1-4

The distribution of the Ostracoda in the sediments of an alpine brook, the Seebach (Lunz, Austria) - A preliminary report -

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There is little published information about the ecology of freshwater interstitial ostracods living in the sediments of running waters. Most data are found in faunistic collections (e.g. KLIE 1943, LÖFFLER 1961, 1963, DANIELOPOL 1980b). DANIELOPOL (1976) showed in the River Danube that hypogean species occur deeper in the substrate than epigean species.

Considering the subterranean freshwater ostracods, DANIELOPOL (1977) hypothesizes that most of the Candoninae originate from surface species living in the running waters.

As a result of the launching of the RITRODAT Project on the Seebach by the team working at the Biological Station Lunz (see the general introduction by BRETSCHKO 1978) a systematic study of the problems of alpine streams may now be undertaken.

1 - Sampling strategy

The method used is that of BRETSCHKO (1980). - Samples have been taken following three different approaches:

- An examination of sediments at two stations (4B and 12B) has been made at four different depths (0, -20, -40, -60 cm) over a course of one and a half year (from April 1980 to November 1981).
- o The investigation of the special distribution has been carried out either once or twice a month from November 1979 to November 1981 at a depth of 20 cm at eleven separate stations.

1) Address at the end of this article

 A study of the ground water fauna of the banks at eight stations distributed over a 20 metre area on either side of the stream (from November 1979 to April 1980).

2 - The ostracod fauna

Altogether 9 species of ostracods have been found in the area studied:

Cypridopsis subterranea J.P. Wolf Candona candida (O.F. Müller) Candona neglecta G.O. Sars Pseudocandona bilobata (W. Klie) Pseudocandona sp. Cypria lacustris G.O. Sars Eucypris pigra (Fischer) Psychrodromus fontinalis (J.P. Wolf) Potamocypris sp.

Two of these species (S. subterranea and C. candida) are usually dominant and always occur in the samples. The other species, whose numbers are smaller, are also subject to high temporal variations, i. e. they do not constitute permanent members of the ostracod assemblages at the different sampling sites.

- 3 Study of the vertical distribution
- o The station 4B and 12B, where samples in different sediment layers were taken, do not reveal any major differences in the ostracods at different depths. However, in station 12B the ostracod populations are more abundant.
- Most of the ostracod species also live at the sediment surface. This is unusual for C. subterranea, which has been considered a hypogean species (KLIE 1936).
- o The highest abundance of the ostracod population occur at the 40 an 60 cm depths.
- o The two dominant species (i.e. C. subterranes and C. candida) seem to have different vertical distribution patterns. This observation has to be tested statistically.

o To complete the study, samples (taken with a hand-pump) from the deeper layers (-70, -110 and -250 cm) at station 12B have enabled observations on very fine sediments at a depth of 250 cm and these include valves of Limnocythere sanctipatrici, a benthic lake ostracod. This discovery suggests that the deeper sediments of the Seebach were deposited during a lacustrine phase.

4 - The horizontal distribution

Ground water ostracods often display an aggregated pattern (DANIELOPOL 1980a). The aggregated patterns appear to be very stable in the Seebach:

- o Some stations (18A1 and 12B) are still densely populated after successive samplings.
- o The station 8C4, located in a secondary branch, with particular sedimentological and chemical characteristics, has always included a population of Pseudocandona sp., which is only rarely found at other stations.

The fauna sampled in the alluvial sediments farthest from the banks is not so diverse and abundant as the stream sediments, it contains the hypogean species Ps. bilobata and the epigean C subterranea.

- 5 The origin of the ostracod fauna
- o Most of the ostracod species found in the sediments of the Seebach are surface species. Only Pseudocandona bilobata is a hypogean dweller. Candona candida and Cypria lacustris are cosmopolitan species. These were also found (April 1982) in Lunz Mittersee, which discharges in the Seebach. Cypridopsis subterranea, Psychrodromus fontinalis and Eucypris pigra are species which have been recorded from various springs in Europe (WOLF 1919, PETROVSKI 1962, 1966).
- It should be noted that Limnocythere sancti-patrici is not found living in the Seebach sediments. This species which theorically is well suited to live in an interstitial environment (DANIELOPOL, pers. comm.) occurs in the Lunz Mittersee (data from April 1982).

o Most of the interstitial ostracod dwellers in the Seebach have reduced swimming bristles. Cypria lacustris is the only species having long bristles. These data accord with the model of the origin of freshwater interstitial ostracods proposed by DANIELOPOL (1976, 1978).

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