
Peretti Museum Foundation (PMF) Discovers and Hosts Holo-type of New Lizard from the Early Cretaceous

Albian or younger amber yields unexpected lizard find



For immediate release (1 February 2022)

Meggen, Switzerland - Amber, a fossilized tree resin valued for its beauty, can preserve ancient animals, plants and even fungi in spectacular detail. In recent decades, amber from Myanmar has yielded a remarkable array of small fossil vertebrates, including dinosaurs, birds, frogs, and lizards.

A paper published recently in *Scientific Reports* led by Andrej Čerňanský from the Comenius University in



Fig. 1: Artwork of life reconstruction of *Retinosaurus hkamtiensis* by Stephanie Abramowicz (with permission)

Bratislava, with co-authors from around the world, describes the first definite representative of a group of lizards known as scincoideans, a group that today includes skinks, Armored Lizards, and Night Lizards, or xantusiids. Intriguingly, the fossil most closely resembles xantusiids, which are today found only the American southwest, Central America and Cuba, half a world away from Myanmar.

This new fossil lizard resembles xantusiids in some morphological features, notably the arrangement of its scales which, along with parts of the skeleton, have been preserved in the amber. Even the delicate eyelids are visible, revealing a difference from modern Night Lizards, in which the eyelids are fused into a transparent scale, as in snakes.

Studying this fossil was an interesting experience says Juan Diego Daza from Sam Houston State University. “We had the rare opportunity of studying the articulated skeleton, but also describing the external appearance of the lizard (scalation), in the same way that herpetologists (amphibian and reptile specialists) study modern species.” This resemblance of this complete specimen to modern

xantusiids suggests that the new fossil lizard, like modern xantusiids, may have been active in cryptic microhabitats such as rock crevices or

under logs, says Aaron Bauer from Villanova University. While this fossil retains exquisitely preserved skin and scales, it appears to lack the bony armored scales common in many other members of Scincoidea, points out Edward Stanley from the Florida Museum of Natural History. Stanley was in charge of digitally reconstructing the anatomy of the new fossil lizard, using high-end imaging software to extract bones, muscles, skin and even the windpipe from a 3D dataset produced by Joseph Bevitt at the Australian Synchrotron radiation facility.

The specimen was found in Myanmar’s Hkamti District in a mine located about 100 kilometers from the more famous mines of the Hukawng Basin which have yielded most of the previously described fossil vertebrates from Myanmar. The new mine is also older by 10 million years, placing these fossils in the Early Cretaceous, a critical period for lizard diversification, says Susan Evans from University College London who is the senior author on this paper. Although fossil lizards are known from this period around the world, nowhere else preserves the unique ecosystem represented by Myanmar amber.

The fossil was found in 2017 by local researcher, Burmese gemologist Nyi Nyi Aung who was working with Adolf Peretti from GRS Gemresearch, the curator of the Peretti Museum Foundation (a Swiss institution dedicated to Burmite research), where the specimen now resides. Together they recognized the scientific significance of the specimen, which was recovered from among the hundreds of thousands of amber pieces from the Hkamti region recovered by indigenous miners. The specimen has travelled around the world to access the latest imaging technology, including the High-Resolution X-Ray CT Facility in Austin Texas and the Australian Nuclear Science and Technology Organization. With the data generated in these facilities, the fossil could be studied in great detail

by an international collaboration of researchers from Myanmar, the United Kingdom, Spain, Slovakia, Canada, USA, Argentina, and Australia. 3D data from the CT analysis is freely available to other researchers, educators, and the general public. While the digital models generated from CT scan data can never fully replace the physical objects they represent, they can greatly increase access to museum specimens says Stanley.

Myanmar is sadly undergoing an internal armed conflict, and this situation, together with the worldwide coronavirus pandemic, has been detrimental to the amber miners, particularly in the Hukawng Basin. GRS Gemresearch funds efforts in Myanmar to better the lives of indigenous miners. This research was conducted in compliance with ethical recommendations developed by the Society of Vertebrate Paleontology.

Publication in Scientific Reports with full list of authors can be accessed from the link below

www.nature.com/articles/s41598-022-05735-5

A



Different mining spots in the Hkamti area:
A Leychun mine with 20m high rock cliff on the right and the mining entrances at the base. The rocks on the left are overburden removed from the tunnels of mining. The huge amount of boulders removed from the mines are due to hundreds of meters of tunnels inside the hill on different levels.

File name: MIne 4

E



E and G Kyauk Tan mine in Hkamti where the amber appears in certain layers 30 degrees inclined. The miners follow the amber bearing conglomerate in a complicated carbonate rock sequenc. One of the authors Nyi Nyi Aung is shown (with hat) working in the mines with a jack hammer to remove the hard rock from the overburden. Picture March, 2017

File name: MIne 3



File name: Amber in rock



File name: MIne 1



View towards SW showing the Lee Chun and Kuyak Tan minings spots of the so called Hkamti mining area. In the back ground is a mountain called "Pa ta Bum" or translated from Kashin language "honour of ethnic leader". This the local name used by the indigenous miners for the amber deposits at Hkamti. Drone picture taken in 2019 by local miners.

File name: Drone Leuchun mine camp 04

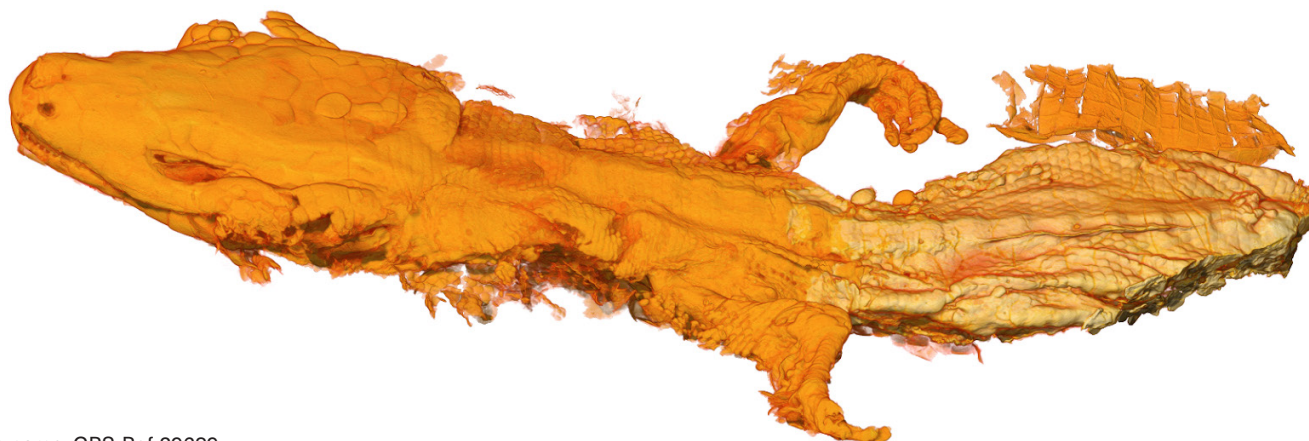


Detail of Lee chun mine in July 2019 shows the devastating flooding by the small river named Nam Pilin at that moment that mostly destroyed all the mining infrastructure from the previous mining season.

File name: Drone Leuchun mine camp 04

Kyauk Tan	25 40 58.602	95 50 45.624	172.6
Lay Chun	25 41 12.804	95 51 21.876	176.5

Watch 3D animation of the Retinosaurus hkamtiensis



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