



A complex of Transversotrematidae (Platyhelminthes: Digenea) associated with mullid fishes of the Indo-West Pacific Region, including the descriptions of four new species of *Transversotrema*

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Abstract

Phylogenetic analysis based on ribosomal DNA markers indicates that there is a discrete clade of species of *Transversotrema* Witenberg, 1944 associated with mullid fishes of the Indo-West Pacific, although there is only one previous record of transversotrematids from these fishes. Each of the species in this clade bears broad morphological similarity to previous concepts of either *Transversotrema haasi* Witenberg, 1944 or *Transversotrema licinum* Manter, 1970, yet none of them is attributed here to either of these species. Four new species of *Transversotrema* are described from mullid fishes of the tropical and sub-tropical Indo-West Pacific using a combination of morphology, morphometric analysis and DNA sequencing. *Transversotrema cabrarum* n. sp. is described from *Parupeneus spilurus* (Bleeker) from Ningaloo Reef (Australia), and recorded from *Parupeneus cyclostomus* (Lacepède), *Parupeneus pleurostigma* (Bennett) and *Parupeneus trifasciatus* (Lacepède) from the same location. *Transversotrema chevarum* n. sp. is described from Lizard Island (Great Barrier Reef, Australia) from *Parupeneus ciliatus* (Lacepède), and further recorded from *Parupeneus barberinus* (Lacepède), *P. cyclostomus*, *Parupeneus indicus* (Shaw), *Parupeneus multifasciatus* (Quoy & Gaimard) and *P. trifasciatus* at the same location. *Transversotrema cutmorei* n. sp. is described from *Upeneus tragula* Richardson from Moreton Bay, Australia. *Transversotrema tragorum* n. sp. is described from *Parupeneus indicus* from Lizard Island and recorded from *P. barberinus*, *P. ciliatus*, *P. cyclostomus*, *P. multifasciatus* and *P. trifasciatus* from the same location. An additional species, also from mullids from Lizard Island, is delineated on the basis of molecular data, but not formally described. Like many other transversotrematids, the species described here appear to have limited geographical distributions.

Key words: Digenea, Transversotrematidae, *Transversotrema cabrarum* n. sp., *Transversotrema chevarum* n. sp., *Transversotrema cutmorei* n. sp., *Transversotrema tragorum* n. sp., *Transversotrema* sp. E, taxonomy, Mullidae, Great Barrier Reef, Lizard Island, Ningaloo Reef, Moreton Bay, Australia

Introduction

The Transversotrematidae Witenberg, 1944 is a distinctive family of digenean trematodes that, until Hunter *et al.* (2010), contained just four recognised genera and eight species (Cribb *et al.* 1992). The family is characterised by a two-host life cycle. The cercaria, where known, has a body that resembles the adult and a tail with unique arm-like processes at its base (Cribb 2002). Confirmed accounts of transversotrematids (Cribb *et al.* 1992) reflect a distribution in marine waters of the Indo-West Pacific region and in freshwater bodies on landmasses that border these oceans.

A recent study of the Transversotrematidae of the Indo-West Pacific, with emphasis on the Great Barrier Reef (Hunter & Cribb 2010), found four distinct lineages on marine fishes: (1) *Crusziella formosa* Cribb, Bray & Barker, 1992 which is found only from mugilid fishes; (2) (Group A) a complex of three species associated with haemulid, labrid, lethrinid and scarid fishes; (3) (Group B) a complex of species associated with mullid fishes; and (4) (Group C) a complex of species from multiple fish families, related to and resembling, *Transversotrema licinum*