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Panisaspis, a new genus of pliomerid trilobites from the Lower Ordovician (Ibexian; Tulean and Blackhillsian) of the Great Basin, western USA

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Table of contents

Abstract

Panisaspis n. gen. is a clade of pliomerid trilobites from the Tulean and Blackhillsian stages (Floian) of the Great Basin. It includes *Protopliomerops*? *quattuor* Hintze, 1953, and ten new species, six of which are formally named: *Panisaspis millardensis* (type species), *P. sevierensis*, *P. deltaensis*, *P. rancherensis*, *P. topscityensis*, and *P. loganensis*. Four new species are not well enough known for formal naming and are described in open nomenclature. All species are Tulean in age except for *P. millardensis*, which is earliest Blackhillsian. Synapomorphies of *Panisaspis* include a short, nearly semicircular anterior border; small L1; large genal spines; a rounded, ovoid hypostomal border; elongated third pygidial spines; and a large, triangular terminal piece with distinct pitted impressions. Phylogenetic analysis indicates that *P. millardensis* and *P. sevierensis* are sister taxa, and that *P. deltaensis*, *P. rancherensis*, *P. topscityensis*, *P. quattuor*, and *P. loganensis* are successive sister species. The group may be sister to *Ibexaspis* Přibyl and Vaněk in Přibyl *et al.*, 1985.

Key words: silicified, Utah, Idaho, Nevada, taxonomy, phylogenetics

Introduction

This is the fourth paper in a series (McAdams and Adrain, 2009a, 2010a, 2011) describing and revising the systematics of members of the trilobite family Pliomeridae Raymond, 1913, from Ibexian (Tremadocian–Floian) and lower Whiterockian (Dapingian) strata in the Great Basin. Silicified trilobite faunas from sections in southeastern Idaho and northern Utah (Ross, 1951) and western Utah and eastern Nevada (Hintze, 1953) are the subject of ongoing field-based description and systematic revision (e.g., Adrain *et al.*, 2001, 2003, 2009; Adrain and Westrop, 2007a, 2007b; McAdams and Adrain, 2009a, 2009b), and the history of their study was summarized by Adrain *et al.* (2009). New sampling of these sections has resulted in a great number of new species and much more complete knowledge of previously established species of pliomerids, which are typically common, well preserved, and often abundant.

Pliomeridae includes over 40 genera and nearly 200 named species, yet no cladistic analysis of any component of the family has previously been published. Absence of modern cladistic analyses of pliomerid taxa means that their phylogenetic status is uncertain (see also a brief summary in McAdams and Adrain, 2009a), and a lack of well known stratigraphically early, and potentially plesiomorphic, species compounds the problem. Species from the Great Basin have been recovered from closely spaced horizons with good biostratigraphic control, and include some of the oldest known members of the family.

Full systematic revision of Pliomeridae cannot proceed without description of new taxa, resampling (where possible) and redescription of previously named species, followed by phylogeny reconstruction using modern