A NEW Marine Cercaria (Digenea: Aporocotylidae) From the Southern Quahog Mercenaria Campechiensis

William J. Wardle
Moody College (Texas A&M University), Galveston, Texas

ABSTRACT

A new larval aporocotylid trematode, Cercaria mercenariae n. sp., is described from the gonadal tissue of the Southern quahog Mercenaria campechiensis (Gmelin) collected from Galveston, Texas. C. mercenariae most nearly resembles Cercaria loossi Stunkard, 1929. This is the first report of a cercaria from clams of the Genus Mercenaria.

INTRODUCTION

Adult digenetic trematodes of the Family Aporocotylidae are parasites of the circulatory system of fishes and reptiles. The larvae of marine species develop in sporocysts in bivalved molluscs, and in either sporocysts (Linton 1915) or rediae (Martin 1952) in polychaete annelids. The cercariae are aphyaryngeate, longicercous, and brevifurcous. A penetration organ is present on the anterior end of the body, connected by long ducts to four or five pairs of midbody penetration glands. A median dorsal fin is often present on the body and fins may also be present on the caudal furcae.

Aporocotylid trematodes have an unusual life cycle in which there is no encysted metacercarial stage. The cercariae leave the intermediate host and penetrate directly into the circulatory system of the definitive vertebrate host.

MATERIALS AND METHODS

Southern quahogs were hand collected in the intertidal zone on the northwestern shore of Galveston Island at San Luis Pass and Terramar Beach, Texas. The animals were dissected in 20 ppt. artificial seawater and various tissues were inspected under a dissecting microscope for the presence of trematode larvae. Drawings and measurements of the parasites were made from living specimens under moderate cover-slip pressure and measurements are given in millimeters.

RESULTS

A single species of cercaria was found and is described below:

Description

Body of cercaria (Fig. 1) 0.24 to 0.26 long and 0.03 to 0.07 wide. Undulating fin present, inserted on dorsal surface of body above body of anteriormost mid-

1 Present Address: Sea Grant Office, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062.

body penetration gland, and terminating posteriorly midway between intestinal crura and excretory bladder. Five pairs of penetration glands (Fig. 2) staining light pink with neutral red, situated lateral to esophagus, their ducts extending forward and opening medially into slightly subterminal suckerless oral cavity. Esophagus 0.12 to 0.15 long and straight, extending just into posterior half of body then branching into two relatively short intestinal crura, each 0.01 to 0.03 long, staining pink with neutral red. Excretory bladder “V” shaped and 0.02 to 0.04 in height. Collecting tubules extending anterior to fork of intestine then branching into two finer collecting tubules. Three pairs of flame cells occurring in positions shown in Figure 2. Integument on anterior half of body minutely spinose, spines coarser on penetration organ. Posterior half of body and tail aspinose. Tail stem 0.28 to 0.39 long and bearing two symmetrical furcae 0.06 to 0.14 in length, each with lateral fins arising at base of furcae and confluent around furcal tips. Lateral fins not extending anterior to tail fork. Median excretory tubule extending from opening of excretory bladder and branching with caudal furcae, opening at each furcal tip.

Sporocysts (Fig. 3) pale white, 0.23 to 0.35 long and 0.11 to 0.21 wide, containing up to seven discernible cercariae and two to four additional germ balls. Sporocysts appearing a pale white mass in gonad of host clam. No host gametes seen, indicating parasitic interference with gamete production since uninfected clams of comparable size contained mature eggs and sperm. This cercaria is named after its molluscan host.

**Host:** *Mercenaria campechiensis* (Gmelin), southern quahog

**Locality and Incidence:** San Luis Pass 3 of 5 clams (60.0%); Terramar Beach, 5 of 23 clams (21.7%). Both sites are on the north shore of the western portion of Galveston Island.

**Seasonality:** All infected clams were taken during the month of August. Six clams from Terramar Beach in March were not found to be infected.

**Host Size:** The eight infected clams ranged in size between 46 and 70 mm (maximum shell dimension) averaging 53.8 mm. The twenty uninfected clams examined from the two stations where the parasite was found ranged in size from 57 to 114, averaging 90.5 mm.

*Cercaria mercenariae* most nearly resembles *Cercaria loossi* Stunkard, 1929 in the possession of five pairs of penetration glands, three pairs of flame cells, a V-shaped excretory bladder, and symmetrical caudal furcae whose lateral fins are confluent around the furcal tips. It differs from *C. loossi*, however in lacking a swelling of the excretory duct in the anterior portion of the tail stem, and in that the lateral fins of the caudal furcae of *C. mercenariae* do not extend anterior to the tail fork as they do in *C. loossi*. Four species of adult aporocotylids have been reported from marine fishes in the Gulf of Mexico. Two of these were reported from host species which Parker (1965) lists as being present in Galveston Bay. *Cardicola laruei* Short, 1953 parasitizes the heart of *Cynoscion nebulosus* and *C. arenarius*. Both of these fishes are found throughout the year in all parts of the Galveston Bay system. *Selachohemecusolsoni* Short, 1954 inhabits the heart of
Figs. 1–3. Larval stages of *Cercaria mercenariae* from *Mercenaria campechiensis*. 1. Lateral view of body of cercaria, with caudal furcae rotated 90° around axis of tail stem to present dorso-ventral view. 2. Ventral view of body of cercaria. Flame cells omitted from right side. 3. Sporocyst.

*Rhizoprionodon terraenovae* (as *Scolidon*) a small shark which according to Parker (1965) is a rare summer visitor to West Bay.

*Cercaria mercenariae* was found only in clams from the high salinity (25–30%) portion of West Bay along the western part of the north shore of Galveston Island during the month of August. The same species of clam was also found
living in the sand beyond the surf zone along Galveston Beach, but twenty clams from those habitats were examined and not found to be infected.

In view of the geographical and seasonal correlation of the occurrence of *Rhizoprionodon terraenovae* and the aporocotylid infections of *Mercenaria*, this shark appears more likely to be the definitive host than the two species of *Cynoscion* cited above, which are less restricted in habitat and seasonality.

This is the first known record of a cercaria developing in clams of the genus *Mercenaria*. *M. campechiensis* is of a limited use on the western Gulf Coast as a human food source, but its relative, *Mercenaria mercenaria*, the northern quahog or hard clam, is a commercially important species on the U.S. East Coast. The larger adults are harvested for use in chowder and the smaller ones are marketed as “cherrystone clams” and meats are consumed whole. The only other trematode reported from quahogs (*Mercenaria*) is the metacercarial stage of an echinostome described as *Himasthla muehlensi* by Vögel (1933) in New York. This parasite was reported to be capable of infecting humans.

**ACKNOWLEDGMENTS**

The author is indebted to Dr. S. H. Hopkins of Texas A&M University under whose guidance the work was performed. Thanks are also due to Dr. S. M. Ray of Moody College who authorized the use of laboratory facilities wherein this study was conducted.

**LITERATURE CITED**


