# Platypus gets more exotic origin story, as this bigger swimmer ruled ancient Australian lakes beside dolphins

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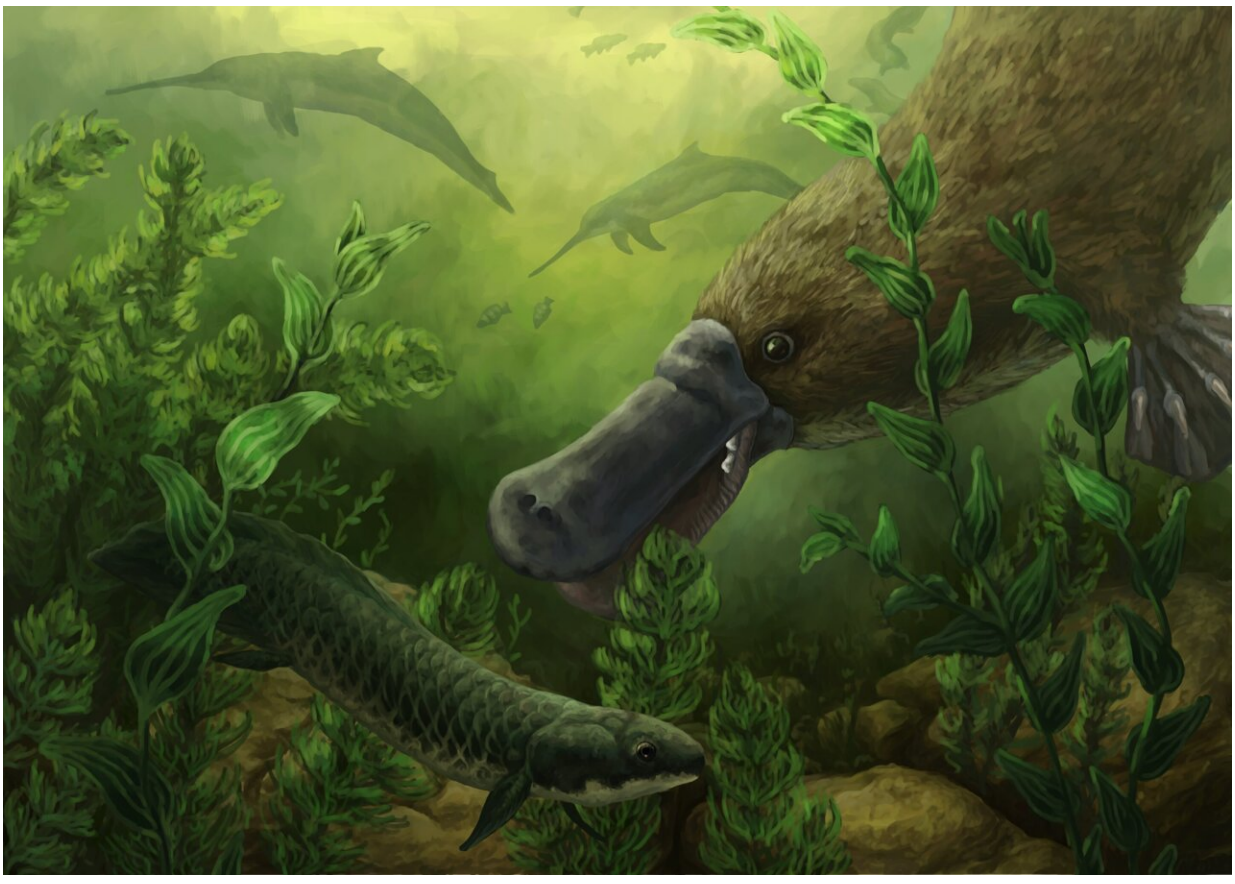
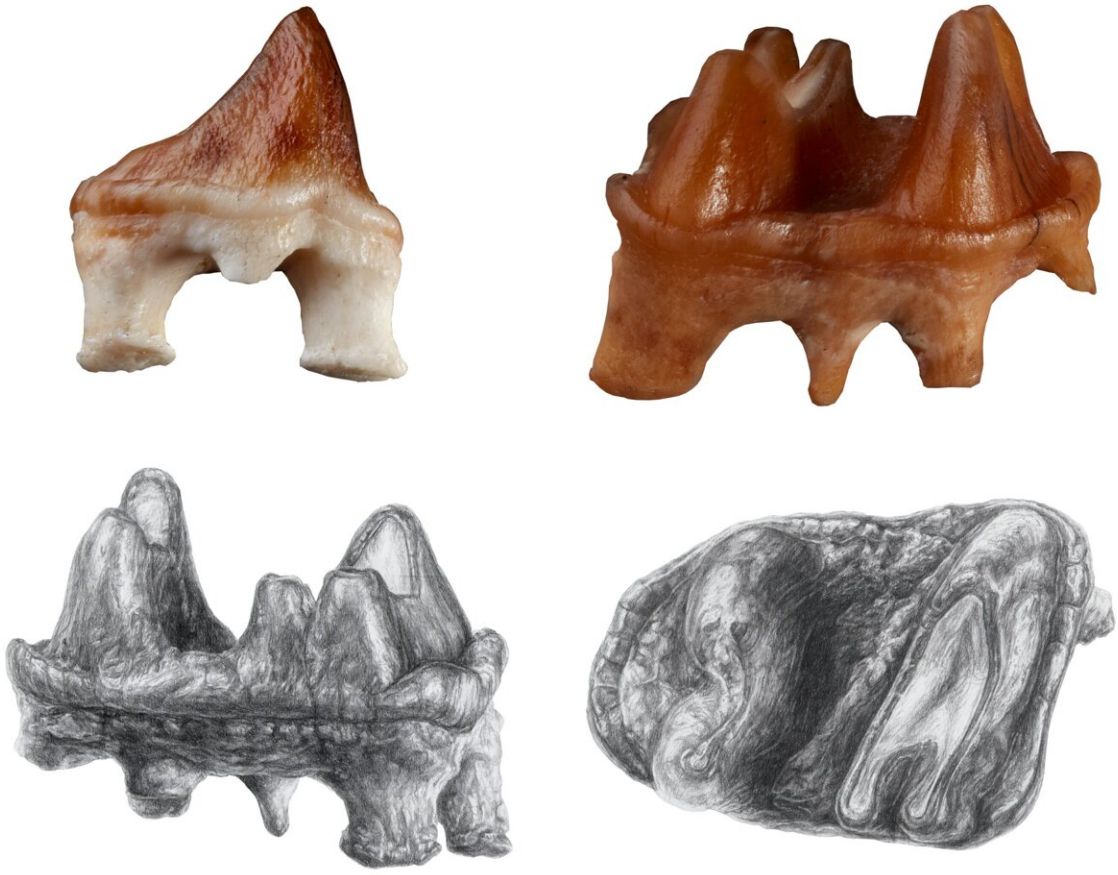


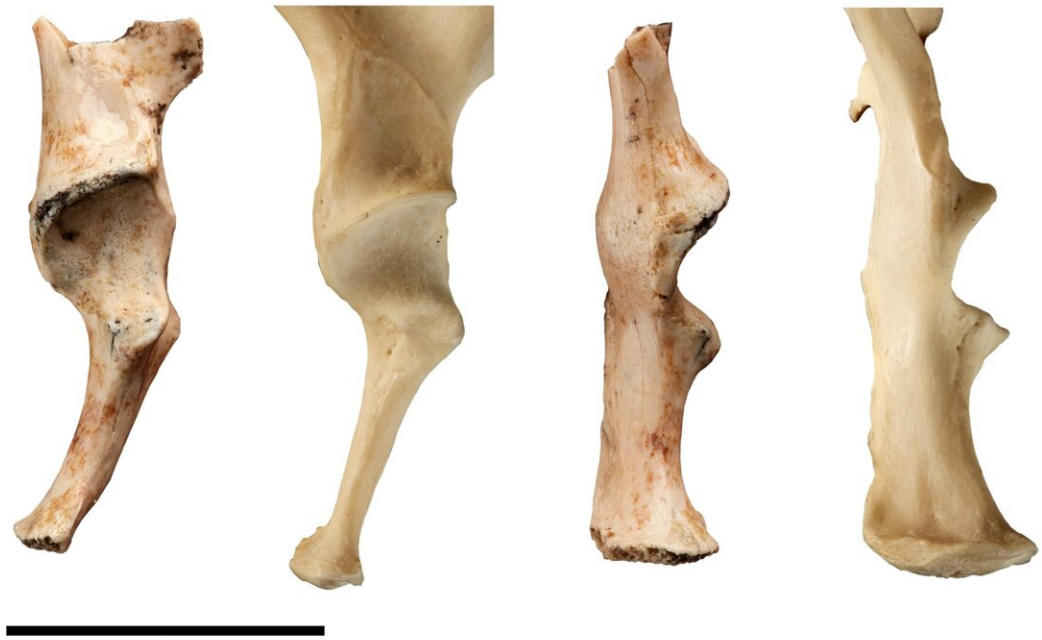
Artist's impression of the toothed platypus that lived 25 million years, probably with other aquatic animals including ancient lungfish, flamingos and freshwater dolphins. Credit: Gen Conway (Flinders University Palaeontology Lab).

Australia's platypus, one of the world's most enigmatic animals, had a more exotic origin story, according to an exciting discovery by Flinders University paleontologists. They have described rare 25-million-year-old fossils found east of the Flinders Ranges in remote outback South Australia which show ancient platypus with well-formed teeth munched on a varied diet in huge inland lakes and rivers, probably with other critters such as ancient lungfish, flamingos and freshwater dolphins.

"Platypuses are extremely rare in the fossil record and are often restricted to teeth, so it's exciting to find new material and learn more about these unique mammals," says Dr. Aaron Camens, an author of a new paper in *Australian Zoologist*, which adds to the long evolutionary history of modern platypuses in Australia.

The well-preserved fossils of the oldest known species, Obdurodon insignis, show that a toothed ancestor of the modern platypus lived during the late Oligocene about 25 million years ago in the extensive permanent lakes, slow-flowing rivers and forested lowlands of central Australia.





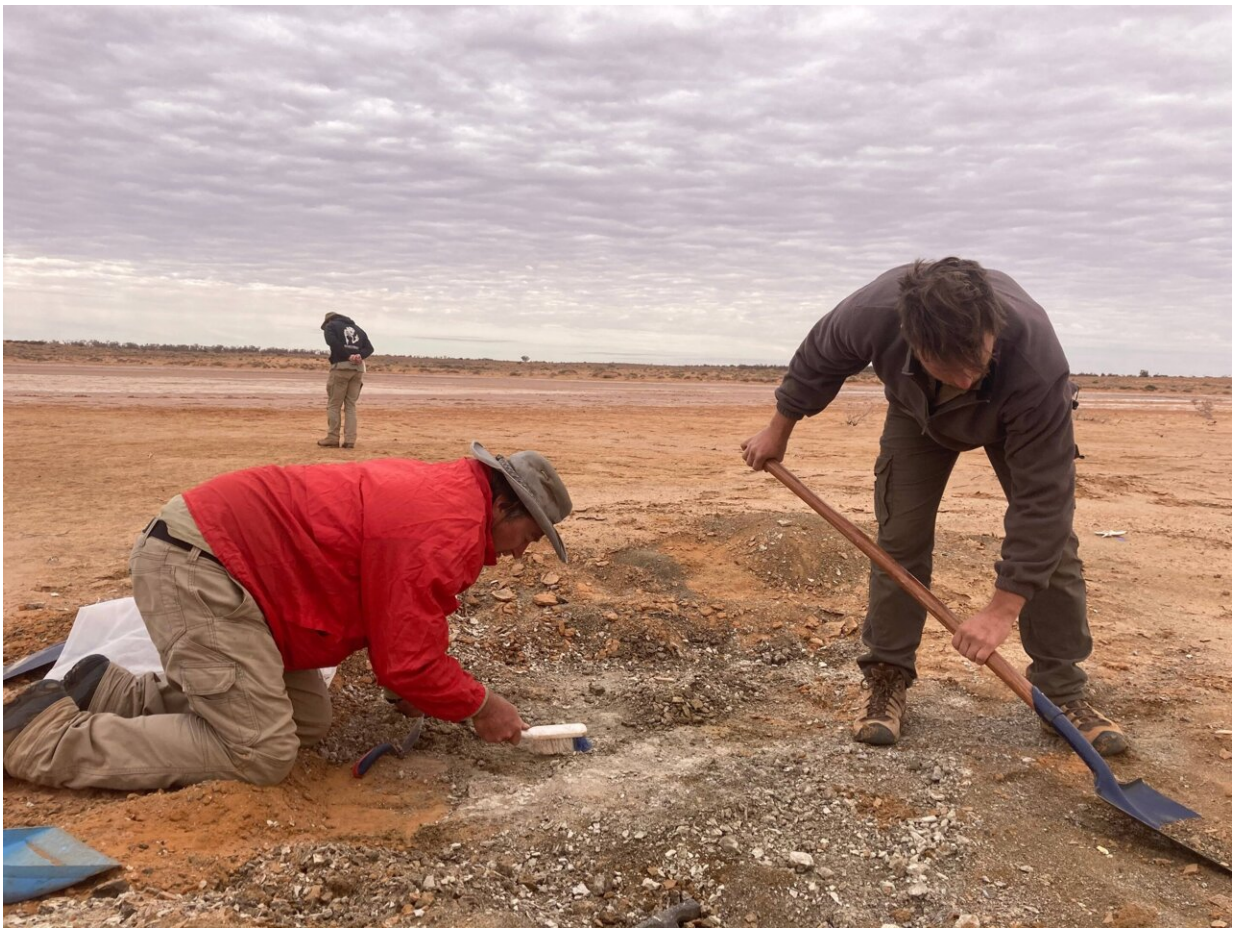
The new fossils of *Obdurodon insignis*. Lower premolar (upper left). Lower molar (upper right), and drawings of other views (middle row). Two views of the shoulder bone—scapulocoracoid—next to the same bone of a modern platypus. Credit: G Conway, Flinders University)

Obdurodon insignis mainly differs from modern platypus by having well-formed teeth—molars and premolars. The modern platypus has vestigial teeth on hatching but soon loses them and only has small horny pads to chew its food with as adults.

Previously, this ancient platypus was known only by one and a half molar teeth, a jaw fragment and a pelvis fragment.

However, another fossil reveals more of what Obdurodon looked like. There is a fantastic fossil skull of a closely related younger (17–14 million years old) species called Obdurodon dicksoni from Riversleigh World Heritage Area in northwest Queensland. It shows that Obdurodon had a skull very similar to the modern platypus. It was bigger, had teeth and a stronger bite.

"The new material includes the first premolar, an important tooth in front of the molars," says Dr. Camens, from the College of Science and Engineering. "The new premolar for Obdurodon insignis shows this species also had large, pointed front teeth, which with its large robust molar teeth could easily have crushed animals with shells or robust exoskeletons like yabbies," says co-author Associate Professor Trevor Worthy, from the Flinders Paleontology Lab.



Associate Professor Trevor Worthy (left) excavating the fossil layer at Billeroo Creek in 2020 when the scapulocoracoid was found. Credit: Gregg Borschmann

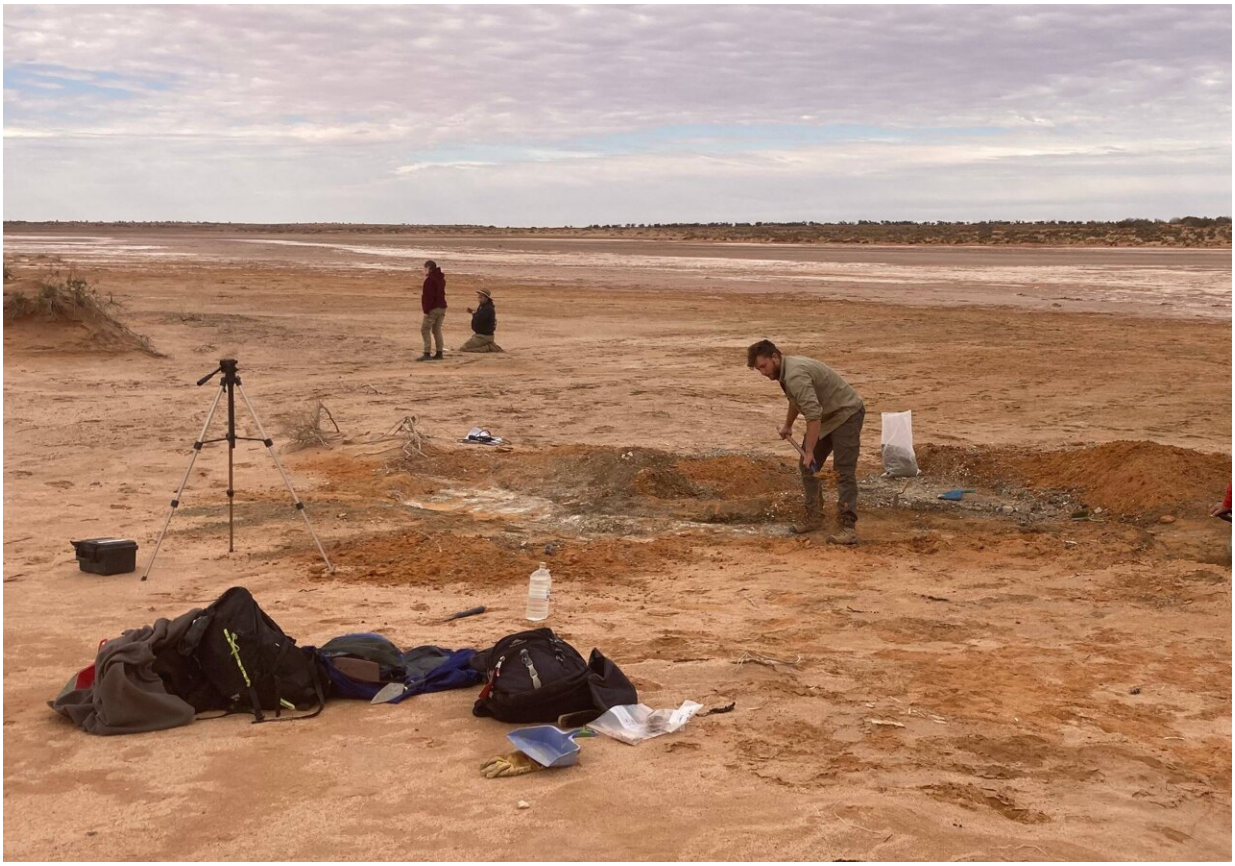
"The other rare find was the discovery of a partial scapulocoracoid, or bone that supports the arm or front limb. This reveals a very similar forelimb structure to the modern platypus, indicating it could swim just as well as its modern descendant," says Associate Professor Worthy.

"These fossils show that 25 million years ago Obdurodon insignis was very similar to the modern platypus. It differed mainly by being slightly larger and having teeth."

For more than 20 years, the Flinders University team has organized expeditions to an outback desert location east of the Flinders Ranges to study rocks containing fossils. As the rocks erode and sand shifts, more evidence emerges from the evolutionary past of this "lost world."

Among the millions of fish bones, over a thousand fossils of non-fish vertebrate animals have been collected. These included just three fossils of the toothed platypus.

The forests then had diverse communities of arboreal tree-dwelling mammals, such as koalas and many types of possums. Below, on the ground, sheep-sized marsupials browsed, with many other animals at their feet. These included familiar-looking skinks, frogs and small carnivorous marsupials. In the trees, numerous birds, including the giant eagle Archaehierax, lived.



Excavations at the fossil site in Billeroo Creek in 2017 when one of the fossils was recovered. Credit: Aaron Camens (Flinders University)

The lakes supported many kinds of lungfish and other smaller fish. Feeding on the fish, or plants and small invertebrates in the lake or along its shores, were several species of waterfowl, cormorants and flamingos. Little known, is that a small dolphin also lived in these freshwater ecosystems. Its teeth and bones have been found at several places where the rocks expose this ancient community. But as the new fossils show, another mammal swam with the dolphins.

"An ancient, toothed platypus lived in these lakes and rivers as shown by the bones of one that settled to the floor of the lake twenty-five million years ago."

The rainforests and lakes may have long gone, but platypuses have been swimming in Australian waterways ever since.

"I have studied this lost ecosystem for many years now, and it is for exquisite fossils like these that I return again and again to the desert. One never knows what erosion or one's efforts will reveal next," says Associate Professor Worthy.

**More information:** Trevor H. Worthy et al, New material of the toothed platypus*Obdurodon insignis*(Monotremata: Ornithorhynchidae) from the late Oligocene Pinpa Local Fauna at Billeroo Creek, South Australia, *Australian Zoologist* (2026). DOI: 10.1071/az26011