Abstract

This study describes the physico-chemical environment (bedrock composition and water quality) in relation to the distribution, density, and growth (Thiaridae) of the benthic macroinvertebrate fauna of the Rio Cobre, Jamaica and selected tributaries. The study was carried out during the period June 1998 to December 1999.

Five sites were selected on the Rio Cobre according to their bedrock characteristics: those of predominantly limestone bedrock: Broadleaf Spring, Deeside, United Estates, and bedrock of volcanic origins: Rio Pedro, Rio D'Oro. The benthic macroinvertebrate communities chiefly comprise of Trichoptera, Odonata, Ephemeroptera, Coleoptera and Mollusca. The latter consists predominantly of non-indigenous aquatic snails from the Family Thiaridae, namely *Thiara granifera* and *Melanoides tuberculata.* In some tributaries of the Rio Cobre *T. granifera* makes up about 80% of the standing crop of benthic macroinvertebrates, with maximum density of 331 to 411organisms m^{-2}. On average, snail length was within the range of 9.00 to 14.00 mm. *T. granifera* was an inhabitant of all sites and outnumbered *M. tuberculata* at sites where both species were present (Broadleaf Spring, Deeside and Rio D'Oro). Successful breeding was apparent in both populations of thiarids however distinct classes were not observed.

Studies of the bedrock type, limestone vs. volcanic, revealed that invertebrate population diversity correlated with water hardness at the respective sites. However, densities of the macroinvertebrate fauna seem to be related to species preference to substrata. Trichoptera was the most abundant insect group and their distribution could be related to the availability of case building material.