

Unit 2 Populations and Communities

Populations (12.1)

- I. Biosphere and Ecological Systems
 - A. Earth's **biosphere** is the parts of Earth and surrounding atmosphere where there is life.
 - 1. Includes all continents and islands
 - 2. Includes oceans, lakes, streams and polar ice caps
 - B. Earth's system is made of smaller systems-atmosphere, hydrosphere, geosphere and biosphere
- II. Population
 - A. A **community** is all the populations of different species that live together in the same area at the same time
 - B. A **population** is all the organisms of the same species that live in the same area at the same time
 - C. Populations and communities can be made of any combination of plants, animals and other organisms
 - D. A **species** is a group of organisms that have similar traits and are able to produce fertile offspring.
- III. **Competition** is the demand for resources such as food, water and shelter, in short supply in a community.
- IV. Population Sizes
 - A. **Limiting factors** are anything that restricts the size of a population
 - 1. **Biotic factors** are living parts of an ecosystem (plants and animals). Disease can also be a biotic factor.
 - 2. **Abiotic factors** are nonliving parts of an ecosystem like soil, air, water, sunlight and temperature. These often determine which plants and animals can live in an area. Natural disasters are abiotic factors.
 - B. **Population density** is the size of a population compared to the amount of space available.
 - 1. Population is estimated using a sample count
 - 2. Not every organism is actually counted
 - C. **Biotic potential** is the potential growth of a population if it could grow in perfect conditions with no limiting factors.
 - 1. No population on Earth reaches biotic potential because no ecosystem has unlimited resources
 - D. **Carrying capacity** is the largest number of individuals of one species that an environment can support.
 - 1. Populations grow until they reach carrying capacity of an environment
 - 2. Limiting factors affect carrying capacity
 - 3. Carrying capacity is not constant-increase or decrease with available resources
 - E. **Overpopulation** is when the population becomes larger than the carrying capacity of its ecosystem