Largest spider fossil found in China

April 21 2011, by Deborah Braconnier

Nephila jurassica sp. nov. holotype, scale bar, 5 mm. Image credit: Biology Letters, doi:10.1098/rsbl.2011.0228

(PhysOrg.com) -- According to Paul Selden, the director of the Paleontological Institute at the University of Kansas, he and his team members have discovered the largest spider fossil. The fossil was discovered within ancient volcanic ash located in Inner Mongolia in the Daohugoa fossil beds. The new spider, named Nephila Jurassica, is around two inches long and dates back to Middle Jurassic around 165 million years ago.

Published in *Biology Letters*, Selden and his team say this spider would have lived in a more tropical climate than the one it was discovered in, suggesting the area has undergone great climate change. They believe the spider originated on Pangaea (the supercontinent). The Nephila jurassica, like modern day golden orb-weavers, would have lived within its orb web, probably in the clearing of a forest or close to source of water.

Until this discovery, the oldest known Nephila genus fossil was 34 million years old, making this fossil and the origin of the Nephila spiders much older than originally thought. While it is the largest spider fossil ever found, it is not the oldest. Other spider fossils found have been as old as 310 million years (Eocteniza silvicola and Protoctenzia Britannica), but they were not the Nephila genus.

The spider's spinnerets, or silk spinning organs, were visible on the fossil spider's legs, suggesting that it, like its modern day orb-weavers, were capable of spinning large, durable webs capable of trapping a variety of insects. The larger Nephila spiders of today, growing as large as four or five inches, are able to spin webs strong enough to trap small birds and bats.

More information: A golden orb-weaver spider (Araneae: Nephilidae: Nephila) from the Middle Jurassic of China, *Biol. Lett.* Published online before print April 20, 2011, doi:10.1098/rsbl.2011.0228

Abstract
Nephila are large, conspicuous weavers of orb webs composed of golden silk, in tropical and subtropical regions. Nephilids have a sparse fossil record, the oldest described hitherto being Cretaraneus vilaltae from the Cretaceous of Spain. Five species from Neogene Dominican amber and one from the Eocene of Florissant, CO, USA, have been referred to the extant genus Nephila. Here, we report the largest known fossil spider,

Nephila jurassica sp. nov., from Middle Jurassic (approx. 165 Ma) strata of Daohugou, Inner Mongolia, China. The new species extends the fossil record of the family by approximately 35 Ma and of the genus Nephila by approximately 130 Ma, making it the longest ranging spider genus known. Nephilidae originated somewhere on Pangaea, possibly the North China block, followed by dispersal almost worldwide before the break-up of the supercontinent later in the Mesozoic. The find suggests that the palaeoclimate was warm and humid at this time. This giant fossil orb-weaver provides evidence of predation on medium to large insects, well known from the Daohugou beds, and would have played an important role in the evolution of these insects.