

Poisonous prehistoric 'raptor' discovered in China

December 21 2009



This image of fossilized Sinornithosaurus shows the raptor's long, grooved fangs. It lived in prehistoric forests of northeastern China that were filled with a diverse assemblage of animals including other primitive birds and dinosaurs. Credit: David A. Burnham, PhD University of Kansas Biodiversity Institute

(PhysOrg.com) -- A group of University of Kansas researchers working with Chinese colleagues have discovered a venomous, birdlike raptor that thrived some 128 million years ago in China. This is the first report of venom in the lineage that leads to modern birds.

"This thing is a venomous bird for all intents and purposes," said Larry Martin, KU professor and curator of vertebrate [paleontology](#) at the Natural History Museum and Biodiversity Institute. "It was a real shock to us and we made a special trip to [China](#) to work on this."

The KU-China team's findings will be published in the early edition of the [Proceedings of the National Academy of Sciences](#) during the week of Dec. 21.

"We think it's going to make a big splash," said Martin.

The article's authors are Enpu Gong, geology department at Northeastern University in Shenyang, China, and researchers Martin, David Burnham and Amanda Falk at the KU Natural History Museum and Biodiversity Institute.

The dromaeosaur or raptor, *Sinornithosaurus* (Chinese-bird-lizard), is a close relative to *Velociraptor*. It lived in prehistoric forests of northeastern China that were filled with a diverse assemblage of animals including other primitive birds and dinosaurs.

"This is an animal about the size of a turkey," said Martin. "It's a specialized predator of small dinosaurs and birds. It was almost certainly feathered. It's a very close relative of the four-winged glider called *Microraptor*."

The venom most likely sent the victim into rapid shock, shrinking the odds of retaliation, escape or piracy from other predators while the raptor manipulated its prey.

"You wouldn't have seen it coming," said Burnham. "It would have swooped down behind you from a low-hanging tree branch and attacked from the back. It wanted to get its jaws around you. Once the teeth were embedded in your skin the venom could seep into the wound. The prey would rapidly go into shock, but it would still be living, and it might have seen itself being slowly devoured by this [raptor](#)."

The genus had special depressions on the side of its face thought by the

investigators to have housed a poison gland, connected by a long lateral depression above the tooth row that delivered venom to a series of long, grooved teeth on the upper jaw. This arrangement is similar to the venom-delivery system in modern rear-fanged snakes and lizards. The researchers believe it to be specialized for predation on birds.

"When we were looking at Sinornithosaurus, we realized that its teeth were unusual, and then we began to look at the whole structure of the teeth and jaw, and at that point, we realized it was similar to modern-day snakes," Martin said.

Sinornithosaurus is represented by at least two species. These specimens have features consistent with a primitive venom-delivery system. The KU-China research team said it was a low-pressure system similar to the modern Beaded lizard, *Heloderma*, however the prehistoric Sinornithosaurus had longer teeth to break through layers of feathers on its bird victims.

The discovery of features thought to be associated with a venom-delivery system in Sinornithosaurus stemmed from a study of the anatomy and ecology of *Microraptor* by the joint Chinese-KU team. They now are seeking to discover if *Microraptor* may have possessed a similar poison-delivery system.

Provided by University of Kansas

Citation: Poisonous prehistoric 'raptor' discovered in China (2009, December 21) retrieved 21 September 2024 from <https://phys.org/news/2009-12-poisonous-prehistoric-raptor-china.html>

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