



species factsheet

| species introduction |

Common name: Muskoxen

Oomingmak (Inuit), Moskusokse (Danish/Norwegian), Bœuf musqué (French), Moschusochse (German), Myskoxe (Swedish), Buey almizclado (Spanish).

Scientific name: *Ovibos moschatus*

Muskoxen are compact and stocky, with a prominent hump over the shoulders, short neck, a large, low-slung head and long, coarse dark brown hair, which extends down past the knees. They resemble bison superficially, although they are much smaller. Both sexes have cream-colored horns with black tips that drop down along the side of the head, and then curve up to form sharp hooks. In males (bulls), the horns grow together at the centre of the head in a boss, which is between 15 and 20cm thick at the top of the skull. The boss is an effective head protection during butting contests among males. Muskoxen begin to grow horns as calves, and horns first become visible as small knobs. Most horn growth occurs during the first four years of life. Horns grow outward from the base and continue to grow throughout life with a declining rate. Females (cows) grow horns, but lack the extra thickness of a horn boss at the base of the horns. Female horns are often more slender, and a patch of white wool can be seen separating the horns at the base. The tail is short (8-10cm) and is entirely covered with, and hidden by the fur. Muskoxen are sexually dimorphic in body size and horn shape, males being larger and heavier than females, and having a thick horn boss.



The taxonomy at subspecies level is unclear. There is some evidence, especially based on morphology and distribution, that there are two subspecies of muskoxen: *O. moschatus moschatus* and *O. moschatus wardi*. Some analyses do not support this division, but no conclusive information is available yet (Tener, 1965; Groves, 1997; Rowell, 1990; Wilson & Mittermeier, 2011). Formerly a third subspecies was described, *O. moschatus niphoeus*, but is not commonly recognized anymore.

Barren ground muskoxen, *O. m. moschatus*, are native to mainland Canada, and possibly Banks and Victoria Island, and Alaska, but the Alaskan population went extinct in the late 1800's, mainly due to hunting. They are generally larger and darker than *O. m. wardi*.

White-faced muskoxen, *O. m. wardi*, are native to Greenland and the Canadian Arctic archipelago and have been introduced to a number of locations. They are smaller and tend to be lighter in colour than *O. m. moschatus*. Another, less distinctive trait is the colour of the head, which is more whitish in *O. m. wardi*. The two subspecies can interbreed and produce viable offspring (Tener 1965).

| status in the wild |

Muskoxen are listed as “Least Concern” on the IUCN Red List of Threatened Species. The species has a wide distribution, large population and with a rate of decline that does not qualify for it to be in a threatened category (Gunn & Forchhammer 2008). Muskoxen populations have fluctuated often in size in the past couple of centuries, and declined so drastically at the end of the 1800s because of overhunting that Canada declared muskoxen a protected species. In Greenland muskoxen live mostly within protected areas and are therefore also protected.

| species reproduction |

Muskoxen live in herds of seasonally varying size. The herds are most commonly of mixed sexes, although single-sex herds do occur. Isolated individuals, most commonly males, can also be found in the wild. Herd composition is rather fluid, with individuals joining and leaving frequently, and herds can merge on occasion, most often in winter. Individuals have a strong dominance hierarchy within the herd. Males are normally dominant over females, and there is generally one dominant male. The hierarchy is maintained by frequent low intensity aggressive interactions, limited often to agonistic displays, vocalizations, and brief chases with only occasional charges and head butts. Gland-rubbing (rubbing of the preorbital gland against a foreleg, see below) is a general aggressive signal used all year round, by all individuals during all types of agonistic encounters, including those with predators. It is considered by some to be the most distinctive of muskox behaviour patterns. Muskoxen, though mostly slow and calm, can appear quite ‘temperamental’, charging other muskoxen apparently at a whim. Winter herds are normally larger than summer herds, possibly as a defence against predators and the elements, as well as a consequence of reduced resource availability.

Females in the wild normally breed for the first time when about three to four years old, even though calving as two year-olds is not uncommon. Most females at this age have not yet reached full size, which may affect the condition of the calf. In captivity it is therefore advisable to wait until the female is older.

Males are normally at least five years old before they are in condition to challenge the dominant male successfully and thus reproduce. Large, healthy, three year old males can mate and keep a harem of about four to five cows, but they are in their prime from the ages of five to seven years.

The rut occurs from about mid-August to mid-October. Calving takes place between April and June (Gray 1987, 1990). Gestation lasts 8 months (255 days) on average. Females commonly produce only one calf a year, although twins do occur. In Greenland, females in the western population produce calves every year, whereas females in the north-eastern

population only once every two years. Population differences in calving frequency in general may be due to differences in resource availability, and therefore nutritional status of females.

Behaviour of cows immediately prior to calving can vary greatly. Some cows show no signs until contractions begin. Some become restless, pacing 24-48 hours before delivery. The cow might also start growling as cows do when calling their calves. Cows can be aggressive towards calves that aren't their own. A cow in labour assumes a squatting stance, usually a little deeper than that seen during urination. Often she can be seen straining in this position, more frequently as labour progresses. The cow will often change repeatedly between standing and lying on her side, and may show signs of confusion or discomfort. During delivery the front feet of the calf should be presented first, quickly followed by the head and the rest of the calf. Cows may run away immediately after the calf is born if space allows, and then return to it shortly after.

| species habitat |

Muskoxen live mostly in open, cold regions with low precipitation, from high polar desert to subarctic boreal forests. Their typical habitat is tundra-like, characterised by long, very cold winters, with snow and wind, and short summers with limited snowmelt and vegetation growth. During winter muskoxen prefer areas with shallow or disproportionately distributed snow cover. During summer, muskoxen live in wet areas, such as river valleys, lakeshores and seepage meadows. They move to higher elevations either in the winter to avoid deep snow, or during July and August to avoid harassment from the abundant insects (Lent 1988, Nellemann 1998).

Herds usually do not remain in one place for more than a day during the summer, but may feed in a favourable spot for several days during the winter. Movements between winter and summer ranges are generally not more than 80km. Daily movements are usually less than 10km. Home ranges for muskoxen in Alaska have been reported to be as large as 223km² in summer and 27-70km² in winter. Other animal species that share habitat with populations of muskoxen and are relevant for their ecology include grizzly bear (*Ursus arctos horribilis*), arctic wolf (*Canis lupus arctos*), reindeer (caribou, *Rangifer tarandus*) and polar bear (*Ursus maritimus*).

| species food |

Wild muskoxen feed predominantly on graminoids (*Carex* sp., *Eriophorum* sp. and *Poa* sp.) during the summer. In spring or early summer, when nitrogen content is high, they may prefer *Eriophorum* sp. Some populations prefer browsing on leaves of Arctic shrubs, especially willow (*Salix* sp.), to grazing. Woody species (*Salix* sp., *Betula* sp., *Ledum* sp. and *Empetrum* sp.) are exploited in all seasons, even though preferences may differ among populations (Lent 1988).

In winter, muskoxen can dig through snow using their front hooves, thus gaining access to graminoids, especially *Carex* sp., and also more fibrous, larger plants like willow and birch if they are available. Muskoxen general health seems to benefit from feeding on fibrous, woody vegetation. Muskoxen seem to be more selective in feeding than reindeer, but even so their diet varies widely between the different habitats. The balance of grasses and shrub leaves is variable across their distribution range, varying between boreal and Arctic populations, and between coastal and mainland populations (Lent 1988).

Water intake is through open water sources like rivers and lakes in summer, whereas during winter most of the water is obtained by eating snow.

When feeding, muskoxen have been observed displacing each other from feeding sites, one individual approaching a conspecific from behind and taking over the patch, often a feeding crater dug in snow (Gray 1987, 1990). No obvious communication took place, but this might be because the observer was not close enough. Muskoxen in zoos have been observed to sometimes give a slight rumble, only audible at close range, upon displacing others. Muskoxen show a preference for grazing on exposed, steep cliff-edge habitats, which are relatively snow free in winter, making feeding easier. These areas may also host seabird colonies in summer, giving highly fertilized vegetation (Lent 1988).

| threats |

n/a

| conservation |

Wild muskoxen can be found in Greenland and Canada, and populations have been reintroduced to Alaska and Russia and introduced to Norway. The Alaskan population was wiped out in the late 19th or early 20th century, but muskoxen have since been reintroduced, mainly from Greenlandic populations. The United States Fish and Wildlife introduced muskox onto the Nunivak Island in 1935 as a means for sustenance living. In Greenland the muskoxen are native to the north and northeast. Muskoxen were taken from NE Greenland and relocated on the west coast of Greenland at Kangerlussuaq (Søndre Strømfjord) in the 1960's. This population has since grown and provided animals for new introductions of muskoxen to several locations in West Greenland (2009-10-20 <http://www.natur.gl>). The Russian populations of the Taimyr Peninsula and Wrangel Island originate from reintroductions in the early 1970s, using animals from Banks Island (Canada) and from Nunivak Island (Alaska). After an initial decline, the Russian populations have now stabilized (Gordeeva et al. 2009).

| find out more |

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Webpages:

- http://animaldiversity.ummz.umich.edu/site/accounts/information/Ovibos_moschatus.html
(University of Michigan, Museum of Zoology entry on muskox).
- <http://www.natur.gl/>
(Greenland Institute of Natural Resources)
- <http://www.lhnet.org/musk-ox/>
(Large Herbivore Network, part of European Centre for Nature Conservation)
- http://www.iata.org/whatwedo/cargo/live_animals/Pages/index.aspx
(The International Air Transportation Association's Live Animal Regulations)
- http://en.wikipedia.org/wiki/Ovibos_moschatus#cite_note-ellis-6
(Wikipedia article on muskox)
- http://www.mnh.si.edu/mna/image_info.cfm?species_id=240
(The Smithsonian Institution's North American Mammals page on muskox)
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(The IUCN Red List entry for muskox)

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