



Transversotrematidae (Platyhelminthes: Trematoda) are rich and abundant on Indo-Pacific fishes

JANET A. HUNTER¹ & THOMAS H. CRIBB^{1,2}

¹*School of Chemistry and Molecular Biosciences, The University of Queensland, Brisbane, Queensland, 4072, Australia.*

E-mail: janet.hunter@uqconnect.edu.au;

²*Centre for Marine Studies, The University of Queensland, Brisbane, Queensland 4072, Australia. E-mail: t.cribb@uq.edu.au*

Abstract

The Transversotrematidae, perhaps because of their unique and obscure habitat under the scales of fishes, have been little reported in surveys and studies of trematodes of marine fishes. At present there are just three fully marine species recognized. We have surveyed 2604 individuals, from 359 species and 71 families, of marine fishes from a range of sites mainly from coral reefs in the Indo-Pacific. We found infections on 87 species and 15 families of fishes; one family, Monodactylidae, is new for transversotrematids. Morphological and molecular analyses suggest that, in addition to *Crusziella formosa* which parasitizes only mugilids, there are three complexes of species of *Transversotrema*; one associated with mullids only, one with haemulids, labrids, lethrinids and scarids, and one associated with at least 13 families of fishes. Molecular evidence suggests that these complexes comprise at least 22 species. Overall we conclude that the richness of this family has been significantly underestimated and that it is rich and abundant on fishes of the Indo-Pacific.

Key words: Digenea, Transversotrematidae, *Transversotrema*, Great Barrier Reef, Queensland, Australia, Maldives, Palau, Indo-West Pacific, Chaetodontidae, Haemulidae, Kyphosidae, Labridae, Lethrinidae, Lutjanidae, Monodactylidae, Mugilidae, Mullidae, Nemipteridae, Pomacentridae, Scaridae, Sillaginidae, Sparidae

Introduction

The Transversotrematidae Witenberg, 1944, is presently one of the least species rich families of digenean parasites. Unlike any other family, the adults live beneath the scales of marine and freshwater fishes, their definitive hosts, and they have a correspondingly transversely elongated shape. The recognized species of Transversotrematidae are: *Transversotrema haasi* Witenberg, 1944, *Transversotrema licinum* Manter, 1970, *Transversotrema patialense* (Soparkar, 1924), *Transversotrema chauhani* Agrawal & Singh, 1981, *Prototransversotrema steeri* Angel, 1969, *Prototransversotrema exquisitum* Cribb, Bray & Barker, 1992, *Crusziella formosa* Cribb, Bray & Barker, 1992, and *Squamacola parvivitellaria* Pan & Wang, 1985. Two freshwater species from China have caused the only uncertainty in the recognition of the Transversotrematidae as a group of exclusive ectoparasites. *Circuitiocoelium opsariichthydis* Wang, 1981, a synonym of *S. parvivitellaria*, was reported from the intestine of the cyprinid *Opsariichthys uncirostris bidens* Günther (Cyprinidae) (Wang 1981), and later from the yellow catfish, *Pseudobagrus fulvidraco* (Richardson) (as *Pseudobagrus fulvidraco* [Richardson]) (see Wang *et al.* 1985). The reported site of infection (the intestine) may have been incorrect and as bagrid catfishes are scaleless it is surprising that any transversotrematid would be able to infect them. The Squamacolidae Pan & Wang, 1985 and Circuitiocoeliidae Wang, 1981 are presently considered synonyms of the Transversotrematidae (Cribb 2002). The Transversotrematidae is now recognized as the sole member of the Suborder Transversotremata Olson, Cribb, Tkach, Bray & Littlewood, 2003 (see Olson *et al.* 2003).

The first known adult transversotrematid, *T. haasi*, was described after being discovered in a dish containing 20 fishes from the Red Sea (Witenberg 1944). The type-host remains unknown. It was from this