



Sample Geology Program

About 4th – 6th Grade

Theme: Geology determines ecology. The geology of this site is a major factor that determines the plants and animals that live here. Like a painter needs a canvas to paint on, living things need the land underneath.

This is a selection of talking points and activities that you may select from. There is too much here to fit within a typical program.

Materials:

Bag of small stones for “Find Your Own Rock” game
3 towels
Ancient Denvers pictures – ocean here, dinosaurs here
Picture of tectonic plates
Bat pics and facts
Falcon pics
Eagle pics and plaster eagle egg replica
Interview a rock questions
Igneous, sedimentary, metamorphic rock samples

- Introductory activity: Get to know a rock
 - Activity possibilities: Find your own rock, Every rock has a story, Interview a rock
- While hiking:
 - Look at rocks, plants, animals that we see that illustrate the theme
 - Look at big view – Flatirons, prairie
- How did these mountains and the Flatirons get here?
 - Activity: Continental Crash
 - Tectonic plates are still moving – Have you heard about in earthquake anywhere?
- What makes valleys and mountains?
 - Rain and wind grind the rocks into the little particles over many years.
 - Freezing / thawing makes rocks break and crumble (ever left a pop bottle in the freezer? It breaks.)
 - When rocks break up and wash or blow away, this is called erosion.
 - Soft rocks break up and erode much faster than hard rocks.
 - Valleys form where soft rocks have eroded away.
 - Mountains form where hard rocks resist erosion.
- Soil can come from rocks. How?

- Soil is made of rocks ground up into very, very fine particles like flour, with decayed plants and animals mixed in.
- Running water and wind carry the little particles, and dump them together in low and flat places like valleys.
- Activity: Glacier Shuffle (glaciers also can transport rock and soil particles).
- What needs soil?
 - The amount and type of soil, the altitude, the steepness, all help create the habitat that determines which plants and animals that can live there
 - So what makes places steep (mountains) or flat (valleys)? How hard the rocks are underneath! That means, the kinds of plants and animals you'll find depends in part on how hard the rocks below the soil.
 - What do plants need? Food (nutrients from soil), water, sun, air, space
 - What do animals need? Food (plants), water, shelter (plants, rocks), air (plants), space
- Some animals that live here
 - Bats nest in caves in the rocks
 - Falcons, eagles and more nest in the cliffs and rocks
 - Activity: turn over a rock and see if anything lives there. Be sure to model putting it back to protect the little guys that live under it!
 - Other animals that live here...Do any use rocks?
 - Hide in them, den under them,
- Some plants that live here
 - Ponderosa
 - Lichens grow on rocks
 - Ferns, mosses and many other plants live in cracks that form in rocks and trap soil / water.
- Foothills – where plains and mountains meet
 - Dance of forest and plains – trees moving down or grasses moving up, depending on weather.
 - Show/discuss 3 basic rock types:
 - Igneous
 - Sedimentary
 - Use towels to demonstrate layers
 - Metamorphic
- The ground has a story
 - Used to be beach here
 - Show pictures from ancient denvers
 - When anything moves on the ground, it makes an impression
 - Activity – Forest Newspaper

- In Ranger Cottage:
 - Show ripple rock (from beach here)
 - Show dinosaur footprint