A reptile platypus from the early Triassic

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Artist's impression of *Eretmorhipis carrolldongi*. Related to the dolphin-like ichthyosaurs, *Eretmorhipis* evolved in a world devastated by the mass extinction event at the end of the Permian era. Its small eyes and bill suggest that like the duckbilled platypus, it hunted by touch. Credit: Gianluca Danini

No animal alive today looks quite like a duckbilled platypus, but about 250 million years ago something very similar swam the shallow seas in what is now China, finding prey by touch with a cartilaginous bill. The newly discovered marine reptile Eretmorhipis carrolldongi from the

lower Triassic period is described in the journal *Scientific Reports* Jan. 24.

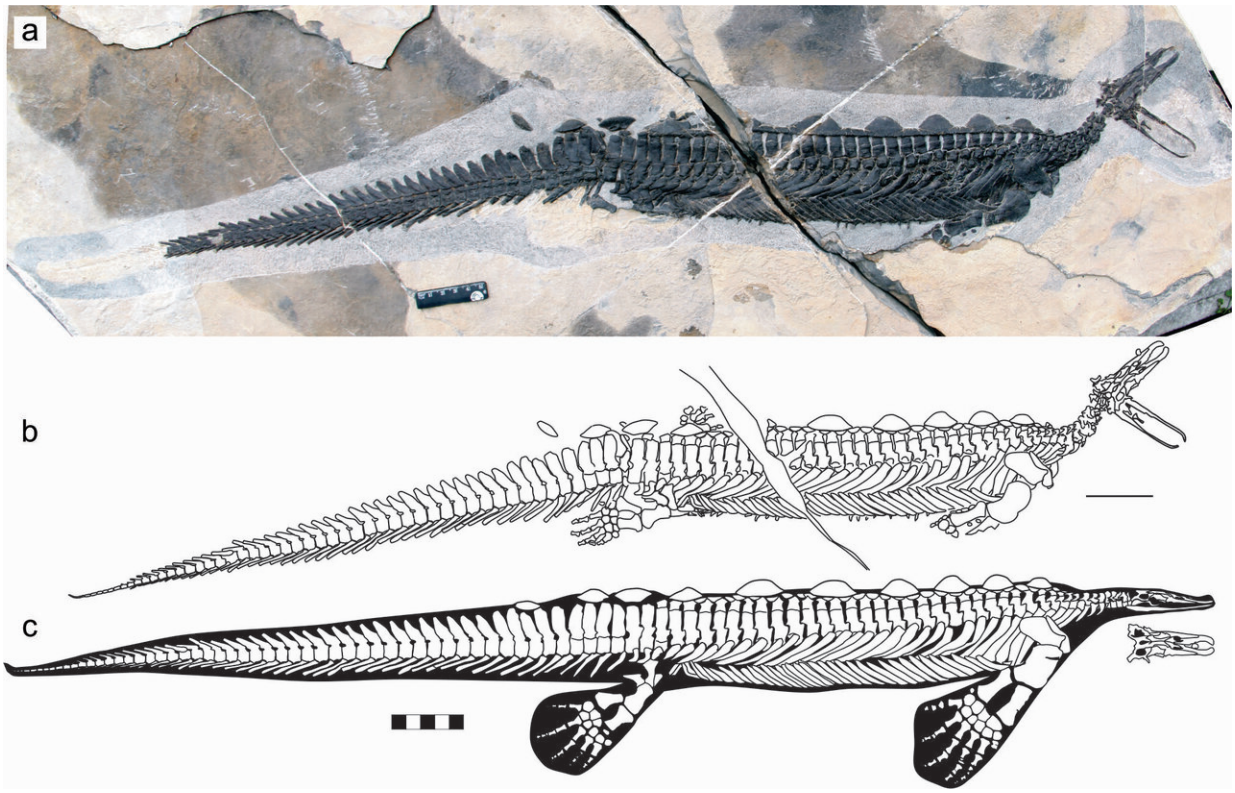
Apart from its platypus-like bill, Eretmorhipis was about 70 centimeters long with a long rigid body, small head and tiny eyes, and four flippers for swimming and steering. Bony plates ran down the animal's back.

Eretmorhipis was previously known only from partial fossils without a head, said Professor Ryosuke Motani, a paleontologist at the University of California, Davis Department of Earth and Planetary Sciences and coauthor on the paper.

"This is a very strange animal," Motani said. "When I started thinking about the biology I was really puzzled."

The two new fossils show the animal's skull had bones that would have supported a bill of cartilage. Like the modern platypus, there is a large hole in the bones in the middle of the bill. In the platypus, the bill is filled with receptors that allow it to hunt by touch in muddy streams.

In the early Triassic, the area was covered by a shallow sea, about a meter deep, over a carbonate platform extending for hundreds of miles. *Eretmorhipis* fossils were found at what were deeper holes, or lagoons, in the platform. There are no fossils to show what Eretmorhipis ate, but it likely fed on shrimp, worms and other small invertebrates, Motani said.



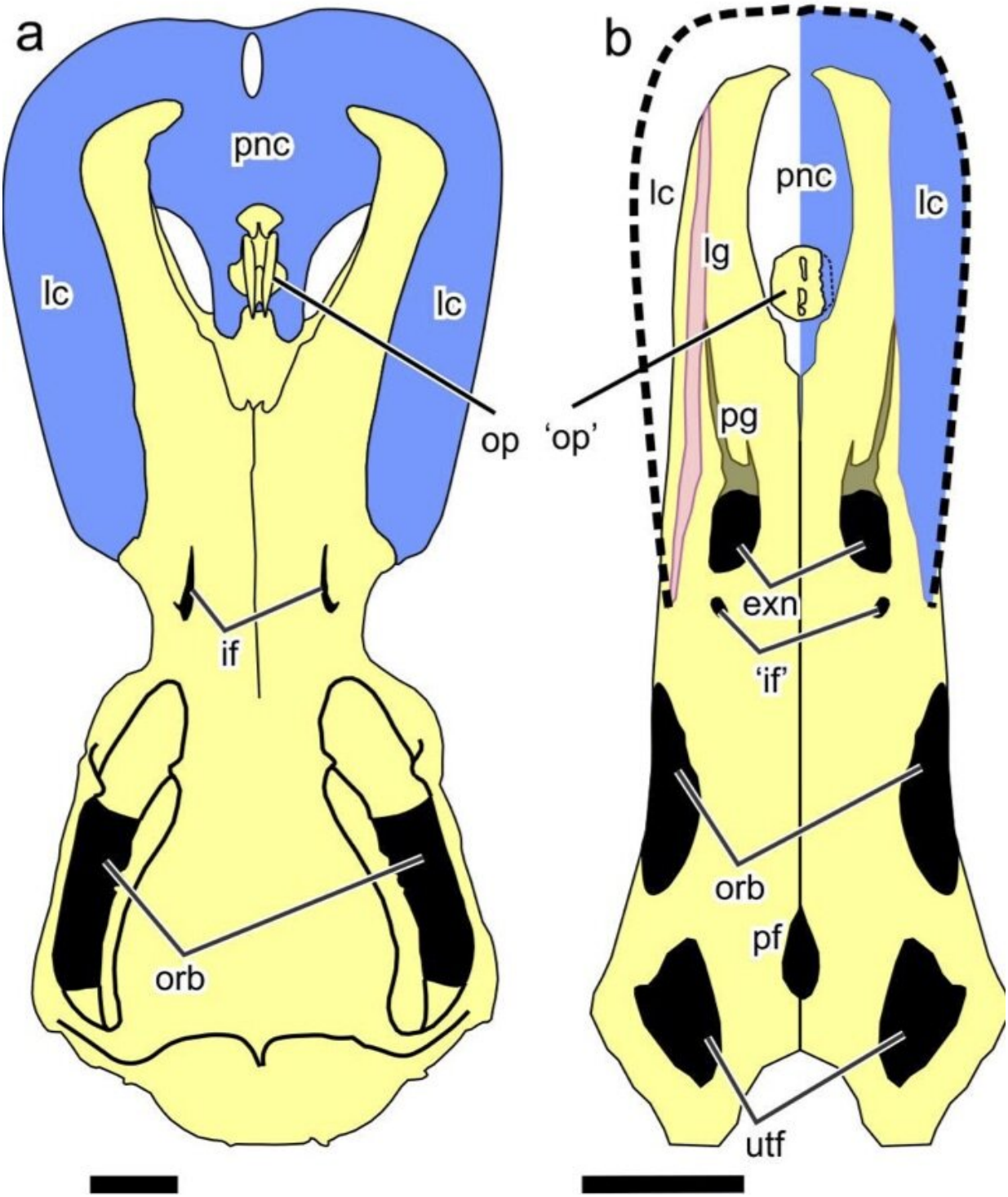
Complete fossil and line drawing of *Eretmorhipis carrolldongi*. Related to the dolphin-like ichthyosaurs, Eretmorhipis evolved in a world devastated by the mass extinction event at the end of the Permian era. Credit: L. Cheng et al, *Scientific Reports*, Creative Commons 4.0

Its long, bony body means that Eretmorhipis was probably a poor swimmer, Motani said.

"It wouldn't survive in the modern world, but it didn't have any rivals at the time," he said.

Related to the dolphin-like ichthyosaurs, *Eretmorhipis* evolved in a world devastated by the mass extinction event at the end of the Permian era. The fossil provides more evidence of rapid evolution occurring during

the early Triassic, Motani said.



Comparison of the skulls of the duckbilled platypus (*Ornithorhynchus anatinus*), left, and *Eretmorhipis carrolldongi* on the right. Blue shading indicates cartilage. In the platypus, the bill is sensitive to touch allowing the animal to hunt in low light conditions. Credit: L. Cheng et al, *Scientific Reports*, Creative Commons 4.0

More information: Long Cheng et al, Early Triassic marine reptile representing the oldest record of unusually small eyes in reptiles indicating non-visual prey detection, *Scientific Reports* (2019). DOI: 10.1038/s41598-018-37754-6

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