Oh Moose Survival Game

NGSS Standards

K-LS1-1 Use observations to describe patterns of what plants and animals (including humans) need to survive.

MS-LS2-1 Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

Crosscutting Concepts

Cause and Effect Events have causes, sometimes simple, sometimes multifaceted. Deciphering causal relationships, and the mechanisms by which they are mediated, is a major activity of science and engineering.

Related Resources

Pair With Stake A Claim; Habitat Models

Overview

Animals need food, water, and shelter to survive.

Objectives

- Students will be able to name three habitat necessities for animal survival: food, water, and shelter.
- Students will understand that there will be fewer animals when there are fewer habitat resources.
- Students (grade 4-6) will understand the concept of carrying capacity.

Materials

☐ Whiteboard or Large Sheet of Paper
☐ Dry Erase or Colored Markers

Background

This fun activity is meant to introduce students to the concept that animals need certain habitat resources, specifically food, water, and shelter. When those resources decline, the animal population will decline as well. The game pairs well with more focused learning about habitats through activities like "Stake A Claim" and "Habitat Models."

Preparation

Clear a large area in the classroom, move to the gym/multi-purpose room, or head outside to the playground.

Notes

Introducing the Lesson

Ask students to think about what they need to survive. Brainstorm a list that includes water, shelter, and food. Explain that all animals require some sort of food, water, and shelter to survive.

Activity

1. Divide students into two groups and line them up along opposite edges of the playing area. One group will represent resources (the three elements of habitat); the other will start as moose.
2. Have the class make up a sign for food (i.e. rubbing your belly), for water (i.e. sticking your tongue way out), and for shelter (i.e. using your arms to make a roof overhead).
3. When you say, "Oh Moose," students in the resource group will individually show one of the three signs indicating that they are food, water, or shelter. Students in the moose group will simultaneously each show one of those three signs, indicating what they are in need of that round.
4. A "moose" student who shows the sign for food must run (or walk, shuffle, skip, etc.) to the other side and gently tag a "resource" showing the sign for food before that resource is tagged by another moose. Resources that are tagged support a moose population that can raise healthy calves. They become moose and join the moose side. Moose that cannot find the resource they need perish, are recycled through the ecosystem and become new resources and join the resource side.
5. As the game progresses, graph the number of moose in each round on the whiteboard. Play for at least five rounds.

>>*Educator Tip: It is important during game play to pause and notice what happens when there is an abundance of one resource (eg. lots of shelter) but not the other resources needed. Moose who cannot find the resource they selected may not change to a different resource in order to survive. The instructor can coordinate with the resource side once or twice for everyone to choose the same symbol to emphasize this point.*

Wrap-up

Examine the graph. Ask students what happened to the moose when there were a lot of them. (The population declined.) Ask students what happened when there were few moose and lots of resources. (The population increased).

Assessment

At the early elementary level, have students explain verbally or in writing what the moose in the game required to survive. Working in small groups, have them compare these needs to their own survival needs. Have them identify at least three needs moose and humans share. This can be done verbally, in writing, or through labelled drawings. Students who have met the performance expectation should be able to identify water, food, and shelter as needs for moose as well as humans. Additional needs can be included in their list too. Have them identify one need that is similar for plants, and one need that might be different between animals and plants. At the upper elementary or middle school level, ask students to replicate the graph in their science notebook or on paper. In small groups, ask them to analyze the data to make a claim about the approximate carrying capacity of the ecosystem for moose in the model. When was the population most stable? (Usually this number is about half the size of the class–the more rounds you play, the easier it is to estimate carrying capacity). Have them draw the carrying capacity they've estimated on their graph. This number should stay more or less constant over time, unless there are major changes in the ecosystem. See below for an example:
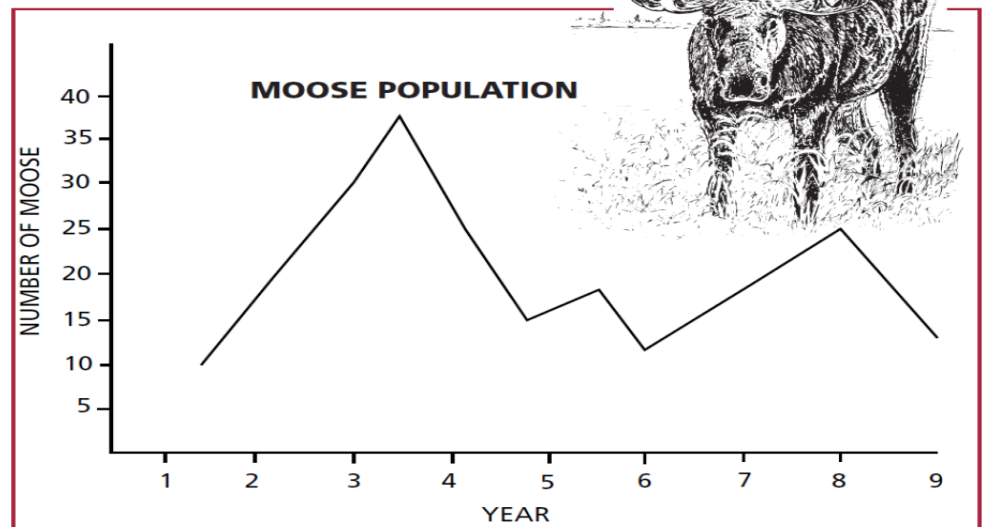
For middle school students, ask them to respond verbally, in writing, or with labelled drawings/diagrams to the following questions:
- What events or factors could affect resource availability enough to change the carrying capacity for moose in this model ecosystem? List at least three events or factors. Explain your reasoning for how

these events/factors would affect resource availability and lead to a change in carrying capacity.

- Of these three events or factors, which are likely to increase carrying capacity? Which are likely to decrease carrying capacity?
- Are there some events or factors that have the potential to both decrease and increase carrying capacity at different times?

Students who meet the performance expectation will be able to list at least three events or factors that could change resource availability and in turn affect moose populations. They will be able to explain the causal relationship between event/factor, change in resource availability, and change in carrying capacity for moose population in the model ecosystem.

>>*Teacher tip: If you are having difficulty explaining carrying capacity, here is a helpful metaphor: One way to explain it is by using the metaphor of carrying firewood. I can carry ten pieces of firewood. If I go over that number, I'm going to drop some pieces of firewood, and if I have less than ten, I'm going to pick up more. Ask students if they can see the carrying capacity on the graph for the moose. Draw it as a dotted line running across the graph for each. If a population goes above that line (should be around the middle), "firewood" will get dropped. If the population falls below that line, the habitat can support more, so the population will increase.*

Pair With

- Stake a Claim Lesson Plan
- Habitat Models Lesson Plan