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Research Article

A new species, genus and family of marine Gastrotricha from Jamaica, with a phylogenetic analysis of Macrodasyida based on molecular data

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Gastrotricha is a phylum of aquatic microinvertebrates counting about 850 species divided into the two orders Chaetonotida and Macrodasyida. Currently, Chaetonotida includes 8 families and 31 genera while Macrodasyida includes 9 families and 32 genera; however, systematics is in a state of flux due to phylogenetic incongruences of the classical systematization. The process of re-systematization will benefit from additional surveys of insufficiently known taxa and especially from the discovery of new species bearing novel characteristics that could help to recognize plesiomorphy in these morphologically diverse animals. Herein, a new and interesting macrodasyidan species from the northwestern shore of Jamaica is described. Specimens up to 1170 μm in length have: a vermiform body with numerous epidermal glands; naked cuticle; head weakly demarked; posterior end in the form of two caudal pedicles; TbA, arranged in two diagonal rows, inserting directly on the cuticle; TbL/TbVL scarce; TbD and TbV absent; TbP at the tip of each caudal pedicle and along its inner margins; mid-sized terminal mouth; pharynx with pores at the base; PhIJ at U20; intestine rectilinear, anus ventral; hermaphroditic sexual apparatus; gonads paired: female anterior, male posterior; gametes maturing in a caudo-cephalic direction; spermatozoa relatively short, with spiralled head and spiralled tail; sperm ducts directed posteriorly, converging ventrally on the midline and joining the sac-like caudal organ; and frontal organ, dorsal to the intestine, not obviously muscularized. External morphology and layout of the reproductive system appear so unique among Gastrotricha to grant the establishment of a new taxon, for which the name *Hummondasys jamaicensis* gen. et sp. nov. is proposed. Furthermore, to allocate the new genus, the creation of the new family Hummondasyidae is proposed based both on the morphological peculiarities and results of phylogenetic analyses based on the 18S rRNA gene, which involved all of the relevant macrodasyidan taxa.

http://zoobank.org/urn:lsid:zoobank.org:pub:595575EA-5ADF-4D0C-AD8B-8BC87E3D3905

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Introduction

Gastrotricha is a phylum of aquatic microinvertebrates which includes about 850 species (as in June 2014) divided into the two orders Chaetonotida and Macrodasyida. Chaetonotida includes tenpin-shaped, hermaphroditic or parthenogenetic species found in marine, brackish or freshwater habitats, whereas Macrodasyida includes, as a rule, vermiform, hermaphroditic species living interstitially in the sand of marine ecosystems.

The alpha biodiversity of the entire phylum is in a state of flux as testified by the incessant description of new species (e.g. freshwater: Kånneby, 2013; Kolicka *et al*., 2013; Suzuki *et al*., 2013; Todaro *et al*., 2013; marine: Hummon, 2011; Todaro *et al*., 2011*a*; Atherton & Hochberg, 2012*a*, *b*; Kieneke *et al*., 2013*a*; Lee *et al*., 2013, Atherton, 2014), whereas cladistics studies of the last decade, challenging the phylogenetic congruence of the classical systematization, have brought about a notable increase in the number of the recognized genera and families (Todaro *et al*., 2006*a*, 2012*a*; Leasi & Todaro, 2008; Hummon & Todaro, 2010). Currently, the order Chaetonotida is subdivided into 8 families and 31 genera while the order Macrodasyida includes 9 families and 32 genera (Todaro, 2013*a*). However, the effort to make systematization more congruent with the results of phylogenetic studies is far from completed, as best testified by the recent work on the largest family of the phylum (Kånneby *et al*., 2013).

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