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Expanded abstract:

The characteristics of muskox late winter habitat in the Arctic National Wildlife Refuge, Alaska

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The objective of this study was to determine if snow or vegetation characteristics where muskoxen fed differed significantly from unused areas. Twenty foraging sites were sampled in March and April in 1989 and twenty-four were sampled in March and April of 1990. At each foraging site, snow depth was measured in feeding microsites (craters), in the feeding zone (the zone in which craters occurred), in paired adjacent zones (a zone surounding the feeding zone), and in paired non-adjacent zones (a zone 100 m from the adjacent zone). Also, snow hardness was measured in each zone using a Ramsonde penetrometer. Cover of vegetation was measured when the sites were relocated during the following summers. Habitat types were classified according to the dominant plant taxa and growth forms, site moisture, and physionomic factors.

Mean snow depth in feeding microsites (depth range = 0.1 to 46.4 cm) was shallower than in feeding zones (P=0.0001). Mean depth was also shallower in feeding zones than in either paired adjacent zones (P=0.001) or paired non-adjacent zones (P=0.001). Mean snow hardness was less in feeding microsites (hardness range = 9 to 12.5 kg) than in feeding zones (P= 0.0051). Hardness was less in feeding zones than in either paired adjacent zones (P= 0.0019) or paired non-adjacent zones (P= 0.034).

Total vegetative cover (the sum of all forage classes) was greater in feeding zones than either paired adjacent (P=0.0041) or paired non-adjacent zones (P=0.0001), as was sedge cover (P=0.0092, P=0.0469) and shrub cover (P=0.0152, P=0.0053). Cover of standing dead plants/litter was also greater in feeding zones (P=0.045, P=0.031).

Ninety-one percent of the feeding sites sampled were on or within 100 m of some type of topographic relief that concentrated the snow redistributing effects of the wind. Seventy-one percent of those were on bluffs within 100 m of a creek or river; twelve percent were on bluffs along the edge of a bay. Moist sedge tundra and tussock tundra were the most abundant habitat types and were used in greater proportion than their availability. There was very little use of riparian shrub communities, presumably because of the deep snows that accumulate there in late winter. There was moderate use of riparian grass forb gravel bars and *Dryas* terraces. Muskoxen avoided barren ground, wet sedge tundra, and *Dryas* ridges.

Although absolute abundance of the vegetation types used is high, their relative abundance is severely restricted by snow cover. In iate winter, muskoxen feed on vegetated bluffs that are windblown and therefore have shallow snow cover. On the coastal plain, these areas appear to be distributed in narrow bands along creeks, rivers, and the coastline. Management plans should include protection of these areas and insure their accessibility to muskoxen if oil development and exploration occurs.

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