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New replacement names in fossil echinoderms (Echinodermata)

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Abstract. Within the genera of fossil Echinodermata three junior homonyms are found and the following replacement names are proposed: *Edrioblastocystis* nom. nov. pro *Blastocystis* Jaekel, 1918 nec Aléxéieff, 1911 and consequently Edrioblastocystidae nom. nov. to replace Blastocystidae Jaekel, 1918; *Euzonohymenosoma* nom. nov. = *Hymenosoma* Lehmann, 1957 nec Desmarest, 1823; *Pennsylvanicycloscapus* nom. nov. = *Cycloscapus* Moore and Jeffords, 1968 nec Erdős and Novicky in Erdős, 1951. Accordingly, also three new combinations (comb. nov.) are established.

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Keywords: homonym, new combination, new name, nomen novum, nomenclature change

Introduction

Echinodermata is a large phylum of deuterostomes, including only marine organisms, which occupy many diverse benthic habitats, ranging from intertidal to deep sea (Reich *et al.*, 2015). They are unique animals, as their symmetry is bilateral in larvae but radial (often pentamorous) in adults (Pandian, 2018). Echinoderms are very well represented in the fossil record: indeed, more than 20,500 species (including both fossil and recent species) are known, of which about 13,000 as fossils (Zhang, 2013). They are very important fossils in paleontology and they are recorded with certainty since the Cambrian Series 2, but their origin may be older, since the enigmatic pentaradial animal *Arkarua adami* from Vendian of Australia has been interpreted as the earliest known echinoderm (Gehling, 1987; Mooi and David, 1998); however its phylogenetic position is still debated (Sprinkle and Guensburg, 1997; Zamora and Rahman, 2014; Cracknell *et al.*, 2021).

Within fossil Echinodermata there are some genera whose names are junior homonyms, not recognized as such so far. Thus, according to the International Code of Zoological Nomenclature (ICZN, 1999), they need to be replaced with new names.

Replacement names

Edrioblastocystis nom. nov.

Jaekel (1918: 107) described the new echinoderm genus *Blastocystis*—(first figured by Schmidt (1874)—from the Ordovician of the Baltic Region and established the new family Blastocystidae to allocate this new genus along with *Blastoidocrinus* Billings 1859. Both genus and family names are still accepted (Cope and Donovan, 2005; Rozhnov, 2013).

Some years earlier Aléxéieff (1911: 298) used the same name when, disputing the nature of some cysts of *Trichomonas intestinalis*, he asserted that they were actually a vegetable organism akin to yeasts. Thus he established the new genus name *Blastocystis* for the new species *B. enterecola*, a parasite in vertebrates and leeches, which he classified with the ascomycetes (and for this reason it is still reported by some sources such as Farr and Zijlstra, 2021). Although in the past several hypotheses were made about the classification of this genus among botanical organisms, including algae (e.g. Ciferri and Redaelli, 1938), thanks to first studies with the electron microscope Zierdt *et al.* (1967) reported several characteristics that fit a protozoan classification and changed the phylogenetic position of this organism. Currently, *Blastocystis*

Novicky in Erdős, 1951

Species *Pennsylvanicycloscapus laevis* (Moore and Jeffords, 1968) comb. nov.

= *Cycloscapus laevis* Moore and Jeffords, 1968 (type species)

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Author contributions

The first author conceived the study. Both authors wrote the manuscript and equally contributed to the article.