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Additional morphological information on *Dipteropeltis hirundo* Calman, 1912, and a description of *Dipteropeltis campanaformis* n. sp. (Crustacea: Branchiura) from two characiform benthopelagic fish hosts from two Northern rivers of the Brazilian Amazon

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Abstract

Dipteropeltis is a monotypic genus of the Branchiura and endemic to South America. Twelve specimens of *Dipteropeltis* sp. and micrographs of a thirteenth specimen were obtained from four institutions. Measurements and light micrographs were taken of all the specimens. The specimens were compared to all known descriptions of *D. hirundo* and sorted into two groups, those that conformed to the description of *D. hirundo*; and those that differed morphologically. Two specimens, one from each group, were stained with lignin pink and subsequently prepared for Scanning Electron Microscopy. The differences observed in the specimens indicated that a new species exists. Thus, *Dipteropeltis campanaformis* n. sp. is described from seven specimens collected from two characiform benthopelagic fish species and compared to *D. hirundo*. *Dipteropeltis campanaformis* n. sp. differs from *D. hirundo* in the head shape, the length and shape of the carapace lobes, the membrane composition of the maxillules, the shape of the maxillae, the shape of the mouth, and the shape of the natatory lobes.

Key words: South America, parasite, morphology, description

Introduction

The genus *Dipteropeltis* Calman, 1912 is the only monotypic genus in the subclass Branchiura (Piasecki & Avenant-Oldewage 2008) and also the only branchiuran endemic to South America (Malta 1998).

Dipteropeltis hirundo Calman, 1912 was first described from four specimens collected in southern Brazil, in the region of Matto Grosso (Calman 1912). This paper described the species as an argulid with maxillae modified to suckers with discoidal scales on the membranous border; a preoral papilla with no spine; small antennules with a stout basal part and a subglobular terminal part separated by a constriction; small antennae that are undivided with a blunt lobe at the base bearing a short apical “tooth”; no furcal rami and elongated carapace lobes (Calman 1912). The specimens used for this description were deposited in the Crustacea collection of the British Museum of Natural History (BMNH).

However, in the same year, Moreira (1912) wrote a brief description of a new genus and species that he called *Talaus ribeiroi* Moreira, 1912, from a single specimen collected from the same region (Moreira 1912). *Talaus ribeiroi* was described as lacking antennae; maxillules as two-thirds the length of the cephalothorax; maxillae strong with the basal segment short and terminal segment digitiform; the posterior pair of lobes of the swimming legs as large, elongate and bent backwards and upwards; the carapace lobes as parallel; and finally, the abdomen as half the length of the whole specimen (Moreira 1912). In 1914, Melo-Leitão suggested that the genus *Talaus* be

campanaformis n. sp. Thus, the drawing used in Thatcher (1991, 2006), which is referenced as being redrawn from Paiva Carvalho (1941), is in fact a drawing of *D. campanaformis* n. sp.

Regarding the distribution and hosts of *Dipteropeltis* species in Brazil; *D. hirundo* specimens were collected from *Acestrorhynchus falcistrostris* in the Gauporé River, one of the main tributaries of the Madeira River, a southern tributary of the Amazonas River (southern Amazon basin); however, this fish species is also distributed within the Amazon and Orinoco River basins. Furthermore, *D. hirundo* has also been found to parasitize *Salminus brasiliensis* in the rio Grande which forms part of the rio Paraná basin. While *Dipteropeltis campanaformis* n. sp. was only recorded from the tributaries of the Amazonas River basin, the largest tributary of the Amazon River basin and limited to the distribution of its host, *Brycon amazonicus*. The distribution patterns of *B. amazonicus* and *A. falcistrostris* are similar and thus, they may coexist in the same river systems which may result in the two *Dipteropeltis* species coexisting. Additionally, if the remainder of South America is considered, records of *D. hirundo* exist as far north as Venezuela in tributaries of the Orinoco River, Tiznado River and Caño Guariquito (Weibezahn & Cobo 1963) and as far south as Argentina in the Paraná River (Ringuelet 1943, 1948). The distribution appears disjunct but may be a result of incomplete sampling or even misidentification.

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References

- Calman, W.T. (1912) On *Dipteropeltis*, a new genus of the crustacean Order Branchiura. *Proceedings of the Zoological Society of London*, 763–766.
<http://dx.doi.org/10.1111/j.1469-7998.1912.tb07553.x>
- Carvalho, L.N., Del-Claro, K. & Takemoto, R.M. (2003) Host-parasite interaction between branchiurans (Crustacea: Argulidae) and piranhas (Osteichthyes: Serrasalminae) in the Pantanal wetland of Brazil. *Environmental Biology of Fishes*, 67, 289–296.
<http://dx.doi.org/10.1590/s1679-62252004000200006>
- Malta, J.C. (1998) Maxillopoda, Branchyura. In: Young, P.S. (Ed.), *Catalogue of Crustacea of Brazil. Série Livros 6*. Rio de Janeiro, Museu Nacional, Brazil, pp. 67–74.
- Mamani, M., Hamel, C. & Van Damme, P.A. (2004) Ectoparasites (Crustacea: Branchiura) of *Pseudoplatystoma fasciatum* (surubi) and *P. tigrinum* (chuncuina) in Bolivian white-water floodplains. *Ecología en Bolivia*, 39 (2), 9–20.
- Møller, O.S. (2009) Branchiura (Crustacea)- Survey of historical literature and taxonomy. *Arthropod Systematics & Phylogeny*, 67 (1), 41–55.
- Møller, O.S., Olesen, J., Avenant-Oldewage, A., Thomsen, P.F. & Glenner, H. (2008) First maxillae suction discs in Branchiura (Crustacea): Development and evolution in light of the first molecular phylogeny of Branchiura, Pentastomida, and other “Maxillopoda”. *Arthropod Structure and Development*, 37, 333–346.
<http://dx.doi.org/10.1016/j.asd.2007.12.002>
- Møller, O.S. & Olesen, J. (2010) The little known *Dipteropeltis hirundo* Calman, 1912 (Crustacea, Branchiura): SEM investigations of paratype material in light of recent phylogenetic analyses. *Experimental Parasitology*, 125 (2010), 30–41.
<http://dx.doi.org/10.1016/j.exppara.2009.09.008>
- Moreira, C. (1912) Crustacés du Brésil. *Mémoires de la Société Zoologique de France*, 25, 145–148. [in French]
- Moreira, C. (1915) Les antennes du *Dipteropeltis hirundo* Calman (Talaus ribeiroi Moreira) [Crust. Argulidae]. *Bulletin de la Société Entomologique de France*, 1915, 120–121. [in French]
- Paiva Carvalho, J. (1941) Sobre *Dipteropeltis hirundo* Calman, Crustáceo (Branchiura) parasito de peixes d’água doce. *Boletim da Faculdade de Filosofia, Ciências e Letras, Universidade de Sao Paulo*, 22 (5), 265–275. [in Portuguese]

- Piasecki, W. & Avenant-Oldewage, A. (2008) Diseases caused by Crustacea. *In*: Eiras, J.C., Segner, H., Wahli, T. & Kapoor, B.G. (Eds.), *Fish Diseases*. Science Publishers, New Hampshire, USA, pp. 1115–1200.
- Ringuelet, R. (1943) Revisión de los Argúlidos Argentinos (Crustácea, Branchiura) Con el catálogo de las especies Neotropicales. *Revista del Museo de La Plata (Nueva Serie)*, 3, 43–99. [in Spanish]
- Ringuelet, R. (1948) Argúlidos del Museo de La Plata. *Revista del Museo de La Plata (Nueva Serie)*, 5, 281–296[in Spanish]
- Thatcher, V.E. (1991) Amazon Fish parasites. *Amazoniana: limnologia et oecologia regionalis systemae fluminis Amazonas*, 11(3/4), 263–572.
- Thatcher, V.E. (2006) Branchiura. *In*: Adis, J., Arias, J.R., Rueda-Delgado, G. & Wantzen, K.M. (Eds.), *Aquatic biodiversity in Latin America. Vol. 1. Amazon fish parasites (Second Edition)*. Pensoft Publishers, Bulgaria, pp. 390–415.
- Weibezahn, F.H. & Cobo, T. (1964) Seis argulidos (Crustacea, Branchiura) parasitos de peces dulce-acuicolas en Venezuela, con descripción de una nueva especie del genero *Argulus*. *Acta Biologica Venezuelica*, 4 (2), 119–144. [in Spanish]