



Wild Kids

Mapping School Biomes

STUDENT GUIDE

A biotic community or biome is a region that can be identified by a distinct plant community or associations that are generally not found in other places and are easily recognized and identifiable. These communities can be created by regional climate (temperature, wind, rainfall, solar intensity), elevation, slope exposure (north facing versus south facing slopes of hill and mountains), or soil type. Biotic communities are defined by plant association and not animal associations because if an animal cannot find food, water, or shelter it will leave. Plants cannot leave. Thus plants represent adaptations to a particular set of environmental conditions of the biome.

There are about 29 biotic communities listed for the southwestern United States and northern Mexico. Three are explained below.

Chaparral

The chaparral biome is also referred to as scrub. It is an association of stunted or scrubby trees and shrubs. Chaparral is a fire-dominated biome. The seeds of many chaparral plants are fire adapted. This means that in order for some seeds to sprout, they must first be scarred by and survive a fire. The frequent presence of fire prevents most large trees from becoming established.

Common chaparral plants in Arizona include manzanita, shrub oak, stunted willow and stunted juniper. Chaparral is extensive in Arizona, covering 3.5 million acres.

Most people are familiar with the term "chaps" - the leather half-pants that cowboys wear over their pants to protect the front of their legs. Cowboys wear chaps when they need to find stray cows in chaparral. Many chaparral plants are thorny and scratchy. Chaps protect cowboys when they are riding through chaparral.

Grassland

As the name of this biome suggests, grasslands are dominated by grasses with a few scattered trees on occasion. In Arizona, grasslands are found at elevations from 3,800 to 7,200 feet. There are different types of grasslands.

The montane meadow grassland is found in the moist meadows of the Mogollon Rim and White Mountains. These grasslands are generally surrounded by ponderosa pine or spruce and fir forests. The Great Basin or plains grassland is located north of the Grand Canyon in an area referred to as the "Arizona strip." If trees are present they are generally junipers. Finally, the semidesert grassland is found in the lower elevations. Yucca, mesquite, and juniper may be present. Semidesert grasslands are found in southeastern Arizona, especially around the towns Patagonia, Sonoita and Sierra Vista. All three types of grasslands receive 10 to 20 inches of rainfall a year.



Desert

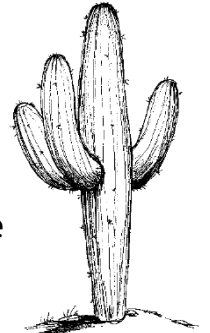
Deserts are generally described as regions receiving less than 10 inches of rainfall a year. Deserts in Arizona can be found from 190 feet below sea level to 7,200 feet in elevation. The desert biome cannot be identified by one particular set of plants, because four different deserts are found throughout North America. Arizona is the only place where all four North American deserts can be found.

The Great Basin desert is found in the northern part of Arizona. It is dominated by sagebrush, almost excluding other plants in some places. In some areas of the Great Basin desert, a person can see nothing but sagebrush for miles in all directions! Other vegetation includes cacti, agave, annual wildflowers, creosote and other shrubs. It is considered a cold desert because of its relatively severe winters. Snow is not uncommon. It is the largest of the four North American deserts.

The Mojave desert is characterized by evenly spaced shrubs such as creosote, bursage, and a yucca called the Joshua tree. Rain occurs mostly in the winter when most plants are dormant. As such, the rain is unavailable for plants to use. In Arizona, the Mojave desert is found in the northwestern corner of the state around Lake Mead. It is the smallest of the four North American deserts.

The Chihuahuan desert contains a large variety of plants. It is distinguished from the other deserts by the lack of tall trees and an abundance of agave and yucca. Many types of cacti, wildflowers, shrubs and even creosote are found here. The Chihuahuan desert can be found in the southeastern corner of Arizona.

The Sonoran desert is not the largest in size of the four deserts, but it is the largest in Arizona. It is considered to be a subtropical desert due to its biseasonal rainfall (summer and winter). This desert is identified by columnar cacti (saguaro, senita, barrel, organ pipe) and legume trees (mesquite, palo verde, ironwood, acacia). Creosote is also found in the Sonoran desert. This desert is famous for its spring wildflower displays. The saguaro cactus is only found in the Sonoran desert.



SCHOOL HABITAT MAP

- 1) Make a map of the outside area of your school or home. Show the actual size relationships between buildings, parking areas, fields or yards, etc. Include the location of trees, flower beds, garbage cans, bird feeders, shrubs and sidewalks. In other words, make your map as accurate as possible and include everything you can.
- 2) Decide what biotic communities can be found in your habitat. Be creative. This could include cement biome, short grass biome, tree biome, building biome, etc. Mark them on your map. You may want to use color. It helps in visualizing the overall picture of your habitat.
- 3) Observe the organisms (e.g., plants, birds, insects, etc.) that use the various biomes.
- 4) Share your map with your class.



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TEACHING GUIDE

Overview

In this activity, students will read an article about the four desert found in North America and Arizona. Then, they will complete a word search puzzle to assess their understanding of the reading. Finally, with the teacher as a guide, they will discuss adaptations are necessary for animals to live in the different deserts and what might happen to species moved from one desert to another.

Suggested Procedures

1. Print the worksheet above. If possible, print it double sided.
2. Have the students read both pages until the activity
3. Ask students the following questions and discuss:
 - What is a biotic community? How are they identified? Why?
 - Why aren't all 4 deserts be considered the same biotic community?
4. Inform students that they are now going to make a map of the school or their house. The purpose is to identify some potential biotic communities that may be present. Let them know that they will be creating the biotic communities based on characteristics they observe. They won't be using ones that have been created already.
5. Give the students time to make a general map of the area first. The map should include all major features like building, sidewalks, yards, etc.
6. As a class or in small groups, have students brainstorm potential biotic communities that might be found in their areas. Some examples might be concrete, short grass, tree, building, etc. Once they have identified and named potential biomes, they should mark these on their map using different colors to represent different biomes.
7. Give students time to observe the organisms in each of their areas. They should start with plants (since those define the biomes) but they should also note any wildlife they observe.
8. Have students share their maps and compare. Discuss the following questions:
 - Did you find certain plants associated with certain "biomes" in your map?
 - What types of animals were you finding? Did they associate with certain biomes?
 - Are there animals that you didn't find but thought you would? What changes could you make to the area to promote those animals?

Grade

5th

AZ Science Standards

- 5.L3U1.10

Science and Engineering Practices

- Obtain, evaluate and communicate information
- Develop and use models

Crosscutting Concepts

- Patterns
- Scale, Proportion and Quantity