

## Chapter 8: Understanding Populations Lecture Guide, Day One

### What Is a Population?

- A \_\_\_\_\_ is a group of organisms of the \_\_\_\_\_ species that live in a specific geographical area and interbreed.
- A population is a \_\_\_\_\_ group because organisms usually breed with members of their own population.

### Properties of Populations

- \_\_\_\_\_ is the number of individuals of the same species in that live in a given unit of area.
- \_\_\_\_\_ is the pattern of distribution of organisms in a population.
- A population's dispersion may be even, clumped, or random.

### How Does a Population Grow?

- The resulting population change over time can be represented by the equation below:

### How Does a Population Grow?

- \_\_\_\_\_ is an expression of the increase in the size of an organism or population over a given period of time.
- Growth rate =
  
- Overtime, the growth rates of populations change because birth rates and death rates \_\_\_\_\_.

### How Does a Population Grow?

- For the growth rate to be zero, the average number of births must \_\_\_\_\_ the average number of deaths.

### Reproductive Potential

- A species' \_\_\_\_\_ is the fastest rate at which its populations can grow.
- \_\_\_\_\_ is the maximum number of offspring that a given organism can produce.
  - Examples: Bacteria

### Reproductive Potential

- Reproductive potential \_\_\_\_\_ when individuals produce more offspring at a time, reproduce more often, and reproduce earlier in life.
- Reproducing early \_\_\_\_\_ the generation time, or the average time it takes a member of the population to reach the age when it reproduces.

### Exponential Growth

- \_\_\_\_\_ is logarithmic growth or growth in which numbers increase by a certain factor in each successive time period.

- Exponential growth occurs in nature only when populations have \_\_\_\_\_.
- For example, population explosions occur when bacteria or molds grow on a new source of food.

### What Limits Population Growth?

- Under the forces of \_\_\_\_\_ in a given environment, only some members of any population will survive and reproduce. Thus, the properties of a population may change over time.

### Carrying Capacity

- \_\_\_\_\_ is the largest population that an environment can support at any given time.

### Resource Limits

- A species reaches its carrying capacity when it \_\_\_\_\_ a particular natural resource at the same rate at which the ecosystem produces the resource.
- That natural resource is then called a \_\_\_\_\_.
- The supply of the most \_\_\_\_\_ limited resources determines the carrying capacity of an environment for a particular species at a particular time.

### Competition Within a Population

- Instead of competing for a limiting resource, members of a species may compete indirectly for \_\_\_\_\_.

### Competition Within a Population

- A \_\_\_\_\_ is an area defended by one or more individuals against other individuals.
- The territory is of value not only for the \_\_\_\_\_ but for the \_\_\_\_\_ it contains.

### Two Types of Population Regulation

- Causes of death in a population may be \_\_\_\_\_.

### Population Regulation

- When a cause of death in a population is \_\_\_\_\_, deaths occur \_\_\_\_\_ in a crowded population than in a sparse population.
- This type of regulation happens when individuals of a population are \_\_\_\_\_ packed together.
- \_\_\_\_\_ result in higher rates of death in dense populations than in sparse populations.

### Population Regulation

- When a cause of death is \_\_\_\_\_, a certain proportion of a population \_\_\_\_\_ regardless of the population's density.
- This type of regulation affects all populations in a \_\_\_\_\_.
- \_\_\_\_\_ are often density independent causes of death.