

Alpine Ecosystem Lesson

By Debbie Bock and Eric Cellucci
2005 Earth Education Interns

Age: 4th Grade

Lesson Plan: 5

When: Wed. 1:00-2:00

Where: Douglass Elementary

Number of Students: 26

Materials: Paper Plates, Popsicle Sticks, Art Supplies, Alpine Ecosystem Poster and Descriptions (Ecosystems Book and Poster Set)

Objective: To introduce the alpine ecosystem to students and discuss how habitats change as the abiotic (non-living factors) change such as altitude, weather, geology and snow pack.

Engage:

Go over water brochure (city worksheet activity newspaper) and ask what they remembered from last time. (water cycle stuff) Ask if they conserved water this week and how and suggest more ways. Go over Water Cycle Song (created by intern Jesi Vandeputte: (To the tune of “She’ll be Coming Round the Mountain”)

Water Flows in a cycle yes it does

water flows in a cycle yes it does

It goes up in evaporation

It forms clouds of condensation

It comes down in precipitation, yes it does.

Write it up on the board and sing it through a few times. They will love it!

Go over nature observations from the week.

TIME: 10 Minutes

Explore and Explain:

Go over the Alpine and Sub-Alpine Ecosystems. Put posters on board and ask questions and write answers and ideas on another board. What comes to your mind when you think of alpine? What is the elevation for alpine ecosystems? What elevation is Boulder? Have you been to Rocky Mountain National Park? Or other places with that elevation? What animals do you find? What do you notice about really high-up? (no trees) Does anything live above tree-line? What causes the trees to not grow above that elevation? (wind, less soil, etc) Have any of you been to the top of a mountain? Been to the top of a fourteener? Ask if they know what succession is and describe the process and draw on the board pioneer species like lichen or grasses going into an environment and the going to climax communities, like trees. Explain the importance of lichen in building soil and how very small trees can be very old. (A lot of information in the “Wild Colorado: Crossroads of Biodiversity” book.)

TIME: 15 minutes

Elaborate:

Explain that you will pass out descriptions of animals and plants (numbered and listed in the Wild Colorado book) and that they are to find their species on the poster and draw and make a puppet-type thing using paper plates, markers, scissors, feathers, yarn, grass, or what have you to create their animals or plant to be used in a play for next time. Make copies of the picture key from the Wild Colorado book so you can help locate their species on the poster. Get them excited about whatever they have and encourage them in their art. Use popsicle sticks to make puppets used for next week's skit.

TIME: 30 minutes

References Used:

Wild Colorado: Crossroads of Biodiversity From the Colorado Division of Wildlife

<i>STANDARD</i>	DESCRIPTION
1 Investigations/ Methods	General Outcome: The learner will be able to understand the processes of scientific investigation and be able to design, conduct, communicate about, and evaluate scientific investigations.
	<ul style="list-style-type: none"> • The learner will ask questions that guide specific inquiry and investigations. • The learner will create a written plan for an investigation using the scientific processes. • The learner use appropriate tools and technologies to gather and test data and metric-based measurements. • The learner will estimate the degree of uncertainty that is associated with common measuring devices and procedures. • The learner will organize and evaluate scientific information. • The learner will generate possible explanations and models using evidence. • The learner will think critically and logically about relationships between evidence and explanations. • The learner will develop scientific procedures and explanations, and communicate their work in various ways (i.e. written reports, graphic displays, and/or oral presentations).
2 Interaction of Matter and Energy	General Outcome: The learner will know about and understand common properties, forms, and interactions of matter and energy.
	<p>Specific Outcome 2.2: The learner will know that energy appears in different forms and can be transferred and transformed</p> <ul style="list-style-type: none"> • The learner will measure and compare quantitative relationships involved with several forms of energy (i.e. light, sound, heat, electrical, magnetic, mechanical, and chemical energy). • The learner will identify and describe processes associated with the transfer of energy (i.e. conduction, convection, radiation, and potential to kinetic).
3 Characteristics, Interactions, and Processes of Living Things and Their Environment	General Outcome: The learner will know the characteristics of living things, the processes of life, and how living things interact with each other and their environment.

	<p>Specific Outcome 3.1: The learner will know the characteristics of living things, the diversity of life, and how living things interact with each other and their environment.</p> <ul style="list-style-type: none"> • The learner will use and create a classification system based on the structure of organisms. • The learner will categorize organisms according to their roles in food chains and food webs. • The learner will explain the interactions and interdependence of nonliving and living components within ecosystems. • The learner will recognize limitations that resources place on an environment's ability to support populations (i.e. water, space, or the presence of an important nutrient).
	<p>Specific Outcome 3.4: The learner will know that species evolve in response to changes in their environment over time.</p> <ul style="list-style-type: none"> • The learner will describe the role of chromosomes and genes in heredity. • The learner will explain that genes occur in pairs in most animals and plants. • The learner will describe examples of and evaluate evidence that supports evolutionary change in species throughout geologic time.
<p style="text-align: center;">4 Earth and Space Systems</p>	<p>General Outcome: The learner will understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space.</p>
	<p>Specific Outcome 4.3: The learner will know major sources of water, its uses, and importance, and its cyclic patterns of movement through the environment.</p> <ul style="list-style-type: none"> • The learner will describe major differences in the physical properties of water as a solid, liquid, and a gas. • The learner will describe and compare the distribution of the world's water in oceans, glaciers, rivers, ground water, and the atmosphere. • The learner will explain the water cycle in terms of how water circulates through Earth systems.