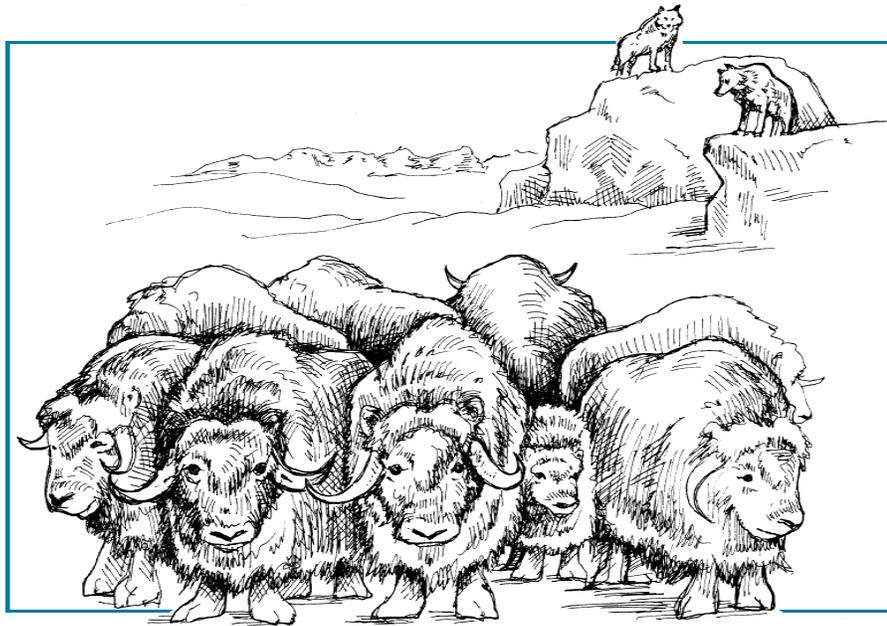


# Muskox Maneuvers

## 2 EXTENSIONS



### Section 4 TUNDRA ACTIVITIES

**Grade Level:** 4 - 8

**State Standards:** 5.E.1, 8.E.1.,8.E. 2

**NGSS:** 3-LS2-1, MS-LS1-4., MS-LS2-2  
MS-LS2-4.

**Subjects:** Science, physical  
education

**Skills:** Observing, cooperating,  
analyzing, evaluating

**Duration:** 20 - 45 minutes

**Group Size:** At least 15

**Setting:** Indoors or Outdoors

**Vocabulary:** Adaptation, defense,  
extirpate, herbivore, predator,  
prey, reintroduction

### Objective:

1. Students will describe adaptive behavior of prey and predators.
2. Students will describe how predators limit wildlife populations.

### Teaching Strategy:

Students simulate adult and calf muskoxen and wolves to examine predator - prey relationships.

### Materials:

Rag flags or survey tape of 2 colors for approximately half the class; objects such as Popsicle sticks, poker chips, or pieces of paper to represent food eaten by muskoxen; pictures of muskoxen and wolves.

### Background:

See *INSIGHTS Section 4, Ecosystems. Also Muskox Natural History (below).*

### Muskox Natural History

Muskoxen, or Umingmak (oo-ming-muck), are **herbivores** that live in tundra areas of Alaska, Canada, and Greenland. A full grown muskox male weighs between 600 and 800 pounds (272-565 kilograms), and an adult female weighs 350 to 500 pounds (159-227 kilograms).

Calves weigh about 19 pounds (8.6 kilograms) when born and reach 235 pounds (107 kilograms) at the end of one year. Adult muskoxen grow to 5 feet (1.5 meters) tall and are covered with long, shaggy hair. Muskoxen eat grasses, sedges, and woody plants.

Muskoxen live in small herds of 20 to 30 animals. Both parents and the herd defend the young by making a circle around the calves, or by standing in a line between calves and **predators**. They may lower their heads and butt wolves with their horns. They also lash out with their hooves. A muskox snorts and grunts.

Their **defense** strategy is quite effective against wolves, but it is not effective against human predators. When muskoxen gather into a defensive circle they are easy **prey** for hunters with rifles.



Muskoxen were overhunted and became locally extinct (**extirpated**) in Alaska during the 1850s. The muskox herd in Alaska today is the result of a **reintroduction** effort. Muskoxen were captured in east Greenland and moved to the Fairbanks area.

Offspring from that herd have been relocated to Nunivak Island, Nelson Island, the Seward Peninsula, and the Arctic National Wildlife Refuge. Muskox **habitat** remained relatively the same throughout their absence, so the herds have grown.

## Procedure:

*NOTE: This is a very active game which requires adult supervision and clear instruction.*

1. Review the history and behavior of muskox in Alaska. Define the vocabulary terms.
2. Establish the boundaries of the playing area and scatter “food” (for example Popsicle sticks, poker chips, paper) over the area.
3. Divide the class into 3 groups: adult muskoxen, calves, and wolves. The group representing the adult muskox should be the largest.
4. Wolves and calves wear “flags” (flagging tape or cloth strips loosely tucked into their pockets or belt loops).
5. When play starts, muskoxen spread out over the playing field to quietly gather food. The wolves are out of sight. As the wolves attack the muskoxen the head cow gives the signal to move into defense positions.

6. Each group plays a specific role described below:

**Adult Muskoxen:** The adults, together, choose a head cow to look out for predators. When the head cow sees a predator, she will give a signal decided upon with the rest of the muskox. At the signal, all the adults circle round the calves to protect them from the wolves. The adults stand facing out toward the wolves and use their upper bodies to block the approach of the wolves.

The adults do not move their feet. They can, however, defend the calves with their hands by grabbing the flag from a wolf that is attacking the muskox (*no pushing or*

*tackling*). If an adult succeeds in grabbing the flag, the wolf “dies” and moves to the sidelines until the end of the round. Taking the flag represents injuries muskoxen inflict using their horns and hooves.

**Calves:** Calves stand behind the adults with their hands on adults’ waists. Because the calves depend on the adults, they cannot move around or make the adult move. Calves wear flags.

**Wolves:** Wolves try to sneak up on the muskoxen as they graze, so that they can “kill” a calf by grabbing its flag. Wolves arrange signals in order to work as a team. They try to move undetected close to the muskoxen before “attacking.” If a wolf “kills” a calf, stop the play long enough for the body to be moved to the sidelines. Wolves also wear flags. Wolves howl and bark.

6. There are various ways the game can end:

- The muskox might kill all the wolves.
- The wolves might kill all the calves.
- The wolves might not be successful and would give up the hunt.
- The wolves might kill a couple of calves and drag them away to eat them. The hunt then ends, and muskoxen go back to grazing.

7. In discussion afterward, ask students what kind of **adaptation** the muskoxen used to protect their young, and what was the wolf’s most successful hunting behavior. Ask students what the outcome would be if the wolves killed calves at every hunt. What do students think would happen to the wolves if they never killed a muskox calf? Does an unsuccessful hunt “cost” the wolf anything? (*loss of energy and potential injuries*)

## Evaluation:

1. Students name a tundra prey species and its predator. Students describe adaptations: What kind of protection does the prey have or use? What does the predator do to catch the prey?

2. Describe an imaginary or unnamed tundra “prey” to the class, including its predator defense mechanisms. Students state the type of predatory technique an animal would need to capture the described “prey.” Students list possible real-life predators.



**Credit:**

Adapted from “Muskox Maneuvers,” *Project WILD*, Western Regional Environmental Education Council, 1992.

<[www.adfg.alaska.gov](http://www.adfg.alaska.gov)>

“Muskox natural history” <[www.muskoxfarm.org](http://www.muskoxfarm.org)> (Alaska’s Muskox Project)

**Curriculum Connections:**

(See appendix for full citations)

**Teacher Resources:**

(See appendix)

**Books:**

*A is for Arctic* (Lynch)

*Moose, Caribou and Musk Ox*  
(Alaska Geographic Society)

*Arctic Animals* (Kalman)

**Websites:**

Muskox fact sheet in *Alaska Wildlife Notebook Series* online

