BEAR TRACKS

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

No. 1 Editors: Dean Cluff and Ray Case Fall 1995

FIRST FIELD SEASON VERY SUCCESSFUL

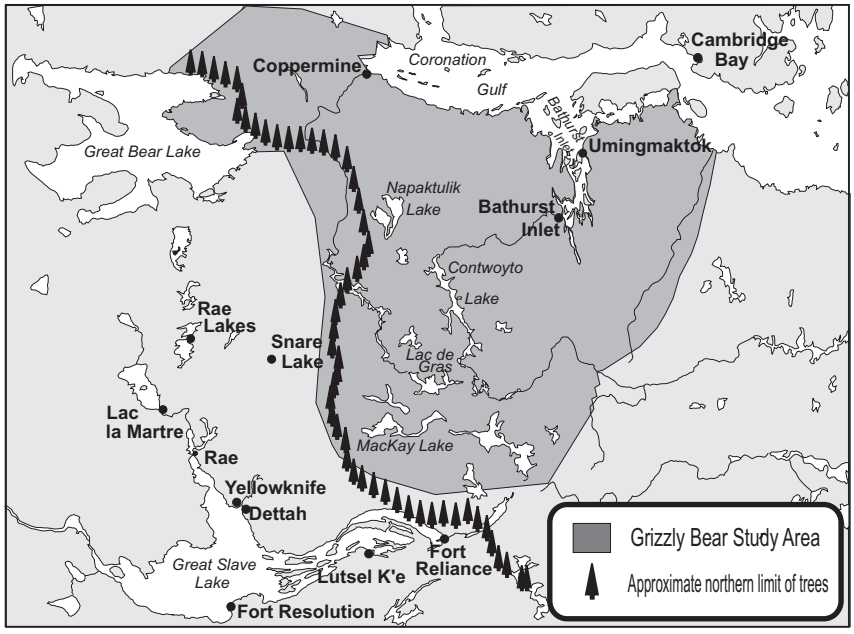
A multi-faceted research program into the ecology of grizzly bears in the central Arctic started in May 1995. The study area includes the area north of treeline from east of Bathurst Inlet to west of Coppermine. In late May and early June, 39 grizzly bears were captured in the areas around Lac de Gras and the upper Coppermine River. Of these, 23 were equipped with satellite transmitters on collars, including 8 adult males, 12 adult females, and 3 sub-adult females.

The collars reveal the bears' location every 2 days. Tracking the collared bears will help biologists determine grizzly bear distribution, movement patterns, population units, critical habitats, food habits, and foraging behaviour. This information will be used to assess and mitigate impacts of resource development and to develop a management program for grizzly bears. The 16 bears captured but not collared were mostly young bears which were too small to collar. These bears were eartagged and will provide information on cub survival.

Since May, 2 collars fell off (a female and a male), and 1 female was killed by another bear. The 2 dropped collars were placed on other bears in late summer. Unfortunately 1 of the collars is not transmitting so only 21 collars remain active.

PLANS FOR WINTER AND NEXT SPRING

Over the winter we will be analyzing samples and data collected during the past summer. Den locations of the radio-collared bears will be determined this fall to provide more data on denning habitat requirements. In spring, we plan to deploy more collars in the Lac de Gras area and to deploy collars in the northern portion of the study area between Coppermine and Umingmaktok. Collared bears will be tracked again next summer and the food habit and habitat use studies will continue.



We are planning to include a traditional knowledge component for the studies starting in 1996. Information gathered from Dene and Inuit elders and hunters would be linked to the scientific studies to help interpret study results. Funding for all aspects of these studies needs to be finalized through the recently established West Kitikmeot/Slave Study.

GRIZZLY BEAR MORTALITY DOWN IN 1995

The grizzly bear harvest in the study area has been closely monitored since 1992. Deaths caused by all human activities declined from 18 in 1994 to 6 in 1995. Only 1 of 5 sport hunts was successful. The low success rate was due in large part to poor weather conditions in the spring which hampered outfitted sport hunts conducted from Coppermine and Umingmaktok. Five of the 6 bear mortalities were the result of problem kills in outfitter camps and Inuit hunting camps. This was a decrease from 10 problem bear kills in 1994.

We responded to 4 requests to deal with problem bears in the study area. In one case, no bear was sighted. In the other 3 cases, we captured the bear and relocated it. Two of these bears were also fitted with satellite radio-collars. However, one of them was shot after repeated encounters with humans. The collar on the second bear malfunctioned a week after relocating the bear so its current status is unknown.

HABITAT USE STUDIES REVEAL IMPORTANT AREAS FOR GRIZZLIES

Vivian Banci has been investigating how grizzly bears use habitat on the BHP property. This information will be used to develop management guidelines that can be used during the exploration, planning and development phases of diamond mining. Rob Gau has also been recording habitat use in his food habit study.

In early spring, Vivian and Rob found most bears in areas blown clear of snow, mostly north facing slopes and esker tops. Vivian's detailed observations of 5 collared bears and their young indicated that in June and July, these bears were eating mostly sedges and grasses, and occasionally, spawning fish. The wetlands used for feeding tended to be close to hiding/sleeping cover which consisted of tall shrubs, mostly willows about 1-2 m in height. Rob also observed that bears were always near running water in mid-summer. These wet areas, which have abundant sedge and willow growth, appear to be important habitats for both feeding and cover.

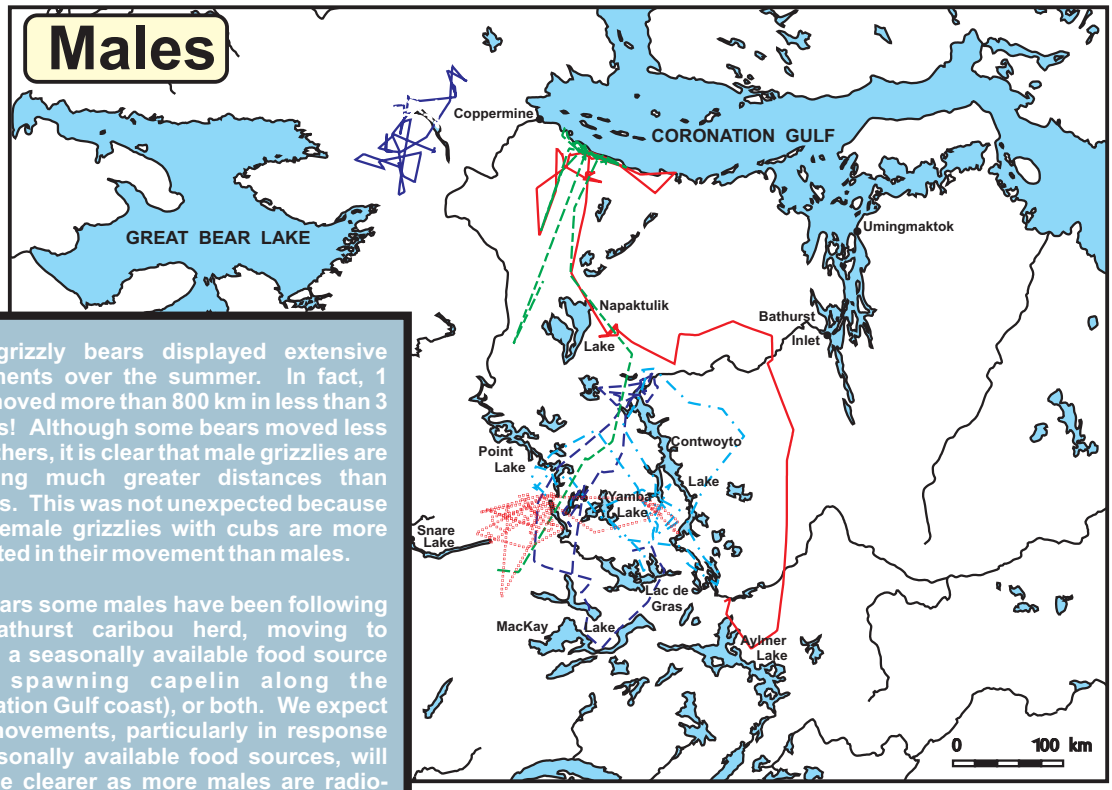
In late summer and fall, bears were once again using eskers and ridgetop areas. During this time, these upland habitats support the richest berry production. Willows were still used for hiding and sleeping.

Thirty-four dens that were estimated to be 3 years old or less were found on the BHP property. Of these, 14 were situated on eskers while 19 were ‘off-eskers’ and one den was not located in any esker materials at all. Bears appear to dig more than one den before deciding which one they will use. Therefore, the number of dens does not correspond to the number of bears that actually den in an area. Observations this fall will record which habitats bears use before denning and locate where the radio-collared bears den.

Using a Geographic Information System, bear location, movement, and habitat use information will be compared with habitat maps to identify valuable bear habitats. This information will be used to evaluate existing and planned developments.

WATCH OUT FOR MOVING BEARS!!

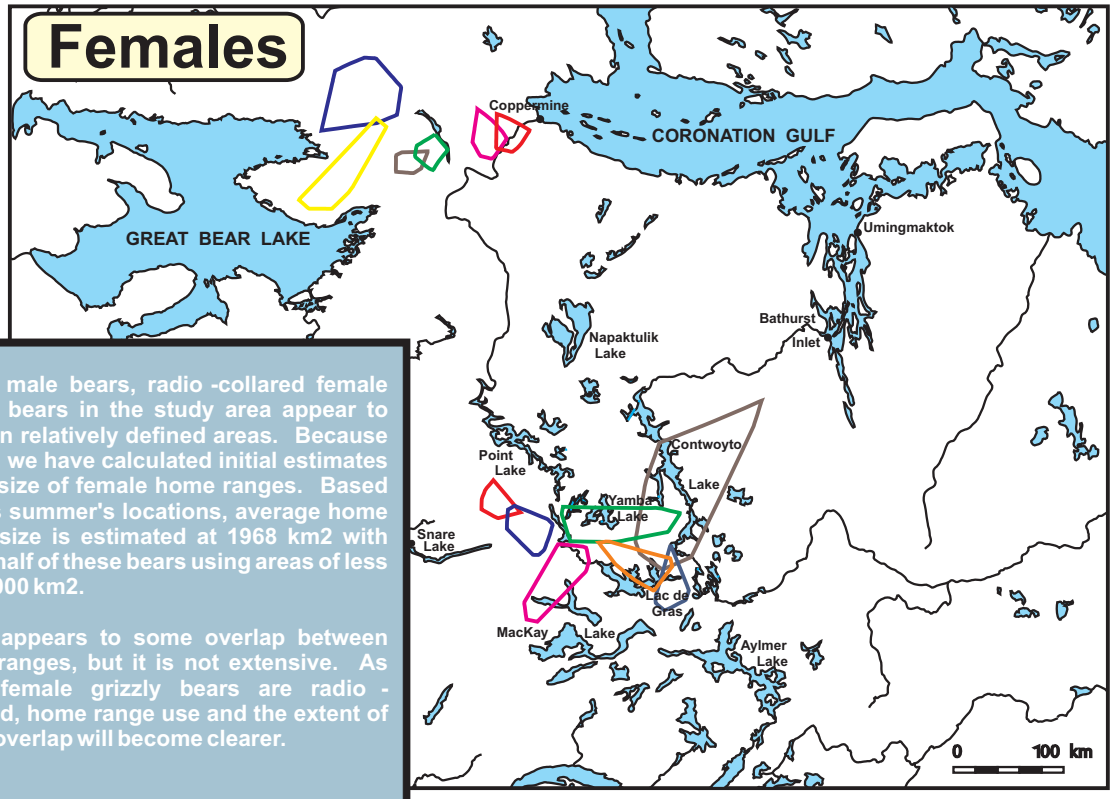
Males



Male grizzly bears displayed extensive movements over the summer. In fact, 1 male moved more than 800 km in less than 3 months! Although some bears moved less than others, it is clear that male grizzlies are travelling much greater distances than females. This was not unexpected because adult female grizzlies with cubs are more restricted in their movement than males.

It appears some males have been following the Bathurst caribou herd, moving to exploit a seasonally available food source (e.g., spawning capelin along the Coronation Gulf coast), or both. We expect bear movements, particularly in response to seasonally available food sources, will become clearer as more males are radio-collared.

Females



Unlike male bears, radio -collared female grizzly bears in the study area appear to move in relatively defined areas. Because of this, we have calculated initial estimates of the size of female home ranges. Based on this summer's locations, average home range size is estimated at 1968 km2 with about half of these bears using areas of less than 1000 km2.

There appears to some overlap between home ranges, but it is not extensive. As more female grizzly bears are radio - collared, home range use and the extent of range overlap will become clearer.

ASSESSMENT OF WILDLIFE HABITAT USING DIGITAL SATELLITE IMAGERY

Staff from GNWT's Wildlife Management Division and the NWT Centre for Remote Sensing are working on a project to inventory and map wildife habitat in the Lac de Gras area of the Slave Geological Province. Habitat classes will be based on general vegetation cover types using 30m resolution Landsat TM imagery.

Working from the Department's Tundra Ecosystem Research Station at Daring Lake in mid-August 1995, Steven Matthews and Cindy Taylor examined ground cover classes at several hundred sites across the 30,000 km^2 area. Prior to fieldwork, maps were plotted at a 1:50,000 scale. The colour plots were then used in the field to select ground sites, plan efficient helicopter routes linking sites, and record observations. Colour photos were taken at many sites, and frequent ground stops provided an opportunity for detailed vegetation surveys.

The field sites will be used as training sites in a supervised classification procedure to map the entire area. The resulting vegetation classification will be in digital form, which can be used in a geographical information system (GIS) or plotted as colour maps at various scales.

Combined with other wildlife information, the digital vegetation classification is expected to be useful in assessing important habitat for various wildlife species. This work will also assist in determining the feasibility of mapping large areas of the central Arctic including the Slave Geological Province.

ACKNOWLEDGEMENTS

Mitch Taylor, Polar Bear Biologist, Department of Renewable Resources, was an early proponent for this grizzly bear study and was a major contributor to its study design. Mitch's concern for the well-being of all bears, whether polar, grizzly, or otherwise, was clearly evident here.

Noel Doctor from N'Dilo and Frank Martin from Rae assisted Rob with on-ground monitoring of satellite radio-collared bears. Joachim Obst, Natalie Pelletier, Grant Blondin, Jerry Enzo, Camilla Zoe-Chocolate, Richard Wayelin, Denise Bub, and Michele Tanguay were able and enthusiastic assistants for Vivian Banci on the BHP and RESCAN field work.

We thank the pilots from Air Tindi, Canadian Helicopters, Great Slave Helicopters, Remote Helicopters, and Northern Air Support for safe operations in often difficult circumstances. We are grateful to the Yellowknives Dene Band, the Dogrib Renewable Resources Committee, the Coppermine, Burnside, and Bay Chimo Hunters and Trappers Associations, and our sponsors for their continued support. Chris Caldwell illustrations reproduced with permission (Copyright by Environment Yukon).

We appreciate all the effort people have put into reducing bear encounters. We encourage anyone working or travelling on the barrens to obtain Safty in Bear Country information and training from the Department of Renewable Resources (Contact Andy McMullen, Resource Development / Conservation Education Officer at 403-920-3049 for more information).

FOOD HABITS

Spring

The food habit study conducted by Robert Gau has provided new information on seasonal diets. Bears observed or captured in the spring were eating caribou, old berries from the previous fall, and the twigs and branches from low lying shrubs. For most bears feeding on caribou, we could not determine if the caribou were killed by the bears, scavenged from wolf kills, or were caribou that died during the winter. One young female bear was seen on a fresh caribou carcass with no evidence of wolves around so we assume she had killed it herself.

Chris Caldwell

Early / Mid Summer

In early summer, caribou moved from the Lac de Gras area and the bears' diet consisted mainly of brown, hay like grasses and sedges from the previous summer, and old berries from the previous fall. As new vegetation growth appeared, the bears' diet switched to grass and sedge shoots, willow leaves, and ground squirrels. Along the Arctic coast in mid -summer, satellite telemetry data suggested that the bears' diet may have included spawning capelin. Vivian Banci reported spawning suckers and grayling were also eaten in the Lac de Gras area.

Late Summer

Observations and scat collections in August showed that berries were the primary foods eaten. Blueberry, crowberry, and cranberry dominated the diet. In one instance, a lone caribou calf was observed approximately 20 metres directly downwind of an adult female with 2 cubs of the year. The female and her cubs were aware of the calf's presence but they appeared more intent to feed on berries.

PHYSICAL CONDITION

The physical condition of captured bears was estimated by using bioelectrical impedance analysis. This technique, developed for use in humans, can accurately estimate the amount of body fat. From the 17 grizzly bears captured in May, just after they emerged from their dens, body fat values ranged from 8 to 27% (average = 16%). There was little fat remaining under the skin and most of the fat was likely internal. The bears were generally in poorer body condition during mid summer than in May and ranged from 6 to 10% body fat (average = 8%).

In the fall 6 bears were captured and appeared in good physical condition with body fat ranging from 17 to 27% (average = 22.4%). Observations of bears in October indicate the bears are entering the winter denning period in very good condition.

THE NWT GRIZZLY BEAR PROJECT

PROJECT LEADERS

Ray Case, Ph.D. Wildlife Management Biologist, Department of Renewable Resources, GNWT.
Ray has been studying the productivity of grizzly bears in the Coppermine area since 1988 and he has worked in wildlife management in the NWT since 1982. Ray is leading the field work and is a member of Robert Gau's graduate studies committee.

François Messier, Ph.D. Professor, Department of Biology, University of Saskatchewan.
François is a well known researcher in the field of large mammal population dynamics. His background includes research on moose, caribou, muskrats, polar bears and now grizzly bears. François has the lead in analysis of telemetry data, is Philip McLoughlin's supervisor, and is a member of Robert Gau's graduate studies committee.

RESEARCH PARTICIPANTS

Philip McLoughlin, M.Sc. Student, University of Saskatchewan, is analyzing movement data as part of his Masters degree.
Robert Gau, M.Sc. Student, University of Saskatchewan, is investigating grizzly bear food habits and the importance of different food sources and habitats.

Steven Matthews, Environmental Assessment Biologist, and **Cindy Squires-Taylor,** Remote Sensing Analyst, NWT Centre for Remote Sensing, Department of Renewable Resources, GNWT. Steve and Cindy are conducting habitat mapping support for the project.

Vivian Banci, Senior Wildlife Biologist, Rescan Environmental Services Ltd., is monitoring habitat use by grizzly bears in the BHP claim block north of Lac de Gras.

Andy McMullen, Conservation Education/Resource Development Officer, North Slave Region, Department of Renewable Resources, GNWT, coordinates the Safety in Bear Country Program in the study area.

Dean Cluff, Regional Biologist, North Slave Region, and **John Nishi**, Regional Biologist, Kitikmeot Region, Department of Renewable Resources, GNWT, are assisting with many aspects of the research.

THANKS TO OUR SPONSORS

BHP

Rescan

Northwest Territories Renewable Resources

Indian and Northern Affairs Canada

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Natural Sciences and Engineering Research Council of Canada

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