

A TAXONOMIC PROBLEM CONCERNING TWO DIAPSID GENERA FROM THE LOWER YIXIAN FORMATION OF LIAONING PROVINCE, NORTHEASTERN CHINA

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It has come to our attention, while examining the fossils and paleoecology (Smith et al., 1998) of the much publicized “feathered dinosaur biota” from the lower Yixian Formation of western Liaoning Province, China (Wang, 1998), that there is a taxonomic incongruity concerning the diapsid genera *Hyphalosaurus lingyuanensis* Gao et al., 1999 and *Sinohydrosaurus lingyuanensis* Li et al., 1999. These two taxa, described in 1999 by authors from two institutions in Beijing, the Institute of Vertebrate Paleontology and Paleoanthropology (IVPP) and the Beijing Natural History Museum (BVC), are based on the part and counterpart of the same skeleton (Fig. 1). As this makes *Hyphalosaurus* and *Sinohydrosaurus* objective synonyms according to Articles 67 and 72 of the Fourth Edition (1999) of the International Code of Zoological Nomenclature (ICZN), we hereby propose formally synonymizing these two names.

SYSTEMATIC PALEONTOLOGY

DIAPSIDA Osborn, 1903

Family *incertae sedis*

Genus *HYPHALOSAURUS* Gao, Tang, and Wang, 1999

Type Species—*Hyphalosaurus lingyuanensis* Gao, Tang, and Wang, 1999.

Diagnosis—As for the type and only known species.

Etymology—*hyphalos*, Gr., submerged (under water); *sauros*, Gr., lizard.

HYPHALOSAURUS LINGYUANENSIS Gao, Tang, and Wang, 1999

Sinohydrosaurus lingyuanensis Li, Zhang, and Li, 1999:2, pl. I (pre-occupied).

Diagnosis—(after Gao et al., 1999:3) An aquatic diapsid sharing with choristoderes the following characters: platycoelous vertebral centra; three sacral vertebrae; pachyostotic dorsal ribs; epipodial segment of limbs much shorter than propodials; carpal and tarsal ossification greatly reduced. Differs from other diapsids (including choristoderes) in having a skull that is proportionally small in relation to its body size, a greatly elongated neck, 19 cervical vertebrae, strongly sigmoid shaped pachyostotic dorsal ribs, 20+ rows of gastralia (each row with segments and each body segment corresponding to two or three rows), MT III and MT IV subequal in length, and MT V not hooked.

Etymology—*lingyuanensis* from the English translation of Lingyuan, the name of the district in western Liaoning Province where *Hyphalosaurus* was discovered.

Holotype—IVPP V11705 and BVC 398, part and counterpart of a skeleton with nearly complete skull and postcrania, preserved on a slab of siltstone, largely flattened into two-dimensions (Gao et al., 1999:pls. I, II).

Occurrence—Specific location data were not provided by either Gao et al. (1999) or Li et al. (1999) beyond the Fanzhangzi area of the Lingyuan District of western Liaoning Province, lower Yixian Formation (approximate regional latitude and longitude is 41°11'N, 119°25'E).

The age of the lower Yixian Formation, and thus the fossil horizon of interest here, is currently in dispute (e.g., see Martin et al., 1998; Sun et al., 1998; Chiappe et al., 1999; Swisher et al., 1999; Barrett, 2000; Smith et al., in press). It has been considered to be both Late Jurassic and Early Cretaceous, although the latest available data most

strongly support a Barremian age (about 121–127 Ma [Gradstein et al., 1995, 1997]) in the Early Cretaceous (see Smith et al., in press; Swisher et al., 1999). While it is definitely true that the Yixian Formation in Lingyuan has not been correlated with the outcrops of the formation in the Sihetun area near Beipiao that were dated by Swisher et al. (1999), the outcrops that produced the dates were near the bottom of the Yixian Formation. Thus, in the current absence of contradictory evidence, it is likely that *Hyphalosaurus* came from a deposit of similar age in Lingyuan.

Discussion

IVPP V11705 and BVC 398 represent the part and counterpart of the same individual skeleton (Fig. 1). According to Articles 67.11 and 72.6 of the Fourth Edition of the ICZN (1999), *Hyphalosaurus* and *Sinohydrosaurus* are thus objective synonyms of one another. Both names are thus to be considered “available” in the sense of the Code, but only one of these names (generally the older name) can be valid as applied to this taxon. Since both names were published in January of 1999 in the first issue of their respective journal volumes, we hereby act as first reviewers according to Recommendation 24A of the ICZN (4th edition, 1999:31), which states that “an author should select the name, spelling or nomenclatural act that will best serve the stability and universality of nomenclature.” In doing so, we hereby select *Hyphalosaurus* to serve as the name for this taxon because the manuscript for Gao et al. (1999) was apparently in press well before the manuscript for Li et al. (1999) (Gao Keqin, pers. comm., 6 March, 2000) and because the name *Hyphalosaurus* has already been cited in the literature (Wang et al., 1999).

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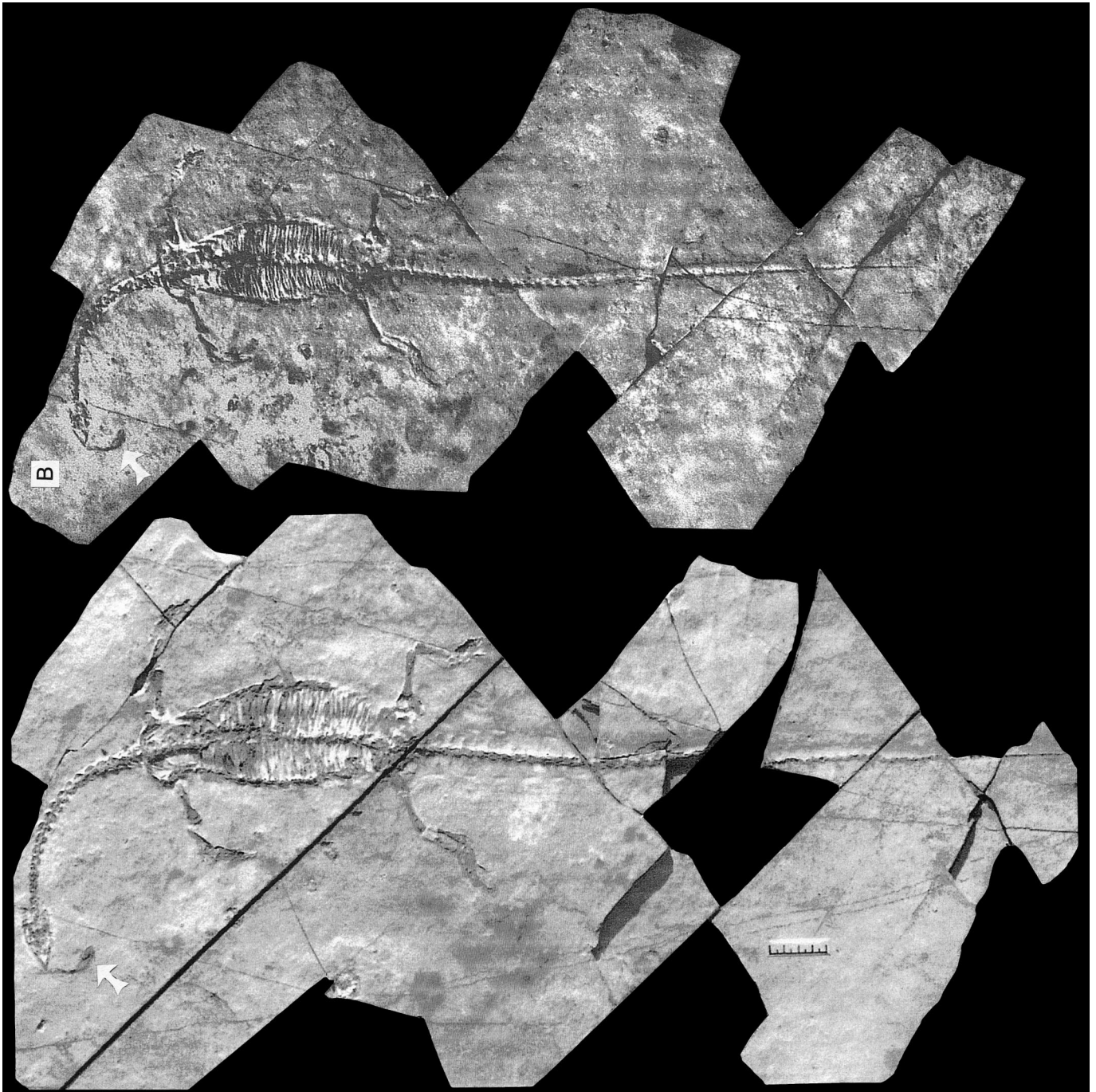


FIGURE 1. The holotype of *Hyphalosaurus lingyuanensis* Gao et al., 1999. A, part (IVPP V11705) and B, counterpart (BVC 398). The counterpart (BVC 398) has been reversed photographically. Note the cf. *Lycoptera* specimen just in front of the crania of both specimens. IVPP V11705 after Gao et al. (1999), BVC 398 after Li et al. (1999). Scale bar equals 4 cm.

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