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Cenozoic bryozoan biota and their response to climatic changes in Antarctica

Urszula Hara

Polish Geological Institute- National Research Institute - Poland - urszulagrazynahara@gmail.com

Antarctic bryozoans are important colonial marine invertebrates in terms of their origin, palaeoenvironment and climatic approaches. The changes of the bryozoan fossil records during the last 55 Ma years are well-defined by their biodiversity, taxonomic composition and colony growth-forms. The late Early Eocene biota from the shallow-marine–estuarine clastic succession of the lower part (Telm1-2) of the La Meseta Formation of Seymour Island are represented by the prolific, spectacular in size, massive multilamellar colonies dominated by the cerioporids as well as diverse ascophorans cheilostomes (Hara, 2001). The free-living lunulitiform, disc-shaped colonies, which occur in the middle part of the La Meseta Formation (Telm4-Telm5), are characteristic for the warm, shallow-self environment and bottom temperature, which ranges from 10 to 29°C. The presence of the bimineralic skeletons of this fauna (such as Lunulites, Otionellina, and Uharella) with the traces of aragonite is indicative for the temperate shelf environment, sandy and often shifting substrate. Lunulitids are inhabited by the circumpolar to warm-temperate waters, at the present day. Contrary to that, the bryozoans from the upper part of the LM (Telm6-7) are represented by the scarce lepraliomorphs accompanied by the crustaceans, brachiopods and gadiform fish remains. The individuality of the Eocene bryozoan assemblages are well-correlated with the EECO, MECO and EOT climatic events, based on the other marine macrofaunal marine fossil records (see also Ivany et al. 2008). The lower Pliocene bryofauna recently described from the Cockburn Island Formation is composed of the rich encrusting shallow-water, membranoporiform zoaria (Hara and Crame, in review, 2020). The biota of the Pecten Conglomerate are indicative of the interglacial conditions during the deposition of the Cockburn Island Formation. At the present day bryozoans with the preponderance of cheilostomes are the most significant marine benthic community, thriving successfully in cool-water Antarctic conditions.

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