

## *Lophorhothon*

*Lophorhothon* is among the family of dinosaurs known as hadrosaurs, or duck-billed dinosaurs. They inhabited North America during the Late Cretaceous period (65 to 99 million years before the present). The *Lophorhothon* is known with certainty from only a single juvenile specimen collected from the Late Cretaceous Mooreville Formation, a marine chalk deposit in Dallas County in west-central Alabama.

Hadrosaurs were herbivorous dinosaurs that ranged from 24 to 35 feet long. They were largely bipedal, but their front limbs were sturdy enough to allow for some four-legged walking, standing, and feeding. Most hadrosaur skulls feature flattened, duck-like mouths developed from wide, toothless upper and lower front jaw bones. Hadrosaurs had long rows of grinding rear teeth that the animals used to process vegetation. Hadrosaur skulls also usually display a variety of odd crests, formed by their nasal and upper jaw bones. The more primitive hadrosaurine subfamily, of which *Lophorhothon* is a member, often developed a "Roman-nose" shape formed by a high, narrow nasal ridge.

*Lophorhothon* is also the only hadrosaur that has been identified to genus in eastern North America. The fossilized skeleton was collected during the 1940s by researchers investigating the Alabama chalks for the Field Museum of Natural History in Chicago. In 1960, paleontologist Wann Langston Jr. first described the *Lophorhothon* specimen as a new genus and species of hadrosaur and coined the name *Lophorhothonatopus* by combining the Greek for "crest-nose" and "out of place" because virtually all other hadrosaurs known at that time came from the western side of North America.

Langston was able to identify the specimen as a juvenile and estimated its length at about 15 feet, well below the estimated adult size for average hadrosaurs. Despite being one of the best-preserved dinosaur fossils in the eastern United States, the skull is represented by only several fragments, and less than one-half of the entire skeleton was found. Fortunately, the preserved parts of the skull included the rear portion of the nasal crest and enough bones of the roof of the skull to allow identification of an opening known as a fontanel, which is a gap in the skull roof bones. The presence of the fontanel identifies the specimen as a juvenile because this gap closes as an animal reaches adulthood. The bones display characteristics that are typical of most hadrosaurines, aside from minor differences in the nasal crest, the crown angle of the teeth, and the fontanel. It appears to be closely related to the western genus *Kritosaurus* and among the older members of the subfamily in North America.

The *Lophorhothon* specimen dates to approximately 80 million years ago, based on associated fossils. Other hadrosaur fossils found in the Coastal Plain, from North Carolina to Tennessee, also may be tentatively identified as *Lophorhothon* and come from deposits ranging from 76 to 84 million years ago. Unfortunately, it is impossible to identify a specimen accurately as a hadrosaur without certain diagnostic skull parts, and the identification becomes especially difficult when comparing adult specimens with the juvenile type specimen from the Mooreville Formation. For example, researchers have found an adult hadrosaur lower leg in Russell County in deposits of the same age as the Dallas County *Lophorhothon* specimen and hadrosaurine teeth and bones from contemporary sediments in western Georgia that very likely belong to *Lophorhothon*. But, to date, the Mooreville Formation specimen remains the only one that can be confidently identified as *Lophorhothon atopus*.

It is interesting to note that although *Lophorhothon* was a terrestrial animal, the type specimen was found in a marine chalk deposit. In fact, all dinosaur remains from the Southeast have been found in marine deposits and represent floating or otherwise water-transported carcasses that reached the ocean from shorelines or inland rivers. Langston addressed this preservation issue in the original *Lophorhothon* description, and paleontologist David R. Schwimmer refined what is known as the "bloat-and-float" model of marine dinosaur preservation to include the effects of shark scavenging as a key element of the marine occurrences of dinosaur fossils.

### **Additional Resources**

Langston, Wann, Jr. *The Dinosaurs. Vol. 4, The Vertebrate Fauna of the Selma Formation in Alabama*. Chicago, Ill.: Chicago Museum of Natural History, 1960.

Schwimmer, David R. "Late Cretaceous Dinosaurs in the Eastern USA: A Taphonomic and Biogeographic Model of Occurrences." In *Dinofest International Symposium* (Philadelphia: Academy of Natural Sciences, 1997), p. 203-11.

Schwimmer, David R., et al. "Upper Cretaceous Dinosaurs from the Blufftown Formation in Western Georgia and Eastern Alabama." *Journal of Paleontology* 67 (March 1993): 288-96.

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