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### Biotic and Abiotic Factors

- Every ecosystem includes both living and nonliving factors
- Biotic and Abiotic Factors
- Biotic factors are living things.
    - Plants
    - \_\_\_\_\_
    - Fungi
    - Bacteria
  - Abiotic factors are nonliving things
    - Moisture
    - Temperature
    - \_\_\_\_\_
    - Sunlight
    - soil
  - Changing one factor in an ecosystem can affect many other factors
    - \_\_\_\_\_ is the assortment, or variety, of living things in an ecosystem.
    - Rain forests have more biodiversity than other locations in the world, but are threatened by human activities
  - A \_\_\_\_\_ is a species that has an unusually large effect on its ecosystem.
    - They form and maintain a complex \_\_\_\_\_

### Habitat and Niche

- Every organism has a habitat and a niche.
- A habitat differs from a niche.
- A habitat is all aspects of the area in which an organism lives
  - \_\_\_\_\_ factors
  - \_\_\_\_\_ factors
- Your address

An \_\_\_\_\_ niche includes all of the factors that a species needs to survive, stay healthy, and reproduce

- Food
- Abiotic conditions
- Behavior
- Your occupation

Species can share \_\_\_\_\_ but cannot occupy the same \_\_\_\_\_ in the same ecosystem.

\_\_\_\_\_ occurs when two species use resources in the same way (occupy same niche)

- Competitive exclusion keeps two species from occupying the same niche.

Competitive exclusion has three different outcomes:

1. One species is better suited to the niche and the other will either be pushed out or become extinct.
2. The niche will be \_\_\_\_\_.
3. The two species will further diverge.

Competitive Exclusion Principle: No two species can occupy the same niche at the same time.

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Ecological equivalents are species that occupy similar niches but live in different \_\_\_\_\_ regions.

### Community Interactions

Organisms interact as individuals and as populations

- There are three main ways in which organisms interact:
  - Competition
  - \_\_\_\_\_
  - Symbiosis
    - Mutualism
    - Commensalism
    - Parasitism

Resource availability gives structure to a community.

Competition occurs when two organisms fight for the same \_\_\_\_\_ resource.

Types of competition:

- Intraspecific: \_\_\_\_\_
- Interspecific: \_\_\_\_\_

\_\_\_\_\_ occurs when one organism captures and eats another organism.

- Symbiosis is a relationship in which two species live closely.
- Three types:
  - Mutualism
  - Commensalism
  - Parasitism

Mutualism: both organisms \_\_\_\_\_

Commensalism: one organisms \_\_\_\_\_, the other is \_\_\_\_\_.

Parasitism: one organism benefits, the other is \_\_\_\_\_.

Endoparasite: live in the tissue and organs of host

- feed on nutrients ingested by host
- Example: \_\_\_\_\_

Exoparasite: exterior of host

- feed on fluids of host
- Example: \_\_\_\_\_

### Population Density and Distribution

- Each population has a density, dispersion, and a reproductive strategy.
- Population density is the number of individuals that live in a defined area.
  - a measurement of the number of individuals living in a defined space.
- Scientists can calculate population density.
- Formula: \_\_\_\_\_
- Geographic dispersion of a population shows how individuals in a population are spaced.
  - Population dispersion refers to how a population is spread in an area.
- There are three types of dispersion:
  - \_\_\_\_\_
  - Uniform
  - \_\_\_\_\_
- Survivorship curves help to describe the reproductive strategy of a species.
  - Diagram showing the number of surviving members over time from a measured set of births.

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- Survivorship curves can be type I, II or III
- Type I -low level of infant mortality and an older population
  - Common to large \_\_\_\_\_
- Type II -survivorship rate is equal at all stages of life
  - Common to birds and reptiles
- Type III -very high birth rate, very high infant mortality.
  - Common to \_\_\_\_\_

### Population and Growth Patterns

- Populations grow in predictable patterns
- The size of a population is always changing.
- Four factors affect the size of a population:
  - Immigration:
    - organisms coming into a \_\_\_\_\_
  - Births
  - Emigration
    - Organisms \_\_\_\_\_ an ecosystem
  - Deaths
- Population growth is based on available resources.
- There are two types of growth:
  - Exponential
  - Logistic
- Exponential growth is a \_\_\_\_\_ population increase due to an abundance of resources.
- Logistic growth is due to a population facing limited resources.
  - Population will level out around \_\_\_\_\_.
- Carrying capacity is the maximum number of individuals in a population that the environment can support.
- A \_\_\_\_\_ is a dramatic decline in the size of a population over a short period of time.
- Ecological factors limit population growth.
- A \_\_\_\_\_ is something that keeps the size of a population down.
- There are two types of limiting factors:
  - Density dependent
  - Density \_\_\_\_\_
- Density dependent limiting factors are affected by the number of individuals in a given area.
- Examples:
  - Predation
  - \_\_\_\_\_
  - Parasitism and disease
- Density independent limiting factors limit a population's growth regardless of the density.
- Examples:

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- Unusual weather
- \_\_\_\_\_
- human activities