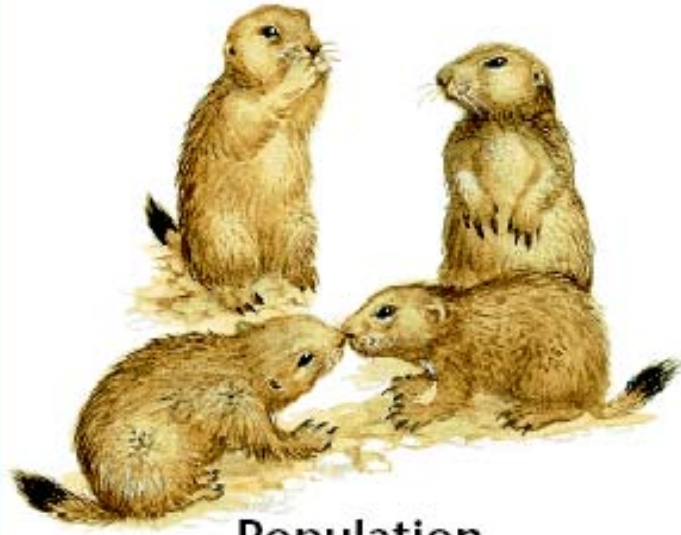


Levels of Organization Within an Ecosystem



Organism



Population



Community



Ecosystem

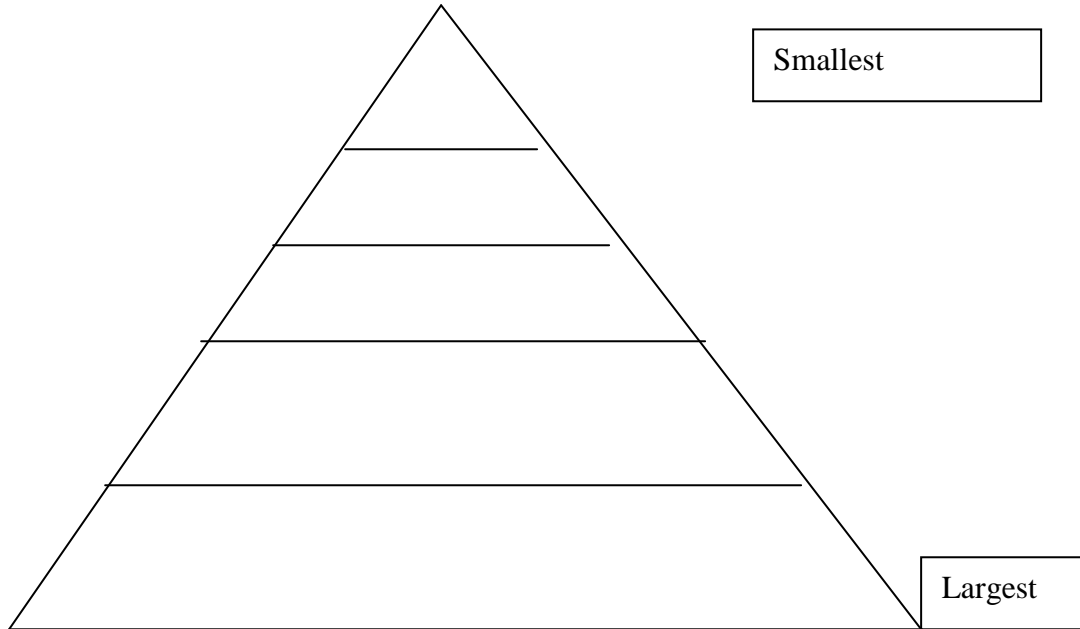
SCIENCE 10 - Worksheet #2

Parts of an Ecosystem

Name:

Block:

1. Give the ecological hierarchy of the biosphere from the largest division to smallest division:



2. What is ecology?

3. What term defines a group of particular organisms which live in a community?

4. What term refers to all the different species which live in an ecosystem?

5. How is habitat different from a niche?

6. Why is soil important for terrestrial ecosystem?

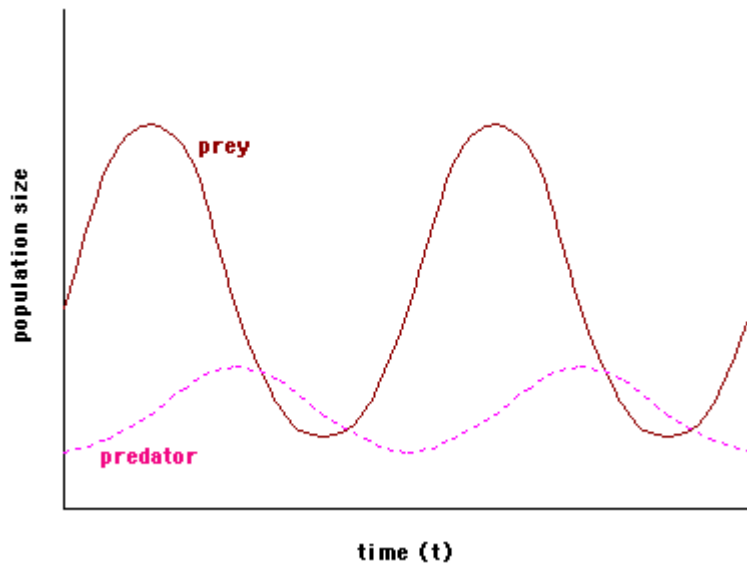
7. Identify each of the following as commensalism, mutualism, parasitism, competition or predation
- a. Bacteria living at the root of a plant get food from the plant and provide nitrogen to the plant for root growth _____
 - b. A whale travels around with barnacles on it's tail. The barnacles get a free ride to food and the whale is not hurt _____
 - c. Tapeworm lives inside of you intestine and eats the nutrients that you ingest _____
 - d. An introduced rat species eats all of the food of a native rat species _____
 - e. Some flowers are pollinated by bees. In return bees get nectar from the flowers _____

8. Are plants defenceless? Do they have any natural protection?

9. What will happen when two species compete for the same resources?

10. What does the term symbiosis mean? Give an example.

11.



Explain why the predator population lags behind the prey population:

11. How does mutualism differ from parasitism?

12.

What is the best reason to explain why fewer plants can grow in deep water than can grow in shallow water in a marine ecosystem?

- A. There are more predators in deep water.
- B. The temperature of the water is colder at deep levels.
- C. Water pollution is more concentrated at deep levels than at shallow water levels.
- D. The amount of light available for photosynthesis is less in deep water than in shallow water.

13.

What is the largest division of the biosphere?

- A. biome
- B. habitat
- C. ecosystem
- D. population

14.

What is the correct order of the ecological hierarchy, from smallest to largest?

- A. ecosystem, population, community, organism
- B. organism, community, population, ecosystem
- C. organism, population, community, ecosystem
- D. population, ecosystem, organism, community

16.

A crab lives on a beach, which is where the crab finds food, shelter and a space to live. For the crab, the beach is an example of what division of the biosphere?

- A. niche
- B. habitat
- C. ecosystem
- D. community

18.

A biologist wants to introduce a new species (species A) into an ecosystem. Species B already lives in the ecosystem and occupies the same niche as species A. What will be the likely outcome if species A is introduced into the ecosystem?

- A. mutualism between the two species
- B. parasitism of species B by species A
- C. commensalism between the two species
- D. competition between species A and species B

15.

Which of the following statements about mutualism is false?

- A. Mutualism is a symbiotic relationship in which both organisms benefit.
- B. In some mutualistic relationships, two species are unable to survive without each other.
- C. In one type of mutualism, one species defends another species against attacks in return for food and shelter.
- D. One species protects another species from predators by camouflage. The host species is not harmed in the relationship.

17.

Which of the following statements about water is **not** true?

- A. Water anchors plants in place.
- B. Without water, no organism would survive.
- C. Water carries nutrients from one place to another in an ecosystem.
- D. The cells of most living organisms contain between 50 and 90 percent water.

19.

Which of the following characteristics are common adaptations of predators?

I	good eyesight
II	mimicry
III	sharp, pointed teeth

- A. I only
- B. I and III only
- C. I, II, and III
- D. II and III only

Ecosystem Notes

- **Habitat** – Place where an organism lives and that provides the things the organism needs
- **Species** – a group of similar organisms that can mate with one another to produce children
- **Population** – all the members of one species in a particular area
- **Community** – the different populations that live together in an area
- **Ecosystem** – Living and non-living things that interact in a particular area
- The *type* of place an organism lives is the ecosystem, the specific *part* of the ecosystem that meets the organism's needs is its habitat:
 - *Forest Ecosystem – woodpeckers habitat is different from that of a mushrooms*
- **Biotic Factors** – the living parts of an ecosystem
- **Abiotic Factors** – the nonliving parts of an ecosystem
 - *Examples: water, oxygen, and sunlight*
- **Ecology** – study of how living things interact with one another and with their environment

Energy Transfer Notes

- **Producer (Autotroph)** – an organism that makes its own food and stores energy
 - *Example: plants*
- **Consumer (Heterotroph)** – an organism that obtains food and energy by eating other organisms
- Types of Consumers:
 1. **Herbivores** – organisms that eat only plants
 - *Example: cattle*
 2. **Carnivores** – organisms that eat only animals
 - *Example: coyotes*
 3. **Omnivores** – organisms that eat both plants and animals
 - *Example: bears*
- **Decomposer** (*also a heterotroph*) – organisms that obtain energy by breaking down wastes and the remains of dead organisms
 - *Examples: mushrooms and earthworms*
- **Food Chain** – model that shows how energy passes from one organism to another
 - In a food chain, an arrow points from the organism being eaten to the organism doing the eating
 - Primary source of energy in a food chain is the sun
 - *Example: Plant → Rabbit → Weasel*
- Levels of Consumers:
 - **First level**: Consumers that eat producers
 - **Second level**: Consumers that eat first-level consumers

- Only about 10% of the energy consumed by a first-level consumer is available for the second-level consumer. The other 90% is used to support the life processes (keeping warm, pooping, etc) of the primary consumer
- This means that the higher the level of consumer, the fewer there are of them because they have to eat *A LOT* to get enough energy
- **Food Web** – a series of overlapping or connected food chains that exist in an ecosystem. More accurate than a food chain because they show ALL the feeding relationships within an ecosystem

Components of an Ecosystem

Guide for Reading

- What components of an ecosystem do organisms respond to?
- What are the levels of organization within an ecosystem?

All the living and nonliving things that interact in a particular area make up an **ecosystem**. Organisms live in a specific place within an ecosystem. An organism obtains food, water, shelter, and other things it needs to live, grow, and reproduce from its surroundings. The place where an organism lives and that provides the things the organism needs is called its **habitat**.

An organism interacts with both the living and nonliving things in its environment. The living parts of an ecosystem are called **biotic factors**. The nonliving parts of an ecosystem are called **abiotic factors**. Abiotic factors include water, sunlight, oxygen, temperature, and soil.

All the members of one species in a particular area are referred to as a **population**. Some animal populations form highly structured groups called societies. A **society** is a closely related population of animals that work together for the benefit of the whole group.

All the different populations that live together in an area make up a **community**. The smallest unit of organization is a single organism, which belongs to a population of other members of its species. The population belongs to a community of different species. The community and abiotic factors together form an ecosystem.

The study of how living things interact with each other and with their environment is called **ecology**. Ecologists, scientists who study ecology, look at how all the biotic and abiotic factors in an ecosystem are related. They study how organisms react to changes in their environment. Living things constantly interact with their surroundings, responding to changes in the conditions around them

Energy in an Ecosystem

Guide for Reading

- How does energy flow in living systems?
- What happens when biomass decays?

Autotrophs, such as plants, use the sun's energy to turn water and carbon dioxide into sugar molecules. An organism that can make its own food is a **producer**. Producers are the source of all the food in an ecosystem.

Heterotrophs cannot make their own food. They depend on autotrophs for food and energy. An organism that obtains energy by feeding on other organisms is a **consumer**. Consumers are classified by what they eat. Consumers that eat only plants are called herbivores. Consumers that eat only animals are called carnivores. A consumer that eats both plants and animals is called an omnivore. An organism may play more than one role in an ecosystem.

Heterotrophs that break down wastes and dead organisms and return the raw materials to the environment are called **decomposers**. As decomposers obtain energy for their own needs, they return simple molecules to the environment to be used again by other organisms.

Ecologists use a diagram called a **food chain** to show to flow of energy from organism to organism in an ecosystem. In general, energy flows from producers to consumers to decomposers in an ecosystem. A diagram called a **food web** shows

how many food chains are connected.

The total amount of living matter, and the remains of dead organisms, in an area is the area's **biomass**. When living things die, decomposers break down the material in the biomass, and the biomass decays. **The decay of biomass produces matter in the form of small molecules. This chemical breakdown also releases the energy stored in the chemical compounds in the biomass.**