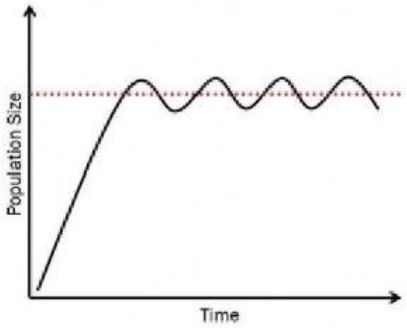
April 11 Vocab and Limiting Factors

Word	Definition	Example Sentence	Picture
carrying capacity			
limiting factor			
competition			
cooperation			

Carrying Capacity and Limiting Factors Activity

Organisms need resources to survive. They also require space to live. There are limited resources and only so much space in an ecosystem. These features are called limiting factors. Limiting factors regulate how many organisms live in an ecosystem. Space, food, oxygen, and water are limiting factors. Temperature and precipitation determine the climate of an ecosystem, which impacts the organisms that can live in an ecosystem.

An ecosystem can support only so large of a population. The maximum population size that an ecosystem can support is called carrying capacity. Limiting factors determine carrying capacity. The availability of abiotic factors (such as water, oxygen, and space) and biotic factors (such as food) dictates how many organisms can live in an ecosystem. Carrying capacity is also impacted by the availability of decomposers. Decomposers break down and recycle dead organisms and organic matter. They prevent dead matter from accumulating and taking up space in an ecosystem.



In an ecosystem, the population of a species will increase until reaches the carrying capacity. Then the population size remains relatively the same. If abiotic or biotic factors change, the carrying capacity changes as well. Natural disasters can destroy resources in an ecosystem. If resources are destroyed, the ecosystem will not be able to support a large population. This causes the carrying capacity to decrease. Humans can also alter carrying capacity. Our activities can decrease or increase carrying capacity. We alter carrying capacity when we manipulate resources in a natural environment.

If a population exceeds carrying capacity, the ecosystem may become unsuitable for the species to survive. If the population exceeds the carrying capacity for a long period of time, resources may be completely depleted. Populations may die off if all of the resources are exhausted.

2. What do limiting factors do?

a. Separate biotic factors from abiotic factors.
b. Determine which is the predator and which is the prey.
c. Regulate how many organisms live in an ecosystem.
d. Determine which natural disasters will hit an area.

3. Which of the following are abiotic limiting factors?

a. The decomposers in an ecosystem.
b. The populations of producers in a given habitat.
c. Carrying capacities of several species.
d. Water, space, and oxygen.

4. In biology, what is carrying capacity?

a. The maximum population size an ecosystem can support.
b. A total list of the limiting factors.

c. How much weight an organism can lift.
d. How much pain an organism can tolerate.

Situation 1: A population of trout in a lake has significantly declined over the past year. The main source of food for the fish in this lake are aquatic insects. Due to poor climate conditions, there are significantly fewer insects and thus, not enough food to sustain the population of trout in the lake. Trout is a food supply for larger fish in the lake and without enough trout, other fish are negatively impacted in the lake.

1. What is the problem?

a. Trout population has increased
b. Insect population has increased
c. Insect population has decreased
d. Larger fish population has increased

2. What has caused the problem?

a. Poor climate conditions
b. Humans overfishing
c. Pesticides being used on the insects
d. Decreased water levels

3. How could humans alter carrying capacity so the trout population returns to its normal level?

a. Humans could alter the carrying capacity by hunting the trout
b. Humans could alter the carrying capacity by hunting the larger fish
c. Humans could alter the carrying capacity by breeding the insects
d. Humans could alter the carrying capacity by breeding the larger fish

Situation 2: The population of bullfrogs is growing out of control near a small pond. Its main predator, a snake species, was killed off by disease. Without this natural predator, the bullfrogs can thrive in and around the pond. The growing frog population is having a negative impact on the quality of the environment and other species living in the area.

1. What is the problem near the small pond?

a. Bullfrog population is too small
b. Bullfrog population is too large
c. Snake population is too large
d. Snake population is killing the bullfrogs

2. What has caused the problem?

a. Natural Disaster wiped out the snake population
b. Humans began hunting the snakes
c. A disease killed all the snakes
d. Snakes went to a different ecosystem

3. How could humans alter carrying capacity, so the bullfrog population returns to its normal level?

a. Humans could alter the carrying capacity by breeding bullfrogs
b. Humans could alter the carrying capacity by hunting the snakes
c. Humans could alter the carrying capacity by hunting the bullfrogs
d. None of the above will help alter the carrying capacity