

LEVEL: Grades 4-8

SUBJECTS: Science, Language Arts, Art.

PROCESS: Through the construction of dioramas, students will develop the connection between living in different rooms of their homes with living in different biomes (rooms) in the earth's environment.

OBJECTIVES: The student will:

1. Construct the major biotic units of plants and animals that make up a community.
2. Compare the characteristics of a room in a house with the characteristic vegetative forms in the different rooms (biomes) on the earth.
3. Describe the distinctive vegetation of a living environment of a particular region and the climate of the area.

TIMEFRAME: 1 hour 30 minutes.

SKILLS: Applying, classifying, comparing similarities and differences, comprehending, describing, discussing, generalizing, identifying, researching, understanding cause and effect.

MATERIALS: Shoeboxes (six), construction paper, clay, glue, paint, scissors, colored pencils, crayons, reference books, "My Home, Our Home" task cards one per group (attached). Individual and group assessment checklists are printed on the back of the task cards. Reference materials will need to be available on tundra, desert, grasslands, woodlands, tropical forests, and marine biomes.

VOCABULARY: Biome, desert, grassland, marine, tropical forest, tundra, woodland.



MY HOME, OUR HOME

OVERVIEW: Think of the various rooms in your home. Each of the rooms has its own design, and its own kind of furnishings to meet the needs of that room. In the kitchen, for example, you'll find a stove and a refrigerator for preparing and saving food. In the living room, you'll find a couch, chairs, and perhaps a television so family and friends can spend time relaxing together. In the bedrooms, you'll find beds for sleeping and places for storing clothes. Just like the many rooms in your home, earth is filled with various rooms or ecosystems.

Ecoregions (geographic areas) are unique combinations of climate, topography and geology (characteristics). The specific combination within an ecoregion determines the particular plants and animals which grow and live there.

Because of the many combinations of soil, flora, fauna, and

climate, different kinds of ecosystems have developed on earth. Each of these distinctive systems is known as a biome. A biome is the set of characteristics. Like the rooms in your home, biomes meet specific purposes and are "furnished" with unique plants and animals. These biomes are named after their dominant plants such as woodland, tundra, tropical forest, desert, grassland, and marine biomes.

PROCEDURE:

1. Discuss with students the kinds of furnishings found in different rooms of their homes. Make a chart on the chalkboard listing the rooms in their homes in rows and a list of furnishings and/or appliances that are usually found in each room. Use the example below to get students started. Ask:

MY HOME, OUR HOME TASK CARD

1. ASSUME ROLES.

Each person in your group should choose one of the following tasks:

Recorder: _____
(This person completes this task card.)

Materials Manager: _____
(This person makes sure the group has all materials necessary and organizes the group clean-up at the end.)

Observers: _____

(These people look for the answers to the task card questions.)

Task Manager: _____
(This person makes sure that the group completes the task in a timely manner and that everyone is equally involved.)

2. LIST THE PREDOMINANT PLANTS IN YOUR BIOME.

3. WHAT ANIMALS LIVE IN THIS BIOME?

4. LOCATE ON A MAP AND DESCRIBE

best describes the biome in which we live?

-What are the predominate plants and animals in our biome?

ASSESSMENT:

Evaluate:

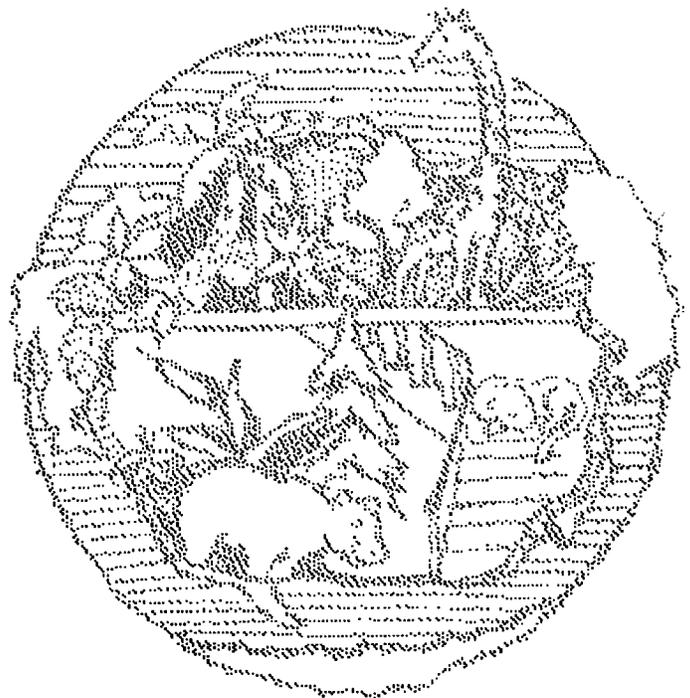
1. Group oral reports.
2. Description of the distinctive characteristics of each biome.
3. Completion of task cards.
4. Cooperative group work checklists.

EXTENSIONS:

1. Have students construct biomes in an aquarium with live plants to replicate the condition of the different biomes. This will result in varied problems of climate control in the confines of an aquarium that may or may not be achievable depending on the resources at your disposal. The in-class observations of aquarium biomes will create opportunities for problem solving.

2. Have each student choose a biome and report on the characteristic adaptations of plants and animals in that biome. Students should include in their reports the environmental factors that are distinctive to the biomes like soil, water, climate, and geographical locations in the United States or the world. Encourage them to include in their reports how human populations have adapted or how the environmental factors in biomes have determined cultural differences.

RESOURCES: Reference materials on plants and animals in different locations of the United States and the world can be found in most libraries.



Arctic Circle. This small (around 20 grams in weight) bird travels 20,000 miles every year!

Not all shorebirds migrate such long distances. Some, like the American Avocet, have short migrations as they breed in the northern part of the United States and winter in the southern part of the United States.

In North America three primary flyways are heavily used migration routes, connecting the shorebirds' breeding grounds in the north to their wintering grounds in the south. One of these flyways follows the Pacific coast from Alaska to the southern part of South America. A second flyway follows the Atlantic coast from northwestern Canada to the very southern tip of South America. The third flyway stretches from north central Canada down through the center of the United States into northern South America. This is the route we will focus on in this activity.

Shorebirds must prepare themselves physically for their strenuous migrations. Before leaving their wintering grounds in the south, they must put on a fat load, which is mainly stored lipids (fats), but includes protein and water. Shorebirds feed almost constantly for two weeks, often doubling their weight for the migration to the north.

Some shorebirds fly non-stop to their destination, but others make several stops along the way to replace their body fat. These stop-over areas along the migratory route are called 'staging' areas. They are usually lowlands flooded from the spring snow melt and are very rich in newly hatched insects. Many shorebirds increase their body masses up to 100 percent at these staging areas!

One of the most critical *wetland* staging areas is the Prairie Pothole region. Located in the northern Great Plains of the United States and southern Canada, it spreads across hundreds of miles forming many small wetlands. Tens of thousands of shorebirds use this area as a feeding and resting place along their migration route to or from the northern breeding grounds and the southern wintering grounds.

Weather can be a factor in the shorebird's

departure from the wintering ground. Poor weather may keep them from leaving, delaying the journey until cold weather offers no threats.

Shorebirds usually fly in large flocks and migrate at night. If a bird is left behind, it usually waits for another flock to join. But while it is alone, it has less time to feed because it has to be more watchful of predators.

Once the migration north begins, there is no time to waste. Semipalmated Sandpiper males for instance, usually migrate to the breeding grounds several days before the females to establish territory for nesting. The males normally reestablish the same territory they claimed the previous year. When the females arrive and pair with mates, nest building begins. Four to six days after pairing, egg laying begins. Incubation of the eggs is about 20 days. After hatching, the juvenile shorebirds (young birds that have not yet reached sexual maturity) must eat constantly to become strong enough and put on enough fat to leave for the wintering grounds. Juvenile shorebirds often do not start their southern migration until three to four weeks after the adults have left.

Shorebirds travel over several different countries during their migration. That makes it difficult to protect them. Shorebirds must contend with a number of problems.

During migration, Peregrin Falcons and Merlins often attack shorebirds in flight. There can be the impact of oil spills and agricultural pesticides along the migration route as well, both contaminating shorebirds' food supplies. Agricultural pesticides are widely used throughout North America. DDT, a highly poisonous pesticide, was banned in the United States in 1972, but continues to be produced in the United States and sold to Central American and South American countries for agricultural use. Shorebirds have died as a result of the application of DDT to agricultural fields.

Migratory staging areas and southern wintering grounds are being impacted by increased human development. Many wetlands have been drained for agricultural or building purposes. The Prairie Pothole region has lost about 50% of its wetlands with some areas having lost 90%.