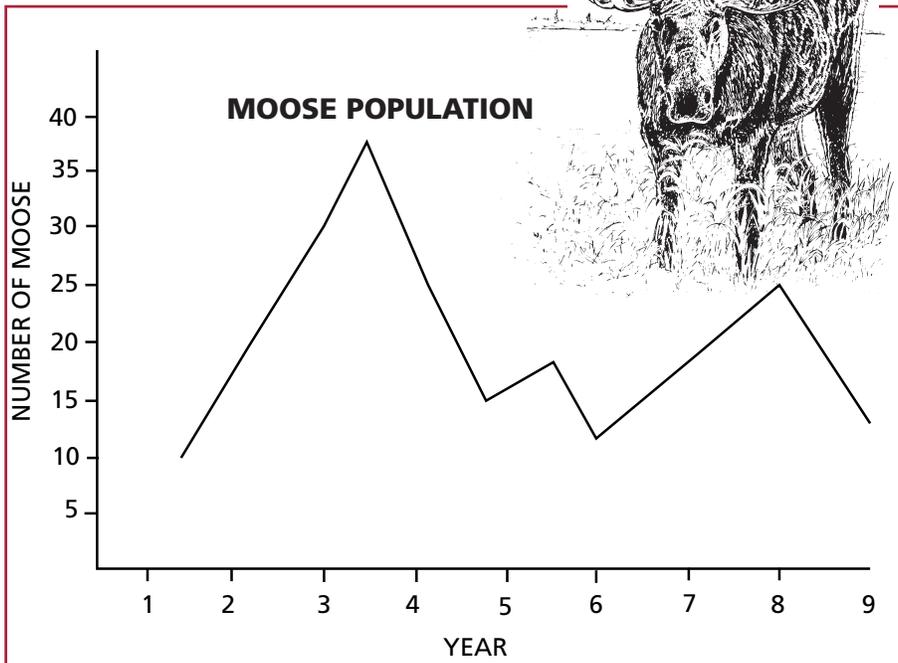


Oh Moose!

3 EXTENSIONS



Section 2 ECOLOGY ACTIVITIES

Grade level: 4 - 12

State Standard: M A-3,
M A-4, M A-6, S A-14

Subjects: Science, math,
social studies, physical
education

Skills: Applying, comparing,
generalizing, graphing,
observing

Duration: 45-60 minutes

Group Size: 15 or more

Setting: Indoors/ outdoors
(large area)

Vocabulary: Ecosystem,
habitat, herbivore, limiting
factors, population, predator

Objectives:

1. Students will identify at least three things in an ecosystem necessary for an animal to survive.
2. Students will define “limiting factors,” and identify which parts of an ecosystem can limit the growth of a population.
3. Students will describe how and why a population changes as its ecosystem changes.

Teaching Strategy:

Students participate in a game which shows how populations change in relation to the supply of food, water, and shelter.

NOTE: This activity is simplified to cover the basic concepts of habitat and limiting factors. For older students, please refer to the Extensions on page 17.

Complementary Activities:

“Create a Classroom Compost Box” in this section. “Investigating Mammals” in Section 3. Also “Create and Destroy” and “Spinning a Yarn about Ecosystems” in Section 4.

Materials:

Large area for running or walking; flip chart or chalkboard; writing materials.

Background:

See **INSIGHTS Section 2, Ecosystems – Community Connections.**

Procedure:

1. Ask students what animals need to survive? Review that all animals need **habitat** (*food, water, shelter, and space in which to live*). If animals do not have these necessities, they will die. Tell students that this activity involves finding these essentials for moose.
2. Separate the class so that 1/4 of the class becomes “moose” and 3/4 become the “habitat” components. Mark two lines parallel to each other and 10 to 20 yards apart. The moose stand behind one line. All habitat students stand behind the other line.
3. Each moose needs to find three habitat essentials: food, water, shelter. *In this game, assume that moose have adequate space to live (represented by the 10 to 20 yard space between the moose and habitat).*



- FOOD: When a moose is looking for food, it holds its hands (*hooves*) over its stomach.
- WATER: When a moose is looking for water, it holds its hands over its mouth.
- SHELTER: When a moose is looking for shelter, it holds its hands over its head.

4. At the beginning of each round of the game, a moose can decide what to look for. Once each moose has chosen what to look for, it cannot change until the beginning of the next round. This is very important for the activity to be successful.

5. Each player in the habitat group randomly chooses to be one of the essentials – food, water, or shelter – at the beginning of each round. Once chosen, the habitat essential cannot be changed until the next round. These students use the same hand gestures as the moose to indicate their identity. *If all the habitat players decide to be water one round, they could represent a flood year in that ecosystem.*

NOTE: For younger students, there may be a problem with changing roles during a round. You could hand out color-coded tokens to represent food, water, and shelter. Students choose the color corresponding to their habitat essential at the beginning of each round and return it to the supply at the end.

6. At the beginning of a round, all the students line up on their lines with their backs facing the players on the opposite line.

7. The teacher or leader asks all the players to make the appropriate hand gestures for food, shelter or water.

8. Count “One, Two, Three,” and all the students turn around to see the other group. Moose continue to hold their hand gestures and walk to a player at the other line displaying the same habitat hand gesture. They escort the habitat essential person (food/water/shelter) back to the moose line.

- *Successful moose survive and are able to reproduce. If a moose does not obtain its needed essential, it “dies” and turns into a habitat component for the next round.*

- *If more than one moose picks the same habitat element, the one arriving first is the survivor.*
- *If habitat components are not used by the moose, they stay at their line for the next round, when they can choose to represent a different habitat component.*

9. Have one student keep track of the number of moose at the beginning of each round of play. Play the game for 8-15 rounds, keeping track of the numbers of moose.

10. At the end of the game, ask the players to tell what they observed happening to the moose population during the game.

- *They should note that the moose population increased for several rounds, while the herd found plenty of food/water/shelter.*
- *After a few rounds, however, the larger herd would not find enough to satisfy its needs. The moose herd would decrease due to lack of water, food, or shelter. The causes of the moose population decline are called **limiting factors**.*

11. Individually or as a group, students graph the numbers of moose as if each round was a year. The graph will show the ups and downs of the moose population as the supply of food/water/shelter changed. *It is important to realize that a healthy habitat means a healthy wildlife population.*

12. In class discussion, ask what animals need to survive. How does the supply of each habitat component affect the population of moose? Does a population always stay the same? Or is there some other pattern to describe what happens over time? How does the idea of “balance” in nature apply to the habitat and population of an organism? Is there actually a constant balance in an ecosystem or is there another way to describe what actually happens?

Evaluation:

1. Students give three examples of factors that limit the size of a particular population and describe what is meant by the term “limiting factor.”



2. Students graph the changes in population numbers over time.

3. Students define a balanced population or “the balance of nature.”

EXTENSIONS:

A. **Play the game with predators.** As the game progresses, introduce one predator such as a wolf, bear, or human who has to hop or skip (*for safety*). A predator can “catch” (*tag*) its moose prey with two hands as the moose runs toward the food/ water/ shelter.

Once the moose is tagged, the predator takes the moose off the playing field, to a designated area to eat, cache, or butcher the animal. The “dead” moose then become an additional predator and both predators return to the game.

As with the moose, if a predator does not obtain food, it dies and becomes a habitat component. Have the student recorder keep track of the number of predators as well as the number of moose. Later, this information can be added to the graphs.

With older students, study concepts of predator/prey relations as they effect population, in depth. Have students investigate and discuss the complexities of predator management in Alaska. Allow time for research, opinion writing, and possible debate. For assistance with such resource, contact your local Fish and Game office or the Division of Wildlife Conservation’s Wildlife Education Program.

B. **Discuss reproductive capacity (with older students).** In the above activity all moose are treated as females capable of only one offspring. Contact your local Fish and Game office for more information on moose reproduction. Have older students redesign the activity taking reproduction into account with some moose as male, others as female. Identify years where reproductive rates are high or low to illustrate the impacts of reproductivity on population.

C. **Discuss and graph local population data.** Population records may be available for certain

species in your area. Contact your local ADF&G office to request this data for use in the activity. Discuss past trends and changes in your local population.

D. **Describe limiting factors for other species.** Students describe some limiting factors of other species including humans. What habitat components are affected by flood, fire, volcanic eruption, pollution, human development, and human recreational activity? How do hunting/trapping/viewing affect wildlife populations?

Credits:

Adapted from “Oh, Deer!” Project WILD Activity Guide. Western Regional Environmental Education Council, 1992.

Curriculum Connections:

(See appendix for full citations)

Books:

Deneki (Berry)

Disappearing Lake: Nature’s Magic in Denali National Park (Miller)

Moose for Kids (Fair)

Our Endangered Planet: Life on Land (Hoff)

Out Among Wolves (Murray) (Essay “The Importance of Predators” by David Rains Wallace and “Thinking Like a Mountain” by Aldo Leopold)

Wolves, Bears, and Their Prey in Alaska by the Committee on management of Wolf and Bear Populations in Alaska.

Media:

Into the Forest, Krill, Onto the Desert, Predator (Nature’s Food Chain Games) (Ampersand Press)

The Wolf Kit. Contact the Division of Wildlife Conservation/Wildlife Education for loan information at (907) 267-2168.

Teacher Resources:

(See appendix)



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3. Students define a balanced population or “the balance of nature.”

EXTENSIONS:

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