

## 3) DEBRIS DAMS AND RETENTION IN LOW ORDER STREAMS (PROJEKT RITRODAT LUNZ)

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Debris dams are stable accumulations of organic matter in running waters. They serve as effective retention devices for smaller organic material, allowing time for microbial colonization, utilization and consumption by invertebrates. The structure and the invertebrate community of a debris dam in a first order mountain stream are described. An entire debris dam was dismantled according to its exposition to surface water. Periodically overflowed areas are separated from permanently flooded areas. The latter are further divided accordingly to surface water currents. The organic matter was divided into FPOM, leaves and CPOM of different sizes (1-10 mm, 10-50 mm, > 50 mm). It is determined as dry weight.

Debris dams form also transitional habitats between the terrestrial riparian and the aquatic biocoenosis. Therefore distinct differences in the invertebrate community are shown between the periodically and the permanently overflowed regions. In the first case, the invertebrate community contains elements of the riparian biocoenosis and in the second case it is a pure aquatic one. Within the permanently overflowed regions the composition of the invertebrate community depends on the exposition to water currents. The higher the flow of water through the debris dam, the higher is the abundance of Baetidae (Ephemeroptera) and Simuliidae (Diptera).

4) POM IN A GRAVEL STREAM (RITRODAT-LUNZ STUDY AREA, AUSTRIA, EUROPE)  
DEBRIS DAMS AND RETENTION IN LOW ORDER STREAMS (PROJEKT RITRODAT LUNZ)

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Amount, distribution and appearance of particulate organic matter (POM) are described for the bedsediments of a 100 m long stretch of a gravel stream. POM is measured as total organic carbon (TOC) and total organic nitrogen (TON). Bedsediments are the sediment layers dominated by epigeic faunal elements. At the study site (1600 m) bedsediments are approximately 60 cm deep, weighting about 18000 tons. This amount of sediments contains in the annual mean 3068 kg TOC + 10 % and 211 kg TON + 20 %. Largest concentrations are to be found between 20 and 40 cm sediment depth. Although grain sizes smaller than 1 mm contribute less than 10 % of total sediment (in weight), 80 % of TOC and up to 90 % of TON is to be found in this grain size class. In the area of highest water currents POM quantity is lowest but food quality (measured as C/N) is highest. Besides of macrozoobenthos (excluded here) POM appears in 3 forms:

- a) Animal tissue: probably quantitatively of lesser importance. The relation between total meiofaunal biomass expressed as TOC to measured TOC is roughly 1 : 250 000.
- b) Plant tissue: mostly parts of terrestic vegetation. The frequency of occurrence of those particles does not correlate with TOC- and TON-concentrations.
- c) Biofilm: microorganisms plus their extracellular products associated with a substratum. By far most of the standing crop of POM in the bedsediments appears as biofilm. This may explain the fact that POM standing crop is not directly influenced by the discontinuous input of organic matter.

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Zoologisch-Botanische Datenbank/Zoological-Botanical Database

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