

PHYLOGENETIC RECONSTRUCTION OF GASTROTRICHA BASE ON MOLECULAR AND MORPHOLOGICAL DATA

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Figure 1. *Acanthodasys* sp.: Marine gastrotrichs collected from Fome beach, IlhaBela-SP. DIC photo of the specimen habitus.

Gastrotrichs are aquatic microinvertebrates (less than 1 mm) and an important component of the benthos and phytofauna of marine and freshwater habitats. Despite the large number of specimens in different habitats, this taxon is poorly studied possibly due to the small size and fragility of their bodies. Moreover, although the taxonomic studies of the group initiated in the end of nineteenth century, currently the phylogenetic relationships within Gastrotricha are still far from being considered satisfactory. Thus, this project has different aims: a) comparative morphological analysis of external structures using techniques of scanning electron microscopy (SEM), transmission electron microscopy (TEM) and confocal laser microscopy; b) construct a well-supported phylogenetic hypothesis of Gastrotricha based on molecular (nuclear and mitochondrial DNA) and morphological data in order to better understand the evolutionary history of the taxon; c) formally describe the gastrotrichs collected by Garraffoni et al. (2010) and Araújo et al. (2013) and only identified until genus level; d) designate and document neotypes of the 12 new species described by the Polish researcher Dr. Jacek Kisielewski, from the state of São Paulo, in the early 1990s, using microscopy with differential interference contrast optics (DIC) and SEM, e) consolidate the meiofauna collection of the Zoological Museum of the Institute of Biology, State University of Campinas (ZUEC / Unicamp). With these goals, this project will help to establish a new research group from Latin American focused on understanding the systematics, evolution and ecology of gastrotrichs and other understudied meiofaunal taxa.

SUMMARY OF RESULTS TO DATE AND PERSPECTIVES

Due to the fragility of the gastrotrich bodies, specimens deteriorate and most of their diagnostic characteristics vanish soon after preservation. Thus, in this first year of the present project, the main effort was dedicated to sampling distinct freshwater and marine habitats and constructing an image database of the specimens sorted in the sediments. Although most of those samplings were done in only a few sites in the states of São Paulo and Minas Gerais, we were able to find a large number of undescribed species. At least 10 morphotypes do not match with any other species described in gastrotrichs (Figs. 1 and 2). To date, two new species and one new genus were described and one of the few species previously described from Brazil had its geographic distribution expanded.



Figure 2. *Polymerurus* sp.: Freshwater gastrotrichs collected from an urban lagoon, Paulina, SP. DIC photo of the specimen habitus.

Until 35 years ago Brazilian freshwater and marine habitats were recognized as *terra incognita* for gastrotrich fauna, then two pioneering taxonomical studies were carried out by foreign researchers from samplings in the inland waters from the states of São Paulo, Mato Grosso do Sul and Pará, and along the northern coasts of the state of São Paulo. This limited sampling effort has direct impact in the knowledge of Brazilian gastrotrichs because large extensions of Brazilian inland waters and coast were never sampled before causing absence of reference collections about the taxon in Brazilian Museums. Thus,

we will continue sampling new sites in order to increase the knowledge of the biodiversity of Gastrotricha, including new investigation of the genetic diversity of the taxon.

MAIN PUBLICATIONS

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