

Beaver Fever

Adapted From: Oh Deer, Project Wild K-12 Activity Guide, Project WILD, p. 36-40

Grade Level: Basic or intermediate

Duration: Approximately 30 to 45 minutes depending on discussion.

Setting: Large area for running, such as a gym or playground area.

Summary: Students will play the role of beavers or habitat necessities (food, water, and shelter) to demonstrate the concept of carrying capacity.

Objectives: Students will learn about the importance of having food, water, and shelter.

Vocabulary: Carrying capacity

Related Module Resources:

- Leave blank

Materials (Included in Module):

- Plastic Rope

Additional Materials (NOT Included in Module):

- None

ACADEMIC STANDARDS: (ENVIRONMENT AND ECOLOGY)

7th Grade

- 4.1.7.C. Explain the effects of water on the life of organisms in a watershed.
 - Explain how water is necessary for all life.
- 4.3.7.B. Describe how human actions affect the health of the environment.
 - Explain how natural disasters affect environmental health.
- 4.7.7.C. Explain natural or human actions in relation to the loss of species.
 - Analyze and explain the changes in an animal population over time.

10th Grade

- 4.1.10.C. Describe the physical characteristics of a stream and determine the types of organisms found in aquatic environments.
 - Explain the habitat needs of specific aquatic organisms.
- 4.1.10.E. Identify and describe natural and human events on watersheds and wetlands.
 - Describe how natural events affect a watershed (e. g., drought, floods).
 - Identify the effects of humans and human events on watersheds.
- 4.6.10.A. Explain the biotic and abiotic components of an ecosystem and their interaction.
 - Explain the concept of carrying capacity in an ecosystem.
 - Describe how the availability of resources affects organisms in an ecosystem.
 - Interpret possible causes of population fluctuations.
- 4.7.10.C. Identify and explain why adaptations can lead to specialization.
 - Explain factors that could lead to a species' increase or decrease.

12th Grade

- 4.6.12.A. Analyze the interdependence of an ecosystem
 - Explain limiting factors and their impact on carrying capacity.
- 4.7.12.C. Analyze the effects of threatened, endangered or extinct species on human and natural systems.
 - Explain why natural populations do not remain constant.

BACKGROUND:

Carrying capacity refers to the maximum number of animals in a particular habitat that can be supported all at one time without having any damaging effects. If there are any disturbances in the environment, whether they may be natural or physically introduced, the carrying capacity of a habitat can be seriously affected. There are three main necessities that all animals need in order to survive: food, water, and shelter. If one of these necessities cannot be found, then the animal will eventually move to a different location or even die.

Many natural or physically introduced disturbances keep animal populations from increasing every day. Some natural disturbances that affect the size of animal populations are weather (drought, flooding, winter blizzards, etc.) and predators/prey relationships. Some physically introduced disturbances include pollution, deforestation, car/animal accidents, and complete destruction of habitat. If these disturbances are too great for an animal population, then they may threaten

or even cause the extinction of an entire animal species.

The population size of all animals is constantly changing, which means that they are never at a complete standstill. They are always increasing and decreasing, sometimes at predictable rates when it comes to natural disturbances, such as the changing seasons.

Numerous disturbances are always occurring and sometimes they affect more than one species of animal. For example, rabbit populations increase during the spring months, but during the winter months, their population decreases due to the lack of food, water, and shelter. In time, other animals may decline as well, such as coyotes, red foxes, and bobcats because rabbits are an important part of their diet.

OVERVIEW:

Students will play the role of beavers and habitat necessities. They will try to determine how carrying capacity can be affected if there is an abundant amount of beavers and few habitat necessities or few beavers and numerous habitat necessities to choose from.

PROCEDURE:

Student Activity:

1. This activity will be dealing with the three main necessities that all organisms need in order to survive: food, water, and shelter. Also, organisms need their own space in order to live.
2. Students will be divided by counting off in fours. The students who are ones will go to one area and all the twos, threes, and fours will all go together in another area. Make two parallel lines on the floor or ground using tape, string, or ribbon and have them about ten to twenty yards away from each other. The students who are the ones will stand along one line. The other group of students will line up along the other line (both groups will be facing one another for right now).
3. The ones will be playing the “beavers.” Every beaver wants to live in a good habitat in order to survive. The three main necessities that all animals need are food, water, and shelter. So, the “beavers” (the ones) will have to look for food, water, and shelter in order to survive. If a beaver is looking for food, it should place its “paws” over its stomach. If it is looking for water, it should put its “paws” over its mouth. When it is trying to find shelter, it will hold its “paws” over its head. The beavers can only look for one necessity, they cannot change what they are looking for during the game. But for each round, they can change their necessity.
4. The group of twos, threes, and fours will be representing the food, water, and shelter. Each student will be able to decide at the beginning of each round which necessity each would like to be. The students will be depicting which necessity they are in the same way the “beavers” are doing when they are looking for food, water, or shelter.
5. Now all the players line up behind their markers, alongside each other. The “beavers” will be on one side and the “necessities” will be on the other. Both sides

will have their backs turned so that each side cannot see what the other is deciding to depict. Wait a couple of minutes so that each side can choose their signs (hands over stomach, mouth, or head).

6. When the teacher says “go”, the “beavers” and “necessities” will all turn around facing each other (while continuing to hold their signs).
7. When a “beaver” sees the necessity that it needs, they are to race to it as fast as they can (the necessities are to stand still behind the line). Each “beaver” has to keep holding their sign until they reach the necessity that they match up to. After a “beaver” reaches their necessity (food, water, or shelter) they will capture or take hold of their necessity and bring it back to the “beavers” side-line. By doing this representation, it shows that the beaver has successfully found one of its necessities. The captured necessity will then become a beaver for the next round showing that the beaver population was able to reproduce successfully as a result of finding its necessity. However, if some beavers were unable to retrieve their specific necessity (food, water, or shelter), then the beaver dies and becomes a “necessity” for the next round.
8. Keep track of the number of beavers that survive during each round. You can have the students play ten to fifteen rounds in order to see some interesting results.

DISCUSSION:

After the activity is over, have the students come together and discuss what they saw.

1. What are the three main necessities that all animals need in order to survive?
Answer: Food, water, and shelter.
2. At the beginning of the activity, was there a small group of beavers and a large amount of necessities to choose from? *Answer: If there were very few beavers and numerous necessities then the beaver population would grow greatly until it reached its carrying capacity, then the beavers would start dying off because they were unable to find their specific necessities. So, then the dead beavers would become a specific necessity. This is exactly what happens in nature because it is a constant balancing act between animal populations and specific needs that are available.*
3. Do beavers need all three necessities in order to survive? *Answer: Yes, beavers need food, water, and shelter in order to live. They won't die instantly, but they may slowly die from disease or starvation.*
4. What actually happens if a beaver dies from not having one of the three main necessities? *Answer: Beavers do not instantly turn into nutrients (like what happened during the activity), it takes time for a carcass to decompose.*
5. What are animal populations constantly doing in order to survive? *Answer: Animal populations are in a constant balancing act. They are never static and they have to*

constantly balance with their available necessities in order to survive.

EVALUATION:

- Students can be quizzed on the above questions.

EXTENSIONS AND MODIFICATIONS:

- Teachers can create a plotted chart with the recorded data by making the x-axis the number of rounds or (years) and the y-axis the number of beavers that survived for each round or (year).
- Students can research a specific animal population and examine whether that population of animals increases or decreases throughout each year and why.

NOTES (PLEASE WRITE ANY SUGGESTIONS YOU HAVE FOR TEACHERS USING THIS ACTIVITY IN THE FUTURE):