

Sauropodomorph dinosaur trackways from the Fleming Fjord Formation of East Greenland: Evidence for Late Triassic sauropods

Jens N. Lallensack, Hendrik Klein, Jesper Milàn, Oliver Wings, Octávio Mateus, and Lars B. Clemmensen

Acta Palaeontologica Polonica 62 (4), 2017: 833-843 doi:<https://doi.org/10.4202/app.00374.2017>

The Late Triassic (Norian–early Rhaetian) Fleming Fjord Formation of central East Greenland preserves a diverse fossil fauna, including both body and trace fossils. Trackways of large quadrupedal archosaurs, although already reported in 1994 and mentioned in subsequent publications, are here described and figured in detail for the first time, based on photogrammetric data collected during fieldwork in 2012. Two trackways can be referred to *Eosauropus*, while a third, bipedal trackway may be referred to *Evazoum*, both of which have been considered to represent sauropodomorph dinosaur tracks. Both the *Evazoum* and the *Eosauropus* trackways are distinctly larger than other trackways referred to the respective ichnogenera. The trackmaker of the best preserved *Eosauropus* trackway is constrained using a synapomorphy-based approach. The quadrupedal posture, the entaxonic pes structure, and five weight-bearing digits indicate a derived sauropodiform trackmaker. Other features exhibited by the tracks, including the semi-digitigrade pes and the laterally deflected unguals, are commonly considered synapomorphies of more exclusive clades within Sauropoda. The present trackway documents an early acquisition of a eusauropod-like pes anatomy while retaining a well-developed claw on pedal digit IV, which is reduced in eusauropods. Although unequivocal evidence for sauropod dinosaurs is no older than the Early Jurassic, the present trackway provides evidence for a possible Triassic origin of the group.

Key words: Dinosauria, Sauropodomorpha, trackway, Triassic, Greenland.

Jens N. Lallensack [jens.lallensack@uni-bonn.de], Steinmann-Institut für Geologie, Mineralogie und Paläontologie, Rheinische Friedrichs-Wilhelm Universität Bonn, Nußallee 8, 53115 Bonn, Germany. Hendrik Klein [Hendrik.Klein@combyphone.eu], Saurierwelt Paläontologisches Museum, Alte Richt 7, D-92318 Neumarkt, Germany. Jesper Milàn [jesperm@oesm.dk], Geomuseum Faxe/Østsjællands Museum. Østervej 2, DK-4640 Faxe, Denmark, and Natural History Museum of Denmark, Øster Voldgade 5-7, DK-1350 Copenhagen, Denmark. Oliver Wings [dr.wings@gmail.com], Zentralmagazin Naturwissenschaftlicher Sammlungen (ZNS), Martin-Luther-Universität Halle-Wittenberg, Domplatz 4, 06108 Halle (Saale),

Germany. Octávio Mateus [omateus@fct.unl.pt], GEOBIOTEC, Faculdade de Ciências e Tecnologia, FCT, Universidade Nova de Lisboa, 2829-526 Caparica, Portugal, and Museu da Lourinhã, Rua João Luís de Moura, 2530-157 Lourinhã, Portugal. Lars B. Clemmensen [larsc@ign.ku.dk], Department of Geosciences and Natural Resource Management, University of Copenhagen, Øster Voldgade 10, DK-1350 Copenhagen, Denmark.

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 \(663.2 kB\)](#) |



[Supplementary file \(2,408.8 kB\)](#)