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New records of ribbon worms (Nemertea) from Ceará, Northeast Brazil

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Abstract

Of 45 species of nemerteans reported for the Brazilian coast, only two were recorded from Brazil's Northeast coast. Here we report seven new records for the state of Ceará, in Northeast Brazil: *Tubulanus rhabdotus* Côrrea, 1954, *Carinomella* cf. *lactea* Coe, 1905, *Baseodiscus delineatus* (Delle-Chiaje 1825), *Cerebratulus* cf. *lineolatus* Coe, 1905, *Cerebratulus* sp. 1, *Cerebratulus* sp. 2 and Lineidae sp. 1. Specimens were collected at the following beaches: Praia dos Dois Coqueiros, Praia do Pacheco, Pecém harbor, Praia da Pedra Rachada and Praia do Guajiru. *T. rhabdotus* is a new record for Northeast Brazil, *Carinomella* cf. *lactea* and *Cerebratulus* cf. *lineolatus* are new records for the South Atlantic Ocean and both genera are new records for Brazil.

Key words: Occurrence, taxonomy, distribution

Introduction

The phylum Nemertea, commonly known as "ribbon worms", comprises non-segmented worms that typically are slim and long, and posses a coelomic cavity (rhynchocoel) housing an eversible protrusible proboscis that is diagnostic for the phylum (Schwartz & Norenburg 2005).

Most nemerteans are marine benthic but some are pelagic, a few are terrestrial or freshwater, and some marine forms live in association with crustaceans and mollusks (Roe 1970; Ivanov *et al*. 2002; Turbeville 2002; Kajihara 2007; Malaskova & Norenburg 2008). Benthic nemerteans prey on many different organisms but primarily polychaetes, crustaceans and mollusks (McDermott & Roe 1985). Some also feed on recently dead animals, contributing to the organic material cycle (Thiel 1998).

In Brazil, 33 species of nemerteans were recorded through the contributions of Diva Corrêa, almost exclusively for the southeast coast, (Corrêa 1948; Corrêa 1951; Corrêa 1955; Corrêa 1956; Corrêa 1957; Corrêa 1958; Corrêa 1966). Seven additional species were reported in a dissertation by E. Santos (1974), three by C. Santos *et al.* (2006), and two more in the most recent summary of nemerteans from southeastern Brazil by Santos & Norenburg (2011). Only two species have been reported from the Northeast coast of Brazil, *Baseodiscus delineatus* and *Coenemertes caravela* (Gibson 1995). The present study reports eight new records for the Northeast region, of which two are new records for the southwestern Atlantic Ocean.

Material and methods

Specimens were collected at Caucaia, Ceará during low tides in 2011 at the beaches Praia do Pacheco, (3°41.11' S 38°37.91' W) and Praia dos Dois Coqueiros (3°41.28' S 38°36.55' W); in 2011, 2012, 2013, and 2014 collections were made at Praia da Pedra Rachada, Paracuru, Ceará (3°23.95' S 39°0.85' W); and at Praia do Guajiru, Trairí,

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Ceará (3º14.21'S 39º13.44'W), Northeast Brazil (Fig.1). The nemerteans were found under rocks in tide pools and transported in plastic containers with sea water.

In the laboratory specimens were anesthetized with 7.5% $MgCl_2$ diluted in tap water, photographed, and then fixed in 5% formalin without buffer prior to preservation in 70% ethanol.

Additional animals were obtained from samples of the project "PROCAD—Bentos em regiões portuárias ao longo da Costa Brasileira: biodiversidade, filogeografia e aspectos de bioinvasão por biofouling" (for more details see: http://npbiomar.cebimar.usp.br/index.php/en/research/list_projects_details_npbiomar/90000). These specimens were collected from settlement plates placed at the Pecém harbor (3°32.08' S 38°47.78' W), after the plates were removed and immersed in 5% formalin (Fig. 1).

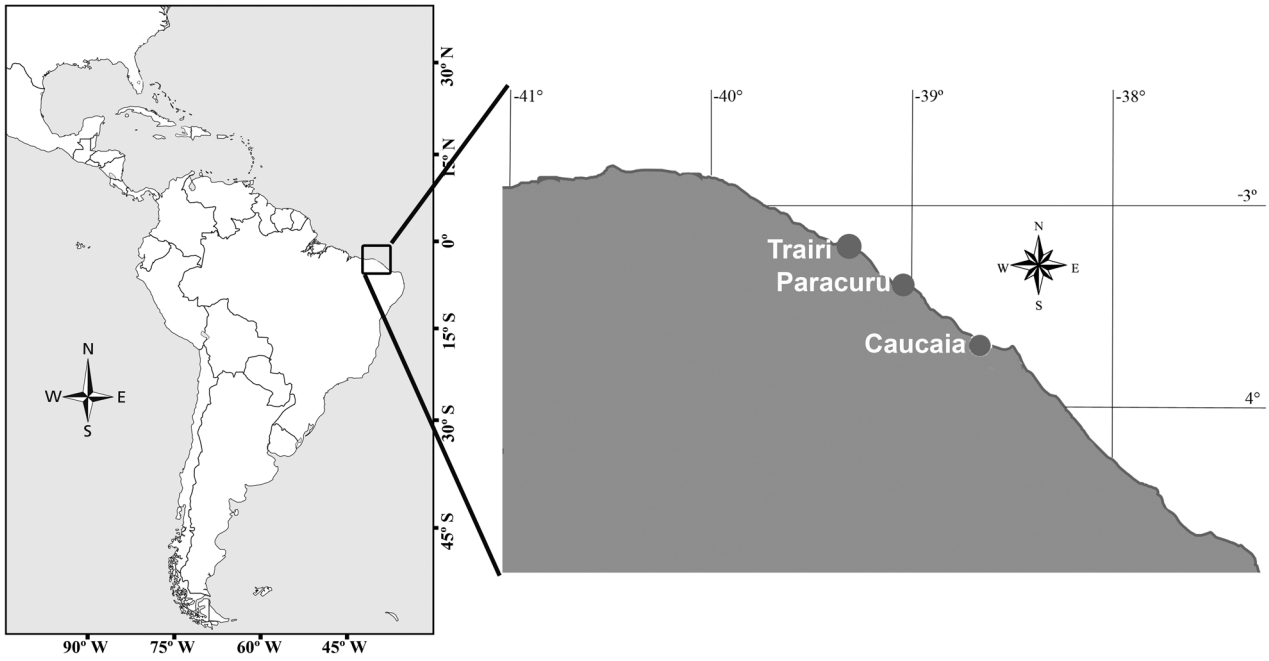

FIGURE 1. Map of South America emphasizing coast of Ceará, circles mark the sampling sites.

When possible, one individual of each species was used for microscopical analysis to confirm putative identities or attempt to increase taxonomic resolution. These specimens were dehydrated in a graded ethanol series, cleared in xylene, embedded in paraffin, sectioned at 8µm thickness, and stained with Gomori trichrome and hematoxylin-eosin. Though ultimately not helping refine identifications, these specimens are deposited in the Coleção de Invertebrados Marinhos do Museu de Zoologia, Universidade de São Paulo, São Paulo (MZUSP).

In view of the recent phylogenetic results of Thollesson & Norenburg (2003), Andrade *et al*. (2012), Andrade *et al.* (2014), Kvist *et al*. (2014), each with support for rejecting the Class Anopla, we treat the three main groups of nemerteans (Palaeonemertea, Heteronemertea and Hoplonemertea) as equivalent and do not designate ranks for them.

We include undescribed species here in the interest of documenting diversity; we are certain these are distinct species and that they are not previously known from the South American Atlantic coast, but we feel that detailed anatomical study and species descriptions require additional and better preserved specimens than we have available. There are no unambiguous, widely accepted diagnoses for the lineid genera *Cerebratulus, Lineus* and *Micrura* (Schwartz & Norenburg 2001). Hence, we attribute specimens for three unknown species to *Cerebratulus* and Lineidae as morphotypes, based on external anatomy.

Systematics

PALAEONEMERTEA Hubrecht, 1874

Family TUBULANIDAE Bürger, 1904 (1874)

Genus *Tubulanus* Renier, 1804

***Tubulanus rhabdotus* Corrêa, 1955**
(Figure 2 [1])

Tubulanus rhabdotus: Corrêa, 1955: 12, pl. 1, figs 1–6, pl. 2, figs 7–9, pl. 3, figs 10, 11, pl. 4, figs 12–18; Corrêa, 1961: 5, figs 5, 6; Corrêa, 1963: 42; Fox & Ruppert, 1985: 37; Norenburg, 1985: 40, fig. 4; Jespersen & Lützen, 1987: 187; Jespersen, 1994: 124; Gibson, 1995: 531; Reunov & Klepal, 1997:132; Stricker *et al*. 2001: 225; Thollesson & Norenburg, 2003: 409; Ritger & Norenburg, 2006: 932; Santos & Norenburg, 2011.

Material examined. One specimen, MZUSP 00001, Brazil, Ceará, São Gonçalo do Amarante, Pecém harbor, 3°32.08' S 38°47.78' W, on settlement plates, coll. PROCAD team, 29.I.2010.

Two specimens, MZUSP 00002, Brazil, Ceará, São Gonçalo do Amarante, Pecém harbor, 3°32.08' S 38°47.78' W, on settlement plates, coll. PROCAD team, 13.X.2010.

Three specimens, MZUSP 00003, Brazil, Ceará, São Gonçalo do Amarante, Pecém harbor, 3°32.08' S 38°47.78' W, on settlement plates, coll. PROCAD team, 12.VIII.2011.

One specimen, MZUSP 00004, Brazil, Ceará, São Gonçalo do Amarante, Pecém harbor, 3°32.08' S 38°47.78' W, on settlement plates, coll. PROCAD team, 01.IX.2011.

One specimen, MZUSP 00005, Brazil, Ceará, São Gonçalo do Amarante, Pecém harbor, 3°32.08' S 38°47.78' W, on settlement plates, coll. PROCAD team, 01.XI.2011.

One specimen, MZUSP 00006, Brazil, Ceará, São Gonçalo do Amarante, Pecém harbor, 3°32.08' S 38°47.78' W, on settlement plates, coll. PROCAD team, 16.VIII.2012.

Two specimens, MZUSP 00007, Brazil, Ceará, São Gonçalo do Amarante, Pecém harbor, 3°32.08' S 38°47.78' W, on settlement plates, coll. PROCAD team, 20.XI.2012.

One specimen (26 mm long after preservation), MZUSP 00008, Brazil, Ceará, Caucaia, Praia do Pacheco, 3°41.11' S 38°37.91' W, between algae, coll. Cecili Mendes, 03.I.2013.

Field diagnosis. Body beige with transverse black rings variably spaced; color persists after fixation; first four rings widest; first ring with median constriction dorsally, interrupted ventrally by mouth. Body with scattered small black dots surrounded by greenish halos; halos can disappear after fixation. Lateral sensory organs visible at fourth black ring as non-pigmented small circular depressions. No eye spots evident. Rhynchopore sub-terminal near anterior margin of cephalic lobe.

Distribution. Western Atlantic: USA (Florida [Corrêa 1961]; South Carolina [Fox & Ruppert 1985]); Panama (Bocas del Toro region [Norenburg unpublished data]); Curaçao (Gibson 1995); Brazil (Ceará [present study] and São Sebastião [Corrêa 1955]).

Ecology. Worms of this species live in the littoral zone, between algae on rocks, on recruitment plates, on old mangrove roots, under logs in tide pools, in seagrass or algae beds (Corrêa 1955; Corrêa 1961). Most of the specimens in this study were found on offshore recruitment plates installed at Pecém harbor but one was found among algae. These animals, as others of the genus, produce thin cellophane-like tubes in which they shelter (Corrêa 1961). None of the specimens found in this study were encased in those tubes, some tubes were found on the recruitment plates.

Remarks. The only species that can be confused with *T. rhabdotus* is *Tubulanus riceae* Ritger and Norenburg, 2006; however adult specimens of the latter generally are smaller, body ground color is whitish, and the lateral sensory organs are in the third dark ring (in the fourth black ring in *T. rhabdotus*). Specimens collected during the PROCAD project could not be measured because most of them fragmented during the fixation process. Two specimens remained intact and measured 92 mm and 75 mm long. Corrêa (1955; 1961; 1963) reports specimens up to 25 mm long.

Family CARINOMIDAE Bergendal, 1900

Genus *Carinomella* Coe, 1905

Carinomella cf. *lactea* Coe, 1905

(Figure 2 [2a–2b])

Carinomella lactea: Coe, 1905: 127, Pl. 5, figs. 45–49, Pl. 6, figs. 50–54, Pl. 7, figs. 55, 56, Pl. 8, figs. 57, 58, Pl. 9, figs. 59–61, Pl. 10, figs. 63–65, Pl. 11, figs. 66–62; Boesch, 1973: 230; Turbeville & Ruppert, 1983: 103; Fox & Ruppert, 1985: 37; Norenburg, 1993: 212; Hochberg & Lunianski, 1998: 295; Ritger & Norenburg, 2006: 941; Turbeville, 2006: 968, figs. 4, 5, 6c; Chernyshev, 2010: 2288.

Material examined. One specimen (26 mm), MZUSP 00012, Brazil, Ceará, Paracuru, Praia da Pedra Rachada, 3°23.95' S 39°0.85' W, on mud sand, coll. Cecili Mendes, 16.VI.2014.

Field diagnosis. Body small, rounded anteriorly, flattened intestinal region; translucent, whitish anteriorly and yellowish-orange posteriorly. No eye spots, white dorsomedian line on head. Large mouth, immediately posterior to cerebral ganglia. Alimentary canal divided into two portions, anterior clear and less opaque than yellowish intestinal region, as seen by Coe (1905). Lateral organs present posterior to start of intestine; circular orange band formed in this region after preservation.

Distribution. Western Atlantic: USA (Florida [Corrêa 1961], South Carolina [Fox & Ruppert 1985] and Virginia [Boesch 1973]) and Brazil (Ceará [present study])

Eastern Pacific: USA (California [Coe, 1905])

Ecology. The present specimen was found in muddy sand, under rocks in the lower intertidal zone, which agrees with Coe (1905). However, Corrêa (1961) reports a specimen dredged from about 4 m in Biscayne Bay.

Remarks. This species can be confused with *Carinoma mutabilis* because of the ground color, but *C. mutabilis* lacks lateral sense organs. Identification of the present specimens remains uncertain because there are few internal and external characters that can be compared with other species. A firmer identification awaits genetic study. A factor favouring the probability that this is conspecific with worms reported as *C. lactea* from Florida is the significant taxonomic overlap among nemerteans from Florida and Brazil. However, given the lack of morphological diagnostics, the identity for all Atlantic reports of this species must be held in doubt until compared with northeastern Pacific Ocean specimens from the vicinity of the type locale.

HETERONEMERTEA Bürger, 1892

Family BASEODISCIDAE Bürger, 1904

Genus *Baseodiscus* Diesing, 1850

Baseodiscus delineatus (Delle Chiaje, 1825)

(Figure 2 [3])

Polia delineata? Delle Chiaje, 1825: 427, pl. XXVIII, fig. 4.
Borlasia striata Quoy & Gaimard, 1833: 286, pl. 24, figs 3, 4.
Borlasia carmelina Quatrefages, 1846: 196.
Polia curta Hubrecht, 1879: 209.
Eupolia ascophora Bürger, 1890: 24, pl. II, fig. 27, pl. IX, fig. 184.
Eupolia marmorata Bürger, 1890: 24, pl. I, fig. 11, pl. II, fig. 26, pl. V, fig. 73.
Eupolia amboinensis Staub,1900: 78, pl. XLVII, fig. 1, 1b, pl. XLVIII, figs1–5.
Eupolia reticulata? Staub, 1900: 78, pl. XLVII, figs 3, 4, pl.XLVIII, figs 6–9.
Baseodiscus insignis Punnet & Cooper, 1909: 5 pl. 1, figs 1a, b.
Baseodiscus curtus (Hubrecht, 1879): Bürger, 1904: 82; Stiasny-Wijnhoff, 1920: 102, fig. 2 a–e; Kajihara, 2007:303.
Baseodiscus delineatus var. *curta* (Hubrecht, 1879): Bürger, 1895: 601, pl. 3–5, 7, 9, 17, pl.19 fig. 6; Stiasny-Wijnhoff, 1920: 102, pl. 5, fig. 2 a–e; Corrêa, 1956: 199, pl. 2, figs 6–11; Corrêa, 1958: 443, pl. 1 figs 1–2; Corrêa, 1961: 11, fig. 7; Corrêa, 1963: 42; Kajihara, 2007: 293.
Baseodiscus delineatus (Delle Chiaje, 1825): Diesing, 1850: 243; Bürger, 1904: 82; Stiasny-Wijnhoff, 1920:102; Coe, 1940: 260; Coe, 1947: 105; Coe, 1951: 179, fig. 24, fig. 25 a, b; Gibson, 1974: 355, figs 1–7; Gibson & Winsor, 1980: 173; Riser, 1991: 436; Vernet & Anadon, 1991: 92; Gibson, 1995: 478; Hochberg & Lunianski, 1998: 294; Gibson & Sundberg, 2001: 1260, tab. 1; Strand *et al.* 2005: 3785, figs 1, 2; McDermott, 2006: 1009; Kajihara, 2007: 303; Lyimo *et al.* 2008: 45; Wirtz, 2009: 46; Magarlamov & Chernyshev, 2011: 440, pl. 1, figs a–e, pl. 2 figs a–f.

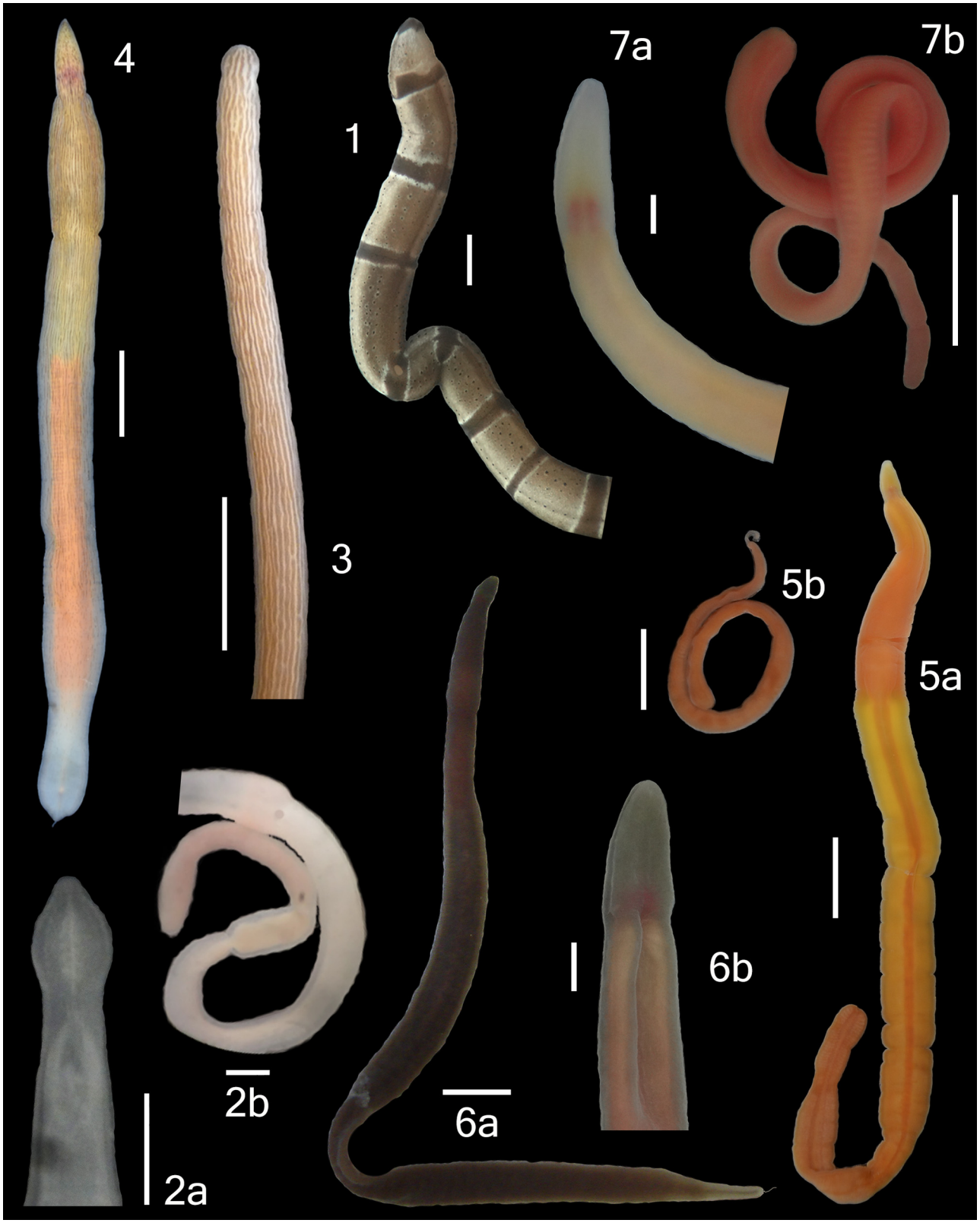

FIGURE 2. (1) *Tubulanus rhabdotus* Corrêa, 1955, lateral view; (2) *Carinomella* cf. *lactea* Coe, 1905: (a) head, dorsal view; (b) posterior end, lateral view; (3) *Baseodiscus delineatus* (Delle-Chiaje, 1825): dorsal view; (4) *Cerebratulus* cf. *lineolatus* Coe, 1905, dorsal view; (5) *Cerebratulus* sp. 1: (a) dorsal view; (b) posterior end, dorsal view; (6) *Cerebratulus* sp. 2: (a) whole body, dorsal view; (b) head, ventral view; (7) Lineid sp. 1: (a) head, dorsal view; (b) posterior end, dorsal view. Scale bars: 1, 2a, 2b, 6b and 7a, 1mm; 3, 5a, 5b and 6a, 5mm; 4 and 7b, 10mm.

Material examined. One specimen (41 mm), MZUSP 00009, Brazil, Ceará, Caucaia, Praia de Dois Coqueiros, 3°41.28' S 38°36.55' W, under rock, coll. Yan Timbó, 18. VI.2011.

One specimen (66 mm), MZUSP 00010, Brazil, Ceará, Caucaia, Praia do Pacheco, 3°41.11' S 38°37.91' W, under rock, coll. Cecili Mendes, 18.VI.2011.

Diagnosis. Body long, not fragile; with irregular, interrupted orange and white longitudinal stripes, from head to tail; stripes can vary from light orange to red. Cephalic lobe (head) rounded, delimited posteriorly by neck-like constriction. Several ocelli along anterolateral margins of head. Mouth ventral, immediately posterior to cephalic lobe. Posterior extremity rounded, without caudal cirrus.

Distribution. Western Atlantic: Curaçao (Corrêa 1963); Europe (Spain and Italy), Cape Verde, Bermuda, Barbados, USA (Florida), and Puerto Rico (Gibson 1995); Belize (Collin *et al.* 2005); Brazil (São Paulo, Bahia [Gibson 1995] and Ceará [present study]).

Eastern Pacific: USA (Gulf of California) and Chile (Coe 1940).

Western Pacific: Fiji Island, Mariana Island, Java Island, Torres Strait, Australia (Great Barrier Reef) and Japan (Gibson 1995).

Indian: Java Island, Australia, Mauritius Islands and Zanzibar (Gibson 1995).

Adriatic Sea and Mediterranean Sea (Gibson, 1995, Kajihara 2007).

Ecology. Specimens in this study were littoral, under rocks. This species is reported from littoral and sublittoral zones to depths of 50 m or more, in various bottom types, under rocks and boulders on coarse clean to shelly or muddy sand, in crevices of rocks, on seagrass or algae, among sponges or other encrusting or colonial organism and corals (Gibson 1995).

Remarks. This is one of the more widespread species of Nemertea, being recorded in both hemispheres, in tropical and subtropical waters, and extending to temperate latitudes (Gibson 1995).

Taxonomic confusion is frequent, due to the wide geographical distribution, variability of color (bands can vary from orange, brown or green), many synonyms (especially *Baseodiscus curtus* and *B. jonasii*) and several changes in genus name. The disjunct distribution of this species and seemingly associated variation in color pattern may indicate a species complex and a need for a taxonomic revision of the taxon.

HETERONEMERTEA Bürger, 1892

Family LINEIDAE McIntosh, 1873–1874

Genus *Cerebratulus* Renier, 1804

Cerebratulus cf. *lineolatus* Coe, 1905

(Figure 2 [4])

Cerebratulus lineolatus Coe, 1905: 196, pl. 4, fig. 44; Coe, 1940: 275; MacGinitie & MacGinitie, 1949: 163, textfig. 44; Corrêa, 1961: 14; Gibson, 1995: 337.

Material examined. One specimen (115 mm, after preservation), MZUSP 00013, Brazil, Ceará, Paracuru, Praia da Pedra Rachada, 3°23.95' S 39°0.85' W, under rock, on sand, coll. Cecili Mendes, 28.VIII.2011.

One specimen (39 mm, after preservation), MZUSP 00014, Brazil, Ceará, Caucaia, Praia do Pacheco, 3°41.11' S 38°37.91' W, under rock, coll. Cecili Mendes, 18.VI.2011.

Two specimens (30 mm, 73 mm, after preservation), MZUSP 00015, Brazil, Ceará, Paracuru, Pedra Rachada beach, 3°23.95' S 39°0.85' W, under rock, on sand, coll. Cecili Mendes, 20.VIII.2012.

Field diagnosis. Body beige, with posterior region reddish due to gonads; dorsal and ventral surfaces completely covered by numerous thin, interrupted, brown lines. Cephalic lobe triangular, narrowing to neck-like constriction. Body long and flat ending in short caudal cirrus; latter lost easily during collection. Cerebral ganglia visible as a reddish region in head. No eye spots evident.

Distribution. Western Atlantic: USA (Florida [JLN unpublished obs] and South Carolina [Fox & Ruppert 1985]) and Brazil (Ceará [present study]).

Eastern Pacific: California (San Pedro, Newport, San Diego), Mexico (Puerto Refugio, Angel de la Guardia, Punta Willard, Bahia San Luis Gonzaga) (Coe 1940).

Ecology. This species is reported from intertidal zone to depths of 70 m (Gibson 1995). They seem to inhabit mud or muddy sand. The specimens here were found on muddy sand under rocks in the lower intertidal zone, sometimes in direct contact with the rock.

Remarks. The species was first described from the North Pacific Ocean, along the southwestern coast of North America, and a morphologically identical form has been reported from the south coast of Florida (Corrêa 1961; JLN, unpublished obs). No material is available from the Pacific Coast for comparison. Though the described appearance (Coe 1905; Coe 1940) is convincingly similar, the disjunct geographic and depth distributions provide cause to question the specific identity of the Brazilian (Florida and South Carolina) worms.

Cerebratulus sp. 1

(Figure 2 [5a–5b])

Material examined. One specimen (176 mm), MZUSP 00016, Brazil, Ceará, Paracuru, Praia Pedra da Rachada, 3°23.95' S 39°0.85' W, under rock, on sand, coll. Cecili Mendes, 31.I.2014.

Two specimens (27 mm, 52 mm), MZUSP 00017, Brazil, Ceará, Paracuru, Praia da Pedra Rachada, 3°23.95' S 39°0.85' W, under rock, on sand, coll. Cecili Mendes, 11.VIII.2014.

Field diagnosis. Bright orange anterior third of body; remaining body yellow. Body long and flat, ending in long transparent caudal cirrus. Head triangular shape with red cerebral ganglia visible. Shallow constriction at posterior of cephalic slits demarcates head. Mouth small, immediately posterior to cephalic slits. No eye spots. Animals fragment easily during anesthesia process.

Ecology. Specimens were found in muddy sand, under rocks in middle intertidal zone. They appear to be solitary.

Remarks. We assign this informally to *Cerebratulus*, on the basis of a relatively pointed head, a stout foregut region followed by a conspicuously flattened intestinal region and presence of a caudal cirrus. This species differs from *C. ignea* by the ground color (*C. ignea* is totally orange, while *Cerebratulus* sp. 1 is orange on the anteriorly and yellow on the mid-gut portion);by size (*C. ignea* ranges from 10 to 25mm, while *Cerebratulus* sp. 1 is 27 to 176 mm); by the shape of posterior end (*C. ignea* has a wide caudal end, while *Cerebratulus* sp. 1 has a sharp end); and by the habitat (*C. ignea* was found inside filamentous algal mat, while *Cerebratulus* sp. 1 was found in muddy sand).

Cerebratulus sp. 2

(Figure 2 [6a–6b])

Material examined. One specimen (115 mm), MZUSP 00018, Brazil, Ceará, Paracuru, Praia da Pedra Rachada, 3°23.95' S 39°0.85' W, under rock, on sand, coll. Cecili Mendes, 31.I.2014.

One specimen (75 mm), MZUSP 00019, Brazil, Ceará, Trairí, Praia do Guajiru, 3°14.21'S 39°13.44'W, under rock, on sand, coll. Cecili Mendes, 02.III.2014.

One specimen (123 mm), MZUSP 00020, Brazil, Ceará, Paracuru, Praia da Pedra Rachada, 3°23.95' S 39°0.85' W, under rock, on sand, coll. Cecili Mendes, 30.III.2014.

One specimen (114 mm), MZUSP 00021, Brazil, Ceará, Paracuru, Praia da Pedra Rachada, 3°23.95' S 39°0.85' W, under rock, on sand, coll. Cecili Mendes, 27.VII.2014.

One specimen (100 mm), MZUSP 00022, Brazil, Ceará, Paracuru, Praia da Pedra Rachada, 3°23.95' S 39°0.85' W, under rock, on sand, coll. Cecili Mendes, 07.IX.2014.

Field diagnosis. Body dark brown, long and flat, ending in a white tip and a long caudal cirrus. Head triangular, black with red cerebral ganglia visible. No eye spots. Deep, long cephalic slits. Small mouth immediately posterior to cephalic slits. No marks on body. Intestinal region paler than anterior; diverticula visible; ventral side pale brown, very transparent. Proboscis beige, long and thin. Very contractile animals; posterior end usually curls during fixation process.

Ecology. Specimens found in medium sand, under rocks in mid- and lower littoral zone. They appear to be solitary.

Remarks. This species could be confused with *Dushia atra sensu* Corrêa (1963); the latter is blackish, the snout has a white anterior margin and is not pointy, the brain is not visible, the mouth is a large fissure, the posterior can have a short white region, the caudal cirrus is short and obvious only in small (< approximately 200 mm extended length) specimens (JLN, unpublished obs.).

Lineid sp. 1
(Figure 2 [7a–7b])

Material examined. One specimen (165 mm), MZUSP 00023, Brazil, Ceará, Paracuru, Praia da Pedra Rachada, 3°23.95' S 39°0.85' W, under rock, on sand, coll. Cecili Mendes, 07.IX.2014.

Field diagnosis. Anterior third of body pale orange; remaining body pink. Body long and flat, without caudal cirrus. Head white, oblong with cerebral ganglia visible as two small red regions. No eye spots. Long cephalic slits. Mouth small, immediately posterior to cephalic slits. No marks on body. Intestinal diverticula and proboscis pink, visible through body wall.

Ecology. Specimen found in muddy sand, under rocks in mid-littoral zone.

Remarks. We assign this to Lineidae, because traditional consensus diagnoses for external morphology of *Lineus* and *Micrura* morphotypes are based primarily on absence or presence of a caudal cirrus, both of which have a high likelihood of homoplasy (Schwartz & Norenburg 2001).

Discussion

This is the first report of any named species of nemertean from the Ceará coast as well as the first species-level accounting of littoral nemertean diversity along this coast, though nemerteans were identified to phylum in previous studies of Ceará fauna (Matthews-Cascon & Lotufo 2006). Lack of regional expertise often results in members of smaller and difficult phyla being identified only to major taxonomic levels. As seen here, that is exacerbated by taxonomic uncertainties and likelihood of novel species.

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