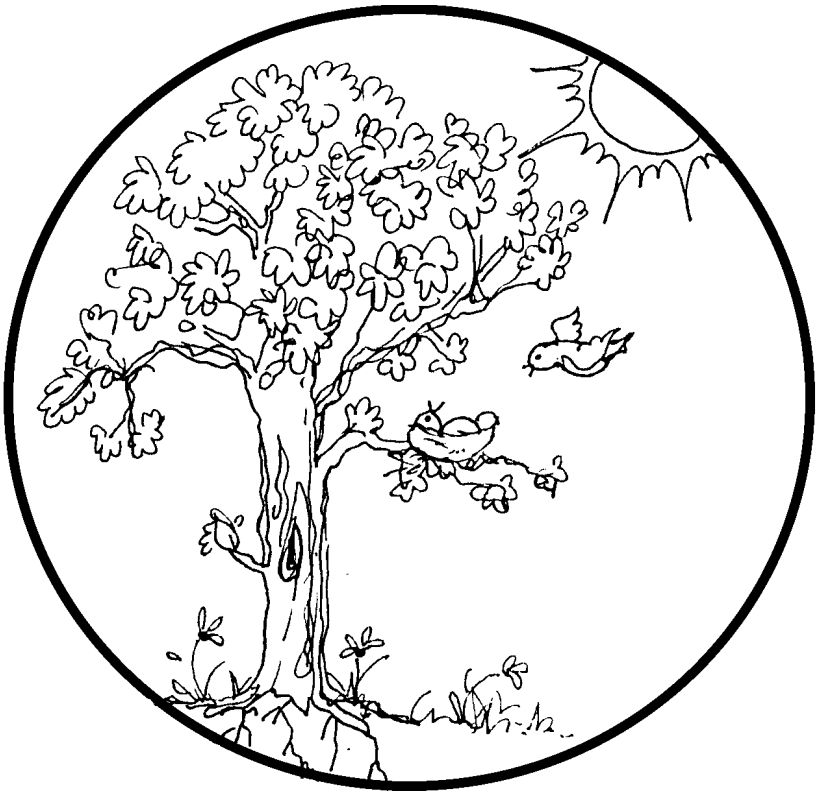
Life Cycle

Diversity in a Balance

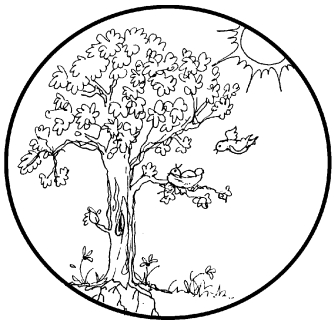
THIRD GRADE

NATURAL ENVIRONMENT



2 WEEKS
LESSON PLANS AND
ACTIVITIES

LIFE CYCLE
OVERVIEW OF THIRD GRADE



ORGANISMS

WEEK 1.
PRE: *Comparing and contrasting invertebrates and vertebrates.*
LAB: *Learning about different marine invertebrates.*
POST: *Exploring where marine invertebrates live.*
WEEK 2.
PRE: *Comparing marine and terrestrial invertebrates.*
LAB: *Classifying different types of arthropods.*
POST: *Investigating metamorphosis.*

HUMAN BIOLOGY

WEEK 3.
PRE: *Comparing human organ systems.*
LAB: *Exploring external signs of internal systems.*
POST: *Analyzing components of the respiratory system.*
WEEK 4.
PRE: *Comparing the different sensory organs.*
LAB: *Analyzing how we taste.*
POST: *Investigating the digestive system.*

PLANT LIFE

WEEK 5.
PRE: *Investigating requirements of growth.*
LAB: *Designing an experiment testing two variables.*
POST: *Comparing how plants reproduce.*
WEEK 6.
PRE: *Exploring plant characteristics.*
LAB: *Comparing cellulose from different plant products.*
POST: *Investigating the importance of plants.*

NATURAL ENVIRONMENT

WEEK 7.
PRE: *Comparing the world's biomes.*
LAB: *Comparing locations of plant and animal biomes.*
POST: *Identifying the local vegetative biome.*
WEEK 8.
PRE: *Comparing how organisms obtain food.*
LAB: *Comparing herbivores and carnivores.*
POST: *Analyzing the importance of natural environments.*

LIFE CYCLE - NATURAL ENVIRONMENT (3A)

PRE LAB

Students use an inflatable globe to locate where animals live.

OBJECTIVES:

1. Comparing the world's biomes.
2. Locating different ecosystems.

VOCABULARY:

biome
ecosystem
marine
terrestrial

MATERIALS:

Inflatable Animal Globes

BACKGROUND:

There are many kinds of ecosystems on this Earth because of the many possible combinations of climate, soil, parent rock, water, temperature, currents, and biological life. There are terrestrial, fresh water, and marine ecosystems. This activity will concentrate on the terrestrial ecosystems and their biome divisions. A biome is a large geographical region identified mainly by its vegetation caused by similar climate. There are a few ways to classify terrestrial biomes. These lesson will use the following biome classification used on the inflatable globes.

Tundra - Wet country beyond the timberline in both the Eurasian Arctic and the American Arctic. A treeless, marshy plain with grasses, sedges, lichens, rocks, and water.

Desert - Occupies climates too dry for grasslands. Vegetation consists of widely scattered thorny bushes, perhaps a few succulents such as cacti. Drought is a limiting factor, and can include warm or cold deserts.

Tropical Rain Forest - Plenty of moisture and heat, no drought and no winter. Great diversity of animals and plants. Best developed in tropical Americas, particularly the Amazon basin in Brazil, in the East Indies and surrounding areas, and lesser extent in Africa.

Forest - Community of plants and animals in which the most dominant members are a variety of trees. There are many different species of trees that comprise different forest areas. Deciduous forest are those trees that shed their leaves annually. Coniferous forest have needle-like leaves and are evergreen.

Prairie/Savanna/Grasslands - Grasslands often dotted with trees or small patches of forest. Some are dry, others are wetter, warm all year round with dry seasons and cool seasons. The drier climates are usually called Savanna and are located in Central America (Pacific coast), Central and East Africa, India, Southeast Asia, and northern Australia.

Temperate grasslands have more water evenly distributed throughout the year. Located in Central North America, Eastern Europe, Central and Western Asia, Argentina, and New Zealand.

Mediterranean - Mild, damp winters but hot, dry summers with blue skies and seldom a drop of rain. Vegetation varies from dense spiny scrub to open grassy woodlands. Located in southern France, Spain, Portugal, North Africa, Israel, Lebanon, Italy, California, southwestern Australia, Cape of Good Hope in South Africa, and in central Chile.

Mountain Flora and Moorland - High altitude with sparse flora. Cold all year round, with some thawing.

Ice/Snow - Areas that are covered by snow all year round. Vegetation is almost nonexistent. Organisms are sparse and cold tolerant.

PROCEDURE:

1. Discuss with students the different terrestrial biomes described in the "Background" section. You may want to give students a globe and have them list the biomes on the board and then proceed to define each one. A biome is a rather broad category with considerable variation around the Earth, but it includes an area of the earth that has similar physical and/or biological characteristics. The inflatable globe divisions are a blend of the two.

2. As a homework assignment, have student find pictures of different organisms. These pictures will be needed for the lab. Students should research where these organisms are from. For example, if they bring in a picture of a rainforest, make sure they identify where the picture was taken. In lab, the students will try to figure out where all the organisms belong on the inflatable globe, and try and find organisms that are similar in the same biomes. You will find out that this is not as easy as it sounds. There are many different divisions of biomes, but it is important for students to learn that it is not always cut and dry, the natural world is not as simple as it seems!

LIFE CYCLE - NATURAL ENVIRONMENT (3A)

LAB

Students use a globe and other information to find out where animals live.

OBJECTIVE:

1. Comparing locations of plant and animal biomes.
2. Defining organisms that live in biomes.

VOCABULARY:

biomes
endemic
population
terrestrial

MATERIALS:

Inflatable Animal Globes
various books on different organisms in different biomes
Internet

BACKGROUND:

Different organisms like different conditions. Throughout the world in regions where there are similar conditions there are not always the same animals. For instance, the elephants like grassland conditions, but yet there are not elephants of the North American grasslands. There are individuals that live only in a specific geographic area, they are called native or endemic. For instance, Koala bears are only found naturally in Australia and Panda bears in China. These animals are native to the appropriate geographic area.

Biomes give us a way to compare the flora and fauna of an area, but we still have to consider that some animals have adapted to a specific geographic area. The factors that have caused this are many and complicated including physical barriers that would prevent species from moving from one place to another (migrating). However, a biome will generally support organisms that are ecologically equivalent especially in respect to the food web.

PROCEDURE:

1. When you feel that the students have found enough organisms you may want to make a master list of the organisms on the board or butcher paper. Discuss the different organisms with the students, keeping in mind the problem whether certain organisms are native or endemic to an area. You will find that the answer is yes. Just make sure that you tell students that zoos don't count, because they are not natural.

2. They will use the biomes that are on the Inflatable Animal Globe and try to find

animals or plants that are found on those biomes. It will take students a while to organize and locate the different organisms.

3. You may want to use the worksheet enclosed to help get pictures of organisms. You also may want to use the Internet to find different sites that might help find the type of biomes that organisms live. We recommend using a search engine.

1. Flamingo - Tropical Rain
2. Black bear - Forest
3. Giraffe - Prairie/Savanna/Grassland
4. Buffalo - Prairie/Savanna/Grassland
5. Rhinoceros - Prairie/Savanna/Grassland
6. Penguin - Ice/Snow
7. Camel - Desert
8. Panda - Forest
9. Kangaroo - Prairie/Savanna/Grassland
10. Koala - Forest
11. Monkey - Forest
12. Lion - Prairie/Savanna/Grassland
13. Elephant - Prairie/Savanna/Grassland

LIFE CYCLE - NATURAL ENVIRONMENT (3A

WHAT IS MY BIOME?

LIFE CYCLE - NATURAL ENVIRONMENT (3A)

PROBLEM: Do geographic biomes have certain organisms that live in that specific area (endemic population)?

PREDICTION: _____

MATERIALS: Animal Inflatable Globes

Look at the inflatable globe and locate the different biomes listed on the lab sheet. Consult reference material your teacher may have and determine which animals or plants live in that specific biome. List them below.

BIOME	ORGANISMS FOUND
TUNDRA	
DESERT	
TROPICAL FOREST, JUNGLE	
FOREST	
PRAIRIE	
MEDITERRANEAN	
MOUNTAIN FLORA AND MOORLAND	
ICE/SNOW	

CONCLUSION: Do specific organisms live in specific areas? Give two examples.

_____

_____

_____

LIFE CYCLE - NATURAL ENVIRONMENT (3A)

Students determine the major vegetation type in their state.

POST LAB

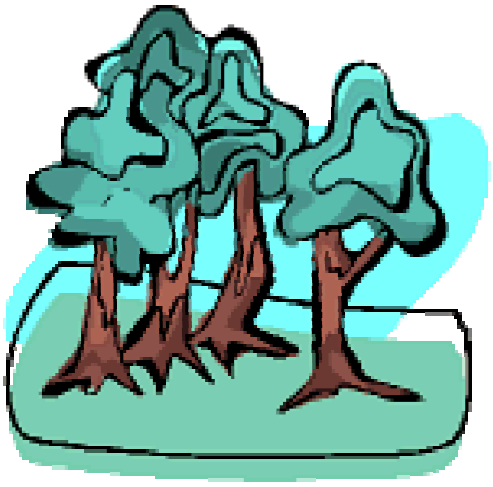
1. Identifying the local vegetative biome.
2. Comparing North American biomes.

VOCABULARY:

biome
coniferous
ecosystem

MATERIALS:

map of major vegetation types in North America



BACKGROUND:

A particular region or set of regions that has characteristic climate or other physical condition and supports flora and fauna that show adaptation to these conditions (biome) is reflected in many different types of distribution maps. It is important for students to realize that there are many local environments within an area designated on a map. Maps tend to generalize, especially if the maps are not detailed.

PROCEDURE:

1. Instruct students to look at the map of North America and locate where they are. They do not need to know what each of the regions are, just so they know that there are many different vegetative biomes in North America.

2. Pictures of some of these biomes would help students to visualize each region. Have them answer the questions using the map of North America.

Boreal forest
Rocky Mountain forest
Eastern deciduous forest
Hemlock hardwood forest
Southeastern coniferous forest
Pacific Coast forest = moist coniferous forest
Thorn forest
Tropical forest
Broad sclerophyll vegetation = chaparral
Cold desert = sage, low growing desert plant
Warm desert = scrub, small thorny desert bush
Tundra

High altitude temperate vegetation

ANSWERS: 1,2 (local answers); 3. (southern coniferous forest); 4. (warm=scrub, cold = sage); 5. (tundra, boreal); 6. (desert, ice); 7. (Boreal, Rocky Mountain, Eastern deciduous; Hemlock hardwood; Southeastern coniferous, Pacific Coast, Thorn, Tropical); 8. (Eastern deciduous); 9. (Cold desert); 10. (Pacific Coast)

LIFE CYCLE - NATURAL ENVIRONMENT (3A) POST

1. Locate where you live. State what type of vegetation you live in.

_____

Does the map correctly reflect the vegetation type? Explain.

_____

2. What is the vegetation in the capitol of our country. Name the capital and then write down the vegetation?

_____

3. The cornbelt is in the midwest of the United States. What type of vegetation does the map refer this to?

_____

4. What is the difference between a warm and cold desert?

_____

5. Canada is mainly what vegetation type?

_____

6. Where is there little or not vegetation according to this map.

_____

7. Name all the forests.

_____

_____

8. New York State is in what type of vegetation?

_____

9. Nevada is in what type of vegetation?

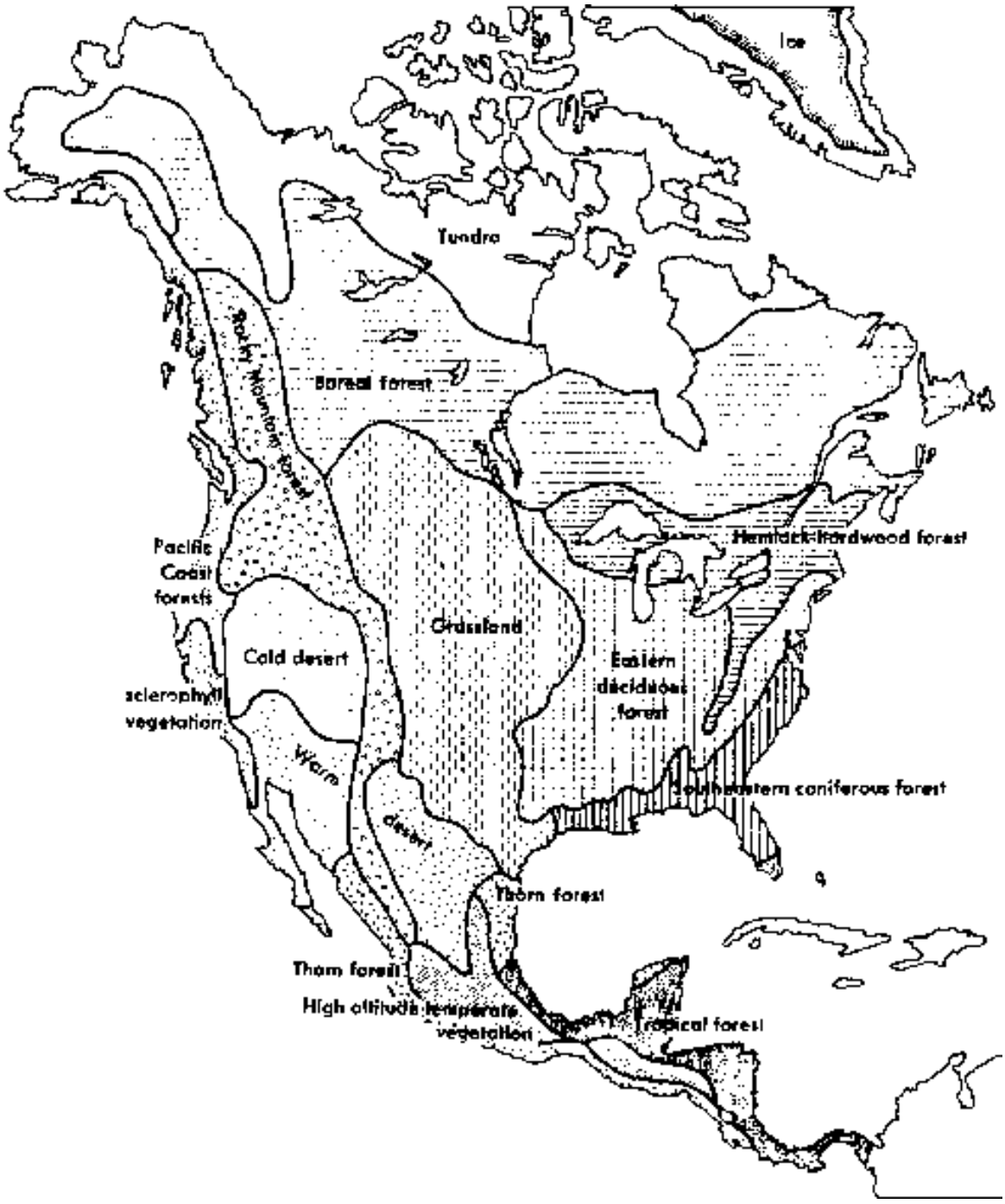
_____

10. Where are the Redwood Forests located (in what vegetational biome)?

_____

LIFE CYCLE - NATURAL ENVIRONMENT (3A)

POST



LIFE CYCLE - NATURAL ENVIRONMENT (3B)

PRE LAB:

Students determine trophic levels.

OBJECTIVE:

1. Comparing how organisms obtain food.
2. Defining characteristics of how organisms eat.

VOCABULARY:

carnivore
consumer
decomposer
herbivores
omnivore
producer
trophic level

MATERIALS:

worksheet

BACKGROUND:

Biomes have physical, as well as biological, characteristics that one must consider. The biological part of the system usually consists of four or five energy levels. These are called trophic levels and are based on how far the original energy has come through the community.

The first level would be considered the producer level. This is the part of the community that captures and stores solar energy in photosynthesis and releases oxygen. The rest of the community is completely dependent upon this level. The rest of the system are collectively called consumers, which are defined as "eating" their meals.

The second level would consist of herbivores and can range in size from a small microorganism to an elephant. Any organism that eats the producer is considered the second trophic level of the food chain.

Carnivores are the third trophic level of the biological system. The energy is now one more step removed from its original source. There can be several trophic levels of carnivores. A tiger can eat other smaller carnivores. Some organisms, like man, are neither true carnivores nor herbivores, they care classified as omnivores, sometimes eating plant material and sometimes eating other animals.

Decomposers break down organic structures and substances, releasing compounds and elements back into the environments. This group would constitute another trophic level.

PROCEDURE:

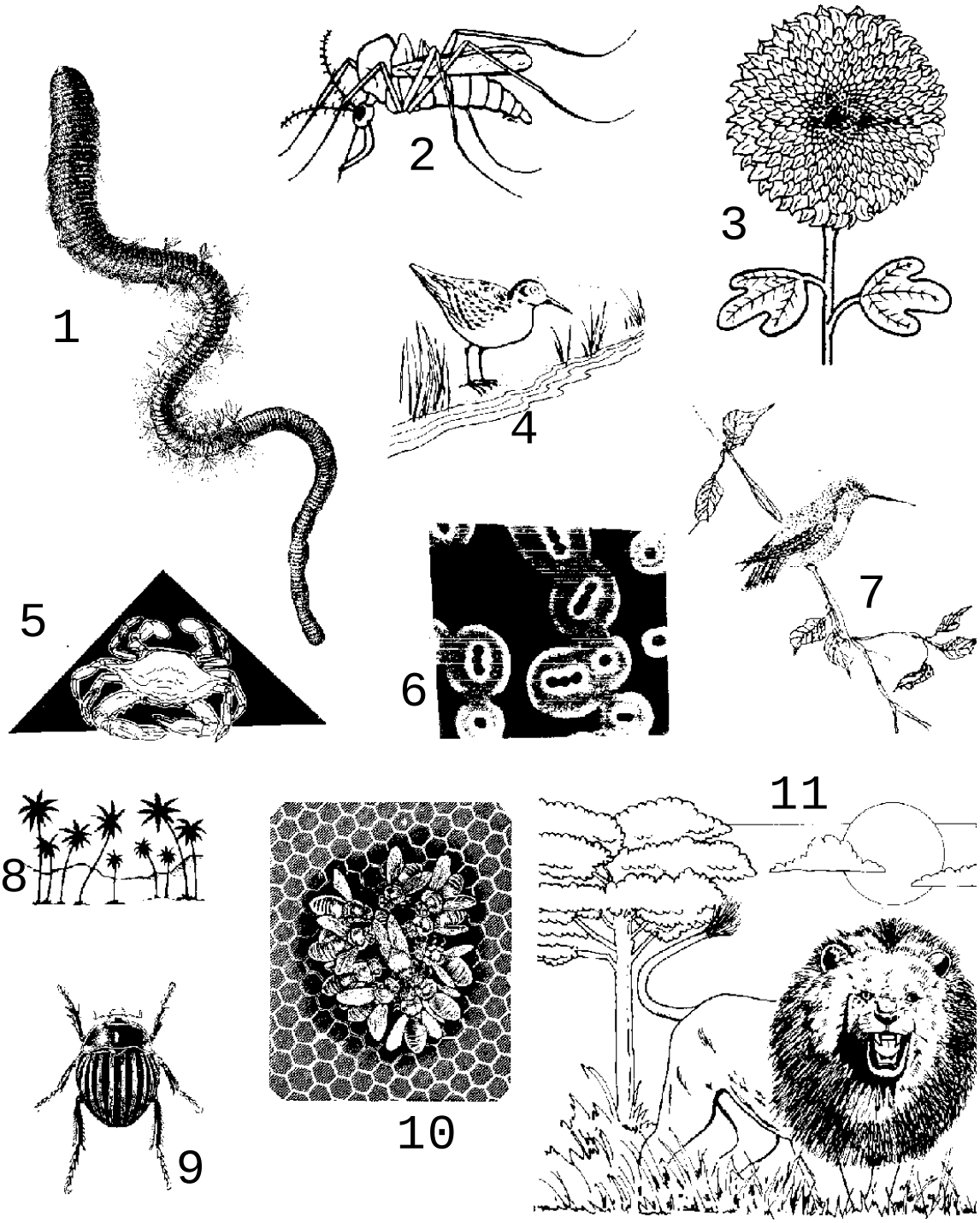
1. Tropic levels help develop a flow of energy through any biological system. Students can use the worksheet to develop their own levels of producers, decomposers, herbivores, and carnivores.

2. Instruct students to group the different organisms by cutting them out and sorting them into producers, decomposers, herbivores, and carnivores.

3. ANSWERS: Producers (3,8); Decomposers (1,6); Herbivores (7,9,10); Carnivores (2,4,5,11).

LIFE CYCLE - NATURAL ENVIRONMENT (3B)

PRE



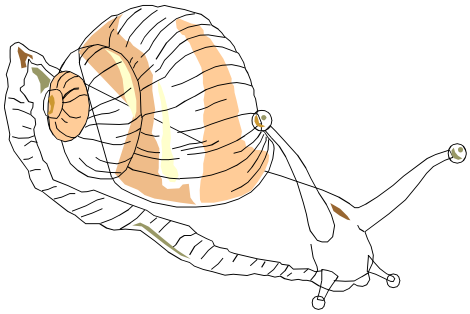
LIFE CYCLE - NATURAL ENVIRONMENT (3B)

LAB

Students sort snails into carnivores and herbivores.

OBJECTIVE:

1. Discovering the food chain of gastropods.
2. Comparing herbivores and carnivores.



VOCABULARY:

carnivore
herbivore

MATERIALS:

Life Cycle - Natural Environment (3B)
Familiar Seashells (Knopf)

BACKGROUND:

The marine environment has many different environments where organisms can live. There are consumers as well as producers, including carnivores, omnivores, and herbivores.

The marine environment has physical conditions that change like those in the terrestrial environment. The conditions, however, are different and include water temperature, salinity, ocean currents, depth, and nutrient supply. Plants can only live in the upper 200 meters of water, because light cannot penetrate any further. The farther you go down in water depth, the more you will only find consumers. The ocean environment is very complex.

The gastropods are a very large group of the mollusca family. The group includes the conches, periwinkles, limpets, garden snails, and slugs. Most gastropods have shells, generally in the shape of a spiral with numerous turns. Virtually every type of feeding habit is exhibited by gastropods. Larger bottom dwelling carnivore gastropods burrow into the sand to reach their prey including volutes, bonnets, helmets, olive shells, harp shells, and whelks. Some species in these groups smother the victims with their feet. Some may grip the bivalve with the foot, pulling, or wedging the two valves apart with the edge of the shell. Some are adapted to drill holes in the shells.

The living gastropod has a distinct head with a mouth, eyes and tentacles. Most have an organ in their mouth area called a radula, a series of rows of minute teeth on a flexible piece of flesh with which they scrape up food, tear the flesh of prey, or bore holes in the shells of clams. Gastropods may be plant-eaters, carnivores, scavengers, deposit-feeders (obtaining food particles from sediment) or suspension-feeders (straining suspended food particles from the water. It is very difficult to determine if a snail is a herbivore or carnivore by looking at its shell. Gastropod shells display an infinite variety of colors, patterns, shapes and sculpturing. There is one clue that works most of the time

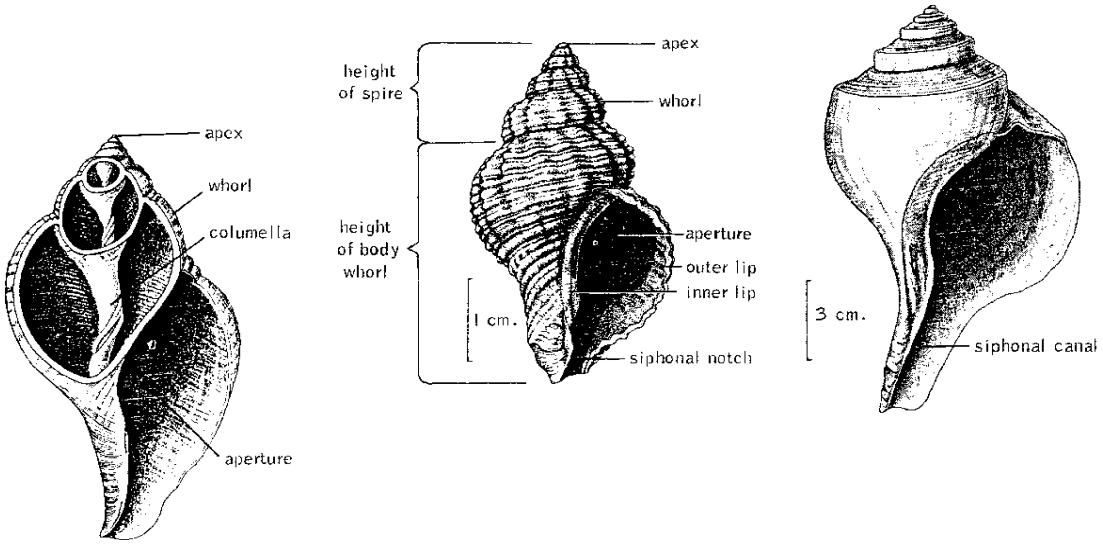
when trying to determine if a snail is a herbivore or carnivore, by looking at the siphonal notch area of the shell.

PROCEDURE:

1. Make students realize that the oceans are not one homogeneous mass of salt water; they are as diverse, if not, more diverse than the land environment.

2. Go over the diagram of a snail with students because the slight modification of the siphonal notch will give students clues on how to determine if a snail is a herbivore or carnivore.

If the notch is indented it is usually a carnivore, if there is no indentation it is usually a herbivore. Of course, there are exceptions, but that is where books like the Audubon Pocket Guide to Familiar Shells can help. On the lab sheet, students will describe the shells using the model shell picture as a guide. Have them determine if their shells are from a herbivore or carnivore.



3. In the lab, students will look at their packets and determine which marine snails are herbivores or carnivores.

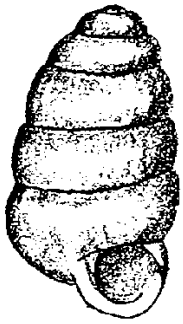
LIFE CYCLE - NATURAL ENVIRONMENT (3B)

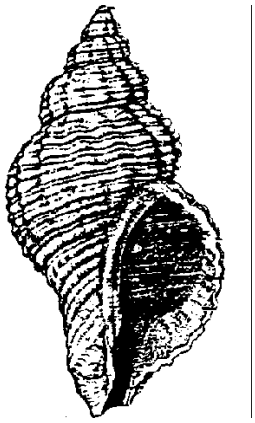
PROBLEM: Can you determine how a gastropod eats?

PREDICTION: _____

MATERIALS: package of shells

Determine how the specimens differ by comparing them with the pictures below. State whether you think the shell came from a carnivore or herbivore.





1._____
_____
2._____
_____
3._____
_____
4._____
_____
5._____
_____
6._____
_____
7._____
_____
8._____
_____

CONCLUSION: How can you determine if a snail is a herbivore or carnivore?

_____

_____

LIFE CYCLE - NATURAL ENVIRONMENT (3B)

POST LAB

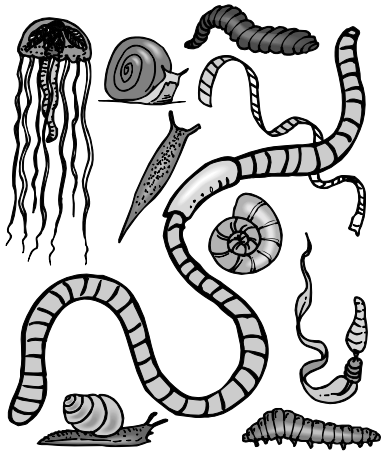
Students read the Lorax.

OBJECTIVE:

1. Analyzing the importance of natural environments.
2. Discussing reasons to keep the environments natural.

VOCABULARY

ecology
natural environment



MATERIALS:

worksheet
The Lorax by Dr. Seuss (Random House)

BACKGROUND:

Students may not be aware that humans and wildlife share environments. Many times humans intrude into the range of many wildlife, causing some of the wildlife to go extinct. Wildlife is present in or on nearly all areas of the Earth's surface. There are some areas like tropical rainforests that have more wildlife than other areas of the world.

Humans and wildlife all depend on the Earth for their living conditions. Humans and wildlife have habitats that include components like food, water, shelter or cover, space, and the arrangement of these in relation to each other. Any environmental changes in any of the habitats can affect the life of an organism.

This is a perfect time to discuss environmental issues that may have occurred during the year. Students need to be reminded how humans increase pressures on wildlife. These pressures can be reduced if all humans respect areas designated as wildlife areas.

PROCEDURE:

1. The Lorax is a fictional story about what happened to a forest when people didn't use it wisely. You can use this story to emphasize how humans can destroy an area very quickly.

2. Have students write a story about whether they think the story line of The Lorax was realistic. Have them think about whether the people in the Lorax really needed thneeds in the first place. Was it worth cutting down the truffula trees to make thneeds? Why did the Once-ler keep making so many? How was the wildlife affected with the Once-ler cut down so many truffula trees?

LIFE CYCLE - NATURAL ENVIRONMENT (3B) POST

WAS THE ONCE-LER GREEDY? EXPLAIN.