On the diversity of the SE Indo-Pacific species of *Terebellides* (Annelida; Trichobranchidae), with the description of a new species

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Abstract

The study of material collected during routine monitoring surveys dealing with oil extraction and aquaculture in waters off Myanmar (North Andaman Sea) and Indonesia (Macasar Strait), respectively, allowed us to analyse the taxonomy and diversity of the polychaete genus *Terebellides* (Annelida). Three species were found, namely *Terebellides* af. *woodlawa*, *Terebellides hutchingsae* **spec. nov. (**a new species fully described and illustrated), and *Terebellides* sp. (likely a new species, but with only one available specimen). The new species is characterised by the combination of some branchial (number, fusion and relative length of lobes and papillation of lamellae), and thoracic (lateral lobes and relative length of notopodia) characters and is compared with all species described or reported in the SW Indo-Pacific area. The taxonomic relevance of the relative length of branchial lobes and different

[AG1] Comentário: "aff."? See comment about this species below

types of ciliature in branchial lamellae for species discrimination in the genus is discussed. A key to all *Terebellides* species described in SE Indo-Pacific waters is presented.

Key words

Polychaeta, Myanmar, Indonesia, ~~*Terebellides*, New Species~~, Branchial morphology, SEM.

[AG2] Comentário: Both words are in the title

Introduction

The genus *Terebellides* is characterised by combination of several characters including the compact appearance of the prostomium, a peristomium forming two lips (upper and lower), a thorax composed by 18 chaetigers, capillary notochaetae, denticulate thoracic neurochaetal hooks and abdominal avicular uncini. Nevertheless, the two most distinctive characters are the single mid-dorsal branchiae composed by 2−5 lamellate lobes, and the geniculate chaetae present in the first 1−2 thoracic neuropodia.

[H3] Comentário: The authors could cite references of papers that redefined the genus base on phylogenetic analysis or Schüller & Hutchings, 2013 who emended the diagnoses for the last time.

The peculiar shape of the branchiae of the type species (i.e. *T. stroemii* Sars, 1835) led to attribute most subsequent records to this taxon. Therefore, the number of fully described species was relatively low and *T. stroemii* was thought as being cosmopolitan. Prior to the 1980's this species was reported from a wide variety of world areas and depths. In addition to this, the 'Catalogue of World Polychaetes' by Hartman (1959) contributed to this consideration by synonymizing several species with *T. stroemii* (e.g. *T. ypsilon*). However, since Williams (1984), this idea has gradually been changing. Imajima and Williams (1985) and Solís-Weiss *et al*. (1991) further supported to this trend and, thus, a progressively high number of new species have been (and are being) described (e.g. Hutchings *et al*., 2015; Parapar & Moreira, 2008; Parapar *et al*., 2011; 2013; 2016; Schüller & Hutchings, 2010; 2012; 2013). At the same time new characters for the species discrimination have been

[AG4] Comentário: In the last years, many new species have been described, thus I would like to suggest to include more systematic information of the genus.

[H5] Comentário: I partially agree with this statement. I believe that one of the main reason for the cosmopolitism of T. stroemii is directly related with the original description. In the 19 century only few characters were enough to discriminate the different species, but in the middle of 20 century this set of characters was not enough to distinguish among the new species. The study done by Williams (1984) clearly showed that a new set of characters was needed to help to distinguished the new species from the previously ones.

[H6] Comentário: If this a kind of revision regarding the description of new terebellids, the authors need to cite other papers (e.g. Bremec & Elias 1999; Hilbig, 2000; Hutchings & Peart 2000; Garraffoni & Lana, 2003)

reported, and those traditionally used (e.g. branchial shape) have increasingly been described in greater detail. As a result, the true diversity of the genus *Terebellides* begins to be revealed.

In the SW Indo-Pacific, ten species of *Terebellides* have been described: four from the Philippine and China Seas (Salazar-Vallejo *et al*., 2014), namely *T. intoshi* Caullery, 1915, *T. jorgeni* Hutchings, 2007, *T. sieboldi* Kinberg, 1867 and *T. ypsilon* Grube, 1878, and six from the Australian coasts: *T. akares* Hutchings, Nogueira & Carrerette, 2015, *T. jitu* Schüller & Hutchings, 2010, *T. kowinka* Hutchings & Peart, 2000, *T. mundora* Hutchings & Peart, 2000, *T. narribri* Hutchings & Peart, 2000 and *T. woodlawa* Hutchings & Peart, 2000. Additional references to the presence of *T. stroemii* in these waters are found in Caullery (1944), Rullier (1965), Gallardo (1967), Stephenson *et al*. (1970, 1974), Gibbs (1971), Knox & Cameron (1971), Hutchings (1977), Shin (1982), Amoureux (1984), Hutchings & Murray (1984), Hutchings *et al*. (1993) and Tan & Chou (1993). Further papers by Hutchings (2007), Schüller & Hutchings (2010) and Hutchings *et al*. (2015) continued with the reassessment of the diversity of *Terebellides* in Australian-Indonesian coasts.

Many reports of *T. stroemii* from Australian and New Zealand waters were summarized by Day & Hutchings (1979) while Hutchings & Peart (2000), by reviewing a high number of references and material of the Australian *Terebellides* (as well as from near the type locality in the SW coast of Norway), described four new species and conclude that *T. stroemii* is not present in southern latitudes. ~~Further papers by Hutchings (2007), Schüller & Hutchings (2010) and Hutchings *et al*. (2015) continued with the reassessment of the diversity of *Terebellides* in Australian-Indonesian coasts.~~

Our paper addresses the study of the genus in waters off Myanmar and Indonesia, allowing us to describe a new species. We are also reviewing and updating the previous works reporting this genus in the area, and we present a key to all species recorded in the SE Indo-Pacific. Our study, which is by far not definitive, represents one more contribution for

[H7] Comentário: This sentence could be rephrased

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unveiling the hidden diversity of the genus *Terebellides* in world oceans and confirms that the type species is probably absent in the Indo-Pacific area. Furthermore, we provide evidences supporting that the diversity of *Terebellides* is still far to be well known.

[H8] Comentário: This sentence could be rephrased

Material and Methods

This study is based on 82 specimens of the genus *Terebellides* from 25 samples collected during routine monitoring surveys dealing with oil extraction and aquaculture in waters off Myanmar (North Andaman Sea, 2003) and Indonesia (East of the Borneo Island, North of Macasar Strait, 2004), respectively (Table 1).

The samples were collected by means of a van Veen grab covering about 0.3 m^2. The grab contents were mixed in a sufficiently large container, and then sieved out on board by pouring the contents through a 1 mm mesh sieve. The retained sediment was then transferred into a plastic bag, fixed with a 10% formaldehyde/seawater solution, stained with “Rose of Bengal” and stored until sorted. An initial sorting was performed under a dissecting stereomicroscope (Zeiss Stemi 2000-C) and the specimens of *Terebellides* were counted and preserved in 70% ethanol.

In Myanmar, a one-liter volume of sediment from one grab was used for physico-chemical analyses (viz. granulometry, organic carbon content). The sediment was taken at each station and transferred into a wide-mouthed double-closing 500 ml polyethylene flasks, which were stored in the dark until transferred to the laboratory. Laser granulometry (% volume) was performed on dry sediment after sifting through a 0.8 mm mesh sieve using a Malvern Mastersizer S laser granulometer. Sediments were characterized by the percentage of silt and clay (diameter < 63 µm) Estimates of organic carbon have been made according to the European experimental standard NF ISO 14235 (oxidation method, 0.1 % m/m).

Light microscope images were obtained by means of a Olympus SZX12 stereomicroscope equipped with a Olympus C-5050 digital camera. Line drawings were made by means of an Olympus BX40 stereomicroscope equipped with camera lucida. Specimens used for examination with Scanning Electron Microscope (SEM) were prepared by critical point drying, covered with gold and examined and photographed under a JEOL JSM-6400 electron microscope at the Servizos de Apoio á Investigación-SAI (Universidade da Coruña-UDC, Spain).

Most of the obtained material was deposited in the Museo Nacional de Ciencias Naturales (Madrid, Spain; MNCN). Additional paratypes of *T. hutchingsae* **spec. nov.** were deposited in the collections of the Australian Museum (Sydney, Australia; AM) and Göteborgs Naturhistoriska Museum (Göteborg, Sweden; GNM). Type material of *Terebellides gracilis* Malm, 1874 was loaned for study by the Göteborgs Naturhistoriska Museum (Holotype, GNM Polych 641). Type material of *Terebellides sieboldi* Kinberg, 1866 was requested to the Swedish Museum of Natural History for comparison but only one specimen, and badly preserved, could be located (L. Gustavsson, *in litt*.).

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[AG9] Comentário: The last papers about terebellides (e.g. Schüller and Hutchings 2010; Parapar et al. 2013) showed that staining pattern of the anterior region can provide interesting patterns and a new set of characters. Why not use it in the description of the new species?

Abbreviations used in text and figures: BL—branchial lobes; BT—buccal tentacles; CP = ciliated papillae; CHG = chaetiger with geniculate chaetae; dl—dorsal lobes; gc—geniculate chaeta; go—genital opening; GP = genital papillae; LL—lateral lappets; NACH = number of abdominal chaetigers; npa—nephridial papillae; NRTU = number of rows of frontal rostral teeth in thoracic uncini; PPP = posterior pointed projection; r—rostrum; TC—thoracic chaetiger; TN—thoracic notopodia; tp—terminal projection; TU—thoracic uncini.

[H10] Comentário: Why not use branchial projection rather than the presence or fifth branchial lobe as stated by Garraffoni & Lana (2004)

[AG11] Comentário: The authors could standardize the use of abbreviation (only uppercase or only lowercase)

Results

Systematics

Family Trichobranchidae Malmgren, 1866

Genus *Terebellides* Sars, 1835, emended by Schüller & Hutchings, 2013

Type species

Terebellides stroemii Sars, 1835, redescribed by Parapar & Hutchings, 2015

[AG12] Comentário: I think that this information can be deleted

Terebellides hutchingsae **spec. nov.**

LSID: 78E96984-41E7-43E6-8E5D-03E9421BE306

(Figs 1–8, Tables 2–3)

Material examined

INDONESIA (Macasar Strait): **Holotype**: MNCN 16.01/0000 (St. 6). **Paratypes:** MNCN 16.01/0000 (St. 2, 4 specs); MNCN 16.01/0000 (St. 3, 3 specs); MNCN 16.01/0000 (St. 5, 2+1 specs); MNCN 16.01/0000 (St. 5, 1 spec. on SEM stub); MNCN 16.01/0000 (St. 6, 5 specs); MNCN 16.01/0000 (St. 7, 5 specs); MNCN 16.01/0000 (St. 8, 7 specs); MNCN

[AG13] Comentário: I prefer that the specimens deposited in the museum are listed separated from those specimens used from the SEM.

16.01/0000 (St. 8, 1 spec. on SEM stub); MNCN 16.01/0000 (St. 15, 2 specs); MNCN 16.01/0000 (St. 16, 6 specs); MNCN 16.01/0000 (St. 23, 1 spec. on SEM stub. **MYANMAR** (North Andaman Sea): **Paratypes**: MNCN 16.01/0000 (St. E7(2), 1 spec.); MNCN 16.01/0000 (St. E8(3), 1 spec.); MNCN 16.01/0000 (St. E11B(2), 4 specs); MNCN 16.01/00000 (St. E11B(3), 2 specs); MNCN 16.01/0000 (St. E14(2), 4 specs); MNCN 16.01/0000 (St. E15(2), 10 spec.); MNCN 16.01/0000 (St. E16(1), 2 specs); MNCN 16.01/0000 (St. E16(3), 1 spec.); MNCN 16.01/0000 (St. 17(3), 1 spec.); MNCN 16.01/0000 (St. S2(2), 1 spec.); MNCN 16.01/0000 (St. S3(2), 4 specs); MNCN 16.01/0000 (St. S3(2), 1 spec. on SEM stub); MNCN 16.01/0000 (St. S3(3), 4 specs); MNCN 16.01/0000 (St. S4(2), 2 specs); MNCN 16.01/0000 (St. S4(3), 1 spec.); MNCN 16.01/0000 (St. WP2(2), 2 specs); MNCN 16.01/0000 (St. WP2(3), 2 specs); MNCN 16.01/0000 (St. WP2(3), 2 specs on SEM stub); MNCN 16.01/0000 (St. WP3(3), 1 spec.).

Description (based on holotype and paratypes)

Complete individuals ranging from 9.0 to 14.0 mm in length (14 mm in holotype; Fig. 2A–B) and 0.7 to 1.5 mm in maximum width at thoracic region (1.3 mm in holotype, excluding parapodia). Body tapering posteriorly with segments increasingly shorter and crowded towards pygidium. Prostomium compact; peristomium forming a tentacular membrane with large upper and lower lips surrounding mouth, sometimes almost devoid of buccal tentacles (Fig. 3A). Buccal tentacles of two types, short ventral tentacles uniformly cylindrical or slightly expanded at tips, and long dorsal tentacles more expanded at tips (Figs 2B, 4A–B). Lateral lappets on TC1–5 (SGIII–VII), being larger in TC1–3 (Figs 2B, 3A, 4C, 6A). No conspicuous dorsal rounded projection on anterior chaetigers or oval-shaped glandular region in TC3. Both notopodia and notochaetae in TC1 less developed than in following chaetigers (Figs 3A, 4C).

[AG14] Comentário: I could not find this abbreviation in the "*Abbreviations list*"

Branchiae arising as single structure from SGII–III, with a single, mid-dorsal, stalk and two pairs of unfused lobes; lower (=ventral) (BL3–4) pair smaller and much shorter than upper (=dorsal) (BL1–2) pair of lobes (Figs 3A–B, 6B–C). Upper and lower lobes with a short terminal pointed projection (although deciduous and sometimes damaged) (Fig. 3C). Dorsal pair of branchial lobes with short anterior projection (fifth lobe; BL5) (Fig. 3D), sometimes hidden behind buccal tentacles (Fig. 2A–B). Loss of any of branchial lobes not observed. One side of branchial lamellae with parallel bent rows of cilia and well-developed ciliated papillae on edge of one side of each branchial lamella (Fig. 3D–F).

Eighteen thoracic chaetigers (SGIII–XX), all with notopodia; neuropodia from SGVIII. Notopodia of TC1 smaller than following ones (Fig. 4C, E); all remaining notopodia similar in size. Thoracic neuropodia as sessile pinnules, from TC6 (SGVIII) to TC18, with uncini in single rows from TC7 (SGIX) throughout. Thoracic notochaetae similar in length, with textured surface (Fig. 4F). Ciliated papilla dorsal to each thoracic notopodia not observed. First thoracic neuropodia (TC6) with 4–7 geniculate acicular chaetae with minute teeth in their upper part forming a *capitium* easily overlooked without SEM (Fig. 6E–F); sharply bend. Subsequent thoracic neuropodia with one row of about 8–10 uncini per torus (Fig. 5A); uncini as shafted denticulate hooks with long, pointed *rostrum* surmounted by 4–5 teeth and an upper crest of several smaller denticles of different sizes (Fig. 5A–C). One finger-shaped nephridial papilla basal to branchial stem (Fig. 4E); genital openings, dorsal to notopodia in TC4 and TC5 (Figs 4D, 6D).

Twenty seven to 30 abdominal chaetigers (30 in holotype). Abdominal neuropodia as erect pinnules, with about 30 uncini per torus (Fig. 5D). Uncini with 3–4 teeth above main fang (Fig. 5D–E), surmounted by a row of an irregular number of shorter teeth and an upper crest of minute teeth. Pygidium blunt, funnel-like depression. No eggs were observed in body

198 cavity of holotype, but mature females of smaller size were observed (9.0 mm length, 1.0 mm
199 width). Colour in alcohol pale brown.
200
201 *Type locality*
202 Macasar Strait (Indonesia), muddy bottom with shell fragments at 72 m depth.
203
204 *Distribution and habitat*
205 Specimens of *T. hutchingsae* **spec. nov.** were found in shallow water bottoms (45.5–51.0 m
206 depth) about 80 Km off the coast of Myanmar (North Andaman Sea) and in slight deeper
207 bottoms (58.0–84.0 m depth) about 16 Km off the mouth of the Mahakam delta in the East
208 coast of the Borneo Island (Indonesia) (North Makassar basin) (Table 1, Fig. 7).
209
210 *Etymology*
211 The species is named after Dr. Pat Hutchings, for her many contributions to the taxonomy of
212 Terebelliform polychaetes in Australia and SW Pacific waters, and particularly to the genus
213 *Terebellides*, and also for her key role in the study of Australian polychaetes.
214
215 *Remarks*
216 Several species of *Terebellides* were previously described in the Myanmar-Indonesia-
217 Philippines-North Australia area (Fig 7): *T. intoshi* Caullery, 1915, *T. sieboldi* Kinberg, 1867,
218 *T. ypsilon* Grube, 1878, *T. jorgeni* Hutchings, 2007 and *T. jitu* Schüller & Hutchings, 2010.
219 *Terebellides intoshi* is characterised by the large size of the notopodia and notochaetae from
220 TC6 onwards (Fig. 8A) and probably by the presence of two chaetigers with geniculate
221 chaetae as well (see Remarks of *Terebellides* sp.); *T. sieboldi* has geniculate chaetae in TC7
222 instead of TC6 and *T. ypsilon* is considered undeterminable by Hutchings & Peart (2000)

[H15] Comentário: Why the authors only compared the morphological variation of the new species with the morphotypes found close to the type locality? I think that the morphological features of the new species need be compared with those species that have a close set of features independently of the distance

because type material no longer exists. The two most recently described species, *Terebellides jorgeni* and *T. jitu*, are the most similar to *T. hutchingsae* **spec. nov.** *Terebellides jorgeni* differs from the new species in: 1) the presence of glandular and whitish ventral part of anterior segments, SG5 to SG9 (CH3 to CH7) but specially on SG5 to SG7 (absent in *T. hutchingsae* **sp. nov.**), and bearing pronounced thickening and elevation of dorsal anterior margins forming dorsal crests; 2) genital pores are present in SG4 and SG5, instead of SG6 and SG7 (TC4 and TC5) as in *T. hutchingsae* **spec. nov.**; 3) the branchiae are formed by four lobes instead of five**.** On the other hand, the overall shape of branchiae is quite similar in both species, being lobes 1–4 unequal sized and entirely free (not fused), with upper (dorsal) ones larger than lower (ventral) ones, and with "surface of branchial lamellae weakly papillate" (cfr. p. 78 in Hutchings, 2007); the latter probably refers to the presence of ciliated papillae, which is a feature difficult to confirm in the original figures.

Terebellides jitu is also similar to *T. hutchingsae* **spec. nov.** but all branchial lobes are of similar length and fused half of their length instead of the lower ones being much shorter and fused basally as in *T. hutchingsae* **spec. nov.**

Terebellides narribri Hutchings & Peart, 2000 and *T. woolawa* Hutchings & Peart, 2000 were described from the NE Australian coast. Both species share with *T. hutchingsae* **spec. nov.** branchiae with similar shape and composed by five lobes; *Terebellides narribri* differs from the new species by having first thoracic notopodia (TN1) of same size as the following, and TC3 bearing large, white, oval pair of glandular patches. *Terebellides woodlawa* is characterised by the great development of BL5 (see Remarks on *T*. af. *woodlawa*) and by having anterior thoracic segments with dorsal projections on lateral lappets, which are absent in *T. hutchingsae* **spec. nov.**

The North Atlantic species and type species of the genus *Terebellides*, i. e. *T. stroemii* Sars, 1835, was also widely reported in the area (e. g. Indonesia: Caullery (1944); South Korea:

[AG16] Comentário: As you start the sentence pointing out that *Terebellides jorgeni* and *T. jitu*, are similar to *T. hutchingsae*, report the features that are similar and then report those used to distinguished.

Gallardo (1967); Hong Kong: Shin (1982); Singapore: Tan & Chou (1993); Australian coast: Stephenson *et al*. (1970; 1974), Knox & Cameron (1971), Hutchings (1977), Amoureux (1984), Hutchings & Murray (1984), Hutchings *et al*. (1993); Fig. 7). This species was recently redescribed by Parapar & Hutchings (2015) from Norwegian specimens collected by Michael Sars near the type locality. In the Southern Pacific Ocean, its presence had already been denied by Hutchings & Peart (2000) after examining Norwegian material; indeed, part of this material was already reassigned to other species (see Hutchings & Peart, 2000) while others specimens were not. Among the latter, the material reported by Caullery (1944) and collected during the Siboga expedition might well correspond to more than one species according to the description and illustrations. The shape of the branchiae in specimen from station 271 (fig. 147 in Caullery, 1944; redrawn here in Fig. 8B) and station 311 (fig. 148 in Caullery, 1944; redrawn here in Fig. 8C) sharply differs in BL5 size; the specimen of station 311 is more similar in branchial shape to *T. hutchingsae* **spec. nov.** but differs in the high degree of fusion of dorsal and ventral lobes in Caullery's material (see Fig. 8C). The specimen reported by Gallardo (1967) cannot be properly identified because the description is quite brief (e.g. "The branchia has the typical shape…") and only a lateral view of a thoracic uncinus is illustrated and this is not relevant in species discrimination.

One of the most relevant diagnostic characters of *T. hutchingsae* **spec. nov.** is the presence of ciliated papillae in branchial lamellae. This character was long ignored in *Terebellides* descriptions and was discussed by Parapar *et al*. (2016). In fact, several recently described species from across the world oceans show this feature, namely *T. gracilis* Malm, 1874 *sensu* Parapar *et al*. (2011), off Iceland; *T. jorgeni* Hutchings, 2007, from Indonesia; *T. gracilis* Malm, 1874 *sensu* Parapar *et al*. (2013) and *T. mediterranea* Parapar *et al*., 2013, from the Adriatic Sea; *T. akares* Hutchings *et al*., 2015, from the Great Barrier Reef (NE Australia); a new species described by Parapar *et al*. (in press), from the Persian Gulf; and *T*. af. *woodlawa*

[AG17] Comentário: This reference is not cited in the reference list. As the paper is in press, it could be interesting to insert the DOI.

Hutchings & Peart, 2000 *sensu* Parapar *et al*. (this work) from South Myanmar. This character is probably much more widespread that was thought previously, and shows at least two different morphotypes: 1) low papillae as it was found in *T. gracilis* from Iceland and the Mediterranean, and 2) well developed papillae in the rest of species. The presence of these low ciliated papillae (Parapar *et al*., 2011; 2013) in Icelandic and Adriatic specimens of *T. gracilis* could not be confirmed yet in the holotype of (see M&M above).

Terebellides af. *woodlawa* Hutchings & Peart, 2000

[AG18] Comentário: "aff."?

(Figs 2C–D)

Material examined

Two specimens. MNCN 16.01/0000 (St. S4(3), 1 spec.); MNCN 16.01/0000 (St. WP3(3), 1 spec.).

Distribution and habitat

Both specimens of *T*. af. *woodlawa* were found in two near shallow water stations (51.0 m depth) about 80 Km off the mouth of the Irawadi river in the coast of Myanmar (North Andaman Sea) (Table 1).

Remarks

Terebellides woolawa is characterised by the well-developed fifth branchial lobe (BL5) and the presence of dorsal rounded projections on lateral lappets of SG 3–6 (TC1–4). This large species was described from intertidal to shallow water habitats in eastern Australia (Fig. 7) and was found across most of Australian coasts (Hutchings & Peart, 2000). Specimens found in this study are large-sized, and agree fairly well with the original description; in particular,

specimen MNCN 16.01/0000 shows the typical shape of the branchiae, which have five lobes, BL1–4 are fused up to half of their length, filamentous tips are short, and BL5 is well developed (Fig. 2C–D). Nevertheless, our specimens lack the characteristic dorsal lobes of anterior thoracic lateral lappets: this prevented to fully confirm the identity of our material.

[AG19] Comentário: Following the recommendation of Bengtson (1988 - Palaeontology 31:223–227) the use of "aff." Between genus and species name is ntended to indicate a new undescribed species and to relate it to a known and named species. In the other hand, "cf." between genus and species names when the identification is provisional and may require further data. For me, in this case, the authors could use " cf" instead " aff"

Terebellides sp.

(Fig 2E–F, 7, 9)

Material examined

One specimen. MNCN 16.01/0000 (St. S4(3), 1 spec.).

Distribution and habitat

The specimen was found in shallow water bottom (51.0 m depth) about 16 Km off the coast of Myanmar (North Andaman Sea) (Table 1).

Remarks

The specimen differs from *T. hutchingsae* **spec. nov.** and *Terebellides* af. *woolawa* in two features: 1) BL5 is large-sized, about half the length of posterior lobes (BL1–4); and 2) TC5 and TC6 are both provided with acicular geniculate chaetae. Thus, BL5 is longer than in any other described species including *T. woodlawa*; however, this might be due to the preservation state of the specimen, which is slightly deteriorated. Anyway, the combination of the two aforementioned characters may justify the erection of a new species but we prefer to wait for eventual finding of additional specimens to confirm its status.

Four species of the genus *Terebellides* were previously described as having geniculate chaetae in two thoracic chaetigers: *T. akares* Hutchings, Nogueira & Carrerette, 2015 (North-

East Autralia), *T. biaciculata* Hartmann-Schröder, 1992 (French Polynesia), *T. bigeniculatus* Parapar, Moreira & Helgason, 2011 (Iceland) and *T. intoshi* Caullery, 1945 *sensu* Imajima & Williams (1985) (Japan).

We follow Parapar *et al*. (2011) in considering that type material of *T. intoshi* from South China Sea (see Figure 8) probably does not have two chaetigers with geniculate chaetae and thus Japanese material would belong to a different species. Anyway, the latter also differs from *Terebellides* sp. in the branchial shape and the greater development of thoracic notopodia from TC6 (Fig. 8A). In *Terebellides akares*, the branchiae bears a much shorter BL5 and posterior ventral lobes (BL3–4) are completely free from each other; in *Terebellides* sp., these lobes are fused in most of their length (Fig. 2F).

Key of SE Indo-Pacific species of Terebellides

The key here presented has been modified from the previous key of Australian Trichobranchidae (Hutchings & Peart 2000), which was based on a limited number of easy-to-detect characters: 1) number of chaetigers with geniculate chaetae, 2) degree of development of thoracic notopodia, and 3) shape of branchiae, giving special emphasis to the relative size of branchial lobes. *Terebellides ypsilon* Grube, 1878, from the Philippines, was not included because the description is very brief and following Hutchings & Peart (2000), who revised the type material, the taxon should be considered as undeterminable.

1. GC in two

TC 2

- GC in one

TC 4

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[H20] Comentário: Although the authors provided the abbreviation list I believe that could be better (and easy) to use here the non-abbreviated name of the structure

2. All TN of similar length 3

- TN from TC6 onwards much bigger in size and with more numerous and longer notochaetae ....
T. intoshi Caullery, 1944

3. TU with GC similar in shape and position ..... *T. akares* Hutchings *et al*., 2015

- TU with GC different in shape and position .....
***Terebellides* sp.**

4. GC in TC7[1] ..... *T. sieboldi* Kinberg, 1867

- GC in TC6 5

5. Branchial lobes 1-4 loosely fused ..... *T. mundora* Hutchings & Peart, 2000

- Branchial lobes 1-4 more or less fused 6

6. Four branchial lobes 7

- Five branchial lobes 8

7. All TN similar in size and well developed ..... *T. kowinka* Hutchings & Peart, 2000

- TN1 and TN2 much smaller than subsequent ones ..... *T. jorgeni* Hutchings, 2007

8. BL5 about 1/5 length of posterior lobes; thoracic LL without dorsal projections, GC of TC6 sharply bent 9

- BL5 almost 1/2 length of posterior lobes; LL of TC1-4 with dorsal projections, GC of TC6 gently curved ..... *T. woolawa* Hutchings & Peart, 2000

9. TN1 not reduced; large, white, oval glandular patches in TC3 .... *T. narribri* Hutchings & Peart, 2000

- TN1 strongly reduced; no glandular patches in TC3 10

10. All branchial lobes of similar length and fused half of their length; BL with transverse ridges of ciliature ..... *T. jitu* Schüller & Hutchings, 2010

- Ventral (posterior) branchial lobes much sorter than dorsal (anterior) ones and fused basally; BL with ciliated papillae on border ..... ***T. hutchingsae* spec. nov.**

[(1)] The position of GC in TC7 is very rare in the genus *Terebellides*; this feature is apparently only shared with *T. pacifica* Kinberg, 1866, a species which has been removed from synonymy with T. *stroemii* by Garraffoni *et al.* (2005).

[AG21] Comentário: Not in the reference list

Acknowledgements

We are indebted to the staff members of Créocéan, who recovered the material during the processing of benthic macrofaunal samples and explicitly accepted to allow publishing the information contained in this study, and to Andrea Feijoo (UDC) for the initial study of the material. Special thanks are also due to Ada Castro and Cati Sueiro (SAI, UDC) for assisting with the preparation of the specimens and use of the SEM, and to Xela Cunha (Marine Station of A Graña-Ferrol, University of Santiago de Compostela-USC, Spain) for her assistance with the stereomicroscope images. Authors also wish to thank Kennet Lundin (GNM) for sending *T. gracilis* holotype, and Lena Gustavsson (NRM) for her help in trying to locate *T. sieboldi* holotype.

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