FOXE BASIN POLAR BEAR RESEARCH PROGRAM 1984 FIELD REPORT

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GOVERNMENT OF THE NWT

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ABSTRACT

A mark-recapture program was initiated on Southampton Island in 1984 to determine the size and discreteness of the population of polar bears resident in Management Zone C. During two months of tagging effort in the fall, 63 bears were handled. The numbers of bears seen or handled indicated that Southampton Island was a major summer retreat for polar bears. We cannot draw any conclusions about the Zone C polar bear population until the entire geographic region has been sampled.

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INTRODUCTION

Since 1977, formal requests have been made to the NWT Legislative Assembly for increases in polar bear (Ursus maritimus) quotas by Inuit living in Cape Dorset, Coral Harbour, Hall Beach, Igloolik, Lake Harbour, and Repulse Bay. These communities are located in Polar Bear Management Zone C (Fig. 1).

The degree of exchange of bears between Zone C and other zones is not known. In addition, little is known about the population size of polar bears in Zone C. As a result, no changes have been made to the existing community quotas within this zone since 1978.

The first polar bear research in Zone C was in 1973. Sixteen bears were captured and released throughout the Foxe Basin area (Manning 1973). Stirling and Kiliaan (1977) caught about 30 bears near the eastern boundary of Zone C in 1976 and 1977. During the summer of 1978, six bears were tagged on Mansel Island (Furnell 1979) and five bears were tagged at Wager Bay (Furnell 1981). No other tagging has been done. Because of the small sample number of marked animals, the long time between subsequent capture efforts, and the large area encompassed by this zone, it was not possible to estimate the population size of polar bears in this region from the tagging results.

Harington (1968) studied the denning habits of polar bears on Southampton Island from 1961 to 1964. Since then denning surveys have been conducted on Mansel Island (Kraft 1978), Southampton Island (Helmer 1975), and at Wager Bay (Ayotte 1980,

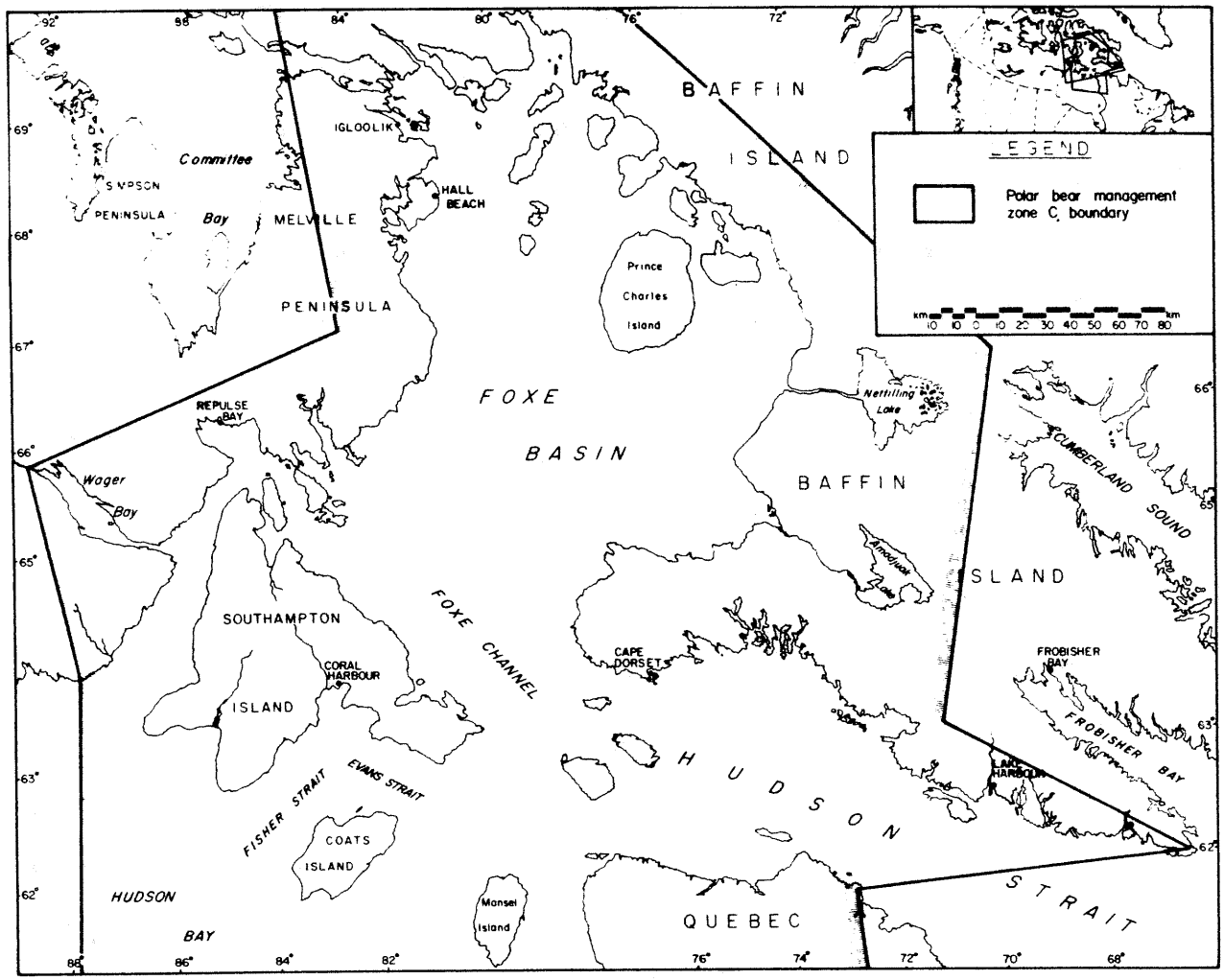

Figure 1. Locations of communities within Polar Bear Management Zone C.

Davidge 1980). Aerial surveys were flown over Wager Bay during the summers of 1976 and 1977 in order to document the importance of this area to polar bears (Donaldson and Heard 1981).

Inter-management zone movements do occur. Four bears tagged in Manitoba (Zone A1) were shot in Zone C; two along the western coast of Quebec and two on Southampton Island (Stirling et al. 1977, Canadian Wildlife Service unpubl. data). One bear caught on Mansel Island (Zone C) was later recaptured on the Labrador coast (Zone B), while a bear caught in Labrador was shot on Southampton Island (Stirling and Kiliaan 1980).

In 1984, funds were made available to initiate a multi-year study in Zone C to estimate the size and discreteness of the population of polar bears resident in this region. Prior to the initiation of this tagging program, meetings were held with the Hunters' and Trappers' Associations (HTA) of both Repulse Bay and Coral Harbour to explain the purpose of the work and our methods. At these meetings the HTAs agreed that they would make an effort not to shoot marked bears seen during their hunts. This report presents the data gathered during the first field season.

METHODS

Study Area

Polar bears were captured on both Coats and Southampton islands (Figs. 2 and 3). The topography of most of Southampton Island consists of sedge meadow lowlands interspersed with many ponds. Closer to the coast, raised beach ridges and eskers are common. The most rugged terrain on the island is found along the northeast coast. In this region 600 m granite cliffs and steep valleys are found. The topography of most of Coats Island is very similar to that of Southampton Island's lowlands, although granite cliffs rising to approximately 200 m are also found on the northeast portion of Coats Island.

Techniques

Polar bears were located from a Bell 206B helicopter and immobilized using a 1:1 ratio of ketamine hydrochloride (Ketamine) and xylazine hydrochloride (Rompun) (Schweinsburg et al. 1982a, Ramsay and Andriashek 1986). Both drugs were mixed in solution at 200 mg/ml of each (Lee et al. 1981). A sublingual or intra-muscular injection of the Rompun antagonist, yohimbine hydrochloride (Yohimbine), at a concentration of 10 mg/ml, was administered at the end of our work on each animal. Each bear was tattooed on the inside of each upper lip with a unique identifying number. A delrin tag with the same number was attached to each ear. The straight-line length and weight of each bear were measured. The weight was approximated by measuring the axillary girth with a commercial cattle weight tape

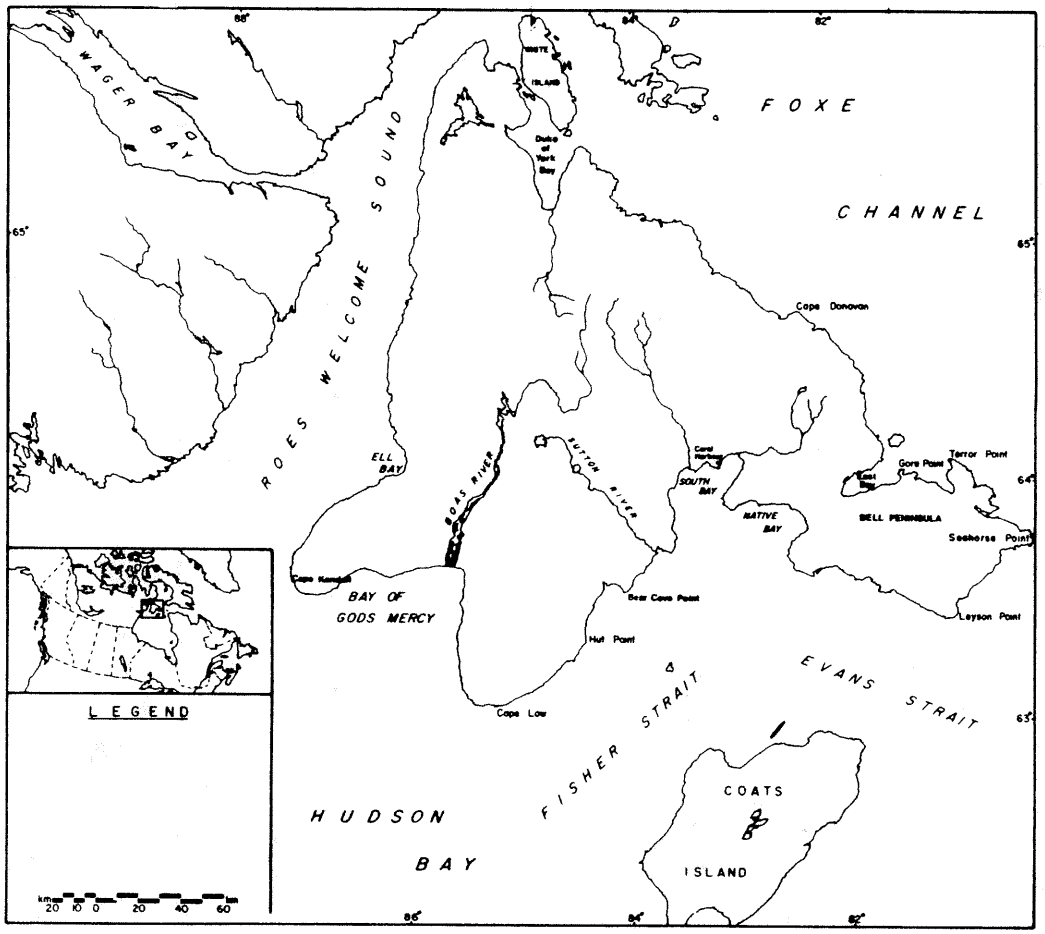

Figure 2. Location of Southampton Island study area.

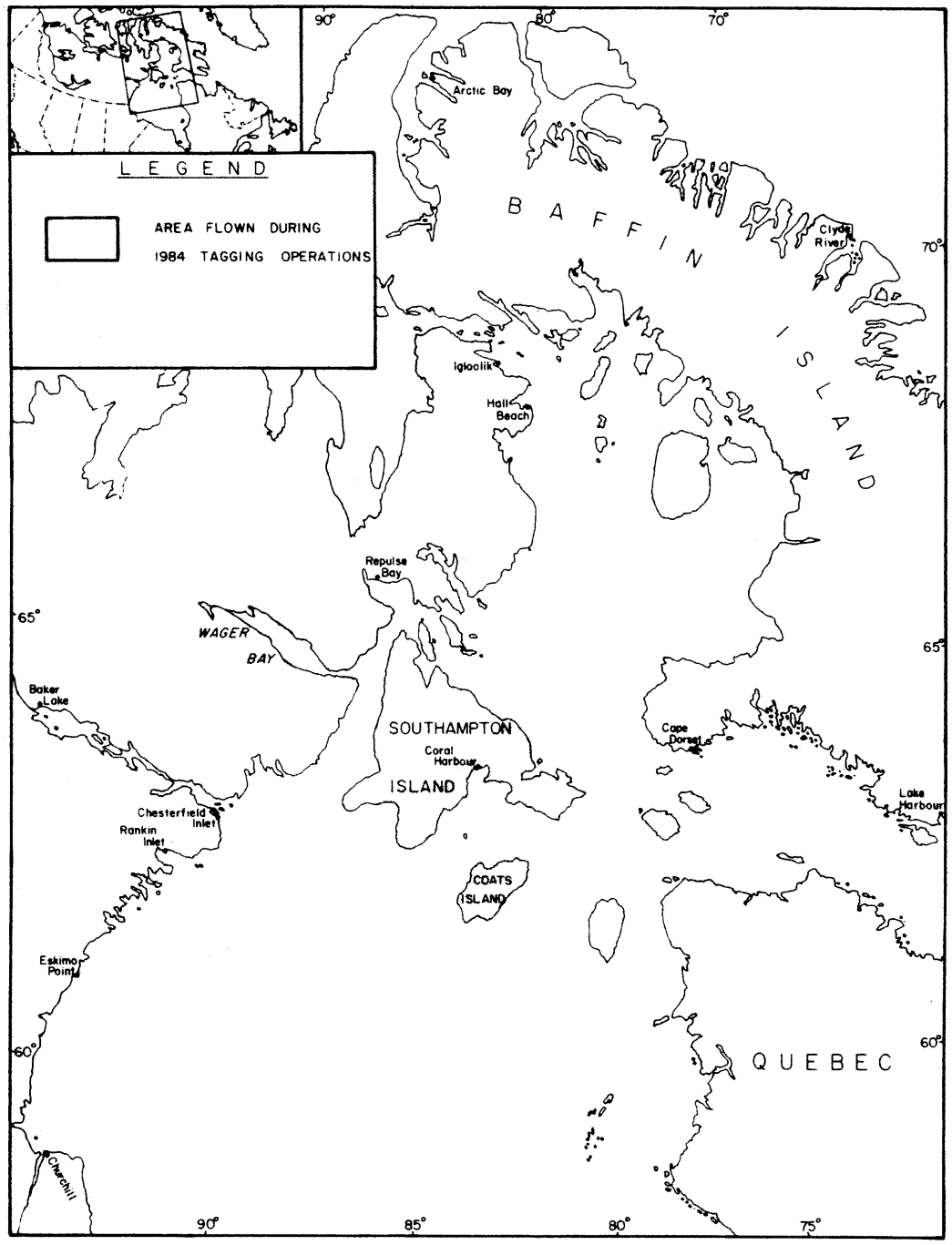

Figure 3. Areas flown during fall 1984 tagging operations on Southampton and Coats islands.

(Stirling et al. 1977). Two types of dye, "Doc Brannen" (Stone Manufacturing and Supply Co., Kansas City) and "Raidex" (Raidl, West Germany), were used to mark the back of each animal with a number, facilitating future identification during this field season.

The first premolar (PM1) was taken for later age determination using methods described by Thomas and Bandy (1973) as modified by Stirling et al. (1977). From counts of cementum annuli, each bear was aged and placed into one of the following age classes:

1) Cub-of-the-year (COY) - less than 1 year of age
2) Yearling - between 1 and 2 years of age
3) 2-year-old - between 2 and 3 years of age
4) Subadult - between 3 and 5 years of age
5) Adult - 5 years of age or older

For the purposes of this report, COYs, yearlings, and 2-year-olds were all considered cubs.

RESULTS

Work began on 13 September and by 24 September we had flown 13.8 hours between Cape Low and Leyson Point, and 11.2 hours on Coats Island. During these 25 hours of flying, we saw a total of 12 bears and captured 5 of them. An adult female and one COY died as a result of our handling (see Appendix A). The other five bears were not caught as they were in areas of open water that we felt were hazardous. We temporarily suspended our tagging operations at this time in the hope that bears would concentrate along the southern coast of Southampton Island, by early October. We felt that the bears were probably further north and moved south to those areas where the ice has traditionally formed earliest each year. Unfortunately we were unable to work on northern Southampton Island to test this hypothesis.

We resumed flying on 4 October (nine days later) and over the next five days of flying, we say 65 bears along the southern coast of Southampton Island. From 4 October to 9 November, we flew 86.3 hours and tagged 55 bears. On some days we saw up to 40 bears, but the maximum we could handle in the daylight available was eight. New sea ice had begun forming during the 3rd week of October and by 9 November, there was enough ice to allow the bears to leave the land. However, the ice was not thick enough to allow us to work safely.

Hunting season for polar bears opened on 1 October but the hunters of Coral Harbour delayed the start until 25 October.

During the first two weeks, five marked bears were shot by hunters from Coral Harbour. Of these five, only one had a visible mark. A sixth tagged bear was shot near Lake Harbour on 5 January 1985.

Apart from tagging 60 bears, we collected specimens from four others: the female and cub that died during our handling, a COY carcass found near Hut Point, and a carcass of an adult female found near Cape Donovan.

Two main areas of the southern half of Southampton Island appeared to have the highest concentration of polar bears. Of 59 bears handled on Southampton Island, 39 (66%) were caught either between Cape Low and Hut Point or between Seashore Point and Gore Point. Many of the bears that were seen but not caught were in the Seahorse Point area.

Almost half (48%) of the bears handled were immature (Fig. 4). Thirty bears were 4 years of age or less, 13 (21%) were between 5 and 9 years of age, 12 (19%) were between 10 and 14 years of age, and 8 (13%) were 15 years of age or older. A total of 11 family groups were caught, all either on Bell Peninsula or between Cape Low and Hut Point. Seven females were accompanied by COYs (three groups of twins and four groups of singles), and four were accompanied by yearlings (three groups of twins and one single).

Two females, one with a single COY, were caught at separate COY carcasses. Like the two carcasses, both females and the single COY were emaciated. Neither female was lactating. Two

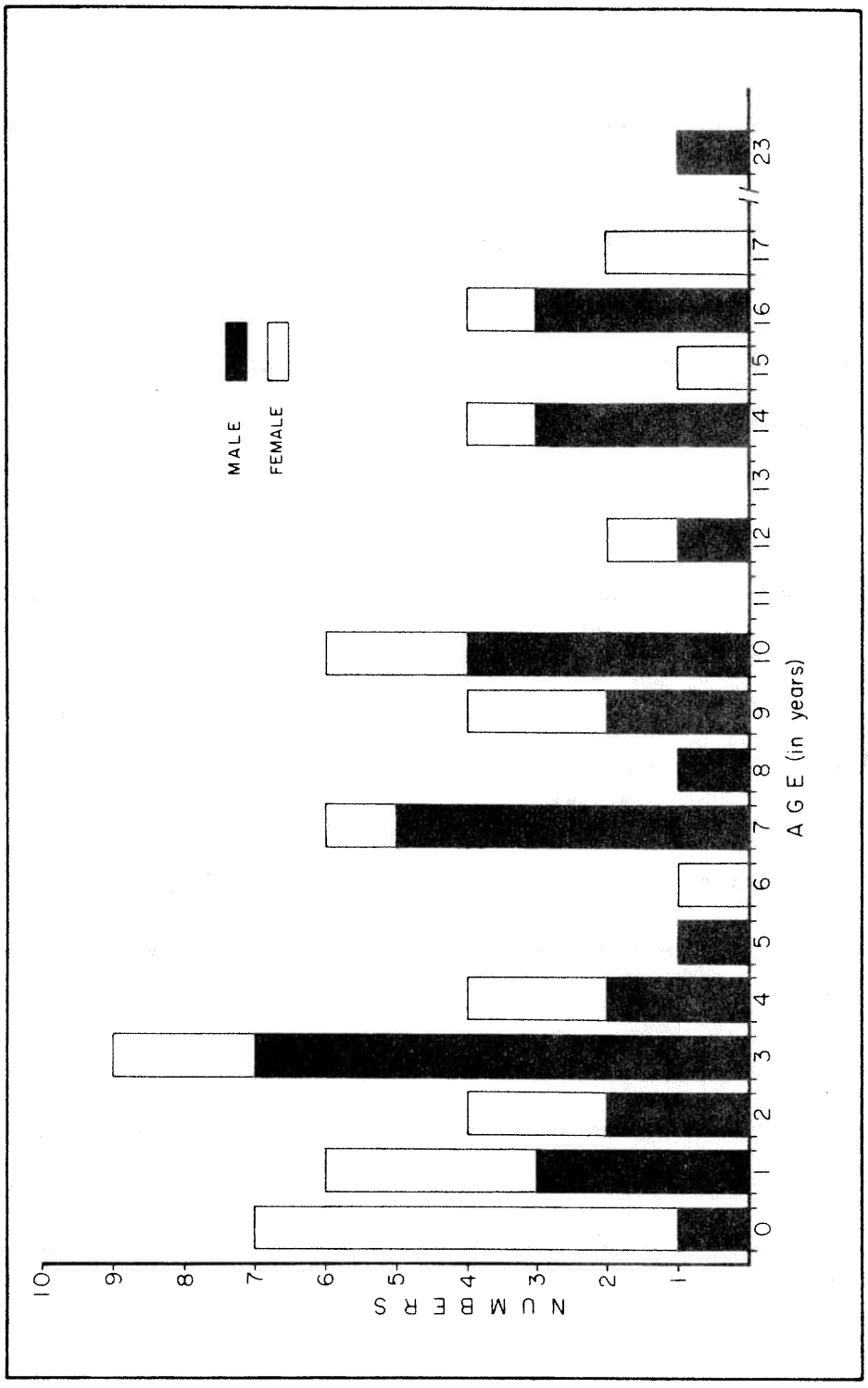

Figure 4. Numbers of polar bears handled on Southampton and Coats islands, during 1984, by age and sex.

other females, each accompanied by twin COY that weighed less than 30 kg., were caught. Both of these adult females were thin, but not emaciated. We also handled on thin, old male (23 yrs) that had recently attacked and killed an adult female. In contrast, we also tagged one of the heaviest bears ever handled in Canada. This 16 year old male weighed 803 kg (1767 lb). We also caught one bear that weighed over 500 kg (1100 lb) and 8 bears that weighed over 400 kg (880 lb).

Nine tagged bears were resighted during the capture period (Fig. 5). The time lapse between capture and resightings were 3 days or less for 8 of the 9 bears. The other bear had moved 46 km in 8 days.

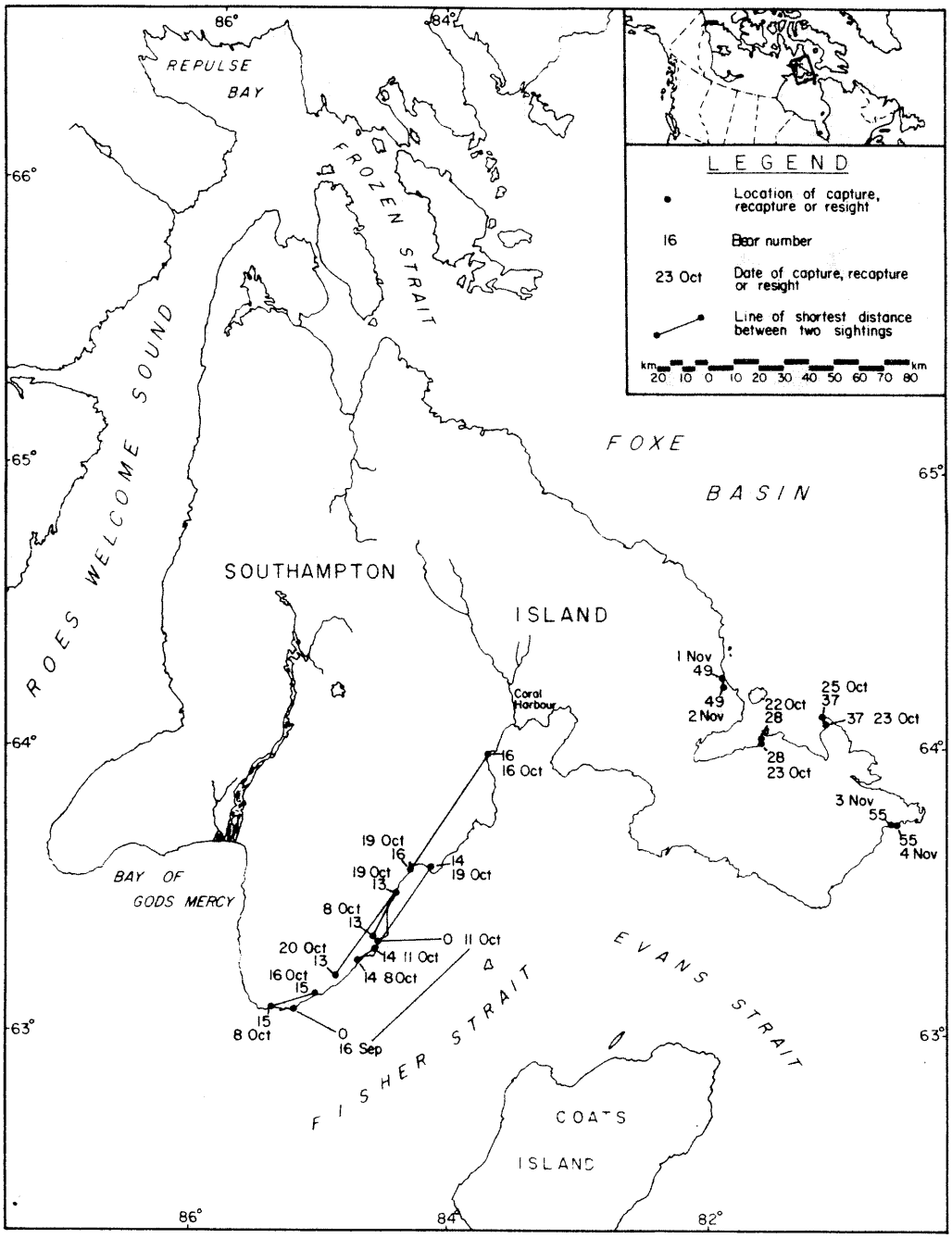

Figure 5. Movements of polar bears tagged on Southampton Island during the fall of 1984.

DISCUSSION

Distribution

Southampton Island appears to be a major summer retreat for polar bears in this region. Summer retreats have been identified in other polar bear management zones (Stirling et al. 1977, Latour 1981, Schweinsburg et al. 1981, 1982b). The number of bears using a particular summer retreat may depend upon the number of bears present, the extent of sea ice breakup, and the number of areas suitable for a retreat. For example, in western Hudson Bay, the sea ice melts completely resulting in most polar bears coming ashore along the coasts of Manitoba and Ontario (Russell 1975, Stirling et al. 1977, Latour 1981, Lunn 1985).

Other summer retreats are known in Zone C, such as Wager Bay (Donaldson and Heard 1981) and Mansel Island (Furnell 1979). Whether additional summer retreats exist in Zone C is unknown at present; however, with the coasts of the mainland and Baffin Island plus the northern islands remaining unexplored, other summer retreats may exist.

The relatively high concentrations of bears along certain regions of the Southampton Island coast may be caused by early ice formation in the fall. The first ice to form and remain was found along the southeast and southwest coasts of Southampton Island (Canada, Atmospheric Environment Service 1980-1984). Bears along these coasts would be able to return to the sea ice earliest. These two coastal regions were the same areas where the highest concentration of bears were observed. Although we

were unable to survey Southampton Island adequately, we suspected that polar bears moved to these areas from more northern coastal and inland areas. Stirling et al. (1977) and Latour (1981) noticed general northward movements and concentration of bears at Cape Churchill, Manitoba; the same region where freeze-up begins earliest.

Age and Sex Structure

After only one field season, we cannot draw any conclusions about the Zone C population of polar bears. We only covered a limited area of the island, as a result, our capture sample may not be representative of the total population. The age structure of both our capture data and the Coral Harbour kill data were similar, approximately 50% of the bears were less than 5 years of age. This similarity suggested that both the hunters and ourselves were sampling from the same population of bears. This was not surprising, as the Inuit of Coral Harbour typically hunt in the same areas that we tagged bears.

Condition of the Population

The number of females with COYs that were either thin or emaciated was unexpected. COYs typically weigh between 10 kg and 15 kg when they leave the maternity den in April or May (DeMaster and Stirling 1981). Some of the COYs we caught had either gained little weight in 6 months, or else had lost a lot of weight recently. The poor physical condition of these family groups may be related to individual hunting efficiency, especially since

most of the bears captured appeared to be in good physical condition.

The attack on the female by the old male appeared to be a case of intraspecific aggression, rather than scavenging, due to the nature of the wounds on both animals (Lunn and Stenhouse 1985). The productivity, in terms of the distribution and abundance of prey species, of this area is not known. However, the number of bears handled that were over 400 kg suggests that the marine productivity of the surrounding waters is good in some areas.

ACKNOWLEDGEMENTS

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APPENDIX A

Report of polar bear fatality

Northwest Territories Keewatin Region

September 21, 1984

REPORT OF POLAR BEAR FATALITY SOUTHAMPTON ISLAND

On the morning of September 14, 1984, Gord Stenhouse, myself and our helicopter pilot flew southeast out of Coral Harbour towards the Bell Peninsula. At approximately 10:15, an adult female with a single cub of the year (COY) were spotted along the south coast of the Bell Peninsula near Leyson Point. The area contained some small lakes and ponds, as well as raised beach ridges and eskers. We concluded that this area was safe to work on bears and therefore decided to attempt to capture the two bears. A single 10cc dart was filled with a solution containing the drugs Ketamine and Rompun. At 10:35, the adult female was hit with the dart in the left hind leg. Both she and her cub ran into a nearby pond. We immediately tried to drive her out of the water with the helicopter. When near the shore, her cub climbed on top of her hindquarters. At 10:41 the adult female's head submerged beneath the water. We landed immediately and attempted to pull her out of the water. However, her cub would not let us approach. The helicopter then drove off the cub while Gord and myself jumped into the pond to lift her head up and drag her out of the water. It was estimated that she was under water from one to one and a half minutes. Once ashore, we attempted to revive her using artificial respiration. Although we continued for one hour, we could not revive her and she was pronounced dead. We decided to leave the cub rather than shoot it since it had left the area.

As we were both wet and the weather was cold, we decided to return to Coral Harbour to change clothing rather than skin the bear out at that time. Once we returned to Coral Harbour the local HTA were notified and they recommended an individual who could help skin the bear. As well, both the Regional Office in Rankin Inlet and the head office in Yellowknife

...ment of the Northwest Territories, Rankin Inlet, N.W.T. ... Telex 034 45593

were notified. Gord Stenhouse, Tommasie Nakoolak, and the pilot returned to the bear carcass at 15:45. The COY was on the dead female at this time and could not be driven off with the helicopter or by the approach of Gord Stenhouse and Tommasie Nakoolak. Mr. Stenhouse and Mr. Nakoolak discussed the fate of this COY and decided to kill the bear since it would probably not survive alone. Gord Stenhouse shot the COY at 16:12 and both bears were skinned, the skulls collected, and the crew returned to Coral Harbour at 18:88.

Maggie Nakoolak cleaned and stretched both hides ($250.00) and they were turned over to Mark Hoppe (Wildlife Officer-Coral) with seizure tag #'s 3759 female, #3760 COY. Both skulls remain in the possession of Gord Stenhouse, Regional Biologist, Rankin Inlet.

Nick Lunn

Gord Stenhouse

c.c. M. Manchur, Rankin Inlet
K. Lloyd, Yellowknife