

Cannibalism of a Yearling Polar Bear (*Ursus maritimus*) at Churchill, Canada

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ABSTRACT. An adult male polar bear (*Ursus maritimus*) was observed on 17 October 2000 consuming a yearling polar bear at Churchill, Manitoba, Canada. On 21 October 2000, a subadult male fed on the remains of the same bear carcass. Circumstantial evidence suggests that the adult male killed the yearling, although it is possible that he took the kill from another bear.

Key words: Churchill, Manitoba, western Hudson Bay, cannibalism, polar bear, *Ursus maritimus*

RÉSUMÉ. Le 17 octobre 2000, à Churchill au Manitoba (Canada), on a observé un ours polaire (*Ursus maritimus*) adulte mâle en train de manger un ours polaire d'un an. Le 21 octobre 2000, un jeune adulte mâle s'est nourri des restes de la même carcasse. Des preuves indirectes suggèrent que le mâle adulte a tué l'ours d'un an, bien qu'il soit possible qu'il ait pris la proie à un autre ours.

Mots clés: Churchill, Manitoba, ouest de la baie d'Hudson, cannibalisme, ours polaire, *Ursus maritimus*

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Cannibalism has been observed various times in polar bears (*Ursus maritimus*) (Lunn and Stenhouse, 1985; Taylor et al., 1985; Derocher and Taylor, 1994; Derocher and Wiig, 1999). We observed polar bears from 7 July to 18 November 2000 at Gordon Point (approximate coordinates: 58°45'–58°48'N and 93°38'–93°50'W), approximately 35 km east of the town of Churchill, Manitoba. The specific area under surveillance encompassed the coastline where tour operators transport tourists in large, customized tundra vehicles to view polar bears during the ice-free period from July to November. An 8 m wooden observation tower was used for most observations on bears and tundra vehicles.

On 17 October 2000 at 0900, an adult male bear (> 5 years) feeding on a bear carcass was spotted approximately 800 m north of the observation tower, 500 m south of the Hudson Bay shoreline and 20 m from a tundra vehicle trail.

Wounds and blood on the neck, the right facial area, and the right shoulder area were observed on the adult male. Aside from these wounds, the bear appeared to be in good condition and well nourished. The carcass was only partially consumed and had not been there the previous evening. Thus, we estimated that the incident had occurred between 2100 on 16 October and 0830 on 17 October. The carcass was on a lake edge. The adult male was observed lying in one spot within 5–10 m of the carcass and occasionally feeding on it. The adult male bear appeared

undisturbed by the tundra vehicles, which approached to within 5–10 m. A single adult female bear with fresh wounds on her right front leg was spotted on a small gravel island within the lake, approximately 200 m to the east of the male bear and the carcass. She was observed lying down, mostly facing the male and carcass. Female polar bears often stay with slain cubs (Taylor et al., 1985). We therefore speculated from this female's behaviour and her fresh wounds that she might have been the mother of the dead bear.

The adult male fed on the carcass for the next two days. Upon our return to the study area at 0830 on 20 October, we noticed that the carcass had been moved about 100 m across the main tundra vehicle trail. The male was still feeding on the carcass. The female was in another location, but remained within 500 m of the slain bear. She was mostly inactive. Other bears were attracted to the carcass, but did not attempt to approach closer than 400–500 m while the adult male was in the vicinity. Later in the afternoon (~1600), the male moved to a gravel spit and lay down, which allowed us to examine the carcass more closely. There were no tracks in the area to indicate a fight between two or more bears. No blood or fur was on the ground surrounding the carcass, and no other signs of a fight were visible in the immediate or greater area surrounding the carcass.

The killed bear was a male yearling with an estimated body mass of approximately 120–140 kg. We based the

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bear's age on our experience, tooth wear, and cranial fissures. The pelage was removed from the shoulders down, but was still attached to the carcass. Front paws, front legs, and head were not fed upon. The hind legs up to the pelvic girdle were cleaned to the bone, leaving only the paws intact. No fat deposits were detected on the carcass. The latissimi dorsi had been consumed, leaving only the intercostal muscles. All internal organs seemed to be present. Approximately 60–70% of the carcass had been consumed. The head showed multiple deep scars on the frontal region, above the left eye, and across the base of the nasal bone.

The carcass was again moved, by approximately 500 m, on 21 October. The adult male was seen in the area but did not feed on the remains. The female, at this point, was not seen in the area. A subadult male (< 5 years) in good physical condition spent most of this day feeding upon the remains. By the end of the day, only the head and the paws had not been consumed, and the carcass was reduced to a skeleton and the pelage. The head was collected and examined further.

The yearling had no ear tags or tattoos. The vertebral column was fractured between the 1st and 2nd cervical vertebrae. A canine puncture wound was found on the right facial area between the parietal and squamous bones. The diameter of the puncture hole was 28 mm. The right zygomatic arch was fractured at the junction of the jugal and squamosal bones. The cranial damage observed on this polar bear yearling was consistent with damage caused by an adult bear (Lunn and Stenhouse, 1985). The cranial damage suggests that another bear killed the yearling. The adult male's fresh wounds and the fact that he was feeding on the carcass suggest that he killed the yearling, although it is also possible that he took the kill from another bear. The female could have played a role in the killing as well, but we believe this to be unlikely.

DISCUSSION

Taylor et al. (1985) suggested that cannibalism is not rare, basing this conclusion on the observed levels of *Trichinella* larvae in polar bear populations across the circumpolar basin. Cannibalism by male polar bears for nutritional benefit was suggested by Lunn and Stenhouse (1985), Taylor et al. (1985), and Derocher and Wiig (1999). The frequency of cannibalism for the western Hudson Bay population is unknown. Considering the intensity of ongoing population studies in this area, and the paucity of observation of cannibalism, it seems likely this is not a common occurrence. Claws of cubs have been found in polar bear scats (Russell, 1975), and direct observations of bears feeding on conspecifics have been reported (R. Brook, pers. comm. 2000).

The cannibalistic adult male fed on the carcass for two days and consumed 60–70% of the yearling cub. The

subadult male fed on the carcass for about one day. Therefore, one possible explanation for this case of cannibalism may be nutritional benefits gained (Elgar and Crespi, 1992). However, neither male appeared to be malnourished. Derocher and Wiig (1999) reported an incident in which an adult male in normal physical condition pursued a female with one yearling, then killed and consumed the yearling. Both this male and the one that we observed fed on the carcass for one day, moved the carcass, and continued to feed on the carcass for at least another day.

Once on land, polar bears segregate by sex and age class along the western shore of Hudson Bay. Adult males remain on the coast, family groups move farther inland, pregnant females travel toward the denning areas in Wapusk National Park, and subadults can be found throughout the coastal and inland areas (Derocher and Stirling, 1990a, b). The area where the incident occurred is a major fall congregating area for polar bears that also provides bear viewing opportunities for tourists. The number of family groups among bears frequenting this area has been increasing since the beginning of tour operations approximately 20 years ago (P. Ratson, pers. comm. 2000). During this study, we observed nine different family groups: four females with twin cubs-of-the-year, two females with single yearlings, two females with twin yearlings, and one female with a two-year-old. Local high densities of bears may increase interactions between adult male bears and females with their offspring, as well as the possible risk of predation (Davis and Harestad, 1996). Stirling (1974) observed adult females with cubs that, when threatened, were not subordinate to bears of any other age or sex classes. He concluded that cannibalism does not happen more than on an incidental level.

Illegal baiting and feeding of polar bears have been reported from this area (Watts and Ratson, 1989; Herrero and Herrero, 1997). Such activities can habituate bears to human presence and result in food conditioning: bears learn to associate human areas with a food source. Polar bears that become food-conditioned and habituated to human artefacts (e.g., gray water, tundra vehicles) may exhibit different behavioural traits (Herrero and Herrero, 1997). Food conditioning has been known to increase aggressive behaviour in bears (Herrero and Herrero, 1997) and may increase lethal risks to bears and people (Gilbert, 1989). Whether habituation, food conditioning, or increased interactions are the reason for family groups to stay in this area is presently uncertain, and historical data that would allow inferences are unavailable.

Lunn and Stenhouse (1985) stated that cannibalism among polar bears occurs under natural conditions, but its frequency and its importance are unknown. Various reasons for the occurrence of cannibalism have been suggested, including gain of nutritional benefits or population control. To understand the complex dynamics of interacting factors regarding cannibalism in polar bears, we need more direct observational data from other investigators.

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