



### ScienceWatch – If It Looks Like A Duck .....

Anyone interested in birds (and anyone who isn't) knows about the dinosaur theory of birds, i.e., that modern birds descended from warm-blooded, bipedal dinosaurs known as theropods. *Archaeopteryx*, the first bird-like dinosaur fossil with feathers lived about 140 million years ago. Now another fossil of a bird that lived about 110 million years ago and discovered in China, indicates that all modern birds evolved from a water bird that closely resembled a duck.

Evidence of its existence first surfaced 25 years ago when a partial leg was found. It was named *Gansus yumenensis* because it was discovered in the Gansu province of China. Writing in the June 16, 2006 issue of *Science*, a team led by Hai-lu You of the Chinese Academy of Biological Sciences in Beijing has published an analysis of five newly discovered, well-preserved fossils of this tern-sized bird. The skeletons are complete except for the head and upper neck, and the impressions left by asymmetrically vaned feathers are clearly evident. You *et al.*, describe an animal with webbed feet, big bony knees to hold strong swimming muscles and wing feathers virtually identical to those of modern flying birds. Given these characteristics the researchers have likened the animal to a loon.

This bird is an important link in the evolution of modern birds (neornithians) because it belongs to the group known as ornithuromorphians (near-modern), which resemble modern birds in the way the bones of their shoulders and ankles fit together. Up to now ornithuromorphian fossils have been scarce from that early period of bird evolution with most belonging to the enantiornithes or “opposite birds” so called because their bones link together in the opposite way to that of modern birds. The near-modern and “opposite birds” form two main branches of the bird evolutionary tree; however, the “opposite birds” comprise a dead-end branch that was not destined to become modern birds. Nevertheless, they dominated the landscape at a time when few near-modern birds were evident. This meant that when paleontologists traced the lineage of modern birds through the near-modern branch they came up against a 40 million year gap, which has now been filled by *Gansus yumenensis*.

According to the authors, the “opposite birds” occupied the land for ten of millions of years. During this time most near-modern birds were aquatic with only a few groups becoming terrestrial. About 65 million years ago the “opposite birds” were killed off by the same extinction event that wiped out the dinosaurs. Why the near-modern line survived is open to speculation, but the extinction of the “opposite birds” left the terrestrial niches wide open for colonization by the near-modern lineage, which gave rise to all the birds we know today.

Nothing left to say except – “quack”.

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