

A Quantitative Study of the Fauna of Some Types of Stream-Bed

Author(s): E. Percival and H. Whitehead

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# A QUANTITATIVE STUDY OF THE FAUNA OF SOME TYPES OF STREAM-BED

By E. PERCIVAL, B.Sc.

*Lecturer in Zoology, The University, Leeds,*

AND

H. WHITEHEAD, B.Sc.

*Lecturer in Biology, City of Leeds Training College, Leeds.*

THE faunistic ecology of streams has hitherto received very scanty attention in these islands. Carpenter (6) has examined qualitatively the streams in a Welsh area. Gardiner (13) in a preliminary note gave some quantitative results obtained by the use of various pieces of apparatus, and Butcher and Pentelow (5) have made a quantitative study of the effects of polluting effluents on the fauna of the river Lark, a stream very different in character from those dealt with in the present paper.

The qualitative study of rapid stream populations has been prosecuted to a very considerable extent especially by German workers. Steinmann (31) has given a very important account of the organisms of Alpine streams and Thienemann (32) has similarly dealt with those of the Sauerlandes (Westphalia). The work of Carpenter (*loc. cit.*) has shown that the rapid upland streams of Wales resemble in most respects those examined by the two workers named. Hubault (15) has an important account of the rapid streams of eastern France with many biological data.

It is not our intention, in this paper, to present a faunistic list. Very soon we became aware that the bulk of the population was made up of a few types of organisms which varied somewhat with the environment. Also there was a very considerable variation in numbers which might be explained only by reference to the conditions. We have attempted to analyse some of the conditions and to determine their effects upon the organisms as indicated by the density of the population. One of the results has been of considerable satisfaction in that we have obtained a good idea of the structure of the fauna as a whole. Many of the organisms which have been considered as the almost entire source of food of fish, such as *Limnaea peregra*, *Gammarus pulex* and *Ephemera* spp., have been found to contribute, in many places, either no part or very little part of the total fauna. Further, the very important rôle of the Microphyta, the Ephemeroptera and the Chironomidae has been emphasised anew.

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