

## Diversity in Ecosystems Notes

### ECOLOGY

- **Ecology** is the study of interactions among organisms. It also involves the study of how organisms interact with their surrounding environment.
  - Organisms and their environment are interdependent.
- The relationships among the living and non-living parts of a particular environment create an **ecosystem**.
  - **Abiotic** elements are non-living things, while the **biotic** elements are living.
  - **Artificial Ecosystems** are planned and maintained by humans.
  - **Natural Ecosystems** occur naturally and grow on their own, most often untouched by humans.
    - They undergo change each year because of free growth.
- In a healthy ecosystem, each organism fills a **niche**, or a certain place and role in the ecosystem.
- An ecosystem with high **biodiversity** will contain many types of organisms.
  - Members of the same species that live in the same habitat are known as a **population**.
  - A group of populations in the same habitat are called a **community** of organisms.
- Organisms within neighboring ecosystems will interact in the transitional area between two ecosystems; this area is called an **ecotone**.
  - Ecotones have an increased biodiversity and are therefore less fragile, guarding against extinction because there are so many alternative food sources.

### SPECIES AT RISK

- There are various degrees of risk:
  - **Vulnerable** species exhibit low or declining numbers at the fringe of its range or in some restricted area.
  - **Threatened** species are likely to become endangered if the factors making them vulnerable are not reversed.
  - **Extirpated** species no longer exist in one part of a nation but can be found in other areas.
  - **Endangered** species are close to extinction in all parts of a nation or in a significantly large location.
  - **Extinct** species are no longer found anywhere on Earth.
    - Records within rocks and fossils reveal several large-scale disasters that have destroyed huge numbers of species. Mass extinctions occurred before humans existed and the most promising theories involve asteroids crashing into Earth.
- Species extinction rates are increasing dramatically as the human population grows.
  - Climate change and the pressure of competition force organisms to either adapt or die, but these causes for extinction still do not outweigh the devastating effects of human activities.
- The reduction of biodiversity caused by the extinction of a single species can cause a **domino effect** – the collapse of an entire food chain.