



Two new species of *Oregodasys* (Gastrotricha: Macrodasysida: Thaumastodermatidae) from Carrie Bow Cay, Belize with ultrastructural observations of the epidermal glandular system

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Abstract

This study represents the first report of Gastrotricha from the coast of Belize. Two new species of *Oregodasys* (Macrodasysida: Thaumastodermatidae) are described from sublittoral sediments around the island of Carrie Bow Cay in the Belizean barrier reef complex. *Oregodasys norenburgi* **sp. nov.** is unique in the possession of paired red ocelli and in the quantity and distribution of lateral and posterior adhesive tubes. *Oregodasys katharinae* **sp. nov.** is allied with species that possess ventrolateral cirri in the posterior body region, but is distinguished based on the quantity of cirri and adhesive tubes and the bipartite structure of the caudal organ. Ultrastructural analysis of the bodywall of *O. katharinae* **sp. nov.** reveals a highly glandular epithelium covered by a bilayered cuticle consisting of a thin exocuticle and thicker endocuticle containing electron-dense elements. At least three types of papillae are present beneath the cuticle: blunt papillae, triangle-shaped papillae, and sensory papillae. The sensory papillae are two-part structures consisting of a porous epidermal cell and a monociliated epidermal cell. The ultrastructure of blunt papillae was not examined, but triangular papillae are formed from neck-like extensions of underlying glandulocytes and contain a pore to the external environment. Insunk glandulocytes are present between the various papillae and have an elongate neck that extends between epidermal cells. All glandulocytes contain a variety of membrane-bound secretory vesicles with a wide range of staining characteristics, from electron lucent to electron dense.

Key words: New species, gastrotrich, meiofauna, Central America, Caribbean

Introduction

Carrie Bow Cay is a small island off the coast of Belize built from Holocene carbonate sediments over 15m thick (Shinn *et al.* 1982). The cay is one of many islands located on the barrier reef complex of Belize – a complex approximately 250 km long and up to 32 km wide – that forms the largest continuous reef in the Caribbean Sea (Gischler & Hudson 2004). The biodiversity of both sedimentary and reef habitats around Carrie Bow Cay and adjacent islands has been extensively documented, especially regarding the invertebrate macrofauna (see Rützler & MacIntyre 1982 and references therein). Alternatively, the meiofauna of these Belizean islands remains poorly known. The first systematic surveys of “permanent” meiofauna—animals with maximum dimensions less than 1 mm throughout their ontogeny (Higgins & Thiel 1988)—began with Higgins (1983) survey of Kinorhyncha around Carrie Bow Cay. Higgins described one new genus and eighteen new species from sublittoral sediments, and attributed the high species richness of kinorhynchs to the ecological heterogeneity (e.g., patch reefs, mangroves, etc) that is characteristic of the region. Nine years later, Sterrer (1992) documented the first species of Gnathostomulida from Belize with the description of *Clausognathia* from the Southern Sandores. This was followed by reports of new species of gnathostomulids from a variety of islands around Belize (Sterrer 1998) and the wider Caribbean, including Carrie Bow Cay (Sterrer 2000). While kinorhynchs and gnathostomulids form a diverse part of the meiobenthic fauna, especially the fauna that is characteristic of organic-rich sediments, their species-richness is not necessarily