly adhered to a policy of not allowing the harvest of mandated big game species without supporting data to establish a harvestable surplus or to predict the effects of the harvest. On one hand, the proposed quota only legalizes the sale of hides, as it is already legal to kill grizzly bears. On the other hand, the proposed quota could increase the harvest and there are no data with which to predict the effect of an increased harvest. The economic impetus and momentum of sport-hunting is a possible complication.

The current problems may be defined as:

1. The public is concerned with the increasing interactions between people and bears around camps and settlements.
2. Stated departmental objectives are to maximize the economic benefit of wildlife resources to local people and manage wildlife according to the principles of conservation.
3. There is an absence of data on the barren-ground grizzly in the Kitikmeot Region.

The recommended commercial quota may contribute to the solution of those three problems:

1. If Tuktoyaktuk is an appropriate model, the harvest may eventually create bear-free zones around the settlement and outpost camps.
2. Sale of hides from bears killed for food and, optionally, those killed in defense will return cash to the hunter.
3. The proposed commercial quota includes obligatory reporting of any kill and requires hunters to provide information on the sex and age of the bear. Those data will accrue over time to form a basis for more precise bear management. Additionally, past consultations with the Hunters' and Trappers' Associations have been positive in that hunters have contributed sightings and if this co-operative approach to management continues, additional information will be forthcoming. In this report, the data from the study of bears on the Tuktoyaktuk Peninsula has been relied upon extensively. Data on the distribution and level of bear harvest, nuisance bears and the economic return realized from bear hide sales since the end of the Nagy et al. (1983) study in 1978 would likely improve our predictive ability on the effect of a commercial quota of bears in Coppermine and Bay Chimo.

Recording of grizzly bear kills will be incorporated into the Kitikmeot Regional harvest study now that hunters realize that they are not implicating themselves by reporting bear kills, and also that the data are necessary to guide subsequent management decisions on quota levels. The location and incidence of man-bear

conflicts will require a sustained monitoring effort. The creation of bear-free zones may be an indicator that the harvest is affecting the bear population.

Within decades, if not sooner, requests for quota increases are predictable given the current emphasis on utilization of natural resources especially for the increased economic benefits from the sale of products such as hides and services such as guiding. Concurrently, the requirement for management data will also increase. Emphasis will have to be placed on developing indices to monitor the bear population status given the expense and difficulties of measuring population size in order to manage by trend of the population.

RECOMMENDATIONS

1. The importance of receiving grizzly bear sightings and harvest information should be further advertised and encouraged through local radio and posters. The same means should be used to explain bear biology.

2. A provisional commercial quota for the sale of hides (and other products of bears) from a maximum of eight bears for Coppermine and five for Bay Chimo should be implemented for the 1985-86 hunting season. Females accompanied by cubs or yearlings should not be killed. The commercial tag should be conditional on the hunter providing specimens necessary to sex and age the bears.

EDITORIAL NOTE:

In 1987 the Wildlife Regulations were amended to provide for a quota of 5 bears each for Coppermine (C/1-2) and Bay Chimo (F/2-1). This quota applies to bears other than cubs, that are not accompanied by a cub. All lower jaws and all information requested by an officer pertaining to each barren-ground grizzly bear killed in the quota must be provided. Tags issued under these quotas can be attached to hides from bears harvested by GHL holders to permit the sale and export of the hide, or provided to resident, non-resident and non-resident alien hunters for guided hunts.

ACKNOWLEDGEMENTS

Jimmy Ross Miyok (H.T.A.) and the Renewable Resource Officers, Colin Adjun and Fred Elias helped with the October denning survey. The hunters and trappers of Coppermine contributed many useful sightings of bears which were recorded by Colin Adjun and Fred Elias, and their help is gratefully acknowledged. Don Vincent (Renewable Resources) reviewed the report and his comments were appreciated.

Doug Stern drafted the figures and Patty Evalik patiently typed the report.

PERSONAL COMMUNICATIONS

R. Binne, Superintendent, Inuvik Area Office, Dept. of Renewable Resources, Inuvik, NWT.

LITERATURE CITED

Burns, B.M. 1973. The climate of the Mackenzie Valley. Atmospheric Environmental Service, Climatological Studies No. 24, Vol. 1., 227 pp.

Fleck, S.E. and A. Gunn. 1982. Barren-ground caribou, calving grounds in the Northwest Territories. NWT Wildl. Serv. Progress Report, 111 pp.

Gavin, A. 1945. Notes on mammals observed in the Perry River district, Queen Maud Sea. J. Mamm. 26: 226-30.

Harington, C.R., A.H. Macpherson, and J.F. Kelsall. 1962. The barren-ground grizzly bear in northern Canada. Arctic 15(4): 294-298.

Kelsall, J.P. 1968. The migratory barren-ground caribou of Canada. Can. Wildl. Serv. Monograph 340 pp.

Macpherson, A.H. 1965. The barren-ground grizzly bear and its survival in northern Canada. Can. Audubon. 27(1): 2-8.

Milton Freeman Research Ltd. 1976. Inuit land use and occupancy project. Department Indian and Northern Affairs, Ottawa, INA Public No. Q.S. 8054-001-EE-AI, Vol. 1, 263 pp.

Nagy, J.A., R.H. Russell, A.M. Pearson, M.C.S. Kingsley and C.B. Larsen. 1983. A study of grizzly bears on the barren-grounds of Tuktoyaktuk Peninsula and Richards Island, Northwest Territories, 1974 to 1978. Can. Wildl. Serv. unpubl. report, 136 pp.

Appendix A. Chronology of concerns over grizzly bears in the Kitikmeot Region (recorded in minutes of H.T.A. or community meetings).

1. 1976 October: Regional Hunters' and Trappers' Association Conference

   Bay Chimo - Bathurst delegate raised as a concern that more and more grizzly bears were being sighted.

2. 1983 January: Regional Hunters' and Trappers' Association Conference

   Bay Chimo - Bathurst delegate wanted to know if grizzly bear surveys or studies are planned and whether or not it is legal to kill bears without a quota.

3. 1983 August: Kingoak Annual Hunters' and Trappers' Meeting

   Concerns expressed over increasing number of bears, bears close to camps and requested a quota. Delegates asked the consequences of killing a bear and what happens to the bear hide.

4. 1983 December: Bay Chimo Community Meeting

   Only concern raised was over the increasing number of bears seen over many years and more cubs in spring in the last few years. A request for a quota was made.

5. 1984 July: Kugluktuk Agoniatit, Hunters' and Trappers' Association, Coppermine

   Members wanted a letter to DRR, Cambridge Bay, to find out if grizzly bears could be killed as lots of bears were seen along the coast and previous year, bears had damaged tents and equipment.

6. 1984 July: Kitikmeot Inuit Association, Pelly Bay

   Two motions passed to request DRR to grant quotas for grizzly bears at Coppermine and Bay Chimo and Bathurst Inlet.

7. 1984 August: Kugluktuk Agoniatit, Hunters' and Trappers' Association, Coppermine

   Question of grizzly bears raised and request for sightings of bears to be reported to Wildlife Office. October denning survey mentioned.

8. 1984 October: Kugluktuk Agoniatit and Kugluktuk Katimayeen, Hunters' and Trappers' Association and Hamlet Council, Coppermine

"Barren Ground Grizzly Bears - The people of this community had great concerns regarding grizzly bears for there was a life lost due to an accident incident this summer where a grizzly bear was involved. Also that a lot of camps were demolished due to bears."

"Honourable Nellie Cournoyea explained that the Inuit can shoot and kill grizzly bears for food but are not to sell the skin.

The people here did not know that was allowed and always thought it was against the law to shoot bears."

9. 1984 November: Kugluktuk Agoniatit, Hunters' and Trappers' Association

H.T.A. President explained grizzly bears could be killed for meat but for sport hunting, etc., H.T.A. recommended a quota of 8.

Appendix B. Description of grizzly bear dens, Coppermine, October 1984

1. Date: 3 October 1984
   Description: Den was a single hole on a shallow slope facing east and about 5 m from a lake margin. The country was rolling with eskers and possibly the den was in sandy substrate. There were 2 or 3 trails in the vicinity of the den but no trails leaving the mouth of the den.

2. Date: 3 October 1984
   Description: Den was a single hole in an east facing bank almost hidden by willows. No tracks were visible and there was a little snow on the pile of dirt in front of the hole. The "clean" appearance (no leaves or debris visible) of the den mouth suggested a recently and possibly currently occupied den.

3. Date: 3 October 1984
   Description: Fresh tracks in the snow led to a dug-over patch, but the trails also meandered around an esker complex. The tracks led to a fresh large hole dug mid-way on a south-facing slope and to two fresh holes, a single hole and another pair of holes. The trail ended so the bear was likely denned.

4. Date: 4 October 1984
   Description: Bear tracks led to a sandy ridge probably 10-15 m high. A mixture of sand and snow was lying at the mouth of the den and the northeast facing slope had a snow drift building up along it. The trail entered but did not leave the den.