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UTILIZATION OF BIOFILM FROM DIFFERENT SUBSTRATES BY LARVAE OF PROTONEMURA NITIDA (PLECOPTERA) IN LABORATORY FEEDING EXPERIMENTS

(Ritrodat-Lunz study area, AUSTRIA)

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SUMMARY:

Surfaces of organic and inorganic substrates in streams are well colonized by microorganisms (bacteria, fungi and algae - the so-called biofilm). This organic layer is of high nutritional value for invertebrates. Laboratory feeding experiments were conducted to examine the food preferences of larvae of Protonemura nidia (Plecoptera) with special references to colonized surfaces. Three categories of available food source were sampled at the study site and offered to the larvae. The animals were allowed to select between well-colonized stones, leaves (Acer sp.), mosses (Fontinalis antipyretica), and uncolonized (oven-dried) stones, leaves and mosses. A comparison is made between offered food items, the feeding traces on them and fecal pellets by means of a scanning electron microspe. Conditioned substrates are significantly preferred to unconditioned ones (81% and 17% respectively) and are detected by the larvae within a very short time. Feeding traces show that larvae are just scraping off surfaces but do not cut particles from organic substrates. In fecal pellets large amounts of undigested moss fragments and unbroken diatoms are found. Neither bacteria nor fungi have been found in any pellet. If there are bacteria they are attached to the peritrophic membrane.