



web of water

Web of Water Webisode 1: In the Mountains Discussion Questions and Answers

South Carolina Science Standards Grades 1-12

These standards correlate to discussion questions and answers for Webisode 1 of the Web of Water Series at <http://www.webofwater.org>.

QUESTIONS:

1. Does the clear, cold water up in the mountains have more or less oxygen than water on the coast of South Carolina?
2. We can run through these mountains like the Native American tribes who once lived off this same land. What was the name of the most populous Native American tribe in the SC mountain region?
3. What were those early interactions with the settlers like?
4. What are some of the different types of trees up in the mountains that create such beautiful foliage?
5. We don't find many fossils up in these Mountains, why is that?
6. Moss and lichen are everywhere up here in the mountains. What unique relationship do lichen have to produce food?

ANSWERS:

1. The cold water in the mountains holds more oxygen than the warmer water on the coast of South Carolina.
2. The most populous tribe in the upstate of South Carolina was the Cherokee nation, and it is



estimated that the Cherokee have lived in the upcountry area of South Carolina since 1500. In fact, the Cherokee are the largest tribe in the United States, but have suffered some of the greatest losses. In 1670, it is estimated that their population numbered 50,000, but throughout the 1700's, half were lost to disease brought by European colonists. Learn more about the Cherokee and other Native American tribes in South Carolina through Knowitall.org at Periscope! Look for the issue for Native American Heritage Month.

3. Early relations with the settlers were rough, but soon the Cherokee began trading with the British. The peace was not to last long though, and soon Andrew Cummings negotiated a peace treaty that saw some of the Cherokee travel all the way to England for its signing. This treaty bound the Cherokee to the British up until and during the American Revolution. This did not bode well for the Cherokee upon the Colonists defeating the British in the war. Before the end of the 19th century the Cherokee would have their land taken from them and they would be relocated from South Carolina. The United States government forcibly removed many Native Americans from their homelands under the Indian Removal Act of 1830. The Trail of Tears is the route by which the Cherokee and other Native Americans departed for land in the west.

4. The many trees creating the foliage of the mountains are primarily: 1) conifers / pines (pitch pine, Virginia pine, short leaf pine) and 2) deciduous hardwoods (pignut hickory, mockernut hickory, scarlett oak, white oak, chestnut oak).

5. Fossils are found only in sedimentary rocks. The mountain region comprised of metamorphic rock created with the smashing together of the North American and African plates. Since no fossils are found in metamorphic rock there are no fossils in the mountain region.

6. Lichen are the result of a symbiotic relationship between algae and fungus. Using water and minerals absorbed by lichen from whatever the plants are growing on, algae turns the sun's energy into food while the fungus helps to retain water for the algae and to decompose the organic materials for recycling.

GRADE 1

Plants

Standard 1-2: The student will demonstrate an understanding of the special characteristics and needs of plants that allow them to survive in their own distinct environments. (Life Science)

Indicators

- 1-2.3 Classify plants according to their characteristics (including what specific type of environment they live in, whether they have edible parts, and what particular kinds of physical traits they have).
- 1-2.5 Explain how distinct environments throughout the world support the life of different types of plants.



GRADE 3

Habitats and Adaptations

Standard 3-2: The student will demonstrate an understanding of the structures, characteristics, and adaptations of organisms that allow them to function and survive within their habitats. (Life Science)

Indicators

3-2.3 Recall the characteristics of an organism's habitat that allow the organism to survive there.

GRADE 3

Earth's Materials and Changes

Standard 3-3: The student will demonstrate an understanding of Earth's composition and the changes that occur to the features of Earth's surface. (Earth Science)

Indicators

3-3.3 Recognize types of fossils (including molds, casts, and preserved parts of plants and animals).

3-3.4 Infer ideas about Earth's early environments from fossils of plants and animals that lived long ago.

3-3.5 Illustrate Earth's saltwater and freshwater features (including oceans, seas, rivers, lakes, ponds, streams, and glaciers).

GRADE 4

Organisms and Their Environments

Standard 4-2: The student will demonstrate an understanding of the characteristics and patterns of behavior that allow organisms to survive in their own distinct environments. (Life Science)

Indicators

4-2.2 Explain how the characteristics of distinct environments (including swamps, rivers and streams, tropical rain forests, deserts, and the polar regions) influence the variety of organisms in each.



Astronomy

Standard 4-3: The student will demonstrate an understanding of the properties, movements, and locations of objects in the solar system. (Earth Science)

Indicators

4-3.3 Explain how the Sun affects Earth.

GRADE 5

Ecosystems: Terrestrial and Aquatic

Standard 5-2: The student will demonstrate an understanding of relationships among biotic and abiotic factors within terrestrial and aquatic ecosystems. (Life Science)

Indicators

5-2.3 Compare the characteristics of different ecosystems (including estuaries/salt marshes, oceans, lakes and ponds, forests, and grasslands).

5-2.4 Identify the roles of organisms as they interact and depend on one another through food chains and food webs in an ecosystem, considering producers and consumers (herbivores, carnivores, and omnivores), decomposers (microorganisms, termites, worms, and fungi), predators and prey, and parasites and hosts.

GRADE 6

Structures, Processes, and Responses of Plants

Standard 6-2: The student will demonstrate an understanding of structures, processes, and responses of plants that allow them to survive and reproduce. (Life Science)

Indicators

6-2.1 Summarize the characteristics that all organisms share (including the obtainment and use of resources for energy, the response to stimuli, the ability to reproduce, and process of physical growth and development).

6-2.7 Summarize the processes required for plant survival (including photosynthesis, respiration, and transpiration).



GRADE 7

Cells and Heredity

Standard 7-2: The student will demonstrate an understanding of the structure and function of cells, cellular reproduction, and heredity.
(Life Science)

Indicators

7-2.4 Explain how cellular processes (including respiration, photosynthesis in plants, mitosis, and waste elimination) are essential to the survival of the organism.

GRADE 7

Ecology: The Biotic and Abiotic Environment

Standard 7-4: The student will demonstrate an understanding of how organisms interact with and respond to the biotic and abiotic components of their environment. (Earth Science, Life Science)

Indicators

7-4.1 Illustrate energy flow in food chains, food webs, and energy pyramids

7-4.5 Summarize how the location and movement of water on Earth's surface through groundwater zones and surface-water drainage basins, called watersheds, are important to ecosystems and to human activities.

GRADE 8

Earth's Biological History

Standard 8-2: The student will demonstrate an understanding of Earth's biological diversity over time. (Life Science, Earth Science)

Indicators

8-2.2 Summarize how scientists study Earth's past environment and diverse life-forms by examining different types of fossils (including molds, casts, petrified fossils, preserved and carbonized remains of plants and animals, and trace fossils).



9-12 BIOLOGY

Standard B-3: The student will demonstrate an understanding of the flow of energy within and between living systems.

Indicators

B-3.6 Illustrate the flow of energy through ecosystems (including food chains, food webs, energy pyramids, number pyramids, and biomass pyramids).

9-12 BIOLOGY

Standard B-6: The student will demonstrate an understanding of the interrelationships among organisms and the biotic and abiotic components of their environments.

Indicators

B-6.1 Explain how the interrelationships among organisms (including predation, competition, parasitism, mutualism, and commensalism) generate stability within ecosystems.

B-6.5 Explain how ecosystems maintain themselves through naturally occurring processes (including maintaining the quality of the atmosphere, generating soils, controlling the hydrologic cycle, disposing of wastes, and recycling nutrients).

