High School Science Virtual Learning

College Biology

April 22, 2020

High School College Biology
Lesson: April 22, 2020

Objective/Learning Target:
Students will be able to discuss how populations grow and what impacts population growth.

Let's Get Started:

1. Define population.

2. Calculate the population density of oak trees in a 50 km2 forest that contains 200 oak trees

Answers:

1. A group of individuals of a single species that occupy the same general area at the same time.

2. $Population\ Density = \dfrac{Number\ of\ organisms}{area} = \dfrac{200\ oak\ trees}{50\ km^2} = 4\ oak\ trees/km^2$

Lesson Activity:

1. Read over pages 1-13 of the Chapter 19 Notes. ([Linked Here](#))

2. Watch this Crash Course video on the [Population Ecology](#).

Practice:
1. What is the age structure of a population and why is it important to ecologists?

2. Why is exponential growth not sustainable for organisms in any environment?

3. What is intraspecific competition and why is it one of the more important density-dependent limiting factors?

Practice Answers:

1. Age structure of a population is the distribution of individuals in different age groups. It is important because it provides insight into the history of a population's survival, reproductive success and how the population handles environmental factors.
2. Exponential growth is not sustainable because organisms require resources and all ecosystems have a finite amount of resources.
3. Intraspecific competition is the competition for resources among members of the same species. It is one of the biggest limiting factors due to the fact that members of the same species require exactly the same resources and therefore competition is very high.

Even More Practice:

1. What two values would you need to know to figure out the human population density of your community?

2. If members of a species produce a large number of offspring but provide minimal parental care, then a Type _____ survivorship curve is expected. In contrast, if members of a species produce few offspring and provide them with long-standing care, then a Type _____ survivorship curve is expected.

Even More Practice:

3. Which of the following describes the effects of a density-dependent limiting factor?
   a. A forest fire kills all the pine trees in a patch of forest.
   b. Early rainfall triggers the explosion of a locust population.
   c. Drought decimates a wheat crop.
   d. Rabbits multiply, and their food supply begins to dwindle.

Even More Practice Answers:

1. The number of people and the land area in which they live

2. III; I

3. D

Review Tools:

-Kahoot 1
- Mr. Anderson videos about population ecology: Video 1, Video 2, Video 3.