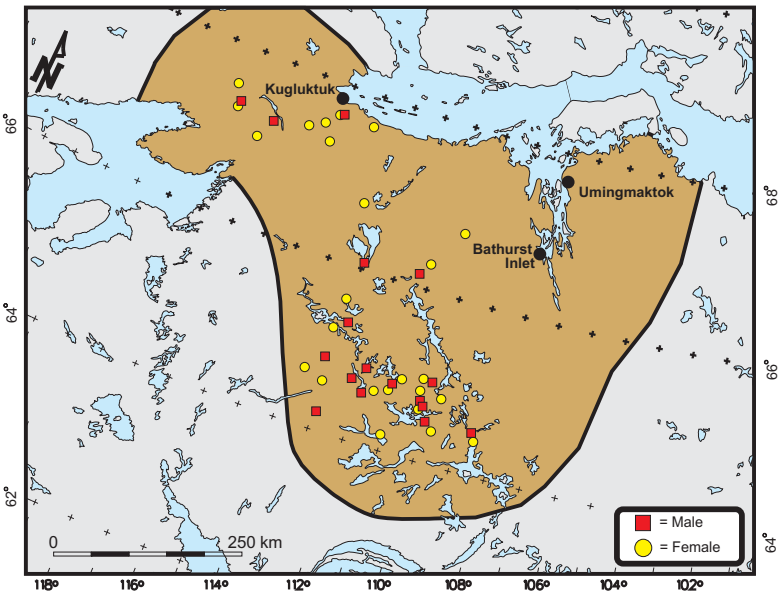
BEAR TRACKS

No. 3 Editors: Dean Cluff and Ray Case Winter 1996/97

A Newsletter on Grizzly Bear Studies in the Central Arctic, NWT, Canada

COLLAR DEPLOYMENT CONTINUING

In May 1995 we started a multi-faceted, multi-year and multi-partner research program into the ecology of grizzly bears in the central arctic. This project will help biologists determine grizzly bear distribution, movement patterns, population units, critical habitats, food habits, and foraging behaviour. The core of this project is the capture and collaring of grizzly bears with satellite transmitters. This allows us to collect detailed information on individual bears through two summers.



Satellite Collar Deployment 1995 & 1996

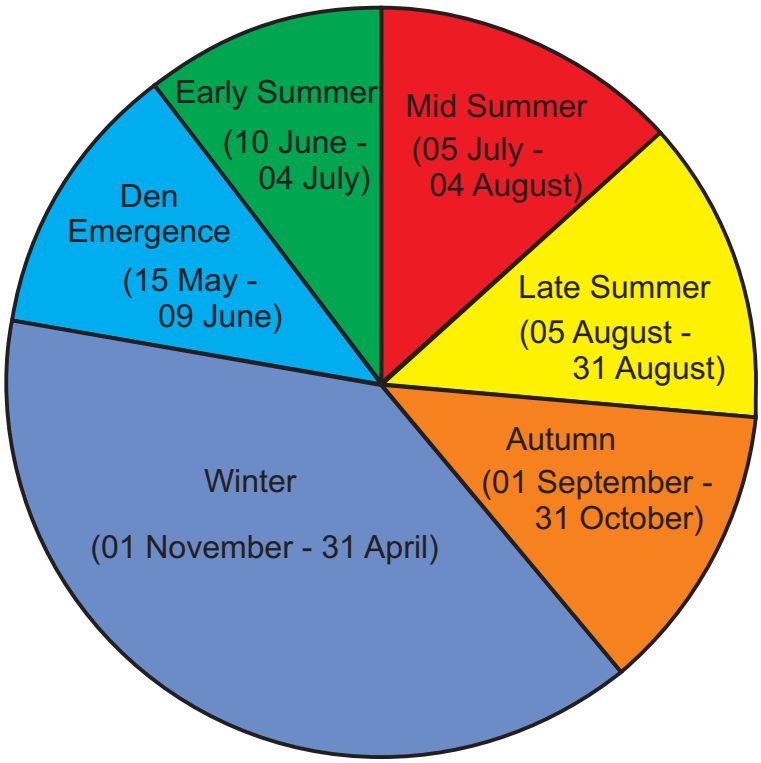
In order to meet the objectives of the study we need to spread the collaring effort throughout the 175,000 km^2 study area. During the first two years of the study much of the collaring effort has focused on the Lac de Gras, Lake Providence and Kugluktuk areas (see figure).

These areas are now well represented and the information collected from these bears has been excellent. Many of these collars have been removed or will be this spring. We now need to focus the collaring effort in areas still under represented. Therefore, we hope to deploy 30 to 35 radio-collars around MacKay and Aylmer Lakes, between Kugluktuk and Bathurst Inlet, northeast of Contwoyto Lake and possibly east of Umingmaktok. To do so will require a co-ordinated effort with other research projects and with the mining industry. Co-operation among all our partners has been excellent and an integral part of the success of the project to date.

THE SEASONAL CYCLE OF FAT RESERVES

Rob Gau's data collection on the seasonal changes of body condition and food habits in barren- ground grizzly bears was completed this past season. Body condition analysis, as determined by bioelectrical impedance techniques, revealed some interesting results and will continue in 1997 during spring season capture work and incidental problem bear occurrences.

So far we've learned that adult male bears and lone females follow a seasonal cycle in body fat reserves. This cycle is closely linked to the bears' diet and habitat selection.



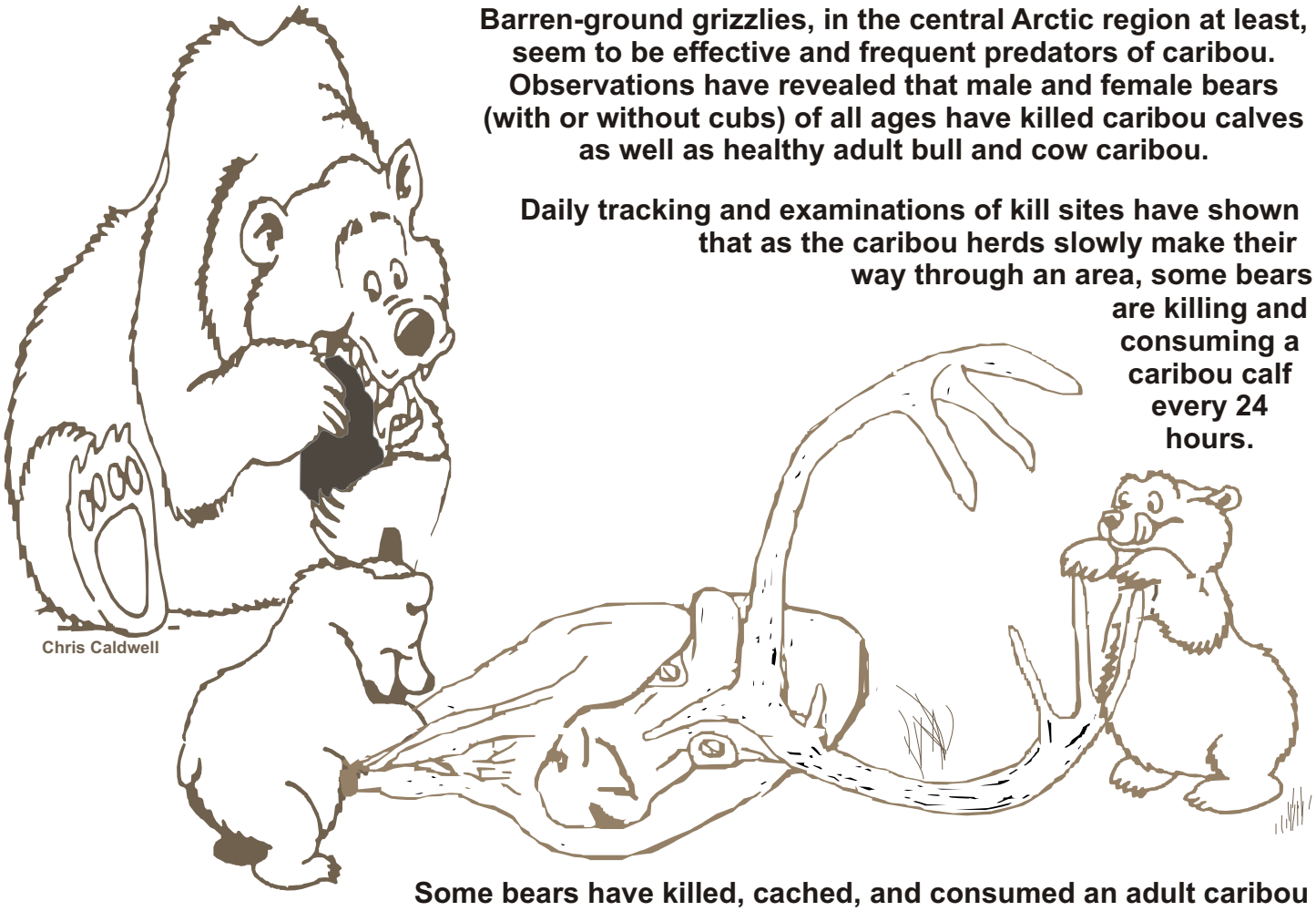
Percent body fat depends on the type of food consumed, and where that food source is available to bears is reflected in their habitat selection. Upon leaving their winter dens, the bears maintain body condition by exploiting the migratory Bathurst caribou herd as their primary food source. However, in early summer, as the caribou leave the study area to their northern calving grounds, bears switch their diet to the new shoots of grasses and sedges. These plants have low nutritional value for bears and with the added stress of reproduction and long search times for food, bears lose the remainder of their fat reserves accumulated the year before.

Early summer finds the bear in their poorest condition. Some bears got so lean that their body fat reserves actually dropped to just 1% to 2% useable body fat. As the caribou returned from their calving grounds in mid-summer, the bears' diet again switched to a primarily carnivorous one and body condition improved. As summer progressed, the bears became hyperphagic as the northern berry crop ripened. There was an excellent berry crop this year which were likely the primary foods responsible for re-establishing body fat reserves of bears.

In the fall, 3-4 weeks before denning, bears were fatter than at any other season, and bears again switched their diet to caribou, even though most caribou had travelled further south to the treeline for the winter. A seasonal pattern in food habits is similar to bear populations elsewhere but the amount of caribou in the diet has been surprising.

THE CARNIVOROUS GRIZZLY BEAR ?

Fecal analyses of barren-land grizzly bears suggest that caribou appear to be the single most important food item for spring, mid-summer, and autumn. Are these bears really that predatory on caribou or is the scat analysis somehow flawed? Maybe bears are simply claiming caribou killed by wolves or scavenging from carcasses from other sources. Fortunately, direct observation work and data from stable nitrogen isotope analysis on captured bears have helped our interpretation.



Chris Caldwell

Barren-ground grizzlies, in the central Arctic region at least, seem to be effective and frequent predators of caribou. Observations have revealed that male and female bears (with or without cubs) of all ages have killed caribou calves as well as healthy adult bull and cow caribou.

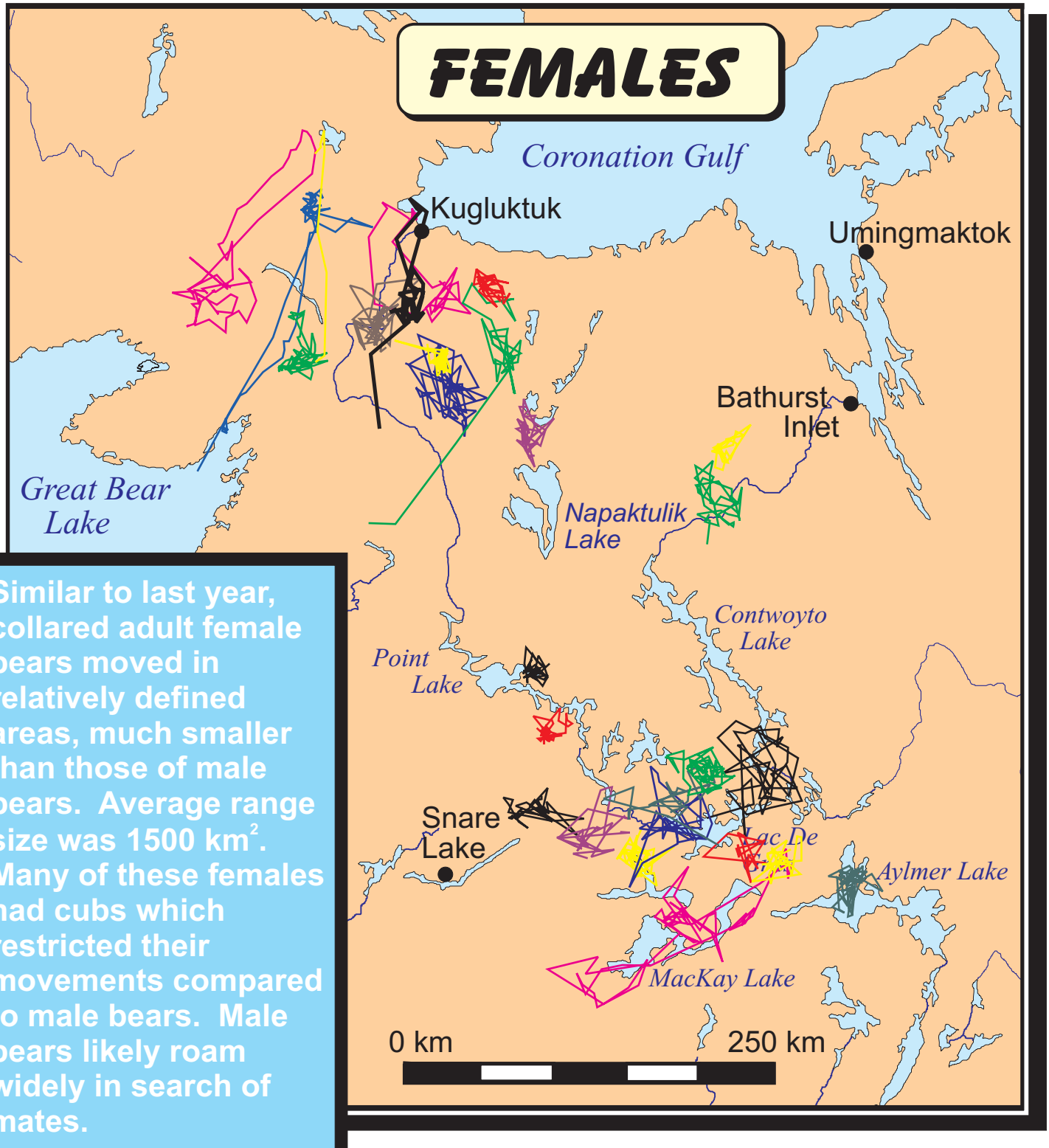
Daily tracking and examinations of kill sites have shown that as the caribou herds slowly make their way through an area, some bears are killing and consuming a caribou calf every 24 hours.

Some bears have killed, cached, and consumed an adult caribou in all of three days, only to do it all over again after that.

Stable nitrogen isotope analysis from captured bears lends support to the notion that these bears lead a predominantly carnivorous lifestyle. By measuring this form of nitrogen in body tissues, such as blood, we can examine the diet of bears on a vegetation versus animal matter comparison. Plants typically have low stable nitrogen isotope values while higher trophic levels (e.g., herbivores, carnivores) tend to show a small stepwise enrichment. Therefore, a diet primarily of plants would have lower isotope values than those found in a meat-based diet.

Results so far have indicated that isotope values were high in the blood of grizzly bears captured during times when caribou dominated their diet. This reduced dependence on plants and greater use of animals over prolonged periods is yet another distinguishing feature of the barren-ground grizzly bears compared to their cousins in the mountains.

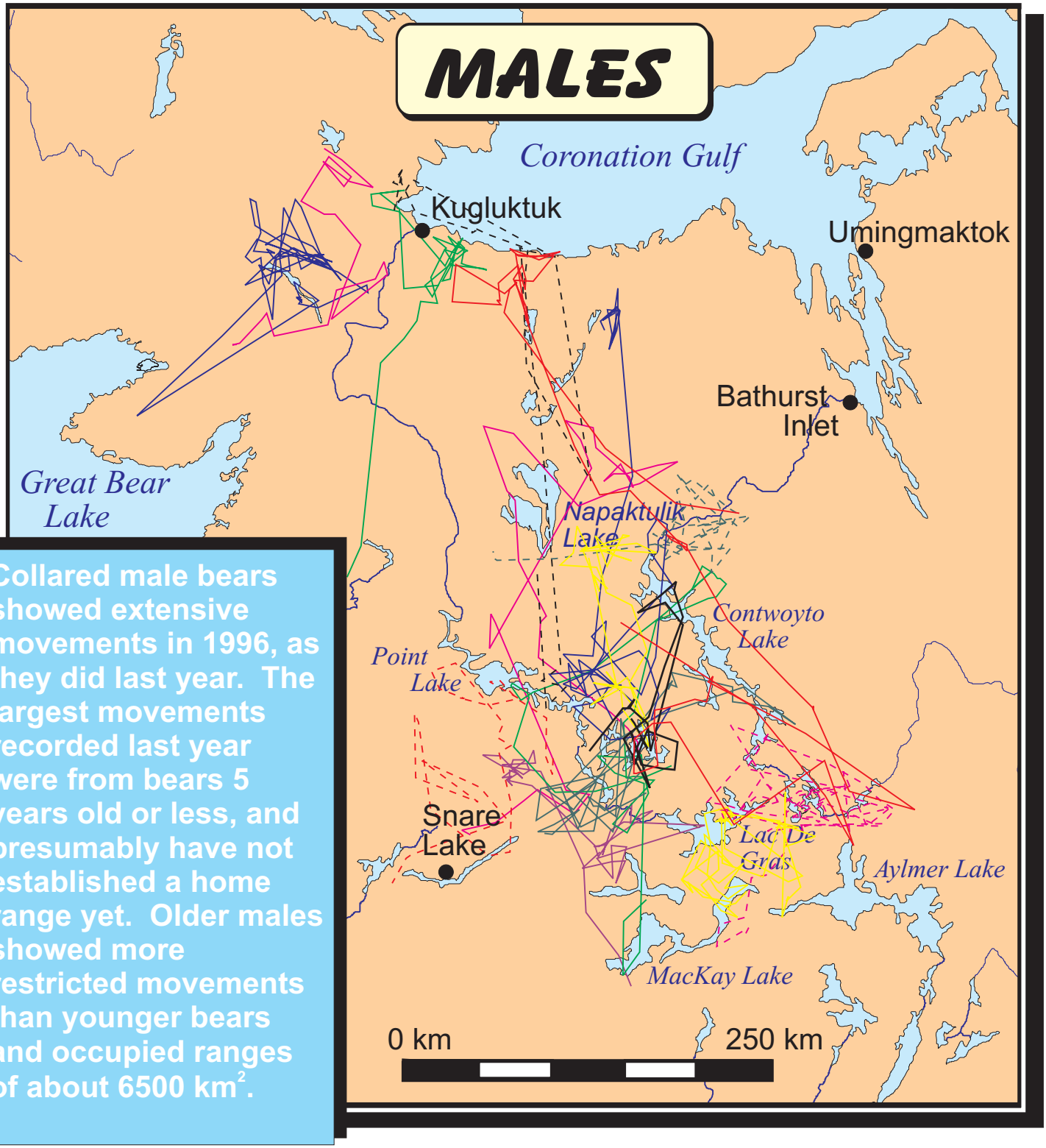
GRIZZLY BEAR MOVEMENTS



Similar to last year, collared adult female bears moved in relatively defined areas, much smaller than those of male bears. Average range size was 1500 km^2. Many of these females had cubs which restricted their movements compared to male bears. Male bears likely roam widely in search of mates.

MAY TO OCTOBER 1996

GRIZZLY BEAR MOVEMENTS



Collared male bears showed extensive movements in 1996, as they did last year. The largest movements recorded last year were from bears 5 years old or less, and presumably have not established a home range yet. Older males showed more restricted movements than younger bears and occupied ranges of about 6500 km^2.

MAY TO OCTOBER 1996

DIAVIK ACTIVITIES

Diavik Diamond Mines Inc. (formerly Kennecott) provided logistical support and searched for bears during the May and June capture efforts by the Department of Renewable Resources (now Resources, Wildlife and Economic Development) in the Lac de Gras area. The Diavik wildlife crew monitored three adult bears, two of which were radio-collared. Monitoring of collared bears for habitat use assessments complemented that of BHP's work during the summer. During fall, three bears were monitored by VHF transmitters until denning. One bear was video-taped as she gathered crowberry bushes presumably for bedding or plugging the den entrance. One adult female bear with two 2-year old cubs had not denned by October 29 and was still feeding on caribou.

Site investigations found that caribou was a dominant fall food item while they were present in the area. During a 28 day period in October, one adult female ('G639') and her two 2-year cubs were located 15 times, and included nine different caribou kills. Direct observations and site evidence indicate that the bears killed seven of these caribou. The two other kills has an abundance of wolf tracks about and were likely scavenged by the bears.

Aerial and ground searches of eskers and other habitats found 42 denning sites south and east of Lac de Gras in addition to the three current dens of collared bears. Habitat charactization was completed on 14 recent dens and 17 older dens. Forty percent of these dens were associated with esker terrain while the remainder occurred with other sandy deposits.

Fast Facts

- ✔ Barren-ground grizzly bears of the central Arctic region enter their winter dens around mid- to late October and remain there until mid-May - a hibernation period of 6½ to 7 months.
- ✔ Some male barren-ground grizzly bears have moved over 800 km in a single season and can easily cover 50 km in one day.
- ✔ The heaviest barren-ground grizzly bear we have captured so far was a male bear weighing 261.5 kg in late May and just over 2 m in length. Imagine what he would weigh by October, after feasting on berries and caribou.

BHP UPDATE

The BHP's NWT Diamonds Project Inc. received federal government approval on November 1st to proceed with Canada's first diamond mine subject to the normal regulatory process. The last of the licences and permits were approved later in December.

One of the conditions of the mine's approval was the establishment of an independent Environmental Monitoring Agency to be funded by the company. The Agency will be established in February and will guide environmental monitoring projects in the Lac de Gras area. It is likely that the monitoring program will include ongoing monitoring of grizzly bear activity and habitat use.

VHF COLLARS

In early September, nine bears in the Lac De Gras area were recaptured to remove their satellite collars. These collars were deployed in the spring of 1995 and battery output was low after two summers of transmitting signals. We acted now to ensure that these bears would not be left with non-functioning collars. Satellite collars were replaced with standard VHF collars (no satellite beacon) for eight of the recaptured bears. Replacement VHF collars were used to aid in locating bear dens in late October and will determine family status in spring.

The VHF collars deployed were fitted with an elastic bridge that was designed to break-away from wear and UV radiation after approximately one year. However, two of the eight collars were dropped unexpectedly by October. Nevertheless, den locations of four of the remaining six bears were still located as planned. We hope that the den sites of the last two animals will be located later this winter or spring. There are no plans to redeploy satellite collars on any of these animals.

DENNING UPDATE

Denning dates for 32 collared bears in 1996 were similar to last year (average date was October 17th), virtually identical to last year's average (October 19th). Bears in the Kugluktuk area also followed last's pattern of generally entering dens before those in the Lac de Gras did.

Chris Caldwell

We located hibernation dens for 14 grizzly bears fitted with satellite radio-collars in the Lac de Gras and Contwoyto Lake areas. The satellite transmitter provided the search area afterwhich we used the VHF beacon on the collar to further pin down the precise den site. The actual location will be determined next spring (but after the bear has left the area).

We expect that this preliminary den search in late fall will greatly assist our den location efforts in the spring. To date we have recorded locations and have detailed descriptions of 19 known grizzly bear dens. Over the next two years, we hope to raise this number to 50 or 60 dens.

BEAR - PEOPLE CONFLICTS WORKSHOP

Plan to attend the 2nd International Bear-People Conflicts Workshop being held in Canmore, Alberta, April 3 - 5, 1997. The main objective of the workshop is to bring together those working in problem bear management. Bear biologists, wildlife practitioners and those who work in bear country will share information to develop practical solutions. Your bear management experiences and recommendations are crucial. By working together we can make bear country safer for both people and bears.

For more information:
Contact Andy McMullen at (403) 920-3049 or email andymc@gov.nt.ca.

THE NWT GRIZZLY BEAR PROJECT

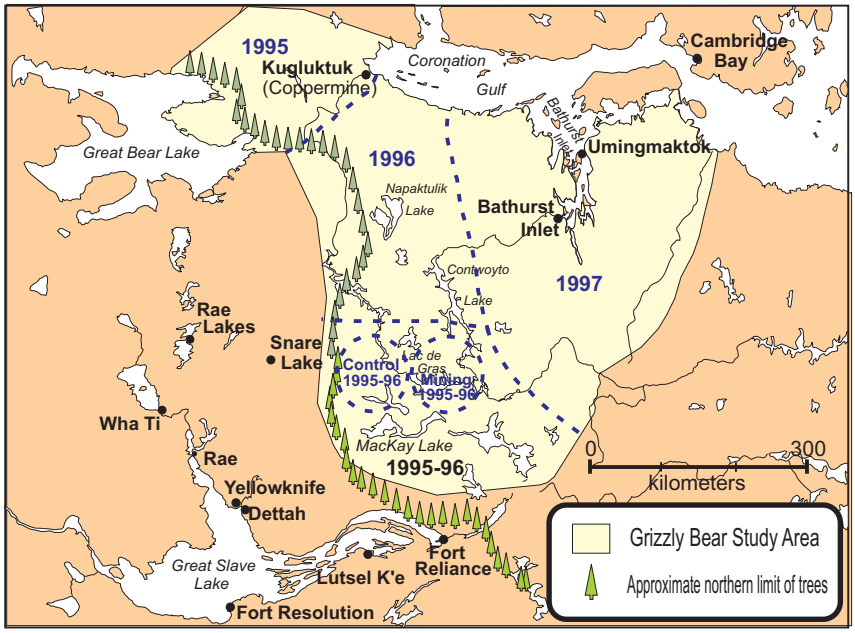
PROJECT LEADERS

Ray Case, Department of Resources, Wildlife, & Economic Development, Government of the NWT
François Messier, Department of Biology, University of Saskatchewan

RESEARCH PARTICIPANTS

Dept. of Resources, Wildlife, & Econ. Dev.
Dean Cluff, North Slave Region
Steven Matthews, Wildlife & Fisheries Division
Andy McMullen, North Slave Region
John Nishi, Kitikmeot Region
Cindy Squires-Taylor, NWT Centre for Remote Sensing

University & Industry
Vivian Banci, Rescan Environmental Services Ltd.
Robert Gau, Univ. of Saskatchewan
Philip McLoughlin, Univ. of Saskatchewan
David Penner, Penner & Associates Ltd.



The Study Area

Description of the search zones for capturing barren-ground grizzly bears in the Slave and Bear Geological Provinces, 1995-1997. Also depicted are the control and mining sites used to assess potential impacts of mining activities on bear movements.

Acknowledgements

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FOR MORE INFO:

Contact: Dr. Ray Case, Wildlife & Fisheries Division, Department of Resources, Wildlife & Economic Development
600, 5102 - 50 Ave., Yellowknife, NT X1A 3S8 (403) 920-8067 (tel)
(403) 873-0293 (fax) or email rcase@gov.nt.ca