

Dinosaur skull changed shape during growth

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This is a *Diplodocus carnegii* adult and juvenile feeding. Credit: Reconstruction illustration: Mark A Klingler / Carnegie Museum of Natural History

The skull of a juvenile sauropod dinosaur, rediscovered in the collections of Pittsburgh's Carnegie Museum of Natural History, illustrates that some sauropod species went through drastic changes in skull shape during normal growth.

University of Michigan paleontologists John Whitlock and Jeffrey Wilson, along with Matthew Lamanna from the Carnegie Museum, describe their find in the March issue of the [Journal of Vertebrate](#)

[Paleontology](#).

The fossil offers a rare chance to look at the early life history of *Diplodocus*, a 150 million-year-old sauropod from western North America.

"Adult [sauropod](#) skulls are rare, but juvenile skulls are even rarer," said Whitlock, a doctoral candidate in the U-M Museum of Paleontology.

"What we do know about the skulls of sauropods like *Diplodocus* has been based entirely on adults so far."

"*Diplodocus* had an unusual skull," said Wilson, an assistant professor in the Department of Geological Sciences and an assistant curator at the U-M Museum of Paleontology. "Adults had long, square snouts, unlike the rounded or pointed snouts of other sauropods. Up until now, we assumed juveniles did too."

The small *Diplodocus* skull, however, suggests that major changes occurred in the skull throughout the animal's life.

"Although this skull is plainly that of a juvenile *Diplodocus*, in many ways it is quite different from those of the adults," Whitlock said. "Like those of most young animals, the eyes are proportionally larger, and the face is smaller. What was unexpected was the shape of the snout—it appears to have been quite pointed, rather than square like the adults. This gives us a whole new perspective on what these animals may have looked like at different points in their lives."

The researchers believe these changes in skull shape may have been tied to feeding behavior, with adults and juveniles eating different foods to avoid competition. Young *Diplodocus*, with their narrower snouts, may also have been choosier browsers, selecting high quality plant parts.

The discovery also highlights the importance of museum collections for paleontological research.

"Fossils like this are a great example of why natural history museums like ours put so much time and effort into caring for our collections, said Lamanna, an assistant curator of vertebrate paleontology at Carnegie Museum of Natural History. "This little Diplodocus skull was discovered in 1921, and more than 80 years passed before we recognized its significance. If the Carnegie Museum hadn't preserved it for all that time, the important insight it has provided into the growth and ecology of this dinosaur would have been lost."

The actual juvenile Diplodocus [skull](#), as well as a fully restored, mounted skeleton of an adult, is on display in Carnegie Museum of Natural History's "Dinosaurs in Their Time" exhibition.

More information: Journal of Vertebrate Paleontology:
www.vertpaleo.org/publications/index.cfm

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