

Ancient Crocodile Chomped on Plants

One look at the sharp teeth and powerful jaws of a crocodile leaves no doubt about its reputation as a ferocious meat-eater. But a surprising new discovery shows that long ago, crocodiles had at least one relative that preferred to munch on plants.

Paleontologists recently recovered the 120-million-year-old skeleton of a plant-eating crocodile from a site in the Hubei province of central China. Dubbed *Chimaerasuchus paradoxus*, it is the first example of an herbivorous crocodile ever found.

The finding alters conventional crocodile wisdom because it tells scientists that these reptiles were much more diverse than previously assumed. "Part of the appeal of this find is that it really pushes the whole realm—the ecological spectrum—of crocodylians into a new dimension," says Hans-Dieter Sues of the Royal Ontario Museum in Toronto and the University of Toronto.

Moreover, the discovery supports the increasingly popular idea that animals alive during the Cretaceous period may not have been as geographically restricted as previously thought. "According to a consensus in recent years," Sues says, "people thought that during the Cretaceous, we really had a differentiation into northern and southern faunas." Although *Chimaerasuchus* lived in the Northern Hemisphere, it appears closely related to crocodiles that lived in Gondwana, a large, ancient land mass in the Southern Hemisphere.

Sues and his colleagues Xiao-chun Wu and Ailing Sun, both of the Institute of Vertebrate Paleontology and Paleoanthropology in Beijing, report their findings in the Aug. 24 *NATURE*.

Initially, looking at the skull alone, the researchers were unsure what they were dealing with. "It wasn't quite right for any kind of early mammal or advanced reptile," Sues says. "But then, once we looked at the rest...it was clear that we were dealing with a crocodylian." The partial skeleton includes a snout, lower jaw, shoulder girdle, 15 vertebrae, forelegs, a "hand," pelvis, and thighbone—enough to give the researchers a good picture of the animal.

With slender legs and an erect posture, *Chimaerasuchus* was about 3 to 3.5 feet long. Its nose openings pointed forward, unlike all other known crocodiles whose nose openings point upward to give them their familiar profile in the water.

Its teeth tipped off the researchers to this reptile's vegetarian bent. In contrast to the cone-shaped teeth of its kin, *Chimaerasuchus*' teeth were relatively flat with a pronounced cutting edge at the back. "The teeth are specialized for dealing with highly fibrous material," Sues explains. "In fact, the teeth are extremely similar to those of certain mammals and certain very advanced mammal-like reptiles."

The *Chimaerasuchus* fossil looked so bizarre that it spent roughly three decades in limbo before anyone even identified it as a crocodile. A Chinese petroleum and geology survey, which unearthed the skeleton in the 1960s, turned it over to the institute in Beijing. The skeleton, Sues says, then "went on a lengthy odyssey in the institute." Because of its very unusual teeth, researchers had "thought that this was some kind of peculiar Mesozoic mammal."

Sues received the fossil only about three years ago. His group is currently assembling a detailed description of the reptile's anatomy. Now that *Chimaerasuchus* has found its place in the paleontological record, the phrase "herbivorous crocodile" is no longer an oxymoron.

— C. Wu