



National Science Content Standards:

Unifying Concepts and Processes

- Systems, Order, and Organization
- Evidence, Models, and Explanation
- Change, Constancy, and Measurement
- Evolution and Equilibrium

Science as Inquiry

- Abilities necessary to do scientific inquiry
- Understanding about scientific inquiry

Life Science (5–8)

- Regulation and behavior
- Population and ecosystems

Vocabulary:

carrying capacity
territory
predator
limiting factor
cache
rendezvous site
wolf recycling
(definition used for this game)

Wolf Turf

Introduction:

Students collect prey and den cards to simulate wolves searching for food and shelter. They will discover how territory size, as well as food availability, can be limiting factors for a population.

This activity would preferably be done before using the *WolfQuest* program, but could also be done as a follow-up activity.

Objectives:

At the end of this activity, the student will:

1. Predict how food availability affects wolf populations.
2. Analyze the relationship between pack size and habitat.
3. Calculate their wolf pack's food needs and food acquisition.

Procedures:

1. Read the background information for "Wolf Turf" (address in link). The following will be a summary of directions and helpful hints.
2. **Make copies** of "Wolf Turf" cards and laminate them, if possible. Each wolf (student) would ideally need 450 pounds of "food" to survive, but you only provide 75% of what is needed. To calculate this, multiply 450 x the number of students in your class. Multiply this number by .75. This will give you the total number of pounds of "food". For example, a class with 32 students would need 10,800 pounds of food ($32 \times 450 = 14,400 \times .75$) For this size class, you would need to copy three "Wolf Turf" cards, and use two full sheets, plus 1,100 extra pounds of food from the 3rd sheet to have the right amount of food for this activity.
3. Ideally, use a larger space such as a gym or lunchroom. This activity can also be done in a classroom if you push the desks and/or tables to the side.
4. If you have students with disabilities, you could pair up students, simulating wolves hunting together. Each pair would hunt twice (select two cards).

Materials:

- Copies of “Wolf Turf Cards”
- Copies of “Pack Food Budget” sheets
- Copies of “Wolf Population Chart”
- Calculators-one for each “pack”
- Scissors to cut apart “Wolf Turf Cards”

Links:

International Wolf Center

Gray Wolves, Gray Matter-Section #2, Natural Systems, pages 3-11

http://www.wolf.org/wolves/learn/educator/gwgm/pdfs/gwgm_sec2.pdf

- 5. Make copies** of the “Pack Food Budget” paper, found in the instructions. You will need one copy for each pack/group of five students for one “year” or four rounds. You may need to make extra copies of this sheet in case you have time for more than four rounds.
- 6. Make copies** of the “Wolf Population Chart”. Each pack/group of 5 students will need one copy. One paper has enough space to get you through 8 rounds.
- 7. Game summary:** In round one, which lasts three minutes, students take turns collecting food or den cards, which you have placed on the floor. Using the “pack food budget sheet”, they will calculate if they have collected enough food for each pack member to survive. If they have enough food, all pack members live. If not, the one with the least food “dies” and goes to the “wolf recycling” area. These students will return as pups in later rounds. If they have extra food, it will get stored in their cache, which they can use to trade for a pup from “wolf recycling”. Also, in later rounds, disputes over food or dens are settled with “rock, paper, scissors”. Each round lasts 3 minutes. It is recommended that at least four rounds are played to be able to gather enough information. This will take you through one “year”. As mentioned, if you have enough time for more than 4 rounds, you will want to make more “Pack Food Budget” sheets. Data for each group/pack can be quickly graphed using the “Wolf Population Chart”. There are also discussion questions, a quiz, and extensions with this activity. Extension #1 suggests adding a card that says, “One wolf killed for depredation on livestock”. Extension #2 has the students graph a wolf population that suffers no mortality. This second activity could be used for homework.