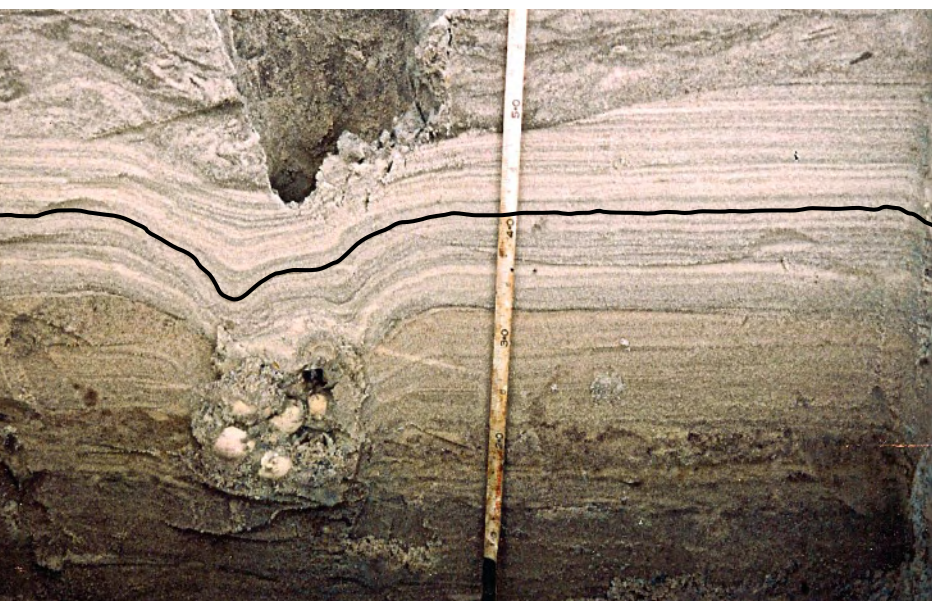
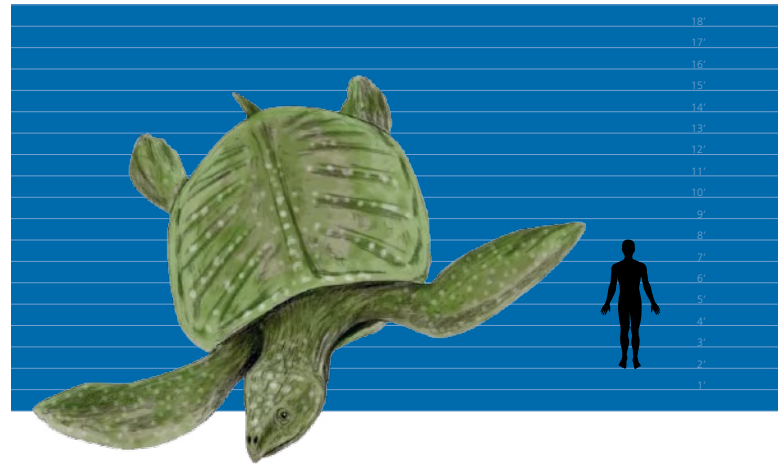


Modern Meaning in an Ancient Turtle Nest

Late Cretaceous seas contained giant swimming marine reptiles, including mosasaurs (9 meters in length), plesiosaurs (18 meters in length), and sea turtles (nearly 5 meters in length) that joined toothed, diving birds and flying reptiles that fed on the abundant vertebrates, bivalves, ammonites, squids, and other invertebrates. Most of these behemoths accompanied the dinosaurs in the late Cretaceous mass extinction event that killed off 75 percent of the plants and animals on Earth—but *not* the sea turtles. Fossils prove sea turtles' abundance in the Western Interior Seaway—across western North America from the Gulf of Mexico to the Arctic Ocean—during the Cretaceous period, and a hypothesis formed in 1996 suggested that turtles nested on sandy beaches there.



These two images show cross-sections of the fossilized sea turtle nest (above) from the late Cretaceous period located in Fox Hills Sandstone, Colorado, and a modern loggerhead turtle nest (bottom) on St. Catherines Island, Georgia. Both are collapsed nests with eggs remaining in the egg chamber.

© GALE BISHOP; ABOVE RIGHT: The illustration above is an artist's rendering of *Archelon ischyros*, a sea turtle from the Late Cretaceous period of North America. © ARTHUR WEASLEY / WIKIPEDIA COMMONS (GNU FREE DOCUMENTATION LICENSE)

In 1997, in the Cretaceous Fox Hills Sandstone near Limon, Colorado, my colleagues and I helped to prove that hypothesis true. During an industrial study of ghost shrimp burrows to help delineate heavy mineral deposits in the area, my colleagues showed me an enigmatic sedimentary structure. Almost immediately, I recognized the structure as a fossilized sea turtle nest! Inside the partially collapsed nest were preserved egg impressions.

When we discovered the egg chamber, a nearby covering pit, and cross-section of a sea turtle crawlway leading away from the nest, I realized with astonishment that we had located a shoreline in the Cretaceous Western Interior Seaway and discovered the first documented suite of fossil sea turtle nesting structures.

The covering pit, a surface disturbance dug by the turtle to camouflage the neck of the egg chamber, provided fascinating evidence that Cretaceous sea turtles had already evolved defenses against destruction of their nests by their predators, the dinosaurs. Modern sea turtles use this same technique, making covering pits in the sand to disguise their eggs from wild hogs, raccoons, foxes, birds, and other predators.

This nest is the first and only known fossilized sea turtle nest. More significantly, it indicates that the camouflaging behavior of ancient sea turtles had already evolved and been integrated into the nesting behavior of sea turtles 70 million years ago.

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