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A REDESCRIPTION OF *ONCHOLAIMOIDES ELONGATUS* HOPPER, 1961 (NEMATODA: ENOPLIDA) WITH DESCRIPTIONS OF THE OTHER TWO MEMBERS OF THE GENUS

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ABSTRACT *Oncholaimoides elongatus* is redescribed from specimens collected from subtidal, shallow-water sediments from the Gulf of Mexico, Bay County, Florida. The original description of this species was based on a single male specimen from the Gulf of Mexico, Baldwin County, Alabama. Descriptions of *Oncholaimoides rugosus* and *Oncholaimoides striatus* from subtidal sediments of St. Andrew Bay, Bay County, Florida are given. A key to the species of *Oncholaimoides* is provided.

INTRODUCTION

The genus *Oncholaimoides* Chitwood, 1937 was proposed to receive two species of oncholaimoid free-living marine nematodes with a cuticle having transverse striations and longitudinal ridges. The longitudinal ridges are interrupted by the transverse striations. The degree of development of the cuticular striations and ridges was sufficient to differentiate the two species, and Chitwood (1937) gave few measurements and little additional descriptive information for the two species that he placed in the genus. *Oncholaimoides rugosus* Chitwood, 1937 was described from male and female specimens. The cuticle in this species has distinct coarse transverse striations and well-developed longitudinal ridges. *Oncholaimoides striatus* was described from two female specimens. The cuticle has fine transverse striations and much finer longitudinal ridges.

Hopper (1961) described the third species in the genus, *Oncholaimoides elongatus*, from a single male specimen from Gulf of Mexico, Baldwin County, Alabama. This species has a pattern of cuticular ridges similar to that of *O. striatus*. The specimen of *O. elongatus* was differentiated from *O. striatus* on the basis of a larger "a" value, larger amphid, and the presence of a distinct constriction of the tail immediately posterior to the cloaca. Gerlach and Riemann (1974) considered each specific name of the members of the genus as a lapsus and changed the names accordingly (*O. rugosum* to *O. rugosus*, etc.).

Male and female specimens of the three species of *Oncholaimoides* were collected from shallow-water subtidal sediments from the Gulf of Mexico and St. Andrew Bay, Bay County, Florida. The purpose of this paper is to provide a more detailed description of the members of the genus *Oncholaimoides* and provide an amended key to the species.

MATERIALS AND METHODS

Sediment samples were obtained from water 1–5 feet deep (Mean Low Tide) with a 4.5 cm diameter corer to a depth of approximately 10 cm in the sediment. Nematodes were extracted from the sediment samples by repeated washing and decanting. Nematodes were removed alive and fixed in hot 4% formalin in seawater or hot alcohol-formalin-acetic acid for at least 24 hours, cleared in glycerin, and mounted in anhydrous glycerin on Cobb slides. The mean of the measurements is followed by the range in parentheses.

RESULTS

Genus *Oncholaimoides* Chitwood, 1937

Oral opening surrounded by six lips bearing an internal circle of six papillae and an external circle of 10 setae posterior to lips; amphids with elliptical to ovoid openings, moderate to large in size; stoma wide, containing one large (right subventral tooth) and two small teeth (left subventral and dorsal teeth equal). Cuticle transversely striated, bearing longitudinal ridges broken by striae. Male with two short straight spicules. Female with two ovaries; demanian system apparently absent. Caudal glands and spinneret present.

Oncholaimoides elongatus Hopper, 1961

Figures 1–6, 22

Description

Body slender. Cuticle with fine transverse striations beginning just posterior to level of cephalic setae, extending almost to tail tip. Longitudinal striations very

PLATE I

Oncholaimoides elongatus

Figures 1-6. (1) Female, anterior end, lateral view; (2) Male, anterior end, lateral view; (3) Female tail, lateral view; (4) Male specimen 1, left lateral view, cloacal region; (5) Male specimen 2, left lateral view, cloacal region; (6) Male, posterior end, left lateral view.

PLATE II

Oncholaimoides striatus

Figures 7-13. (7) Female, anterior end, lateral view; (8) Male, anterior end, lateral view; (9) Cuticular striations and ridges, midbody; (10) Female, tail, lateral view; (11) Male, posterior end, left lateral view; (12) Male specimen 1, left lateral view, cloacal region; (13) Male specimen 2, right lateral view, cloacal region.

fine and difficult to discern; begin about midway between anterior end and nerve ring, and fade at level of anus. Cervical setae present to level of nerve ring, somatic setae not observed, caudal setae present in males, not observed in females. Male amphid aperture posterior to midlevel of buccal cavity, bow-shaped with lateral and posterior margins more heavily cuticularized than anterior margin; width 51.1% (45.8–58.3) of head diameter. Female amphid aperture at midlevel of buccal cavity, lateral and posterior margins not heavily cuticularized; width 31.8% (30.0–33.9) of head diameter. Excretory pore small, posterior to nerve ring; duct very narrow. Male tail abruptly reduced in diameter just posterior to cloaca, then cylindrical. Female tail conical, then cylindrical.

Male (n = 8) – Body length 2.32 mm (1.85–2.53); width at midbody 37.6 μ m (35.0–45.0). Head diameter 23.0 μ m (22.0–24.0) at level of cephalic setae; cephalic setae 8.0 μ m (8.0–8.0) and 6.5 μ m (6.0–7.0) long. Amphid 12.6 μ m (11.0–14.0) wide. Buccal cavity 25.6 μ m (24.0–27.0) long, 15.3 μ m (14.0–16.0) wide. Esophagus 352 μ m (317–382) long; nerve ring 161 μ m (142–178), excretory pore 207 μ m (176–224) from anterior end. Tail with six pairs short circumcloacal setae; cloacal region slightly depressed. Tail 118 μ m (99–131) long; 21.8 μ m (19.0–24.0) wide at cloaca. Caudal setae present as subventral pairs, four submedian setae at tail tip. Spicules short, straight, broad, 22.8 μ m (21.0–26.0) long; gubernaculum absent. a = 59.4 (52.9–68.3); b = 6.33 (5.83–6.93); c = 19.1 (14.4–23.7).

Female (n = 4) – Body length 2.09 mm (1.89–2.31); width at midbody 48.5 μ m (42.0–51.0). Head diameter 24.0 μ m (22.0–26.0) at level of cephalic setae; cephalic setae 7.5 μ m (7.0–8.0) and 6.0 μ m (6.0–6.0) long. Amphid 6.5 μ m (6.0–7.0) wide. Buccal cavity 26.5 μ m (26.0–27.0) long, 16.5 μ m (16.0–18.0) wide. Esophagus 349 μ m (330–379) long; nerve ring 164 μ m (154–179), excretory pore 210 μ m (200–221) from anterior end. Tail 150 μ m (141–154) long; 21.8 μ m (21.0–22.0) wide at anus. Reproductive system amphidelphic; ovaries reflexed; demanian system not observed. Vulva 1.16 mm (1.05–1.29) from anterior end. a = 43.2 (40.0–45.3); b = 5.98 (5.72–6.16); c = 14.3 (12.3–16.4); V = 55.5% (55–56).

Remarks

The specimens described above as *O. elongatus* differ in some aspects from the original description. One obvious difference is in the length of the buccal cavity. However, examination of the description of the type specimen given by Hopper (1961) revealed a discrepancy between the written description and the figures. The description states that the head diameter is 25 μ m and the buccal cavity is 55 μ m deep. Examination of figure 10 of the original description reveals that the buccal cavity is about equal in depth to the head

diameter rather than 2.2 times greater. Application of the scale to the drawing confirms that the buccal cavity is about equal to the head diameter or 25 μ m deep.

The specimens described above as *O. elongatus* are shorter in body length than the type specimen and the "a" value is smaller. Hopper (1961) reported the "a" value for the type specimen as 97.5 mm. However, the specimens are similar to the description of the type specimen in the presence of a large amphid, fine transverse striations, very fine longitudinal striations, shape and length of spicules, and shape of the tail. The specimens described herein as *O. elongatus* are considered such based upon these similarities. Because the original description was based on a single male, the sexual dimorphism in width and appearance of the amphid that is reported here could not have been determined.

Locality

Fine subtidal sand from water about 1–1.5 m deep, Gulf of Mexico (85°56'54"W and 30°15'00"N).

Specimens

Two males, National Museum of Natural History, USNM 77181, 77182; one female, USNM 77183.

Oncholaimoides striatus Chitwood, 1937

Figures 7–13, 21, 23

Description

Body broad. Cuticle with fine transverse striations and fine longitudinal ridges. Transverse striations begin just posterior to level of cephalic setae. Longitudinal ridges poorly developed anteriorly and posteriorly, best observed in midbody region. Amphid at midlevel of buccal cavity, lateral and posterior margins more cuticularized than anterior margin. Male amphid width 41.6% (38–47) of head diameter; female amphid width 33% (30–38) of head diameter. Cervical setae present to level of nerve ring; somatic setae not observed, caudal setae present in male, not observed in female. Excretory pore small, posterior to nerve ring, duct very narrow. Tail in both sexes conical then cylindrical, tip clavate.

Male (n = 7) – Body length 2.13 mm (1.79–2.45); width at midbody 66.0 μ m (59.0–70.0). Head diameter 29.7 μ m (27.0–32.0) at level cephalic setae; cephalic setae 8.0 μ m (7.0–9.0) and 6.0 μ m (6.0–6.0) long. Amphid width 12.0 μ m (11.0–14.0). Buccal cavity 29.0 μ m (27.0–32.0) long; 19.2 μ m (18.0–22.0) wide. Esophagus 333 μ m (301–370) long; nerve ring 166 μ m (154–176), excretory pore 233 μ m (224–240) from anterior end. Tail conical with 6–7 pairs circum-

PLATE III

Oncholaimoides rugosus

Figures 14–19. (14) Male, anterior end, lateral view; (15) Female, anterior end, lateral view; (16) Cuticular striations and ridges, midbody; (17) Female, tail, lateral view; (18) Male, left lateral view, cloacal region; (19) Male, posterior end, left lateral view.

PLATE IV

Figure 20. *O. rugosus*. Cuticular pattern, anterior end. Scale bar = 5 μ m. Figure 21. *O. striatus*. Cuticular pattern, midbody. Scale bar = 5 μ m. Figure 22. *O. elongatus*. Male, posterior end. Scale bar = 40 μ m. Figure 23. *O. striatus*. Male posterior end. Scale bar = 40 μ m. Figure 24. *O. rugosus*. Male posterior end. Scale bar = 40 μ m.

cloacal setae. Tail 140 μm (127–144) long; 26.6 μm (24.0–30.0) wide at cloaca. Caudal setae present as subventral pairs, two subdorsal setae (one long, one short) and single subventral seta on each side at tailtip. Spicules short straight narrow 29.0 μm (26.0–32.0) long; gubernaculum absent. $a = 32.4$ (28.3–41.5); $b = 6.38$ (5.94–6.76); $c = 15.2$ (12.5–17.8).

Female ($n = 5$) – Body length 2.36 mm (2.11–2.53), width at midbody 87.4 μm (74.0–101.0). Head diameter 31.2 μm (28.0–35.0) at level of cephalic setae; cephalic setae 8.0 μm (7.0–9.0) and 6.0 μm (6.0–6.0) long. Amphid width 10.5 μm (10.0–11.0). Buccal cavity 29.5 μm (29.0–30.0) long, 20.0 μm (19.0–22.0) wide. Esophagus 345 μm (320–362) long; nerve ring 174 μm (163–182), excretory pore 225 μm (216–240) from anterior end. Tail 144 μm (128–158) long; 28.4 μm (26.0–32.0) wide at anus. Vulva 1.25 mm (1.06–1.52) from anterior end. Reproductive system amphidelphic; ovaries reflexed; demanian system not observed. $a = 27.7$ (23.0–33.1); $b = 6.85$ (6.66–7.02); $c = 16.5$ (15.5–18.2); $V = 53\%$ (50–60).

Remarks

Chitwood (1937) described *O. striatus* from two female specimens from North Carolina. He described the cuticle of this species as finely striated with minute longitudinal ridges. His drawing of this specimen shows that the longitudinal ridges are distinct in the head region. The specimens described herein have longitudinal ridges apparent from about 1/2 distance from anterior end to the nerve ring to about the level of the anus.

Locality

Several locations from subtidal sediments, both vegetated and nonvegetated in St. Andrew Bay, Bay County, Florida.

Specimens

Three males, USNM 77184, 77185, 77186; two females, USNM 77187, 77188; one juvenile USNM 77189.

Oncholaimoides rugosus Chitwood, 1937

Figures 14–19, 20, 24

Description

Body short, broad. Cuticle with coarse transverse striations and well developed longitudinal ridges. Longitudinal ridges broken into oblong elevated areas of varying lengths over length of body. Transverse striations begin just posterior to cephalic setae. Longitudinal ridges and pattern begin just posterior to buccal

cavity and extend to just anterior to cloaca in male and anus in female, not evident on tail. Amphid at midlevel of buccal cavity. Male amphid with cuticularized walls posteriorly and laterally; cuticularization absent in female amphid. Short cervical setae present to level of nerve ring; somatic setae not observed; caudal setae present. Excretory pore not observed. Tail conical, tip clavate.

Male ($n = 7$) – Body length 1.87 mm (1.65–2.15); width at midbody 61.8 μm (56.0–64.0). Head diameter 21.7 μm (19.0–23.0) at level cephalic setae; cephalic setae 5.0 μm (4.0–6.0) and 4.0 μm (3.0–5.0) long. Amphid width 9.3 μm (8.0–12.0). Buccal cavity 23.0 μm (22.0–25.0) long and 15.4 μm (14.0–18.0) wide. Esophagus 263 μm (256–270) long; nerve ring 146 μm (139–155) from anterior end. Tail 158 μm (149–167) long, 22.4 μm (22.0–24.0) wide at cloaca. Tail with 8–10 pairs circumcloacal setae, caudal setae present; three pairs at tail tip. Spicules short gently curved, 27.4 μm (22.0–29.0) long; gubernaculum absent. $a = 31.4$ (28.0–37.0); $b = 7.08$ (6.30–8.00); $c = 11.8$ (11.1–13.7).

Female ($n = 2$) – Body length 1.84 mm (1.80–1.88); width at midbody 83.0 μm (81.0–85.0). Head diameter 25.5 μm (24.0–27.0) at level cephalic setae; cephalic setae 6.0 μm (6.0–6.0) and 5.0 μm (5.0–5.0) long. Amphid width 6.5 μm (6.0–7.0). Buccal cavity 21.0 μm (20.0–22.0) long, 18.0 μm (18.0–18.0) wide. Esophagus 258 μm (256–259) long; nerve ring 144 μm (139–148) from anterior end. Tail 163 μm (160–166) long, 24.0 μm (24.0–24.0) wide at anus. Caudal setae present near tail tip. Vulva 838 μm (810–865) from anterior end. Reproductive system amphidelphic; ovaries reflexed; demanian system not observed. $a = 22.2$ (21.2–23.2); $b = 7.14$ (6.90–7.34); $c = 11.3$ (11.3–11.3); $V = 45.5\%$ (45.0–46.0).

Remarks

The specimens described herein agree closely with the original description.

Locality

Several locations from nonvegetated sediments in St. Andrew Bay, Bay County, Florida.

Specimens

Two males, USNM 77190, 77191; one female, USNM 77192.

DISCUSSION

Chitwood (1937) separated *O. striatus* from *O. rugosus* on the basis of the varying degree of development of the cuticular striations and ridges. Hopper

(1961) differentiated *O. elongatus* from the closely related *O. striatus* on the basis of the greater body length, greater amphid size, and larger "a" value in *O. elongatus*.

The specimens described herein as *O. elongatus* are similar in body length to *O. striatus*. However, the specimens of *O. elongatus* have a larger "a" value

(1.83 times that of *O. striatus* males and 1.56 times that of *O. striatus* females), more pronounced sexual dimorphism in size and shape of the amphid, spicules are broader, and the male tail has a more definite constriction just posterior to the cloaca as described by Hopper (1961). The following key is based on that given by Hopper (1961).

KEY TO THE SPECIES OF *ONCHOLAIMOIDES*

1. Cuticle with coarse striations and ridges *O. rugosus* Chitwood, 1937
 Cuticle with finer striations and less pronounced longitudinal ridges 2
2. Male amphid not less than 45.8% (mean = 51.1%) of head diameter; "a" value 52.9–97.5. Female "a" value 40.0–45.3 *O. elongatus* Hopper, 1961
 Male amphid not more than 47.0% (mean = 41.6%) of head diameter; "a" value 28.3–41.5. Female "a" value 25.0–37.0 *O. striatus* Chitwood, 1937

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