Ecosystems and Understanding the Connections

Objective: to get a better understanding of the hierarchy (levels) of structure in nature and determine how the different organisms in the different biomes are connected.

Directions: students will use the biomes provided to determine how ecosystems within that biome would function and what niches different species play within the ecosystem.

For each ecosystem, each student must:

1. research the niche of two organisms within the ecosystem and determine whether it is a primary producer, primary consumer, secondary consumer, or tertiary consumer. You may find that the top (apex) predator within an ecosystem is the secondary consumer, if so, that's fine.

2. What mode of feeding does this organism have? Autotroph or heterotroph? What does the organism specifically eat? Does its diet change throughout the year? How so?

3. What type of habitat does this organism live in? Does it have any requirements for where it lives? If so, what are they?

4. How long does this organism live?

5. How many offspring does it generally have?

6. How does it reproduce?

Each group must:

1. create at least 4 food chains from the organisms in their biome's diagram and draw arrows from the organism being consumed (prey) to the organism doing the eating (predator).

2. fill in the google sheet (link on class board) for each student's research

3. share with the class two of each level of the food chain of your biome: primary producer, primary consumer, secondary consumer, and tertiary consumer (if present).

4. get ready to take the quizzes questions for the last 5-7 minutes of class.

Terms to know:

Organism – an individual member of a population of a species

Population – a group of individuals of the same species interacting with one another and interbreeding

Community – an interacting group of populations of different species within an ecosystem

Ecosystem – the place where an organism interacts with other organisms (same or different) as well as with its physical environment (weather, physical Earth)

Biome – the collection of the same ecosystem in all the different places around the planet. Water, tundra, taiga, deciduous forest, rainforest, and grassland represent the major categories.

Autotroph – method of feeding in which an organism makes its own food

Heterotroph – method of feeding in which an organism consumes other resources to get the necessary nutrients to live

Food chain – the pathway of "what eats what" from the lowest level to the highest level. Usually takes 3-5 steps.

Food web – all the interconnected food chains within an ecosystem

Primary producer – autotrophic organisms that make their own food by using energy from the sun. These are plants, grasses, trees, shrubs

Primary consumer – these are heterotrophs that eat the primary consumers. These are called grazers, or herbivores. If an animal eats the berries, but is not

Secondary consumers – these organisms eat the primary consumers and are either carnivores or omnivores

Tertiary consumers – organisms that eat the secondary consumers. These are called top, or apex, predators.

Biotic factors – factors that affect an organism which are due to another living organism. Disease, food overharvesting, predation…

Abiotic factors – factors that affect an organism which are due to physical factors in the environment. Wind, temperature, rainfall, terrain…