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Short communication

The Benthosgarten: Field experiments on benthic colonization on the Western Baltic. II. Subsequent successional stages

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(This paper is going to be extended and will be published in full elsewhere).

In the first half of the second year, one whole container (1.5 m² each) was removed in December 1976, after exactly one year of exposure, and in February, April and June 1977. In June, a second container was taken up for comparison.

After one year, a rather rich macrofauna with a total abundance of about 4000/m² and a biomass (wet wt., incl. bivalve shells) of about 100g/m² had developed. The species number had reached nearly 40, mainly polychaetes and bivalves. Diversity (H') was low (1.47), due to the predominance of a few species.

During the first half of 1977, the "container community" developed very well. After a seasonal decline from December to April (3400/m²), the *abundance* figures climbed up to 4800/m². This was mainly due to a strong increase in *Diastylis rathkei* and some polychaetes. Although decreasing in number from about 2600 to 1600/m², *Abra alba* held its position as the most abundant species. *Biomass* did not change much from December to April due to the retardation of growth in winter but doubled in the following two months, reaching some 200g/m² in June. In terms of wet weight, molluscs held a share of 81 – 88 % followed by polychaetes with 11 – 15 %. The *species number* still increased slightly (50 in June) reflecting, however, mainly seasonal influences e.g. the appearance of small amphipods. *Diversity* increased a little towards February and April (H' = 1.86/1.83) and reached H' = 2.35 in June, which is quite a good value for a Kiel Bay benthic community.

Compared with the surroundings at 20 m depth, the container community showed in the second year typical characteristics of a western Baltic *Abra alba* community. Because of its short time of existence, large bivalve and polychaete specimens were lacking. Nevertheless, abundance and biomass figures were considerably higher than in the surrounding area. Not yet explicable is the presence in large numbers of a few otherwise rare species (e.g. the bivalve *Saxicava arctica*, the polychaetes *Disoma multisetosum* and *Euchone papillosa* and the amphipods *Caprella linearis* and *Phthisica marina*). Predation by fish and starfish apparently had a certain impact, as could be seen from long-term camera observations. On photos taken automatically every 5 or 10 minutes, cod, flounders and gobies revealed a surprisingly regular diel pattern of appearance.

The computation of secondary production from growth and abundance of the different species will be more difficult than anticipated, at least with the present sampling schedule. The different containers reveal a certain degree of independence concerning the growth and age structure of macrofauna, which – despite all similarity in species composition, abundance and biomass – makes a calculation from succeeding containers rather doubtful. On the other hand, a different way of sampling seems even less promising because it would have to reduce the sample size, increasing at the same time the effort considerably.