

Observations of Polar Bear Predatory Behaviour toward Caribou

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ABSTRACT. A polar bear (*Ursus maritimus*) was observed unsuccessfully stalking and chasing caribou (*Rangifer tarandus*) in western Hudson Bay. Before chasing the caribou, the polar bear appeared to make use of wind direction and vegetation cover in order to move close to them. While there have been very few documented cases of the two species interacting, our observations indicate that polar bears will stalk and chase caribou.

Key words: polar bear, *Ursus maritimus*, caribou, *Rangifer tarandus*, predation, Hudson Bay, Manitoba, Wapusk National Park

RÉSUMÉ. On a observé un ours polaire (*Ursus maritimus*) traquer et poursuivre sans succès le caribou (*Rangifer tarandus*) dans l'ouest de la baie d'Hudson. Avant de se lancer dans sa poursuite, l'ours polaire semblait s'aider de la direction du vent et du couvert végétal pour s'approcher des animaux. Bien que très peu de cas d'interaction des deux espèces aient été documentés, nos observations révèlent qu'en réalité les ours polaires traquent et poursuivent le caribou.

Mots clés: ours polaire, *Ursus maritimus*, caribou, *Rangifer tarandus*, prédation, baie d'Hudson, Manitoba, parc national Wapusk

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INTRODUCTION

Polar bears (*Ursus maritimus*) feed primarily on the ringed seal (*Phoca hispida*) and to a lesser degree on other marine mammals, including bearded seal (*Erignathus barbatus*), beluga whale (*Delphinapterus leucas*), narwhal (*Monodon monoceros*), and walrus (*Odobenus rosmarus*) (Stirling and Archibald, 1977; Lowry et al., 1987; Smith, 1980; Smith and Sjare, 1990; Rugh and Shelden, 1993; Stirling and Øritsland, 1995). However, some populations of bears are forced onto land during the summer months by the complete or partial melting of the sea ice, which limits their access to seals (Stirling et al., 1999). Polar bears are well adapted to fast through these onshore periods (Watts and Hansen, 1987), but they do feed opportunistically during this time. While polar bears are known to use terrestrial food sources (Russell, 1975; Abraham et al., 1977; Stempniewicz, 1993; Donaldson et al., 1995; Smith and Hill, 1996), urea/creatinine ratios (Ramsay et al., 1991), stable-carbon isotope analyses (Ramsay and Hobson, 1991; Hobson and Stirling, 1997), and behavioural observations (Knudsen, 1978; Lunn and Stirling, 1985) suggest that terrestrial environments form only a minor component of their diet.

Grizzly bears (*U. arctos*), close relatives of polar bears (Kurtén, 1964) with similar physiology and morphology, are known to be effective predators of caribou (*Rangifer tarandus*) (Boertje et al., 1988; Young and McCabe, 1997) and occasionally muskox (*Ovibos moschatus*) (Gunn and Miller, 1982; Case and Stevenson, 1991; Clarkson and

Liepens, 1993). However, there are few records of polar bear predation on large terrestrial mammals. Derocher et al. (2000) documented several observations of polar bears preying on Svalbard reindeer (*R. t. platyrhynchus*). Ovsyanikov (1996) noted a muskox that may have been killed by a polar bear. F. Miller (pers. comm. 2000) observed a female polar bear with cubs chasing muskox and caribou on Bathurst Island. An Inuk from Resolute told I. Stirling of a muskox killed on the sea ice by a polar bear, and an Inuk from Tuktoyaktuk told him of a polar bear unsuccessfully chasing reindeer on the Tuktoyaktuk Peninsula along the southern Beaufort Sea (I. Stirling, pers. comm. 2000). This paper describes observations made of a polar bear stalking and chasing caribou in Wapusk National Park, Manitoba, 3 km inland from the Hudson Bay coast. Our observations were made opportunistically, during a vegetation sampling project, from a tower ~3.5 m above ground level.

DESCRIPTION OF OBSERVATION

At 20:15 local daylight time on 16 July 1998, a subadult polar bear of unknown sex was observed approaching a group of approximately 120 grazing caribou. The wind was blowing from the north-northwest at approximately 20 km/h, and the bear was 500 m downwind. The bear generally kept its head down, below shoulder level, stopping every five seconds to face the caribou as it approached. The bear moved slowly along the inside edge of

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the nearby lake within the 2 m tall willow fringe. The bear briefly moved its head partially out of the willow fringe directly facing the caribou and then remained in the willows while slowly stalking the herd over the next 20 minutes. During this time, the caribou exhibited no obvious signs of nervousness and continued feeding as the bear approached. Many of the caribou were facing away from the bear.

The bear was within 20 m of the caribou herd when it broke out of the willows and ran toward the nearest individuals. The herd immediately began running away. Most of the caribou fanned out in an easterly direction, but two individuals moved south. The bear then turned toward and chased the two caribou that had separated from the herd, but did not get closer than 10 m. After only about 20 seconds of running, the bear slowed to a walk but continued moving toward the herd, which by then had dispersed somewhat. The herd had also slowed to a walk, but continued to move away from the bear. At this time the two lone caribou rejoined the herd. The group continued walking northeast and resumed grazing.

After ~45 seconds of walking toward the herd, the bear charged toward the herd again from ~40 m away. The bear continued chasing the herd for ~90 seconds and then stopped. The caribou herd continued moving slowly north and began grazing shortly after the chase ended. The bear remained within 500 m of the herd for 45 additional minutes, but was not observed stalking or chasing again that day.

On 17 July 1998, a subadult bear was observed moving slowly toward a group of caribou. It is unknown if this was the same bear observed on the previous day. Again, the wind was blowing from the north-northwest. The bear emerged from the willows on the edge of a small lake and moved west toward a small group of caribou that was moving slowly along an open beach ridge. On this occasion, the caribou stopped grazing when the bear was 100 m away and began running to the south almost immediately. The bear did not run after the caribou.

On four additional occasions during the summers of 1998 and 1999, we observed polar bears within 100 m of caribou, but no other chasing behaviour was observed. A polar bear was observed feeding on a caribou calf carcass on 15 July 1998, but the cause of the calf's death was unknown. Polar bears are adept scavengers, so it is impossible to tell if the bear killed the calf or if it was already dead when found.

DISCUSSION

The behaviour we observed was similar to the behaviour of polar bears hunting seals (Stirling, 1974) and willow ptarmigan (Miller and Woolridge, 1983). Therefore, we interpret the behaviour as a predation attempt.

A bear would realize a nutritional benefit from a successful caribou hunt during the summer months. However,

there is a significant energetic cost involved in chasing caribou. Caribou are generally highly vigilant animals, and they are well adapted to travelling at high speeds to outrun predators such as wolves (*Canis lupus*). Thus, the likelihood of a polar bear capturing a healthy, adult caribou is presumably low. Furthermore, polar bears are susceptible to hyperthermia during almost any bout of exercise, especially during warm weather (Best, 1982).

Lunn and Stirling (1985) predicted that because of the high cost of running, a bear chasing snow geese would not receive a net gain in energy unless it caught a goose within 12 seconds. Similarly, chasing caribou would likely produce a benefit only over short distances. Lions (*Felis leo*), which are also inefficient runners, are ambush predators that normally chase prey only for short distances (Schaller, 1974; Taylor, 1976; Stirling, 1988). Both vegetation cover and wind direction greatly influence the success of lions in capturing ungulates (Schaller, 1974). In our first observation, the polar bear appeared to be using the tall willows and wind direction to move close to the caribou. In the second observation, without the benefit of wind direction and cover, the bear was not able to get as close to the caribou before being detected and avoided.

The attempts that we observed could have been unsuccessful because there were no unhealthy individuals or young in the groups chased. It is also possible that the young bear in this case was simply testing potential prey. Alternatively, subadults may need to further supplement their diet during the summer months to reduce weight loss, as they tend to be less successful at hunting and protecting their kills on the sea ice (Derocher and Stirling, 1990). Finally, while the current observations strongly suggest predatory behaviour, we cannot rule out other possible explanations, such as play. However, play is an integral part of developing predatory skills (Fagen, 1976; Martin and Caro, 1985), so predatory and play behaviours are not necessarily mutually exclusive.

Polar bears return annually to Wapusk National Park during the ice-free period of Hudson Bay (usually from July to November). They use the coastal area, which provides a cooling breeze off Hudson Bay and a potential source of beached marine mammals (Derocher and Stirling, 1990). During the calving and post-calving period (May to September), the Cape Churchill caribou population (approximately 4000 individuals) remains in this coastal area for insect avoidance and to access graminoid and shrub vegetation (Campbell, 1996). As a result, polar bears and caribou are together at high densities in this area for up to three months each year, a situation in which interactions between them could occur frequently.

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