119 - T112. Halo-Dash: The Deep and Shallow History of Aquatic Life's Passages between Marine and Freshwater Habitats

Monday, 10 October 2022
1:30 PM - 5:30 PM

119-8: A REFINED TIMESCALE FOR CLITELLATE ANNELID EVOLUTION **PARRY, Luke**[1], LOZANO FERNANDEZ, Jesus[2], TANNER, Alastair R.[3], HETHERINGTON, Alexander J.[4], HARDER, Christoffer Bugge[5], JAMES, Samuel W.[6], MONGIARDINO KOCH, Nicolas[7], KUPRIYANOVA, Elena K.[8], SUN, Yunan[8], PISANI, Davide[9] and VINTHER, Jakob[9], (1)University of Oxford, Department of Earth Sciences, South Parks Road, Oxford, MA OX1 3AN, United Kingdom, (2)Faculty of Biology, University of Barcelona, Barcelona, 08028, Spain, (3)University of Bristol, Advanced Computing Research Centre, Bristol, BS8 1TH, United Kingdom, (4)University of Edinburgh, School of Biological Sciences, Edinburgh, EH9 3BF, United Kingdom, (5)Department of Biosciences, University of Oslo, Oslo, NO-0316, Norway, (6)Sustainable Living Department, Maharishi University of Management, Fairfield, IL 52556, (7)Department of Earth & Planetary Sciences, Yale University, 210 Whitney Avenue, New Haven, CT 06511, (8)Australian Museum Research Institute, Australian Museum, Macquarie University, Sydney, NSW NSW 210, Australia, (9)University of Bristol, Department of Earth Sciences, Bristol, MA BS8 1RL, United Kingdom
doi: 10.1130/abs/2022AM-381431

Abstract

Annnelid worms can be split into two distinctive morphogroups, the primarily marine polychaetes and the clitellates. While polychaetes are now recognised as paraphyletic, clitellates are a monophyletic comprising earthworms, leeches and other closely related lineages. Extant clitellates have diversified in freshwater habitats, with both earthworms and leeches have made the transition to the terrestrial realm. Earthworms have long been heralded as one of Earth's most important terrestrial organisms, acting as crucial ecosystem engineers through extensive modification of soils. Despite this, we have limited confidence on the timescale over which earthworms made the transition to land and consequently their contribution to the assembly of terrestrial ecosystems is effectively unknown. Here we employ a new molecular dataset including 40 new transcriptomes from earthworms and close outgroups which we combine with 15 fossil calibrations derived from the marine annelid fossil record in relaxed molecular clock analyses. Our results recover successive branching events within the clitellate crown from the Ordovician onwards, with the earthworm crown group dated to the Carboniferous-Permian boundary. This late Palaeozoic radiation postdates the origin of other soil invertebrate groups and is coincident with large scale restructuring of terrestrial ecosystems.

Geological Society of America Abstracts with Programs. Vol 54, No. 5, 2022
doi: 10.1130/abs/2022AM-381431