DINO HUNT IN THE ROCKIES

By Art Storbo, May 2024

On our way to/from Waco for the eclipse, we stopped at four dinosaur dig/museum sites. We wanted to gather information for an illustrated talk to our North Seattle Rock Club next fall, the talk tentatively titled “Dinosaurs: What the Rocks Tell Us.” Everything we know about dinosaurs comes from the rocks, and it’s a fascinating story. We had years before been to two dino sites in MT and WY, but these four fleshed out our knowledge of dino history and rocks. Most U.S. dino recovery sites lie in the Rocky Mountains, which during dinosaur times formed the western shore of the Western Interior Seaway that divided the North American continent during the Cretaceous Period 145-66 Mya (million years ago). Many rocks today can be dated accurately to the nearest 1 My by sophisticated geology lab methods.

Dinosaurs ruled the Earth’s animal kingdom from 225 Mya to 66 Mya. Then they were suddenly wiped out when an asteroid 7 miles in diameter struck planet Earth, making a 120-mile-diameter, 12-mile-deep hole in the ocean floor at today’s Yucatan peninsula in southeast Mexico. The proof lies in the K-T boundary, a 1-cm-thick iridium-rich layer with fallout materials, found in many places around Earth, all dating to 66 Mya. Before this, dinos were as plentiful in what became Europe, Asia, and South America as in North America; but species varied slightly. Following the asteroid strike came world-wide shock waves of blinding light and extreme heat, earthquakes, and fallout of blast materials, from which only land animals underwater and in burrows survived. It was the worst day ever on planet Earth. This was followed by years-long atmospheric pollution by CO_2 and sulfur, creating a “nuclear winter” in which most land-based plants died. Life in the oceans fared equally badly; acidification of the oceans from acid rain killed off plankton and all species up the food chain.

We first visited Dinosaur Journey Museum in Fruita, CO, where we learned what dinos ate. Herbivores up to 100 feet long and weighing up to 40 tons ate plants including tree branches. Stones rubbing together in their gizzards aided digestion, just as small gravel aids digestion in chickens and some birds today. Carnivores (meat-eaters), like the familiar Tyrannosaurus Rex, grew to 30 feet long and weighed up to 6 tons. Their fossilized bones and coprolites, even their fossilized eggs, tell us their life story. Dino bones tell of health maladies including parasites, injuries including bite marks, broken bones, infections,

arthritis, even cancer, and old age when they couldn't find enough to eat, outrun other predators, or avoid drowning in a flash flood or mudhole. Dinos lived a maximum of about 30 years.

We next visited Clayton Lake State Park, NM. Here are hundreds of dino tracks made in soft clay/sand 100 Mya, then covered with outwash from the eastern flank of the rising Rocky Mountains. In time, these sedimentary materials hardened into stone, much of which later eroded away. Left behind after dam construction was a stone layer, which lay just under the surface of the dam's excavated spillway. When the spillway was scoured clean in 1982 by an overflow, the tracks were recognized. They tell many stories – at least four different kinds of dinosaurs, herbivores, and carnivores, adults and young, travelling singly and in herds – as they walked, ran, dragged their tails, or retreated. Their footprints show toes and claws, correlate with footprints left at other sites, indicate animal size, and distance made with each step walking or running. They avoided crocodiles who left their own traces, and even worms left tracks or burrows.

A 5-ton Pentaceratops from northwestern NM

Hundred s of dino tracks at Clayton Lk NM

At the New Mexico Museum of Natural History in Albuquerque, we saw numerous skeletons of dinos of all sizes, even bird size – some still lying in the rock they were buried in. Modern science can even tell us what color the dinos were. The exhibits included several clutches of dino eggs – from 2" to cantaloupe in size. Most dinos didn't guard their nests of 20-50 eggs. Up to 50 percent of eggs were eaten by small predators, and hatchlings often died as

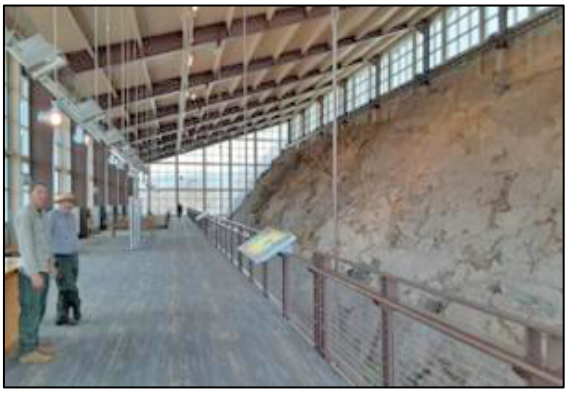
Alamosaurus skeleton replica, Albuquerque, NM

food for predators as well, leaving 10 percent to grow to adulthood. This museum is one of the best.

At Dinosaur National Monument in the northeast corner of UT, we visited the Quarry Exhibit Hall. It encloses a wall of rock dipping at 45 degrees like the strata in the surrounding hills. The rock is filled with dino bones, believed to have piled up in the flash flood of a river. As a result, many bones are mixed together, though some skeletons are nearly intact and complete. This site was first discovered in 1909. Fossils from nearly 400 different dinosaurs have been recovered here. Visitors can touch fossils still in the rock, and it is easy to see the fossilized bones as they are darker than the surrounding rock.

Quarry Exhibit Hall near Vernal, UT

And in keeping with a common rock collector's habit, we bought a few rocks - a gizzard stone, another coprolite, a fossilized bone, and a 10-inch Tyrannosaurus Rex tooth (this one a recast, as these real artifacts aren't usually sold to the public).



Interior of Quarry Exhibit Hall near Vernal, UT

Dinosaur bones you can touch at Quarry Exhibit Hall

A great trip, combining two hobbies (the eclipse) of planet Earth history.