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in the Gulf of Mexico

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***Terranova ceticola* n. sp. (Nematoda: Anisakidae) from the Dwarf Sperm Whale, *Kogia simus* (Owen), in the Gulf of Mexico**

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Abstract

Terranova ceticola n. sp. is described from specimens in the stomachs of an individual dwarf sperm whale, *Kogia simus*, which stranded on the beach at Biloxi, Mississippi. It is characterized by possessing a single pair of medial preanal papillae, 38 to 40 pairs of lateral preanal papillae, five pairs of postanal papillae, and spicules 1 to 2% of the body length and by lacking cuticular plates at the posterior anal lip of males.

Introduction

The genus *Terranova* Leiper & Atkinson, 1914 contains about 20 species which parasitize elasmobranchs, reptiles, and mammals. A young dwarf sperm whale, *Kogia simus* (Owen), stranded on the beach at Biloxi, Mississippi, in 1973, contained an additional species previously referred to as *Terranova* sp. by Gunter & Overstreet (1974) which occurred in the stomachs together with *Anisakis typica* (Diesing, 1861) and which is described below.

Materials and methods

Specimens were removed from the host, fixed in glacial acetic acid, stored in a solution of 5 parts glycerin and 95 parts 70% ethyl alcohol, and examined in glycerin after evaporation of the alcohol. All figures were drawn with the aid of a drawing tube.

***Terranova ceticola* n. sp.**

General: Body reaching greatest width near midbody. Cuticle with inconspicuous annulations. Lips approximately equal in size, widest at base, all wider than long, all bearing bidentate projection on anterior extremity; projection with dentigerous border; dorsal lip with two lateral double papillae; subventral lips each with single lateral papilla, amphid, and mediolateral double papilla; internal pulp not constricted near base. Interlabia absent. Oesophagus 8 to 11% of body length. Ventriculus narrower than widest level of oesophagus, widest at posterior extremity, longer than broad. Nerve ring located around anterior 15 to 19% of oesophagus. Cervical papillar pair prominent, near level of nerve ring. Excretory pore opening between bases of subventral lips. Tail conical, lacking ornamentation.

Male (Five specimens): Body 17.5–25.5 mm long by 543–693 μm wide at greatest width; ratio of greatest width to length 1:31–40. Lips 48–103 μm long by 84–110 μm wide. Nerve ring with center 321–457 μm from anterior extremity, 36–61 μm in breadth. Oesophagus 1.8–2.4 mm long by 222–327 μm wide. Ventriculus 488–605 μm long by 129–203 μm wide. Intestinal caecum 0.4–0.6 mm long by 135–253 μm wide; ratio of caecal to oesophageal lengths 1:3.0–3.8. Spicules equal, 265–313 μm long by 18–21 μm wide, 1 to 2% of body length; spicule ratio 1:1.0. Caudal papillae 44–51 pairs; preanal pairs 38–40, becoming more lateral and irregularly spaced as progressing anteriorly; medial preanal pair 1, located immediately above lateral portion of anterior anal lip; postanal pairs 5, with pairs 1, 3, and 5 from posterior located slightly more ventral than pairs 2 and 4, with pair 5 doubled and conspicuously larger than others; para-anal papillae lacking. Tail flexed ventrad, 216–294 μm long. phasmids just lateral to postanal pairs 1 and 2.

Female (Ten specimens): Body 18–24 mm long by 583–961 μm wide; ratio of greatest width to length 1:21–38. Lips 67–101 μm long by 91–106 μm wide. Nerve ring with center 296–414 μm from anterior extremity, 36–57 μm in breadth. Oesophagus 1.8–2.4 mm long by 203–253 μm wide. Ventriculus 618–788 μm long by 141–236 μm wide. Intestinal caecum 0.7–1.2 mm long by 191–333 μm wide; ratio of caecal to oesophageal lengths 1:1.6–2.9. Vulva with salient lips, opening 5.8–8.0 mm or 31 to 37% of body length from anterior extremity. Vagina vera with thick muscular wall, 185–247 μm long by 148–203 μm at widest point, extending posteriorly from vulva; uterus didelphic, opisthodelphic; ovaries rarely extending anterior to level of vulva. Eggs 26–43 μm in diameter. Tail 222–370 μm long, with phasmids located laterally midway between anus and posterior extremity.

Host: *Kogia simus* (Owen) dwarf sperm whale (Physeteridae).

Sites of infection: Stomachs.

Locality: Stranded on Biloxi Beach, Mississippi, USA.

Specimens deposited: Holotype, male, USNM Helm. Coll. No. 75953; Allotype, female, No. 75954; Paratypes, No. 75955 (pair) – Helminthological Collection of the Commonwealth Institute of Helminthology No. BI031.

Etymology: The Latin “cetus,” meaning whale, refers to the host, and the suffix “cola” means inhabiting.

Figures 1-10. *Terranova ceticola*

1. Dorsal view of lips. 2. Ventral view of lips. 3. Posterior extremity of female tail, lateral view. 4. Body at level of intestinal-ventricular junction, male. 5. *En face*. 6. Vulva. 7. Male tail showing postanal papillae, lateral view. 8. Male tail showing postanal and medial preanal papillae, ventral view. 9. Posterior end of male showing caudal papillae and spicules, lateral view. 10. Posterior end of female tail, lateral view.

Discussion

By possessing one pair of single, medial preanal papillae, *T. ceticola* most closely resembles *T. lanceolata* (Molin, 1860) in the crocodilian *Melanosuchus niger* (Spix) from Brazil and *T. galeocerdonis* (Thwaite, 1927) in the tiger shark *Galeocерdo tigrinum* (Lesueur) from Sri Lanka. On *T. ceticola* and *T. lanceolata* these papillae occur lateral to each other, whereas on *T. galeocerdonis*, the arrangement differs. For the original description, Thwaite (1927) reported a large single median papilla, and for another report on specimens identified as the same species from three sharks in Australia, Johnston & Mawson (1951) illustrated and described two, median, tandem papillae. Males of both *T. galeocerdonis* and *T. lanceolata*, but not *T. ceticola*, have caudal cuticular plates.

Three papers document *Terranova* in dwarf or pigmy sperm whales. Johnston & Mawson (1939) described *Porrocaecum kogiae* Johnston & Mawson, 1939 from the pigmy sperm whale, *Kogia breviceps* (Blainville), captured in South Australia and Queensland. Later (1945) they transferred the species to the genus *Terranova* because it lacked interlabia. *Terranova ceticola* differs by having 38–40 preanal plus 5 postanal papillae rather than 65–70 plus 6, by lacking three transverse rows of cuticular plates (= plectanes of Sprent, 1979) at the posterior anal lip, and by the presumed location of the excretory pore in *T. kogiae*. Because the pore in *T. kogiae* was described as opening near the nerve ring rather than between the subventral lips, Mozgovoi (1951) erected the genus *Pseudoterranova* for it. Since other structures near the level of the nerve ring may be misconstrued as the excretory pore, the location of the excretory pore should be confirmed in those specimens deposited by Johnston & Mawson. Hartwich (1974) excluded *Pseudoterranova* from his key because it was incompletely described. Dollfus (1966) briefly described two male specimens of *Terranova* sp. from *K. breviceps* stranded at Charente-Maritime, France. The specimens were 12.5 and 25.0 mm long and had spicules 283 and 181–237 μ m long or 2.2 and 0.7 to 0.9% of the total body length, respectively. Although the numbers of papillae were not discussed by Dollfus, the illustration of the 25 mm individual showed an apparently different papillar pattern from that in the present specimens. Dollfus questioned whether his specimens were conspecific and refrained from naming them. The third paper, by Gunter & Overstreet (1974), reported the specimens we describe as *T. ceticola*.

No species of *Terranova* has been previously reported from the Gulf of Mexico. However, *T. caballeroi* Barus & Coy Otero, 1966 infects snakes in Cuba and Louisiana; *T. brevicapitata* (Linton, 1901) infects the little skate, *Raja erinacea* Mitchill, in Woods Hole, Massachusetts; and *T. ginglymostomae* Olsen, 1952 infects the nurse shark, *Ginglymostoma cirratum* (Bonnaterre), in Tortugas, Florida. *Terranova ceticola* differs from *T. caballeroi* by lacking both an unpaired, median, double papilla on the anterior lip of the anus and three cuticular plates at the posterior anal lip; from *T. brevicapitata* by having five, rather than eight postanal papillae; and from *T. ginglymostomae* by having 38–40 preanal and 5 postanal papillae, rather than 51–59 preanal and 7 postanal ones, by possessing one pair of single, median, preanal papillae, instead of a single relatively large median one, and by lacking ventral cuticular plates on the males.

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