

Chapter 4 - The Organization of Life

- Ecosystem – all of the organisms living together with their physical environment
- Examples:
 - Vacant lot
 - Coral reef
 - Desert
 - Savanna
 - Tropical rain forest

Components of an ecosystem

- 1. Biotic Factors
 - a. Living and once living organisms
 - b. Examples
 - Animals, plants
- 2. Abiotic Factors
 - a. Nonliving parts of an ecosystem
 - b. Examples
 - Air, water, sand, rocks, light, temperature, etc.

Components of an ecosystem

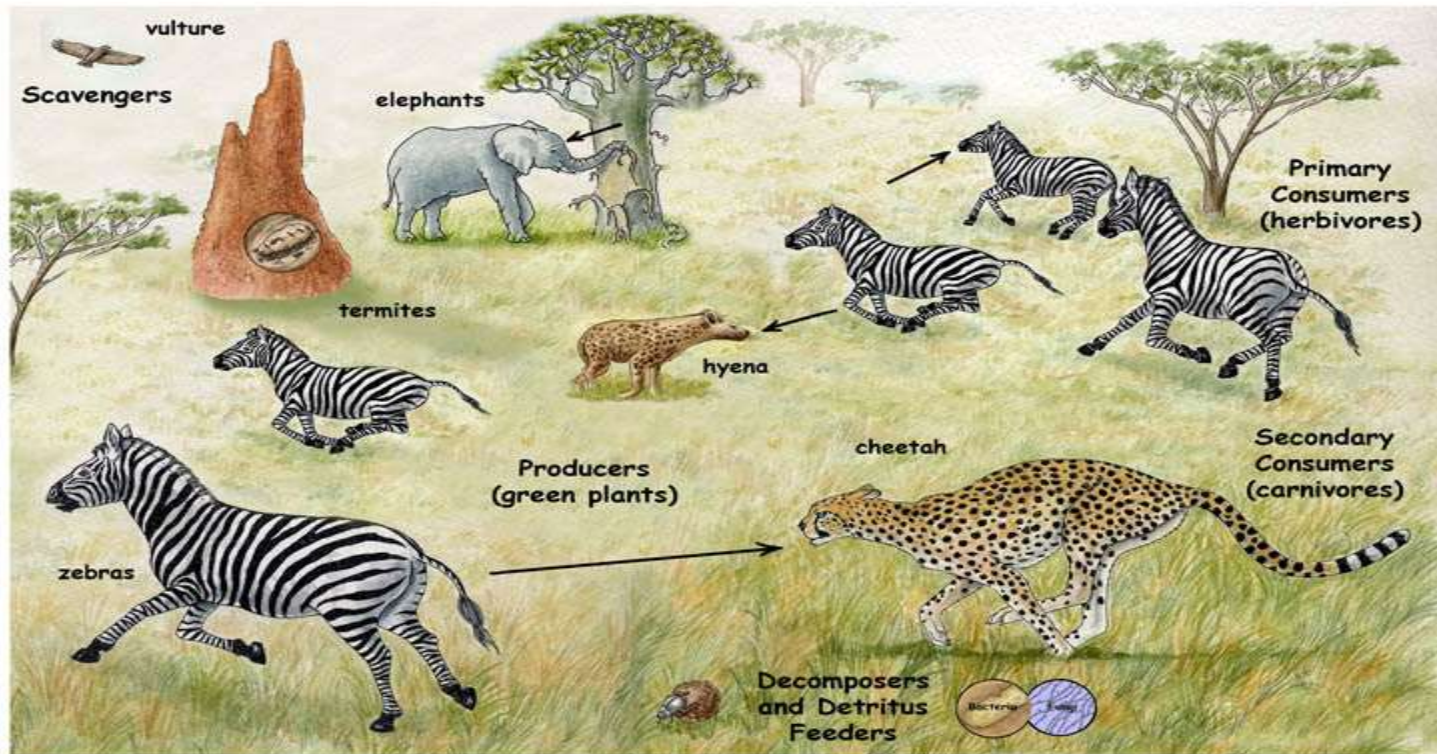
- 3. Organisms
 - a. An individual living thing
 - b. Species - a group of organisms that can mate to produce fertile offspring
- 4. Populations
 - a. All the members of the same species that live in the same place at the same time

Components of an ecosystem

- 5. Communities
 - a. A group of various species that live in the same place and interact with each other
 - b. Examples: Pond, Forest
- Everything is connected → a food web

Components of an ecosystem

Grassland Food Web



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REVIEW

1. Give an example of an abiotic factor.
2. Give an example of a population.
3. What is the difference between a community and an ecosystem?

Habitat

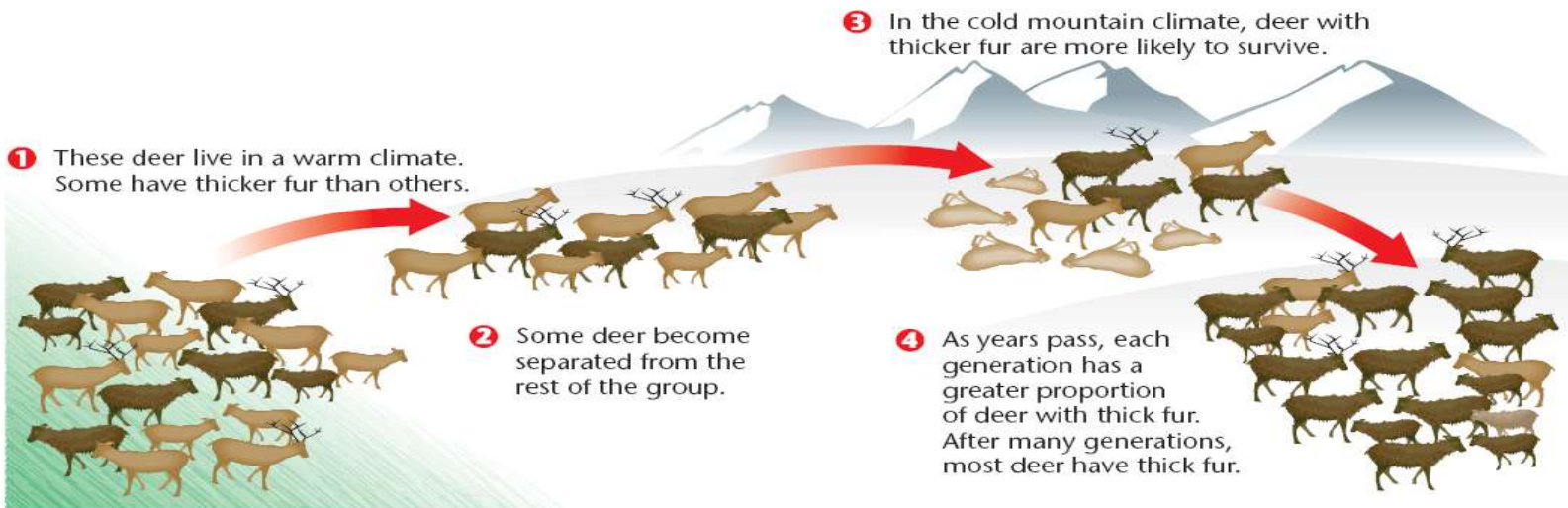
- 1. A place an organism lives
- 2. Each habitat has specific biotic and abiotic factors that the organisms living there need in order to survive.
- 3. If any of these factors change, then the habitat changes and the organisms may not be able to adapt and survive.

Evolution by Natural Selection

- 1. Natural selection
 - a. The survival and reproduction of organisms with particular traits that allows them to survive.
- 2. Evolution – a change in the genetic characteristics of a population from one generation to another.

Evolution by Natural Selection

- 3. Adaptation – an inherited trait of an organism that increases their chance of survival and reproduction in a certain environment
 - Examples: Deer



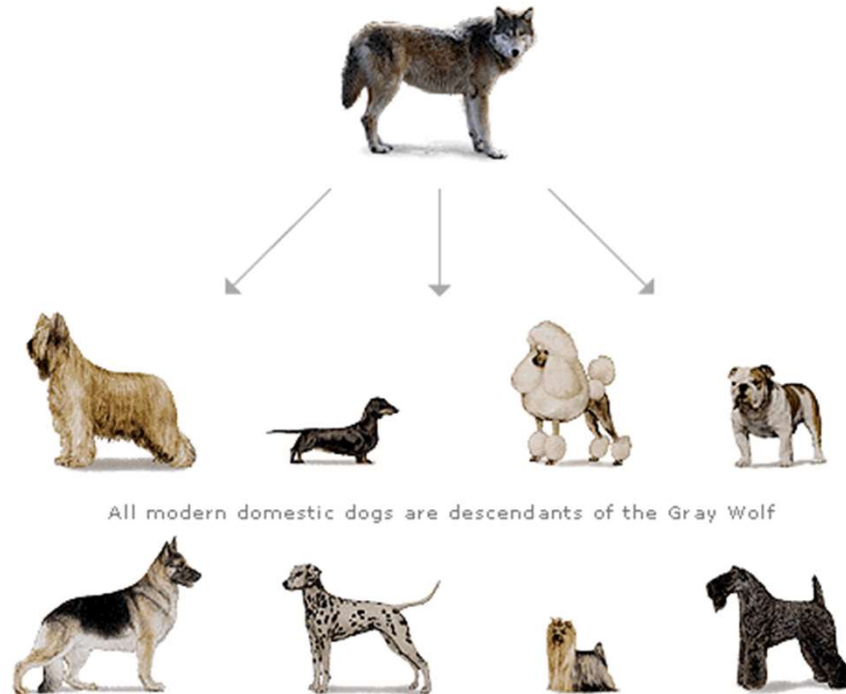
Evolution by Natural Selection

- 4. Coevolution – two or more species evolving in response to long-term interaction with each other.
 - a. This can be positive or negative
 - Madagascar orchid and hawk moth



Evolution by Artificial Selection

- 1. Selective breeding of plants and animals for specific traits
 - a. Examples: Dogs



REVIEW

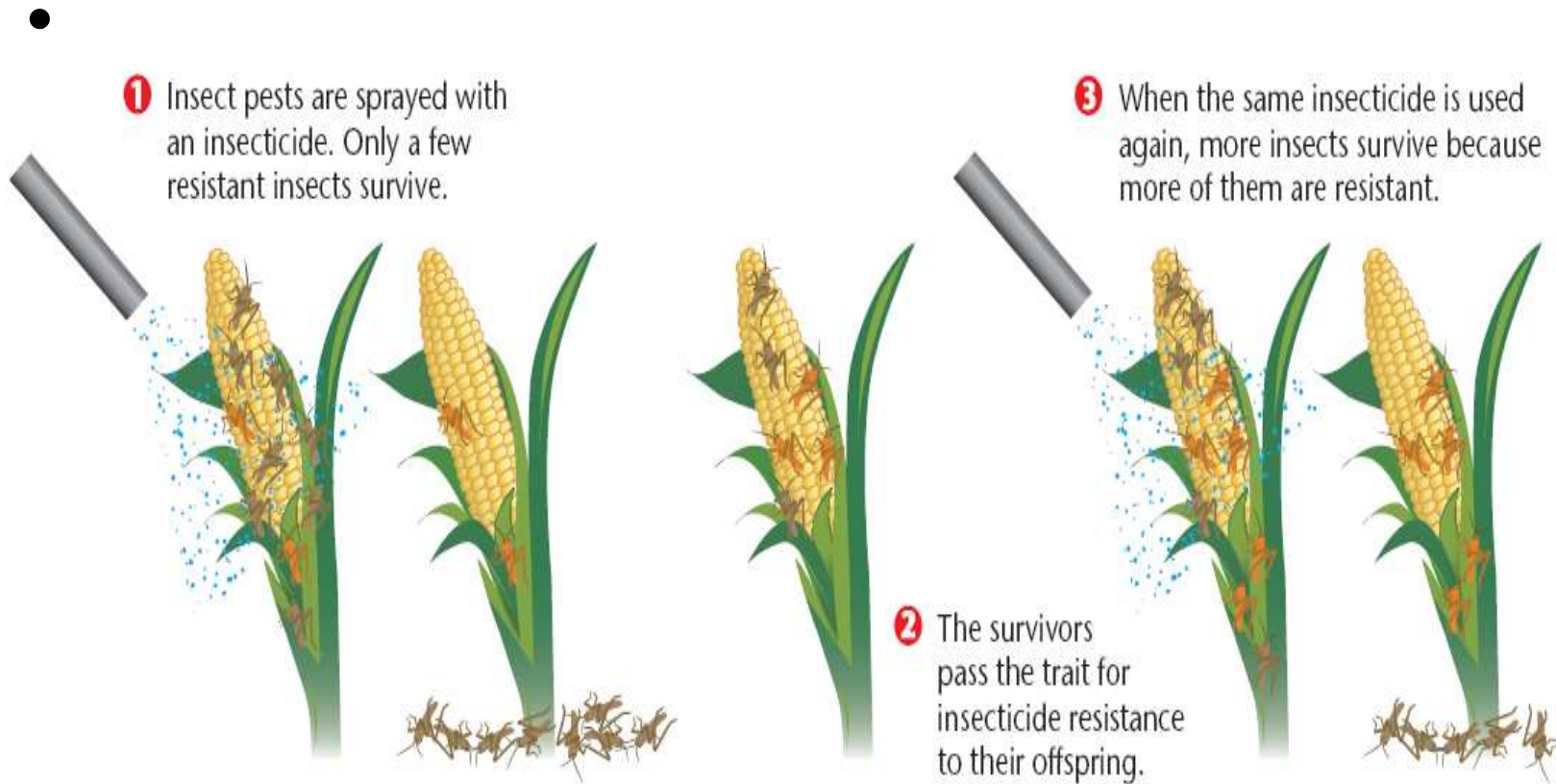
1. Describe natural selection.

2. What is evolution?

Evolution of Resistance

- 1. The ability of one or more organisms to tolerate a particular chemical designed to kill it.
- 2. Pesticide resistance
 - a. Over time, insects become more and more resistant to the pesticides that are used on the crops.
 - b. Result → the pesticides no longer work on those insects.

Evolution of Resistance



REVIEW

Explain resistance.

The Diversity of Living Things

6 Kingdoms

Table 2 ▼

The Kingdoms of Life		
Kingdom	Characteristics	Examples
Archaeobacteria	single celled; lack cell nuclei; reproduce by dividing in half; often found in harsh environments	methanogens (live in swamps and produce methane gas) and extreme thermophiles (live in hot springs)
Eubacteria	single celled; lack cell nuclei; reproduce by dividing in half; incredibly common	proteobacteria (common in soils and in animal intestines) and cyanobacteria (also called <i>blue-green algae</i>)
Fungi	absorb their food through their body surface; have cell walls; most live on land	yeasts, mushrooms, molds, mildews, and rusts
Protists	most single celled but some have many cells; most live in water	diatoms, dinoflagellates (red tide), amoebas, trypanosomes, paramecia, and <i>Euglena</i>
Plants	many cells; make their own food by photosynthesis; have cell walls	ferns, mosses, trees, herbs, and grasses
Animals	many cells; no cell walls; ingest their food; live on land and in water	corals, sponges, worms, insects, fish, reptiles, birds, and mammals

Review Questions

- Which of the following is not one of the kingdoms of living things?
 - a. archaeobacteria
 - b. protobacteria
 - c. eubacteria
 - d. protists

Review Questions

- Humans have promoted the evolution of insects that are resistant to insecticides by...
- a. trying to control pests with chemicals.
- b. using insecticides that are outdated.
- c. using the wrong insecticide.
- d. breeding more useful insects.

Review Questions

- The Chihuahua is a dog that exists because of...
- a. natural selection.
- b. artificial selection.
- c. resistance.
- d. abiotic factors.

Review Questions

- Which of the following is not true of an adaptation?
 - a. It is an advantage to an organism in certain environments.
 - b. It increases an organism's chance of reproducing.
 - c. It increases an organism's chance of survival.
 - d. It decreases an organism's chance of evolving.