ACTA PALAEONTOLOGICA POLONICA

First palaeoscolecid from the Cambrian (Drumian, Miaolingian) Marjum Formation of western Utah, USA

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Acta Palaeontologica Polonica 66 (3), 2021: 663-678 doi:https://doi.org/10.4202/app.00875.2021

The middle Marjum Formation is one of five Miaolingian Burgess Shale-type deposits in Utah, USA. It preserves a diverse non-biomineralized fossil assemblage, which is dominated by panarthropods and sponges. Infaunal components are particularly rare, and are best exemplified by the poorly diverse scalidophoran fauna and the uncertain presence of palaeoscolecids amongst it. To date, only a single Marjum Formation fossil has been tentatively assigned to the palaeoscolecid taxon *Scathascolex minor*. This specimen and two recently collected worm fragments were analysed in this study using scanning electron microscopy and energy dispersive X-ray spectrometry. The previous occurrence of a Marjum Formation palaeoscolecid is refuted based on the absence of sclerites in the specimen, which we tentatively assign to an unidentified species of *Ottoia*. The two new fossils, however, are identified as a new palaeoscolecid taxon, *Arrakiscolex aasei* gen. et sp. nov., characterized by the presence of hundreds of size-constrained (20–30 μm), smoothrimmed, discoid plates on each annulus. This is the first indisputable evidence for the presence of palaeoscolecids in the Marjum biota, and a rare occurrence of the group in the Cambrian of Laurentia. Palaeoscolecids are now known from nine Cambrian Stage 3–Guzhangian localities in Laurentia, but they typically represent rare components of the biotas.

Key words: Scalidophora, Burgess Shale-type preservation, Great Basin, House Range, Laurentia.

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