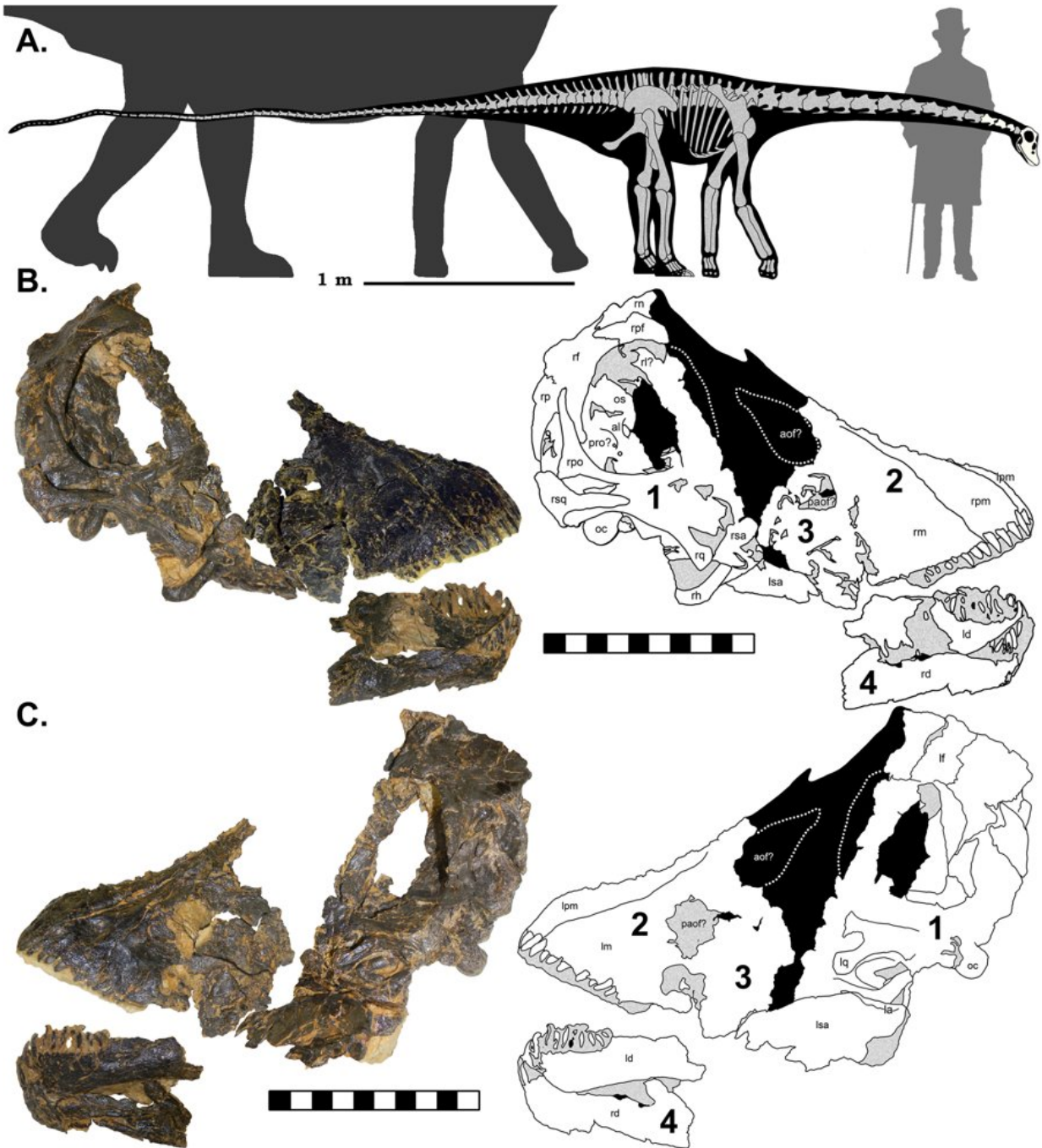


Guess what these young dinosaurs ate when their parents weren't looking

October 12 2018, by Tom Avril, The Philadelphia Inquirer



Skeletal reconstruction of CMC VP14128 to scale with a mature *D. carnegii* (dark grey). Grey bones are missing, while those in ivory are those present in CMC VP14128. Skeletal reconstruction based on the *Diplodocus* by S. Hartman. Silhouettes by S. Hartman and PhyloPic, modifications made. Skeletal reconstruction of CMC VP14128 redrawn from *D. carnegii* skeletal by S. Hartman. Human scale is Andrew Carnegie at his natural height of 1.6 m.

Skeletal and silhouettes to scale. (B) CMC VP14128 in right lateral view with accompanying schematic. (C) CMC VP14128 in left lateral view with accompanying schematic. Schematics by DCW. The four portions of the skull numbered on accompanying schematics. Lateral views and schematics to scale. a: angular, al: alisphenoid, aof: antorbital fenestra, d: dentary, f: frontal, h: hyoid, l: lacrimal, m: maxilla, n: nasal, oc: occipital condyle, os: orbitosphenoid, p: parietal, paof: preantorbital fenestra, pf: prefrontal, pm: premaxilla, po: postorbital, pro: prootic, q: quadrate, sa: surangular, sq: squamosal. L and r before bone denotes if it is left or right. Credit: *Scientific Reports* (2018). DOI: 10.1038/s41598-018-32620-x

Imagine a crew of hungry toddlers and kindergartners with unrestricted access to the kitchen. Would they gorge themselves on candy, chips and ice cream?

For a type of fast-growing youngster that lived 150 million years ago, the answer instead was a diverse, nutritious diet, rich in tender greens.

That finding resulted from the discovery, announced Thursday, of a rare juvenile dinosaur [skull](#) belonging to one of those familiar, long-necked plant-eaters called [sauropods](#). Unlike adults of this particular species, called *Diplodocus*, the young dinosaur had two different kinds of teeth—pencil-like teeth in the front, and flatter, spatulalike chompers in the back.

The dino's dental diversity and narrow snout allowed it both to pick out the choicest shoots and chew them to extract as many nutrients as possible, said lead study author D. Cary Woodruff, a Ph.D. student at the Royal Ontario Museum and the University of Toronto.

Proper nutrition would have been essential to fuel fast growth for the animals, which hatched from a cantaloupe-size egg and reached a

staggering 60 feet in length by the time they were teenagers, he said.

"We're thinking of it like a mouth with a Swiss Army knife," Woodruff said.

Adults, on the other hand, had only the pencil-like front teeth, set in a wider, vacuum-shaped snout, suggesting they raked up vegetation indiscriminately and swallowed it without chewing, said Woodruff, who collaborated with researchers from Princeton University and the Cincinnati Museum Center, among other institutions. And given their different diets, adult and juvenile sauropods likely were eating apart from one another, Woodruff and his coauthors wrote in the journal *Scientific Reports*.

Peter Dodson, a prominent University of Pennsylvania dinosaur expert who was not involved with the research, said the skull was an important find. He agreed that the young dinosaur's two kinds of teeth would have enabled the animal to feed itself—coupled with a narrow snout for selective extraction of the most tender, easy-to-digest plants.

Good thing, because if young sauropods had relied on their massive, 100-foot-long parents for handouts, they would have been in danger, said Dodson, a professor in Penn's School of Veterinary Medicine as well as its department of earth and environmental science.

"It seems like a pretty fair bet that there wasn't parental care," he said. "They could've been stepped on without the parent knowing it."

Dinosaur-hunters get excited when they find a sauropod skull, as the bones from the heads of these massive animals were delicate and often did not survive the ravages of time. As a result, many museum skeletons of *Diplodocus* and other sauropods are completed with a cast from the skull of a different dinosaur—sometimes not even the same species.

The skull Woodruff analyzed—found in a Montana quarry by study coauthor Glenn Storrs, of the Cincinnati Museum Center—is especially unusual for its completeness and the fact that it came from such a young animal.

Woodruff estimated that the creature was 2 to 4 years old when it died. Even at that tender age, its skull was already 9 inches long, with a body stretching at least 15 feet from head to tail.

More information: D. Cary Woodruff et al. The Smallest Diplodocid Skull Reveals Cranial Ontogeny and Growth-Related Dietary Changes in the Largest Dinosaurs, *Scientific Reports* (2018). [DOI: 10.1038/s41598-018-32620-x](https://doi.org/10.1038/s41598-018-32620-x)

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