

Name: Room 19 # _____

Basic Needs

STEMscopes: Developing a model to describe the movement of matter among animals

Standards that will be addressed:

- **5-LS2.A.1:** The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food or other animals eat the animals that eat plants. Organisms can only survive in environments in which their needs are met.
- **5-LS2.B.1:** Cycles of matter and energy transfer in ecosystems.
- **3-5-ETS1-2:** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

Remember to look at the Science tab on our class website for additional resources, information, and updates.

Pages included in the packet:

1. STEMscopedia
2. Linking Literature: Basic Needs Scene
3. Content Connections Video: Interdependency
4. Science Today
5. Independent Practice
6. Concept Attainment Quiz

Optional Extension Activities:

- At Home Connection Piece (see class website)
- Web Surfing Science (see STEMscopes account)

Test Date & Journal Collection: October 4th

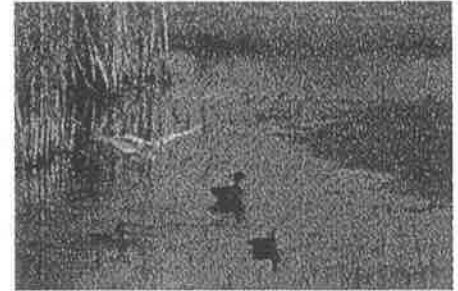
- The test will be 5 Multiple Choice Questions and 3 Open Ended Questions
- Student journals will be collected and graded on neatness and completion.

Reflect

Think about different environments. An *environment* includes everything, living and nonliving, surrounding an **organism**. Some examples include: beach environments, desert environments, forest environments, and arctic environments.

organism: a living thing

Every living organism within these types of environments has basic needs. These basic needs must be present in order for the organism to survive. Air, water, shelter, and food are needs that animals have in order to survive and thrive. Plants need air, water, light, space, and nutrients to survive.



Every living organism has these basic needs, but organisms meet these needs differently, depending on their environment. Think about a shark, for example. A shark gets its food, air, water, and shelter from the ocean. Its gills pull the air (oxygen) it needs out of the ocean water. That is very different from how a squirrel gets the air it needs.

The living organisms in a pond environment are **interdependent** on each other. They depend on each other for survival.

What are the roles of an organism in its environment?




Every living organism within an environment has a specific *role* or job that creates an **interdependent** web linking all organisms. Producer, consumer, and decomposer are all important roles that contribute to the well-being of an environment. These roles create the cycle of resources shared by an environment's members while providing them with their basic needs.



Producers are organisms capable of making their food directly from nonliving resources (water, nutrients, light) in their environment. Producers use the energy from sunlight to activate **photosynthesis**, a process that converts carbon dioxide and water into oxygen and carbohydrates. These can be used by consumers and decomposers in their environment. Producers can also provide protection in the form of shelter to other members of an environment. Examples of producers are plants and algae.

Unlike plants, animals are not capable of producing their own food. Therefore, they have to search for food, a basic need, within their environment in order to survive. Animals are called **consumers**. Consumers ingest other organisms to obtain the energy and nutrients they need to survive. The three types of consumers are herbivores, carnivores, and omnivores.

Reflect

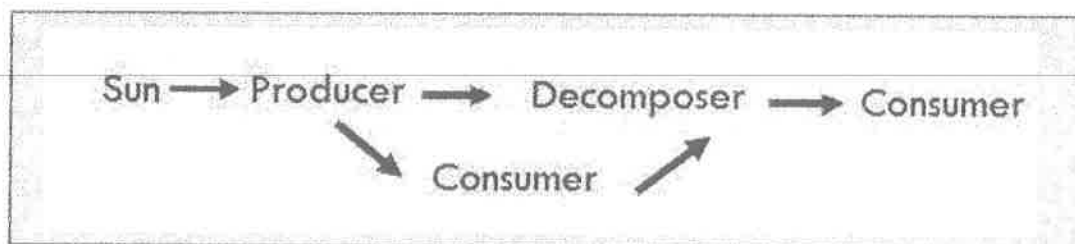
<u>Herbivore:</u> animal that eats only plants	<u>Carnivore:</u> animal that eats only meat	<u>Omnivore:</u> animal that eats both plants and meat
		

Decomposers help an environment by breaking down the matter in dead organisms and recycling the nutrients back into the soil. Producers then use these nutrients when producing their food (photosynthesis). Bacteria and fungi are examples of decomposers.



How do these roles help plants and animals meet their basic needs?

Through their specific roles, plants and animals meet their food needs. These roles create a cycle of resources shared by an environment's members while providing them with their basic needs. This cycle can be illustrated or described by an interdependency web, also known as a food web.



Look Out!

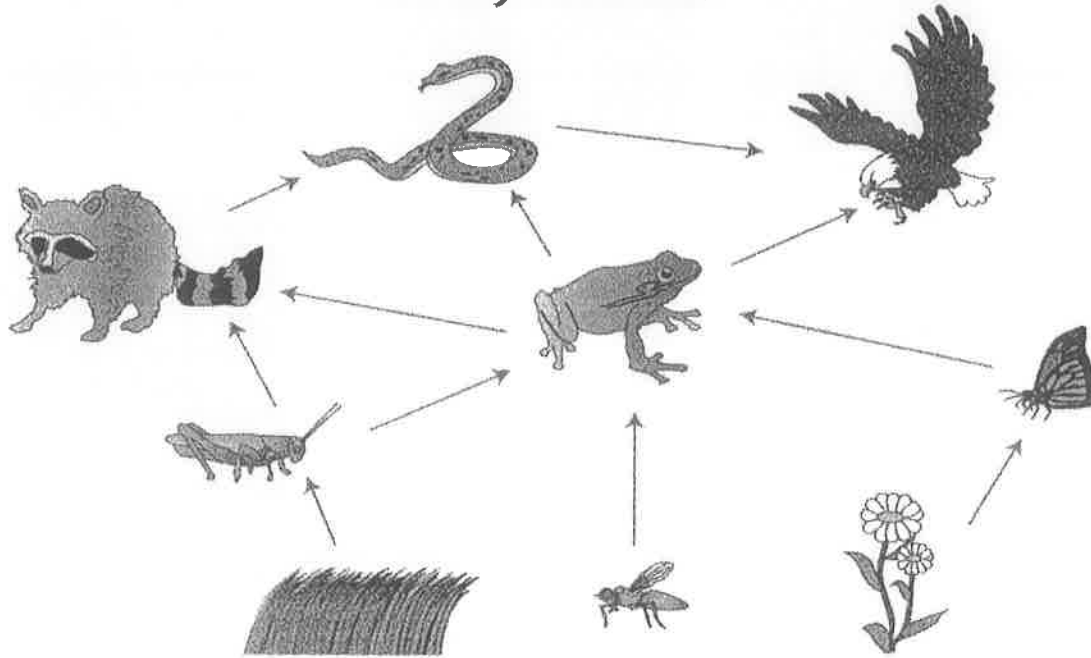
Organisms can only survive in an environment where their basic needs are met. A polar bear cannot survive in the desert for many reasons. Its body is not adapted to live in the heat. Polar bears hunt for fish and fish do not live in the desert because there is little to no water. Polar bears would have a difficult time finding food. With high temperatures, little water, and a lack of an appropriate food source, a polar bear would have a difficult time surviving and thriving in a desert environment. Can you think of other examples of plants or animals that would have a hard time meeting their basic needs outside of the environment in which they are adapted to live?

What Do You Think?

What do you know?

Look at the food web below. Think about how these producers and consumers depend on each other to meet their basic needs of survival. Use the food web to answer the questions that follow.

EcoCity Food Web



1. Which organisms in the diagram are producers?

2. Which organisms in the diagram are consumers?

3. Which organisms in the diagram are herbivores?

4. Which organisms in the diagram are carnivores?

5. What do you think would happen to the frog population if the insect population decreased? How would that then affect the rest of the food web?



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Basic Needs Scene

Draw an animal in its environment in the first box and a plant in its environment in the second box. Be sure to label how each organism meets its basic needs within its environment.

Animal
Plant

How do the different roles in an ecosystem help plants and animals meet their basic needs?



Content Connections Video

Name: _____ Date: _____ Group: _____

Interdependency

1. **Directions:** List the non-living factors in this environment that are important for the frog?

2. **Explain:** What living things are important for the frog's survival?

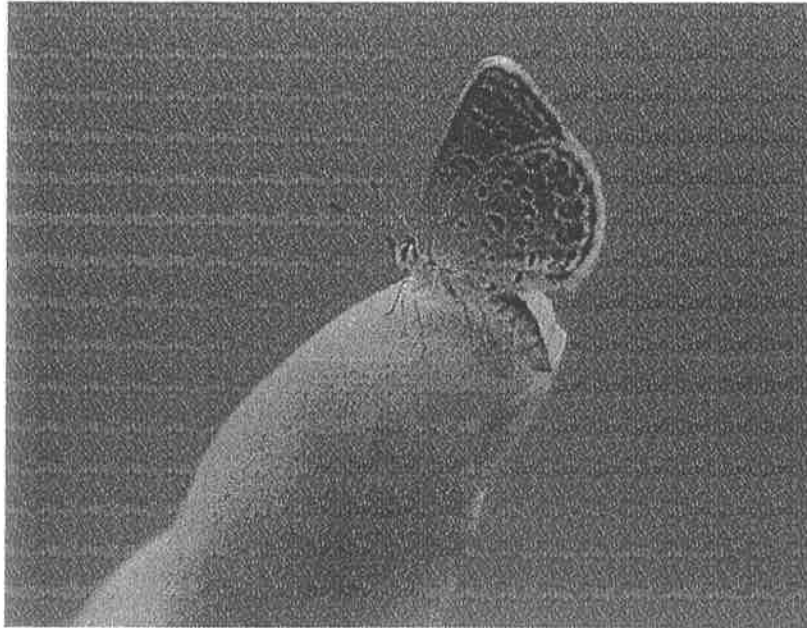
3. **Explain:** How would the ecosystem change if the frogs would be removed?

4. **Directions:** Make a list of living and non-living elements in your schools ecosystem.



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Karner Blue Butterfly Recovery



(AP Photo/Mike Groll)

This tiny butterfly feeds on only the wild lupine plant. If this plant is not available in the butterfly's habitat, the butterfly will not survive. The U.S. Fish and Wildlife Service has taken steps to prevent this butterfly from becoming extinct.

1. Some zoos have breeding programs to help increase the population of Karner blue butterflies. What resources will a zoo need in order to have a successful program?

2. Why is it helpful to breed the butterflies in a zoo rather than letting them breed in the wild?

3. What does the zoo need to consider before releasing the butterflies?



Independent Practice

Name: _____ Date: _____ Group: _____

Part I: Mystery Word

Directions: Each list has a series of clue words. Read through each series to try to figure out the mystery word.

<p>1. Monkey, alive, individual, rose</p> <p>O _____ M</p>	<p>2. Place, plants, animals, soil, sunlight</p> <p>E _____ T</p>
<p>3. Food/nutrients, water, shelter, sunlight, oxygen, carbon dioxide</p> <p>N _____ S</p>	<p>4. Sunlight, water, carbon dioxide, food, plant</p> <p>P _____ S</p>
<p>5. Sunlight, soil, plants, lettuce, apples, eaten, non-consumer</p> <p>P _____ R</p>	<p>6. Herbivores, carnivores, omnivores, non-producer</p> <p>C _____ R</p>
<p>7. Role, plant eater, deer, caterpillars, cows</p> <p>H _____ S</p>	<p>8. Humans, consumer, meat, vegetables, role</p> <p>O _____ E</p>
<p>9. Meat, lion, Venus flytrap, praying mantis, piranhas, role</p> <p>C _____ S</p>	<p>10. Gas, need, producer, make, food</p> <p>C _____ N</p> <p>D _____ E</p>



Independent Practice

Name: _____ Date: _____ Group: _____

Part II: Diagrams

Directions: Draw a simple diagram of each word. Below the diagram, write the letter of the phrase that describes the word.

herbivore	carnivore	omnivore

food web	photosynthesis	producer

- A. Plant eater
- B. How matter and energy moves in an ecosystem
- C. Meat-eating organism
- D. Process used by producers to make food
- E. Plant-eating and meat-eating organism
- F. Uses carbon dioxide, water, and sunlight to make food



Concept Attainment Quiz

Name: _____ Date: _____ Group: _____

I. Vocabulary Matching

<p>_____ Requirements a living thing must have in order to survive.</p> <p>_____ An individual living thing that can function on its own.</p> <p>_____ What a living thing does in order to continue to live.</p> <p>_____ The surroundings around an organism that consist of living and nonliving things.</p>	<p>A. Organism</p> <p>B. Environment</p> <p>C. Survival</p> <p>D. Needs</p>
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II. Identification

Use the word bank to fill in the blanks below.

Cycle of resources	Consumers	Producers	Decomposers
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<ol style="list-style-type: none"> 1. _____ use energy from the Sun in order to produce their own food and release gas, energy, and other matter into the environment. 2. The _____ keep a healthy environment among living and nonliving things. 3. Organisms that ingest other organisms in order to obtain their energy and nutrients are _____. 4. Nutrients in the soil become available when _____ break down the matter of dead organisms and recycle back into the soil.
