



## **Insight into deep-sea life - environmental and pH-dependent behaviour of *Cibicides/-oides* taxa**

Jutta Wollenburg

Bremerhaven, Germany (jutta.wollenburg@awi.de)

Hardly anything is known about the life cycle, population dynamics or ecology of *Cibicides/-oides* taxa although the majority of paleodeep-water reconstructions are based on geochemical and isotopic ratios stored in their calcareous shells.

High-pressure aquaria designed for application under the stereo microscope allowed for the first observations of *Cibicides/-oides* taxa at in situ pressure and temperature conditions. Experiments were carried out with and without sediments, with seawater adjusted to pH 8 and pH 7.4 and under variable current activities. The conducted experiments reveal that e.g. *C. mundulus* alternatively occupies an epifaunal and infaunal habitat. Which habitat is selected by a specimen is essentially determined by the time-lag to disturbance, pH, current activity, the availability of sediments and growth. Hereby, the specimen's immediate response to the transfer into high-pressure aquaria was to immerse into the sediment and/or to form a sedimentary cyst over more or less parts of the test. While 24 hours later a strong rheotaxis became apparent in the normal marine pH-8 experiment. Hereby, the specimens left the respective cyst and the fastest specimen positioned itself in the centre of current activity, the next at a distance of minimum 500  $\mu\text{m}$  hereto. After a week the specimens position became stagnant and any movement was associated with a shedding of fixing pseudopods that could not be resorbed.

In contrast, in the pH-7.4 experiment the specimens agglutinated an extraordinary firm sedimentary cyst surrounding the complete test and occupied an infaunal living mode throughout the experimental running time of three months. Independent of pH, growth was only observed in specimens that lived within an agglutinated cyst or infaunal.

A solid thick cyst covered the specimens of the pH 7.4 experiment throughout the experiment and possibly restricted water exchange between the in-cyst water and the surrounding artificial bottom water mass. A more fragile and possibly more porous sedimentary envelope may, at least temporally, have covered the infaunal specimens under pH 8 but no evidence for this was found upon termination of the experiment.