Student Handout:
Oh Deer, Here Come the Wolves

Imagine you are a wildlife manager working to restore the population of an endangered species of deer. Currently, the herd is small and your task is to find the best habitat and situation for the population to grow and develop into a healthy herd. Which of the following scenarios do you think would provide the best situation for your herd of deer?

Scenario 1: The herd is currently living in a 100 square mile range in the Bitterroot Mountains of Montana which has been continually inhabited by this species for centuries. Human settlers eradicated wolves (one of the deer's principle predators) over 100 years ago although other habitat changes caused by human development have continued to keep the deer's populations low. Now, the habitat is improving and the deer population is growing slowly but steadily. However, some wildlife managers are planning to reintroduce wolves to your region. They plan to bring in several families of wolves into the area. The deer population is just beginning to rebound and you are concerned about the effects of the wolf introduction on the continued growth of the herd.

Scenario 2**:** You have the opportunity to move the deer herd and reintroduce it to a new, more favorable habitat. The new area is a deserted island in the arctic region. There is a lot of food (no animal has filled the deer's niche for many many years) and there are no natural predators. The island has 41 square miles of good habitat for the population.

Prediction: Which of these scenarios would produce the fastest growth of the deep population? Which would potentially provide the healthiest long-term situation for the deer?

Graphing: Graph the following data showing the changes in deer population over time for each of the two regions described above. You will make 2 line graphs.

Data Set A:

Year	Deer Population
1975	2000
1976	2100
1977	2060
1978	2010
1979	1980
1980	2000
1981	1840
1982	1710
1983	1590
1984	1440
1985	1400
1986	1290
1987	1300
1988	1260
1989	1310
1990	1360
1991	1290
1992	1330

Data Set B:

Year	Deer Population
1910	25
1915	78
1920	180
1925	100
1930	500
1935	800
1940	2000
1945	700
1950	8
1955	25

Step 2: Describe and hypothesize.

1. What do you see happening to the two deer populations over time?
2. What similarities do you see in the two graphs? What differences?
3. Why do you think the population changes that you see have occurred?
4. At some point, wolves were reintroduced, write a hypothesis explaining when you think this happened (which graph and what year) and why you think it happened at that point.

Before moving to the analysis portion of this activity, obtain the information that shows when and where the wolves were reintroduced from your teacher.

Step 3: Analyze

Answer the following questions:

1. Look at graph B. If there were no predators, why couldn't the deer population continue to increase indefinitely?
2. Limiting resources are factors that limit the growth of a population. What are some limiting resources that might control the population of deer?
3. Carrying capacity is the maximum number of individuals an environment can support for an extended period of time. Explain what happened in each of the graphs in terms of carrying capacity.
4. What shape do you think the local ecosystem of graph B was in when the deer population crashed?
5. Did the wolves have the effect that you expected?
6. Do you think the carrying capacity of a region can change?
7. Did the wolves have an effect on the region's carrying capacity?
8. Is reintroducing a native predator species harmful to the local ecosystem?
9. According to wildlife biologist Daniel Pletscher, after wolves were reintroduced, they may have depleted the deer population from between 3% and 12% each year. Why do you think this rate may have varied?