



## Deer: Predation or Starvation

### National Science Content Standards:

#### Life Science:

- Populations and ecosystems
- Regulation and Behavior

#### Science in Personal and Social Perspective

- Populations, resources and environments

#### Unifying Concepts and Processes

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

### **Vocabulary:**

Predator  
Prey  
Ecosystem  
Closed Ecosystem

### **Materials:**

- Poster paper
- Deer: Predation or Starvation Worksheets (One per student)
- Two different colored Sticky notes (one of each color per student)

**Introduction:** An island population of deer has no predators and the island is too remote for hunters. Is it better to let nature take its course with the deer population or should predators (wolves) be introduced onto the island?

This activity could be done before or after playing *WolfQuest*.

### **Objectives:**

At the end of this activity, the student will:

1. Identify predator/prey relationships and how they may or may not impact one another.
2. Examine the changes that populations undergo to keep a balance in the ecosystem.
3. Examine changes in populations due to human intervention.
4. Create a graph illustrating population changes in a predator/prey relationship.

### **Procedure:**

Teacher Prep: Copy one worksheet per student. Make three signs with the each of the following titles on large poster paper:

Deer are better off with the wolves

Deer are worse off with the wolves

Deer are about the same with the wolves

Leave space below the title for the students to add their opinions.

Post these posters around the room.

1. Read the scenario to the students prior to handing out the worksheet. Ask students to hypothesize how this might or might not work. Have students predict what may happen to each of the populations.
2. Now point out the posters' headings. Ask students to place a sticky note on the poster that has the outcome with which they agree.
3. Hand out the Deer: Predation or Starvation worksheets. Students can either work on this alone or with a partner. This could also be used as a homework assignment since the worksheet can be done independently.
4. After students have completed the analysis questions, discuss questions 1 and 2 as a class.

**Procedure (continued):**

5. Again, ask students to place a sticky note – this time using a color different from the first one – on the poster with the heading with which they agree.
6. As a class, discuss the following things:
  - a) How did your first opinion compare with your second?
  - b) If you changed your opinion, what caused you to change it?
  - c) If you didn't change your opinion, why?
7. Each perspective should choose a spokesperson to share their ideas.

# Deer: Predation or Starvation

Name \_\_\_\_\_

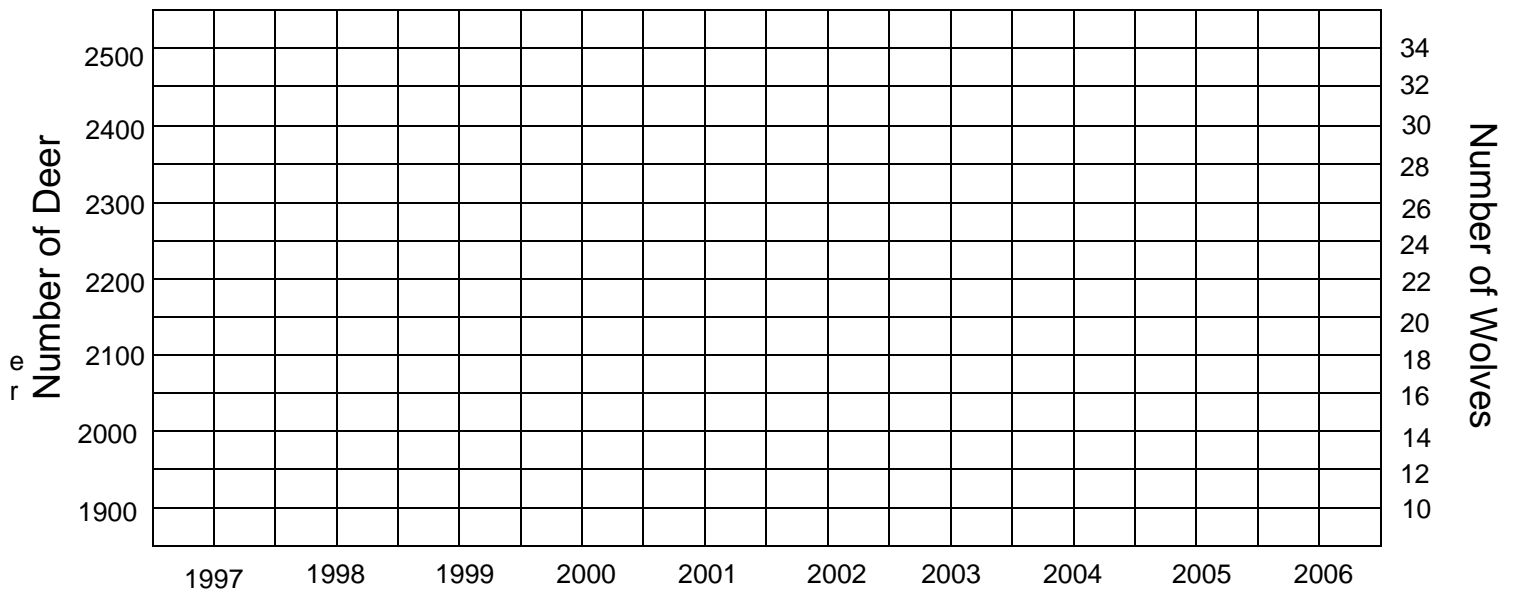
**Scenario:** In 1997 the deer population of an island forest reserve about 518 square kilometers in size was about 2000 animals. Although the island had excellent vegetation for feeding, the food supply obviously had limits. Thus the forest management personnel feared that overgrazing might lead to mass starvation. Since the area was too remote for hunters, the wildlife service decided to bring in natural predators to control the deer population. It was hoped that natural predation would keep the deer population from becoming too large and also increase the deer quality (or health), as predators often eliminate the weaker members of the herd. In 1997, ten wolves were flown into the island.

The results of this program are shown in the following table. **The Population Change is the number of deer born (deer offspring) minus the number of deer that died (predation and starvation) during that year.** Fill out the last column for each year (the first has been calculated for you).

Year	Wolf Population	Deer Population	Deer Offspring	Predation	Starvation	Deer Population Change
1997	10	2,000	800	400	100	+ 300
1998	12	2,300	920	480	240	
1999	16	2,500	1,000	640	500	
2000	22	2,360	944	880	180	
2001	28	2,224	996	1,120	26	
2002	24	2,094	836	960	2	
2003	21	1,968	788	840	0	
2004	18	1,916	766	720	0	
2005	19	1,952	780	760	0	
2006	19	1,972	790	760	0	

Graph the deer and wolf populations on the graph provided. Use one color to show deer populations and another color to show wolf populations.

**TOTAL DEER AND WOLF POPULATIONS BY YEAR**



## Years

**Analysis Questions:** Read and answer the questions. Be sure to use complete sentences and your good grammar skills!

1. Describe what happened to the deer and wolf populations between 1997 and 2006.

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2. What do you think would have happened to the deer on the island had wolves NOT been introduced?

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3. Most biology textbooks describe that predators and prey exist in a balance. This "balance of nature" hypothesis has been criticized by some scientists because it suggests a relationship between predators and prey that is good and necessary. Opponents of this hypothesis propose the following questions:

Why is death by predators more natural or "right" than death by starvation?

How does one determine when an ecosystem is in "balance"?

Do predators really kill only the old and sick prey? What evidence is there for this statement?

