



Prehistoric Plants and Animals

A guide to the life that existed in Carlsbad, Oceanside and Vista during the Cretaceous, Paleocene, Eocene, Oligocene, Miocene, Pliocene and Pleistocene



Calaveras Mountain

Early Plants, Fungi and Mammals

Brontothere

Smilodon

Mount Calavera is a volcanic plug which has been dated to 22,000,000 years ago. The ancient volcano has eroded away leaving a core that resisted the changes. The western face of Mount Calavera was mined for gravel so there remains a cliff which rises to 533 feet.

On the boulders there are lemon-colored lichens. This primitive plant grows on stone and causes the rock to become soil.

A transition is shown on the mosaic which links the Luiseno and prehistoric people who lived in the Carlsbad-Oceanside- Vista area at the end of the Pleistocene Epoch.

Research by: David Schreibman and Camryn Almada

Simple land plants were all bryophytes and included liverworts and mosses. Some had leaves, but did not have roots. They all reproduced by spores, as modern plants with flowers and seeds began in the Cenozoic Era. Later, vascular plants, including ferns and cone-bearing plants had roots to anchor the plant and obtain water from the soil.

Fungi do not perform photosynthesis as they have no green chlorophyll. They absorb nutrient and live as long strands. Fungi reproduce with spores and budding.

The packrat is the "Pleistocene survivor. Earliest records show it existed 6.6 million years ago.

Research by: Morgan Rooney

The brontothere was an herbivore that ate tree branches, shrubs and soft vegetation. It grew to be seven to eight feet high at the shoulder.

It lived in the Eocene about 56 to 35 million years ago and looked most like an early rhinoceros. Unlike rhinos, its horn was made of bone. It was very social.

However, the brontothere was probably most related to horses. The brontothere became extinct probably due to inability to adapt to warmer conditions and tougher vegetation, like grasses that spread in the Oligocene.

Research by: Madeline Welch

The Smilodon lived in the Pleistocene Era. The Smilodon fatalis was not quite as large as the modern African lion. It stood up about forty inches high at shoulder. Along with very powerful limbs, the sabertooth cat had extremely long curved upper jaws with sharp serrations on the front and back edges. The saber-toothed tiger most likely used stealth techniques to ambush its prey. This prehistoric mammal lived in Carlsbad.



Woolly Mammoth



Ankylosaurus



Lambeosaurus



Pterosaur



Research by: Iman Ahmad

Woolly mammoths lived in Southern California in the Pleistocene Epoch up to 10,000 years ago. They were an important mammal on the grasslands. Mammoths also ate flowering plants and lived for 60-80 years. They would go through six sets of flat molar teeth through their life. Their adult teeth were about the size of a large shoe and had a flat, ridged surface that was used to grind up tough plant material. The largest species of mammoth reached 13 feet and the smallest on grew 4-8 feet in height. Several species of mammoths lived in southern California during the Pleistocene. They probably became extinct by climatic change or human over-hunting.

Research by:

Kaleigh Rodriguez

The particular species, *Aletopelta coombsi*, has only been found in Carlsbad California in the Point Loma Formation. The Carlsbad fossils were found by Brad Riney in 1987 along College Blvd. during the road extension.

He noticed dark brown bones exposed where a backhoe had cut a trench into a mudstone strata. Fossilized oysters were on some of the bones, so we know that although this ankylosaur was a land animal who foraged along the edges of rivers and estuaries, the remains must have been carried to sea and covered. Living in the Cretaceous Period, these sturdy armored dinosaurs ate plants and had large bony

Research by: Ava Walker

Fossilized skin of this duckbill dinosaur has been found in Baja California in late Cretaceous rocks near El Rosario. It could reach 50 feet or 15 meters in length and was as tall as 7 feet or 2.1 meters.

It had hoof-like claws which capped its digits on both hands and feet. The stiff tail help balance in all stances.

This herbivore could have reached as much as 20 tons. Its 1600 teeth were shaped like leaves.. The skin had interlocking "tubercles", but they were too thin to protect against predators. From the nesting sites, paleontologists think they were social and lived in herds.

Research by: April Vanaria

Pterosaurs were the first vertebrate to develop flight. Their wings were formed by a membrane-like skin. The wing had an extremely long fourth finger that extended along the body to the legs. Their bones were hollow and filled with air like a bird. Many had hair-like filaments known as "actinofibrils". Scientists think that they developed flight in other ways than "tree-down". They glided. Research is still being done to understand how they flew. In flight the torso was very stiff and could hardly move, so their flight would be stable. The hind limbs were not built for speed. Pterosaurs lived until the Cretaceous Period and the K-T Extinction.



Zamia

Prehistoric turtle

Dunkleosteus

Capybara

Research by: Gabe Clark-Benitez

Zamia lived in Carlsbad and is native to North, Central and South America.

It can be found as far south as Bolivia. The name "zamia" comes from a Greek word meaning "a pinecone".

Research by: Reece Chow and Daniel Rodriguez

Early pond turtle fossils have been found along the Highway 78 and in the Rancho del Oro area. Tortoises and turtles are in the Order Chelonia of Class Reptilia and form one of the oldest living groups of reptiles. They appeared on Earth 205 million years ago. Most have a broad short body protected by a bony shell sheathed with horny scutes. Pond turtles today live where water persists year round and will sun themselves on rocks which protrude from water.

Their diet consists of small fish, aquatic insects and larvae of dragonflies. Breeding is late spring and clutches have up to eleven eggs which the female deposits in loose sand.

Research by: Miles DeAntoni

The Dunkleosteus was one of the largest prehistoric fish. It could get up to 33 feet long and weigh over three tons. It lived about 380-360 million years ago.

Research shows that the Dunkleosteus would eat each other when they could. Fossil records also show that they regurgitated prey bones rather than digest them.

Research by: Deklyn Schlassa

In 1995, when the shopping center on the south of San Luis Rey River Valley was under construction, a partial skull of a capybara was found in Pleistocene pond deposits.

Now the capybara, the world's largest rodent, lives only in the northern part of South America. It can grow to 24 inches in height and 200 pounds.

They like to live in dense vegetation near lakes, rivers and marshes. It eats aquatic plants and they are excellent swimmers. They may be nocturnal.



Magnoia

Corytosaurus

Eohippus

Giant Ground Sloth

Research by: Alexis Freedman

The Magnolia family is characterized by the simple structure of flowers and fruits.

The sepals and petals. The two rings of attractive parts are very similar and are collectively called "tarpals".

Research by: Devin DeLaTorre

The Corytesaurus was a duckbilled dinosaur that lived in Carlsbad and Oceanside in the Eocene Epoch. It could reach 50 feet in length and get as tall as 7 feet at the hip. They were called duckbilled because of their flattened duck-like snouts with no front teeth. As a plant eater, the Corytesaurus could weigh as much as 20 tons. Their back teeth were small and leaf-shaped.

They were the dominant terrestrial herbivore of the Late Cretaceous even though they didn't have any armor to defend themselves. They were probably fast runners and had a good sense of smell and sight. They lived in the coastal lagoons or other aquatic areas avoiding predators.

Research by: Gabriel Sorbi and Alexis Friedman

The dawn horse's back was arched and flexible. The hind quarters were higher than the shoulder. Eohippus had legs and feet that were adapted to running on soft ground where they lived.

Their eyes were set high and forward on their head giving them little lateral vision.

This characteristic was an adaptation to living in the forest.

The eohippus probably lived in small herds or small bands.

Eohippus's soft teeth suggest a relatively short life-span, probably about four to six years.

Research by:

Mitchel Schreiberman

Fossils of the paramylodon haelani have been found from coast to coast in North America and locally in Anza-Borrego Desert State Park.

Other giant ground sloths grazed on grasses and open habitats. They also fed on yuccas, agaves, mallows, mesquite and cacti.

The ground sloth probably lived in caves in day and went out at night. This would have allowed for a stable environment for humidity and temperature. Also, the caves were a good place to raise the young. A cave may have had minerals for the diet also.



Ammonite

Horsetails (Cormophyta)

Early Crocodilia

Trilobite and Stag Beetle

Research by: Vicky DeVito

Ammonites were free-swimming mollusks that had external shells that were either straight or coiled. Little is known about their way of life. Their bodies were like a chambered nautilus. The shells were divided into chambers by intricately folded walls where the animal lived in the outermost chamber. Ammonites were carnivorous marine animals. Tooth marks on some ammonite shells show they were preyed upon by marine reptiles. They were found in Carlsbad, La Jolla, and Point Loma, in California

Research by: David Schreiberman

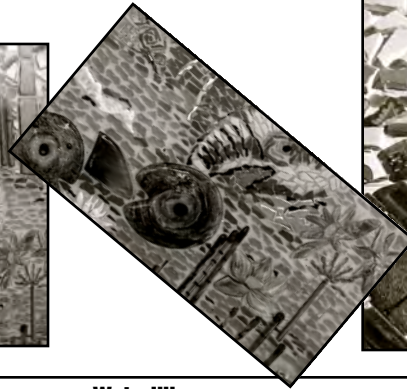
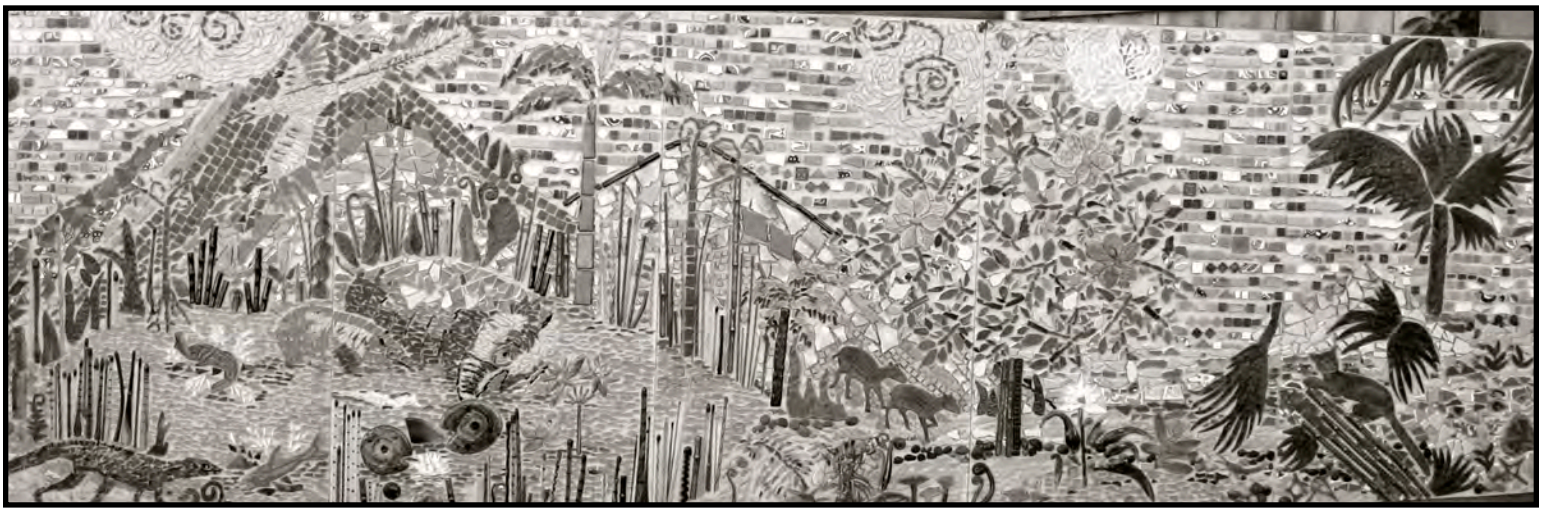
Horsetails have been on earth since Devonian times. A horsetail has a hollow stem. They were successful for drawing moisture up from the soil. They were part of the world's first forests along with scale trees and feathery tree ferns. Mostly these thrived on swampy lands. Spider-like arachnids and first wingless insects, bristletails and springtails, lived in this habitat. We have horsetails growing in our 'Prehistoric Landscape' at school along with the cycad and ferns. Fossils of cycads were found in Carlsbad in the Point Loma Formation. They were probably a good food source for the early herbivorous animals. Fossil remains include stems, cones, leaves and seeds

Research by: Daniel Rodriguez

The Crocodilia are the only archosaurs to have survived to the present day and there are about 25 species that are rather similar. They are tropical, fresh water inhabitants. Armored lizards were found in Oceanside near Stonecrest Square, Ocean Ranch, State Route 78, and Wnis View Estates along with ground sloths, brontotheres, rhinos, primitive carnivores, mastodons, mammoths and pond turtles.

Research by: Ohm Patel

Trilobites (three-lobes) are a well known fossil group of extinct marine arthropods that form the class Trilobita. Trilobites first appear in the fossil record during the Early Cambrian period (about 540 million years ago). Trilobites finally disappeared in the mass extinction at the end of the Permian about 250 million years ago. They had many life styles. Some moved along the sea-bed as scavengers or predators, and some swam feeding on plankton. The exoskeleton is composed of calcite and calcium phosphate minerals. Trilobites can be as small as 1/25 inches with a typical size of one to four inches.



Archaeopteryx

Heptadon

Waterlilies

Peritherium and Tapycyon

Research by:

Kaleigh Rodriguez

Archaeopteryx is called the first bird. It has been studied a lot, because it has teeth, claws on its wings and a bony tail. These things seem to be like a reptile.

But Archaeopteryx had a bird-like skull, perching feet, feathers and a furcula or "wishbone."

Research by: Camryn Almada

The heptadon was about one meter (3.3 feet) in length and closely resembled modern tapirs. The shape of the skull suggests that it probably lacked the characteristic tapir trunk. Instead it probably had a slightly elongated fleshy upper lip.



Research by: Daniel Rodriguez

The flower of the waterlily has an indefinite number of petals. The petals are arranged in spirals. From the outside to the inside of the flower, there are petal structures that have features of both petals and stamens. These features are considered to be less specialized and therefore representative of a primitive plant.

Research by: Cameron Hickerson/ Rhiana Becker

Tapycyon has been found in Oceanside and Murphy canyon in San Diego. Tapycyon is an extinct species of a group of primitive carnivores called miacids that lived in North America during the Eocene Epoch. They were about the size of a large coyote with teeth more like a dog's, but it had retractable claws like a cat. Its sharp teeth were good for eating meat.

Peritherium was a marsupial which looked like an opossum.

They had a long tail to hold branches and sharp teeth to catch insects. These marsupials were common in San Diego County in the Eocene Epoch and were extinct here by the the Oligocene Epoch,

Montessori Arts and Sciences School takes pride in the study of the Timeline of Life developed by Dr. Maria Montessori. Children match graphics and labels of prehistoric plants and animals that developed in periods from the Cambrian to the Neozoic Era. To enhance the experience we participated in a tour of "Fossil Mysteries" at the San Diego Museum of Natural History. We were elated to learn about the richness of life that existed on our landscape thousands or millions of years ago.

Credit for much of the resource information reported here may be attributed to the San Diego Museum of Natural History.

"Prehistoric Plants and Animals" is a special way to draw our awareness to the environment, climate, and is part of the whole "Tribute to that Which Came Before Us."

We hope that what you see here inspires you to learn more and share your discoveries in any art or science!



Further Study

Early Primates

Research by: Camryn Almada

The Omomys had an opposable thumb and big eyes. Its large brain was a result of seeing well and having the ability to hold things. It had flexible joints and lived in trees.

There were eleven species of early primates present in North America.

Mesocyon

Research by: Camryn Almada

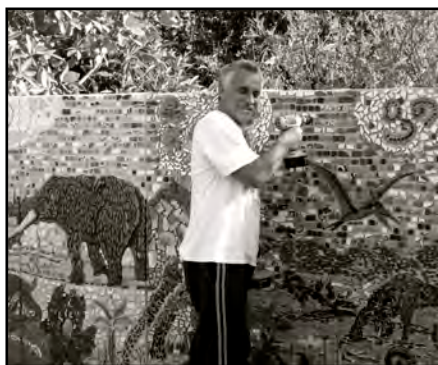
This dog-like carnivore also had retractable claws like a cat. Mesocyon also had broad back molars like a dog. It was a miacid like the tapycon. Fossils have been found in Otay Ranch and Chula Vista.

Mesocyon had "digitigrade" feet which meant that it was able to stand and walk on its toes. This adaptation gave it great speed and increased stride length. The bones of the foot were long and packed together. This is different from "plantigrade" feet which are on animals that walk flat-footed.

K-T Extinction

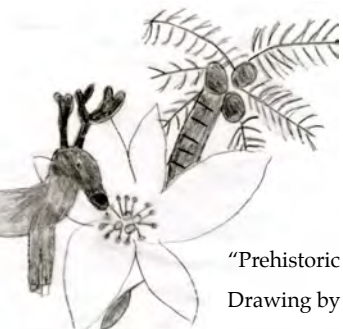
Many scientists believe that an asteroid collided with Earth about 65 million years ago causing the extinction of the dinosaurs.

"Prehistoric Plants and Animals" mosaic wall was installed by Phil Buccola, Jesus Rodriguez and Peter Taylor on 12/13/09.



Wishing you all good health, prosperity, peace and joy for the Holidays and New Year 2010.

Students created oil pastel art to compliment their research and decorate the backdrop for the "Music of Prehistory" Concert. Photographed here are Devin, Ohm, Miles and Madeline.



"Prehistoric Deer, Magnolia and Palm"

Drawing by Alexis Friedman

In Appreciation

“A Tribute to that Which Came Before Us” is a project inspired by the students and curriculum of Montessori Arts and Sciences School. Sincere gratitude goes to Denise Buccola, Artistic Director, for inception of design and project coordination.

Music Inspired by Prehistory

“Who Has Seen the Wind?”
Recorders and Singing by
Elementary Two

“Dinosaur Ages”
Poem recited by
Mitchel Schreiberman

“When”
Sung by: All
Elementary One
Elementary Two

“Diplodocus”
Poem recited by
Alexis Friedman
Morgan Rooney

“Footprints”
Sung by Elementary One
Xylophones: Daniel Rodriguez
April Vanaria
Piano: David Schreiberman
Drama: Iman Ahmad
Ohm Patel

“Whew”
Recited by:
David Schreiberman
April Vanaria

“Who Named the Dinosaurs?”
Rhiana Becker, Reece Chow,
Kaleigh Rodriguez

Music Instructor: Mrs. Tiffany Spencer
Piano Accompaniment: Ms. Kelly Duley

“Tyrannosaurus”
Recited by: Camryn Almada
Ava Walker
Mask Sculptures and
Dramatics: Deklyn Schlassa

“Where did They Live?”
Sung by: Elementary One
Xylophones:
Camryn Almada
Alexis Friedman
Ava Walker

“Aklyosaurus:
Recited by:
Gabe Clark-Benitez
Gabriel Sorbi
”

“Anklyosaurus
Sung by : Elementary Two

“What’s for Lunch?”
Recited by:
Miles DeAntoni
Devin DeLaTorre

“Pteranadon”
Sung by: Elementary One
Dramatics:
Cameron Hickerson

“Dining”
Poem recited by:
Reece Chow

“Duckbill Dinosaur”
Sung by: Elementary Two
Xylophones:
Iman Ahmad,
Gabe Clark-Benitez
Miles DeAntoni
Victoria DeVito
Mitchel Schreiberman

“Triceratops”
Sung by: All

“Seismosaurus”
Recited by: Daniel Rodriguez

“Dinosaur Party”
Sung by: All

“Where Did They Go?”
Composed and recited by:
Madeline Welch

Special thanks to our teachers for
the support and encouragement for
the students:

Elementary One: Mrs. Julia Doran
Elementary Two: Ms. Jessica Scheetz

Evaluation Survey

Please help evaluate the success of this project by providing your feedback about “Prehistoric Plants and Animals”



How well does did this project provide an opportunity for artistic development for children?

excellent average poorly no opinion

Comment: _____

“Prehistoric Plants and Animals” provided educational elements of the of mosaic and history of Carlsbad for participants at ARTSPLASH.

excellent average poorly no opinion

Comment: _____

“A Tribute to That Which Came Before Us” is a mosaic mural that appeals fo all segments of the population.

excellent average poorly no opinion

Comment: _____

Culturally diverse activities were experienced through the process of creating and celebrating the installation of “Prehistoric Plants and Animals”.

excellent average poorly no opinion

Comment: _____

Contributions

Oceanside Glasstile — Glass tile
Mexican Connections— Ceramic Tile
Glasscapes — Mingo and Asho, Handmade glass
Kathleen Schroeder — Ceramics instruction
Buccola Engineering--Technical support

We appreciate the privilege of being present at and supporting ARTSPLASH with mosaic work-in-progress demonstrations.

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