

# New Species of Lizard Found in Stomach of Microraptor

A team of paleontologists led by Prof. Jingmai O'Connor from the Institute of Vertebrate Paleontology and Paleoanthropology (IVPP) of the Chinese Academy of Sciences, together with researchers from the Shandong Tianyu Museum of Natural History, have discovered a new specimen of the volant dromaeosaurid *Microraptor zhaoianus* with the remains of a nearly complete lizard preserved in its stomach. Their findings were published in *Current Biology*.

The lizard is unlike any previously known from the Cretaceous and represents a new species, *Indrasaurus wangi*. The lizard was named after Prof. WANG Yuan from IVPP, who is also director of the Paleozoological Museum of China. Prof. WANG is an expert on the paleoherpetofauna of China and has been in charge of numerous exhibitions of Chinese fossils.

The name *Indrasaurus* was inspired by a Vedic legend in which the god Indra was swallowed by a dragon during a great battle (the dragon here referring to *Microraptor*).

Dr. DONG Liping, a former student of Prof. WANG's, ran the most extensive phylogenetic analysis of Cretaceous lizards ever conducted and showed that all known Cretaceous species were more closely related to each other than to any modern lineage. The new lizard had teeth unlike any other previously known from the Jehol Biota, thus expanding the diversity of this clade and possibly suggesting a unique diet for this new species.

This is the fourth documented occurrence of a *Microraptor* preserving stomach contents – this dinosaur is now known to have fed on mammals, birds, fish, and lizards, supporting the interpretation that it was an opportunistic predator.

The lizard is nearly complete and articulated, showing that it was swallowed whole and head first, meaning that *Microraptor* fed in a manner similar to living carnivorous birds and lizards.

Although the Jurassic troodontid *Anchiornis* has been recently demonstrated to have egested pellets similar to extant carnivorous birds (most famously documented in owls), this ability was apparently absent in *Microraptor*, further adding to the evidence that the evolutionary



Figure 1: A new lizard species in the abdomen of a specimen of *Microraptor* (Image by Jingmai)



Figure 2: Illustration of the lizard-swallowing *Microraptor* (Image by Doyle Trankina)

transition from dinosaur to bird was characterized by extreme homoplasy – that is, numerous traits evolved multiple times independently in closely related groups.

Over the past 20 years, direct evidence of trophic interactions in the Jehol Biota has slowly accumulated. There are now 20 predator-prey relationships documented through direct evidence of stomach contents.

The authors used these relationships to reconstruct the first Jehol food web. Although certainly preliminary, this food web indicates that fish formed the most important food source for secondary and tertiary consumers. This food web can be used in the future to better understand the Jehol ecosystem.

(IVPP)