

ABSTRACT

The effects of chronic contamination with rum distillery waste on the benthic macroinvertebrate community of North Elim River, Jamaica. W.I.

The North Elim River, (St. Elizabeth, Jamaica) is a small low altitude river that has been polluted by rum distillery effluent (dunder) for several decades. The effect of this chronic organic pollution on the benthic macroinvertebrate community was investigated over a two-year period. Sites along the North Elim River were compared with reference sites in nearby streams. At each site, five physico-chemical parameters were measured: DO, pH, conductivity, temperature and turbidity. Sweep samples were taken from marginal vegetation and substrates. The benthic macroinvertebrate communities were analysed in terms of their structure: taxon richness (S), diversity (H and D) evenness (E), and community density (A); and the taxonomic composition of the community. The North Elim River was found to have significantly lower diversity and evenness levels than the reference rivers ($p < 0.05$). These characteristics became more pronounced when there was dunder in the channel. North Elim River was at all times dominated by septic zone fauna (*Tubificidae* and *Chironomus*). Dunder was associated with an increase in the dominance of taxa such as *Tubificidae* and *Eristalis*. However, when there was no dunder in the channel, *Chironomus* and *Psychoda* became dominant and recovery fauna (*Erpobdella*, *Physa*, *Hyallela*, *Baetidae* and *Ostracoda*) significantly increased in abundance.

Keywords: organic pollution, benthic macroinvertebrates, dunder, tropical rivers, Black River Basin, Jamaica