

Leptosynapta brasiliensis: a new species of synaptid holothurian
(Echinodermata) from a sandy beach in southeastern Brazil

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ABSTRACT

A new species of synaptid holothurian, *Leptosynapta brasiliensis* n. sp., is described. The species shows affinities with *Leptosynapta minuta* (BECHER, 1906), presenting 12 simple tentacles and 12 dumb-bell shaped pieces constituting the calcareous ring; anchor ossicles exhibit a sharply bifurcate stock. All individuals were collected in Praia Vermelha, Rio de Janeiro - RJ, Brazil, in coarse sand, at a depth of some 3 m.

INTRODUCTION

While collecting sand fauna in Praia Vermelha beach in the City of Rio de Janeiro, an apodid holothurian of reduced dimensions, exhibiting the typical integumental spicules of the Synaptidae (anchors and anchor plates) was encountered inhabiting the interstitial environment. Within the family Synaptidae, the adult endopsammal habit is seen in *Rhabdomolgus ruber* (Keferstein, 1863), *Psammothuria ganapati* RAO, 1968 (possibly juvenile *Chiridota rotifera* (Pourtales, 1851) cf., Engstrom, 1980) and *Leptosynapta minuta* (Becher, 1906) (in Menker, 1970).

The species belongs to the genus *Leptosynapta* Verrill. and it seems to be an undescribed species, sharing many similarities with *L. minuta*, as seen below.

MATERIAL AND METHODS

Collectings were made in Praia Vermelha Beach (22°57'18"S; 43°9'48"W), in the City of Rio de Janeiro-RJ, Brazil. Water depth ranged from approximately 1 to 4 m; the sediment consisted of coarse, well to very well sorted sand. Specimens were obtained by diving and manually reworking the sediment surface at depths around 3m where the holothurians were more easily encountered.

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Leptosynapta brasiliensis sp. n.

(Figs. 1-6)

Holotype male – Body cylindrical and vermiform, 20 mm in length and 2.5 mm maximum anterior width. In living specimen, the integument is transparent, colorless or pinkish, with small prominent ochre spots concentrated in the anterior region, as also occurring with anchor and anchor plate ossicles, observable occurring through the transparent body wall. Twelve simple buccal tentacles present, without pinnules or digitations, each possessing 1 or 2 pairs of conspicuous pediculate sensory cups at the base. Two dorsal tentacles, 3 lateral ones at each side, and 2 sets of 2 tentacles ventrally. Mouth, in form of a longitudinal notch, occupying a ventral position, once the animal moves with its crown of tentacles facing the substrate.

Digestive tract straight but somewhat sinuous in the living specimen. Stomach in the anterior half of the body, obvious as a thick walled dilatation.

Gonads reaching the posterior third of the body. Gonoduct bifurcating proximally, a branch lying at each side of the dorsal mesentery.

Five visible longitudinal muscle bands, constant in width along their extension, as well as cloacal suspensory muscles.

A single Polian vesicle with a short peduncle located in the ventral portion of the body and a short stone canal, with a madreporic plate, following the dorsal mesentery (not always easily observable).

Six ciliated funnels close to the body wall along ventral mesentery anteriorly.

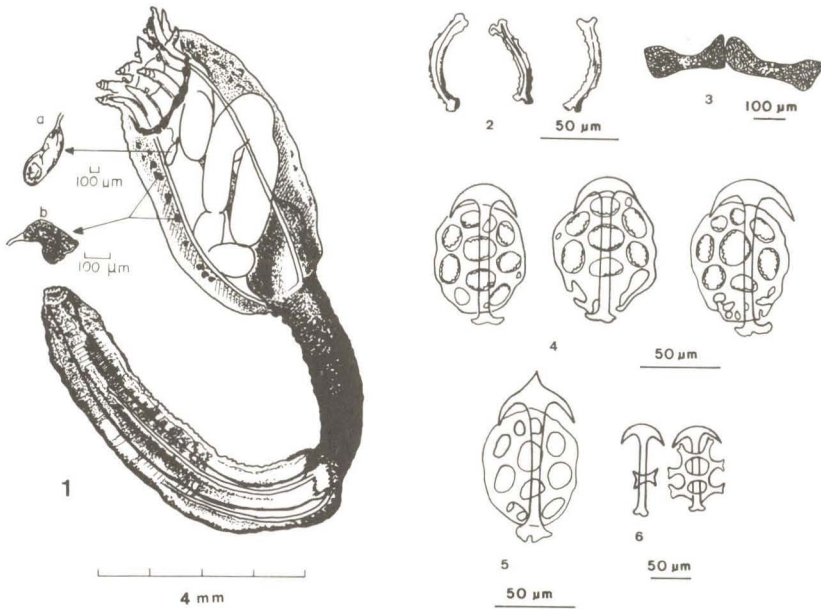
Calcareous deposits consisting of tentacle rods, calcareous ring pieces, anchors and anchor plates. Tentacle rods generally curved, sometimes straight; exhibiting enlarged and ramified extremities and toothed edge. Calcareous ring composed of 12 dumb-bell-shaped pieces, the enlarged extremities of which lie below each of the tentacles. Ossicles consisting of calcareous spicules irregularly distributed along the body wall, though in a much higher density at the anterior portion of the body. Anchors conspicuously longer than plates, measuring around 100 μm in length, presenting a smooth vertex and arms generally smooth or possessing from 2 to 4 pairs of minute teeth. Anchor stock presenting a deep notch, giving an overall bifurcate aspect, sometimes branched and finely toothed. Plates oval to rounded, approximately 70 μm in length, regular, untoothed and exhibiting about 10 perforations with toothed edges. No definite bridge enveloping the base of the anchor shaft. Many anchors in a perpendicular orientation in relation to longitudinal muscle bands. Millary grains not observed.

COMMENTS

Specimens of up to 50mm (fully distended) were found; the sex of the adult examples was determined by transparency, males with a white dense and homogeneous mass and females with conspicuous oocytes. The number of ciliated funnels can vary, an individual with 12 funnels was found. Great variability occurs in anchor and anchor plate morphology within a given individual.

Type and type-locality. The material is deposited in the Museu de Zoologia – Universidade de São Paulo. It consist of the holotype and three paratypes, under the numbers 9706 (holotype), 9707, 9708 and 9709 from Praia Vermelha, Rio de Janeiro - RJ, Brazil. 9706 (Holotype): male, 20 mm total length. Dec/6/1988; 9707: undetermined sex, gonads poorly developed, 15 mm total length, Dec/26/1988; 9708: female, 30 mm total length, Dec/26/1988; 9709: youngster with 10 tentacles, 3 mm total length, Dec/26/1988.

Three additional examples (non types) are deposited in the Museum National d’Histoire Narturelle, Paris, under the catalog number EchH 7947: 1 – Male, 45 mm total length, Dec/26/1988; 2 – male, 16.5 mm total length, Dec/26/1988; 3 – youngster with 10 tentacles, 2.1 mm total length, Dec/26/1988. All material here mentioned collected by the first author.



Leptosynapta brasiliensis sp. n. 1. General aspect (male). a. Polian vesicle; b. Ciliated funnel. Calcareous deposits. 2. Tentacle rods; 3. Two pieces of the calcareous ring; 4. Several anchors and anchor plates, showing some variability; 5. Anchor with an abnormal, pointed projection at the vertex; 6. anchors with anchor plates in fomation.

ECOLOGICAL COMMENTS

The holothurians were mostly found in the upper 10 cm of coarse and very well sorted sand, at a water depth of about 3 m. Average density of some 100 individuals/m² to a depth of about 10 cm of sand.

DISCUSSION

As stated by CLARK (1924), the most important characters on which the descriptions of the genera and species of the family Synaptidae are based on the tentacles and their calcareous deposits. Number of tentacles and shape (pinnate or digitate) are the most important factors. Concerning calcareous deposits, the relevant characteristics are the shape of the anchors, anchor plates and tentacle rods and the presence or absence of miliary grains. The simple tentacle type of *L. brasiliensis* sp. n. is not common in the genus but is found for example in *L. minuta* (in DEICHMANN, 1948 and CHERBONNIER, 1953).

The ensemble of calcareous pieces in *L. brasiliensis* sp. n. is remarkably similar to that of *Leptosynapta minuta* showed by CHERBONNIER (1953). In *L. brasiliensis* sp. n., the anchor plates present clearly serrated perforations, although incomplete plates with perforations as yet unserrated and others lacking their final shape are frequently encountered. The shape of the anchors and anchor plates is very similar to that found within the genus *Leptosynapta*, as can be seen in HEDING (1928). The distinctive feature in *L. brasiliensis* sp. n. is the sharply bifurcate anchor stock, not found in other species in this genus, but in some species of the genus *Protankyra*, such as *P. suroitae* Cherbonnier, 1980 (in CHERBONNIER, 1980) and *P. grayi* Pawson, 1967 (in PAWSON, 1967). The tentacle rods and the ciliated funnels in *L. brasiliensis* sp. n. follow the general shape encountered in the genus.

The 12 pieces comprising the calcareous ring in adult *L. brasiliensis* sp. n. correlate with the 12 tentacles; this pattern is also observed in *L. minuta*, possessing 10 calcareous ring pieces and tentacles (in CHERBONNIER, 1953). The dumb-bell form of each piece is also found in other species like *L. minuta* (in CHERBONNIER, 1953), *Rhabdomolgus ruber* (in MENKER, 1970) and *Psammothuria ganapati* (in RAO, 1968) although it is extremely rare in the Synaptidae, what seems to be of some interest.

These data place the new species *L. brasiliensis* sp. n. within the family Synaptidae and in the genus *Leptosynapta* and justify the creation of a new species based on the differences seen in relation to other species of this genus. Within the genus, it shares many similarities with *L. minuta*, and, in comparison with other genera, to *Rhabdomolgus*. CHERBONNIER (1953) has previously considered the close resemblance between *L. minuta* and the species of *Rhabdomolgus*.

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