

ECOSYSTEMS STUDY GUIDE

BIG IDEA: Living things are organized into systems that are interconnected and interactions with and among living systems cause changes in matter, energy, and environment.

FOOD CHAINS AND FOOD WEBS

SUN>PRODUCER>CONSUMER>DECOMPOSER>SUN

Food web: several food chains together

Be able to put a sample food chain in order/identify each organism's role in the chain (producer, consumer, decomposer)

Sun is the primary source of energy for all ecosystems

Producers are the only organisms that make their own food and oxygen

- Photosynthesis is the process in which plants use energy from the sun to make their own food
- Oxygen is given off by plants- released into the air or water

Consumers consume plants and other consumers- they can be primary, secondary, tertiary consumers

Decomposers recycle dead and decaying plants and animals and return nutrients to the soil so new plants can grow- examples of common decomposers are bacteria, fungi, mushrooms

Be able to apply concepts: What would happen if you took one factor out of a food chain (i.e. all of the plants die? the consumers that eat those plants will most likely die too, and so on

Organisms need space- too many of any one plant or animal can crowd a system

Herbivore (plant eaters), omnivore (plant and meat eaters), carnivore (meat eaters)

Niche- each animal has a their own role in an ecosystem- **be apply to apply concept**--example: a barn cat's niche is to catch mice; example: frogs and snakes can live together in the same garden because they occupy different niches

Mutualism: the relationship between two organisms in which both benefit from the association ex: bees pollinating flowers

Animal adaptations- know and be apply concept-examples: camouflage, hibernation, storing water

Plant adaptations and needs- plants adapt to their environment- **know and be able to apply concept-** example: desert plants grow long roots and are able to store water for long periods of time; effect: **plants don't grow as well in thick forests because the trees block the amount of sunlight that reaches them; plants can't grow at the very bottom of an aquatic (water) ecosystem b/c of lack of sunlight's energy reaching them**

All plants need sunlight- even those living under water- however, plants adapt to their environment and some need more and some need less light to survive

Predator/prey relationships- know and be able to apply concepts

Scavengers: animals that seek out dead and dying organisms

Human impact on ecosystems- humans can cause habitat reduction and threaten survival of species by cutting down forests, building dams that block natural swimming patterns of fish etc

Biomes- 7 major areas on Earth, each with a certain set of characteristics- tundra (short growing season), taiga (coniferous forests), temperate forest, tropical rainforest, desert, grassland, ocean

Ecosystems-be able to decide which abiotic (non-living) and biotic (living) factors would be found in each (woodland, saltwater, freshwater, desert, etc)

Biodiversity: Many different types of plants are needed to support the greatest variety of organisms in an ecosystem- the rainforest is one of the most diverse areas on earth and plants need to be preserved to maintain the variety of other plants and animals

pH paper - press the paper into the soil until it gets wet in order to test/measure **soil** acidity (acid) or alkalinity (base)

Model: small replica of large system- often used in classrooms so that students can study large systems such as ecosystems, solar system

Variables- Independent variable is the variable you can control in an experiment. Dependent variable is the one you observe and measure in an experiment. If you are testing the effect of light on plant growth, how much light you give the plant is the independent variable and how much the plant grows is the dependent variable.

Be able to identify what a student's observations and predictions would look like in a science notebook