

HIGHLIGHTS

Research reveals dinosaurs and other fossil wildlife at Big Bend

Research at Big Bend National Park, Texas, is increasing our knowledge of the environment when dinosaurs lived on the planet. Since 1995, vertebrate paleontologist Dr. Julia Sankey has been visiting Big Bend to find fossils of Late Cretaceous animals such as dinosaurs and mammals (fig. 1). The Cretaceous period ended 65.5 million years ago and was the last geologic period with dinosaurs. Big Bend is the most fossil-rich national park that preserves materials from the last 35 million years of the dinosaurs' existence. The park also contains some of the southernmost fossils from the Late Cretaceous period in North America. Sankey's work is contributing to painting one of the most complete pictures of a Late Cretaceous dinosaur ecosystem anywhere on the planet.

Sankey has focused on collecting fossils from microvertebrate sites. These are accumulations of small teeth and bone that often form in ancient stream channels. To recover the fossils, sediment is collected and washed through fine-mesh screens. With the aid of a microscope, fossil teeth and bone are then sorted out. The teeth can sometimes be identified to the species level and help provide a picture of the ancient ecology of the area.

Thirty-eight different kinds of fossil vertebrates have been discovered in the Talley Mountain area of the park, including dinosaurs, mammals, lizards, and other animals. Fossil teeth from nine plant- and meat-eating dinosaur species have been found (fig. 2). The plant-eating dinosaurs include dome-

head (pachycephalosaurid), duck-billed (hadrosaurid), and horned (ceratopsian) dinosaurs. The meat-eating dinosaurs include an older relative of *Tyrannosaurus rex* and small theropods (*Saurornitholestes* sp. and *Richardoestesia* sp., including a new species, *Richardoestesia isosceles*). Many of the dinosaur teeth are small, probably from juveniles or younger individuals. Although no nest sites have yet been found at Big Bend, these teeth provide evidence that dinosaurs nested in the area.

Aside from finding new and different kinds of fossils, this research is helping scientists better understand the environments in Big Bend in the Late Cretaceous period. The environments in the park were different from areas further north. Big Bend was drier and may have had seasonal droughts and subsequent flash floods. Documenting the Late Cretaceous animals in areas like Big Bend, with such different environments, helps scientists better understand the ecology of the time. This may also help us understand why the dinosaurs went extinct at the end of the Cretaceous period.



Figure 1. Working first as a graduate student at Louisiana State University and now with the South Dakota School of Mines and Technology, Dr. Julia Sankey has been studying fossils of Late Cretaceous dinosaurs and mammals in Big Bend National Park since 1995.

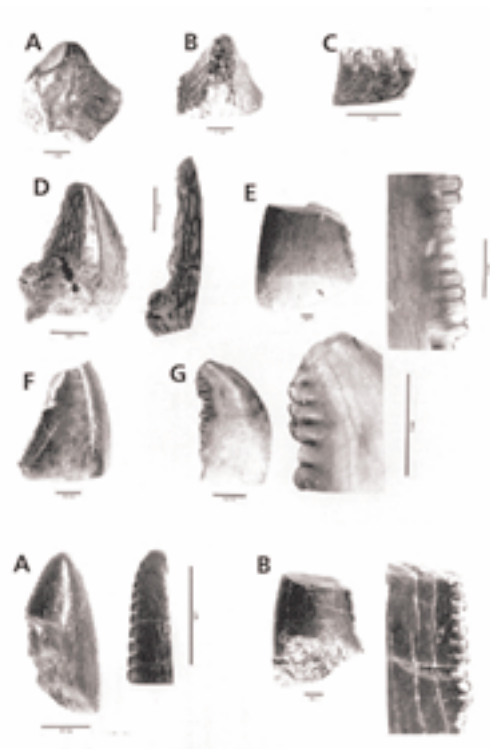


Figure 2. Teeth of plant-eating (A, B, and D) and meat-eating dinosaurs (remainder) from Big Bend. Letter A, bottom row, is a new species of small, carnivorous dinosaur that may have been a fish-eater (see Sankey, J. T. 2001. Late Campanian southern dinosaurs, Aguja Formation, Big Bend, Texas. *Journal of Paleontology* 75(1):208-15).

