

## Parasitism of *Phalloceros harpagos* (Cyprinodontiformes: Poeciliidae) by *Sebekia oxycephala* (Pentastomida: Sebekidae) in the headwaters of the Cambé River, Paraná State, Brazil

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(With 1 figure)

Pentastomid species of the family Sebekidae are known to parasitise fish, using turtles and caimans as definitive hosts (Riley, 1986). Species of genus *Sebekia* have great economic interest as they can cause extensive granulomatous inflammatory reactions with accompanying hemorrhages, myositis, and myodegeneration in cultivated fish (Boyce et al., 1987).

Specimens of *Phalloceros harpagos* Lucinda, 2008 were collected in February 2002 in the headwaters of the Cambé River (23° 16' S and 91° 17' W), municipality of Cambé, Paraná State, Brazil, using gillnets and dipnets.

The captured fish were transported to the Parasites Ecology of Aquatic Organisms Laboratory, Universidade Estadual de Londrina, where they were weighed (total weight in grammes), measured (total and standard length in centimetres), and subsequently submitted to a full necropsy examining the following organs: gills, stomach, intestines, swimming bladder, kidneys, liver, muscles, heart, gonads, eyes and brain.

Pentastomid cysts were removed and opened in order to collect and prepare the parasite nymphs for identification. Part of the sample was fixed in FAA, preserved in 70% alcohol and mounted on permanent slides in Hoyer's medium. Other specimens were fixed in 2% glutaraldehyde, 2% paraformaldehyde and 0.1 M cacodylate buffer, post-fixed in 1% osmium tetroxide, dehydrated in an increasing ethanol series, dried to the critical point, gold-coated at 25 nm thickness and examined using a FEI Quanta 200 scanning electron microscope in the Electron Microscopy and Microanalysis Laboratory, PROPPG, Universidade Estadual de Londrina.

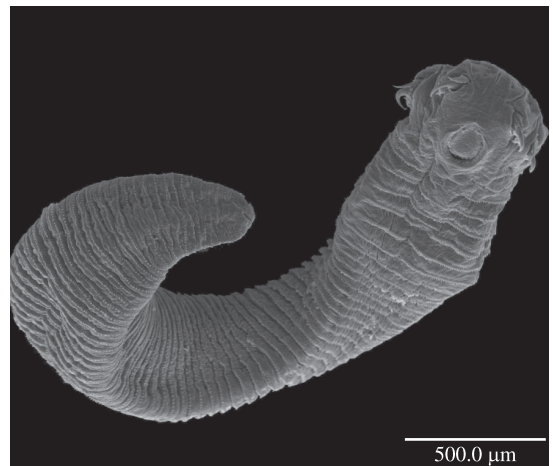
Pentastomid identification was based on the dimensions of their hooks, the copulatory spiculae of the males (measured with the aid of an optical microscope fitted with a micrometer eyepiece), the number of body rings and the oral cadre.

We sampled a total of 79 specimens of *P. harpagos*, including 55 adult females (mean total length  $2.95 \pm 0.1$  and mean standard length = 2.29) and 24 adult males

(mean total length  $2.16 \pm 0.1$  and mean standard length  $1.79 \pm 0.1$ ).

Analyses of the fish demonstrated that five females (mean Lt  $3.0 \pm 0.0$  and mean Ls  $2.2 \pm 0.2$ ) were infected by nymphs of *Sebekia oxycephala* (Figure 1), which were encysted on the mesentery and the intestinal walls (prevalence 6.3%, mean infection intensity  $3.2 \pm 1.6$ , range 1-8). No other alteration of the infection sites, beyond the presence of the cysts, was noted during the necropsy.

Junker et al. (1998) reported prevalence between 9.2% and 40.5% for cichlid fish in the Kruger National, South Africa. In Brazil, Campos et al. (2008) reported that 8.8% (3/34) of the specimens of *Pseudoplatystoma fasciatum* (Linnaeus, 1766) from the Aquidauana River have from one to seven larvae (mean infection intensity 3.3) of an as yet unidentified pentastomid on their mesentery. These values are similar to those of *S. oxycephala* in *P. harpagos* as presented in the present work. On the other hand, Guidelli et al. (2003) reported the occurrence of two specimens of



**Figure 1.** Electron micrograph of entire body in ventral view nymph of *Sebekia oxycephala* from the mesentery of *Phalloceros harpagos* (100x).

*Hemisorubim platyrhynchos* (Valenciennes, 1940) from the Baía River (on the flood plain of the upper Paraná River in Brazil), with a single cyst each of *Sebekia* sp. on their mesentery (prevalence 1.5%, 2/136).

*Sebekia oxycephala* is widely distributed, occurring from the southern part of the United States to southern South America, and like all of the pentastomid species studied so far in Brazil, it appears to be a generalist parasite species. *S. oxycephala* had previously been recorded infecting *Serrasalmus nattereri* Kner, 1860 and *Pseudoplatystoma corruscans* (Spix and Agassiz, 1829) (Rego and Eiras, 1989), and is now reported for the first time in *P. harpagos*.

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