

Utah Ecosystem and Plants

Summary

Students observe Utah plant specimens from the Natural History Museum of Utah. The four ecosystems found in Utah are explored and many of the plants that live there identified. Plant adaptations for each ecosystem are studied. Students play a game of Survivor Utah as they learn about the uses of many of Utah's plants.

Time Frame

1 class periods of 60 minutes each

Group Size

Small Groups

Materials

A toolbox kit from the Natural History Museum of Utah is needed for this lab. There is high demand for these kits at different times of the year. Decide on a two-week interval you think you will fit the lesson in over the year and book the kit for those weeks early in the fall.

Plants toolbox from the Natural History Museum of Utah. Order online at <http://nhmu.utah.edu/>.

School district offices may also carry the toolboxes so check if your school is not located near the museum.

You may want to copy extra sets of the plant identification cards and the plant uses cards from the toolbox kit. Lab works best with one set of cards for each group of students.

- [Plant Uses sheet PDF](#)
- [Survivor Utah PDF](#)
- [Utah Biome Descriptions PDF](#)
- [Utah Plant Biome Key 2 sheet](#)
- [Utah Plant Biome Key 1](#)
- [Biome Sorting page](#)
- [Biome Pictures PDF](#)

Preparation: Make sure that the plant samples in the toolbox coincide with those in the answer key. At times, the Natural History Museum changes which plant samples are in the toolboxes. There are two sets of plant/biome keys with the lab representing at least two of the different sets of specimens that may be found in the kits.

Background for Teachers

A biome is a large geographical area characterized by the similarity in the plants and animals that live there. There is an interaction within biomes between the plants, animals, climate, soil type, and geography found there. Utah has four biomes: wetlands, forests, alpine, and deserts.

The wetland biome of Utah is found in areas where water covers the soil for most of the year. Less than 1% of Utah is a wetland and about 75% of Utah's wetlands are located near the Great Salt Lake. Some of Utah's wetlands are salt wetlands. Wetlands help filter water and serve as a reservoir for water. Plants that live in a wetland have special adaptations. Many tall grasses live in wetlands because they need very little root development. Plants have spongy leaves that float atop the water in a wetland. Some plants have air spaces, which help the plants stand up in water. Trees are generally not found in wetlands in Utah because the ground is too saturated with water to support their weight and height.

The biome with the largest area in Utah is the desert. It is found predominantly in the southern and western regions of the state. Deserts have dry rock, and sandy soil that cannot hold much water. Days are hot and nights tend to be cold. There is a scarcity of precipitation in a desert and plants and animals must be adapted to survive on very little water. Some desert plants are succulents and store water in their stems or leaves. Some desert plants have long roots that find water far below the surface. Many desert plants have spikes to prevent animals from eating their leaves, which store water. Some plants have thick, waxy, or hairy leaves that prevent dehydration.

The alpine biome of Utah is found above the tree line at about 10,000 feet. The soil in the alpine is very rocky and has little nutrients. The alpine has high winds and little precipitation in the form of rain. These conditions dry out plants and require adaptations for their survival. Plants in the alpine are usually less than 12" tall. Some of the plants have hairs, which help keep them warm. Plants also grow in clusters to increase their warmth. The alpine plants also need tough leaves to withstand the wind.

The forest biome accounts for about 25% of Utah. Generally, forest areas have all four seasons and extremes of both hot and cold temperatures. There is enough rain to support abundant plant life. The soil is nutrient rich due to the high plant and animal life in the area. Dense vegetation is found with many trees, shrubs, and low-lying plants that fill the area. Trees are both deciduous and coniferous and have bark to protect against cold winters.

Intended Learning Outcomes

- 1a. Observe simple objects and patterns and report their observations.
- 1b. Sort and sequence data according to a given criterion.
- 1c. Make simple predictions and inferences based upon observations.
- 1d. Compare things and events.
- 1g. Develop and use simple classification systems.
- 1h. Use observations to construct a reasonable explanation.
- 3a. Know science information specified for their grade level.
- 3b. Distinguish between examples and non-examples of science concepts taught.
- 4b. Report observation with pictures, sentences, and models.

Instructional Procedures

Pre-lab discussion:

Define for students a biome. Ask students if they can guess which biomes are found in Utah. Show them pictures of each biome. If you have them available, show students a live cactus, a succulent, some tall grasses, and a woody branch from a tree. Ask the students which biome they think each plant would grow best in. From this discussion, explain the information in the background information section of the lab.

Instructional procedure: Divide the plant specimens between however many groups of students you have. Try and have a mixture of plants in each biome for each group. Each group should also have one set of plant identification cards and one set of plant uses cards from the plant toolbox. * If plant uses cards are not found in the toolbox they aren't essential and the lab can be run without them.

I. Sorting plants into their biomes

Discuss the information found on the Utah biome description pages. Place the biome sorting pages in the center of the table. For this part of the lab, the alpine and forest biomes are combined into one mountain biome.

Hand out one plant specimen or one plant identification card to each student. Have them look at the plant and read about its characteristics. Students then place their specimen or card on the biome they predict it belongs in.

As a group, discuss whether the specimen or card was placed in the proper area. Make any

corrections by checking the answer sheet and repeat until all of the cards and specimens have been identified. Be sure and start noticing the similarities between the plants found in particular biomes. For example: woody stems in forests/mountain, tall grasses in wetlands, and fuzzy, short plants in deserts. Realize some plants may be found in more than one biome. Look at the back of the plant specimen boxes. Notice the Utah map. Discuss with the students where each plant is found so they begin to realize what parts of Utah are wetlands, forests, and deserts.

II. Ethnobotany -- Ethno means the study of human culture and botany means the study of plants. The word ethnobotany describes how humans use plants.

Pass out the plant identification cards to all of the students in the group.

Place the plant use cards in the center of the table. *If they are not available you can simply read the uses of each plant and have students write them down on their plant uses page.

Have students take turns reading out the uses of their plant and pulling the appropriate use cards from the center of the table.

Have other students take turns writing down all the uses for each plant on the plant uses list.

Continue until all the plant identification cards have been completed.

III. Survivor Utah

Looking at their completed plant uses list, students should decide as a group, which two plants they think would be most useful to surviving in a particular biome. Students should imagine that they only have two plants to choose in each biome so they should consider the importance of food, shelter, medicine, as well as other uses.

Each group can explain their choices to the class. Not every group will choose the same two plants providing for a good discussion of their choices.

Bibliography

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