

This huge Jurassic croc was a top predator in a dinosaur-dominated world

www.earthtouchnews.com/discoveries/fossils/this-huge-jurassic-croc-was-a-top-predator-in-a-dinosaur-dominated-world/

Earth Touch News David Moscato David Moscato is a science communicator, writer and educator with a background in palaeontology. Follow him @DMos150 or on his blog, The Meniscus . VIEW more from this CONTRIBUTOR

Today's crocs and gators all fit a similar mould: large, semi-aquatic carnivores. But their evolutionary history extends back hundreds of millions of years, and their family tree includes an incredible variety of forms, from [pug-nosed herbivores](#) to [fully aquatic sea-farers](#). Now there's a new member of the crocodylian fossil record: an enormous Jurassic apex predator with bone-crushing jaws.

Say hello to *Razanandrongobe sakalavae*, or "Razana" if you prefer names with fewer than ten syllables. Around 165 million years ago on the isolated island of Madagascar, in an ecosystem full of dinosaurs and other ancient reptiles, it was one of the biggest and baddest beasts around.



An artist's reconstruction of the head of *Razanandrongobe sakalavae*. Credit: Fabio Manucci.

"*Razanandrongobe sakalavae* is the largest terrestrial carnivore from the Middle Jurassic, and was perhaps one of the top predators in Madagascar at the time," said the team who discovered the creature in a [new study](#) in *PeerJ*.

"'Razana' could outcompete even theropod dinosaurs at the top of the food chain," added one of the scientists,

Cristiano Dal Sasso of the Milan Natural History Museum, in a [press release](#).

The discovery of "Razana" didn't happen all at once. In 2001 and 2003, palaeontologists discovered teeth and bits of skull near the village of Ambondromamy. The team of Italian and French scientists who studied these fossils could tell right away that this was an animal with massive powerful jaws, but they didn't know exactly what kind of creature it was. Only two possibilities fit the bill: a large predatory dinosaur, or some kind of huge croc.

As usual, it took more fossils to solve the mystery. Bones from the animal's upper and lower jaws had been sitting unidentified in the Natural History Museums of Milan and Toulouse, some of which had been collected as far back as the 1970s. All of them came from the same area in northwest Madagascar, and together they showed tell-tale signs of a big crocodilian.



Razanandrongobe shared its habitat with some pretty impressive dinosaurs. Here it is eating one of them. Art by Fabio Manucci.

The jaws of "Razana" are deep and strongly built, and its teeth are equally impressive. Large, thick and serrated like a steak knife, they show the kind of damage caused by biting into particularly tough foods. The largest of the croc's teeth is a remarkable 15 centimetres (six inches) long!

"The very robust jaws of *R. sakalavae*, coupled with its peculiar dentition, strongly suggest a diet that included hard tissue such as bone and tendon," the researchers note in their study.

"Razana" has a lot in common with other impressive prehistoric carnivores. The shape of its teeth is very reminiscent of the teeth of tyrannosaurs – although the denticles (the tiny "saw-teeth") along their knife-like edges are actually larger in "Razana" than in *Tyrannosaurus*!





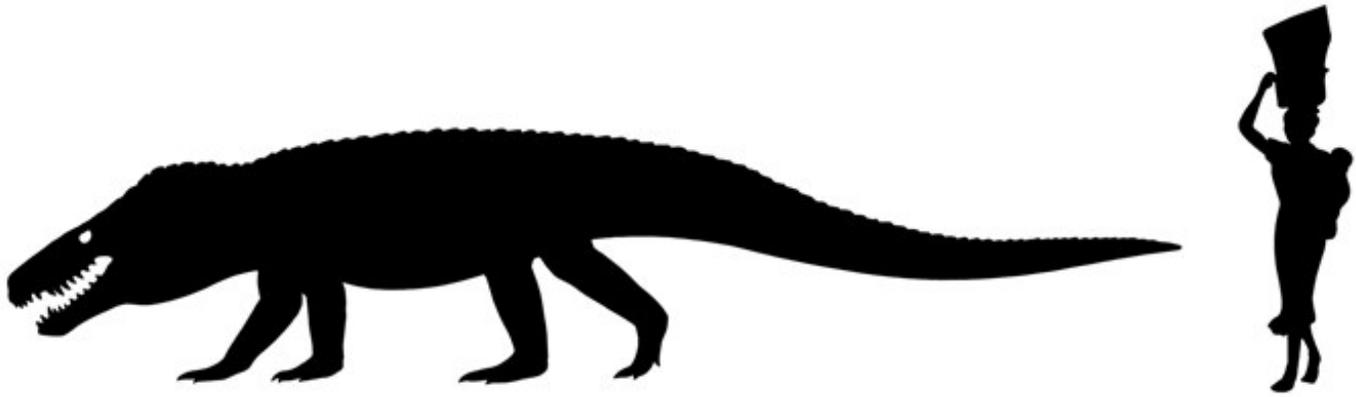
Up close, you can see the thick round shape and the large knife-like serrations of the teeth of *Razanandrongobe*. They're very similar to the teeth of dinosaurs like *Tyrannosaurus*. Scale bar = 10mm. Image: Michele Zilioli.



That's a big croc! Cristiano Dal Sasso (left) and Simone Maganuco (right) show off the 3D-printed reconstruction of the jaws of *Razanandrongobe*. Image: Giovanni Bindellini.

The scientists also compare the size of the croc's tooth sockets with those of the famously huge marine croc [Machimosaurus rex](#).

It's difficult to know for sure how big *Razanandrongobe* was without bones from the rest of its body, but its entire skull may have been around one metre (three feet) long, even with a short snout compared to most other big crocodylians.



With only skull bones so far, it's hard to know the full size of *Razanandrongo*, but scientists can estimate what its body looked like by examining similar relatives. Image: Marco Auditore.

Clearly, this animal represents a significant piece of the Jurassic food chain, but it also fills an important space in the evolutionary history of crocodylians. It isn't a direct ancestor of modern crocs, but instead belongs to a group called the notosuchians, cousins of the ancestors of today's crocodylians.

Notosuchians were extremely diverse and successful, from the small Chinese *Chimaerasuchus* of more than 100 million years ago, to the enormous South American *Barinasuchus*, which lived as recently as 12 million years ago. Not only is "Razana" the oldest known member of this group by around 40 million years, but it's also possibly the largest.

Adding a new top carnivore to our list of prehistoric favourites is always exciting – but this discovery also reveals that, at a time when dinosaurs were taking over ecosystems on every continent, they faced some stiff competition from bone-crunching, land-stalking, enormous predatory crocs.

YOU MIGHT ALSO LIKE:

WATCH: Shell of armoured Ice Age beast dug up in Argentina

Top header image: Fabio Manucci