Macrofauna Activity in Quaternary Bottom Water Environments off Western Australia: Fecal Pellets Evidence

*佐藤 瑠奈[1,2]、岩谷 北斗[2]、安原 盛明[2]、Mamo Briony[2]、Reuning Lars[3]、Gallagher Stephen[4]、奈良 正和[5]、Auer Gerald[6]、Lari Alireza[7]、白石 史人[8]、scientists Exp.356
*Runa Sato[1,2], Hokuto Iwatani[2], Moriaki Yasuhara[2], Briony L Mamo[2], Lars Reuning[3], Stephen J Gallagher[4], Masakazu Nara[5], Gerald Auer[6], Alireza Rastegar Lari[7], Fumito Shiraishi[8], Exp.356 scientists

1. 東京海洋大学、2. 香港大学、3. EMG Group、4. University of Melbourne、5. 高知大学、6. University of Graz、7. Curtin University、8. 広島大学
1. Tokyo University of Marine Science and Technology, 2. University of Hong Kong, 3. Energy & Mineral Resources Group, 4. University of Melbourne, 5. Kochi University, 6. University of Graz, 7. Curtin University of Technology, 8. Hiroshima University

Fossil macrofauna are difficult to assess quantitatively compared with micro- and meiofaunas because of their large body size and rare occurrence, particularly in fine-gained sediments. To estimate the quantitative activity of the macrobenthos, the abundance of the fecal pellet in the Quaternary sediments can be considered. In this investigation, we used a sediment core (Site U1461) recovered off Western Australia in the eastern Indian Ocean during IODP Exp.356.
We focused on horizons that clearly exhibited sedimentary cycles. The upper part of the core mainly comprised of alternating beds of dark-colored packstone/wackestone and light-colored wackestone/mudstone. Well-preserved molluscan fossils and peloids occurred in the light-colored wackestone/mudstone in the upper part of the sedimentary sequence.
The morphological character and size of the peloids within the studied sediments are similar to modern fecal pellets of shallow water polychaetes. The abundance of fossil fecal pellets shows fluctuating trends similar to those of macrofossils (e.g., bivalve, gastropod, scaphopod, and echinoderm) and it is likely that the fecal pellet abundance is an indicator of paleo-macrobenthos activity. This activity was compared to ostracode abundance and temporal changes in fossil fecal pellet abundance and an inverse correlation was found.
In the other intervals, the peloids are replaced by superficial ooids and occurred in conjunction with larger benthic foraminifera, indicating deposition within the photic zone. Thus, these intervals may indicate a shallow water environment during deposition.
In this research, we reveal that the abundance of fossil fecal pellets shows macrobenthic activity, reflecting the evolutions of bottom water environments during the Quaternary.

キーワード：マクロベントス、糞源ペレット、ウーイド、第四期
Keywords: Macrobenthos, Fecal pellet, Ooid, Quaternary

