A New Zoogonid Cercaria (Trematoda: Digenea) from the Florida Horse Conch, Pleuroloca gigantea, in the Northwestern Gulf of Mexico

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ABSTRACT: A seventh known species of larval zoogonid is reported, which was found parasitizing the gonad and digestive gland of the large carnivorous gastropod mollusc Pleuroloca gigantea collected in the Gulf of Mexico southeast of Galveston, Texas. Descriptions of the sporocyst and cercarial stages are given. The larva is assigned the temporary designation of “zoogonid Cercaria A” until further information concerning its life cycle and specific identity becomes available. The morphology of the cercaria most nearly resembles that of the cercaria of Zoogonoides viviparus (Olsson, 1868) Odhner, 1902, from which it differs by its lack of a prepharynx and lack of anterolateral indentations in the stylet. Other differences are in body size, host species, and host geographic range.

KEY WORDS: Zoogonidae, cercaria, marine cercaria, Pleuroloca.

Materials and Methods

Trawl samples from the Gulf of Mexico 18–20 km southeast of Galveston, Texas, at a depth of 5–6 m yielded 5 specimens of the large carnivorous gastropod Pleuroloca gigantea, which were examined for parasites. The snails ranged from 83 to 263 mm in total shell length.

Figures of sporocysts and cercariae were prepared freehand from living material stained with neutral red in seawater under light coverslip pressure at magnifications of ×100–1,000. Measurements (in micrometers) were taken from 10 naturally shed heat-killed specimens under light coverslip pressure. Measurements are followed by mean values in parentheses. Specimens were fixed in formalin-acetic acid-alcohol, stained with aceticarmine, dehydrated in alcohol, cleared in xylene, and mounted in Permount medium.

Results

The smallest of the 5 Pleuroloca gigantea examined (83 mm) was infected with a new zoogonid larva, which is described below.

Zoogonid Cercaria A
(Figs. 1, 2)

DESCRIPTION: Body of tailless cercaria (Fig. 1) 220–315 (271.3) long, 55–77 (65.9) wide. Testum aspinose anteriorly, becoming minutely spinose posteriorly. Posterior spines up to 1 in length. Mouth ventral and subterminal, oral sucker circular, 35–43 (39.2) in diameter. Stylet anterodorsal to oral sucker, lanceolate, 8–12 (10) long, 4–6 (5) wide. Prepharynx absent, pharynx doliiform, 15–27 (21) long, 9–16 (12.8) wide. Esophagus bifurcating anterior to ventral sucker, forming crura that extend posterolaterally terminating anterior to midlevel of ventral sucker. Contents of crura staining red in neutral red vital dye. Ventrual sucker circular, 48–61 (53.3) in diameter, its anterior margin located at midlevel of body. Six pairs of granular penetration glands located in anterolateral portion of body, their ducts extending forward on each side in a bundle dorsolateral to oral sucker, terminating in anterior pores. Penetration glands and ducts staining light pink in neutral red stain as do 3 irregular and indistinct genital primordia posterior to ventral sucker. Excretory bladder oval, 45–57 (53.8) long, 30–45 (37.7) wide, thin-walled, loosely packed with evenly distributed spherical concre-
Figure 1. Zoogonid Cercaria A from Pleuroloca gigantea. Ventral view. Scale bar = 100 μm.

Cercariae, which emerged from sporocysts, were observed crawling vigorously on substrate surface.

Sporocysts (Fig. 2) located in gonad and digestive gland of host snail, thin-walled, transparent and nonpigmented, 650–750 (685) long and 280–370 (315) wide, each containing up to 10 cercariae in various stages of development.

HOST: Pleuroloca gigantea (Kiener, 1840), Florida horse conch.
LOCALITY: Gulf of Mexico, 29°10’N, 94°42’W, southeast of Galveston, Texas.
HABITAT: Sand-mud substrate, depth 5–6 m.
PREVALENCE OF INFECTION: 1 of 5 snails (20%).
VOUCHER SPECIMEN: U.S. National Parasite collection, Beltsville, Maryland, 20705. USNM No. 82738.

Discussion

When compared morphologically to the previously reported zoogonid larvae, as tabulated...
by Madhavi and Shameem (1991), *Cercaria* sp. A appears to be a separate species. *Cercaria* sp. A differs from the cercaria of *Diphterostomum brusinae* Stossich, 1904 (synonym: *Cercaria inconstans* Sinitzjn, 1911), and from *Cercaria chilkaensis* Madhavi and Shameem, 1991, in having more than 3 pairs of penetration glands. It differs from *Cercaria brachycea* Shimura and Ito, 1980, and from *Cercaria crispata* Pelseneer, 1906, in having intestinal crura that extend to the level of the ventral sucker and in having an excretory bladder with a convex anterior margin. It differs from the cercaria of *Zoogonoides laevis* Linton, 1940, and from the cercaria of *Zoogonus lasius* (Leidy, 1891) Stunkard, 1940, in having intestinal crura that do not extend posterior to the ventral sucker.

*Cercaria* sp. A appears to be most similar to the cercaria of *Zoogonoides viviparus* (Olsson, 1868) Odhner, 1902, from which it differs in its lack of a prepharynx and anterolateral indentations of the stylet (as illustrated by Lebour, 1918). Other differences are in body size, host species, and host geographic range.

This constitutes the first report of a zoogonid larva from the Gulf of Mexico and the second report of a trematode species parasitizing the Florida horse conch, *Pleurolopa gigantea*. Wharton (1939) reported the occurrence of the nymph stage of the aspidogastrean *Lophotaspis valleii* (Stossich, 1899) Looss, 1902, from Florida, employing the older synonymous name for the horse conch, *Fasciolaria gigas* Linne.

It is interesting to note that, with the exception of the turbidin archaeogastropod host (*Batillus*) of *Cercaria brachycea*, all known gastropod hosts for the sporocyst and cercarial stages of zoogonids (Madhavi and Shameem, 1991) belong to the predaceous and carnivorous neogastropod superfamily Buccinoidea, which includes the families Buccinidae (*Buccinum*), Columbellidae (*Mitrella*), Nassariidae (*Nassarius, Hymanassa*), Naticidae (*Natica*), and Fasciolaridae (*Pleurolopa*). It is quite likely that the movement of these predatory host gastropods between their invertebrate prey population centers may facilitate acquisition of second intermediate hosts by the tailless, nonswimming zoogonid cercariae, which are capable of crawling only short distances among the benthos during transmission.

*Cercaria brachycea*, although tailless and bearing overall morphological similarities to zoogonid cercariae, might ultimately be proven to be a tailless opecoelid larva due to similarities in excretory system morphology, development in an elongated sporocyst with many cercariae, and utilization of an archaeogastropod first intermediate host, which is the host type used by the majority of typical opecoelid larvae.

**Literature Cited**


