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The Lower Ordovician (upper Floian) bathyurid trilobite *Aponileus* Hu, with species from Utah, Texas, and Greenland

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Abstract

The previously monotypic bathyurid trilobite *Aponileus* Hu, 1963, was known only from poorly preserved material of its type species, *A. latus*, and was interpreted as a junior subjective synonym of *Psephosthenaspis* Whittington. New species from the upper Floian (Blackhillsian) Fillmore Formation of western Utah belong to *Aponileus* and help demonstrate that the genus is an entirely Lower Ordovician (upper Floian) clade phylogenetically separate from the Middle Ordovician (Dapingian) *Psephosthenaspis*. Species of either group have broadly similar morphology, but the species of *Psephosthenaspis* which most closely resembles those of *Aponileus* is the youngest and most derived member, and the similarities are convergent. *Psephosthenaspis* roots among a group of heavily tuberculate, mostly undescribed, upper Floian species, one of which is briefly illustrated for comparison. The species most resembling some species of *Aponileus*, *P. glabrior*, is illustrated on the basis of new silicified material which extends its range from the upper Juab Formation into the base of the Kanosh Formation. New Blackhillsian species are *A. laikaae* (Fillmore Formation; *Presbynileus ibexensis* Zone), *A. aasei* (Fillmore Formation; probably *Pseudocybele paranasuta* Zone), *A. belkaae*, *A. strelkaae*, and *A. ugolekae* (all Wah Wah Formation; "*Pseudocybele nasuta* Zone"). *Aponileus*? *veterokae* n. sp., from high in the *"Pseudocybele nasuta* Zone" of the Wah Wah Formation, is tentatively assigned. *Bolbocephalus glaber* Poulsen, 1927, from the Nunatami Formation of northwest Greenland, is poorly known but is also a member of *Aponileus*, and is similar in morphology to *A. latus* and *A. aasei*; it is revised on the basis of reillustrated type material. Phylogenetic analysis indicates that *A. laikaae* is the basal species, followed by a sister pair of *A. belkaae* and *A. strelkaae*. These are sister to a pair of subclades, the sister pair of *A. ugolekae* and *A.*? *veterokae*, and an effaced group lacking genal spines including *A. aasei*, *A. latus*, and *A. glaber.*

Key words: Silicified, Utah, Texas, Greenland, taxonomy, cladistics

Introduction

Hu (1963) published a short paper on a small collection of Lower Ordovician trilobites from the El Paso Group of the Franklin Mountains, west Texas. The paper established a new monotypic genus, *Aponileus*, which Hu interpreted as a nileid. The type material of *Aponileus latus* Hu, 1963 (revised below), includes two poorly preserved cranidia, a librigena, and two quite well preserved pygidia. The genus received virtually no mention in the subsequent systematic trilobite literature. An exception is Hughes's (1979, p. 154) accurate opinion that two cranidia assigned by Hintze (1953, p. 137, pl. 26, figs 15, 16) to "*Barrandia*?" represent *Aponileus* (they are assigned herein to *A. belkaae* n. sp.). Adrain (in Jell and Adrain, 2003, pp. 343, 467) first recognized *Aponileus* as a bathyurid and placed it in synonymy of *Psephosthenaspis* Whittington, 1953. *Psephosthenaspis* had been nearly equally obscure until Fortey and Droser (1996) revised it, assigning new species from the Dapingian of Utah.