

Polar Bear Denning Area at Gateshead Island, Northwest Territories

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ABSTRACT. A survey during 1977 found that the Gateshead Island area, Northwest Territories, had 9 confirmed and 10 suspected polar bear dens. The importance of the area for polar bear reproduction was confirmed during a survey in 1982 when 15 dens were found, 10 of which were identified as maternity dens. The area should be protected from human intrusion.

Key words: polar bears (*Ursus maritimus*), denning, reproduction, Gateshead Island, Northwest Territories

RÉSUMÉ. Une étude effectuée en 1977 trouva que la région de l'île Gateshead, aux Territoires du Nord-Ouest, contenait neuf tanières d'ours blancs et dix autres tanières possibles. L'importance de cette région dans la reproduction des ours blancs a été confirmée lors d'une étude effectuée en 1982 signalant la découverte de quinze tanières, dont dix furent identifiées comme tanières de maternité. La région devrait être protégée contre toute intrusion humaine.

Mots clés: ours blancs (*Ursus maritimus*), tanières, reproduction, l'île Gateshead, Territoires du Nord-Ouest

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Polar bears (*Ursus maritimus*) give birth during midwinter in maternity dens dug into snowdrifts (Harington, 1968). The protection provided by the den ensures maturation of the cubs until they are sufficiently developed to follow their mothers. Since denning is necessary for polar bear reproduction, management agencies have spent considerable time searching for and then protecting maternity denning areas. This is particularly important in Canada because of the potentially disruptive industrial developments proposed within polar bear denning areas.

In Canada, important denning areas have been found along the western shore of Hudson Bay (Jonkel *et al.*, 1972), on the Simpson Peninsula, on southeast Baffin Island (Jonkel *et al.*, 1978), and on Southampton Island (Harington, 1968). However, in most places in the Canadian Arctic Archipelago, maternity den sites are scattered, probably because of the availability of widespread and abundant denning habitat (Stirling *et al.*, 1978). There have been no reports of denning areas that equal the density found on Wrangel Island (Uspenskii and Kistchinski, 1972) or Svalbard (Larsen, in press). This paper reports on an important denning area on Gateshead Island, Northwest Territories, Canada.

Gateshead Island is located at the south end of M'Clintock Channel (Fig. 1). The island covers about 260 km² and is flat with a maximum elevation of 41 m. Several smaller islands lie near Gateshead. The largest of these is Tinguayalik Island (30 km²) about 25 km to the southwest (Fig. 1).

The area is ice-covered most of the year although the ice is unconsolidated during the warmest months. The prevailing surface current is northwesterly, through M'Clintock Channel (Collin, 1958).

Helicopter tagging studies (Schweinsburg *et al.*, 1981) showed that the Gateshead Island area was a concentration area for all ages of bears, but no dens were found during the tagging operations. However, it was suspected that denning

occurred on the islands because the east coast of Victoria Island, the nearest land, is flat and unsuitable for denning. Since Inuit, particularly David Kaomayok, reported denning on Gateshead Island, a ground survey was initiated in 1977 and again in 1982 to determine the importance of the Gateshead Island area to polar bears.

Observations of bear dens were made from snowmachines (Kiliaan *et al.*, 1978) during 7-20 April 1977 and 5-14 April 1982. Four days were spent searching for dens during 1977 and eight during 1982. Incidental observations were made during travelling days on both surveys.

Dens were found by searching the land areas for mounds of excavated snow ("porches" — Harington, 1968) that were clearly visible in the flat terrain with either the naked eye or binoculars. Once a den was located, a 2-m steel rod was used to probe the cavity. Dens that were not occupied were excavated where possible and their characteristics recorded. Aspect, bear signs (tracks, urine stains, and scats), and the extent of icing inside the den, which indicated duration of use, were recorded. Since most dens were abandoned at the time of the survey, presence and age of cubs in abandoned dens were determined from tracks. A maternity den was defined as one that had evidence of cubs of any age.

During 1977, nine of 19 suspected sites were positively identified as bear dens (Fig. 1). A storm during the survey buried many of the suspected dens under deep drifts which precluded positive identification or excavation. During 1982, 15 sites were found, all confirmed as bear dens.

Only three of the dens found in 1977 were identified as maternity dens, compared to 10 in 1982 (Fig. 1). One of the 13 maternity dens contained cubs older than newborn, either yearlings or two-year-olds. Because drifting snow obliterated tracks, the number of cubs in each den, and hence productivity, could not be determined during either survey.

Ten of the dens did not contain cubs and the occupancy of

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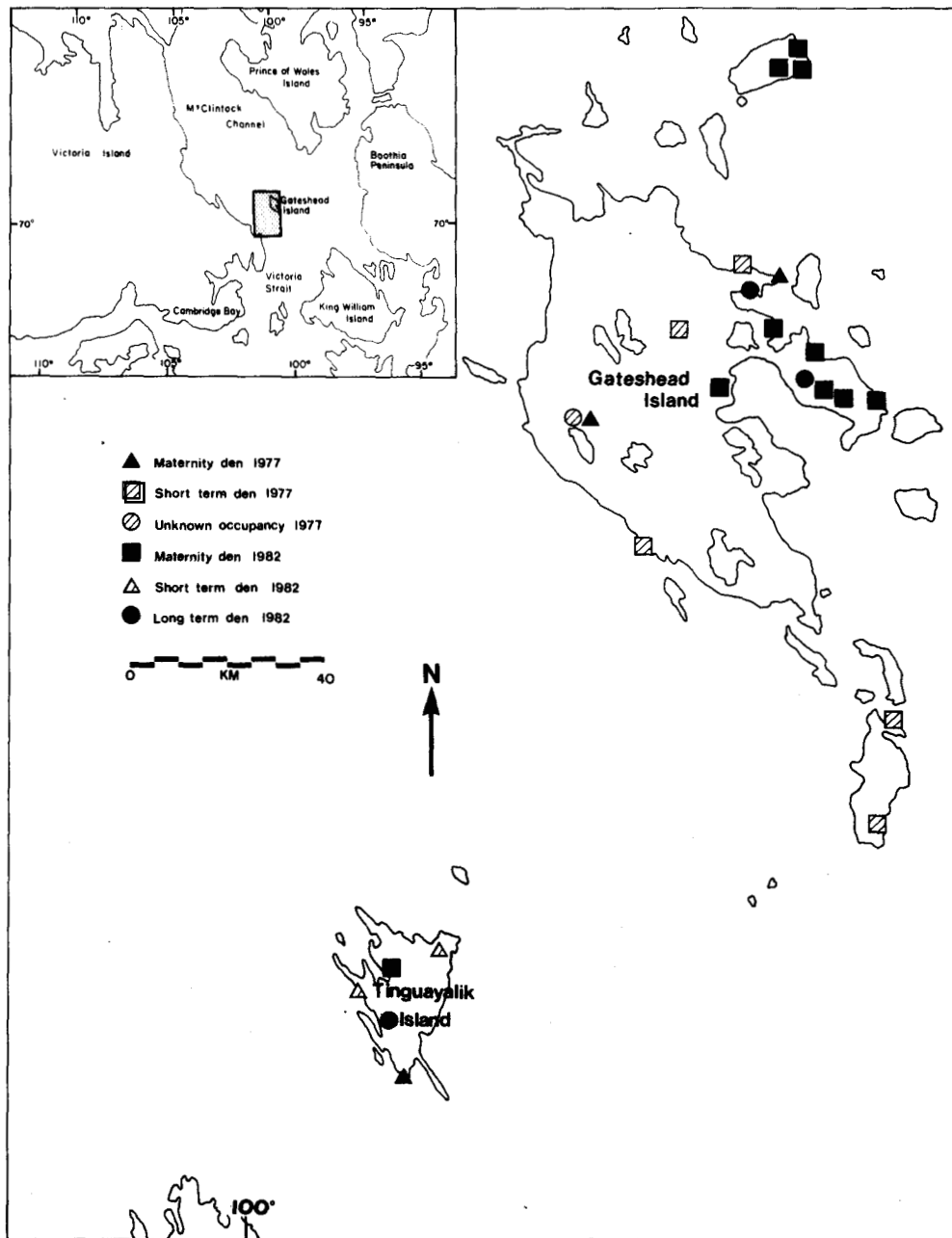


FIG. 1. Denning sites on Gateshead Island.

one den was not determined since a bear was still present within. Van de Velde (1957) and Harington (1968) reported denning of non-breeding bears of both sexes. The dens that did not have cubs were probably used by non-breeding bears although the possibility of intra-uterine and *post-partum* cub mortality in the den exists. Dens of non-breeding bears can be used for varying lengths of time (Harington, 1968). In 1977, no long-term, non-maternity dens were found but three non-maternity dens found in 1982 had extensive icing on the walls and ceilings, indicating lengthy occupancy.

In both surveys, most of the dens were located on the eastern side of Gateshead Island (Fig. 1). Compared with the rest of the island, the terrain in this area is relatively more broken and elevated providing more suitable habitat for denning polar bears. Most dens were found within 1 km of the coast.

During 1977, 17 of the proven and suspected dens had a southern exposure and two faced northwesterly, whereas in 1982, 10 dens faced northwesterly and the remaining five northeasterly. Other authors found that dens generally face south (Harington, 1968; Uspenski and Kistchinski, 1972), but the selection of den sites is probably dependent upon the amount of snow accumulated at the time of denning. In the fall of 1981 predominant southerly winds resulted in a snow build-up on north-facing slopes (David Kaomayok, pers. comm. 1982). This observation could explain the observed selection of north-facing den sites on Gateshead Island during the 1981-82 winter. Unfortunately, meteorological data are lacking for the Gateshead Island area.

Since emergence from dens occurs over a month (Uspenski and Kistchinski, 1972), many abandoned dens are undoubtedly

obliterated by storms. Therefore, we probably found only a portion of the dens that occurred in the area. Nevertheless, these two surveys indicate that Gateshead Island and the nearby satellite islands are important maternity denning areas for polar bears and should be protected from human intrusion.

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