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Wolf (*Canis lupus*) Predation of a Polar Bear (*Ursus maritimus*) Cub on the Sea Ice off Northwestern Banks Island, Northwest Territories, Canada

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ABSTRACT. We describe the apparent predation of a polar bear (*Ursus maritimus*) cub by wolves (*Canis lupus*) on the sea ice just off the northwest coast of Banks Island, Northwest Territories, Canada. On 20 April 2004, while following the tracks of a female bear and two cubs-of-the-year in the snow during a helicopter survey, we noted that the bear tracks had been joined by several sets of wolf tracks. After following both sets of tracks for about 1 km, we observed a disturbed area in the snow with numerous overlying tracks. Upon landing and searching the site, we found the remains of a polar bear cub that the wolves had successfully separated from its mother and killed. This is only the second documented observation ever made of a polar bear killed by wolves.

Key words: *Ursus maritimus*, *Canis lupus*, interspecific predation, Northwest Territories, Canada

RÉSUMÉ. Nous décrivons la prédation apparente d'un ourson polaire (*Ursus maritimus*) par des loups (*Canis lupus*) sur la glace marine, tout près de la côte nord-ouest de l'île Banks, dans les Territoires du Nord-Ouest, au Canada. Le 20 avril 2004, après avoir suivi les traces d'une ourse et de deux oursons de l'année dans la neige lors d'une inspection en hélicoptère, nous avons remarqué que les traces d'ours avaient été rejointes par plusieurs séries de traces de loups. Après avoir suivi les deux séries de traces sur environ un kilomètre, nous avons remarqué que la neige avait été dérangée et que les traces se recoupaient beaucoup. Nous avons atterri, fouillé l'emplacement et trouvé les restes d'un ourson polaire que les loups avaient réussi à séparer de sa mère pour le tuer. Il ne s'agit là que de la deuxième observation à n'avoir jamais été recensée à propos de loups ayant tué un ours polaire.

Mots clés : *Ursus maritimus*, *Canis lupus*, prédation interspécifique, Territoires du Nord-Ouest, Canada

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Predation of black bears (*U. americanus*), brown bears (*U. arctos*), and polar bears (*U. maritimus*) by wolves (*Canis lupus*) has been previously documented (Rogers and Mech, 1981; Ramsay and Stirling, 1984; Paquet and Carbyn, 1986). These interactions have led to the death of adult grizzly and black bears, as well as young of all three species (Palomares and Caro, 1999). In this paper we describe the apparent predation of a polar bear cub by arctic wolves on the sea ice off the northwest coast of Banks Island, Northwest Territories, Canada: the second documented case of wolves killing a polar bear cub.

On 20 April 2004, as part of a population study on polar bears in the Beaufort Sea, we conducted a helicopter survey just off the northwest coast of Banks Island (74.4° N, 123.8° E) in the Northwest Territories. We located a set of tracks (estimated to be one day old) of an adult female polar bear with two cubs of the year traveling east on the landfast ice about 400 m offshore. We followed the tracks for 1 km, at which point they were joined by several sets of wolf tracks from the south (from the direction of Banks Island), and all the tracks continued eastward together on the ice. After about 1 km, the tracks became localized and overlapping. The clutter of tracks oriented in many directions obscured the exact sequence of subsequent events. However, it appeared that the wolves had caught up with the bears at this location, separated one cub from the mother, and killed it. The carcass of the cub was found covered in snow in an area where a number of tracks radiated in and out. Both the head and right forelimb were missing, as well as most of the rib cage. The body cavity was empty, and the entrails had presumably been consumed. We continued to follow the female and the remaining cub, which headed out onto the sea ice farther offshore. We abandoned the tracks after about 2 km, however, as we were low on fuel. While heading inland to a fuel cache, we encountered a pack of 11 wolves on a caribou kill 2–3 km due south of the polar bear kill site. Given the close proximity of the polar bear and caribou kills, we suspected that the same pack of wolves was responsible for both.

A necropsy of the cub revealed a large, canine-sized puncture wound to the left abdomen just behind the rib cage and smaller bite marks on the right hamstring. The partially consumed cub weighed 2.7 kg. Further examination of the carcass revealed that the cub had only minimal amounts of subcutaneous fat.

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The behavioural and ecological factors affecting interspecific killing among mammalian carnivores remain poorly understood (Palomares and Caro, 1999). Several hypothetical reasons for interspecific predation have been proposed, including the removal of a direct competitor for resources, the removal of a potential source of mortality for an individual or its offspring, and the potential acquisition of an energy source (Eaton, 1979; Polis et al., 1989; Palomares and Caro, 1999). Given the ecology of wolves and polar bears, the latter hypothesis is the most probable. Wolves are opportunistic predators and are known to kill and consume a variety of other carnivores, including mustelids, felids, and other canids (Paquet, 1991; Boyd and Neale, 1992; White et al., 2002). While interactions between wolves and black bears and wolves and grizzly bears appear to be relatively common (see Palomares and Caro, 1999), wolf encounters with polar bears have rarely been documented. Ramsay and Stirling (1984) documented the killing of a polar bear cub by wolves in northern Manitoba. The adult female, like the one we observed, was accompanied by two cubs, and presumably one was separated from its mother, leaving her unable to protect it. In contrast to our observation, however, the entire cub was consumed. Derocher and Stirling (1996) mention three additional instances implicating wolves in cub mortality in western Hudson Bay, but do not document the circumstances. Our observation of cub predation, on the sea ice and in a separate geographic location, suggests that predation of polar bear cubs may occur wherever wolves and polar bears are sympatric.

Polar bear cubs in the Beaufort Sea typically weigh 10–12 kg and have little fat when they emerge from the maternity den (Amstrup, 2003), so they would represent only a minimal energy return for a pack of wolves. The risk of injury from the mother, however, would be considerable. Given the risk and the modest energy return, it seems unusual that the wolves did not consume the entire cub. Nonetheless, it is clear that wolves are capable of usurping and killing polar bear cubs.

Although wolves have been observed hunting offshore on sea ice and foraging on seal kills (Stirling and Archibald, 1977; Andriashek et al., 1985), as well as investigating polar bear den sites (Ramsay and Stirling, 1984), encounters between wolves and polar bears are likely infrequent. Overall, it appears to date that predation of polar bear cubs by wolves is the result of opportunistic encounters and is likely not a significant source of mortality for polar bear young. Observations of neonatal polar bear mortality are rare, and very little is known about the factors directly affecting cub survival (Derocher and Stirling, 1996). While difficult to quantify, direct sources of mortality such as infanticide and intraspecific predation also affect survival of individual polar bears. Understanding the significance of various mortality sources at the population level requires the recording of individual events such as the one described here.

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