

### LOGGIA - travel through time to the present

- Eleven 12-ft diameter rings; each represents a period in geologic time.
- The ring farthest from the door is the oldest; closest to the door is most recent time period.
- Silhouettes in each ring represent life from each period.
- Cretaceous time ring - time when dinosaurs died out. Notice how far the ring is to the door. There are no dinosaurs at all at the Western Center, because they went extinct over 60 million years before the age of mastodons and saber-tooth cats.

[ Turn over page for full description of the timeline.]



### LOBBY - prehistoric vs. historic time

- Inside is the 12th time ring which represents the Quaternary; this is the period that represents all the collections in the museum as well as all of human history.
- Note the layers, or strata, in the wall behind the Admissions Desk. Prehistoric strata show fossil species found at Diamond Valley.
- Fossils found date from 30,000 to 60,000 years ago.
- Reproductions include examples of: Dire Wolf (jaw and tooth), Mastodon (tusk), Mammoth (leg bones and tusk), horse (jaw and partial skull), and saber-tooth cat (skull).
- Note the lower counter of the Admissions Desk; historic strata show artifacts.
- Artifacts found date as old as 9,400 years ago; replicas include pottery, projectile points, metates, and horseshoes.



### THE BIG DAM HOLE - water for an arid region

- Diamond Valley Lake is the result of a major ten-year engineering project, the largest earth-moving project in North America at the time.
- Approximately 4.5 miles by 2.5 miles of lake held by three dams, filled with water from the Colorado River and northern California.
- Created as an emergency water reserve for Southern California, located on the western side of the San Andreas Fault.
- California geographic features have changed through the geologic time periods as the result of plate tectonics. Use the California Through Time map-slider interactive to see what happened to the area now called California. Students can see why there are no dinosaurs in our valley or museum; during the age of dinosaurs, this landscape was under water.
- Listen and watch the 3-D map exhibit to learn about the fossils, early residents, and the excavation project.
- Artifacts and fossils were recovered from the construction site.
- Archaeology is the science of studying past human life and culture, using artifacts, plant and animal remains as evidence of humans.
- Paleontology is the science of studying extinct life forms through the evidence of the fossil record.



### QUOTES ON THE WALL - inspiration for exploration and discovery

- Pick a favorite and ask students what it means to them.



12. Quaternary (1.8 million to the present)  
The time of modern man, the Ice Ages, and eventually all of recorded history.



11. Tertiary (65 to 1.8 million years ago)  
The rise of the mammals. By the end of this period nearly all the modern lines of animals have developed. The ancestors of the sloths and mastodons appear in North America.



10. Cretaceous (144-65 million years ago)  
Dinosaurs are found on every continent. This is the time of the horned dinosaurs such as Triceratops. *Tyrannosaurus Rex* (pictured) is in this period.



9. Jurassic (206-144 million years ago)  
Dinosaurs flourished and birds and mammals first appeared. The allosaurus, diplodocus, and ichthyosaur abound. (pictured: *ammonites*)



8. Triassic (248-206 million years ago)  
Dinosaurs, modern corals, and coniferous forests first appeared. The stegosaurus and sea turtles are representative of this period. (pictured: *crocodile*)



7. Permian (290-248 million years ago)  
The supercontinent, Pangaea, forms as the landmasses collide. Trilobites become extinct. Beetles, dragonflies, and reptiles flourish. The *Dimetrodon* (pictured) is a characteristic reptile of this time. The first fossils of the ginkgo tree are found in this period.



6. Carboniferous (354-290 million years ago)  
True reptiles first appeared and much of the Earth's surface was covered by forests. Insects, such as cockroaches and *dragonflies* (pictured), are abundant, and trees and ferns are the most common form of plant life.



5. Devonian (417-354 million years ago)  
Forests and amphibians first appeared and fish became abundant. (pictured: *shark and early amphibian*)



4. Silurian (443-417 million years ago)  
Nautiloids and sharks swimming in the oceans, while on land the earliest forms of plant life evolve. [pictured: *eurypterid (sea scorpion)*]



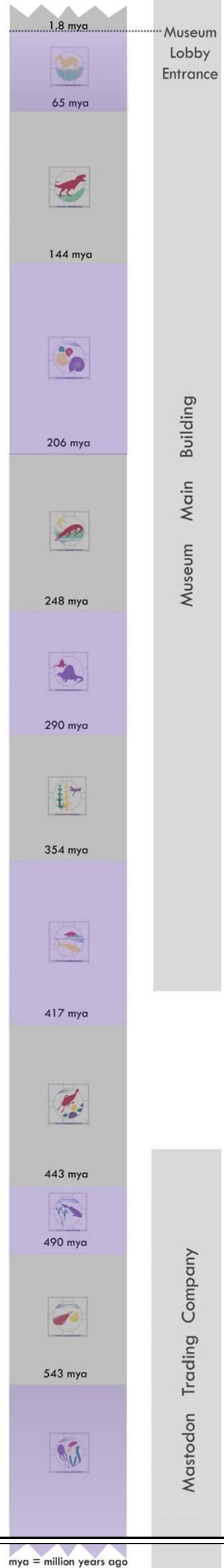
3. Ordovician (490-443 million years ago).  
Corals, crinoids, and clams evolve, as well as the first early vertebrates—primitive fish with bony armor plates. Late in the Ordovician Period, mass extinctions of marine life occur. (pictured: *armored fish*)



2. Cambrian Period (543-490 million years ago).  
This period finds the sea teeming with life; sponges, corals, mollusks, and everyone's favorite, *trilobites* (pictured).



1. Precambrian Period (more than 543 million years ago).  
This represents the oldest period of time on Earth from the formation of the planet into a solid sphere to the advent of *multi-celled, soft-bodied marine organisms* (pictured).



**START HERE**

## HISTORIC ARCHAEOLOGY - travel back to our historic period

- Euro-American settlers arrived in the valleys in 1878; look at the wall panel to place our settlement with other dates and events in early California history.
- Founding families included the Domenigoni, Garbani, Searl, and Baatz families.
- Irrigation of land for farming started about 1910-1920. Dry land farming and dairy farming were easier with more water.
- Archaeology is the systematic study of past human life and culture by the recovery and examination of artifacts and other remains associated with people. An exhibit of historic archaeology focuses on the research of relatively recent time periods and uses clues from objects to understand our past.
- The partially re-created adobe house is similar to one from the Diamond Valley Lake site. The view through the window is one from a photo taken of a valley homestead. There is also an opened storage trunk containing replicas of artifacts found at the excavation site.
- What clues does each artifact tell about the people who lived there?
- How did the environment affect the lives of the settlers?



## PRE-HISTORIC ARCHAEOLOGY - further back in time, before written records

- Step into the Alcove-The sculpted rockwork exhibit case shows images of Native American craftsmen at work. Inside the cases look for projectile points, stone tools/mano and metates, and ceramic pottery and baskets from early natives of Cahuilla and Luiseño tribes.
- Prehistoric Archaeology is the study of cultures where no written record exists. In the United States, this refers to life prior to documented contact with European explorers and settlers. For inland areas in Southern California, one of the earlier arrivals was the Spanish expedition of Juan Bautista de Anza in 1774.
- Members of two native groups, the Cahuilla and Luiseño, seem to have lived in the valley year-round in semi-permanent villages and seasonal camps. Most of what they needed (water, game, edible plants) could be found here. Evidence of habitation for at least 8000 years was discovered!
- What clues do the artifacts in the cases and on the wall panel tell about the earliest residents?
- What materials did the environment provide to make these different artifacts?



## IMMERSION THEATER

Two short films set the background for the remaining exhibits:

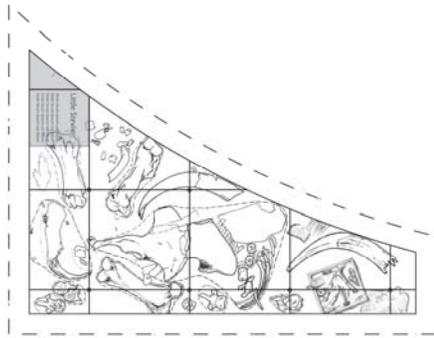
- In **Echoes of the Past**, animation helps you imagine what the valley would have been like more than 10,000 years ago. (7 minutes long)
- In **Discovery and Recovery**, a short documentary, return to the excavations and see the heavy equipment and scientists working together to uncover nearly one million objects. (10 minutes long)



## SNAPSHOTS-IN-TIME - travel back to the Ice Ages

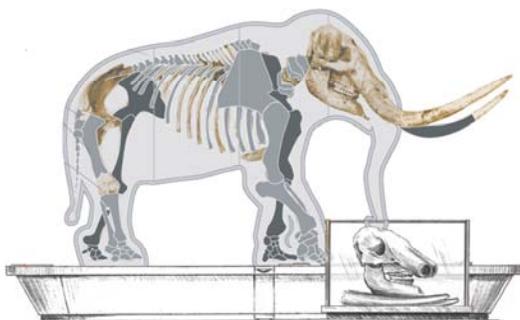
- The main exhibition gallery gives you a 'snapshot-in-time' of life in our region during the Pleistocene. See real fossils (under glass and in cases) and replicas (open to air and touch). All of these fossils were found at Diamond Valley Lake, making this site extraordinarily rich in biological diversity.
- Follow the story of the scientific process (discovery, excavation, document, and analyze) that is the core of both paleontology and archaeology.
- The strata of the east wall show the varying depths at which fossils were found.
- The artistic rendering on the west wall represents the laboratory and archival storage of the recovered materials.
- Make discoveries of your own by looking for clues in the fossils, artifacts and interactives.

### "LITTLE STEVIE"



- In the floor is a unique exhibit that re-creates an excavation site with **real fossils** of mastodon and bison fossils found at Diamond Valley Lake. Look for a reproduced quarry map, field notebook, and tools used to recover the fossils.
- "Little Stevie," the mastodon fossils in the case, is more than 60% complete. This very high percentage of completion is probably due to its burial site in an ancient pond.
- This mastodon, a distant relative of elephants and mammoths, was estimated to have stood 9 ½ feet high or more; it died between 41,000 and 50,000 years ago.

### "MAX"



- This mastodon (only 9% complete), "Max" was at least 10-11 feet high at the shoulders, making it (as of 2005) the largest individual mastodon found in western North America. Most mastodons living in this area averaged 6-9 feet high.
- "Max" is also thought to have been 20-30 years old at death, based on an analysis of tooth wear patterns.

## PLEISTOCENE DIORAMA

Observe a scene of Ice Age life as it might have been in the Diamond Valley Lake region.

- Note the importance of water; how does the presence of water affect plant life?
- What types of vegetation do you see?
- How does the environment affect the diversity of plants and animals in the Ice Ages?

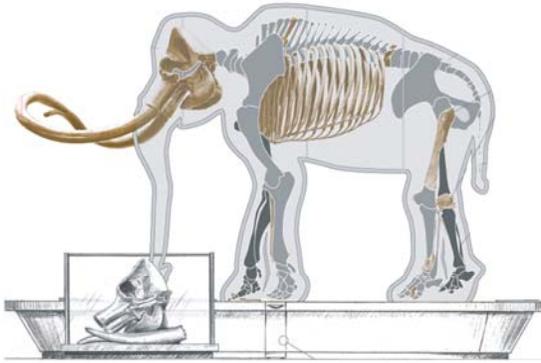
## DO IT YOURSELF INTERACTIVE CENTER

**Reading Rug** - books to read in the shadow of the giants!

**Computer Kiosk** - An Introduction to Archaeology & Paleontology

- Discover the differences between the exciting fields of archaeology and paleontology!

### "XENA"



- The middle scrim silhouette holds a Columbian Mammoth, nicknamed "Xena." On average, mammoths in California stood about 13 feet high or more at the shoulder and would have weighed approximately 10,000 pounds.
- This is not a woolly mammoth with a thick and shaggy hide, like its northern relatives. This Columbian Mammoth did not need a thick coat in this warmer environment.
- Compare the mammoth and mastodon skulls. How are they different?
- Compare the teeth as well. What clues do the teeth give about the animal's diet?

### VALLEY OF THE GOPHERS!

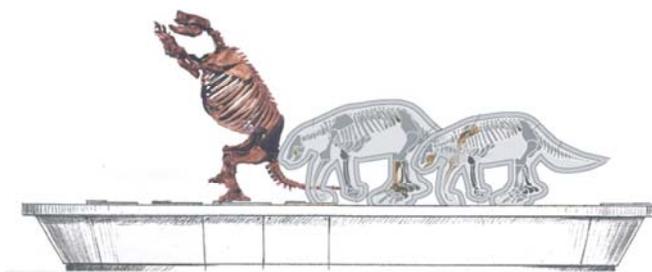


- While most of the mega-fauna became extinct by the end of the Ice Ages, many of these small creatures remain virtually unchanged.
- Use a magnifying glass to look at micro-fossils of rodents, birds, amphibians, reptiles, and mollusks.
- Visit the frogs - living examples of ancient amphibians.

### EXCAVATION FILM

Above the Valley of the Gophers display is a suspended screen displaying scenes of the excavation and recovery of some of the fossils.

### SLOTHS



- Three types of sloths! The Jefferson's Ground Sloth, the Shasta Sloth, and the Giant Ground Sloth were all found at Diamond Valley Lake.
- The co-occurrence of these three different sloths is very unusual; only three other locations have found all three species.
- Sloths were plant eaters; the Giant Ground Sloth stands on its hind legs, grasping for a tree trunk or branch.

## HANDS-ON ACTIVITIES - INVESTIGATE! UNEARTH THE CLUES!

**Walk like a Mammoth!** - A pathway on the museum's floor invites visitors to put their feet right over a footprint of Pleistocene creatures including a mammoth, Dire wolf, camel, and sloth.

**Object Lessons** - Clues from artifacts help us understand our past. These interactives show you where and how to look for clues.

- Search Party - "Where's the Artifact?" Interactive
- Eye in the Sky - Aerial Photography Interactive
- Dig In! - Archaeological Dig Site: Look-Organize-Dig-Record-Analyze
- Pottery Props

**Common Touches** - Archaeology and paleontology share methods and tools!

- Tools of the Trade Interactive
- Sweeping Gestures - Dig Site "Foosball" Interactive
- "Dating Game" Computer Interactive - introduces techniques used to date fossils and artifacts.



**What was Found During the Diamond Valley Lake Excavations?**

- Made by human hands - a 9400 B.P. ceramic fragment
- Oldest fossil in the valley - ancient horse teeth
- Bone casts

**Skeleton Keys** - From a single fossil, a paleontologist discovers clues about an animal; height, weight, diet, age, and even close relatives. These interactives show you how to unlock the secrets in the bones.

- Postmortem Analysis - "Not Everyone Gets to be a Fossil" Interactive
- C.S.I. - Critter Scene Investigators-Be a detective and solve a case.

**Fossil Casting Station** - Make a fossil cast to take home!

**Rubbing Plates** - With crayons and newsprint, make a rubbing of your favorite animal!



**Fluid Thinking: Science is Dynamic!** - Mobiles moving overhead have questions that scientists are asking about Ice Age animals and human migration in North America. You can find the answers to their questions on the nearby wall.

## THE BIG PICTURE

This projector displays scenes of the Diamond and Domenigoni valleys throughout the ages so that you may develop a fuller understanding of our region and our place in it. On the wall next to the projector is a listing of mammal fossils found at the excavations here and a comparison with other paleontological sites in Southern California.

### SOUTHERN CALIFORNIA ANIMAL COMPARISON CHART

Compare the kinds of mammals found at different sites. Which site had the most findings?

**VISIT OUR OUTDOOR EXHIBITS AND DROUGHT-RESISTANT LANDSCAPE!**

## WSC OUTDOORS! - THE SIMULATED DIG SITE

The Simulated Dig Site is designed to help students learn how to search for clues about the past. What was the environment like before people lived here? Which plants and animals lived here? Has the environment changed over time? How do we know?

We look for clues about the past through the careful excavation of sites. In some sites, we find evidence of the climate, plants, and animals before people arrived in the region. Other sites contain information about people and how they lived long ago. During the building of Diamond Valley Lake, hundreds of sites were studied to learn about the past.

Visit our simulation and learn about looking for clues as you view digs that are in progress.

### ARCHAEOLOGY OR PALEONTOLOGY?

These two fields of science both look for evidence of the past, but the subjects are quite different.

**Archaeologists** study a more recent time period; in North America, archaeologists are concerned mainly with the past 15,000 years or less. **Paleontologists** study time periods that are even more ancient - that is, tens of thousands of years ago to hundreds of millions of years ago.

**Archaeologists** study artifacts, the things created or changed by people. **Paleontologists** study fossils, the preserved remains and traces of ancient organisms.

**Archaeologists** interpret human culture based on what they learn from artifacts and other debris left by people. **Paleontologists** interpret ancient life and environments based on what they learn from fossils and the study of ancient environments.

**Archaeology** is considered a social science; the focus is on questions about human prehistory and history, the evolution of cultures, and the development of human society.

**Paleontology** is considered a natural science; the focus is on questions about the history of the natural world, how and why the environment has changed over time, how organisms are related to each other, and how and why organisms have changed.

### THE ENVIRONMENT - THEN AND NOW

Paleontologists use fossils and the rocks or matrix that hold them to understand what the environment was like at the time the plants and animals were alive. Microscopic pollen from ancient sediments can provide clues to what kinds of plants were growing. The fossilized droppings of ancient animals tell us what the animals ate, both plants and other animals.

Paleoecology is the study of ancient species and their environments, and is an important tool to complete our understanding of past and present environments.

### Development of the WSC Simulated Dig Site was funded by

California Cultural and Historical Endowment  
Institute for Museum and Library Services  
City of Hemet  
Western Center Community Foundation  
*Can Ya Dig It?* Event Supporters  
Individual Donors

Thank you!

## WSC OUTDOORS! - BRAIDED STREAM AND ENVIRONMENT

Opened in 2006, the Water + Life Museum complex is the first Museum to receive a Platinum LEED rating. The Western Science Center is a non-profit museum and learning center, owned and operated by the Western Center Community Foundation. The Diamond Valley Lake Visitor Center is owned and operated by Metropolitan Water District of Southern California. Signage tells you more about the LEED design for the building and outdoor environment.

### Managing Stormwater Run Off

A braided streambed was constructed using rocks discarded from the construction of Diamond Valley Lake. Rain water from the building rooftops, parking grove, and hardscape is deposited into the streambed. It gets delivered under Searl Parkway into the natural drainage basin to the east.

Other permeable materials like decomposed granite and gravel were used to increase rain water seepage back into the ground. These materials also help remove contaminants in the stormwaters by slowing the velocity of the runoff. Sediments and contaminants settle out before the water soaks into the ground.

### Drought Resistant Plantings

Plants were selected with a goal of minimizing the amount of water needed. Native plants were chosen when possible. A high-efficiency irrigation system was installed. This type of system delivers water directly to the roots of the plant. The water is tertiary recycled water.

#### TREES

Bottlebrush	<i>Callistemon</i>
California Bay Laurel	<i>Umbellularia californica</i>
California Buckeye	<i>Aesculus californica</i>
Desert Willow	<i>Chilopsis linearis</i>
Fremont Cottonwood	<i>Populus fremontii</i>
Incense Cedar	<i>Calocedrus decurrens</i>
Knobcone Pine	<i>Pinus attenuata</i>
Oaks	
Engelman Oak	<i>Quercus engelmannii</i>
Coast Live Oak	<i>Quercus agrifolia</i>
Strawberry tree	<i>Arbutus unedo</i>
	<i>Arbutus marina</i>
Western Redbud	<i>Cercis occidentalis</i>
Western Sycamore	<i>Platanus racemosa</i>
White alder	<i>Alnus rhombifolia</i>

#### SHRUBS

Arroyo willow	<i>Salix lasiolepis</i>
Bladderpod	<i>Isomeris arborea</i>
Brittlebush, Incienso	<i>Encelia farinosa</i>
	<i>Encelia f. var. phenicodonta</i>
California wild rose	<i>Rosa californica</i>
Chuparosa	<i>Justicia californica</i>
Flannel bush	<i>Fremontodendron californicum</i>
Lilacs	<i>Ceanothus griseus</i>
Manzanita	<i>Arctostaphylos densiflora</i>
Mountain mahogany	<i>Cercocarpus betuloides</i>
Rockrose	<i>Cistus sp.</i>
Rushes: Basket Rush	<i>Juncus textilis</i>
Spiny Rush	<i>Juncus acutus</i>
Sugarbush	<i>Rhus ovata</i>
Redberry	<i>Rhamnus crocea</i>
Toyon	<i>Heteromeles arbutifolia</i>

#### FLOWERING PLANTS AND GRASSES

California fuschia	<i>Zauschneria californica</i>
Deergrass	<i>Muhlenbergia rigens</i>
Mexican Bush Lobelia	<i>Lobelia laxiflora</i>
Penstemon:	<i>Penstemon centranthifolius</i> ["Scarlet Buglar"]
	<i>Penstemon Margarita BOP</i> [blue flower]
	<i>Penstemon parryi</i> ["Parry's Penstemon"]
	<i>Penstemon pseudospectabilis</i>
Sage:	
White sage	<i>Salvia apiana</i>
Cleveland Sage	<i>Salvia clevelandii</i>
Black sage	<i>Salvia mellifera</i> (woody trunk)
Sticky monkey flower	<i>Mimulus aurantiacus</i>
Verbena	<i>Verbena</i>

#### SUCCULENTS

Agave	<i>Agave</i>
Mexican grass tree	<i>Nolina longifolia</i> (synonym: <i>Dasyliirion longissima</i> )
Red Yucca	<i>Hesperaloe parviflora</i>
Beargrass	<i>Nolina microcarpa</i>
Bigelow Nolina	<i>Nolina bigelovii</i>
Prickly Pear	<i>Opuntia</i>
Our Lords Candle	<i>Yucca whipplei</i> <i>Hesperoyucca whipplei</i>

For books and more information, visit the WSC store.

THANKS FOR VISITING!