

# Revision of three species of *Terebellides* (Polychaeta: Trichobranchidae) described by C. Hesse in 1917 from the Southern Ocean

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## Abstract

A revision of the taxonomic status of *Terebellides antarcticus* Hesse, 1917, *Terebellides longicaudatus* Hesse, 1917 and *Terebellides minutus* Hesse, 1917 was undertaken through the examination of the type material. Thus, *T. longicaudatus* is regarded as a valid species and redescribed and *T. antarcticus* and *T. minutus* are considered as junior synonyms of *Terebellides kerguelensis* McIntosh, 1818. *Terebellides longicaudatus* is characterized by the presence of large lateral lobes on chaetigers 1 to 5, 1 and 2 being the largest, first thoracic acicular neurochaetae gently bent, wide thoracic neuropodia fascicles with numerous uncini and the first notopodium greatly reduced. Comments on several body characters related to branchial and chaetal structure are also provided.

## Keywords:

Annelida; *Terebellides longicaudatus*; *Terebellides antarcticus*; *Terebellides minutus*; Antarctica

## Introduction

The Swedish South Polar Expedition (SSPE) was conducted from 1901 to 1903 in Tierra del Fuego (southern South America), Graham and Palmer coast (Antarctic peninsula) and Falkland Islands, South

Georgia Island and Shag rocks (Scotia Arc). A number of polychaete families from this cruise were studied by different authors: Maldanidae by Arwidsson (1911), Phyllodocidae and Polynoidae by Bergström (1914, 1916), Ampharetidae and Terebellidae by Hessle (1917), Spionidae by Söderström (1920), Sabellidae and Serpulidae by Johansson (1922, 1927) and Hesionidae by Hessle (1925). Later, Hartman (1953) listed all the non-pelagic polychaetes collected during the expedition summarizing those previous studies and including additional records. Pelagic species were studied by Støp-Bowitz (1951).

In his worldwide revision of Terebelliform polychaetes, Hessle (1917) revised the material collected during the SSPE describing three new species of *Terebellides*: *Terebellides antarcticus* Hessle, 1917 from shallow waters off Graham's Land, and *Terebellides minutus* Hessle, 1917 and *Terebellides longicaudatus* Hessle, 1917 from South Georgia Island. The author presented very brief descriptions of the species and differentiated *T. minutus* and *T. antarcticus* from *T. stroemii* Sars, 1835 and *T. longicaudatus* according to the shape of thoracic and abdominal uncini. Monro (1930) again reported on *T. minutus* and *T. longicaudatus* from South Georgia Island, suggesting that *T. antarcticus* and *T. minutus* could be the same species on the basis that *T. minutus* was a stage in the development of *T. antarcticus*. Anyway, *T. antarcticus* and *T. minutus* would differ from *T. longicaudatus* “by having the 1st notopod fully developed and by the absence of lateral flaps to the anterior segments” (Monro 1930:198). Soon after, Monro (1939), in a study of the polychaetes collected within the framework of the British, Australian and New Zealand Antarctic Expedition (1929–1931), reported on *Terebellides stroemii kerguelensis* McIntosh, 1885 which was originally described from the Kerguelen Islands. This subspecies was recently established as a valid species by Parapar and Moreira (2008). After examining McIntosh's types, Monro (1939:148) considered that both *T. antarcticus* and *T. minutus* were synonyms of *T. kerguelensis*.

This synonymy was not subsequently followed up by Hartman (1953:52) who considered the three species of *Terebellides* described by Hessle (1917) valid. Later, in her catalogue of world polychaetes, Hartman (1959:533) reconsidered the synonymies proposed by Monro (1939) which was eventually reflected in her later compilation on Antarctic “sedentary” polychaetes (Hartman 1966:113). In that work, Hartman (1966:111) mentioned the presence of *T. kerguelensis* and *T. longicaudatus* in Antarctic waters while no reference to *T. antarcticus* was provided. Finally, in her study of the Polychaeta of the Weddell Sea (Hartman 1978:202), she recorded both *T. longicaudatus* and *T. kerguelensis* and made no further mention of either *T. minutus* or *T. antarcticus*.

Other studies on polychaetes collected during a number of Antarctic cruises such as those by Ehlers (1913) on the “Deutsche Südpolar Expedition”, Augener (1932) on the Norwegian Antarctic Expeditions 1927–1928, Monro (1936) on the RRS “Discovery”, “Discovery II” and “Scoresby” cruise in South Georgia, Levenstein (1964) on Russian expeditions, Hartman (1967) on the USNS “Eltanin” and “Staten Island” cruises as well as other more recent reports from German, Italian, Polish, and Spanish cruises in the Antarctica (e.g. Hartmann-Schröder and Rosenfeldt 1989, 1991; Cantone and Sanfilippo 1992; Sicinski and Janowska 1993; Parapar and San Martín 1997; San Martín et al. 2000; Sicinski 2004) do not provide any reference to *T. longicaudatus*. In those papers, *T. kerguelensis* (as *T. stroemii kerguelensis*) is the only species reported of this genus in those waters.

In the last three decades, much effort has been placed upon a worldwide revision of the Trichobranchidae diversity, mostly after papers by Williams (1984) and Holthe (1986) (e.g. Kritzler 1984; Imajima and Williams 1985; Solis-Weiss et al. 1991; Bremec and Elias 1999; Hutchings and Peart 2000; Garraffoni and Lana 2003; Díaz-Díaz and Liñero-Arana 2003; Garraffoni and Lana 2004; Garraffoni et al. 2005). In his catalogue of world Terebellomorpha, Holthe (1986:116) still

considered *T. longicaudatus* as a valid Antarctic and subantarctic species following Monro (1939) and Hartman (1966), and regarded *T. antarcticus* and *T. minutus* as synonyms of *T. kerguelensis* (Holthe 1986:117). Nevertheless, Garraffoni et al. (2005:14) recently suggest that new examination of type specimens of *T. antarcticus* and *T. minutus* could re-establish these species as valid. Recent references to *T. longicaudatus* can be found in Hutchings and Peart (2000:245) and Rozbaczylo et al. (2006:85). The latter authors distinguish *T. longicaudatus* from *T. kerguelensis* by the smaller development of the first notopodium in the former.

In the present work, type material of *Terebellides antarcticus*, *T. minutus* and *T. longicaudatus* and specimens of *T. longicaudatus* examined by Monro (1930) and Hartman (1978) are revised. As a result of this, the synonymy among *T. antarcticus*, *T. minutus* and *T. kerguelensis* is confirmed. *Terebellides longicaudatus* is considered here a valid species and the holotype is redescribed to complete the original description by taking into account characters currently used in trichobranchid taxonomy. This paper is a new addition to the taxonomic revision of the genus *Terebellides* in Antarctic waters, which began with the redescription of *T. kerguelensis* McIntosh, 1885 by Parapar and Moreira (2008).

## Materials and methods

Type material of *Terebellides antarcticus*, *T. minutus* and *T. longicaudatus* described by Hesse in 1917 (Hesse, C. 1917. Zur Kenntnis der terebellomorphen Polychaeten. *Zoologiska bidrag från Uppsala*, 5: 39–258. was loaned by the Swedish Museum of Natural History (SMNH, Stockholm). The specimen of *T. longicaudatus* used for redescription of the species is registered as SMNH 6626 and labelled as “Holotype”. Additional material identified as *T. longicaudatus* by Monro (1930) (Monro, C. C. A. 1930. Polychaete worms. *Discovery Reports*, 2: 1–222.) and Hartman (1978) (Hartman, O. 1978. Biology of Antarctic Seas, 6. Polychaeta from the Weddell Sea quadrant, Antarctica. *Antarctic Research Series*, 26: 125–223.) was loaned by the British Museum of Natural History (BMNH, London) and United States National Museum (USNM, Washington), respectively. The specimens are stored in 70% ethanol. Observations, drawings and measurements were made using an Olympus SZX9 stereomicroscope and an Olympus BX40 compound microscope, both equipped with a drawing tube. Specimens used for scanning electron microscopy (SEM) were dehydrated via a graded ethanol series, critical-point dried using CO<sub>2</sub>, covered with gold in a BAL-TEC SCD 004 sputter coater at the SAIN (Universidad de Coruña, Spain), and examined and photographed under a LEICA LEOS 435VP SEM at the RIAIDT (Universidad de Santiago de Compostela, Spain).

## Systematics

Family **TRICHOBRANCHIDAE** Malmgren, 1866

Genus *Terebellides* Sars, 1835

*Terebellides longicaudatus* Hesse, 1917.

(Figures 1–4)

*Terebellides longicaudatus* Hesse 1917:139, plate I, figure 17, Textfigure 30.

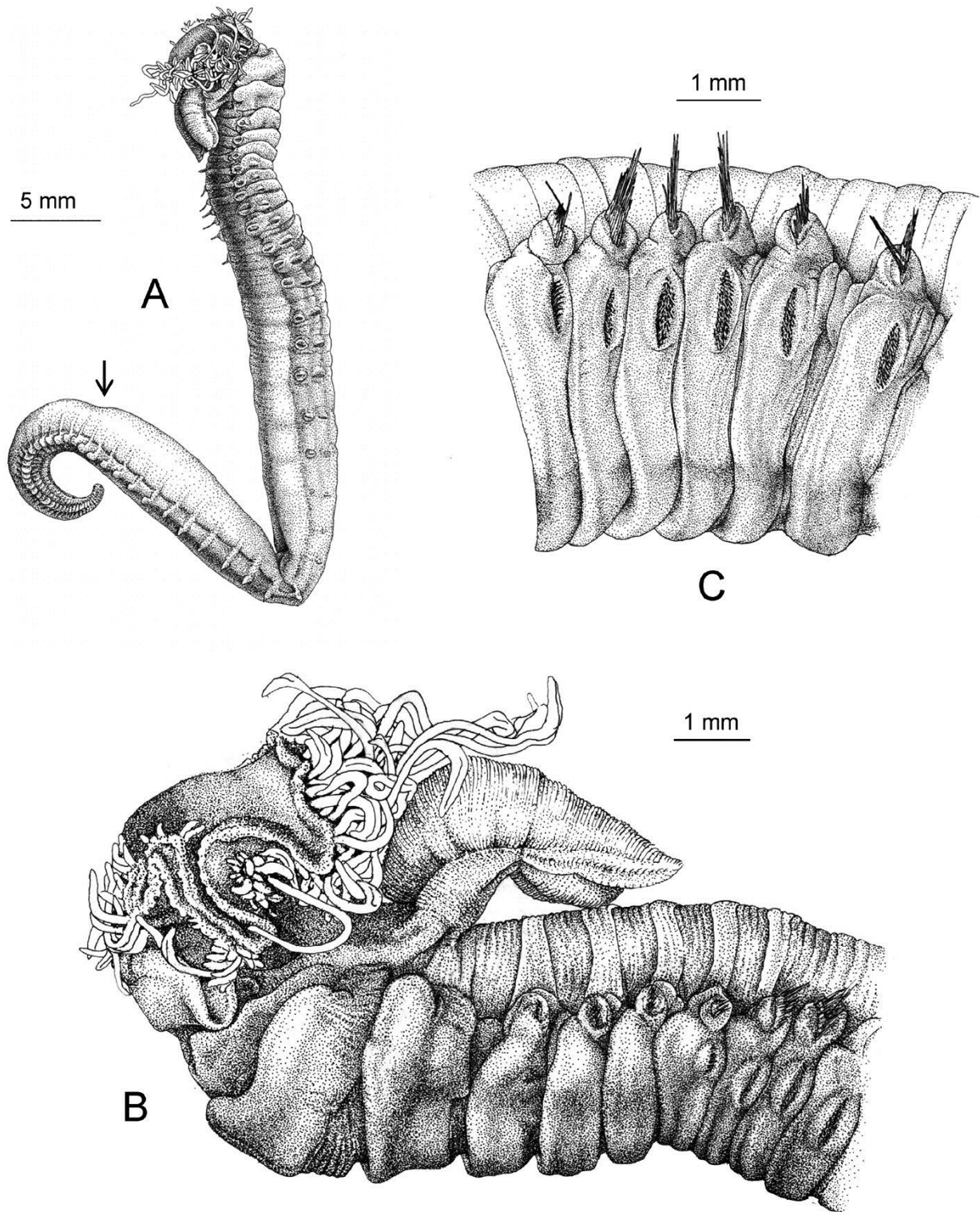


Figure 1 *Terebellides longicaudatus* Hesse, 1917. (A) Holotype (SMNH 66269), lateral view showing constriction in abdominal chaetiger 17 (arrow); (B) Anterior end, lateral view; (C) Thoracic chaetigers 6–11, latero-ventral view.

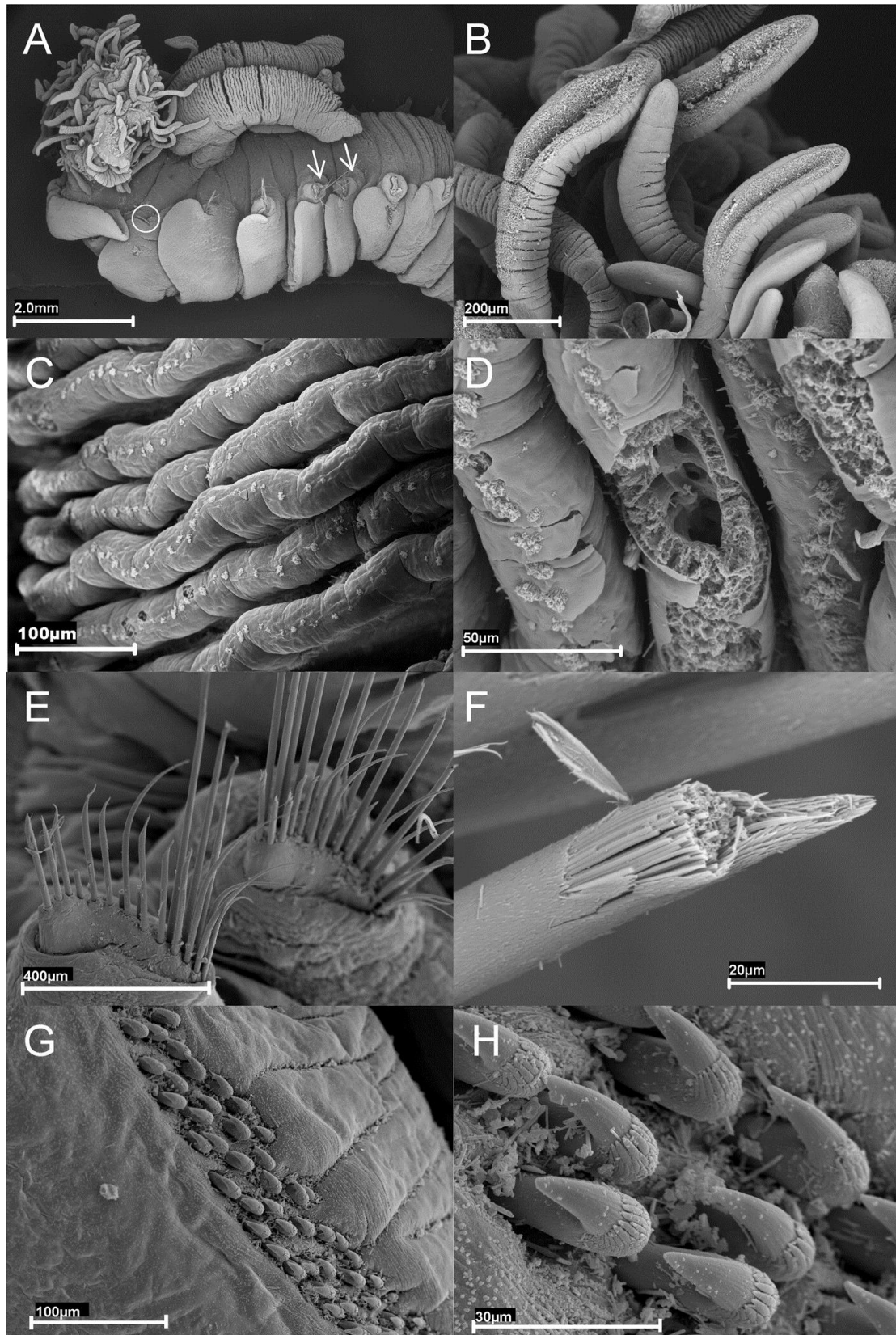


Figure 2 *Terebellides longicaudatus* Hesse, 1917. SEM micrographs from syntype SMNH 6625. (A) Anterior end, lateral view showing position of first notopodium (encircled) and segmental organs on 4th and 5th chaetigers (arrow); (B) Oral tentacles, distal end, detail; (C) Tufts of cilia of branchial lamellae, dorsal view; (D) Damaged margin of one branchial lamella showing internal structure of marginal efferent blood vessel; (E) Thoracic notochaetae (mostly broken) of chaetigers 10–11; (F) Broken thoracic notochaetae showing internal structure; (G) Thoracic neuropodium of chaetiger 7; (H) Thoracic uncini of chaetiger 7, upper view.

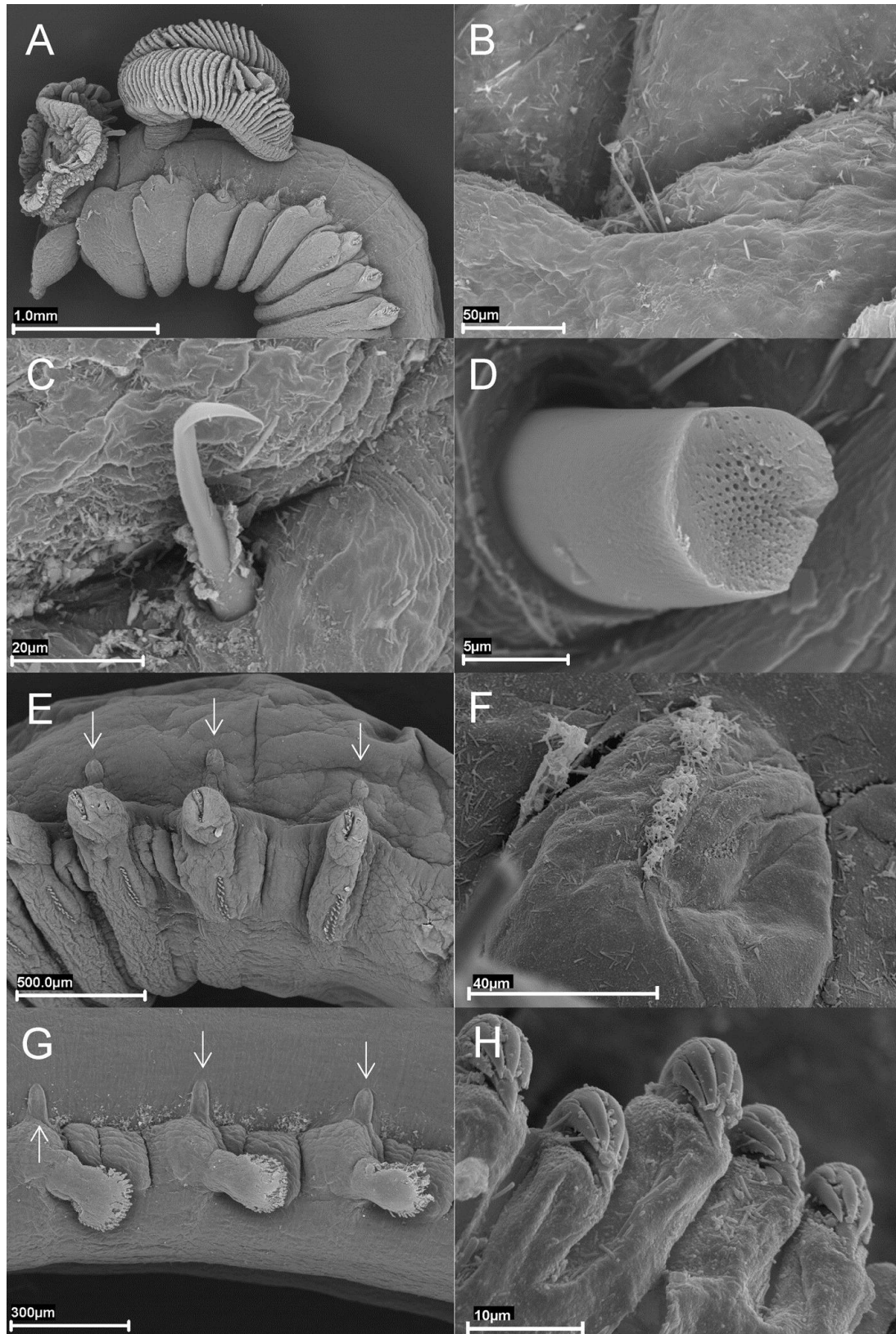


Figure 3 *Terebellides longicaudatus* Hesse, 1917. SEM micrographs from syntype SMNH 6631. (A) Anterior end, lateral view; (B) Notopodium, first thoracic chaetiger; (C) Geniculate acicular hook, 6th thoracic chaetiger; (D) Geniculate hook, internal structure, detail showing fused inner hollow channels; (E) Thoracic chaetigers 11 to 13, lateral view; (F) Thoracic dorsal papilla; (G) Mid-abdominal chaetigers, lateral view; (H) Abdominal uncini. Arrows show position of dorsal papillae.

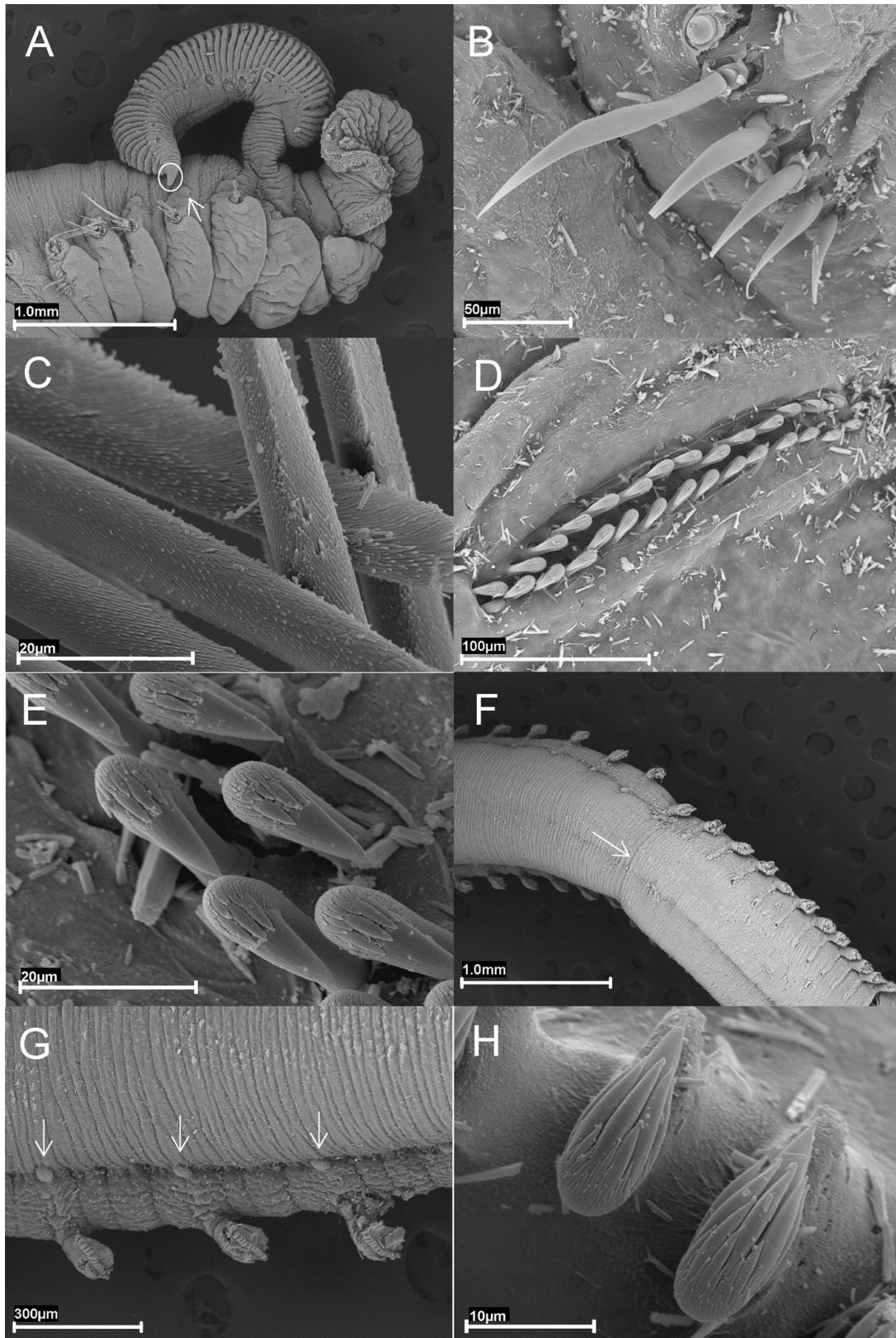


Figure 4 *Terebellides longicaudatus* Hesse, 1917. SEM micrographs from syntype SMNH 6636. (A) Anterior end, lateral view showing pointed projection of lobe ii (encircled) and position of dorsal papilla on chaetiger 3 (arrow); (B) Geniculate acicular hooks, 6th thoracic chaetiger; (C) Textured surface of thoracic notochaetae; (D) Thoracic unciniger, chaetiger 12; (E) Thoracic uncini, upper view; (F) Body constriction between abdominal chaetigers 17 and 18 (arrow); (G) Abdominal chaetigers 12 to 14, dorsal view showing dorsal papillae (arrow); (H) Abdominal uncini; upper view.

### *Type material*

*Swedish Museum of Natural History, Stockholm* SMNH 540 (South Georgia, mouth of Cumberland Bay, 252–310 m depth, 54°11'S; 36°18'W, grey clay, some stones, SSPE, st. 34; one spec.), SMNH 598 (South Georgia, Cumberland Bay, Antarctic Bay, 250 m depth, 54°12'S; 36°50'W, SSPE, st. 20; one spec.), SMNH 6625 (South Georgia, Cumberland Bay, off May Bay, 75 m depth, 54°17'S; 36°28'W, clay, algae, SSPE st. 22; three specs.), SMNH 6626 (SSPE st. 22; one spec.; HOLOTYPE), SMNH 6627 (SSPE st. 22; one spec.), SMNH 6628 (SSPE st. 22; one spec.), SMNH 6629 (South Georgia, Cumberland Bay, outside Grytviken, 95 m depth 54°22'S; 36°27'W, clay, SSPE st. 24; two specs.), SMNH 6630 (SSPE st. 34; one spec.), SMNH 6631 (SSPE st. 34; seven specs.), SMNH 6632 (SSPE st. 34; two specs.), SMNH 6633 (SSPE st. 34; one spec.), SMNH 6634 (SSPE st. 34; one spec.), SMNH 6635 (SSPE st. 34; one spec.), SMNH 6636 (SSPE st. 34; five specs.), SMNH 6637 (SSPE st. 34; one spec.), SMNH 6638 (SSPE st. 34; three specs.).

### *Additional material*

*British Museum of Natural History, London* South Georgia, Antarctica. NHM 1930.10.8.2163–65 (two specs.), NHM 1930.10.8.2167–70 (three specs.), NHM 1930.10.8.2234 (one spec.), NHM 1930.10.8.2236–39 (six specs.), NHM 1930.10.8.2525 (one spec.).

*United States National Museum, Washington* Weddell Sea, Antarctica. USNM 47076 (USCGC Glacier, cr. 2, st. 27; 64°46.2'S; 41°30.1'W, 4575 m, March 19, 1969, one spec.), USNM 47075 (USCGC Glacier, cr. 2, st. 21; 73°52'S; 31°18'W, 2288 m, March 13, 1969, one spec.).

### *Type locality*

South Georgia Island, Cumberland Bay, off May Bay, 75 m depth, 54°17'S 036°28'W (Antarctica). Clay, algae.

### *Description (based on holotype)*

Complete specimen of 55 mm in length and 4 mm in width; body tapering posteriorly with segments increasingly shorter and compacted towards pygidium (Figure 1A). Prostomium compact; tentacular membrane surrounding the mouth and provided with one type of oral tentacles with expanded ciliated tips (Figure 1B, 2B). First segment forming an expanded structure (“lower lip”) below peristomium. Eyespots absent. Branchiae arising as single structure from segments 3–4 (Figure 4A), consisting of single mid-dorsal stalked structure constituted by two pairs of similar-sized lobes; branchial lobes fused together for the most part of their length; a short additional anterior projection (“fifth lobe”) also present (Figure 4A). Posterior region of superior lobes (i and ii) with pointed projection (Figure 4A). Branchial lamellae provided with ciliated rows on both sides and tufts of cilia at dorsal edge (Figure 2C–D). Lateral lappets on chaetigers 1 to 5 (segments 3 to 7), particularly developed in chaetigers 1 and 2 (Figure 1B, 2A, 3A, 4A); anterior margins separated from body wall. Rounded dorsal projections from chaetiger 1 to 5 (Figure 2A). Ventral glandular bands absent.

Notopodia numbering 18 pairs (segments 3 to 20), compact, rectangular and of similar size except those of chaetiger 1 which are smaller (Figure 3B). Neuropodia present from chaetiger 6 (segment 8) to pygidium. Thoracic neuropodia as broad sessile pinnules (Figures 1C, 2G); abdominal neuropodia as erect pinnules (Figures 3G, 4G). Notochaetae of first chaetiger shorter and less numerous than in subsequent notopodia. All notochaetae simple, broad-winged capillaries (Figure 2E) with textured surfaces (Figure 4C) and tubular internal structure (Figure 2F). No accessory chaetae.



First thoracic neuropodium (chaetiger 6) with 10 gently bent, acute-tipped, geniculate acicular hooks (Figures 3C, 4B) with internal structure formed by fused hollow channels (Figure 3D). Second and all subsequent thoracic neuropodia with about 45 (chaetiger 7) to about 80 (chaetiger 18) uncini; uncini of each torus arranged in several rows (Figures 2G, 4D); uncini as denticulate hooks with main fang large and surmounted by 4–6 big teeth and a crest of numerous denticles (Figures 2H, 4E); dental formula: MF:4–6:∞. Abdominal neuropodia numbering 54; about 80 avicular uncini per torus with 5–6 teeth above main fang surmounted by 2–4 teeth and an upper crest of a variable number of smaller teeth (Figures 3H, 4H); dental formula: MF:5–6:2–4:∞. No abdominal notopodia. One abdominal constriction between chaetigers 17 and 18 (Figures 1A, 4F).

One large nephridial papilla attached to notopodium of chaetiger 1 (segment 3), with appearance of long, distally truncated cone. Two shallow and wider buttonhole-like nephridial pores located on basal part of notopodia of chaetigers 4 and 5 (segments 6 and 7) (Figure 2A). Small papillae arising dorsally to all thoracic (Figures 3E–F) and abdominal (Figures 3G, 4G) chaetigers. Pygidium blunt, with funnel-like depression with crenulated edge.

#### *Additional observations from type (SMNH) and non-type material (NHM)*

The presence of short papillar projections on the outer side of the branchial lamellae reported by Solis-Weiss et al. (1991) in some Atlantic South American species and by Jouin-Toulmond and Hourdez (2006) in North Atlantic *T. stroemii* were not observed in this species. The damaged margin of one branchial lamella in SMNH 6625 (Figure 2D) shows the internal structure of the marginal efferent blood vessel reported by Jouin-Toulmond and Hourdez (2006) for *T. stroemii*. Geniculate acicular hooks are clearly acute tipped and gently bent (Figures 3C, 4B). The rows of thoracic uncini vary between 1–2 in smaller animals (Figure 4D) to 4–5 in larger ones (Figure 2G). The uncinal patch shows the highest number of uncinal rows in the central area, showing fewer rows in the formative (dorsal) and degenerative (ventral) edges. Number of abdominal chaetigers varies between 42 in smaller specimens (about 1.6 cm length, SMNH 6634) and 54 in larger ones (7.6 cm, NHM 1930.10.8.2234). The abdominal constriction between abdominal chaetigers 17 and 18 was observed in all specimens; this character was not reported in any other species of *Terebellides*. As Monroe (1930) Monroe, C. C. A. 1930. Polychaete worms.. *Discovery Reports*, 2: 1–222.:199) pointed out, one specimen has 19 notopodia (NHM 1930.10.8.2234), the neuropodia being a very small patch; this extra thoracic chaetiger is only present on the right side, the left having the usual abdominal nature.

The two trichobranchid specimens identified as *T. longicaudatus* by Hartman (1978) (USNHM 47075-76) do not correspond to this species. Although these specimens are in poor condition and have lost the branchiae, they have large notochaetae in the first chaetiger and a small number of uncini in thoracic neuropodia which suggests that they cannot represent specimens of *T. longicaudatus*.

#### *Ecological notes*

Type material was collected in shallow muddy bottoms with stones at depths of between 75 and 310 m. Monroe (1930) reported this species in similar sediments from 110–500 m.

#### *Reported distribution*

South Georgia (Hessle 1917; Monroe 1930). The only specimen reported by Monroe (1930) out of South Georgia, from station 182 in the Schollaert Channel (Palmer Archipelago) (NHM 1930.10.8.2166), corresponds to *T. kerguelensis*.

*Terebellides antarcticus* Hesse, 1917

Hesse 1917:140, plate I, figure 18, Textfigure 31; Hartman 1953, page 11.

*Type material*

Swedish Museum of Natural History, Stockholm SMNH 6639 (Antarctic, Graham region, 360 m depth, 64°03'S; 56°37'W, soft clay, SSPE st. 8; two specs.), SMNH 6640 (SSPE, st. 8; two specs.), SMNH 6641 (Antarctic, Graham region, Admiraltäts Sund, 5–9 m depth, 64°20'S; 57°W, small stones and gravel, SSPE, st. 09; one spec.), SMNH 541 (SSPE, st. 8; one spec.).

*Reported distribution*

Graham's Land, Antarctic Peninsula (Hesse, 1917 Hesse, C. 1917. Zur Kenntnis der terebellomorphen Polychaeten. *Zoologiska bidrag från Uppsala*, 5: 39–258.; Hartman, 1953 Hartman, O. 1953. Non-pelagic polychaeta of the Swedish Antarctic expedition 1901–1903. *Further Zoological Results of the Swedish Antarctic Expedition 1901–1903*, 4: 1–83.).

*Remarks*

Hesse (1917:139) characterizes this species by the absence of lateral lappets in segments 3 and 4 (chaetigers 1 and 2) and by the small number (10–20 per unciniger) and shape (5 teeth over the rostrum and 2–3 upper teeth) of thoracic uncini. Notochaetae of chaetiger 1 are of about the same length as the rest of the thoracic notochaetae, and prostomium, branchiae and distribution and shape of chaetae is similar to those of *T. stroemii*, *T. minutus* and *T. longicaudatus*. Syntypes SMNH 541 and 6639 are of large size (ca. 60 mm) and have 34 and 37 abdominal chaetigers, respectively; those numbers are smaller than those in specimens of *T. longicaudatus* of similar length (e.g. 54 abdominal neuropodia in holotype which is 55 mm in length). The SMNH 541 specimen has oocytes and chaetigers 1 to 3 have lateral lappets. The two specimens labelled as SMNH 6640 are anterior ends which represent those illustrated by Hesse to draw the uncini illustrated in the original description (cf. Hesse 1917, Textfigure 31:140 and pl. I, figure 18) because the sides of those specimens seem to have been dissected. Only one specimen has branchiae which show cilia on lamellae arranged in a similar fashion as those of *T. kerguelensis* (Parapar and Moreira 2008).

*Terebellides minutus* Hesse, 1917

Hesse 1917:138–139, plate I, figure 16, Textfigure 29; Monro 1930:198, figure 83; Hartman 1953:11.

*Type material*

Swedish Museum of Natural History, Stockholm: SMNH 542 (TYPE, South Georgia, Cumberland Bay, the inlet of Westfjord, 250 m depth, 54°15'S, 36°25'W, loose clay, SSPE 1901–03, st. 18; one spec.), SMNH 6642 (SSPE st. 18; 1 spec.), SMNH 6643 (SSPE, st. 18; three specs.), SMNH 6644 (South Georgia, Cumberland Bay, 250 m depth, 54°12'S, 36°50'W, clay, algae; SSPE st. 20; five specs.), SMNH 6645 (SSPE st. 20; one spec.), SMNH 6646 (SSPE st. 20; three specs.), SMNH 6647 (SSPE st. 20; five specs.), SMNH 6648 (South Georgia, off May Bay, 75 m depth, 54°17'S, 36°28'W, clay, algae; SSPE st. 22; 13 specs.), SMNH 6649 (SSPE st. 22; two specs.), SMNH 6650 (SSPE st. 22; two specs.), SMNH 6651 (South Georgia, outside the mouth of Moränenfjord, 64–74 m depth, 54°23'S; 36°26'W, grey clay with gravel and stones; SSPE st. 23; 17 specs.), SMNH 6652 (South Georgia, Cumberland

Bay, outside Grytviken, 95 m depth, 54°22'S, 36°27'W, clay; SSPE st. 24; 33 specs.), SMNH 6653 (SSPE st. 24; one spec.), SMNH 6654 (SSPE st. 24; seven specs.), SMNH 6655 (SSPE st. 24; one spec.), SMNH 6656 (SSPE st. 24; three specs.).

#### *Reported distribution*

Patagonia (Hessle 1917; Hartman 1953) and South Georgia, Antarctica (Monro 1930).

#### *Remarks*

Hessle (1917) Hessle, C. 1917. Zur Kenntnis der terebellomorphen Polychaeten.. *Zoologiska bidrag från Uppsala*, 5: 39–258.:138) distinguishes *T. minutus* from *T. kerguelensis* only on the basis of the shape of the thoracic and abdominal uncini. These differences are, however, not clearly explained in the original description and accompanying drawings. Here, examination of a large number of specimens preserved in good condition from SMNH showed that distinction of the two species based on shape of uncini cannot be maintained thus confirming that *T. minutus* and *T. kerguelensis* are the same species. Syntypes measured between 0.9 and 3.5 cm in length and numbers of thoracic and abdominal uncini have little variation among individuals. On the other hand, the number of thoracic chaetigers ranges from 13 to 15 in large individuals and between 9 and 10 in smaller ones whereas the number of abdominal chaetigers is 33–35 and 28–29, respectively. In addition, dorsal and ventral branchial lobes have a pointed papillar projection located on the posterior face.

## **Discussion**

New examination of type material of *Terebellides longicaudatus* has confirmed that this is a valid species clearly distinguishable from *Terebellides kerguelensis* McIntosh, 1885, the most wide spread species of the genus in Antarctic waters and recently redescribed by Parapar and Moreira (2008). Thus, *T. longicaudatus* is characterized by the presence of wide lateral lappets in segments 3 and 4 (chaetigers 1 and 2), first thoracic notopodium which is greatly reduced and large thoracic uncinigerous tori provided with many (45 to 80) uncini and numerous abdominal chaetigers. Those numbers of uncini and abdominal chaetigers are the highest ever registered in any other species of the genus.

Hessle (1917) differentiated *T. longicaudatus* and *T. kerguelensis* from *T. minutus* and *T. antarcticus* solely according to the shape of thoracic and abdominal uncini, and highlighting the angle formed between the rostrum and the main axis in long thoracic uncini as well as to the number of secondary teeth surmounting the rostrum in short abdominal uncini. These characters were, however, not considered as taxonomically relevant in subsequent studies. Here, examination of type series by means of Scanning Electron Microscope showed that the differences stated by Hessle (1917) are just within the range of variability of *T. kerguelensis* and thus *T. minutus*, *T. antarcticus* and *T. kerguelensis* can be considered to be the same species. Thus, it should be pointed out again that characters based on fine setal structure such as those mentioned above should be used with caution in polychaete taxonomy (Hausen 2005:40). For example, Ohwada and Nishino (1991) found that the number of apical teeth in hooded hooks of the spionid *Prionospio japonica* can vary significantly within the same specimen.

In addition, SEM examination showed that setal internal organization is relatively homogenous with presence of many longitudinal hollow channels. Similar observations were made by Bartholomaeus (1995) in *Pectinaria* and *Spirorbis*, Meyer and Bartholomaeus (1996) in *Owenia* and Hausen (2005) in *Nicolea* and *Pectinaria*.

The papillae observed dorsally on all thoracic and abdominal chaetigers of *T. longicaudatus* were previously reported for *T. stroemi* (as “abdominal notopodial rudiments”) by Williams (1984: p. 127) and for *T. kerguelensis* by Parapar and Moreira (in press) as “thoracic papillae”. These papillae could be related to some sensory structures. Rouse (2000), and later Rouse and Pleijel (2001:27) and Purschke (2005:63) describe the “lateral organs” which are ciliated pits or papillae present between noto- and neuropodia (or dorsal to the neuropodia when notopodia are absent). Those authors pointed out that these structures were found in a number of polychaete families such as the Pectinariidae. A homology of those structures with the “dorsal cirrus organ” described by Hayashi and Yamane (1994, 1997) in some Eunicida and Phyllodocida has been suggested by Purschke (2005).

On the other hand, Garraffoni and Lana (2003:359), in their revision of the Brazilian species of *Terebellides*, provide a key to all known species of the genus but they leave out *T. longicaudatus* because they consider that this species was not well characterized. According to this key, *T. narribri* Hutchings and Peart, 2000 is the closest species to *T. longicaudatus*, but the latter can be distinguished by the presence of large lateral lobes in chaetigers 1 to 5, first notopodium poorly developed when compared to the following ones, the first thoracic acicular neurochaetae are gently bent and thoracic neuropodial fascicles are wider and provided with numerous uncini.

The presence of lateral lappets in anterior thoracic segments (particularly developed in segment 3 and 4) and the smaller number and length of first thoracic notochaetae in *T. longicaudatus* are characters shared with other *Terebellides* species. According to Hutchings and Peart (2000, table 3A) the only species with both characters are: *T. japonica* Moore, 1903, *T. lanai* Solis-Weiss et al. 1991 and *T. woolawa* Hutchings and Peart, 2000. *Terebellides japonica*, originally described as *T. stroemii* var. *japonica* by Moore (1903), was synonymized with *T. stroemii* by Imajima and Hartman (1964) and later regarded as valid species by Imajima and Williams (1985:10) and Hutchings and Peart (2000:249). This species has fewer thoracic neurochaetae (about 40 per torus) than *T. longicaudatus* and the acicular chaetae of sixth thoracic chaetiger have a pointed sheath covering a bluntly rounded core. The tropical species *Terebellides lanai* Solis-Weiss et al., 1991 Solis-Weiss, V., Fauchald, K. and Blankensteyn, A. 1991. Trichobranchidae (Polychaeta) from shallow warm water areas in the western Atlantic Ocean.. *Proceedings of the Biological Society of Washington*, 104: 147–158. differs from *T. longicaudatus* in having a smaller number of abdominal chaetigers (25–29) whereas the Australian species *T. woolawa* only has one pair of nephridial papillae on segment 3 and lacks buttonhole-like papillae in chaetigers 4 and 5.

The presence of a body constriction between abdominal chaetigers 17–18 was not recorded before in any known species of *Terebellides*. Therefore, this character may be regarded as of taxonomic value to distinguish *T. longicaudatus* in the same way as is the dorsal hump present in *T. anguicomus* Müller, 1858, *T. carmenensis* Solís-Weiss et al., 1991 and *T. totae* Bremec and Elias, 1999.

Finally, as a result of this study, the traditional consideration of *Terebellides antarcticus* and *Terebellides minutus* as junior synonyms of *Terebellides kerguelensis* is supported. Thus, the study of the syntypes loaned by the Swedish Museum of Natural History revealed no differences with the type material of *T. kerguelensis* from Kerguelen Island studied by Parapar and Moreira (2008).

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