

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

Wade W. Leibach, Rudy Lerosey-Aubril, Anna F. Whitaker, James D. Schiffbauer, and Julien Kimmig
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 palaeoscolecoid 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 palaeoscolecoid 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 palaeoscolecoid 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.

Wade W. Leibach [wade.leibach@gmail.com], Department of Geological Sciences, University of Missouri, Columbia, MO 65211, USA; X-ray Microanalysis Core, University of Missouri, Columbia, MO 65211, USA; Biodiversity Institute, University of Kansas, Lawrence, KS 66045, USA and Department of Geology, University of Kansas, Lawrence, KS 66045, USA. Rudy Lerosey-Aubril [rudy_lerosey@fas.harvard.edu], Department of Organismic and Evolutionary Biology and Museum of Comparative Zoology, Harvard University, 26 Oxford Street, Cambridge, MA 02138, USA. Anna F. Whitaker [a.whitaker@mail.utoronto.ca], University of Toronto Mississauga, Department of Chemical and Physical Sciences, 3359 Mississauga Road, Mississauga, Ontario L5L 1C6, Canada. James D. Schiffbauer [schiffbauerj@missouri.edu], Department of Geological Sciences,

University of Missouri, Columbia, MO 65211, USA and X-ray Microanalysis Core,
University of Missouri, Columbia, MO 65211, USA. Julien Kimmig [jkimmig@psu.edu], Earth and
Mineral Sciences Museum and Art Gallery, Pennsylvania State University, University Park, PA 16802,
USA.

This is an open-access article distributed under the terms of the Creative Commons
Attribution License (for details please see creativecommons.org), which permits unrestricted use,
distribution, and reproduction in any medium, provided the original author and source are credited.

 [Full text \(3,881.2 kB\)](#)