

## Micromorphological investigation of *Emoleptalea nwanedi* n.sp. from *Schilbe intermedius* in the Limpopo Province, South Africa

Baker, C.<sup>1</sup>, King, P.<sup>1</sup>, Smit, W.<sup>2</sup> and Luus-Powell, W.<sup>2</sup>

<sup>1</sup> Sefako Makgatho Health Sciences University, South Africa, <sup>2</sup> University of Limpopo, South Africa

The Cephalogonimidae Looss, 1899 is a family of small spinous digeneans that are parasitic in the gastro-intestinal tract of fishes, amphibians and reptiles<sup>1</sup>. *Emoleptalea nwanedi* n. sp. is a new species described from the intestine of *Schilbe intermedius*, the silver catfish or butter barbel found in the Nwanedi-Luphephe Dam of the Limpopo Province, South Africa<sup>2</sup>. This is the first record of this parasite from the silver catfish and from southern Africa, and the first description of an *Emoleptalea* species using scanning electron microscopy (SEM).

Species material was collected over a period of three years, fixed in 70 % Ethanol and stained with Van Cleave's haematoxylin. For SEM, the specimens were routinely prepared and examined with a Zeiss Supra 55 Field Emission Scanning Electron Microscope (Carl Zeiss, Germany) at 1 kV.

The body (Figs. 1A) of the parasite is small, dorsoventrally flattened measuring 582 - 722  $\mu\text{m}$  ( $653 \pm 55$ ; 25) long and 320 - 407  $\mu\text{m}$  ( $364 \pm 33$ ; 25) wide. A large oral sucker and pharynx is separated by a pre-pharynx (Fig. 1B). Male reproductive system consists of two testes lying oblique and intercaecal in anterior part of hindbody (Fig. 1C). The cirrus opens medially to the oral opening (Fig. 1D). Female reproductive system consists of round to slightly oval ovary with numerous small, operculated eggs. SEM micrographs show that the body is covered with triangular spines that are arranged anteriorly in rows (Fig. 1E) that decrease in number and concentration posteriorly. Another unique feature is the ciliated receptors on the acetabulum that protrudes from a plate-like base (Fig. 1F). Two types of sensory receptors were observed on the acetabulum wall; bulbous receptors with a short protruding cilium and another with a broad plate-like base with short cilium protruding from centre of plate. Most notably, the cirrus is not covered with spines. Tegument of anterior part of fore body between oral and ventral suckers is covered by scale-like spines (Fig. 1G). These spines are densely packed, posteriorly directed and can retract into body. Posterior to acetabulum these spines are more sharply pointed and seemingly arranged in rows (Fig. 1H).

The African group therefore now includes five species namely *E. exilis*, *E. synodontis*, *E. proteropora*, *E. rifaati* and *E. nwanedi* n. sp. Attempts were made to find the intermediate hosts. Two freshwater snail species were collected during follow-up studies; i.e. *Lymnaea natalensis* Krauss, 1848 which secreted 27-spined echinostome cercariae, and *Biomphalaria Pfeifferi* Krauss, 1848 secreting strigeid cercariae (categorised as pharyngeal, distome, and longifurcate). The metacercarial stage remains unknown, but it is however, suspected that the larval stage of the parasite utilises smaller fish species as second intermediate hosts. The taxonomic investigation adds to the African cluster of *Emoleptalea* species previously described, and differs from the known species due to (1) its unique size, (2) equal size of oral and ventral suckers, (3) position of ovary and seminal receptacle, (4) number of vitelline follicles and their size, as well as (5) distinct ciliated receptors on the acetabulum.

1. Jones, J. & Bray, R.A. (2008) In: Bray, R.A., Gibson, D.I. & Jones, A. p.331-338.
2. King, P.H. et al. (2018) Helminthologia, 55, 1: 70-76.

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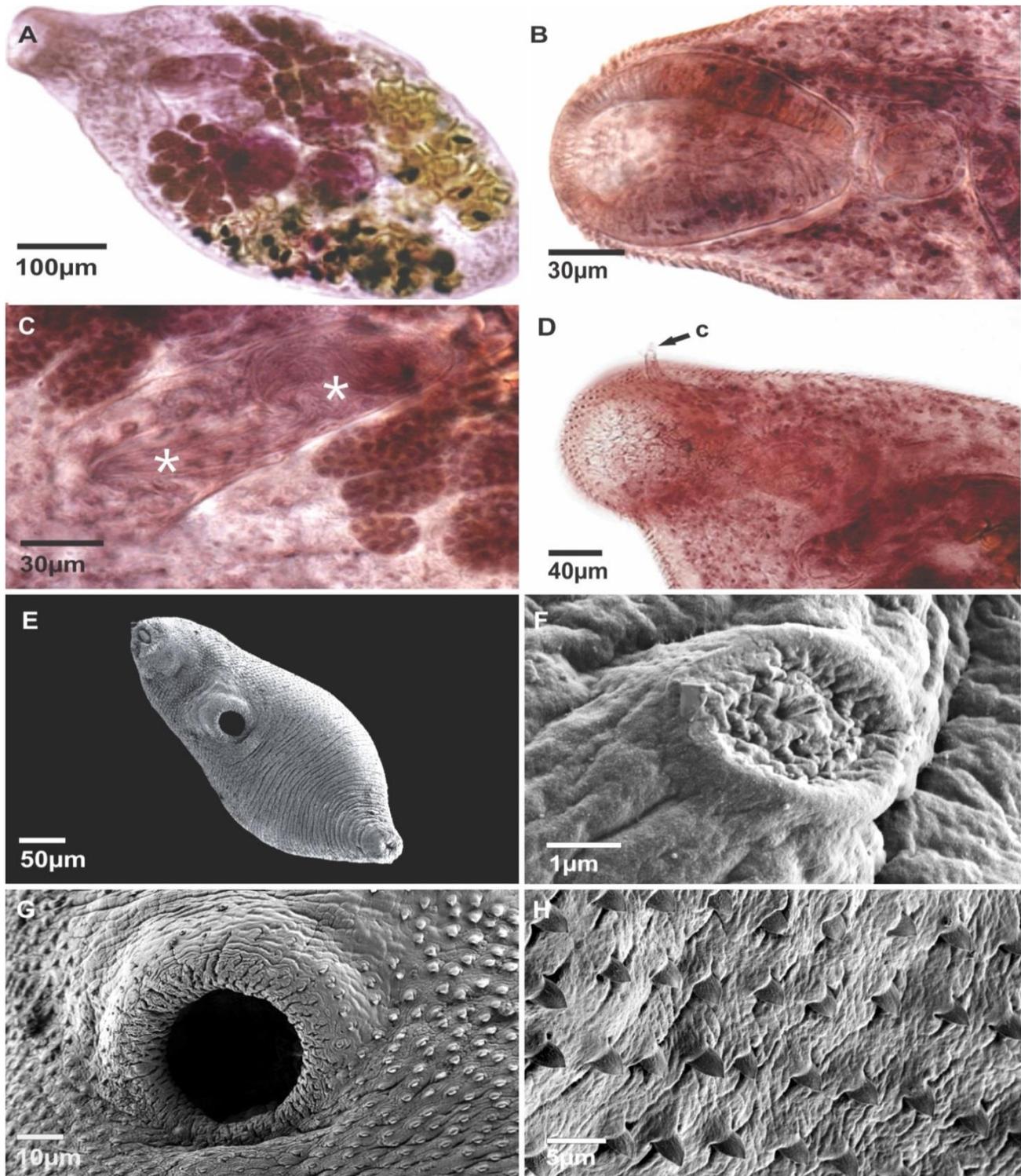


Figure 1: Micrographs of the adult *Emoleptalea nwanedi* n. sp. from the intestine of *Schilbe intermedius*. A - Whole mount; B - oral sucker and pharynx separated by pre-pharynx; C - bipartite seminal vesicle (×); D - cirrus opening (c) medially to oral sucker; E - whole mount; F - acetabulum showing enlarged plate-like receptors; G - tegumental features between oral sucker and acetabulum; H - spines covering body posterior to acetabulum.