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Sipunculus marcusi spec. nov. (Sipuncula) from Southern Brazil

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RESUMO

Descreve-se *Sipunculus marcusi* spec. nov. da costa do Estado de São Paulo. A espécie em questão difere das outras do gênero *Sipunculus* principalmente pelas imensas bases dos músculos retratores da probóscide; estas bases estão unidas umas às outras abrangendo cerca de 18 faixas musculares longitudinais em cada lado do cordão nervoso ventral.

ABSTRACT

Sipunculus marcusi spec. nov. from the coast of the State of São Paulo is described. It differs from all others of the genus *Sipunculus* mainly by the possession of wide bases of the retractor muscles of the proboscis; these bases are united to each other spanning from 18 longitudinal muscle bands on each side of the ventral nerve cord.

INTRODUCTION

An inspection on the monograph by Stephen and Edmonds (1972) reveals that of the 321 "valid" species of sipunculans listed and described there only 2.5% were reported as occurring on the coast of Brazil. Moreover, most of the information about the species which inhabit our coast is related to dredged material.

On studying a collection of sipunculans from the middle intertidal of the Northern littoral of the State of São Paulo, a new species of *Sipunculus* was found, being described here. A paper on the other three common *Sipunculus* from Southern Brazil is now in preparation.

The species here described is named to honour the memory of Prof. Ernst Marcus.

Sipunculus marcusi spec. nov. (Figs. 1-3)

Description

External features: The rose coloured trunk is 325 mm long by a mean diameter of 18 mm; introvert plus tentacles 40 mm. The trunk has 168 annuli, the last 15 mm being smooth. Anal aperture situated 24 annuli behind the introvert; nephropores positioned 7-8 annuli in front of the anus. Four leaf-like tentacles are present. The introvert papillae (Fig. 1, i.p.) are triangular in shape with blunt end; they are not arranged in regular rows or circles.

Internal anatomy: The alimentary canal is composed of a long oesophagus (Fig. 2, o) attached to the retractor muscles of the proboscis by very thin mesenteries to a point where it bends to start the accessory intestinal spiral (A). The regular intestinal spiral (B) is made up of 18-20 coils fastened to the body wall by numerous strands of tissue (f). On the long rectum (r) there is a thumb like caecum (c). The intestine of the specimen examined was ruptured at the level of the beginning of spiral A; most of the coils were filled with coarse clean sand.

The muscular system consists of 35 longitudinal muscle bands (m.b.) which do not anastomose, being well separated from each other; they were counted at different levels of the trunk; 35 in front of the nephridia, 36 at the end of the anterior third, and 35 at the second and posterior thirds. A very thin wing muscle (w) surrounds the rectum and spreads to the base of the dorsal retractors. Attached to the wing muscle there is a pair of well developed racemose glands (g). The spindle muscle (s) anchors 10 mm in front of the anal aperture and on descending the intestinal spire makes contact with the caecum. This muscle gets thinner and thinner as it progresses backwards through the intestinal helix, attaching itself to the 12th convolution. The two pairs of retractor muscles (m) show a peculiar arrangement of their bases as compared to the other species of *Sipunculus*. The bases of the ventral retractors are very broad and continuous with the bases of the dorsal retractors. It is impossible to tell where the bases of the ventral pair finish or where the bases of the dorsal pair begin. Notwithstanding, the bases arise from muscles 1-18 on both sides of the ventral nerve cord without interruption.

A pair of brown nephridia (n) open between muscle bands 4-5 on each side of nerve cord. They are 75 mm long, being attached to the body wall for only 18 mm. An inconspicuous anterior lobe (1.5 mm) is present in these structures.

The nervous system presents as main features a 1.5 mm wide "brain" with small leaf-like processes (Fig. 3, p). The ventral nerve cord (Fig. 1, n.c.) is accompanied by a pair of thin paraneural muscles in the anterior end of the trunk. The nerve cord passes over the united bases of the ventral retractor muscles.

There are two compensation sacs running on each side of the oesophagus; they are devoid of villi.

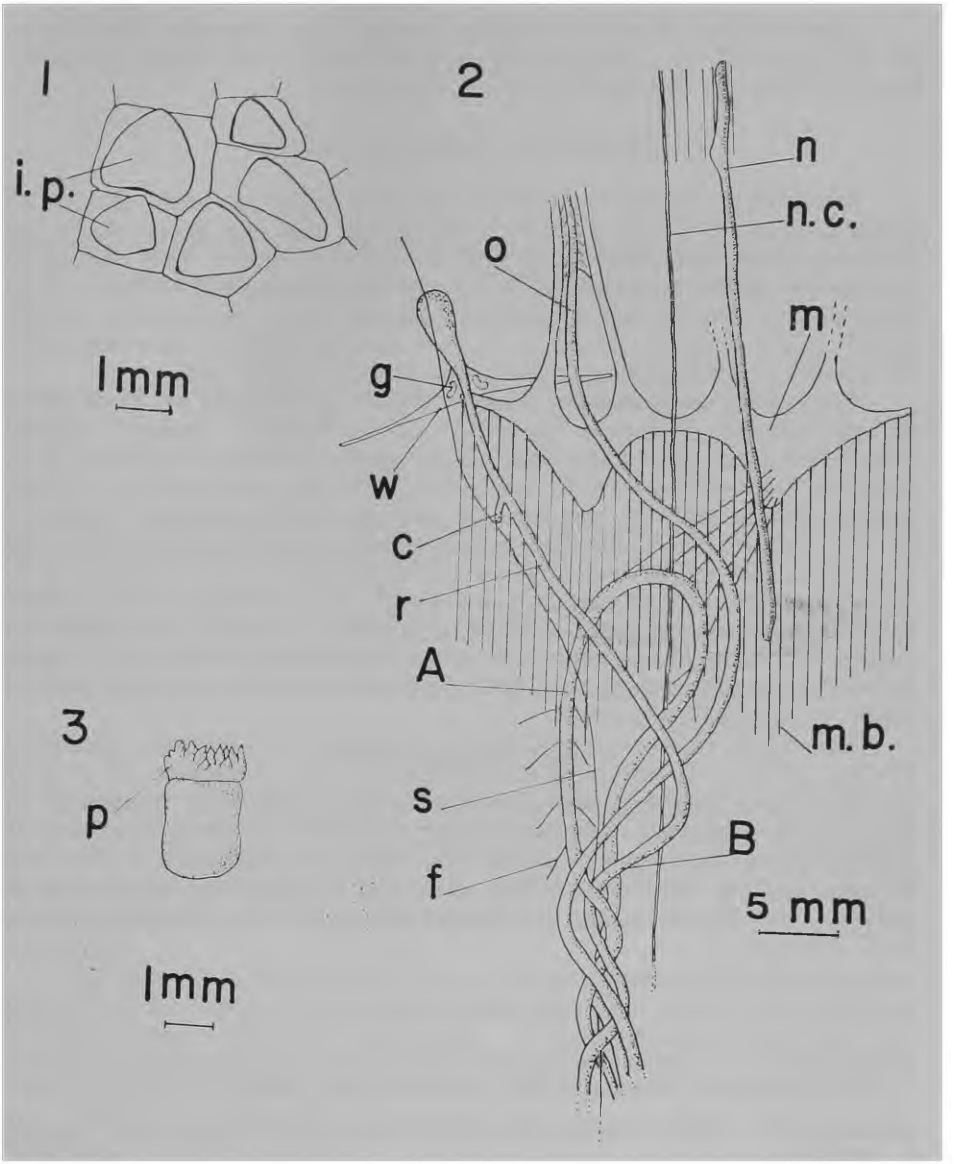

Figure 1 — A small piece of the introvert of *Sipunculus marcusi* showing the papillae (i.p.).

Figure 2 — Main systematic aspects of the internal anatomy of *Sipunculus marcusi*. A = accessory intestinal spiral; B = regular intestinal spiral; c = caecum; f = tissue strands fastening the intestine; g = racemose glands; m = retractor muscles; m.b. = longitudinal muscle bands; n = right nephridium; n.c. = ventral nerve cord; o = oesophagus; r = rectum; s = spindle muscle; w = wing muscle.

Figure 3 — Brain of *Sipunculus marcusi*. p = brain processes.

Type locality: Praia da Siriuba, Ilha de São Sebastião, São Paulo, 22° 50' S 45° 20' W. Dug out 30 cm deep between tide marks. September 21st 1966. 1 specimen. A. S. F Ditadi coll.

Discussion of *Sipunculus marcusi*

Sipunculus marcusi is readily separated from all other species of *Sipunculus* by its peculiar arrangement of the pad-like bases of the retractor muscles, the bases being united with each other. It is related to *Sipunculus nudus* Linnaeus 1776 (apud Stephen and Edmonds 1972) from which it can be distinguished by the number of longitudinal muscle bands; 28-33 in *nudus,* 35-36 in *marcusi,* and by the brain processes; thin thread-like or spongy-like in *nudus* and leaf-like in *marcusi.*

From *Sipunculus inclusus* Sluiter 1902 it can be split off by comparing the number of muscle bands; 31-32 in *inclusus.* Sluiter's original description (loc. cit.) states that 37-38 muscle bands are present in *S. inclusus* "towards the base of the trunk", however, the counting of longitudinal muscle bands at this level as well as at the posterior 10-20 mm of the trunk of all *Sipunculus* usually gives a larger number than that counted at the middle body due to the dichotomy of the musculature at these extremes. By this reason we select the countings at the middle body to make comparisons. Finally, no mention is made in the paper by Sluiter nor in the monograph by Stephen and Edmonds (loc. cit.), whose authorities had access to the type specimen, as to the presence and or aspect of the brain processes.

Sipunculus marcusi should also be compared to *Sipunculus phalloides* (Pallas, 1774). It differs from the latter by the possession of a small number of longitudinal muscle bands (37-38 in *phalloides*) as well as by the site of nephridial openings between muscle bands 6-7 or 7-8 in *phalloides,* and between 4-5 in *marcusi;* moreover, Keferstein (1865) and Selenka, de Man and Bülow (1883) state that *S. phalloides* lacks a spindle muscle, a rectal caecum and racemose glands, all these structures present in *S. marcusi.*

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