Chapter 2.1 Organisms and Their Relationships Notes

: the study of relationships among living organisms and the interactions they have with their environment.

- _____: scientists who study ecology
- Ecologists work in the _____ (outside) or in the _____
- Ecologists perform tests in the environment to give clues about how an organism survives in its environment. Questions like
 - Why did this organism become ill or die from drinking the water?
 - \circ What kink of organisms can live in or near this body of water?
- Ecologists make observations and analyze environments over long periods of time to answer questions about the environment. This is called a ______
- Studying organisms in the field can be difficult because there are just too many variables to study at one time. Instead, scientists use computers to create ______. Models allow ecologists to control the number of variables present and to slowly introduce new variables in order to fully understand the effects of each variable.

All ecological studies take place in the ______. The biosphere is the portion of Earth that supports life.

- It <u>only</u> includes the portion of Earth that supports life, which is really just a thin layer around Earth.
- The biosphere extends from high in the atmosphere down below the ocean to the deep ocean vents. It includes landmasses, bodies of fresh water and saltwater, and all areas below the Earth's surface that support life, frozen polar regions deserts, oceans rain forests.
- Ecologists study the organisms in these environments and the factors in these environments. These factors are divided into two large groups- the living factors and the nonliving factors.

_____-the living factors in an organism's environment

- This includes organisms currently alive as well as dead organisms
- Examples:

_____- factors that are non-living or never were alive

- Organisms depend on abiotic factors and are adapted to the abiotic factors in their natural environments. If an organism moves to another location with a different set of abiotic factors, the organism might die if it cannot adjust quickly to its new surroundings.
- Examples:

Levels of Organization

The biosphere is too large and complex for most ecological studies. To study relationships within the biosphere, ecologists look at _______ of organization or smaller pieces of the biosphere. The levels increase in complexity as the numbers and interactions between organisms increase. The levels of organization are



• Organism- the lowest level of organism. It is the individual organism itself

- Example: ___
- Individual organisms often compete for the same resources, and if resources are plentiful, the population can ______. However, usually there are factors that prevent populations from becoming extremely large. For example, when the population has grown beyond the available resources can support, the population size begins to ______ until it reaches the number of individuals that the available resources can _______
- Population- individual organisms of a single ______ that share the same geographic location at the same time
 - Example: _____
- Biological community-a group of ______ that occupy the same geographic area at the same time
 - Example: the collection of plant and animal populations, including the school of fish, in a pond
 - Organisms might or might not compete for the same resources in a biological community.
- Ecosystem- a biological community and all of the ______ that affect it
 - Ecosystems can be large, like the Sahara desert. They can also be small, like an aquarium or a puddle.
 - The boundaries of an ecosystem are ______ and can _____ with changing abiotic factors like temperature, rainfall, wind etc.
 - Example: the entire pond, which includes all the plants and animals as well as the water, pH, temperature, amount of sunlight, etc.
- Biome- a large group of ______ that share the same climate and have similar types of communities
- Biosphere- all of the biomes on Earth. This is the highest level of organization

Ecosystem Interactions

A community of organisms increases its chances for survival of any one species by using the available resources in different ways.

For example, many different bird species may live in one tree. Their chance for survival ______ if they use ______ resources. So one species of bird may eat the insects on leaves, another may eat ants on the trunk, another may eat the seeds of the tree. If several species live in the tree, they will all live in different parts.

- _____- the area where an organism lives. Think of the habitat as the organisms
- _____- the role or position an organism has in its environment.
 O An organism's niche is how it meets its need for _____, ____, and

Community Interactions

Organisms that live together in a biological community constantly ______. These interactions, along with ______, shape an ecosystem. There are several kinds of interactions

- _____- when two or more organisms try to obtain the same resource. Resources can include ______, ____, ____, ____, ____, ____, ____,
 - When a resource is scarce, the stronger organisms out compete the weaker ones. The weaker ones can move to a new location or face death
 - When a resource is plentiful, all organisms can share the resource, and competition is not as fierce.
- _____- when one organism pursues another and consumes that organism
 - The organism doing the pursuing is the _____
 - The organism being pursued is the _____
- ______-when one organism puts itself at risk in order to help another organism
 - For example: when prairie dogs are out feeding, one prairie dog stands guard, watching for predators. If this prairie dog sees a predator, it will emit a loud, shrill cry alerting the feeding prairie dogs of the danger. However, the guard prairie dog puts itself in danger because it calls the predator's attention.
- _____- the close relationship that exist when two or more ______ species live together. There are three types of symbiosis
 - _____- relationship in which the two different organisms that live together
 - For example: lichens (lik-enz) are an example of a mutualistic relationship between fungi and algae. The algae provide food for the fungi, and the fungi provide a habitat for the algae. They both get something out of their association.
 - _____- the relationship in which one of the organism ______, but the other one is neither ______ nor _____
 - For example: The relationships between clownfish and sea anemones. Clownfish swim among the stinging tentacles of sea anemones without harm. The sea anemones protect the fish from predators while the clownfish eats bits of food missed by the sea anemones. The clownfish receives food and protection, while the anemone is neither harmed nor do they receive a benefit
 - _____- the relationship in which one organism feeds on the body tissues or body fluids of the other one
 - the organism the parasite lives on or in
 - External parasites include ______, ____, etc. Internal parasites include ______, etc.
 etc.
 - Parasites can greatly weaken their hosts, but seldom kill them. Why?
 - _____- a special kind or parasitism that ______ employ. It occurs when one species of bird relies on another species of bird to build their nests and/or incubate their eggs
 - For example: brown-headed cowbirds lay their eggs another bird's nest and abandon the eggs. The host birds incubate the eggs and feed the young cowbirds. Often the baby cowbirds push the host's eggs or young from the nest, resulting in the survival of only the cowbirds. In some areas, the brown-headed cowbirds have significantly lowered the population of songbirds.