

Abstract.

Freshwater decapod communities of Trinidad and Tobago

Wayne Geoffrey Rostant

Decapod crustaceans are a dominant component of many streams in Trinidad and Tobago but have historically received little attention. Their life-history strategies range from direct freshwater development to amphidromy. The latter strategy necessitates amenable upstream and downstream environmental conditions.

The objectives of this study were to update the local freshwater decapod inventory, to explore the relationship between decapod communities and their environment, and to assess their status and biomonitoring potential.

Fifty sites were sampled quantitatively and over twenty five environmental variables were measured at each site. Through multivariate ordination and clustering, similarities between sites were examined and community types were identified. Community data was related to water quality by direct matrix comparison via a Mantel test.

15 genera and 27 species (including several new records) from eight families were collected, bringing the total freshwater and brackish inventory for these islands to 19 genera, 43 species and ten families. Trinidad's decapod diversity was found to exceed that of any other West Indian island, with both South American and Antillean zoogeographical affinities. Tobago's inventory was Antillean and a subset of Trinidad's. Taxonomic keys to the species of the truly freshwater families and a key to all ten freshwater and brackish families were presented.

Six community types were identified. Dissolved oxygen content, current velocity, substrate roughness, altitude and map coordinates were the variables that best described patterns in community composition. Patterns of community-environment association suggests that a reference-condition approach may be used to predict expected species at test sites

Depending on the life-history strategy of species that are predicted from test sites, surveys of decapods and fish may potentially act as a coarse barometer of stream health at different scales from stream segment to the entire catchment. Amphidromous decapods appear to be extirpated from several upstream segments as a result of downstream perturbation.

Keywords: Wayne Geoffrey Rostant; decapod crustaceans; freshwater; amphidromy; communities; biomonitoring; multivariate ordination; clustering; zoogeographical affinities; reference-condition approach.