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Muskox Bull Killed by a Barren-Ground Grizzly Bear, Thelon Game Sanctuary, N.W.T.

ANNE GUNN[1] and FRANK L. MILLER[2]

ABSTRACT. The carcass of an adult muskox bull (*Ovibos moschatus*) killed by a barren-ground grizzly bear (*Ursus arctos richardsoni*) was found in the Thelon Game Sanctuary. It is suggested that adult muskox bulls along the Thelon River system have become prey for at least some grizzly bears that have learned to ambush them in dense vegetation.

Key words: muskoxen (*Ovibos moschatus*); grizzly bear (*Ursus arctos richardsoni*); predation

RÉSUMÉ. La carcasse d'un boeuf musqué adulte (*Ovibos moschatus*) tué par un ours brun "de la toundra" (*Ursus arctos richardsoni*) a été trouvé dans la réserve zoologique Thelon. Il est suggéré que certains ours bruns font leur proie de boeufs musqués adultes le long de la rivière Thelon en les embusquant dans des terrains à végétation dense.

Mots clés: boeuf musque (*ovibos moschatus*); ours brun "de la toundra" (*Ursus arctos richardsoni*); prédateurs

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INTRODUCTION

Muskoxen and barren-ground grizzly bears are relatively common along the banks of the Thelon River in the Thelon Game Sanctuary. In June 1981 we were flying a helicopter search of the Thelon River area during a study of water crossings used by barren-ground caribou (*Rangifer tarandus groenlandicus*). In the early afternoon of 23 June we were flying eastward when we spotted a grizzly bear standing on its hind legs among willow (*Salix* spp.) bushes in a clearing surrounded by black spruce (*Picea mariana*) on the north shore. As there were two gulls (*Larus* spp.) in attendance, indicating the possibility of a kill, we circled closer and could then see a dead muskox on the ground near the bear. The grizzly bear alternately reared up and dropped onto all fours as we came close and when the helicopter was about 100-150 m away, the bear galloped away.

We landed near the carcass of an adult muskox bull lying on its left side. The carcass was intact except for some exposed flesh and head wounds. The nose was torn away and the nasal turbinal bones were crushed and the cartilage torn. The right ear was split and torn away at the base where there was a penetrating wound into the skull. Traumatized areas were hemorrhagic, indicating that the wounds were inflicted on a living animal. The hide and musculature had been removed in the lumbar and thoracic areas, exposing the vertebrae and the right scapula. The internal organs were still intact and warm to touch. Subsequent histological examination of the dental annuli of a first incisor indicated that the muskox bull was 9-10 years old.

The greening sedges (*Carex* spp.) immediately around the carcass were trampled and we backtracked along a disturbed path to a heavily trampled area of 5 m in diameter about 15 m away. The willow bushes peripheral to that trampled area were flecked with blood clots and clumps of blood-stained muskox wool.

The ground cover was beaten down and the ground surface disturbed in many places with footprints pushed 10-15 cm or more into wet soil. We suggest that the grizzly bear surprised the muskox bull while it was grazing on sedge (indicated by rumen contents). The bear most likely grabbed the bull above the muzzle. In response, the bull must have braced its front legs and tried to dislodge the bear, suggested by front-foot hoof prints driven deep (15 cm) into the churned-up ground. Either the bull collapsed or the bear swung him off balance. At that point, the bear probably transferred its bite to just below the back of the bull's horn boss. After making the kill, the bear dragged the carcass to where we found it, and had begun feeding when we interrupted. We returned about 48 hours later and found a light grey wolf (*Canis lupus*) and a grizzly bear whose colouring suggested it was not the bear that had made the kill. The carcass was dismembered and had settled into the wet ground. Most of the muscle masses and the internal organs had been consumed and the limb bones were scattered around the hide. The rumen had been pulled from the carcass but had not been fed on.

The destruction of the facial area was also the mode of attack of a barren-ground grizzly bear killing a caribou cow whose carcass we found on the Beverly caribou herd's calving ground, northeast of the Thelon Game Sanctuary, in June 1981. Griffel and Basile (1981) described puncture wounds in the frontal or jugal bones of 109 of 332 bear-killed sheep (*Ovis aires*) in Idaho. The facial area is richly innervated, and Mystervd (1975) in Griffel and Basile (1981) suggested that unconsciousness and hypoxic asphyxiation would follow severe and sudden injury to that area. Also, the seizing of the muskox bull's muzzle would reduce chances of the muskox using its horns to gore the bear and

[1]Wildlife Service, Department of Renewable Resources, Government of the Northwest Territories, Yellowknife, N.W.T., Canada X1A 2L9
[2]Canadian Wildlife Service, Western and Northern Region, #1000, 9942 - 108 Street, Edmonton, Alberta, Canada T5K 2J5

increase the bear's chances of throwing the muskox off its feet.

Solitary muskox bulls usually seem particularly alert, and their speed of response, size, strength, thick coat and horns must combine to make them a formidable quarry even for a grizzly bear. The location of this kill, at the edge of a small clearing where ambush by rushing from nearby cover was possible, suggests that the kill was opportunistic. The muskox bull was probably so intent on foraging on the new growth of sedges 10-20 cm high that he was not aware of his attacker until it was too late. The femoral marrow fat was pinkish-white and firm, suggesting good nutritional status, and we did not observe any obvious infirmities that would have made the bull particularly vulnerable.

Tener (1965) summarized predation on muskoxen and noted that Pederson's report of a possible kill by a polar bear (*Ursus maritimus*) may be the only reported instance of bear predation. He further commented that predation by barren-ground grizzly bears is rare, since up to 1965 only Hornby (1934, in Tener, 1965) had observed bears feeding on muskoxen on the banks of the Thelon River. In the late 1970s A.M. Hall (pers. comm.) observed grizzly bears feeding on muskox carcasses along the banks of the Thelon River (see photograph of grizzly bear sleeping near partially-eaten bull muskox in Hall, 1980). In 1978, on the banks of the Thelon, Hall observed three muskox carcasses on which grizzlies had fed, but he could not determine whether the bears had killed or were scavenging the muskoxen. Hall (pers. comm.) believes that grizzly bear predation on muskoxen is high, especially on solitary bulls along the Thelon River, probably because the dense willow stands favour surprise ambushes. In June and July 1981, we saw only solitary bull muskoxen feeding in the willow stands, which leads us to the same supposition. Within 40 km of the carcass described in this paper, during the same flight, we observed five other grizzlies on the north shore. Pegau (1973) briefly described an apparent kill of a 2- or 3-year-old muskox by a bear but the carcass was almost completely consumed, so scavenging could not be ruled out. The carcass was found on the Seward Peninsula, Alaska, where Grauvogel (1979) speculated that the slow rate of increase of the transplanted muskox herd might be partially attributed to grizzly bear predation on muskox calves, though no evidence was cited. Our account of an apparently healthy, prime adult muskox bull that was killed by a grizzly bear is the first documentation of such an event.

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