

ABSTRACT

The investigation of the Caroni Swamp, Trinidad, between 1965 and 1968, consisted of a study of the environmental factors in a tropical estuarine environment, and the effect of their diurnal and seasonal fluctuations on the plankton and the ecology of Balanus eburneus.

The physiography of the swamp and the effects of attempted reclamation are described. Analysis of the hydrography and nutrient chemistry showed that salinity fluctuation was the most important ecological factor. Considerable difference existed between dry and wet season levels of dissolved phosphate, nitrate, silicate and iron, but at no time were these thought to be limiting for plankton production. The range of conditions was greater than in many environments, but comparable with other mangrove areas.

The mangrove species and succession were similar to those elsewhere in the New World, with pioneer Rhizophora followed inland by Avicennia woodland, but the latter included extensive barren areas. Herbaceous swamp, modified by human interference, occupied the landward fringes of the swamp. The distribution of the fauna, most of which is recorded for the first time from Trinidad, was controlled by the degree of consolidation of the sediments, tide heights, space on the rhizophores and the extent of adaptation to salinity fluctuation.

The relative abundance and identity of the common plankters are given. Increased plankton production in both seasons coincided with the renewal of land-derived nutrients following rain. A

permanent B. eburneus population was maintained by a succession of generations annually which varied in their salinity tolerance. Although the adults tolerated a wide salinity range, the tolerance of the larvae depended on the salinity experienced during the pre-spawning period and therefore varied at different seasons. Population size at any one time depended on the food supply and rate of spawning in previous months, rather than on contemporary salinity conditions.