Dose Of Viral
Scandalous. Dangerous. Your Daily Dose Of Viral News :)

TAG ARCHIVE

myanmar

A Teeny Tiny Amphibian Had The Earliest Known Example of a Rapid-Fire Tongue

Published on November 6, 2020 — in Science News — by Dose

Albanerpetontids, or "albies" for short, are the cute little salamander-like amphibians you've likely never heard of.

Now extinct, albies had a dream run. They'd been around since the Middle Jurassic around 165 million years ago, and probably even earlier. They lived through the age of dinosaurs (and saw out their extinction), then lived through the rise of the great apes, before quietly disappearing about 2.5 million years ago.

Albie fossils are scattered across continents, including in Japan, Morocco, England, North America, Europe, and Myanmar. But until recently, we knew relatively little about what they looked like or how they lived.

New research by my colleagues and I, published today [November 5] in *Science*, reveals these amphibians were the earliest known creatures to have rapid-fire tongues. This also helps explain why albies were once misidentified as chameleons.

A miniature marvel uncovered

The reason albies remained largely elusive until recently is because they were tiny. Their slight, fragile bones are usually found as isolated jaw and skull fragments, making them hard to study.

The first almost complete albie specimen was found in the wetland environment deposits of Las Hoyas, Spain, and reported in 1995. Even though it was squashed flat, it was enough for palaeontologists to conclude albies were unlike any living salamander or any other amphibian.

They were completely covered in scales like reptiles, had highly flexible necks like mammals, an unusual jaw joint, and large eye sockets suggesting good vision. Why were albies so unique?

Mistakes do happen

The answer partly came to light in 2016, when a group of researchers published a paper demonstrating the diversity of lizards found in the Cretaceous forests of what is now Myanmar.

They presented a dozen tiny 99-million-year-old "lizards", all preserved in amber. Some were even found with soft tissue remains such as skin, claws, and muscles, still attached within the fossilised tree resin.

The researchers used "micro-CT" technology to digitally excavate and study the specimens in detail. This involved using 3D imaging to digitally remove the fossil from the amber and study it on a computer – a technique that avoids the risk of physically damaging the fossil.

They noticed one small, juvenile specimen had a long rod-shaped tongue bone. It was identified as the earliest known chameleon: a remarkable discovery! Or was it?

Alas, mistakes do happen in science. As lizard experts, the researchers had interpreted their results through this lens. It took the keen eye of Susan Evans, a professor of vertebrate morphology and palaeontology at University College London, to recognise this particular "lizard" was actually a misidentified albie.

A tongue-tying revelation

Some time later, Sam Houston State University assistant professor Juan Daza spotted another unbelievable specimen among a collection of fossils preserved in Burmite amber, ethically sourced from Myanmar's Kachin state.

It was an adult version of the juvenile albie Evans identified. Needing higher-resolution 3D images, the sample was sent to me to study at the Australian Nuclear Science and Technology Organisation's Australian Synchrotron in Melbourne.

Named after a class of mythical spirits responsible for guarding natural treasures, Yaksha, and the person who discovered the fossil, Adolf Peretti (founder of the non-profit Peretti Museum Foundation) — the *Yaksha perettii* specimen was an entire skull trapped in golden amber.

Quick hits to unsuspecting prey

Its features that stood out were a long bone projecting back out of the mouth and soft tissue remains, including part of the tongue, jaw muscles, and eyelids. By sheer luck, the soft tissue remains proved the long bone in the mouth was directly attached to the tongue.

In other words, *Y. perettii* was a predator armed with an incredible weapon: a specialised ballistic tongue that fired at lightning speed to capture prey – just as chameleons do today. It's no wonder the original juvenile, only 1.5 centimetres (0.59 inches) long, was initially mistaken for a chameleon.

Modern chameleons have accelerator muscles in their tongues that lock in stored energy. This lets them fire their tongues at speeds of up to 100 kilometres per hour in just a fraction of a second.

We believe albies' projectile tongues were just as fast, used to great effect while sitting motionless in trees or on the ground. If so, this also explains why albies had unusual jaw joints, flexible necks, and large, forward-facing eyes. All these traits would have made up their predator toolkit.

Tree sap turned to iridescent amber

Despite these remarkable new insights, however, many mysteries of albanerpetontids remain. For instance, how exactly are they related to other amphibians? How did they survive for so long, only to die out relatively recently?

We'll need more intact specimens to answer these questions. And most of these specimens will probably come from the Hukawng Valley in Kachin, Myanmar.

It's expected about 100 million years ago this region was an island covered in vast forests. Global temperatures back then would have exceeded today's, with trees producing vast amounts of resin (which later turned into amber) as a result of damage by insects and fire.

Amber studied from this region will not only increase our knowledge of its expired ecosystems, it could also provide insight into how certain organisms today might evolve in response to a warming climate.

Joseph Bevitt, Senior Instrument Scientist, Australian Nuclear Science and Technology Organisation.

Source link

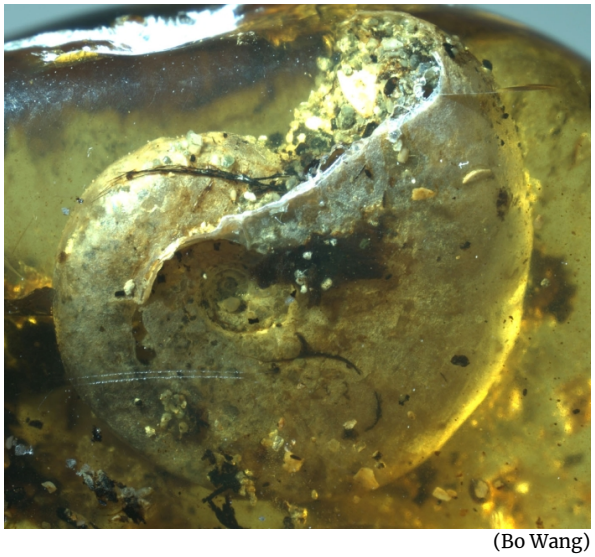
Scientists Discover Something Remarkable Trapped in Amber: Ancient Sea Creatures

Published on May 13, 2019 — in Science News — by Dose

Amber from Myanmar in Southeast Asia is turning out to be an incredibly rich resource for examining the natural world of 100 million years ago. In the last year, it's turned up frogs, snails, a snake, weird feathers, and some pretty wacky bugs. What do all of those have in common? They're land-dwellers.

But now palaeontologists have discovered something really weird in a small chunk of Cretaceous Myanmar amber: sea creatures, side-by-side with land-dwelling creatures.

That's four sea snails, and a juvenile marine ammonite from the ocean. Four intertidal isopods (and three more possible isopods), which dwell in the zone between high and low tide, were also trapped, along with beach sand.



(Bo Wang)

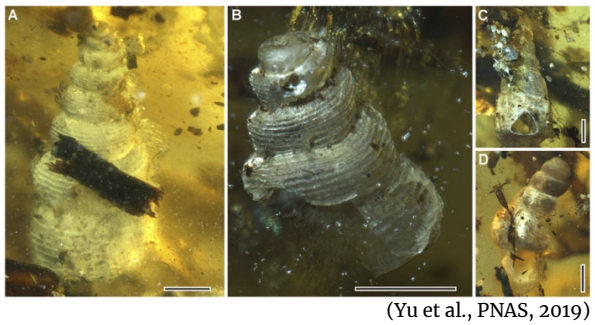
From the land, the amber contains 22 mites, what seems to be a goblin spider, 12 adult insects (eight flies, two beetles, a parasitic wasp and a cockroach) and a millipede. And it's all in a chunk just 33 millimetres by 9.5 millimetres by 29 millimetres.

It's a remarkable assemblage of creatures.

"It is rare to find aquatic organisms in amber, and it is extremely rare to find marine organisms in amber, let alone macroscopic marine organisms mixed with intertidal, terrestrial, and potentially freshwater aquatic organisms," the researchers wrote in their paper.

The piece is certainly mysterious. Palaeontologists have, for instance, been unable to figure out how old it is.

Uranium-lead dating of zircons in the matrix of volcanic rock in which the amber is found places it at around 98.8 million years old maximum, but a sandstone layer above the amber reportedly contained a fossilised ammonite that is thought to have arrived on the scene 113 million years ago, and not to have lived past 100.5 million years ago.



(Yu et al., PNAS, 2019)

The ammonite in question was neither described nor pictured in the paper that mentions it, and no one has been able to find the fossil itself to conduct a re-examination.

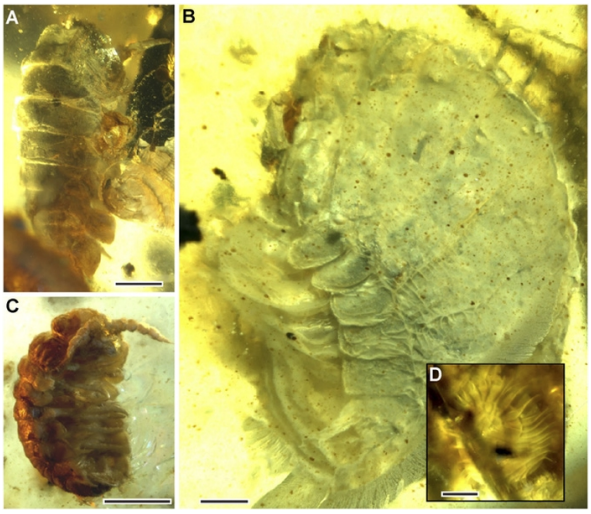
It's possible the amber itself is older than the bed it was collected from, so it could be more than 113 million years old. It's an issue that remains unresolved at this time.

Thankfully, exactly how such a diverse range of creatures ended up in the same piece of amber is a little easier to

reconstruct.

Here lies the clue: the shells of the ammonite and the marine gastropods are lightly abraded, a significant piece of the ammonite shell was lost and the opening clogged with sand; there are also no signs of soft tissue belonging to either ammonite or gastropods.

And resin won't properly solidify when it's submerged in water – so it's unlikely a blob fell into the water and collected the marine animals there before turning into amber.



Intertidal isopods. (Yu et al., PNAS, 2019)

So the palaeontologists have inferred that the marine creatures we see here had already died, their shells tumbled by the tides and washed up on a beach. It was there that they became caught up in a blob of tree resin.

"The exceptional occurrence of macroscopic marine macrofossils in the resin suggests that the amber forest was growing close to a coast, possibly next to a beach, and could have been subjected to exceptional events," the researchers wrote.

"The shells may record an exceptionally high, perhaps storm-generated tide, or even a tsunami or other high-energy event. Alternatively, and more likely, the resin fell to the beach from coastal trees, picking up terrestrial arthropods and beach shells and, exceptionally, surviving the high-energy beach environment to be preserved as amber."

And that's how they have remained for millions of years, buried beneath a sandstone bed in Myanmar. It's possible we may not be able to learn more about how such amber inclusions come about until others containing marine animals have been found.

But what an absolutely spectacular series of events.

The research has been published in *PNAS*.

Source link

OFF FACEBOOK TWITTER GOOGLE PINTEREST

YOU MIGHT BE INTERESTED IN

Search...