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An ancient amphibian is the oldest known animal with a slingshot tongue

BY BRUCE BOITNOTT ON 6TH NOVEMBER 2020

A small amphibian that lived 99 million years ago had a secret weapon: a tongue that shot through its mouth like a bullet to snatch its prey. Researchers say it is the first known example of this "ballistic language" style of predation.

The amphibian is a new species, represented by a few small pieces of skeleton and soft tissues discovered in pieces of Myanmar amber. The centerpiece of these finds is a newly discovered complete skull, exquisitely preserved in 3-D, which includes a long, thin bone connected to the creature's neck, with some tongue remains attached at the end.

The creature, which measured just 52 millimeters long from the snout to the pelvis (not including the tail), used this bone to pull its tongue out of its mouth and capture prey. This "sit and wait" predation style is similar to that of a modern chameleon, researchers report on Nov. 6.

Led by paleontologist Juan Daza of Sam State State University in Huntsville, Texas, the team christened the creature *Yaksha perettii*. "Yaksha" is a type of natural spirit in Myanmar

folklore, thought to protect the roots of trees, and “perettii” is in honor of Swiss mineralogist Adolf Peretti, who discovered the fossil.

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Daza claims that *Y. perettii* has a lot in common with chameleons, including its scaly skin and its throbbing feeding style. In fact, in a previous study, he and Edward Stanley of the Florida Museum of Natural History in Gainesville described a separate fossil, also preserved in amber, of what they now know to be a juvenile *Y. peretti* as one of those reptiles. Then, “we agreed he was a chameleon,” says Stanley, who is also a co-author of the new study.

Then paleontologist Susan Evans, of University College London, spoke. The creature was not a reptile at all, he said: It was an albanerpetontid, an extinct group of strange amphibians that Evans has been studying for decades. Albanerpetontidos first appeared in the fossil record 165 million years ago and were last found in rocks dating back only a million years.

These amphibians were widespread: scientists have unearthed thousands of albanerpetontid fossils in places from Spain to Canada and Japan. These fossils constructed the image of a wacky, salamander-like creature with pointed claws, an unusual jaw structure, and a four-legged body covered in scales. Based on their scaly heads and claws, scientists thought the creatures were probably cavernous, like some modern salamanders. But that didn’t explain some of the features.

“They were weird little things with weird jaw joints and neck joints,” says Evans, co-author of the new study.

Unlike modern amphibians, this group had two separate neck joints, which allowed for more flexibility, and a rare jaw joint “that seems to make a kind of bending motion. It was clearly to do something quite specialized,” says Evans. There was a well-known Albanian-Peptonian specimen that had a long, thin bone preserved near the skull and “I suspected for a long time that they had some kind of ballistic tongue mechanism,” she says. more detailed, the hypothesis was difficult to test.

Everything changed with the discovery of the skull, which shows in beautiful detail the whole apparatus of the tongue. “The fact that you could see the long, rod-like bone actually embedded in the base of the pillow – that’s very strong evidence that this animal was blinking to catch its prey,” says David DeMar, a paleobiologist at the Smithsonian Museum of History. Natural in Washington, DC, who did not participate in the study.

“These specimens completely change our understanding of Albanian petonids,” says DeMar.

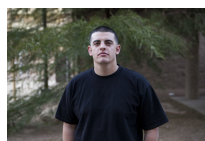
Instead of being burrows, these ballistic-style feeders were tree predators, clinging to the ends of trees with sharp claws while the animals waited for invertebrate prey to buzz or walk, the researchers say.

That interpretation “seems impeccable to me,” says James Gardner, a paleontologist at the Royal Tyrrell Museum in Drumheller, Canada, who did not participate in the study.

The skull fossil clears a lot of confusion about the lifestyle of this group of amphibians, Gardner says, but otherwise, Albanian-petonids remain as enigmatic as ever. This is because they are so unusual, with so many strange characteristics, that it is difficult to determine where they belong in the evolutionary tree of life and how they are related to other amphibians, living and extinct.

Still, this finding only demonstrates that “one or two fossils can actually bother the apple cart,” says Gardner, who admits that he, like many paleontologists, previously thought this group were cavemen. “It’s very exciting. And I’m very happy to be wrong. ”

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Bruce Boitnott

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