

## A new species of *Paraeupolymnia* Young and Kritzler, 1986 (Polychaeta: Terebellidae: Terebellinae) from Brazil\*

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**SUMMARY:** A new species of the previously monotypic *Paraeupolymnia* found in large numbers in biogenic structures such as algae, oyster shells, and sabellariid reefs on rocky shores in the State of São Paulo is described here. *Paraeupolymnia uspiana* is characterised by the absence of both lateral lappets on anterior segments and pigmentation on buccal tentacles, and by the eyespots, which are larger and more numerous than those of *P. carus*, the type species of the genus. The diagnosis of *Paraeupolymnia* is emended, based on features of both species, after the analysis of Brazilian material and the holotype of *P. carus*. It is suggested that, after a comprehensive phylogenetic analysis of the group is undertaken, *Paraeupolymnia* will most probably be synonymised with *Eupolymnia*.

**Key words:** Polychaeta, Terebellidae, Terebellinae, *Paraeupolymnia*, State of São Paulo, Brazil.

**RESUMEN:** UNA ESPECIE NUEVA DE *PARAEUPOLYMNIA* YOUNG AND KRITZLER, 1986 (POLYCHAETA: TERESELLIDAE: TERESELLINAE) DE BRASIL. – Se describe una especie nueva de *Paraeupolymnia*, género anteriormente monotípico, encontrada en gran cantidad en estructuras biogénicas, como algas, conchas de ostras y arrecifes de sabeláridos, en costas rocosas del Estado de São Paulo. *Paraeupolymnia uspiana* se caracteriza por no presentar lamelas laterales en los segmentos anteriores ni pigmentación en los tentáculos bucales y por tener ocelos mayores y más numerosos que los de *P. carus*, la especie tipo del género. Se modifica la diagnosis de *Paraeupolymnia* basándose en características de ambas especies, después del análisis del material brasileño y del holotipo de *P. carus*. Se sugiere la posibilidad de que un futuro análisis filogenético sinonimice *Paraeupolymnia* y *Eupolymnia*.

**Palabras clave:** Polychaeta, Terebellidae, Terebellinae, *Paraeupolymnia*, Estado de São Paulo.

### INTRODUCTION

The previously monotypic terebellid genus *Paraeupolymnia* Young and Kritzler, 1986 was described from material collected in Belize and has never been found since. However, information on the genus was provided by subsequent authors by means of comparative tables (Hutchings, 1997) and

phylogenetic analysis of the subfamily to which it belongs (McHugh, 1995).

Young and Kritzler (1986) described the genus as being very similar to *Eupolymnia* Verrill, 1900, but with two pairs of branchiae, on segments 2 and 3, instead of three pairs on segments 2-4, as in the latter genus.

The authors also characterised *Paraeupolymnia* as having notopodia from segment 3, neuropodia from segment 4, and indistinct ventral shields, but in

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her phylogenetic analysis of the subfamily, after the analysis of the type material of *P. carus* Young and Kritzler, 1986, McHugh (1995) scored the genus as having notopodia from segment 4, neuropodia from segment 5, and ventral shields as uniform pads.

A large number of specimens belonging to a second species of *Paraeupolymnia* were recently collected in Ubatuba, São Sebastião, and São Vicente, living on rocky shores, in empty oyster shells, sabelariid reefs and several species of algae.

Surprisingly, an additional large number of specimens was recently found mounted on permanent slides among the material used for the practical classes of the Biology course at Universidade de São Paulo (USP). That material was collected several years ago in Caraguatatuba, in algae, and remained identified as Terebellidae sp. due to the lack of experts on Polychaeta at USP in the past.

The analysis of the holotype of *P. carus* confirmed not only the distinctive characters of the Brazilian species but also that the genus shows variation in characters that are considered very important for the diagnosis of the genera of Terebellinae, such as the presence/absence of lateral lappets on anterior segments.

In the present paper, this new species of *Paraeupolymnia* is described and the diagnosis of the genus is emended, after the analysis of the Brazilian species and the holotype of *P. carus*.

## MATERIALS AND METHODS

The material was found on rocky shores, or beaches with sand mixed with coarse stones. Individuals live in dense aggregations in biogenic structures in the intertidal zone or near to it. Material was scratched from the rocky substratum, relaxed with magnesium chloride or menthol solutions, examined alive under stereo- and light microscopes, and then fixed in 4% formaldehyde solution. The material from the collection of USP was not examined alive, since it had already been stained with Meyer's paracarmim and mounted on permanent glycerine jelly slides several years ago. For the complete analysis of the species, some additional specimens were mounted on permanent glycerine jelly slides (but not stained), and others were critical point dried, covered with 25 nm of gold and examined under the scanning electron microscope (SEM) at Laboratório de Microscopia Eletrônica, IB – UNICAMP.

The nomenclature of structures adopted for the description and thereafter follows that proposed by Holthe (1986).

The holotype of *P. carus*, kindly loaned by Dr Kristian Fauchald, was examined during a visit to the Nature Center in Sandgerdi, Iceland.

The holotype of *P. uspihana* sp. n. and five paratypes are deposited at the Museu de História Natural, IB – UNICAMP (MHN), five additional paratypes are deposited at the Museu do Centro de Estudos do Mar – UFPR (MCEM), another five paratypes are deposited at the Zoological Museum of the University of Copenhagen (ZMUC), and finally, five other paratypes are at the Australian Museum (AM).

## SYSTEMATICS

Family TERESELLIDAE Grube, 1851

Subfamily TERESELLINAE Malmgren, 1866

Genus *Paraeupolymnia* Young and Kritzler, 1986, emended

*Type species: Paraeupolymnia carus* Young and Kritzler, 1986, by monotypy.

*Description:* Terebellines measuring up to around 3 cm, with ventral shields developed, two pairs of dichotomously branched branchiae, on segments 2-3, notopodia from segment 4, extending for 17 chaetigers, and neuropodia from segment 5 (chaetiger 2). Notopodia as short muscular cones; thoracic neuropodia as inflated tori, as conical/cylindrical uncinigerous pinnules throughout the abdomen, until near pygidium. Notochaetae as bilimbate capillaries of variable lengths, with limb very narrow and almost smooth; thoracic neurochaeta as breviavicular uncini, with capitulum with two rows of teeth above the rostrum, and subrostral process and subrostral appendix well developed; uncini arranged in double rows from chaetiger 7 until the end of the thorax, rows very close, interconnecting, seeming, under light microscope, to be organized in a single row with uncini just alternating directions. Abdominal uncini in single rows, with the same morphology as those of the thorax except for lacking subrostral appendix and having very long and thin manubria, originating from both anterior and posterior processes of uncini (Fig. 1D), those from the posterior process extending slightly beyond the beginning of pinnules.

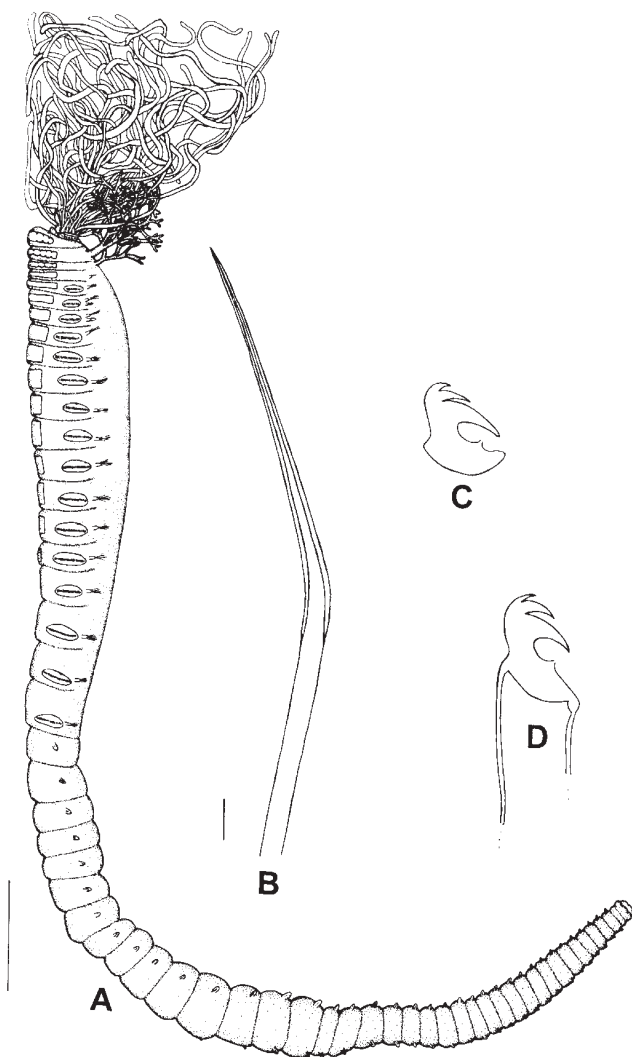


FIG. 1. – *Paraeupolymnia uspiana* n. sp. A, entire worm; B, thoracic notochaeta; C, thoracic uncinus; D, abdominal uncinus (A from holotype, B-D from paratype 1. Scale bars: A= 2 mm; B-D= 10 µm.

**Remarks:** As already mentioned, Young and Kritzler (1986) described the genus as with ventral shields indistinct, notopodia from segment 3, and neuropodia from segment 4, but after examination of the type material of *P. carus*, McHugh (1995) scored it as having ventral shields as uniform segmental pads, notopodia from segment 4 and neuropodia from segment 5. After the analysis of the holotype of *P. carus* (USNM 098908), I agree with McHugh in that it has ventral shields developed, and about the segments on which noto- and neuropodia first appear; perhaps due to contraction of the body at the time of fixation, Young and Kritzler (1986) considered notopodia as starting from the second branchiate segment, but they actually appear on the segment

immediately posterior to it, as in *P. uspiana* sp. n. (Figs. 2A, D). For more details about the diagnostic features of this genus, see discussion.

### *Paraeupolymnia uspiana* n. sp.

Figs. 1-2

**Material examined:** State of São Paulo: Ubatuba, Praia da Fazenda (23°21'S, 44°51'W): many specimens, 5 of which examined in detail, collected in oyster shells by Vasily Radashevsky, in April, 2001; Praia de Domingos Dias (23°30'S, 45°09'W): 31 specimens, on rocky shore, collected by João M. de M. Nogueira on 22 July, 2002, and 22 specimens, on rocky shore, collected by João M. de M. Nogueira on 02 November, 2002; Praia do Félix (23°23'S, 44°50'W): 44 specimens, on rocky shore, collected by João M. de M. Nogueira on 04 November, 2002; Praia do Perequê Mirim (23°29'S, 45°06'W): 6 specimens, collected by João M. de M. Nogueira and Adriano Abbud on 05 January, 2003. São Sebastião, Praia do Araçá (23°49'S, 45°24'W): 6 specimens, collected in algae, by a team of students, in October, 2001; 14 specimens, collected by João M. de M. Nogueira on 24 July, 2002; 22 specimens, collected by João M. de M. Nogueira on 03 November, 2002; and 3 specimens, collected by João M. de M. Nogueira on 03 December, 2002; Praia de São Francisco (23°45'S, 45°24'W): 10 specimens, collected by João M. de M. Nogueira on 04 December, 2002. Caraguatatuba, at Camaroeiro, Praia da Enseada (23°43'S, 45°25'W): 43 specimens, in algae, collected by Carlos E. F. da Rocha (date of collection lost); Praia de Martim de Sá (23°38'S, 45°24'W): 23 specimens, on rocky shore, on 2 October, 2001, collected by the team of BIOTA/FAPESP/Bentos Marinho/Costões Rochosos subproject, 5 of which examined in detail. São Vicente, Ilha Porchat (23°59'S, 46°22'W): 53 specimens, collected in sabelariid reefs by Marco Antônio Puodizius and José Domingos Batista dos Reis, on 11 March, 2002; 143 specimens, on rocky shore, collected by João M. de M. Nogueira and Marcelo V. Fukuda, on 17 November, 2002; Praia das Vacas (23°59'S, 46°23'W): 23 specimens, collected on 19 November, 2002, by João M. de M. Nogueira and Marcelo V. Fukuda. All type material from Ilha Porchat, collected on 17 November, 2002.

**Type material:** Holotype and five paratypes deposited at MHN (holotype: MHN-BPO 72/0, paratypes: MHN-BPO 72/1-5), five paratypes deposited at MCEM (MCEM 12622), five paratypes deposited at ZMUC (ZMUC-POL-1604), and three paratypes at AM (W28632). Seven specimens examined under SEM and discarded.

**Etymology:** This species is named after the Universidade de São Paulo, USP, where individuals of this species have been used for years as material for the practical classes of the Biology course.

**Description:** Body moderately short, elongate and proportionally thin, transparent and usually greenish in live material, with white iridescent spots; whitish after fixation. Holotype with 54 chaetigers and measuring 2 mm in width and 2.1 cm in length, plus additional 0.6 mm of highly convoluted buccal tentacles (Fig. 1A). Upper lip upwardly directed, distally rounded (Figs. 2B, E), bearing numerous unpigmented buccal tentacles; dorsal ridge with numerous ocelli, irregularly displaced in a thick bar, which extends transversally throughout the ridge. Peristomium only ventral, as a developed lower lip (Figs. 2B, E) and part of the upper lip. Segment 1 dorsally very narrow (Figs. 1A, 2A, D); proboscis



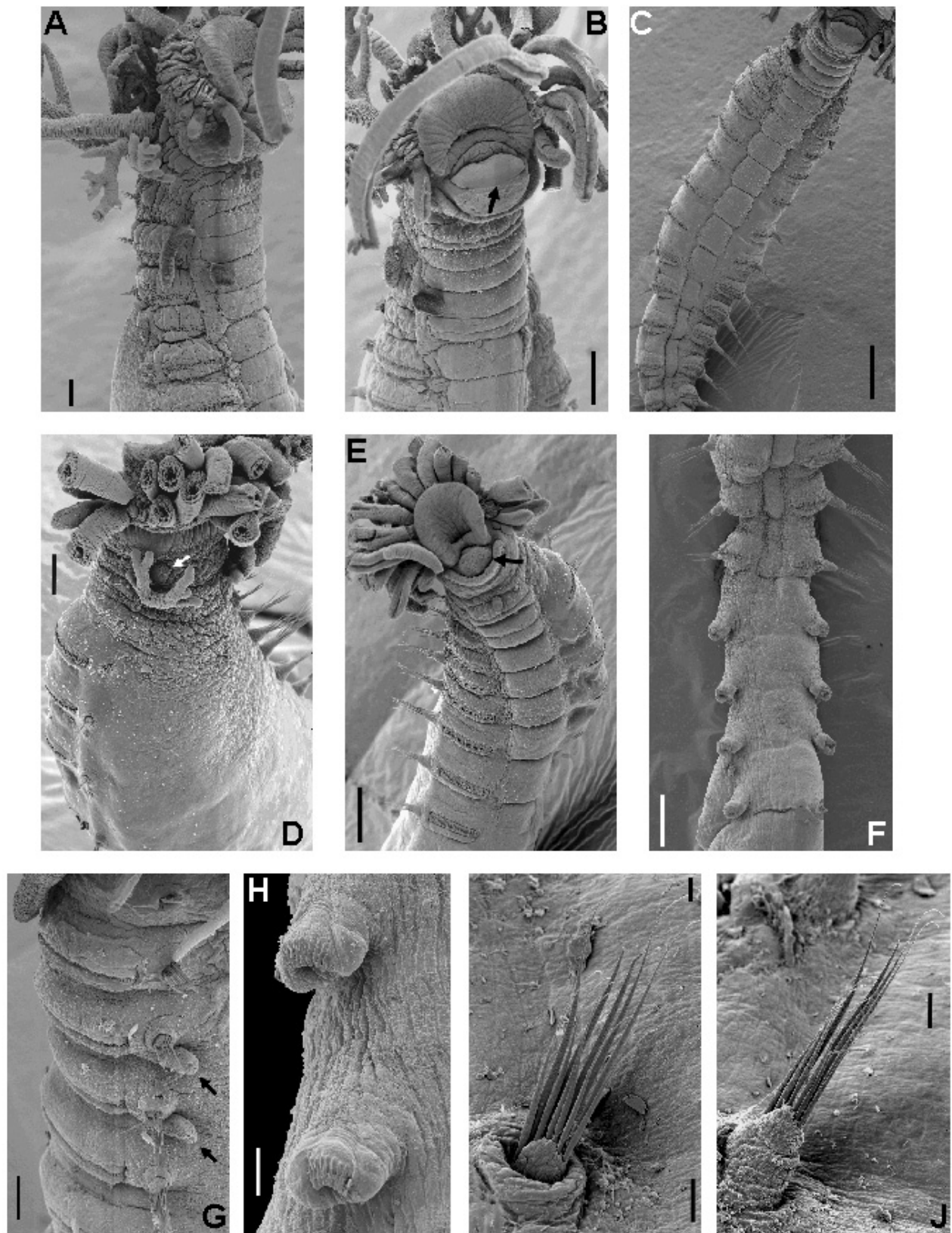


FIG. 2. – *Paraeupolyommnia uspiana* n. sp. A, anterior end, lateral view; B, same, ventral view, arrow points to ventral pharyngeal organ; C, thorax, ventral view; D, specimen regenerating first pair of branchiae, dorsal view, arrow points to the bud of the newly developing branchia; E, anterior thorax, ventral view, arrow points to ventral pharyngeal organ; F, transition between thorax and abdomen, ventral view; G, anterior body, lateral view, arrows point to nefridial papillae; H, abdominal neuropodia; I-J, consecutive notopodia, contracted (I) and distended (J). (A-C, F, H-J, specimen A; D-E, specimen B; G, specimen D. Scale bars: A, D= 100  $\mu$ m; B, E- G= 200  $\mu$ m; C= 400  $\mu$ m; H= 50  $\mu$ m; I-J= 20  $\mu$ m).

everted in many specimens, with ventral pharyngeal organ protruded (Figs. 2B, C, E). Ventral shields broader on anterior segments, becoming progressively narrower towards the end of the thorax; anteriormost segments with shields ruffled, as uniform pads from chaetiger 1 (segment 4) until the end of the thorax (Figs. 1A, 2B-C, E-F). Branchiae dichotomously branching, present on segments 2 and 3 (Figs. 1A, 2A, D), basally red, in live material, due to blood vessels, distally becoming green, as the diameter of the vessels diminishes. Dorsum smooth on thoracic segments, segmentation only visible on the ventral side of the body (Figs. 1A; 2A, D, G), but with segments clearly defined throughout the abdomen (Fig. 1A), especially at distal end. Notopodia frequently bordered by dark brown pigmentation, at least on anterior body; notopodia as short cones, highly muscular, retractile, appearing more or less developed depending on the state of contraction at the fixation (Fig. 2D-G, I-J; see below). Thorax extending for 17 chaetigers (Fig. 1A); notochaetae arranged in two oblique rows, as bilimbate capillaries, almost smooth under highest magnification of light microscope (1600x) (Fig. 1B), very minutely denticulate under SEM (Figs. 2I-J). Neuropodia present until near pygidium; thoracic neuropodia as low tori (Figs. 1A; 2A-G), frequently bordered by dark pigmented spots, in live material; abdominal podia as conical to cylindrical uncinigerous pinnules, present from the first abdominal segment (Figs. 1A; 2F, H). Uncini with strong rostrum, first row of capital teeth with 2-4 teeth much shorter than the rostrum, but remarkably larger than those of the second row, which are 4-5 unequally sized teeth (Figs. 1C; 3A-I); uncini arranged in single rows on chaetigers 2-6 (Figs. 3A-B), in double rows from chaetiger 7, rows very close to each other, and, due to the internal structures, such as the lower subrostrum, uncini seem to be in singles rows under light microscope (Fig. 1A), but with uncini alternating directions (like a zipper). Abdominal uncini arranged in single rows, morphologically like thoracic ones, except for lacking subrostral appendix and for having long and thin manubria originated from both anterior and posterior filaments (Figs. 1D; 3E-I), posterior manubrium apparently longer. One to a few achaetous segments before pygidium present in all specimens (Fig. 1A). Pygidium with poorly developed lobes (Fig. 1A). Nephridia on chaetigers 3 and 4, which present digitate nephridial papillae posterior to the notopodia and longer, originating between parapodial lobes and extending

upwards (Figs. 1A; 2G). Dorsal blood vessel forming a big pumping heart, obliquely placed on chaetigers 3-4.

*Tube:* Mucous, with coarse debris, such as stones and shells of small bivalves, covering the whole tube and hardening it, especially distally.

*Variation:* There was no variation in regard to the morphology of ventral shields and chaetae. On the other hand, there was considerable variation in regard to body pigmentation and, due to the ontogenetic state of the specimens, size and number of pairs of branchiae, from 0 to 2, and of eyespots (see below). Most of the specimens were greenish in live, but some had pale bodies, others, as in the case of all specimens collected at Araçá Beach, had bars of dark brown pigmentation from the peristomium until the first chaetiger, and two of the specimens collected at Martim de Sá rocky shore were purple; since there is no other morphological difference between those specimens and the remaining ones, they all are treated here as belonging to the same species, the pigmentation being probably due to the habitat in which the specimens live and the sources of food available.

There was slight variation in regard to the number of pairs of notopodia: specimens with sixteen and eighteen pairs of parapodia were seen, but they were very rare and, in most cases, juveniles. Besides, some specimens show irregularity on the distribution of notopodia, although most of the individuals have one pair of notopodia per chaetiger, specimens missing notopodia on one side of the body, or with two notopodia instead of one in a particular chaetiger, are common; these irregularities alter the transition between thorax and abdomen, generating individuals with the last thoracic segment with notopodium and neuropodium on one side of the body, and only uncinigerous pinnules on the other. These deformities are possibly due to imperfect regeneration after damage or scissiparity, as is known to occur in other polychaetes (Knight-Jones and Bowden, 1984).

*Development and reproduction:* The large number of specimens collected allowed the development of prostomial eyespots and branchiae to be evaluated. In younger specimens, eyespots are more concentrated laterally on the dorsal ridge, with very few spots randomly placed across its dorsal part, while in adults these spots form a complete band along the whole extension of the ridge. In regard to branchiae, the anterior pair is the first to develop and abranchiate juveniles, or specimens with the first pair of



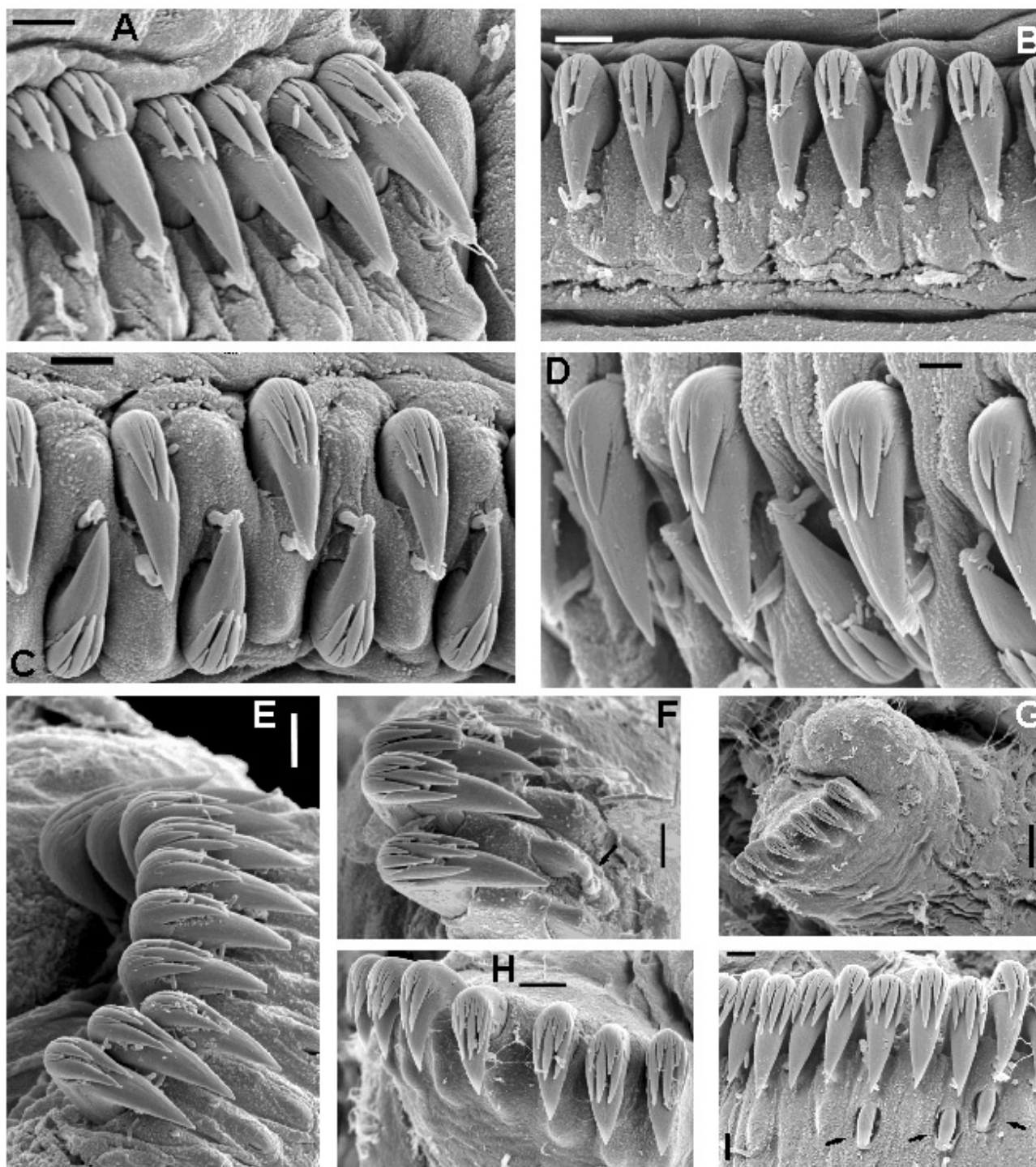


FIG. 3. – *Paraeupolymnia uspians* n. sp. A, uncini, chaetiger 6; B, same, chaetiger 6 (other specimen); C, same, chaetiger 7; D, same, chaetiger 15; E, same, chaetiger 19; F, same, posterior abdomen, arrow points to the origin of anterior manubrium (exposed due to damage of the tissues); G, uncinigerous papilla, chaetiger 19; H, uncini, chaetiger 19; I, uncini, chaetiger 21, arrows point to the origin of anterior manubria (damage of tissues). (A, D-F, specimen A; figures B-C, G-H, specimen B; figure I, specimen C. Scale bars: A-E, H= 5 µm; F= 3 µm; G= 20 µm; I= 6 µm).

branchiae poorly developed and still missing the second pair are common; on the other hand, possibly because it is much larger than the other pair, the anterior pair of branchiae is frequently damaged or lost, and relatively large specimens with buds of branchi-

ae on segment 2 and fully developed branchiae on segment 3 are also common (Fig. 2D). A complete study on the reproduction and development of this species is currently being undertaken, with specimens maintained in aquariums (Nogueira, in prep.).

Live specimens full of coelomic gametes from the middle of the thorax to the middle of the abdomen were frequently collected in April 2001, several specimens in October and November 2001, and rarely in February 2002 and from December 2002 to March 2003, suggesting a possible reproductive season from April to October, but this needs to be confirmed.

## DISCUSSION

*The nature of the anterior end:* This subject has always been very controversial, because there is great disagreement in regard to which structures are of prostomial or peristomial origin, and in how many segments are fused to the head before the beginning of branchiae. Recently, Orrhage (2001) studied the patterns of innervation of the head of Terebellomorpha, and concluded that the dorsal ridge and the buccal tentacles are both derived from the upper lip. However, some doubt remains in regard to the origin of the upper lip; just to mention recent publications, Fauchald and Rouse (1997) considered the peristomium as the area around the mouth, including upper and lower lips, while Hilbig (2000) considers the prostomium to include the upper lip, and the peristomium to be restricted to the lower lip. The most updated hypothesis (Rouse and Pleijel, 2001) is of mixed origin, part prostomial and part peristomial, for the upper lip, which is also in agreement with the other findings of Orrhage (2001), since it is widely accepted that the buccal tentacles are of prostomial origin (McHugh, 1995; Rouse and Fauchald, 1997; Rouse and Pleijel, 2001).

On the other hand, most of the authors agree about the presence of a true segment between the dorsal ridge and the first branchiate segment (in all branchiate forms).

The discussion in regard to what prostomium and peristomium actually are does not alter the numbering of anterior segments, as both parts originate from the pre-segmental area of the trochophore. Thus the two species of *Paraeupolymnia* have notopodia from segment 4, neuropodia from segment 5, and 17 pairs of notopodia.

Not frequently mentioned in descriptive literature, but present in all Terebellida, is a buccal or ventral pharyngeal organ used to scrape off micro-fouling in juveniles, and for sorting of food and swallowing in adults (Dales, 1955; Sutton, 1957;

Rouse and Pleijel, 2001). Zhadan and Tzetlin (2002) studied the ultrastructure of ventral pharyngeal organs in Terebellida and concluded that in Terebellidae it consists of muscular and interstitial cells, but no glandular cells are present.

*Pigmentation of buccal tentacles, number of tentacles and eyespots:* *Paraeupolymnia carus* has "single and paired pigmented spots" along the tentacles (Young and Kritzler, 1986), which, after 14 years of storage in ethanol, are faint but still conspicuous. *Paraeupolymnia uspiana* n. sp., on the other hand, has tentacles lacking any pigmentation. According to the original description (Young and Kritzler, 1986), the buccal tentacles of *P. carus* are arranged in two groups, with 4-6 tentacles each; although counts of the number of tentacles were not made in either the holotype of *P. carus*, or in the specimens of *P. uspiana* n. sp., it is evident that the latter has many more tentacles, disposed in two transverse rows (Figs. 1A; 2D, E). Both *Paraeupolymnia carus* and *P. uspiana* n. sp. present ocelli on the dorsal ridge, but in the latter, even considering the time of storage in ethanol of the first, ocelli are larger and more numerous (frequently covered by the aggregation of buccal tentacles over the dorsal crest).

*Lateral lappets:* *Paraeupolymnia carus* has short but conspicuous lateral lappets on segment 3 (referred to segment 2 on the original description, and on segment 3 by McHugh, 1995, with whom I agree), which are lacking in *P. uspiana* n. sp. This intrageneric variation in regard to the presence of lateral lappets is of particular interest, since the character has frequently been used to distinguish genera.

*Ventral shields:* *Paraeupolymnia uspiana* n. sp. has ruffled shields until chaetiger 1, then uniform pads until the end of the thorax. *Paraeupolymnia carus* was described as lacking shields, but McHugh (1995) scored it as having uniform pads throughout the thorax. After the examination of the holotype of *P. carus*, it was clear that it has ventral shields developed. The presence of ruffled anterior shields on *P. uspiana* sp. n. makes the genus even closer to *Eupolymnia* than Young and Kritzler (1986) envisaged.

*Notopodia:* Young and Kritzler (1986) described the notopodia of *P. carus* as undistinguished, but after the examination of the holotype, I consider them as short cones, like those of *P. uspiana* n. sp. Although short, those podia are muscular and may contract at the moment of fixation, appearing more or less indistinct; this was also observed in the specimens of *P. uspiana* n. sp. (for example see Figures. 2G, I-J).

*Abdominal neuropodia:* In the original description of *P. carus* (Young and Kritzler, 1986), the abdominal uncinigerous pinnules are described as having a low dorsal cirrus each, but this was not confirmed after examination of the holotype. On the other hand, SEM analysis of *P. uspihana* n. sp. showed highly muscular pinnules, but no cirrus is present (Fig. 2H). However, unequal contraction of the podial muscles at the time of fixation may lead to the appearance of higher and lower lobes which may look like cirri (Fig. 3G), but are just artefacts. The same happens in *P. carus*, since both species have identical pinnules.

*Morphology of the uncini:* When discussing the morphology of the uncini, Holthe (1986) drew special attention to the subrostral appendix found in some terebellines (if not all) and questioned its function. After having examined under SEM terebelline species belonging to the genera *Pista* Malmgren, 1866, *Morgana* Nogueira and Amaral, 2001, and *Articulatia* Nogueira, Hutchings and Amaral, 2003, as well as the *Paraeupolytmnia* described here, I can say that in all of them this appendix forms a tuft of short bristles which holds the tip of the rostrum when it is in position to touch the tegument (Figs. 3A-D). The tuft is projected from pores on the tegument, and when the uncini, moved by the neuropodial muscles, are turned with the beak against the epithelium, the tuft stays between them, possibly to protect the tissues (note that in Figure 3D the first superior and inferior uncini, from left to right, are in a slightly different position from the others, and the tuft does not touch the beak). The abdominal uncini of *P. uspihana* n. sp. show subrostral processes, but lack subrostral appendixes, confirming the above hypothesis, since neuropodial papillae raise the uncini from the surface of the body and the beak never touches the tegument (Figs. 3E-I).

One remarkable feature of the abdominal uncini of *Paraeupolytmnia* is that, at least in *P. uspihana* n. sp., they have manubria originating from the anterior and the posterior filaments. In relation to *P. carus*, Young and Kritzler (1986) considered the manubria as being ligaments and did not represent their insertion on chaetae. When I studied the holotype I did not examine this feature, because it would require the preparation of permanent slides; at that time, however, all other features of chaetae looked identical in the two species. Few genera of Terebellinae have uncini with filaments and this could perhaps be a useful tool for phylogenetic purposes.

*Speculation on the validity of Paraeupolytmnia:* Young and Kritzler (1986) considered *Paraeupolytmnia* very closed to *Eupolytmnia*, differing in the number of pairs of branchiae, in the segments on which noto- and neuropodia first appear, and in the absence of ventral shields in the first, while the latter has ruffled anterior shields, then uniform pads until the end of the thorax. Lateral lappets are present on segments 2-4 in *Eupolytmnia*, restricted to segment 3 in *P. carus*, and completely absent in *P. uspihana* sp. n. After McHugh (1995) and the present emendation of the generic characters of *Paraeupolytmnia*, however, these genera become more similar, sharing the same number of pairs of notopodia, starting from segment 4 in both, neuropodia from segment 5, and, at least in *Paraeupolytmnia uspihana* n. sp., a very similar morphology of ventral shields. Hutchings and Glasby (1986), McHugh (1995), and Nogueira *et al.* (2003), among several others, pointed out the fact that a comprehensive phylogenetic survey on the genera of Terebellinae would most probably synonymise several genera, and this study is currently being undertaken (Nogueira and Hutchings, in prep.). Intuitively, before the phylogenetic analysis is actually concluded, it seems very likely that *Paraeupolytmnia* forms a monophyletic clade within *Eupolytmnia*, with two autapomorphies: the secondary loss of the third pair of branchiae and the morphology of abdominal uncini. If this is correct, then the recognition of *Paraeupolytmnia* as a valid taxon would render *Eupolytmnia* paraphyletic. For the moment, this is just a speculation that still needs phylogenetic support to be corroborated. Besides, *Nicolea* Malmgren, 1866 also seems to be a very similar taxon, if the information provided by Fauchald (1977) on the arrangement of double rows of uncini (back to back) is not correct.

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