



Wolf Limiting Factors

National Science Content Standards:

Unifying Concepts and Processes

- Evidence, models and Explanation
- Evolution and Equilibrium

Life Science

- Regulation and behavior

Vocabulary:

Limiting Factors:

Food
Shelter
Water

Materials:

- Large playing field
- 2 sets of cards one red and the other green, 1/3 = water, 1/3 = food, 1/3 = shelter
- Paper and pencil to record data

Introduction:

Students will simulate a wolf and its habitat and observe what happens when the limiting factors change over time.

This activity may be used before or after playing *WolfQuest*.

Objectives:

At the end of this activity, the student will:

1. Identify and describe the essential components of habitats.
2. Define the limiting factors that affect wolves.
3. Recognize that fluctuations in wildlife populations are a natural part of the ecosystem.

Procedure:

1. Explain to the class that they will “become” wolves and the necessary components necessary to a wolf’s survival.
2. Divide the class in to 2 groups and take the class to a large area. (gym or outside)
3. Have the 2 group’s line up in parallel lines facing each other about 20 yards apart.
4. Have a student helper count the number of people in the wolf line and the essential component line and record.
5. Have both lines turn so they are back to back and can not see the other line.
6. Using two ice cream buckets (one for each line), hand out the appropriate cards for round one. I would pass the bucket down the line from student to student or use a student volunteer to help speed up this process. Have enough cards of each component so approximately 1/3 can choose food, 1/3 can choose shelter, and 1/3 can choose water.
Line A represents wolves and each student picks a card of what they need. (Food, shelter, or water) Use red to color code these cards.
Line B represents the necessary components and each student picks one component card. (Food, shelter, or water) Use green to color code these cards.

7. Have the lines turn around and face each other.
8. Let the wolf line run to the other line and find a matching component card. (Only the wolf line runs)
In order to be successful, the wolves must find a person with a card that matches their card.
If they are successful, they return to the wolf line with their match person.
If they are unsuccessful, they become a part of the necessary component line.
9. Using student volunteers, sort out the cards so all the red cards are in the wolf bucket and all the green cards are in the component bucket.
10. Count the new number of students in the wolf line and component line and again record.
11. Re-distribute the cards for each line by passing the buckets down the lines again. Start round 2
12. Repeat at least 10 times being sure to count at the end of each round.
13. It should become apparent the fluctuations that occurs. As the essential components become scarce, the wolf population decreases. When the essential components are abundant, the wolf population grows.
14. Have the students graph the data and discuss what happened during the simulation.

Diagram of playing field:



Discussion Questions:

What happened to the wolf population as the necessary components (food, shelter, and water) decreased?

What happened to the wolf population as the necessary components (food, shelter, and water) increased?

Can you think of some ways to stop the wolf population from crashing as the limiting factors change?

This activity has been adapted from the Project Wild activity, Oh Deer.