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Glaucivermis spinosus gen. et sp. n. (Digenea: Zoogonidae) from the Southern Kingfish, *Menticirrhus americanus* (Linnaeus), in the Coastal Waters of Mississippi

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GLAUCIVERMIS SPINOSUS GEN. ET SP. N. (DIGENEA: ZOOGONIDAE) FROM THE SOUTHERN KINGFISH, *MENTICIRRHUS AMERICANUS* (LINNAEUS), IN THE COASTAL WATERS OF MISSISSIPPI*

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ABSTRACT: *Glaucivermis spinosus* is described from the intestine and pyloric ceca of *Menticirrhus americanus* collected near Ocean Springs, Mississippi, in the Gulf of Mexico and adjacent waters. The genus is characterized primarily by having a preacetabular intestinal bifurcation, a preacetabular sinistral genital pore, a bilobed vitellarium, a swelling of Laurer's canal to form the seminal receptacle, and tandem to diagonal testes. It is most similar to the genus *Diphtherostomum* from which it differs primarily in the arrangement of the testes.

Specimens of a new species of zoogonid trematode were collected during the spring and autumn of 1970 from *Menticirrhus americanus* in water of both high and low salinity near Ocean Springs, Mississippi. Because of the unique arrangement of the testes, a new genus is erected for the worm.

Living trematodes were fixed in hot AFA solution and subsequently stained with Van Cleave's hematoxylin. All measurements are given in microns.

Glaucivermis gen. n.

Diagnosis: Body small, spinose; oral spines present. Oral sucker terminal. Prepharynx short. Bifurcation of esophagus preacetabular. Ceca terminating in or slightly posterior to acetabular zone. Acetabulum without prominent lip. Genital pore sinistral, preacetabular. Testes tandem to diagonal, usually completely in hindbody. Cirrus sac extending into acetabular level; containing large prostatic vesicle and bipartite seminal vesicle. Cirrus with minute papillae. Ovary between anterior and lateral to forward testis, seldom overlapping it. Seminal receptacle a swelling of Laurer's canal. Vitellarium bilobed, near posterior portion of ovary. Uterus filling most of hindbody. "Metraterm" well developed. Eggs containing miracidia without eyespots. Parasites of marine fishes. Type and only species:

Glaucivermis spinosus sp. n.
(Figs. 1–5)

Description (based on 18 mature specimens): Body usually spindle-shaped, with forebody attenuated and posterior end of body usually more pointed than anterior; 412 to 795 long by 119 to 175 in maximum width (at acetabular level). Tegument completely spinose; spines of hindbody short and fine; spines of forebody robust and thornlike, somewhat smaller anteriorly and very short around oral sucker except most anterior row on dorsal side with 9 to 11 (10 on 16 specimens) large globular spines. Numerous small elongated gland cells opening externally, primarily in forebody. Oral sucker funnel-shaped, 51 to 79 long by 49 to 70 wide. Acetabulum weakly developed, 63 to 91 long by 61 to 81 wide. Sucker width ratio 1:1.0 to 1.4. Forebody 45 to 57% of body length. Prepharynx short when evident. Pharynx 28 to 37 long by 19 to 23 wide, with 4 inconspicuous anterior lobes. Esophagus 1.7 to 7.2 times length of pharynx.

Testes smooth to somewhat irregular, usually contiguous but occasionally well separated; anterior testis 70 to 98 long by 37 to 81 wide, usually postacetabular, sometimes at acetabular level; posterior testis 67 to 112 long by 44 to 67 wide. Posttesticular space 6 to 17% of body length. Genital pore at or near margin of body. Cirrus sac arcuate, 112 to 216 long by 33 to 44 wide, or 3 to 5 times longer than wide, extending to anterior margin or middle of acetabulum; cirrus when retracted a little more than ⅓ length of sac.

Ovary smooth, 58 to 88 long by 42 to 70 wide, usually somewhat dextral, overlapping posterior portion of acetabulum. Vitellarium deeply bilobed, either larger or smaller than ovary. Uterus with proximal end usually filled with sperm, distal end having muscular portion before joining "metraterm." "Metraterm" (= terminal organ) conspicuous, muscular, with fine delicate papillae, 61 to 88 long by 21 to 44 wide, or about 2 to 4 times longer than wide, with conspicuous outpouching near distal end, joining to short genital atrium by short narrow muscular duct. Eggs 24 to 30 long by 12 to 16 wide in mounted specimens, 26 to 34 by 16 to 19 in living ones; egg shell prominent, operculated.

Excretory vesicle saccular, epitheliated, usually

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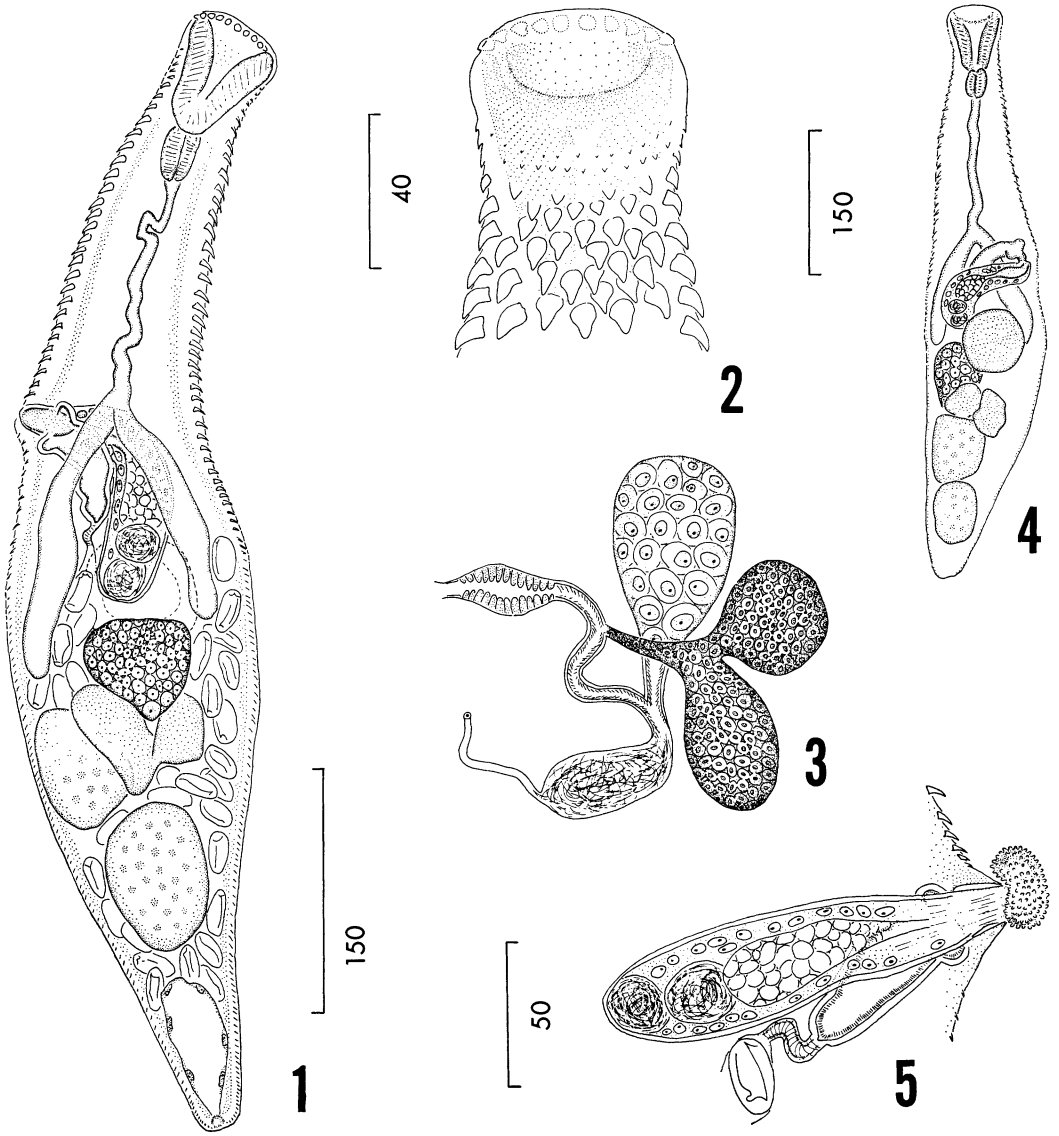

FIGURES 1–5. *Glaucivermis spinosus.* **1.** Holotype, eggs covering organs omitted, dorsal view. **2.** Anterior end of body of a paratype, ventral view. **3.** Female genitalia, dorsal view. **4.** Atypical specimen with anterior testis larger than posterior one and "metraterm" extending anterior to genital pore, typical gonad arrangement, ventral view. **5.** Cirrus sac with extruded cirrus, ventral view. All illustrations were drawn with the aid of a camera lucida except Fig. 3 which was drawn freehand from living material. Scale values are microns.

occupying entire posttesticular space; pore terminal.

Type host: Menticirrhus americanus (Linnaeus), southern kingfish, Sciaenidae (drum family).

Sites: Intestine, usually anterior portion, and pyloric ceca.

Localities: Immediately south of Horn Island and in Davis Bayou, both near Ocean Springs, Mississippi.

Holotype: USNM Helm. Coll. No. 71763; Paratype: No. 71764.

REMARKS

The name *Glaucivermis* is derived from the Latin name "Glaucus," a sea-god mentioned in Greek mythology as bearing responsibility for Scylla's becoming a monster, and "vermis"

meaning "worm." The genus is treated as masculine in gender. The Latin specific name "spinosus" refers to the robust spines on the forebody.

DISCUSSION

Glaucivermis spinosus differs from species in the other zoogonid genera by having tandem to diagonal testes which are typically postacetabular. Another important character, but one difficult to determine on most fixed specimens, is the swelling of the Laurer's canal, whether filled with sperm or not, to form the "seminal receptacle." This arrangement is apparently characteristic of *Zoonogenus vividus* Nicoll, 1912, and could also be present, but undetermined, for other species.

The most similar genus with respect to the shape of the vitellarium and position of the intestinal bifurcation and genital pore is *Diphtherostomum* Stossich, 1903. The testes in most species of *Diphtherostomum* are at the acetabular level, but in those with large suckers, they may be symmetrically or subsymmetrically arranged immediately posterior to the sucker. Other genera that also have members with a preacetabular intestinal bifurcation are *Zoogonoides* Odhner, 1902, with testes at the acetabular level and a compact vitellarium; *Parvipyrum* Pritchard, 1963, with the genital pore at the midacetabular level and a compact vitellarium; *Zoonogenus* Nicoll, 1912, a genus not accepted by Yamaguti (1958) but tentatively retained by Pritchard (1963), with testes at the acetabular level, a short esophagus, and a compact vitellarium; and *Brevicreadium* Manter, 1954, a genus Yamaguti (1958) considered a zoogonid, with vitelline follicles not compacted, an ovoid seminal vesicle, and no tegumental spines.

The highly muscular organ following the distal portion of the uterus is generally referred to in zoogonids as the metraterm. The distal portion of the uterus, however, in *G. spinosus* and other species is also muscular and controls passage of eggs, thus being the true metraterm. The terminal "metraterm" is lined with minute papillae giving a spinelike appearance. In fact, spines, which could be papillae, have been reported from zoogonids. The organ seems analogous to the terminal organ in monorchiids. Near the distal end of the organ in *G. spinosus* is a prominent ridge followed by a narrow neck before entering a short genital atrium. The ridge is continuous around the organ but generally only two lateral cavities are apparent. It is unknown whether these pouches aid in release or coating of the eggs, in copulation, or in some other function. Pouches near or from the genital atrium are also reported from *Zoogonoides acanthogobii* Yamaguti, 1938, and *Neozoogonus californicus* Arai, 1954, and suggested in the illustrations of *Zoonogenus vividus* Nicoll, 1912, and *Diphtherostomum microacetabulum* Schulman-Albowa, 1952. Arai (1954) assumed the structures to be accessory seminal receptacles. This is not the function, at least in *G. spinosus*, because the sperm have long tails and show difficulty remaining in the structure. The proximal portion of the uterus and dilated Laurer's canal are usually filled with sperm.

Glaucivermis spinosus is distinct from all other species in the family. Considering the shape of the body, tegumental spination, elongated esophagus, extension of the ceca and cirrus sac, muscular "metraterm," and bilobed vitellarium, it is most similar to *D. anisotremi* Nahhas and Cable, 1964. *Diphtherostomum anisotremi* can be easily separated from *G. spinosus* by its rounder oral sucker, quadrangular-shaped acetabulum, greater sucker ratio, arrangement of gonads, and thinner egg shells. In addition to the remarks about *D. anisotremi* by Overstreet (1969), it should be noted that examination of my specimens reveals a short prepharynx and no spines either on the cirrus or in the "metraterm." Further comments on this species are given by Fischthal and Thomas (1968).

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