

Introduction to Ecology Notes

Ecology

The scientific study of interactions between organisms and their environments.



Ecologist

A scientist who studies these interactions in order to understand the abundance and diversity of life within Earth's ecosystems.

Organization of Life

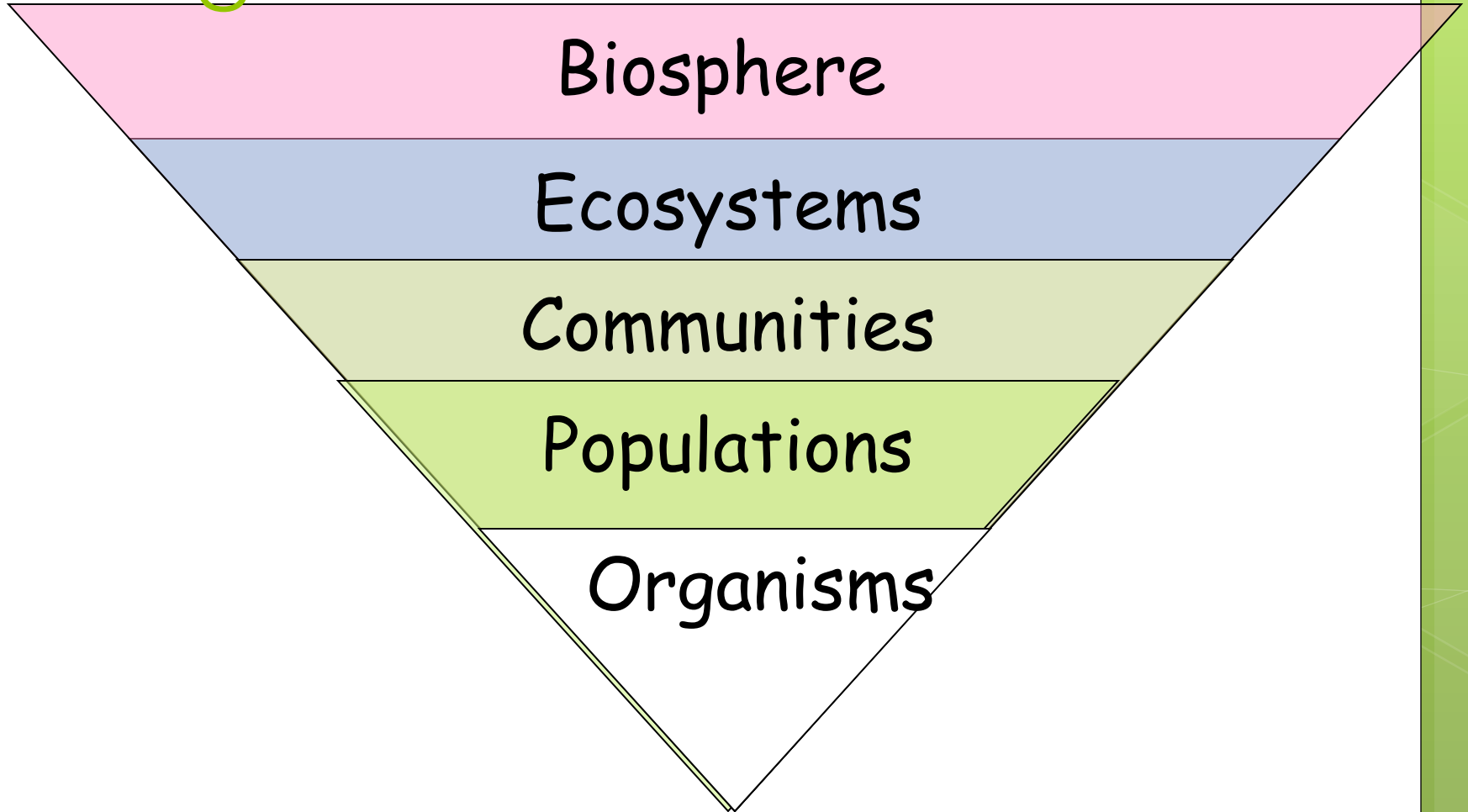
Biosphere

Ecosystems

Communities

Populations

Organisms



Biosphere

- The regions of the surface and atmosphere of the earth or other planet occupied by living organisms.



Ecosystems

- Ecosystems are dynamic interactions between plants, animals, and microorganisms and their environment working together as a functional unit.
- Ecosystems will fail if they do not remain in balance.



Communities

- a group of actually or potentially interacting species living in the same place. A community is bound together by the network of influences that species have on one another.



Population

- a group of individuals of the same species living in a particular geographic area.



Organism/Species

- Individual members that form a population.



Biosphere



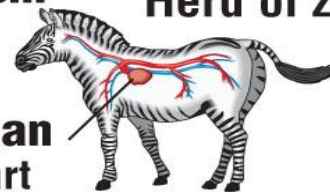
Ecosystem
African savanna



Community
All organisms in savanna

Population
Herd of zebras

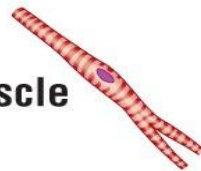
Organism
Zebra



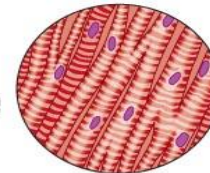
Organ system
Circulatory system

Organ
Heart

Cell
Heart muscle
cell



Tissue
Heart muscle tissue



Molecule
DNA



Atom
Oxygen atoms

Environment

- Is everything that surrounds a living thing and acts upon it. The environment is where all living things get the materials they need for survival.

Interact

- The process of organisms acting upon one another or on the nonliving parts of their environment.

Biotic Factors

- Biotic factors – all **living** organisms in a biosphere

Biosphere – life-supporting layer of Earth

Abiotic Factors

- **Nonliving** factors in an environment
- Examples:
 - Air currents
 - Temperature
 - Moisture
 - Light
 - Soil

Three Basic Approaches to Modern Ecological Research

- Observing – Ecologists observe interactions between living things and their environment. These interactions and phenomena are often difficult because they occur over long periods of time
- Experimenting – Ecologists experiment with setting up artificial environments in laboratories so because this enables them to better control factors in the environment
- Modeling – Ecologists use models to represent both small and large geographical areas. Models often include mathematical formulas.