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Multiple records of tapeworm eggs from Permian coprolites and their palaeoparasitological significance

Paula Dentzien-Dias, Ana Carolina Landim Pacheco, Larissa Catafesta, Weronika Łaska, Aleksandra Skawina, and Kenneth De Baets
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The fossil record of intestinal parasites is a crucial aspect of understanding host-symbiont coevolution. This study reports two new types of eggs attributable to tapeworms in a Permian vertebrate coprolite from the Coproland outcrop, Brazil, expanding previous records and providing insights into helminth diversity during the late Palaeozoic. The discovered eggs within the packet, exhibiting oncospheres with three pairs of hooks, are morphologically comparable to extant taxa such as *Echinobothrium, Dipylidium* , and *Kapsulotaenia*. Isolated eggs with thicker walls are more reminiscent of those of Taeniidae in size and structure. The abundance and diversity of these parasite eggs in Coproland spiral shark coprolites corroborate the presence of complex life cycles and suggest diverse transmission strategies. It may also indicate a high prevalence of tapeworms in Permian aquatic ecosystems, but preservation factors and final host ecology likely also contributed to the exceptional richness of these discoveries.

Key words: Platyhelminthes, Cestoda, bromalite, palaeoparasitology, Rio do Rasto Formation, Permian, Paraná Basin.

Paula Dentzien-Dias [pauladentzien@gmail.com; ORCID: https://orcid.org/0000-0001-8708-6799] and Larissa Catafesta [larissacatafesta@gmail.com; ORCID: https://orcid.org/0009-0006-8660-1756], PPGGeo, Departamento de Paleontologia e Estratigrafia, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, Av. Bento Gonçalves 9500, 91501–970 Porto Alegre, Brazil. Ana Carolina Landim Pacheco [carolandim@ufpi.edu.br ; ORCID: https://orcid.org/0000-0002-2237-9133], Universidade Federal do Piauí, Curso de licenciatura em Ciências Biológicas, Campus Senador Helvídio Nunes de Barros, Rua Cícero Duarte 905, 64607–670 Picos, Brazil. Weronika Łaska [wn.laska@uw.edu.pl ; ORCID: https://orcid.org/0000-0001-5034-5240], Aleksandra Skawina [a.skawina@uw.edu.pl ; ORCID: https://orcid.org/0000-0002-8287-1568], and Kenneth De Baets [k.de-baets@uw.edu. pl ; ORCID: https://orcid.org/0000-0002-1651-321X], Institute of Evolutionary Biology, Faculty of Biology, Biological and Chemical Research Centre, University of Warsaw, Żwirki i Wigury 101, 02–089 Warsaw, Poland

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