



High School Science Virtual Learning

Biology

Population Size Factors

April 24, 2020



High School Applied Biological Science

Lesson: April 24, 2020

Objective/Learning Target:

Students will be able to describe factors that affect population sizes in nature.

Let's Get Started:

1. Define Carrying Capacity.
2. What are 4 factors that affect the size of a population?



Let's Get Started: Answer Key

1. The maximum number of individuals in a species that an environment can support for the long term.

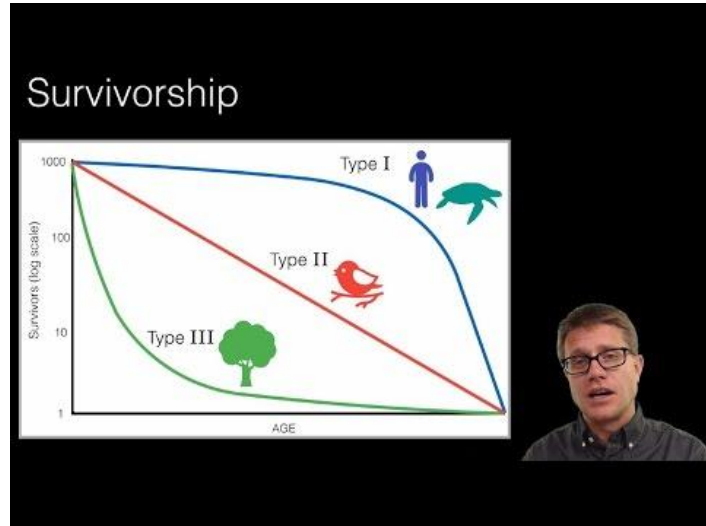
2. 1. Food 2. Water 3. Shelter 4. Space

Lesson Activity:

Directions:

1. Watch the following video over as a review over population ecology. Take notes over the types of factors that can affect a population, and how we can predict populations through graphs.
2. Go to the link below and do the interactive then answer the practice questions.

Links: [Trophic Cascades](#)



Practice

Complete the following questions using the information you learned during the lesson activity.

Questions:

1. Define the term trophic cascade.
2. What kind of effect do otters have on kelp? Explain why.
3. What effect did the disappearance of the otters have on the diet of the glaucous-winged gulls?
4. What was the effect of the disappearance of the otters on the diet of bald eagles?
5. Is the effect of the otters on the other populations a density independent or density dependent factor?

Once you have completed the practice questions check with the **answer** key.

1. A trophic cascade is when an apex predator who controls populations is removed from an ecosystem.
2. Otters control the population of sea urchins which eat the kelp. Without otters the sea urchins will overpopulate and eat all of the kelp.
3. As a result of the disappearance of the otters and loss of the kelp forests, the diet of the glaucous-winged gulls shifted from fish to invertebrates.
4. As a result of the disappearance of the otters and loss of the kelp forests, the diet of the bald eagles shifted from fish and mammals to other bird species.
5. Density - Dependent because they rely on the size of the otter population to control the size of the urchin population.



Common Misconceptions

When we talk about population ecology we are talking about populations of organisms in nature, not human population dynamics. For more information on vocabulary and examples go to the following link.

[Khan Academy Population Ecology Review](#)

More Practice:

Follow the links below to do more practice.

1. [Population Growth Virtual Lab](#)
2. [Modeling Populations with African Lions](#)