



Long term cultivation of larger benthic Foraminifera

Julia Wöger (1), Wolfgang Eder (1), Shunichi Kinoshita (1), Briguglio Antonino (2), Ferrandes-Cañadell Carles (3), and Johann Hohenegger (1)

(1) Institute of Palaeontology, University of Vienna, Austria (juliawoeger@univie.ac.at.com), (2) Department of Geology, University of Brunei Darussalam, (3) Department of Stratigraphy, Palaeontology and Marine Geosciences, University of Barcelona, Spain

Benthic Foraminifera are used in a variety of applications employing numerous different methods, i.e. ecological monitoring, studying the effects of ocean acidification, reconstructing palaeo-bathymetry or investigating palaeo-salinity and palaeo-temperature to name only a few. To refine our understanding of ecological influences on larger benthic foraminiferal biology and to review inferences from field observations, culture experiments have become an indispensable tool. While culture experiments on smaller benthic foraminifera have become increasingly frequent in the past century, reports of the cultivation of symbiont bearing larger Foraminifera are rare. Generally, cultivation experiments can be divided into two groups: Culturing of populations and cultivation of single specimens allowing individual investigation. The latter differ from the former by several restrictions resulting from the need to limit individual motility without abridging microenvironmental conditions in the Foraminiferans artificial habitat, necessary to enable the individual to develop as unfettered as possible.

In this study we present first experiences and preliminary results of the long-term cultivation of larger benthic Foraminifera conducted at the 'Tropical Biosphere Research Station Sesoko Island, University of the Ryukyus', Japan, trying to reproduce natural conditions as closely as possible. Individuals of three species of larger benthic Foraminifera (*Heterostegina depressa*, *Palaeonummulites venosus* and *Operculina complanata*) have been cultured since April 2014. At the time of the general assembly the cultivation experiments will have been going on for more than one year, with the aim to investigate growth rates, longevities and reproduction strategies for comparison with results statistically inferred from application of the 'natural laboratory' method. The most important factor influencing foraminiferal health and development was found to be light intensity and light spectrum. The light intensities reaching the Foraminifera in cultivation however largely depend on the substrate provided (e.g. sand and silt where individuals dig close to the surface or coral rubble used as shelter by the Foraminiferans and as an easy way of retaining the organisms within a designated container by the investigator).