Ascocotyle (Phagicola) rara sp. n. (Digenea, Heterophyidae) from *Ixobrychus exilis* (Aves, Ardeidae) in Brazil

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ABSTRACT. *Ascocotyle (Phagicola) rara* **sp. n.** is described from the intestine of *Ixobrychus exilis* (Gmelin, 1789), a Brazilian bittern. The new species is compared with *Ascocotyle (Phagicola) angeloi* Travassos, 1928 and *Ascocotyle (Phagicola) mollienisicola* (Sogandares-Bernal & Bridgman, 1960); the main distinguishing characters are related to the aspect of the gonotyl that is not perforated in *A. (P.) rara* **sp. n.** when compared to *A. (P.) mollienisicola* and the absence of the crown of spines at the anteriorend in the new species compared with *A. (P.) angeloi*. This is an important finding, since human infections by *Phagicola* spp. have been previously reported in Brazil.

KEY WORDS. Digenea, *Ascocotyle (Phagicola) rara* **sp.n.**, *Ixobrychus exilis*, birds, Brazil

Digeneans of the family Heterophyidae are parasites of mammals and aquatic birds, mainly ardeids. They are distributed worldwide and have a life cycle involving mollusks and fishes. The first Brazilian species from the complex *Ascocotyle-Phagicola*, was described by TRAVASSOS (1916), as *Ascocotyle (Phagicola) angrense*. It was found in *Butorides striatus* (Linnaeus, 1758), *B. virescens* (Linnaeus, 1758) and *Ixobrychus exilis* (Gmelin, 1789) in Angra dos Reis county, State of Rio de Janeiro. Later, TRAVASSOS (1928) described *Ascocotyle (Ascocotyle) felippei* from *Ixobrychus exilis* and *Florida caerulea* (Linnaeus, 1758) and *Ascocotyle (Phagicola) angeloi* from *Ixobrychus exilis*, both from Rio de Janeiro, State.

MATERIALS AND METHODS

The two digenean specimens, on which the present description is based, were collected from *Ixobrychus exilis* in 1921 and capture of the hosts occurred in mudflat areas (Manguinhos) of Rio de Janeiro, Rio de Janeiro State, Brazil. Measurements are in micrometers unless otherwise indicated. The figures were made with the aid of a drawing tube connected to an Olympus CBA brightfield microscope. The holotype and the paratype were deposited in the Coleção Helmintológica do Instituto Oswaldo Cruz (CHIOC), Rio de Janeiro, Rio de Janeiro State, Brazil.

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RESULTS

Ascocotyle (Phagicola) rara sp. n.

Figs 1-3

Description. Body elongated 630-802 long, greatest width 201-216 at the ovary level. Tegument partially covered with thin spines, to the acetabular level. Cephalic crown of spines absent. Oral sucker subterminal 36-46 in diameter; oral appendage 126-129 long. Prepharynx 205-226 long; pharynx 39-43 long, 36 wide. Esophagus 108 long. Intestinal ceca extending posterior to vitellaria. Acetabulum the posterior half of body, 54 long, 57 wide. Testes at posterior end, parallel, oval; left testis 46-54 long, 75 wide, right testis 43-54 long, 72-75 wide. Seminal vesicle between acetabulum and ovary, bipartite, inflated. Cirrus pouch absent. Ovary subspherical, submedian, pretesticular, 50-54 long, 61-72 wide. Uterus confined between acetabulum and testicular area; uterine seminal receptacle median, pretesticular, filled with sperm. Vitellaria with seven follicles on each side, confined to ovarian-testicular zone, 118-126 long in the right side, 115 long in the left. Genital sac pre-acetabular, postbifurcal, 21 long, 31-50 wide, enclosing gonotyl with 16 pockets. Genital pore pre-acetabular, opening to right of genital sac. Eggs numerous, non operculated, 18 long, 10 wide.

Type host. *Ixobrychus exilis* (Gmelin, 1789), least-bittern, "socoí-escuro".

Site of infection. Intestine.

Type locality. Manguinhos mudflat, Rio de Janeiro, Rio de Janeiro State, Brazil.

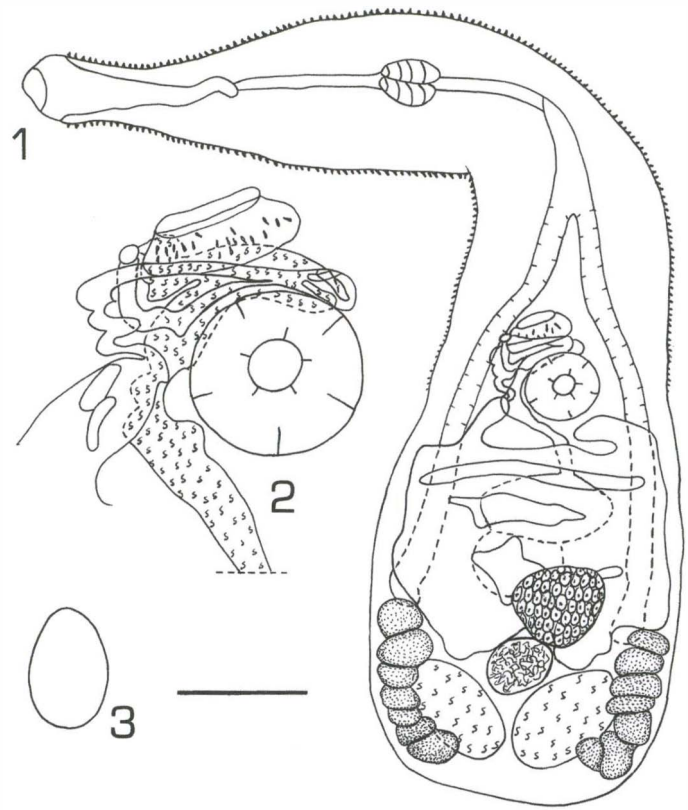
Specimens studied. CHIOC 2621 (*Ascocotyle (Ascocotyle) felippei* holotype, *Ascocotyle (Phagicola) angrense* vouchers), CHIOC 2622 (*A. (A.) felippei, Ascocotyle (P.) angeloi* vouchers), CHIOC 2625-26, 2699 (*A. (A.) felippei*, vouchers), CHIOC 2630 (*A. (P.) angrense, A. (P.) angeloi*, vouchers), CHIOC 2631-35 (*A. (P.) angrense*, vouchers), CHIOC 2636 (*A. (P.) angrense, A. (P.) angeloi*, vouchers), CHIOC 2637 (*A. (P.) angrense* vouchers), CHIOC 2640, 2891, 34369 a-h, 34370 a-z a'-i', 34372 a-b (*A. (P.) angeloi*, vouchers), CHIOC 9334 (*A. (P.) angrense* holotype), CHIOC 34365 a-o, 34366 a-d, 34367 a-j, 34368 a-g (*A. (P.) angrense*, vouchers).

Holotype. CHIOC no. 2632; paratype no. 2639 (whole mounts).

Etymology: the specific name derives from the Latin, meaning "reduced number", "of not common occurrence".

Remarks. According to SCHOLZ *et al.* (1997) the identification of the *Ascocotyle* species complex is difficult due to the small size and the fact that the cephalic crown of spines may be misinterpreted. BURTON (1958) considered the extension of the vitellaria as the main character in a taxonomic array. In addition SOGANDARES-BERNAL & LUMSDEN (1963) and OSTROWSKI DE NÚÑEZ (1993) considered the cercariae characters also valuable, in a scheme of classification.

BURTON (1958), FONT *et al.* (1984) and SALGADO-MALDONADO & AGUIRRE-MACEDO (1991) considered *Phagicola* Faust, 1920 and *Ascocotyle* Looss, 1899 as valid genera. SOGANDARES-BERNAL & BRIDGMAN (1960) described a new genus



Figs 1-3. *Ascocotyle (Phagicola) rara* **sp. n.** (1) total, ventral view (Bar = 0,1 mm); (2) gonotyl (Bar = 0.04 mm); (3) egg (Bar = 0.02 mm). Bar common to figures 1-3.

and a new species, *Pseudoascocotyle mollienisicola*, from an experimental infection in hamsters, stating that the diagnostic character for this genus is the absence of the crown of spines and the presence of a uterine loop perforating the gonotyl. SOGANDARES-BERNAL & LUMSDEN (1963) included *Phagicola*, *Ascocotyle* and *Leighia* Sogandares-Bernal & Lumsden, 1963 as subgenera of *Ascocotyle* and regarded *Pseudoascocotyle* as a synonym of *Ascocotyle*, emending the diagnosis of *Ascocotyle* to refer to the absence of the crown of spines and suppressed the character related to the uterus perforating the gonotyl, that was considered as specific and which is corroborated in the present work. YAMAGUTI (1971) stated that *Phagicola*, *Ascocotyle* and *Pseudoascocotyle* are distinct genera.

The closest species, *Ascocotyle (Phagicola) mollienisicola*, shares with *Ascocotyle (P.) rara* **sp. n.** the absence of a crown of spines at the anterior end. The two species can be differentiated by the gonotyl, that in the latter is not perforated by the uterine loops. In *A. (P.) mollienisicola* the terminal portion of the uterus enters and opens inside the genital sac and not adjacent to it as in *A. (P.) rara* **sp. n.** According to PEARSON (1964) the genital pore can be adjacent or surrounded by

the gonotyl. In the gonotyl of *Ascocotyle (P.) rara* **sp. n.** (Fig. 2) we can observe pockets as reported by OSTROWSKI DE NÚÑEZ (1998) for *A. (P.) angeloi*, contrasting with *A. (P.) mollienisicola*, described by the same author as presenting spines.

Ascocotyle (P.) angeloi possesses a double crown of spines, contrasting with *Ascocotyle (P.) rara* **sp. n.**, in which the crown is absent. In *A. (P.) rara* **sp. n.**, the mouth of the genital sac is absent. This differs from the observation of OSTROWSKI DE NÚÑEZ (1998) when describing *A. (P.) angeloi*. *Ascocotyle (P.) rara* **sp. n.** possesses the genital pore opening beside the genital sac unlike to *A. (P.) angeloi* in which the genital pore opens bellow it.

In the whole mounts with the holotype and paratype specimens, respectively, of *Ascocotyle (P.) rara* **sp. n.**, individuals of *A. (P.) angeloi*, *A. (P.) angrense* and *A. (A.) fellipei* were also found together. In the specimens of these other species mentioned, a well preserved collar of spines could be easily observed.

The importance of this finding is reinforced considering that *Ascocotyle* spp. infections can be recognized as a public health problem. Human infections due to *Phagicola* spp., have been reported in Brazil since 1929 by L. Travassos, who mentioned the lack of specificity of Heterophyidae worms regarding the definitive host. In their life-cycle, heterophyids cercariae infect fresh or brackish-water snails of several genera; fishes, most edible, cercariae encyst as metacercariae, to develop in the adult stage when are infective to birds and mammals, including man, that fed on parasitized fishes. CHIEFFI *et al.* (1992) diagnosed, by means of stool examination, nine cases of human parasitism by *Phagicola* sp. in Brazil. Patients that fed on raw fish suffered from flatulence, diarrhea and showed slight eosinophilia.

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