



An annotated checklist of the chaetonotidan Gastrotricha from India

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Abstract

India has a long history of research on freshwater and marine Gastrotricha. In more than 110 years of study on Order Chaetonotida, two families consisting of 11 genera and 39 species have been described. Thirty of these species are taxa originally described from other continents, while only nine species (7 freshwater, 2 marine) are only known from India. The large percentage (77%) of so-called cosmopolitan species in India has contributed to the phenomenon known as the “meiofauna paradox”. However, a careful review of the pertaining literature provides a different biogeographical picture of the chaetonotidan fauna of India. Herein we show that the high incidence of European and North American species reported from India is mainly due to a mixture of misidentification and species lumping. In fact, for only 12 species there are enough data that would make the Indian specimens morphological similar to taxa previously reported from Europe and/or North America. However, without the appropriate molecular sequence data for comparison, there is no way to rule out the possibility of cryptic speciation. We conclude that further sampling throughout India and the use of more powerful microscopical techniques (e.g., DIC optics) and molecular sequencing will reveal more species and improve the quality of re-descriptions of those (9 spp.) that so far appear to be endemic to the subcontinent. Here we recommend six species to be excluded from the fauna of India while another 11 species (non endemic to India) should be considered dubitatively present in the Indian fauna.

Key words: chaetonotidan gastrotrichs, meiofauna, taxonomic revision, biogeography, Indian fauna

Introduction

Gastrotricha is a phylum of microscopic, aquatic worms phylogenetically allied with Platyhelminthes (e.g., Struck *et al.* 2014; Egger *et al.* 2015). They constitute one of the most stimulating and taxonomically challenging groups of freshwater and marine meiofauna. The group has a cosmopolitan distribution, as putatively do several of its constituent species. To date, there are more than 860 gastrotrich species subdivided into two orders: Macrotrichida, comprising 381 strap-shaped species, all but four are marine or estuarine; and Chaetonotida with 482 mostly tenpin shaped species, 350 of which are freshwater forms (e.g., Kieneke & Todaro 2020; WoRMS 2021).

More than 80 gastrotrich species have been originally recorded from India; however, a recent taxonomic assessment review indicated that several of the 43 macrotrichid species reported to be present in the Asian subcontinent are of uncertain taxonomic status, and many others necessitate a re-description because the reported body traits are insufficient to award a modern, robust identification (Chatterjee *et al.* 2019). Along this line, we provide here a list of the chaetonotidan freshwater and marine species found in India so far, with taxonomic remarks on their status in light of the current practices applied to Gastrotricha. Several of the Chaetonotida species reported from India were originally described from European or North America and therefore seems to have cosmopolitan distributions (i.e., reported from two or more continents or in two or more oceans, including adjacent seas). A careful examination of these descriptions could provide support or refute their current systematization, thus affecting our understanding of their biogeography at a regional and worldwide level.