Earliest toothless bird found

December 10 2009, by Lin Edwards

Zhongjianornis yangi. Photo: Zhonghe Zhou

(PhysOrg.com) -- A new species of bird from the Cretaceous period in China has been identified. It had toothless upper and lower jaws, and provides significant information on the diversification in the evolution of birds during the Early Cretaceous.

Dr Zhonghe Zhou and colleagues from the Institute of Vertebrate Paleontology and Paleoanthropology of the Chinese Academy of Sciences in Beijing found the fossils in the Jiufotang Formation in Liaoning, in north eastern China. The newly discovered bird, *Zhongjianornis yangi*, has a pointed snout, and is the earliest toothless

bird so far discovered.

The new bird was around the size of a pigeon, and had a number of other unusual features, including having a humerus with a wide deltopectoral crest. It probably fed on fish (since the fossil was found in a lake bed), catching its prey on the wing. The shape of its feet suggests it may have rested, and possibly also nested, in trees.

Over 30 genera of birds from the Early Cretaceous have been discovered in north eastern China in the last couple of decades, which the scientists say is evidence that a burst of diversification in birds occurred in the 20 million years or so after the earliest bird, Archaeopteryx, appeared around 150 million years ago. The fossils have been found in deposits which also contained hundreds of specimens of feathered dinosaurs, mammals, amphibians, pterosaurs, insects, and flowering plants.

Zhongjianornis yangi belonged to the most primitive of four groups of birds that independently lost their teeth, and the researchers believe this, and the development of a beak, may have given the birds an evolutionary advantage because of the reduction in weight. The findings also suggest tooth loss was more common in the early evolution of birds than previously thought.

Among known toothless birds, Confuciusornis is the next most advanced. The researchers reasoned that there must have been a selective pressure for a reduction of weight, especially of the head, since it is further from the center of gravity.

More information: The research paper is available online at the Proceedings of the Royal Society B.