

NOVEL ULTRASTRUCTURAL FEATURES OF *Clinostomum cutaneum* IN NILE TILAPIA REVEALED BY SCANNING ELECTRON MICROSCOPY

Shigoley M.I.^{1,2}; Mungai D.N.³; Topić M.¹ & Vanhove M.P.M.¹

¹ Research Group Zoology: Biodiversity & Toxicology, Centre for Environmental Sciences, Hasselt University, Agoralaan Gebouw D, 3590 Diepenbeek, Belgium

² Department of Veterinary Management of Animal Resources, Faculty of Veterinary Medicine, Liège University, 4000 Liège, Belgium

³ Kenya Fisheries Service, National Aquaculture Technology Development and Innovations Transfer Centre, 26 Sagana, Kenya
miriam.shigoley@uhasselt.be

The parasitic trematode *Clinostomum* presents a huge challenge to freshwater fish species, particularly Nile tilapia (*Oreochromis niloticus*), which plays a vital role in both aquaculture and wild fisheries. In a parasitological survey of 157 Nile tilapia samples from fish farms in the Upper Tana River Region, Kenya, 17.2% of the samples dissected and screened for parasites were found to be infected with *Clinostomum* metacercariae, encysted in the buccal cavity, skin and gills. This study used an integrative identification approach that combined traditional morphological techniques with ultrastructural analysis using scanning electron microscopy (SEM) and molecular methods targeting ribosomal regions (ITS1, 5.8S, ITS2, and 28S). The *Clinostomum* metacercariae were identified both morphologically and molecularly as *C. cutaneum* and *C. phalacrocoracis*. SEM revealed some new ultrastructural features specific to *C. cutaneum*. One of these is an excretory pore surrounded by minute, spiny papillae, a feature which had not been reported in previous studies. Another finding we observed was the presence of an everted cirrus in the metacercariae, a feature seen in the adult stage of *C. cutaneum*. However, in our samples, the cirrus lacked basal papillae, showing that there is morphological variation between the adult and metacercarial stages. Additionally, the tegumental area around the genital pore was surrounded by dome-shaped papillae. Our findings, therefore, provide new taxonomic features for the metacercariae of *C. cutaneum* and demonstrate the value of SEM as a complementary tool for more precise parasite identification and species differentiation.

TWO NEW SPECIES OF *Uroleidoides* (MONOPISTHOCOTYLA: DACTYLOGYRIDAE) PARASITIZING THE GILLS OF *Cyphocharax modestus* (CHARACIFORMES: CURIMATIDAE) SUPPORTED BY MORPHOLOGICAL AND MOLECULAR DATA

Yamada P.O.F.¹; Osaki-Pereira M.M.¹; Acosta A.A.³; Ebert M.B.^{1,2} & Silva R.J.¹

¹ Department of Biological Sciences, Cariri Regional University (URCA), Crato, Ceará state, Brazil

² Section of Parasitology, Institute of Biosciences, São Paulo State University (UNESP), Botucatu, São Paulo state, Brazil.

³ Department of Biological Sciences, College of Science, University of North Carolina at Charlotte, Charlotte, North Carolina, USA
reinaldo.silva@unesp.br

The present study describes two new species of monopisthocotyls parasitizing the gills of *Cyphocharax modestus* (Characiformes: Curimatidae) from the two localities of the Upper Paraná River basin, state of São Paulo, Brazil. *Uroleidoides* n. sp.1 and *Uroleidoides* n. sp.2 closely resemble *Uroleidoides triangulus* (Suriano, 1981) by has a vaginal opening and vaginal sclerite sinistral; an accessory piece comprising 2 subunits and not articulated with the base of MCO; MCO a coiled tube with 2½ counterclockwise; and dorsal bar with a posteromedian projection. However, *Uroleidoides* n. sp.1 and *Uroleidoides* n. sp.2 differ from other congeners by the morphology of the accessory piece (comprising two subunits: one subunit scythe-shaped, adjacent piece with narrow base broadening towards upper end, upper end axe-shaped in *Uroleidoides* n. sp.1 and a straight rod with a bifurcated proximal portion, distal portion ending in a point, two curved handles arise from medial portion uniting close to distal portion in *Uroleidoides* n. sp.2, and the morphology of the ventral and dorsal anchor. The phylogenetic analyses recovered *Uroleidoides* as non-monophyletic, indicating the need for taxonomic review. This study provides the first molecular sequences for *Uroleidoides* spp. parasitizing Curimatidae, including newly described species. These findings revealed distinct clades and suggested possible host specificity, underscoring the importance of additional research to better understand the phylogenetic relationships within the genus. Financial support: Financial support: FAPESP 2020/05412-9, 2021/12779-9; CNPq 140872/2017-5, 151170/2022-3, 161838/2021-9, 311635/2021-0; CAPES 88887.9761172024-00; PROPG/PROPe-UNESP 04/2022; and FUNCAP FPD-0213-00301.01.01/23.