Chapter 4 The Organization of Life

Section 1 Ecosystems: Everything is Connected

Ecosystem – all of the organisms living in an area together with their physical environment

- needs at least 5 basic components:

1. energy
2. mineral nutrients
3. water
4. oxygen
5. living organisms

The energy in most ecosystems comes from the sun

Two components of an ecosystem:

1. Biotic – living component (organisms)
2. Abiotic – chemical and physical components (air, water, rocks, sand, light, temp.)

Organism – an individual living thing

Species – a group of organisms that are closely related

Population – all the members of the same species that live in the same place at the same time

- members usually breed with one another

Communities – the difference between them are the types of species they have

- a group of various species that live in the same place and interact with each other

Habitat – where an organism lives

- each has a specific characteristics that an organism needs to survive

Section 2 Evolution

Evolution – a change in the genetic characteristics of a population from one generation to the next

Charles Darwin – observed that organisms differ from others within a population due to heredity and he proposed that environment has a strong influence for survival

- some are more likely to survive better than others and so he used the term <u>natural selection</u>

- because of certain traits, some individuals are more likely to survive and reproduce than others

Evolution by Natural Selection – Table 1 Page 98

Adaptation – an inherited trait that increases an organism's chance of survival and reproduction in a certain environment

Coevolution – the process of two species evolving in response to long-term interactions with each other

Artificial Selection- selective breeding of organisms by humans for specific characteristics

Resistance – the ability of one or more organisms to tolerate a particular chemical designed to kill it

ex: pesticide resistance

Section 3 The Diversity of Living Things

Life on Earth is incredibly diverse

Six Kingdoms- Table 2 Page 102

1 and 2. Bacteria – microscopic, single- celled organisms that usually have cell walls and reproduce by fission and lack nuclei

Two Kinds: Archarbacteria

Eubacteria

They both play an important role in the environment

3. Fungi – organisms whose cells have nuclei, cell walls and no chlorophyll

    - all absorb their food from their surroundings

4. Protists – one- celled microscopic organisms

    - most live in water

5. Plants – many-celled organisms that make their own food using the sun's energy and have cell walls

    - most are on land

    - vascular tissue - leaves and roots are connected by this system of tubes that carries water and food

- Gymnosperms – woody plants whose seeds are not enclosed in fruits
  ex: pine trees (conifers)
  - they produce pollen, which protects and moves sperm between plants
  - they produce seeds, which protects developing plants from drying out
  - our lumber and paper come from these
- Angiosperms – flowering plants that produce seeds in fruit
  - the flower is the reproductive structure
  - most of the food we eat comes from these, along with fibers, such as oak and cotton

6. Animals – can't make food, depend on enviro.

- no cell walls
- more mobile

a. Invertebrates – lack a backbone

- many live attached to hard surfaces in the ocean
- others move around very actively
- insects would be the largest group of animals

b. Vertebrates – possess a backbone

- most live on land