

ABSTRACT

The freshwater shrimp fauna from a number of Jamaican rivers was sampled. From these catches the faunal record of freshwater shrimps was updated by confirming that Macrobrachium crenulatum Holthuis was still extant in the island, and by recording the presence of Atya lanipes Holthuis for the first time. The samples further indicated that the various species had marked preferences with respect to their distribution in the island; some species being found only in the high-gradient streams of eastern and north-eastern parishes, some only in the low-gradient streams of western and south-western parishes, and some throughout the island. It is suggested that oxygen, current speed, and temperature are the primary physical factors affecting this distribution.

Attempts were made to rear a number of Jamaican freshwater shrimps in the laboratory through the larval phase of their life history. This was achieved for Macrobrachium faustinum, Atya innocous and Micratya poeyi from hatching until metamorphosis into juveniles. All species examined required saline water of various concentrations for larval development; indicating that, under natural conditions, larval development must occur in the sea. It is argued that salinity requirements during larval development could be a factor influencing the distribution of the various species throughout Jamaica.

A detailed distributional study was made over a twenty month period in Cane river, a typical high-gradient stream. The various species had obvious preferences with respect to altitudinal distribution within the river, and it is suggested that this is essentially a temperature response. Seasonal changes in the distribution are believed to result from temperature changes and from seasonal differences in rainfall and over-all current speed in the river.

Niche separation on an even smaller scale within the river was investigated for Atya innocous, Micratya poeyi, and Macrobrachium faustinum by means of a microdistributional study which correlated number of specimens at a localised site with a variety of factors operative at that site. The area of the site covered by rocks, the current speed at the site, and the quantity of decaying

vegetation trapped, were found to be the most important factors. The feeding habits of these three species were examined. Diurnal and seasonal changes in fullness of stomach, and seasonal changes in the components of the diets were examined. The diets of all three species were similar, with detritus being the main component; and consequently it was not felt that niche separation was achieved by difference in diet.

Population parameters were investigated in Cane river for Atya innocous, Micratya poeyi, and Macrobrachium faustinum. The three species had two spawning peaks annually, which were found to be associated with the degree of daily temperature change. The major spawning peak immediately preceded the rainy season. Fecundity of all species was high, and recruitment of juveniles from the sea occurred in one massive wave annually. This allowed size frequency histograms to be used for analysis of mortality and growth. Mortality during incubation, during larval development, and throughout the postrecruitment life span were examined. Adults of all three species grew in accordance with the von Bertalanffy growth equation. Total life span was about one year for Micratya poeyi, and about two and a half years for Atya innocous and Macrobrachium faustinum.