Cincinnati Public Schools

Remote Learning Plan

Grade 7

SCPA - 7 Science Moraga

Week 6- Ecosystems

Student Name_____ Bell _____

Weekly Outcomes:

- **Learning Outcome - Week 6: Ecosystems - explain how changes in the population of one species could effect changes in another a population of another species and explain how energy moves throughout an ecosystem.**
- **Directions** - Do your Reading and Questions for the week. Then select and complete activities from the menu for that week. **OR** or go one Schoology
- **Task** - Complete Reading Comprehension and the Read and Respond Non Fiction for the week and 100 points worth of work from the menu **for the week.**
- **How do I know if my work is good?**
    - Information is accurate.
    - All parts of the question are answered completely.
    - Work is detailed and completes the required task.
    - If applicable, work is colorful and visually appealing.
- **What if I need help?**
    - Visit www.discoveryeducation.com and read the Engage and Explore tabs for the following lessons (Do this through Schoology on the left hand side bar)
        - 5.1 (Parts of an Ecosystem)
    - Visithttp://studyjams.scholastic.com/studyjams/jams/science/ecosystems/ecosystems.htm and http://studyjams.scholastic.com/studyjams/jams/science/ecosystems/food-webs.htm and explore the slide shows/videos listed below. Once finished, complete the “Test Yourself” activity.
        - Ecosystems, Food Webs

Ecosystems

Cross-Curricular Focus: Life Science

An **ecosystem** is all the things that interact in a specific area, whether they are living or non-living. Some examples of non-living things that support life in an ecosystem are light, air, soil and water. Living things are the plants and animals, called **organisms,** that use those resources.

Each of the specific ecosystems in the world has its own conditions created by the non-living things. These conditions determine what kinds of living things will be able to thrive there. Organisms can only thrive where their needs are being met. Everything in an organism's environment has an effect on it. One ecosystem that allows many different kinds of organisms to thrive is a temperate zone. It is an area where the conditions never become too hot or too cold.

All the living things in an ecosystem are called a **community**. All of one specific kind of organism living in a community is called a population. All the tree frogs in a rainforest community are one population within the community. All the white birch trees are another population within the same community. All the jaguars are yet another rainforest community population.

All living organisms perform certain life processes. They take in nutrients like air, sunlight, water, and food. They use energy from those nutrients to grow and develop. They release energy by doing work and moving. They release waste products. They react to things in their environment. They reproduce, producing offspring, or babies, that are similar to themselves.

Name: _____

Answer the following questions based on the reading passage. Don't forget to go back to the passage whenever necessary to find or confirm your answers.

1) What is one example of a non-living thing in an ecosystem? _____

_____

2) What are three of the life processes that living organisms do? _____

_____

_____

3) What does population mean in a community?

_____

_____

4) When does an organism thrive?

_____

_____

5) Why does a temperate zone support many varieties of organisms? _____

_____

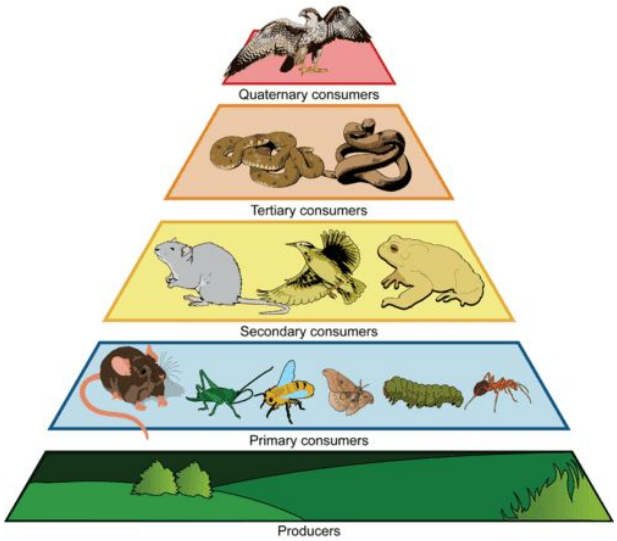
Flow of Energy in Ecosystems

What is the source of energy for almost all ecosystems?

The Sun supports most of Earth's ecosystems. Plants create chemical energy from abiotic factors that include solar energy. Chemosynthesizing bacteria create usable chemical energy from unusable chemical energy. The food energy created by producers is passed to consumers, scavengers, and decomposers.

Trophic Levels

Energy flows through an ecosystem in only one direction. Energy is passed from organisms at one trophic level or energy level to organisms in the next trophic level. Which organisms do you think are at the first trophic level (Figure below)?



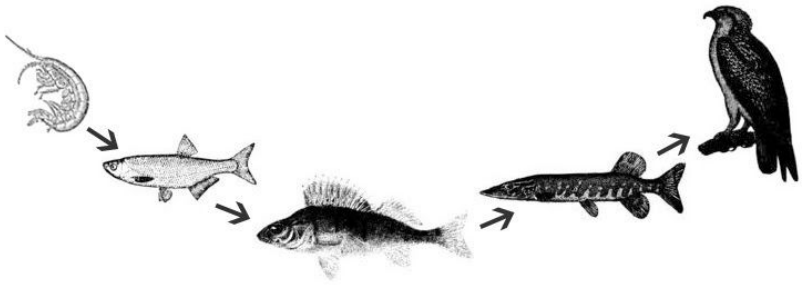
Producers are always the first trophic level, herbivores the second, the carnivores that eat herbivores the third, and so on.

Most of the energy at a trophic level – about 90% – is used at that trophic level. Organisms need it for growth, locomotion, heating themselves, and reproduction. So animals at the second trophic level have only about 10% as much energy available to them as do organisms at the first trophic level. Animals at the third level have only 10% as much available to them as those at the second level.

Food Chains

The set of organisms that pass energy from one trophic level to the next is described as the food chain (Figure below). In this simple depiction, all organisms eat at only one trophic level (Figure below).

A simple food chain in a lake. The producers, algae, are not shown. For the predatory bird at the top, how much of the original energy is left?



What are the consequences of the loss of energy at each trophic level? Each trophic level can support fewer organisms.

How many osprey are there relative to the number of shrimp?

What does this mean for the range of the osprey (or lion, or other top predator)? A top predator must have a very large range in which to hunt so that it can get enough energy to live.

Why do most food chains have only four or five trophic levels? There is not enough energy to support organisms in a sixth trophic level. Food chains of ocean animals are longer than those of land-based animals because ocean conditions are more stable.

Why do organisms at higher trophic levels tend to be larger than those at lower levels? The reason for this is simple: a large fish must be able to eat a small fish, but the small fish does not have to be able to eat the large fish (Figure below).

In this image the predators (wolves) are smaller than the prey (bison), which goes against the rule placed above. How does this relationship work? Many wolves are acting together to take down the bison.

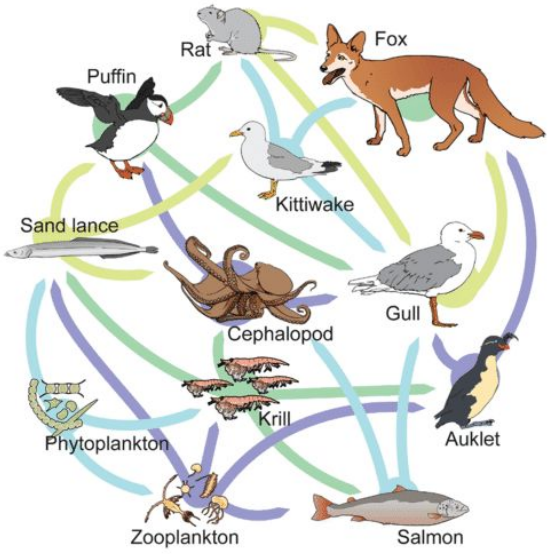
Food Webs

What is a more accurate way to depict the passage of energy in an ecosystem? A food web (Figure below) recognizes that many organisms eat at multiple trophic levels.

A food web includes the relationships between producers, consumers, and decomposers.

Even food webs are interconnected. All organisms depend on two global food webs. The base of one is phytoplankton and the other is land plants. How are these two webs interconnected? Birds or bears that live on land may eat fish, which connects the two food webs.

Humans are an important part of both of these food webs; we are at the top of a food web, since nothing eats us. That means that we are top predators.



Read and Respond
NONFICTION

Article/Author: _____

Main Idea:

_____

_____

_____

_____

Three Important Facts or Statistics:

1. _____

_____

_____

2. _____

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3. _____

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One Opinion From the Article:

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My Opinion About the Article:

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Supporting Detail 1:

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Supporting Detail 2:

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Supporting Detail 3:

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Author's Purpose

☐ Persuade ☐ Inform ☐ Entertain

☐ Explain ☐ Describe

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Text Structure

☐ Description ☐ Problem & Solution

☐ Order & Sequence ☐ Cause & Effect

☐ Compare & Contrast

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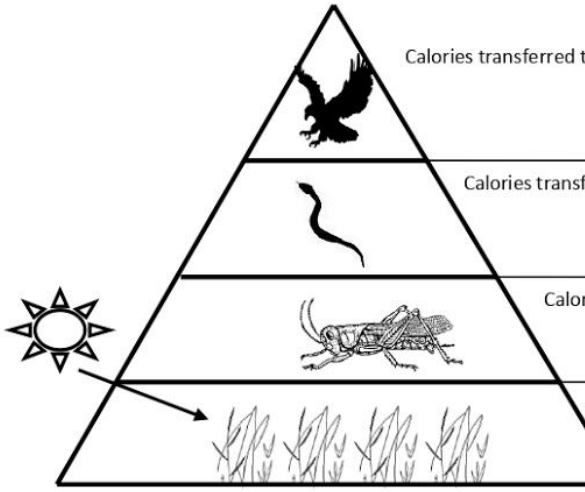
Name_____ Period_____ Date_____

Energy through Ecosystems Worksheet

The amount of available energy at each trophic (feeding) level decreases as it moves through an ecosystem. As little as 10 percent of the energy at any level is transferred up to the next level.

In the energy pyramid below, calculate the amount of energy that is passed up from one trophic level to the next, assuming only 10% of the energy from the previous level is available for the next level. For each trophic level, circle all the words that apply to identify each organism as either a producer or consumer and as either an autotroph or a heterotroph. If the organism could be considered a predator and/or prey, circle those words also.



	Circle all words that apply:
Calories transferred to eagle:	producer consumer predator prey heterotroph autotroph
Calories transferred to snake:	producer consumer predator prey heterotroph autotroph
Calories transferred to grasshopper:	producer consumer predator prey heterotroph autotroph
Calories available from grass: **10,000**	producer consumer predator prey heterotroph autotroph

Questions

1. Assume that the grasshopper in the food pyramid above must eat half its body weight in grass each day. If an average-size grasshopper weighs 2 grams, and 1 blade of grass weighs 0.1grams (one tenth of a gram), how many blades of grass does the grasshopper need to eat each day?

2. Assume a snake must eat 5 grasshoppers per day, while an eagle must eat 2 snakes per day. Use this information along with your answer from Question #1 to calculate how many blades of grass are needed to keep an eagle alive for a day?

3. How many blades of grass are needed to support a family of four eagles for a week?

Ecosystems

Directions: Choose activities from the menu below after finishing your Reading Comprehension and worksheets for the week. You should have a total of 100 points.

25 POINTS

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- ❏ Create an acrostic for a predator for an ecosystem. It should include information about the ecosystem and its food chains.
- ❏ Create a set of trading cards for your ecosystem that include examples of the plants and animals found in your ecosystem.
- ❏ Create 3 truths and a fib about an ecosystem

50 POINTS

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- ❏ Create a travel brochure that would encourage people to visit your ecosystem. Your brochure should include not only general information about your ecosystem but what is special about your ecosystem, making it worth the trip.
- ❏ Create a set of trading cards for your ecosystem that include examples of the plants and animals found in your ecosystem.

75 POINTS

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- ❏ Make an ecosystem board game in which players move through your ecosystem encountering both biotic and abiotic factors and examples of interdependence within the ecosystem.

Ecosystems Menu Work -Create a one pager. For each box not used color it in