

OKLAHOMA ROCKS! STATE PARKS

BEAVER'S BEND

TELLING TIME WITH ROCKS?! written by Kristi Carlucci

When we want to figure out the age of something, or someone, we have a wide variety of tools at our fingertips. Clocks, calendars, history books, and other modern tools help us figure when something occurred, how old something is, and help us tell time. But when dealing with something much older, like rocks or fossils, geologists tell time in a much different way. We use rocks to tell time and learn about the past!

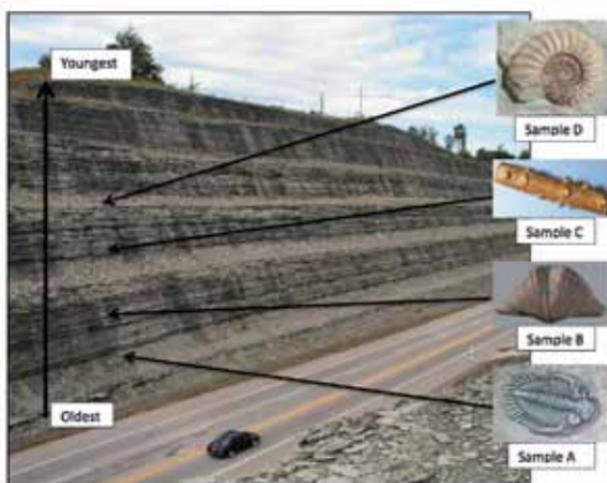
Layers of rock act like pages in a geologic book, recording past events. Once we know how to read these "pages", we can begin to unravel the past! The Principle of Superposition helps us sort out many of these mysteries. It simply means that in layers of sedimentary rocks, each layer of rock is older than the layer above it, and younger than the layer below it. Often times, these layers of sedimentary rock contain fossils. The use of fossils and layers of rock to tell time is called relative age dating. This same principle also applies to volcanic ash and lava flows, which often act as a bookmark indicating a very specific event in the past. To get an exact age of a rock, or lava flow, radiometric dating is used.

>> ACTIVITY

Road cuts are an excellent place to see and apply the Principle of Superposition. There are several road cuts and roadside outcrops in Beavers Bend State Park, located in Southeastern Oklahoma. In addition, there are massive tuff beds from a volcanic eruption 300 million years ago! Tuff is volcanic material that has been compacted and cemented into a rock. Fossils (graptolites) can be found in certain locations within the park, and using the Principle of Superposition, we can figure out the relative ages of the fossils, such as which are older or younger in relation to other rocks or fossils. For example, we know what fossils discovered below the tuff beds are older than 300 million years, and fossils found on top of the tuff beds are younger than 300 million years in age.

Using the Principle of Superposition and the diagram below, answer the following questions:

1. In this example, which is the oldest fossil? Which is the youngest fossil?
2. Is Sample C older than Sample B?



For more information about Oklahoma Geology, and links to past editions of Oklahoma Rocks! visit the Oklahoma Geological Survey website: <http://ogs.ou.edu/level2-earthscied.php>



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