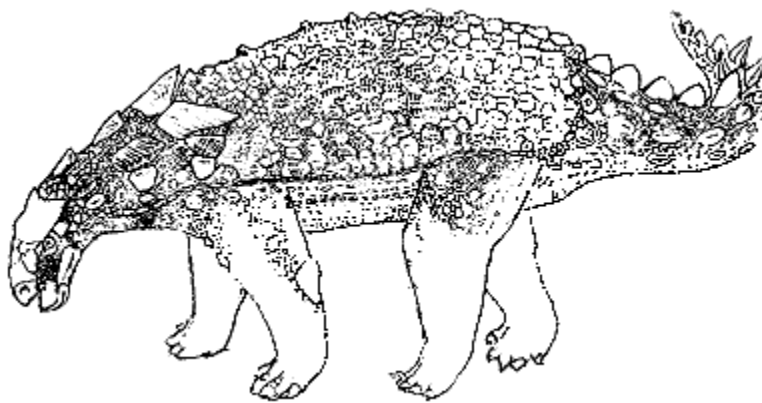


Dinosaurs of San Diego County

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There are few reports of dinosaurs being found in our state and, surprisingly, five of those reports have dealt with discoveries made here in San Diego County -- one in La Jolla, one in Sunset Cliffs, and three in Carlsbad. All of the San Diego dinosaur fossils have been found in sedimentary rocks of the Point Loma Formation of late Cretaceous age, approximately 75 million years old. These rocks are generally equal in age to the famous dinosaur-producing rocks of the Red Deer River region in southern Alberta, Canada.



Hypothetical reconstruction of the Carlsbad nodosaur, by Brad Riney

Although many different species of dinosaurs have been found and described from the Red Deer River region, only two kinds of dinosaurs are presently known from the San Diego area. These include an indeterminate species of hadrosaur (duck-billed dinosaur), probably closely related to *Lambeosaurus* or *Saurolophus*, and an indeterminate species of nodosaur (armored dinosaur), probably closely related to *Panaplosaurus*.

The first dinosaur find in San Diego County was made by [Museum paleontologist Brad Riney](#), then a junior high school student. This hadrosaur fossil material was an incomplete back vertebra from the sea cliffs of La Jolla, found in 1967. Later hadrosaur discoveries include a femur collected in 1983 from a Carlsbad construction site, a series of 13 tail vertebrae collected in 1986 from the Carlsbad Research Center in Carlsbad, and a surf-worn fragment of a lower jaw collected in 1989 from the beach along Sunset Cliffs.

The nodosaur fossil material was collected in 1987 and consists of a partial skeleton including pelvic bones, back legs, incomplete front legs, ribs, dermal (formed in the skin) armor, and teeth. The Carlsbad nodosaur probably approached 4 meters (13 feet) in length and in life was covered by a dense armor of bone that actually formed in the skin. This dermal armor consisted of thick shoulder patches, low keeled spinal plates, and an interlocking mosaic of polygonal pelvic ossicles. Nodosaurids were plant eaters related to the familiar club-tailed ankylosaurs and distantly

related to *Stegosaurus*, with its large dorsal plates and tail spikes. The Carlsbad specimen is the first record of a nodosaur from California.

Geology is the primary reason that dinosaurs are so rare in our state. Here in California, the sedimentary rocks of the correct age to contain dinosaurs were almost all deposited in the sea, and not on land. Since dinosaurs did not live in the ocean (the large marine reptiles of the Mesozoic were not dinosaurs, but were very different types of reptiles that included pleisosaurs, ichthyosaurs, and mosasaurs), their remains are not typically preserved there. Fortunately, however, the occasional carcass would get carried into the sea, probably as the result of an accidental drowning in a storm-swollen stream or river that flowed into the ocean. Similar events have been observed today in the African wilderness where herds of migrating wildebeest leave numerous bloated carcasses floating downstream after a major river crossing.