

ACTIVITY 3: CLUES TO ARIZONA'S PREHISTORIC PAST: DESERT MUSEUM EXHIBIT GUIDE

Instructions: As you tour the Desert Museum with your students, ask them the following questions at the corresponding earth science exhibits. Encourage students to read signs and discuss their answers.

ENTRANCE PATIO

Locate the volcanic bomb. How did it form?

Basalt lava ejected violently like a bomb exploding. It got its shape and texture during the flight through air.

GEOLOGY OVERLOOK

Have students scan the landscape and name some mountain ranges. *Santa Ritas, Roskruges, Baboquivaris, Tucsons, Silverbells, etc.* **The Sonoran Desert lies within the basin and range province, an area of north/south elongated mountain ranges and valleys formed 8 – 15 million years ago by faulting.** Have students point out the basins (*Avra valley*) and ranges (*surrounding mountains*).

What rock on the side of this path provides evidence that the Desert Museum was once a shallow ocean? Limestone. Have students examine the rock and find the evidence:

fossils of shells: brachiopods, crinoids, fusulinids.

DRY CAVE

Why are dry caves a good place to find evidence of ancient life?

They are dry and protected from weather, so ancient life is often preserved there.

What evidence of ancient life can be found in dry caves?

plant debris, bones, artifacts, mummified animals, litter

Find the Fossiliferous Limestone display. How many different kinds of brachiopods are displayed?

seven

Why can marine fossils be found in many caves?

Most caves are made of limestone. Limestone is formed from mud and shells deposited on the ocean floor. The limestone gradually gets lifted above sea level. Caverns are formed, as acidic water dissolves the limestone. Sea life that has been entombed there for hundreds of millions of years gets revealed.

Examine the shasta ground sloth display. What did this shasta ground sloth eat?

Mormon tea **How do we know?** *from the trace fossils: Mormon tea was found in its fossilized dung.* **How long have shasta ground sloths been extinct?** *11,000 years*

Find the pack rat midden. How do we know that 12,000 years ago there was not a desert here? Pack rat middens shows that it was a pinyon and juniper woodland.

What is a pack rat midden?

A collection of plant parts, animal remains, debris and droppings cemented together by urine. Packrats collect all this material within about 100 feet of their dens. Generations occupy the same site for thousands of years.

Locate the ancient cave site. What ancient people once visited this site? *Hohokam*

EARTH SCIENCE RAMP

(Cave exit to left before entering Earth Science Gallery)

Walk up the Earth Science Ramp. Count the number of steps it takes to walk from when “life appears” to “abundant sea life.” Then count the number of steps it takes to walk from when “dinosaurs appear” to “man.” Compare these numbers. What does it tell us?

This exhibit puts geologic time into perspective based on distance. It is important to note that the earliest life consisted of single-celled organisms.

EARTH SCIENCE GALLERY

Look for fossils in the Earth Science Gallery. What evidence is there that the Grand Canyon was once a shoreline? *Fossilized mud cracks were found there.*

Find the coal fossil. How is the world’s most abundant fossil fuel formed?

Coal is the result of the submergence, burial and compaction of vast quantities of plant debris that accumulated in ancient tropical swamps. Coal is a fossil.

Find the earliest bird fossil. Why do scientists think *archaeopteryx* was a bird?

fossilized feather impressions

Find the remains of ice age animals that were found near the Desert Museum (in plastic case). Name these animals. *ice age camel, mammoth, horse*

What may have contributed to the extinction of the large mammals in our region (look above plastic case)? *changing climate, perhaps human hunters*

MAMMOTH KILL-SITE

Find any evidence of man that you see at this site.

Clovis projectile points from prehistoric humans, shovel and sieve from modern man

What evidence of mammoths was found at this site?

mammoth mandibles (molars), bones, tusk

Name some examples of megafauna that used to live in Arizona.

giant mastodons, mammoths, bison, ground sloths, beaver the size of bear, horses, camels,

pronghorn, American lions, short-faced bear, dire-wolf

How long ago were these people and megafauna in Arizona?

Megafauna became extinct about 11,000 years ago; humans are thought to have arrived on this continent around then.