

Name: _____

Populations – On Level

Worksheet

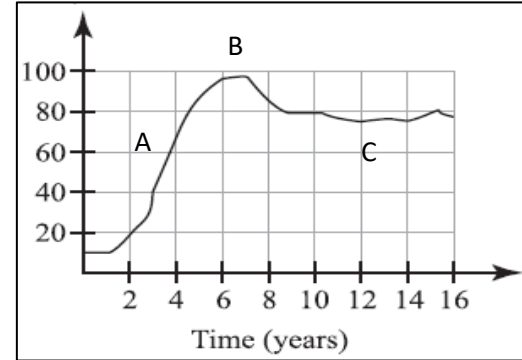
What happened to these populations? Read each passage #1 and #2 and answer the questions that follow.

#1. Wolverines & Territory Size



Wolverines are small carnivorous animal related to weasels. Wolverines are known to be able to eat many different animals, and usually do not have difficulty finding food. However, they are fiercely territorial and require large tracts of land for their territories. If they do not maintain these large territories, they risk competing over living-space, food, mates, or water. A large earthquake in northern

Canada isolated a population of roughly 15 wolverines in a large forest. The wolverine population grew very rapidly until they had exceeded the number that could live in the space of the forest. At that point, competition between wolverines whose territories overlapped caused the wolverine population to decline. This increased the amount of available space, and the wolverine population was able to rebound. This cycle continued, with the population stabilizing around 80 wolverines.



1. What is the carrying capacity for wolverines in this ecosystem? _____

2. What factor limited how large the wolverine population could get? _____

Was this a density dependent or density independent factor? _____

Point C on the graph shows the carrying capacity of wolverines, brainstorm a definition for the term “carrying capacity”.

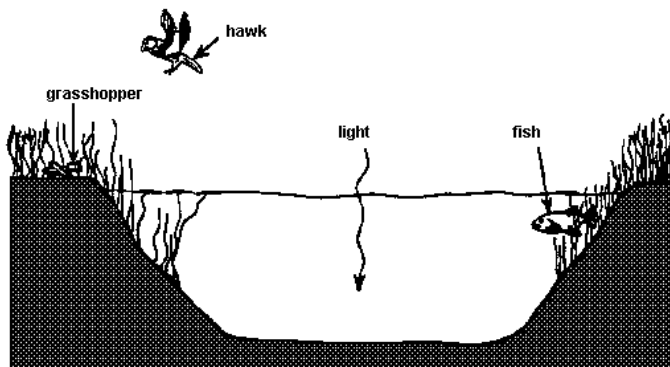
Limiting Factors:

A limiting factor is one that prevents the population from increasing. There are two types.

A density dependent limiting factor “depends” on the population itself. In other words, it would not occur if the population did not exist. Examples are starvation, predation, disease and hunting. All of these “limit” the population number.

A density independent limiting factor will occur whether or not a population exists. Examples are flooding, tornado, pollution and fire. If these occur where a population is, the numbers in the population will likely decrease.

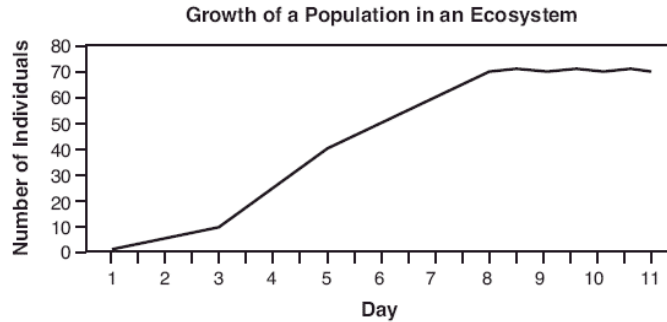
Use the diagram below to answer question 6. The diagram represents a pond in New York State.



5. Identify one abiotic (nonliving) factor in the diagram that functions as a limiting factor for the autotrophs in this ecosystem, and explain why it would be considered a limiting factor and what kind of limiting factor it is.

6. Ten breeding pairs of rabbits are introduced onto an island with no natural predators and a good supply of water and food. Describe what will most likely happen to the rabbit population over the next 100 years, assuming no natural disasters occur on the island. What will some of the limiting factors be?

7. The diagram below represents the growth of the population of wolves in an ecosystem.



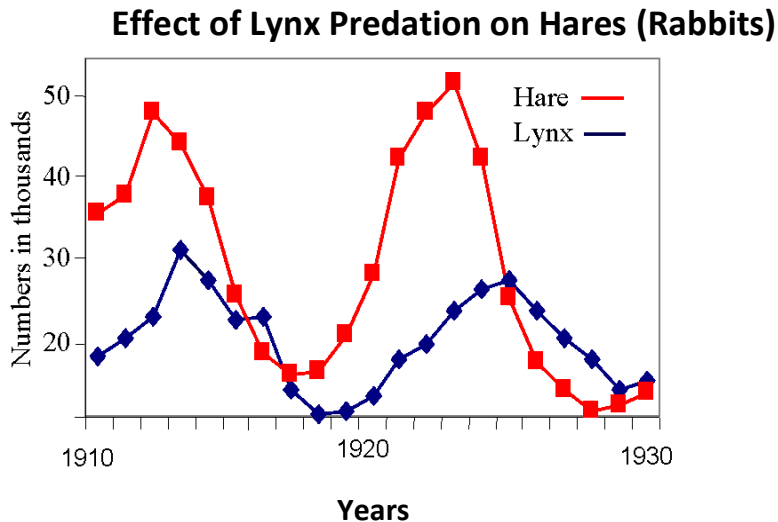
On which day did the population represented in the graph above reach the carrying capacity of the ecosystem? How do you know?

8. What is one density independent limiting factor that could affect the wolf population? _____

9. What is one density dependent limiting factor that could affect the wolf population? _____

Predator Prey Relationships:

Below is a graph showing the relationship between a predator, the Lynx (a wild cat), and its prey, the hare (a wild rabbit). Study the graph then answer the questions that follow.



10. What is the dependent variable? _____

11. What is the independent variable? _____

12. What can you infer about predator – prey relationships from this graph?
