FOOD HABITS OF SOME BENTHIC INVERTEBRATES IN A NORTHERN COOL-DESERT STREAM (DEEP CREEK, CURLEW VALLEY, IDAHO-UTAH)[1]

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KOSLUCHER, D. G. & MINSHALL, G. W. 1973. Food habits of some benthic invertebrates in a northern cool-desert stream (Deep Creek, Curlew Valley, Idaho-Utah). *Trans. Amer. Micros. Soc.*, 92: 441–452. The food habits of several important species of invertebrates inhabiting a northern cool-desert stream were studied on a seasonal basis. The foods eaten were quantified according to frequency of occurrence and were compared with potential foods available in the environment. An assortment of diatoms (Bacillariophyceae) and the filamentous alga *Cladophora glomerata* (Chlorophyta) were the only important living constituents in the diets of the herbivores; no aquatic vascular plant material was found, even when it was abundant in the stream. Plant detritus was the other important food for the herbivores. Of eight invertebrate species studied in detail, five were herbivores, feeding mainly on diatoms and detritus: *Hyalella azteca* (Amphipoda), *Baetis tricaudatus* and *Tricorythodes minutus* (Ephemeroptera), *Hydropsyche occidentalis* (Trichoptera), and *Simulium argus* (Diptera). Three others, *Argia vivida*, *Enallagma anna*, and *Ophiogomphus severus* (Odonata), consistently were carnivorous. Other groups studied less extensively included the herbivores *Gammarus lacustris* (Amphipoda), *Sigara* sp. (Hemiptera), *Optioservus divergens* (Coleoptera), *Limnephilus frijole* (Trichoptera), and Chironomidae (Diptera); and the omnivore *Pacifastacus gambelli* (Decapoda). There were no evident differences between size of the animals and the kinds of foods eaten nor between time of the year and diet. In general, the invertebrate animals in Deep Creek were opportunistic and fed in proportion to the foods present.

The diets of aquatic animals provide valuable clues to an important set of interactions occurring within aquatic ecosystems. Assessment of both the kinds and amounts of foods eaten is necessary for an adequate understanding of the roles of individual species in the biotic community as well as the impact of these species on other members of the community. In addition, such information is of critical importance for proper evaluation of the flow of energy in a given ecosystem. In many aquatic habitats the bottom-dwelling invertebrates comprise an important part in the food conversion processes leading to products of interest to man or necessary for the orderly functioning of the ecosystem. This is especially true in streams, where the benthic invertebrates play key roles in the operation of such ecosystems.

The present study was conducted to determine on a seasonal basis the food relationships of several numerically important invertebrates inhabiting a northern, cool-desert stream. Attempts also were made to discover if the kind of foods eaten changes as the size of the consumer increases and to establish whether the animals select particular foods or eat whatever is available. Data were obtained through examination of gut contents and of materials available as potential food sources.

Widely scattered qualitative records of the food habits of an assortment of benthic invertebrates have appeared in the literature since the turn of the century. However, much work of a quantitative nature, especially in regard to stream-dwelling forms, remains to be done. To date, effort has been concentrated on the Trichoptera (Haage, 1970, 1971; Hanna, 1957; Mecom & Cummins, 1964; Scott, 1958; Slack, 1936; Thut, 1969; Winterbourn, 1971a,b) and to a lesser extent

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