

# Mummified ancient bird offers clues about flight during mid-cretaceous

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Enantiornithes wing and skin sections encased in amber, nicknamed "Rose".  
Credit: Royal Saskatchewan Museum (RSM/ R.C. McKellar)

(Phys.org)—A team of researchers from China, Canada and the U.S. has found an example of mummified remains of a bird from the mid-cretaceous period, in amber. As they note in their paper published in the journal *Nature Communications*, the remains represent the first example of skeletal material alongside feathers in Mesozoic amber.

The team actually found two bird samples inside a single small piece of [amber](#) (which was originally found in Myanmar), both of which belong to enantiornithines—a group of [birds](#) that went extinct at approximately the same time as the other dinosaurs—66 million years ago. Prior research had found that such birds had both teeth and wings with claws on their tips. The birds were tiny (the amber piece as a whole was just a few cubic centimeters) and likely juveniles.

The team reports that they were able to analyze both samples under microscopes and also by using X-ray micro-computed tomography scanning—they also used UV light to examine the entire amber piece with the bird remains inside to learn more about the way the amber flowed before hardening. That allowed them to make out claw marks near one of the bird samples, which the researchers suggest is likely evidence of the bird struggling to break from the tree resin. They noted that both birds had adult-type feathers which suggested they never had to go through a molting phase, they hatched with feathers already fully formed.

The group also notes that the samples are a rare find, most fossilized bird remains are 2D images formed in sedimentary rock. The birds in the amber are true 3D samples which offer the researchers evidence of both skeletal and feather structure in one [sample](#). They also offer something else—color. The feathers are believed to be the same hues they were when the birds were alive, approximately 99 million years ago—pale darks on top with some dots and darker browns on other parts.

Interestingly, the researchers also found that the feather arrangement was very similar to modern birds, which meant that despite a different shoulder structure, they probably flew in much the same way as those we see flying around today. The researchers are hoping further study will shed more light on the middle stage of the evolutionary development of flight—between gliding and full powered flying.

**More information:** Lida Xing et al. Mummified precocial bird wings in mid-Cretaceous Burmese amber, *Nature Communications* (2016).  
[DOI: 10.1038/ncomms12089](https://doi.org/10.1038/ncomms12089)

## **Abstract**

Our knowledge of Cretaceous plumage is limited by the fossil record itself: compression fossils surrounding skeletons lack the finest morphological details and seldom preserve visible traces of colour, while discoveries in amber have been disassociated from their source animals. Here we report the osteology, plumage and pterylosis of two exceptionally preserved theropod wings from Burmese amber, with vestiges of soft tissues. The extremely small size and osteological development of the wings, combined with their digit proportions, strongly suggests that the remains represent precocial hatchlings of enantiornithine birds. These specimens demonstrate that the plumage types associated with modern birds were present within single individuals of Enantiornithes by the Cenomanian (99 million years ago), providing insights into plumage arrangement and microstructure alongside immature skeletal remains. This finding brings new detail to our understanding of infrequently preserved juveniles, including the first concrete examples of follicles, feather tracts and apteria in Cretaceous avialans.

[Press release](#)

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