

Research Note

**First report of *Pyelosomum cochlear* Looss 1899 (Digenea: Pronocephalidae) in a Hawksbill Turtle – *Eretmochelys imbricata* L. found in Brazilian Coast**

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**Article info**

Received May 20, 2019  
Accepted June 17, 2019

**Summary**

*Pyelosomum cochlear* Looss 1899 (Digenea: Pronocephalidae) is a parasite exclusive to sea turtles, having been described in the green turtle (*Chelonia mydas*) in Egypt, the USA, Panama, Costa Rica and Brazil as well as the olive ridley turtle (*Lepidochelys olivacea*) in Brazil. The present note describes the first occurrence of *P. cochlear* in a hawksbill turtle (*Eretmochelys imbricata*) found on the coast of Brazil.

**Keywords:** Brazil; Digenea; helminthofauna; *Eretmochelys imbricata*; Hawksbill Turtle; *Pyelosomum cochlear*; Pronocephalidae

**Introduction**

Looss (1899) erected the genus *Pyelosomum* (type species: *P. cochlear* Looss 1899) based on two specimens found in the urinary bladder of a green turtle (*Chelonia mydas* Linnaeus 1758) from Egypt. The parasite was later described in the same host in the United States (including from Puerto Rico) (Nigrelli, 1940, 1941; Dyer *et al.*, 1991, 1995), Panama (Caballero, 1954), Costa Rica (Santoro *et al.*, 2006) and Brazil (Werneck and Silva 2015) as well as in an olive ridley turtle (*Lepidochelys olivacea* Eschscholtz 1829) in Brazil (Werneck *et al.*, 2015a). However, there are no previous reports of the occurrence of this parasite in the hawksbill turtle (*Eretmochelys imbricata* Linnaeus 1766). Therefore, the present note describes the first occurrence of *P. cochlear* in a hawksbill turtle found on the coast of Brazil.

**Materials and Methods**

In December 2018, a hawksbill turtle was found dead after stran-

ding on Brava Beach (23° 0'33.42"S / 44°29'3.00"W) in the city of Angra dos Reis, State of Rio de Janeiro, Brazil. The sea turtle measured 76.4 cm in curvilinear length and weighed 49.5 kg. During necropsy, the specimen was determined to be female, but the collection of samples for histopathological analysis was not possible due to the advanced state of decomposition of the carcass. However, the analysis of the urinary bladder revealed the presence of a single specimen of *P. cochlear* found in the mucosa of the organ.

The parasite was placed in saline solution, fixed in 70 % alcohol, stained with carmine and cleared with eugenol. The specimen was measured under a microscope (Nikon Eclipse 80i, Kurobane Nikon Co., Ltd., Otawara, Tochigi, Japan) with the aid of the NIS-Elements BR software and deposited in the Helminthological Collection of the Instituto Oswaldo Cruz (CHIOC number 38588) in the state of Rio de Janeiro, Brazil.

The identification of the parasite was based on the taxonomic genus key proposed by Blair (2005) and the phylogenetic study by Pérez-Ponce de León and Brooks (1995) as well as the de-

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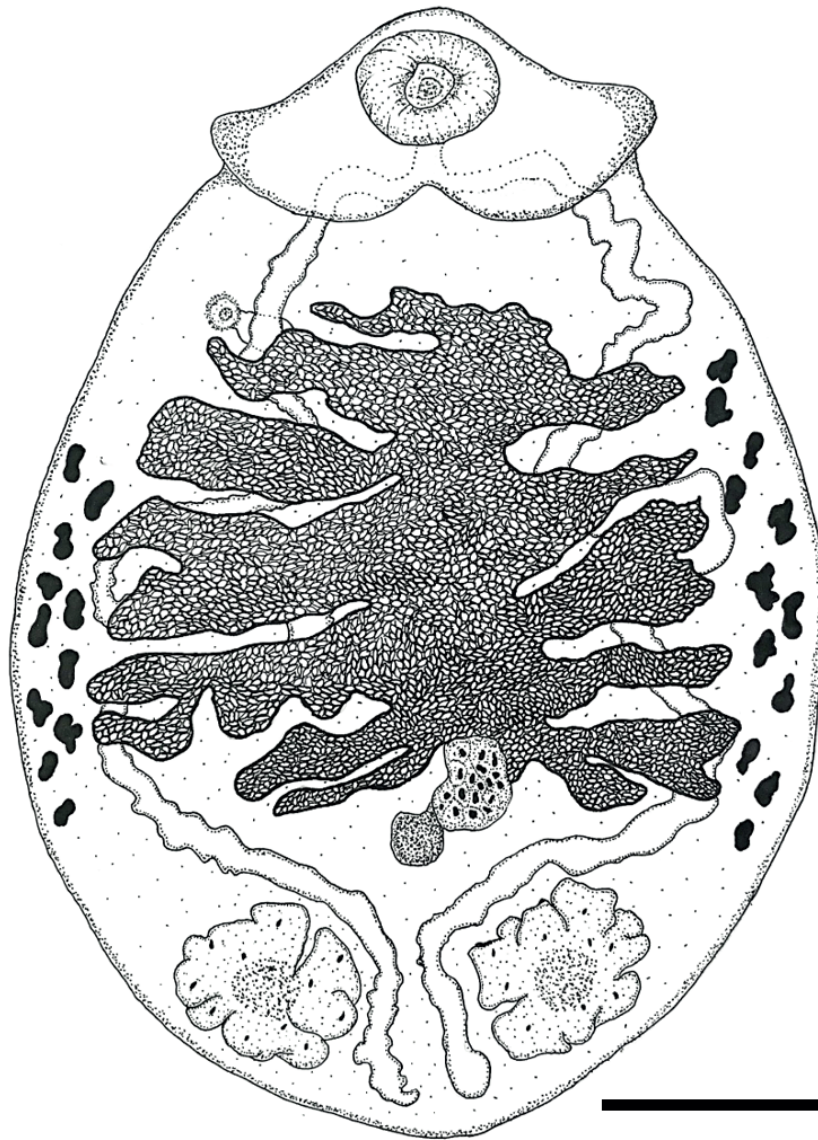


Fig. 1. *Pyelosomum cochlear* Looss 1899 (Digenea: Pronocephalidae) found in *Eretmochelys imbricata* Linnaeus 1766 (Testudines: Cheloniadae) from Brazil. Ventral view (scale bar 1 mm).

scription (Looss, 1899) and redescription (Caballero, 1954) of the species and other reports of the parasite (Nigrelli, 1940; Werneck *et al.*, 2015a).

The following were the characteristics of the specimen (Fig. 1): anterior extremity tapered, with evident cephalic collar; posterior extremity rounded, measuring 4,282  $\mu\text{m}$  in length by 3,409  $\mu\text{m}$  in width; oral sucker subterminal, measuring 658  $\mu\text{m}$  in length by 780  $\mu\text{m}$  in width; esophagus short; ceca sinuous, near side of body, moving to mid region of body before testes, extending beyond the testes and terminating in fundus of cecum between testes near posterior extremity of body; cirrus sac partially covered by uterine loops, but clearly intercecal; vitellaria composed of two groups of follicles, extra-cecal, bordering side of body, beginning

in anterior third near posterior extremity of cirrus sac and ending at ovary level, oval shape, right side with 11 follicles and left side with 12, some points surpass ceca; uterus begins at level of ovary and occupies practically entire medial (inter-cecal) area; uterine loops reach various points laterally to follicle area and anteriorly surpass cirrus sac area; testes in posterior region of body, extracecal, with slightly rounded and weakly lobed shape; right testicle measuring 852  $\mu\text{m}$  in length by 807  $\mu\text{m}$  in width; left testicle measuring 704  $\mu\text{m}$  in length by 620  $\mu\text{m}$  in width; ovary with irregular shape, anterior to Mehlis' gland, measuring 588  $\mu\text{m}$  in length by 470  $\mu\text{m}$  in width; Mehlis' gland measuring 374  $\mu\text{m}$  in length by 223  $\mu\text{m}$  in width; genital pore in anterior third of body at distance of 1209  $\mu\text{m}$  from anterior extremity; eggs with polar processes (10 measured

without polar processes), ranging from 29 to 34  $\mu\text{m}$  (mean: 31  $\mu\text{m}$ ) in length and from 13 to 18  $\mu\text{m}$  (mean: 15  $\mu\text{m}$ ) in width. It was not possible to define the number of polar processes in each egg due to the quantity of eggs in the uterine loops.

### Ethical Approval and/or Informed Consent

For this study formal consent is not required.

### Discussion

*Pyelosomum cochlear* is a parasite exclusive to sea turtles and, according to the majority of reports, preferably occupies the urinary bladder of the host. The species was described based on two specimens found in the urinary bladder of green sea turtles found in Egypt (Looss, 1899).

Four decades later, Nigrelli (1940) cited the occurrence of *P. cochlear*, unfortunately, the author did not describe the number of individuals found, but presented morphometric data on length (0.5 to 2.5 mm), width (2.5 to 5 mm) and egg length (0.0763 to 0.253 mm) as well as some morphological characteristics. Analyzing 50 green sea turtles the following year, the author cited the occurrence of 16 species of parasites, including *P. cochlear* collected from the urinary bladder, but did not describe any morphometric/morphological characteristics or report the prevalence (Nigrelli, 1941).

Analyzing 12 green sea turtles found in Panama, Caballero (1954) redescribed *P. cochlear* based on a specimen found in the urinary bladder. Sometime later, Dyer *et al.* (1991) described the occurrence of *P. cochlear* in the cloaca of a green turtle found in Puerto Rico.

Dailey *et al.* (1992) reported the occurrence of immature individuals of *P. cochlear* in the urinary bladder of a green sea turtle found in Oahu, Hawaii. Dyer *et al.* (1995) reported the occurrence of two specimens of *P. cochlear* in two of a total of four green sea turtles analyzed in Puerto Rico.

Santoro *et al.* (2006) analyzing 40 adult green turtles and described the occurrence of *P. cochlear* in 57.5 % of the hosts, with a mean intensity of  $1.8 \pm 1.1$  (range: 1 to 4). In an analysis of 136 juvenile green turtles from the coast of Brazil, *P. cochlear* was found in only one host (Werneck and Silva, 2015). More recently, Werneck *et al.* (2015a) reported the occurrence of a specimen of *P. cochlear* in the urinary bladder of an olive ridley turtle in southern Brazil.

The specimen analyzed in the present study was consistent with the original description by Looss (1899) and redescription by Caballero (1954) and had the majority of characteristics described by Pérez-Ponce de León and Brooks (1995), with the presence of uterine loops exceeding the limits of the cirrus sac (i.e., autapomorphy found only in *P. cochlear*). However, it was not possible to determine/describe the filament number in each egg, development of the prostatic complex or degree of glandulation of the metraterm due to the large number of eggs in the uterine loops.

The morphometric analysis revealed that the oral sucker, right tes-

ticle, length of the left testicle, length of Mehlis' gland and ovary dimensions were larger than previously published data and the egg dimensions were smaller than previously published data (Looss, 1899; Nigrelli, 1940; Caballero, 1954; Werneck *et al.*, 2015a). Such findings likely correspond merely to individual variations of the specimens

The helminth fauna of the hawksbill turtle correspond to approximately 60 species distributed among 11 families (see Dyer *et al.*, 1995; Greiner, 2013; Santoro *et al.*, 2015; Werneck *et al.*, 2014, 2015b, 2015c). The present study adds *P. cochlear* to this list.

### Conflict of Interest

Authors state no conflict of interest.

### Acknowledgements

The authors wish to express their special thanks to Dr. Paula Baldassin for performing a critical reading and making suggestions to improve the manuscript. BW is a company involved with the activities of veterinary medicine and develops specific consulting work. One of the aims of the company is to disseminate the results of scientific studies to contribute to the conservation of marine organisms. The analyses of the parasites were authorized by federal licenses for activities with scientific purposes (SISBIO 30600-1 and 9329-1). The authors also thank the Environmental Management Department of Eletronuclear for enabling the use of data for the execution of this article and the team in the Radiological and Environmental Analysis Division for logistic support to the activities performed by the Live Turtle Program. The Tartaruga Viva Program is licensed by the federal environmental agencies to conduct monitoring of marine chelonians around Nuclear Power Plants in Angra dos Reis/RJ (SISBIO 67901-1 and ABIO 918 / 2018-1<sup>st</sup> rectification). The authors also wish to their thanks to "Tartaruga Viva Program" that have been developed by Faculty of Oceanography from State University of Rio de Janeiro State (UERJ).

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