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Progoniada and *Goniadella* (Annelida: Polychaeta: Goniadidae) from the outer continental shelf and slope off south-eastern Brazil

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Species of the genera *Progoniada* and *Goniadella* are recorded from off the Brazilian coast, from depths of 93 to 808 m. The description of *Progoniada regularis* is complemented with new data on the number of chevrons and micrognaths. *Goniadella revizee* sp. nov. is described; it differs from the five known species of the genus mainly in having acicular chaetae above the dorsal cirrus, together with 20–21 uniramous chaetigers. The proboscideal papillae of both species are illustrated by scanning electron micrographs.

INTRODUCTION

The family Goniadidae Kinberg, 1865 presently comprises ten genera with about 73 species (Hilbig, 1994). Records from the Brazilian coast include 16 species belonging to the genera *Glycinde*, *Goniada*, *Goniadides*, *Progoniada* and *Ophioglycera* (Hartman, 1965; Steiner, 2000). The complete list of Brazilian coastal species is available on the site http://www.ib.unicamp.br/pesquisa/projetos/biota/bentos_marinho/index.htm. The present contribution adds new records of species of *Progoniada* and *Goniadella* from off the south-eastern coast of Brazil.

The goniadids are characterized by possession of an annulated, conical prostomium and uniramous and subbiramous parapodia. The single exception is *Progoniada*, in which all parapodia are uniramous. The end of the proboscis includes paragnaths arranged in a dorsal and a ventral arc; two macrognaths with several cusps in a latero-ventral position and several micrognaths composed of two basally jointed, H+w-shaped pieces, and of X- or Y-shaped single pieces, in the dorsal and/or ventral positions. The proboscis is densely covered by proboscideal papillae, which can be very diversified. The genera *Progoniada*, *Goniadella* and *Goniada* have a paired row of V-shaped structures, termed chevrons (Hartman, 1950).

Important taxononomic characters distinguishing genera and species of Goniadidae include the number of annulations of the prostomium, the shape and arrangement of the proboscideal papillae, the presence or absence of chevrons, the number and shape of the micrognaths in the dorsal and ventral arc, the number of uniramous chaetigers, the number and shape of the parapodial lobes and the type of noto- and neuro-chaetae (Wilson, 2000).

Herein, we complement the description of *Progoniada regularis* and describe a new species of *Gonadiella*. Both species were collected in waters off south-eastern Brazil during the REVIZEE Programme 'Avaliação do Potencial Sustentável dos Recursos Vivos na Zona Econômica Exclusiva'.

MATERIALS AND METHODS

Specimens of *Progoniada regularis* and *Goniadella revizee* sp. nov. were collected during the REVIZEE Programme/South Score/Benthos sampling cruises of the RV 'W. Besnard' in December 1997 to March 1999, on the outer continental shelf and slope off south-eastern Brazil. This area extends from Ilha Grande Bay in southern Rio de Janeiro State (24°20.527′S 43°46.759′W) south to Tramandaí in Rio Grande do Sul State (29°28.75′S 48°09.35′W). Water depths ranged from 60 to 808 m. The samples were collected with van Veen and box corer grabs and with a dredge. The polychaetes were sorted from the sediment, washed, fixed with 4% formalin, stored in 70% alcohol, and identified.

For goniadids, the proboscis was dissected with ophthalmic scissors, to examine the papillae, macro- and micrognaths and chevrons. Measurements and line drawings were made using ZEISS optical microscopy and stereomicroscopy. Observations using scanning electron microscopy (SEM) were made at the Laboratório de Microscopia Eletrônica, Instituto de Biologia, Universidade Estadual de Campinas (UNICAMP), with JEOL JSM-5800 LV® equipment, after critical-point drying with Balzers CPD 30® equipment (temperature 30°C, pressure 80 kg cm^{-2}) and coating with 25 nm gold. The material examined was deposited in the Museu de História Natural of UNICAMP, in the Polychaeta Collection (MHN-BPO).

RESULTS AND DISCUSSION

SYSTEMATICS

Family GONIADIDAE Kinberg, 1865

Progoniada Hartman, 1965

Type species

Progoniada regularis Hartman, 1965.

Diagnosis

Proboscideal papillae of only a few types. Chevrons present. First segment apodous and without chaetae, with

only lateral cirri. All parapodia uniramous, with only composite chaetae, falcigerous and/or spinigerous.

Progoniada regularis Hartman, 1965
(Figures 1–3; Table 1)

Progoniada regularis Hartman, 1965: 100–101, plate 16; Hartman & Fauchald, 1971: 76.

Material examined

A total of 89 specimens: Station 6646, 25°43.78′S 45°16.06′W, 198 m, 14 December 1997, MHN-BPO/AR-51, 1 specimen. Station 6660, 24°17.678′S 43°48.198′W, 314 m, 9 January 1998, MHN-BPO/AR-30, 2 specimens. Station 6669, 24°07.347′S 44°42.142′W, 101 m, 11 January 1998, MHN-BPO/AR-36, 6 specimens. Station 6671, 24°32.91′S 44°27.46′W, 260 m, 11 January 1998, MHN-BPO/AR-31, 4 specimens. Station 6672, 26°27.75′S 44°30.351′W, 165 m, 11 January 1998, MHN-BPO/AR-32, 1 specimen. Station 6676, 24°49.699′S 44°44.965′W, 153 m, 12 January 1998, MHN-BPO/AR-38, 1 specimen. Station 6677, 24°40.747′S 44°50.822′W, 137 m, 12 January 1998, MHN-BPO/AR-39, 3 specimens. Station 6678, 24°46.357′S 45°11.135′W, 99 m, 12 January 1998, MHN-BPO/AR-33, 2 specimens. Station 6681, 25°11.005′S 44°56.6′W, 168 m, 12 January 1998, MHN-BPO/AR-40, 1 specimen. Station 6686, 25°36.988′S 45°13.571′W, 153 m, 13 January 1998, MHN-BPO/AR-34, 3 specimens. Station 6690, 27°00.88′S 46°40.21′W, 280 m, 18 January 1998, MHN-BPO/AR-37, 1 specimen. Station 6706, 25°48.60′S 45°44.50′W, 184 m, 21 January 1998, MHN-BPO/AR-35, 1 specimen. Station 6737, 24°13.35′S 43°25.90′W, 476 m, 14 February 1998, MHN-BPO/AR-317, 1 specimen. Station 6738, 24°11.60′S 43°26.20′W, 330 m, 14 February 1998, MHN-BPO/AR-321, 2 specimens. Station 6739, 24°02.58′S 43°30.80′W, 147 m, 14 February 1998, MHN-BPO/AR-311, 2 specimens. Station 6741, 23°49.90′S 43°14.40′W, 138 m, 15 February 1998, MHN-BPO/AR-286, 5 specimens. Station 6744, 23°51.50′S 42°49.90′W, 254 m, 15 February 1998, MHN-BPO/AR-316, 7 specimens. Station 6749, 23°44.20′S 42°29.80′W, 325 m, 16 February 1998, MHN-BPO/AR-282, 2 specimens. Station 6753, 23°36.54′S 42°09.86′W, 187 m, 16 February 1998, MHN-BPO/AR-322, 7 specimens. Station 6762, 23°26.20′S 41°15.82′W, 146 m, 28 February 1998, MHN-BPO/AR-309, 6 specimens. Station 6769, 22°02.87′S 40°05.93′W, 93 m, 13 March 1998, MHN-BPO/AR-328, 3 specimens. Station 6783, 27°09.90′S 46°52.83′W, 350 m, 14 March 1998, MHN-BPO/AR-329, 10 specimens. Station 6784, 27°09.51′S 47°04.85′W, 195 m, 14 March 1998, MHN-BPO/AR-340, 4 specimens. Station 6791, 27°48.78′S 47°10.63′W, 358 m, 16 March 1998, MHN-BPO/AR-333, 2 specimens. Station 6793, 27°46.49′S 47°40.45′W, 140 m, 16 March 1998, MHN-BPO/AR-335, 2 specimens. Station 6797, 28°08.15′S 47°22.61′W, 190 m, 17 March 1998, MHN-BPO/AR-337, 1 specimen. Station 6801, 28°34.16′S 47°40.38′W, 166 m, 17 March 1998, MHN-BPO/AR-332, 2 specimens. Station 6821, 29°49.49′S 48°12.76′W, 232 m, 24 March 1999, MHN-BPO/AR-330, 7 specimens.

Description

Thirteen complete specimens, with lengths from 3.42 to 13.62 mm and widths from 0.16 to 0.32 mm, and 76 incomplete specimens. Number of chaetigers from 27 to 83 in complete specimens. Whitish body; pigment, when present, brownish, irregular, subdistally on the prechaetal lobes (Figure 3G); punctiform intersegmental pigment present from the middle ventral region (Figure 3D). Specimens with slender cylindrical body, of uniform width. Conical prostomium as long as the first six chaetigers, with eight distinctly visible rings (Figures 1A & 3A). Prostomial appendages biarticulate, with robust basal articulation and a median constriction; distal articulation short, about one-fourth as long as basal articulation (Figure 1B). Eyes not visible. Nuchal organs inconspicuous, ciliated, located in latero-dorsal position in the basal prostomial ring. Four small ciliated cavities on each prostomial ring, two ventral and two dorsal, except on distal and basal ring (Figure 1A). All proboscids invaginated, with macro- and micrognaths located between chaetigers 13 and 14. Proboscis with two macrognaths in latero-ventral position; three micrognaths in ventral and about 10–14 in dorsal arc, or fewer in juvenile specimens. Macrognaths with three or four cusps. Micrognaths with a single X-shaped piece, or two basally jointed H+w-shaped pieces (Figure 3C), usually arranged in the following manner: (a) in ventral position: three groups of the large H+w-shaped pieces; (b) in dorsal position: a pair of small X-shaped pieces, located near the macrognaths, externally; two large pairs, with H+w-shaped pieces; a small X-shaped pair, rarely accompanied by a smaller U-shaped piece; and three groups with H+w-shaped median pieces. Paired rows of chevrons of the invaginated proboscis located at the level of chaetiger 6 or 7, with about 14 to 22 slender V-shaped pieces (Figure 3B); juvenile specimens with eight pairs. Proboscis surface covered with low papillae, sub-triangular, with one subapical ciliated pore (Figure 2A). Proboscideal papillae more numerous on the dorsal region, composed of about 5–6 series of cordiform papillae with distal ends pointed, on narrow base (Figure 2A, F–G). Latero-ventral region with three larger series of smaller papillae with distal ends pointed, on wide base (Figure 2B); the first with cordiform papillae and the distal end laterally pointed (Figure 2C), the second, tricuspid with the median cusp bifid (Figure 2D); the third with papillae rounded at base with distal end slightly pointed (Figure 2E). A posterior row, ventral, with lateral papillae, slightly spread on narrow bases and with distal ends rounded (Figure 2H–I). Papillae near chevrons smaller than other papillae, with distal ends rounded. First segment apodous, without chaetae, and with lateral cirri only (Figures 1A & 3A). Parapodia with prechaetal lobe digitiform and postchaetal lobe rounded; postchaetal lobe about one-half to one-third length of prechaetal lobe (Figures 1C & 3E,G). Dorsal and ventral cirri digitiform to subtriangular, about as long as postchaetal lobe, or slightly shorter. Parapodia progressively slightly longer and more slender from anterior to posterior region. Chaetigers usually with six chaetae: two falcigers with short distal appendages, located in the outer region of the bundle (Figures 1D & 3H), two falcigers with distal appendages long, in the intermediate region (Figure 3I), and two long spinigers, in the inner part of the bundle (Figures 1E & 3J). Last chaetigers rudimentary, with fewer chaetae. Pygidial cirri not visible, probably lost (Figure 3F).

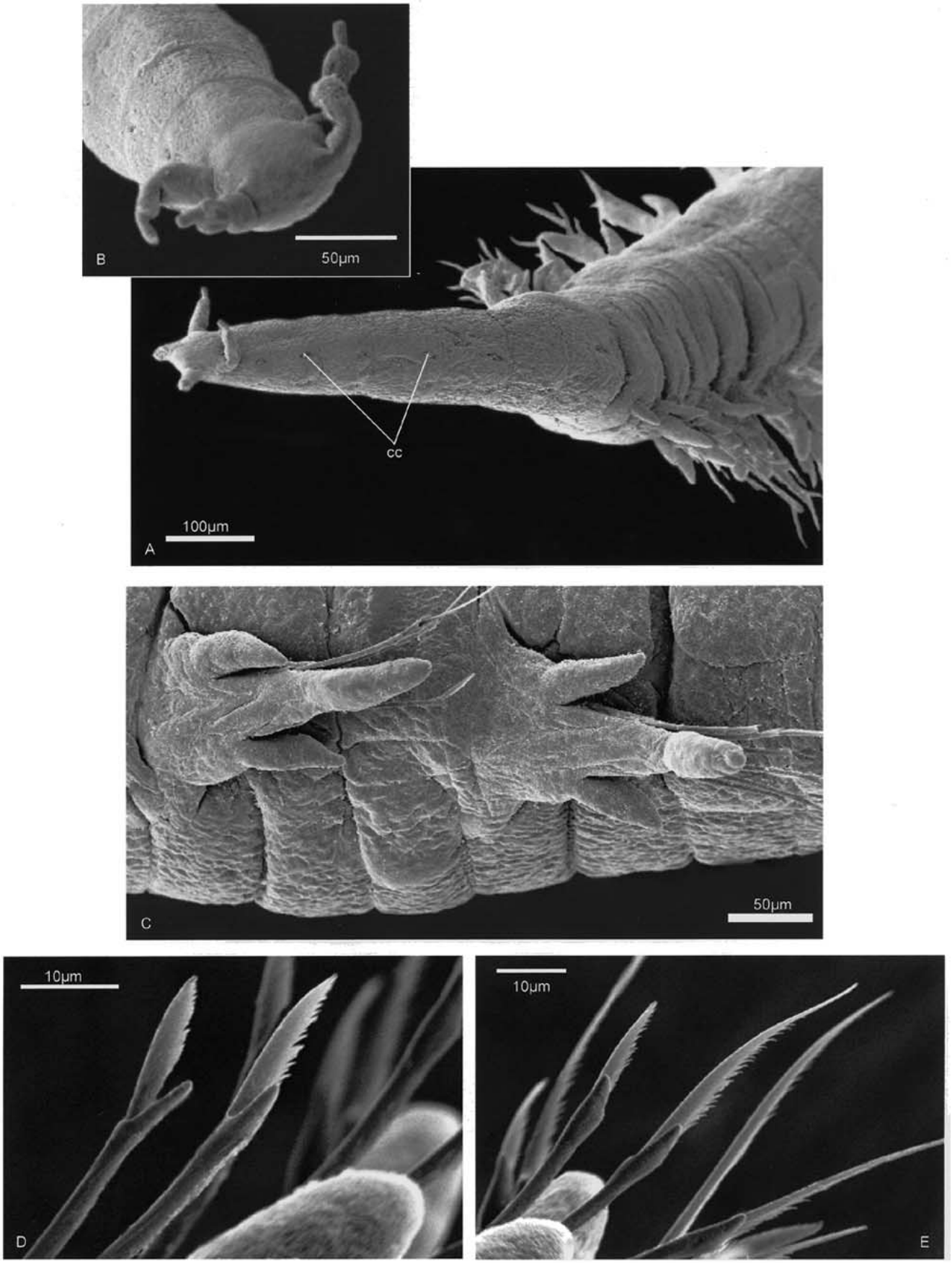

Figure 1. *Progoniada regularis* (SEM micrographs). (A) Anterior region, left latero-frontal view of the prostomium, showing the ciliated cavity (cc); (B) prostomial appendages, frontal view; (C) parapodia of the median region, lateral view; (D) falcigerous chaetae; (E) spinigerous and falcigerous chaetae. (D&E, chaetae from middle region.)

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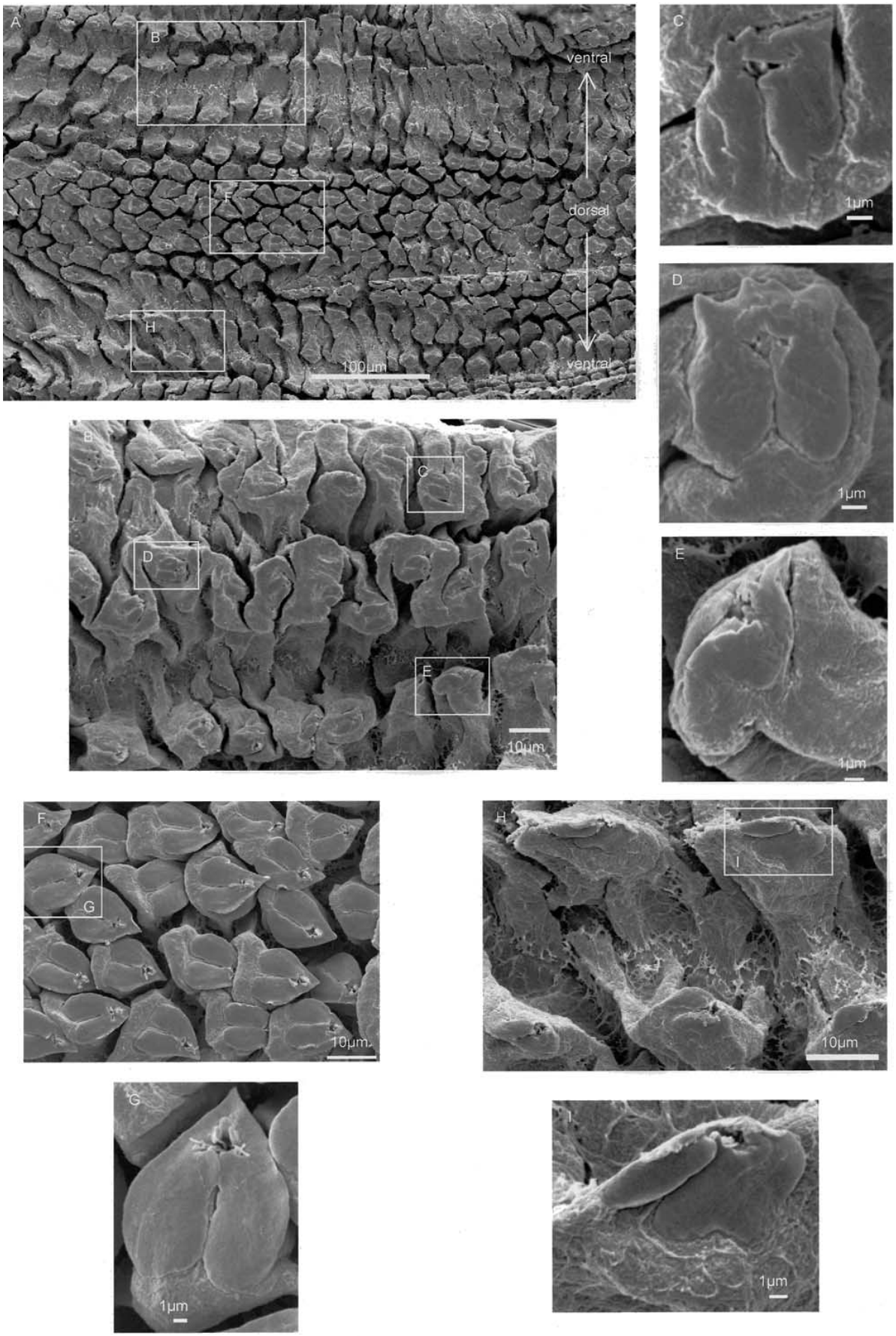

Figure 2. *Progoniada regularis* (SEM micrographs). (A) Proboscideal papillae; (B) latero-ventral papillae, arranged in enlarged series of shorter papillae with distal ends pointed, on a wide base; (C) papilla with distal ends laterally pointed; (D) tricuspid papilla with bifid median cusp; (E) papilla rounded at base and with distal end slightly pointed; (F) cordiform papillae; (G) detail of the cordiform papilla; (H) flattened papillae with distal ends rounded, on a narrow base; (I) detail of the flattened papilla.

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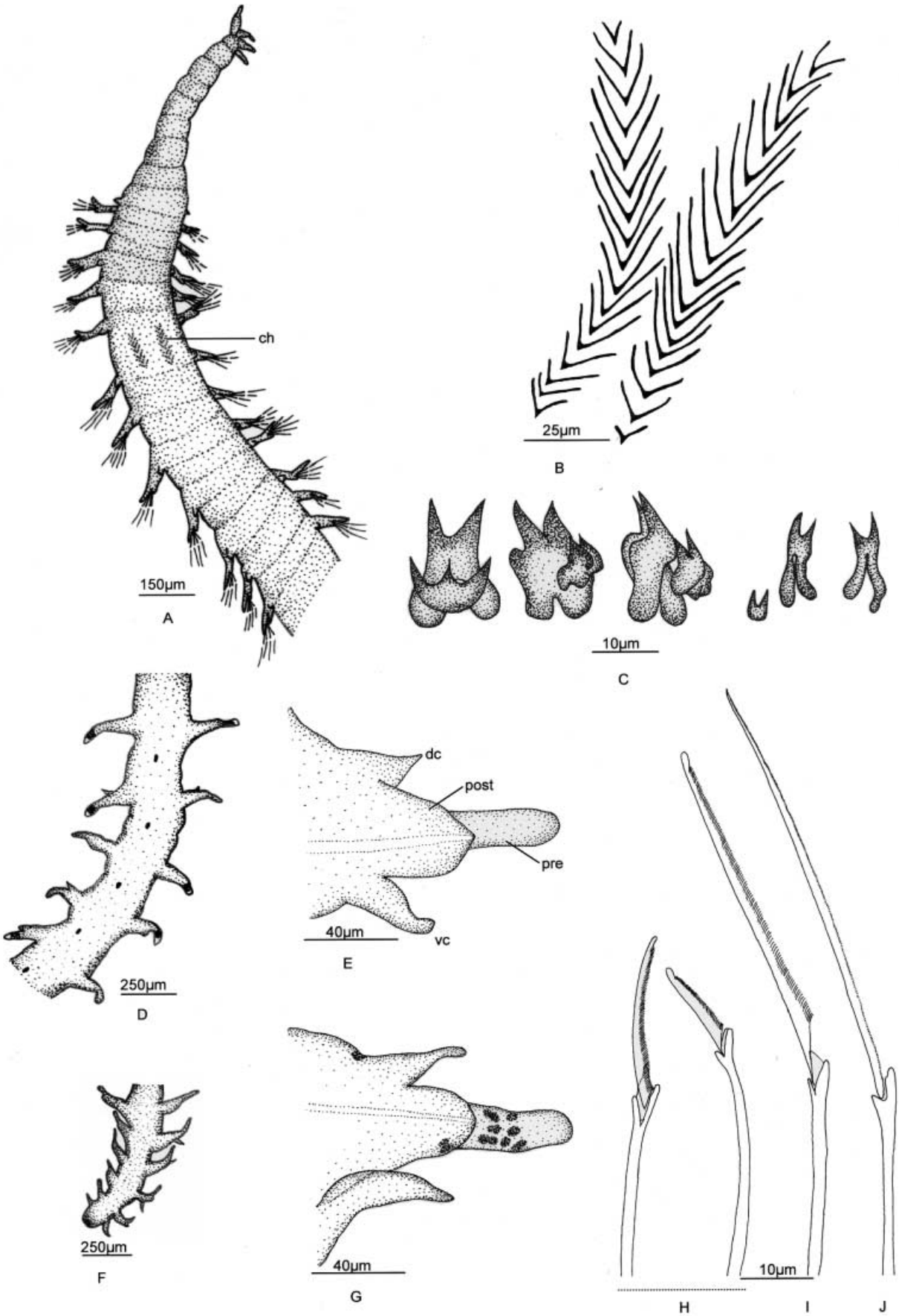

Figure 3. *Progoniada regularis*. (A) Anterior region, dorsal view; proboscis invaginated, chevrons (ch) seen by transparency; (B) paired rows of chevrons with 17 pieces each; (C) pieces of micrognaths, H+w-shaped and basally jointed (left) and X-shaped pieces accompanied by U-shaped piece (right); (D) median region, ventral view; (E) chaetiger 35, posterior view (dc, dorsal cirrus; post, postchaetal lobe; pre, prechaetal lobe; vc, ventral cirrus); (F) last chaetigers; (G) chaetiger 50, posterior view; (H) falcigerous chaetae with short distal appendages; (I) falcigerous chaeta with long distal appendage; (J) spinigerous chaetae.

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Table 1. *Morphological characteristics of the species of* Progoniada *recorded in the literature.*

Species	Depth (m)	Length×width (mm)	Number of chaetigers	Numbers of chevrons	Proboscis: micrognaths (ventral; dorsal arc)	Chaetae
P. regularis Hartman, 1965	770–5001	14–15×0.25	>75 i	20–20	3; 5	Falcigers and spinigers
P. simplex Hartman, 1971*	4886–5069	22.5×1.3	98 i	15–15	3; 10*	Spinigers
Material examined	99–476	3.42–13.62× 0.16–0.32	27–83 c	14–22	3; 10–13	Falcigers and spinigers

*, Hartman (1971) may have erred in describing ten ventral micrognaths and three in the dorsal arc, because goniadids have 0, 3 or more micrognaths in the ventral arc and a variable number in the dorsal arc. We assume that *P. simplex* has three ventral and ten dorsal micrognaths in all its populations. c, complete; i, incomplete.

Remarks

Gambi & Giangrande (1988) identified as *Progoniada* sp. a single specimen collected from shallow depths in the Adriatic Sea, which was found together with *Goniada maculata* Örsted, 1843 and *Glycinde nordmanni* (Malmgren, 1865). This specimen had five pairs of chevrons, and most of the composite chaetae without the distal appendages; some complete spinigers were present. We believe that the specimen examined by Gambi & Giangrande (1988) is a juvenile of *Goniada* sp., because although it had only uniramous chaetigers, the sub-biramous chaetigers might not yet have developed. Species of the genus *Progoniada* have only lateral cirri in the first chaetiger, but the specimen from Mediterranean Sea had the first chaetiger complete, without chaetae. In the area where *P. regularis* was collected together with specimens of *Goniada brunnea* Treadwell, 1906 and *G. maculata*, we found two small specimens, one complete and the other incomplete with nine prostomial rings, one pair of eyes in the basal ring, most of the chaetae spinigerous and some falcigerous, and 5–6 pairs of chevrons. We identified them as juveniles of *G. brunnea*, because all the chaetigers were uniramous, and the total number of chaetigers in the complete specimen was less than 40 uniramous chaetigers, as found in this species. According to Gilbert (1984), species belonging to *Goniada* have neuropodia with spinigerous chaetae, but inferior falcigers may be present on some anterior chaetigers.

Besides the type species, the genus *Progoniada* includes only *P. simplex* Hartman, 1971, described from the Mozambique Basin. Both species were found in deep waters, between 770 and 5001 m. At Bermuda, Hartman (1965) found some individuals with a short squat body and long natatory chaetae, together with specimens of *P. regularis*. She remarked that the former might be a distinct species, rather than an epitoke.

The specimens examined for the present report had one pair of chevron rows, each with about 14 to 22 pieces (mean 18), except for one juvenile with only eight. The number of chevrons on each side of the proboscis did not vary. Juveniles also had fewer micrognaths, some still in the process of development. Like the chevron number, the ventral macro- and micrognaths showed little variation.

One specimen had one w-shaped piece with four instead of three cusps. Micrognaths in the dorsal position numbered from ten to 14, with the exception of one juvenile that had only six plus some pieces in the process of development.

In the original description, Hartman (1965) mentioned a fixed number (20) of pairs of chevrons and only five H-shaped micrognaths in the dorsal arc, besides the three usually found in the ventral arc.

Progoniada regularis differs from *P. simplex* in that the latter has only spinigerous chaetae (Table 1). Examination of the holotype of *P. simplex* will be necessary to determine whether this species distinction is valid.

Bathymetric distribution

Progoniada regularis has been reported from depths of 196 to 5023 m. In this study, the species was collected from 93 to 476 m.

Geographic distribution

Western Atlantic Ocean: off Massachusetts, USA; Bermuda; off Surinam; north of the mouth of the Amazon River, off Pernambuco, and from Rio de Janeiro to Rio Grande do Sul, Brazil.

Goniadella Hartman, 1950

Type species

Eone gracilis Verril, 1873.

Diagnosis

Proboscideal papillae of one or several types. Chevrons present. First segment apodous, without chaetae and with one pair of lateral cirri. Anterior parapodia uniramous, posterior sub-biramous. Prechaetal neuropodial lobe entire, not bifurcated. Notopodial lobe absent or reduced. Acicular notochaeta projecting directly from the epidermal tissue, above or below the dorsal cirrus. Falcigerous and spinigerous neurochaetae.

Goniadella revizee new species
(Figures 4–6, Table 2)

Type material

Twenty four specimens. Holotype: Station 6741, 23°49.90′S 43°14.40′W, 138 m, 15 February 1998, MHN-BPO/85-0; paratype series: Station 6741, 23°49.90′S 43°14.40′W, 138 m, 15 February 1998 MHN-BPO/85-1 to MHN-BPO/85-23, 23 specimens.

Other material examined

A total of 95 specimens: Station 6666, 24°17.129′S 44°12.179′W, 163 m, 10 January 1998, MHN-BPO/AR-42,

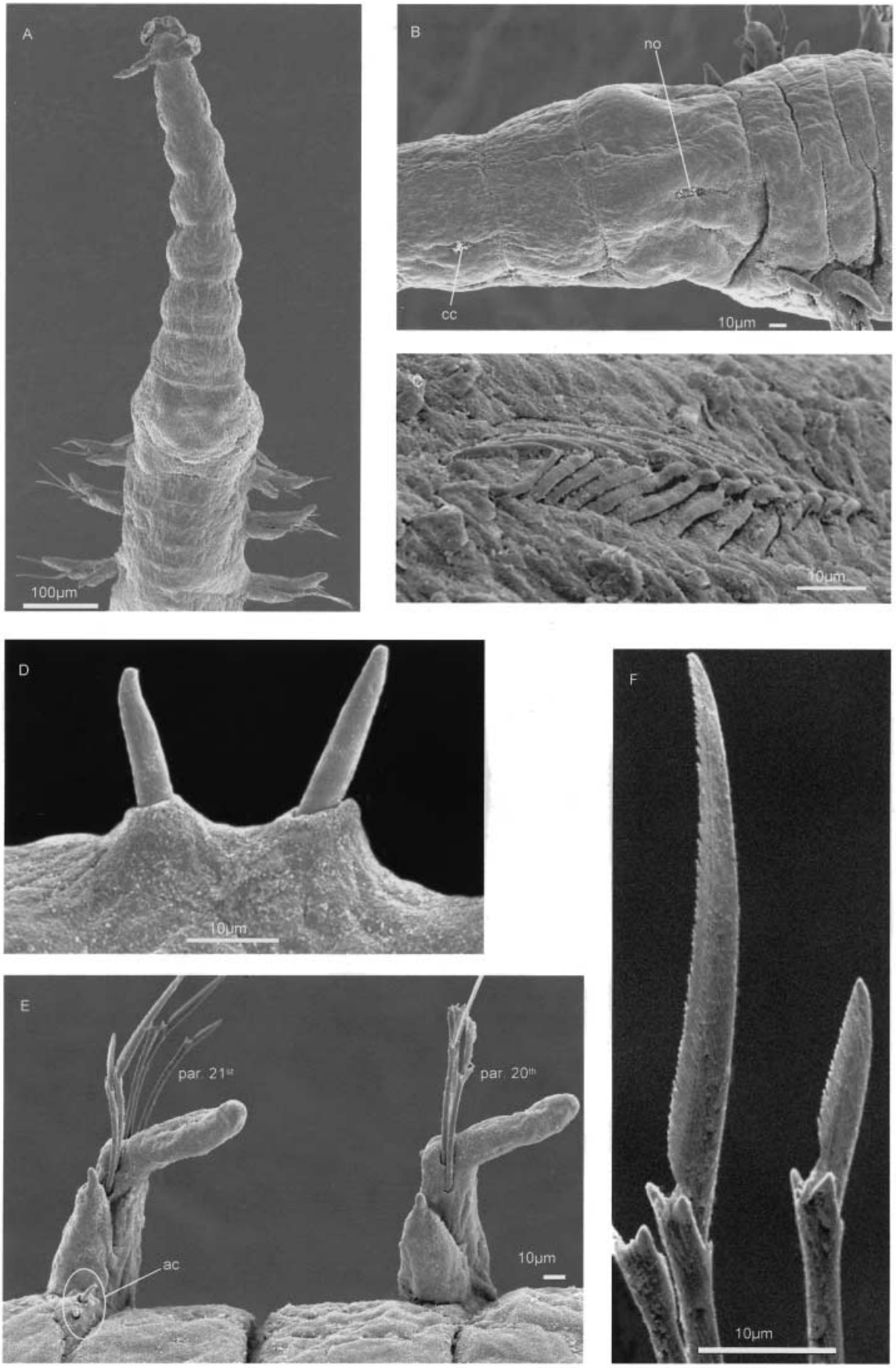

Figure 4. *Goniadella revizee* sp. nov. (SEM micrographs). (A) Anterior region, dorsal view; (B) basal prostomial ring showing nuchal organ (no) and ciliated cavity (cc), left lateral view; (C) rows of chevrons with 12 pieces (other four pieces were lost during SEM processing); (D) acicular notochaetae; (E) transition between uniramous and sub-biramous parapodia (par); beginning of acicular chaetae (ac) in the notopodium, dorsal view; (F) falcigerous chaetae, with long distal appendage (left) and with short distal appendage (right).

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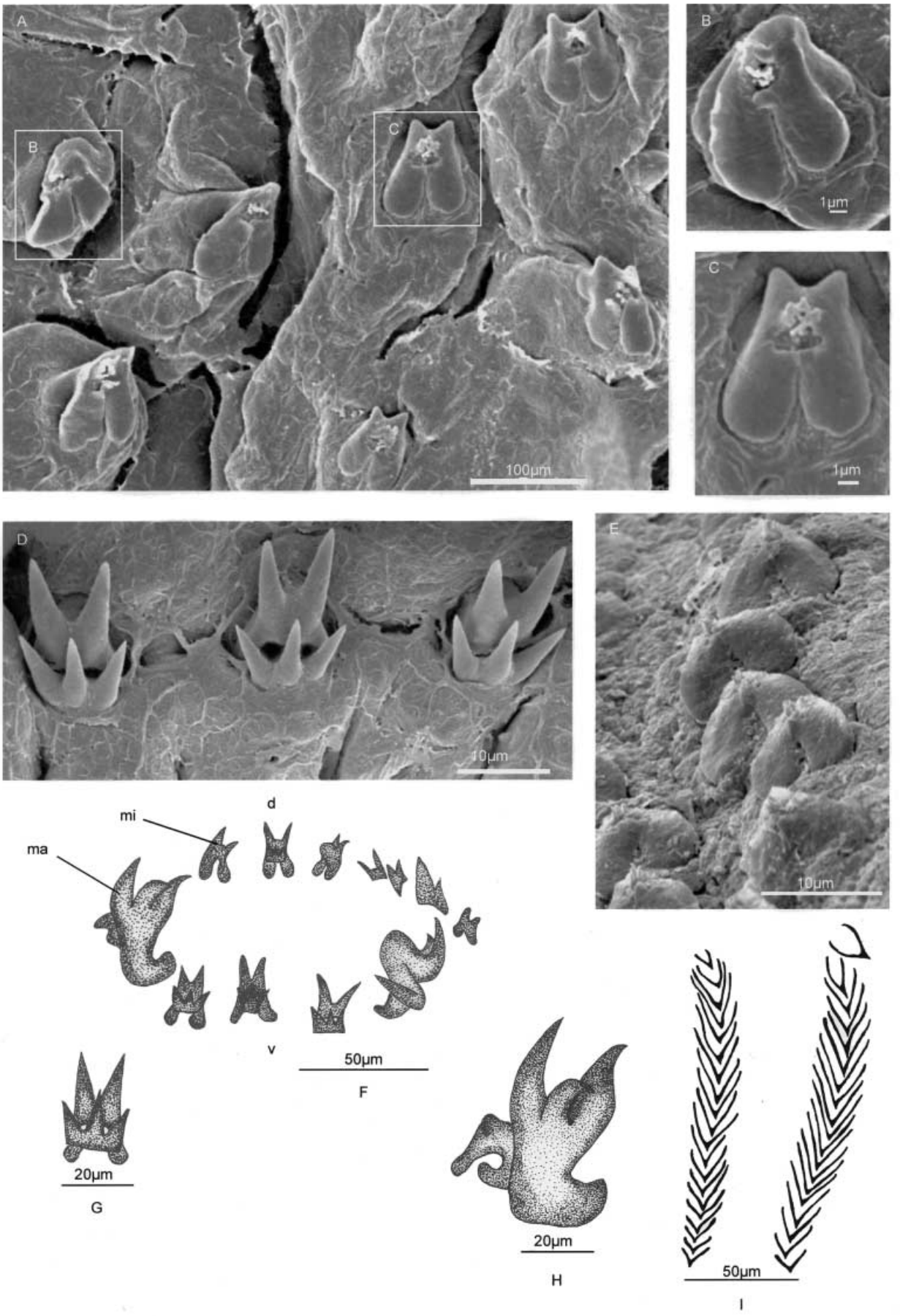

Figure 5. *Goniadella revizee* sp. nov. (SEM micrographs). (A) Proboscideal papillae of two types with a ciliated subapical pore; (B) papilla with a single cusp; (C) papilla with bicuspid distal end; (D) micrognaths of the ventral arc, view of the outer part; (E) papillae located near the base of the proboscis; (F) arc of macro- (ma) and micrognaths (mi) in dorsal (d) and ventral (v) position; (G) micrognath; (H) macrognath; (I) paired rows of chevrons with 19–20 pieces.

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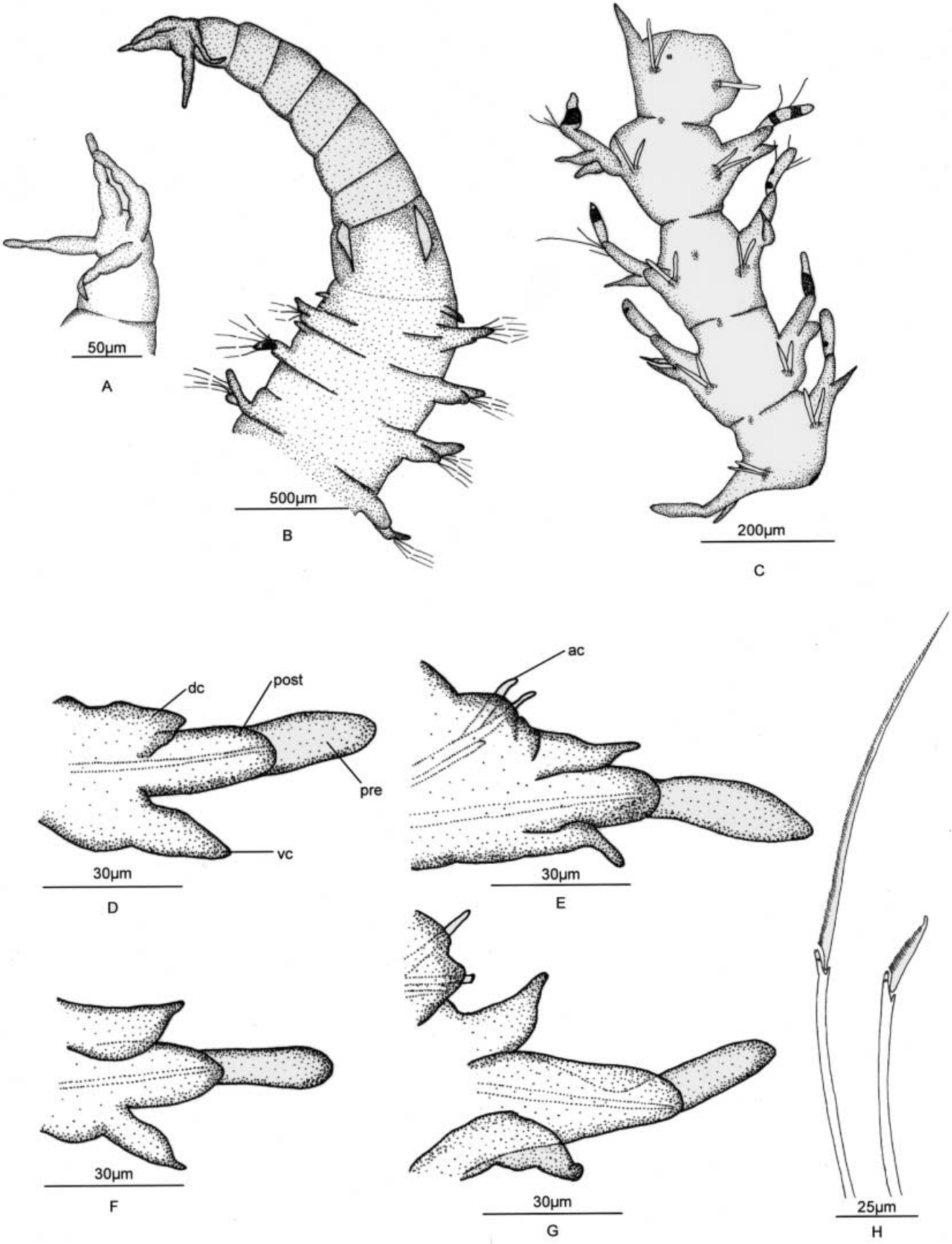

Figure 6. *Goniadella revizee* sp. nov. (A) Prostomial appendages; (B) anterior region, dorsal view; (C) posterior region with intersegmental punctiform pigment seen by transparency in dorsal view; (D) chaetiger 6 (dc, dorsal cirrus; post, postchaetal lobe; pre, prechaetal lobe; vc, ventral cirrus); (E) chaetiger 20; (F) chaetiger 31 (ac: acicular chaetae); (G) chaetiger 40 (D–G, all chaetigers in posterior view); (H) spinigerous chaeta with long distal appendage (left) and falcigerous chaeta (right).

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Table 2. *Morphological characteristics of species of* Goniadella.

Species References	Geographic distribution	Depth (m)	Length× width (mm)	Number of chaetigers	Eyes	Number of uniramous parapodia	Number of chevrons	Proboscis: macrognaths (number of cuspids) + micrognaths (ventral; dorsal)	Chaetae A	Chaetae F	Chaetae S
***Goniadella gracilis* (Verrill, 1873)** *sensu* Hartman, 1950											
Hartman, 1950	Massachusetts, off Gay Head (type locality)	Intertidal to 6	±20	NM	1 pair basal + 1 pair distal	30–31	26	4+3; 10 (+2–3 small)	3–4	3–4	NM
Pettibone, 1963	Massachusetts; Rhode Island	<25	<50×1.0	>100	1 pair basal + 1 pair subdistal	27–32	26	3–4+3; 10	2–4	NM	NM
Walker, 1972	Liverpool Bay, England	15–37	12–23	NM	NM	28–29	20–34	NM	1–2	2–4	2–3
***Goniadella galaica* (Rioja, 1923)**											
Rioja, 1923*	Tambo Island, Marín, Spain (type locality)	NM	15–25×1	NM	1 pair	22–23	17–24	3+3; 9–10	3	NM	NM
***Goniadella bobrezkii* (Annenkova, 1929)**											
Annenkova, 1929	Black Sea (type locality)	12.5–17	13–14×0.5	90	1 pair basal + 1 pair subdistal	24	17–18	5+15	2–3	NM	NM
Walker, 1972	North Sea and Black Sea	NM	NM	NM	1 pair basal + 1 pair distal	22–24	17–24	NM	2	2–3	1–2
Wolff & Stegenga, 1975**	Scheldt River, The Netherlands	8	4.0×0.2 (juvenile)	34	1 pair basal + 1 pair subdistal	22	4–4*	NM+4	2	5	
***Goniadella falklandica* Hartmann-Schröder, 1986**											
Hartmann-Schröder, 1986*	Falkland Islands (type locality)	535	37	95	Not observed	45–47	15–16	NM+4; 16*	3	4–6	4–7
***Goniadella unicirra* Campoy & Aguirrezabalaga, 1984**											
Aguirrezabalaga, 1984	Guipúzcoa Coast, Iberian Peninsula (type locality)	30–70	NM	44	1 pair basal + 1 pair subdistal	29	8–9	3–4+4; 3	2	3	3
***Goniadella* sp. A Gilbert, 1984**											
Gilbert, 1984	Gulf of Mexico	19–56	24.5×0.8	<113	1 pair basal (In Figure 33–2f)	14–15	17–23	2+3–4; 11	NM	NM	NM
***Goniadella revizee* sp. nov.**											
Material examined	Brazil (Rio de Janeiro to Rio Grande do Sul)	99–808	8.08–20.3× 0.14–0.3	54–129	Not observed	20–21	16–22	3+3; 8–10	1–3	2	3

*, Rioja (1923) described three micrognaths in dorsal and 9–10 in ventral position, and Hartmann-Schröder (1986) described four micrognaths in dorsal and 16 in ventral position. They may have erred, because goniadids have 0, 3 or more micrognaths in the ventral arc and a variable number (usually greater) in the dorsal arc. **, Wolff & Stegenga (1975) described eight V-shaped chevrons; they illustrated the anterior region with two rows of chevrons, with four pieces on each. NM, not mentioned; A, acicular; F, falciger; S, spiniger.

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2 specimens. Station 6671, 24°32.91′S 44°27.46′W, 260 m, 11 January 1998, MHN-BPO/AR-50, 1 specimen. Station 6673, 24°17.939′S 44°35.983′W, 133 m, 10 January 1998, MHN-BPO/AR-43, 3 specimens. Station 6674, 24°31.08′S 44°54.00′W, 122 m, 10 January 1998, MHN-BPO/AR-44, 3 specimens. Station 6676, 24°49.699′S 44°44.965′W, 153 m, 12 January 1998, MHN-BPO-AR45, 1 specimen. Station 6678, 24°46.357′S 45°11.135′W, 99 m, 12 January 1998, MHN-BPO/AR-46, 3 specimens. Station 6679, 25°18.874′S 44°52.516′W, 808 m, 12 January 1998, MHN-BPO/AR-47, 2 specimens. Station 6686, 25°36.988′S 45°13.571′W, 153 m, 13 January 1998, MHN-BPO/AR-49, 1 specimen. Station 6739, 24°02.58′S 43°30.80′W, 147 m, 14 February 1998, MHN-BPO/AR-310, 6 specimens. Station 6744, 23°51.50′S 42°49.90′W, 254 m, 15 February 1998, MHN-BPO/AR-315, 1 specimen. Station 6750, 23°40.08′S 42°31.80′W, 162 m, 16 February 1998, MHN-BPO/AR-312, 1 specimen. Station 6753, 23°36.54′S 42°09.86′W, 187 m, 16 February 1998, MHN-BPO/AR-323, 4 specimens. Station 6754, 23°26.70′S 42°14.0′W, 131 m, 17 February 1998, MHN-BPO/AR-320, 2 specimens. Station 6759, 23°20.0′S 41°22.0′W, 110 m, 28 February 1998, MHN-BPO/AR-319, 32 specimens. Station 6762, 23°26.20′S 41°15.82′W, 146 m, 28 February 1998, MHN-BPO/AR-308, 30 specimens. Station 6784, 27°09.51′S 47°04.85′W, 195 m, 14 March 1998, MHN-BPO/AR-341, 1 specimen. Station 6797, 28°08.15′S 47°22.61′W, 190 m, 17 March 1998, MHN-BPO/AR-336, 1 specimen. Station 6817, 29°28.75′S 48°09.35′W, 210 m, 23 March 1999, MHN-BPO/AR-342, 1 specimen.

Description

Holotype complete, with 75 chaetigers, length 10.6 mm, width 0.28 mm. Paratype series with two complete, 21 incomplete specimens; complete specimens with 66–67 chaetigers, length 8.08–8.83 mm and width 0.24–0.26 mm. Other material includes 13 complete specimens with 54 to 129 chaetigers, length 8.25–20.3 mm and width 0.14–0.3 mm, and 79 incomplete. Pigment, when present, irregular, brownish, subdistally on the prechaetal lobes and cirri; punctiform intersegmental pigment present from biramous ventral region. Usually with brown colouring on entire body, on dorsal and ventral side.

Body long, anteriorly cylindrical, posteriorly slender. Conical prostomium with eight rings (Figures 4A & 6B). Prostomial appendages triarticulate, reaching the second distal prostomial ring; basal article one-third size of distal article (Figure 6A). Nuchal organs ciliated, drop-shaped, located latero-dorsally on basal prostomial ring four small ciliated cavities on each prostomial ring, two ventral and two dorsal, except on distal and basal ring (Figure 4B). Eyes not visible. All proboscids invaginated; proboscis with two ventral macrognaths, three ventral micrognaths, and 8–13 dorsal micrognaths (Figure 5F). Macrognaths with three cusps (Figure 5H). Micrognaths composed of two basally jointed pieces, one H-shaped and the other smaller and w-shaped (Figure 5D, G); micrognaths of ventral arc up to twice as large as micrognaths of dorsal arc. Each row of chevrons with 16 to 22 in V-shaped pieces (Figures 4C & 5I). Proboscideal papillae mainly of two types, subtriangular, most with a single cusp and some bicuspid; both types basally cleft, with a ciliated subapical pore (Figure 5A–C). Papillae located near the chevrons, with distal end rounded, and more distal papillae with pointed ends; all papillae also basally cleft with a ciliated subapical pore. Basal papillae smaller and more rounded than others (Figure 5E). Parapodia of posterior region longer and more slender than those of anterior region. First segment apodous and achaetigerous, with one pair of small digitiform lateral cirri (Figures 4B & 6B). Parapodia composed of one digitiform prechaetal lobe and one shorter, rounded postchaetal lobe, up to half the length of the prechaetal lobe; and also of one dorsal and one ventral cirrus, both digitiform to subtriangular (Figure 6D,F). Biramous parapodia beginning on chaetiger 20–21 (20 in holotype), with the appearance of the notochaetae (Figure 4E). Notopodium rudimentary, not prominent, with 1–3 (usually two) simple acicular chaetae, arising above dorsal cirrus (Figure 6E,G); one of the chaetae with its tip slightly curved (Figure 4D). Posterior neuropodia similar to anterior. Neuropodial bundle usually composed of one pair of outer falcigerous chaetae, one pair of spinigers with short distal appendages in an intermediate position, and one spiniger with one long distal appendage in the inner position of the bundle (Figures 4F & 6H). Noto- and neuropodium each supported by one acicula. Anal opening rounded, distal. Pygidium with one pair of slender conical anal cirri, reaching in length the last three chaetigers (easily lost in fixed material).

Etymology

This species is dedicated to the REVIZEE Programme, which made possible the collection of the material.

Remarks

Goniadella revizee sp. nov., *Goniadella* sp. A Gilbert, 1984 and *Goniadella bobrezkii* (Annenkova, 1929) differ from other species of the genus mainly in possessing acicular notochaetae above the dorsal cirrus on sub-biramous parapodia, and in regard to the number of uniramous chaetigers and chevrons. One of the acicular notochaetae of *G. revizee* sp. nov. has its end slightly curved, similar to those described for *Goniadella unicirra* Campoy & Aguirrezabalaga, 1984 (in Aguirrezabalaga, 1984) and *G. bobrezkii*. *Goniadella bobrezkii* is known from European waters (Annenkova, 1929; Walker, 1972; Wolff & Stegenga, 1975). *Goniadella bobrezkii* differs from *Goniadella revizee* sp. nov. mainly in the number of uniramous chaetigers (24) and the number of chevrons (17–18), but also in possessing two pairs of eyes, and macrognaths with five cusps, besides 15 micrognaths. In the original description of this species, the presence of ventral micrognaths was not mentioned.

Table 2 lists some morphological characteristics of the five described species of the genus *Goniadella*, taken from the main references, and of *Goniadella revizee* sp. nov. *Goniadella gracilis* (Verrill, 1873) and *Goniadella falklandica* Hartmann-Schröder, 1986, described from the western Atlantic, and *Goniadella galaica* (Rioja, 1923) from off Galicia, Spain, differ from *Goniadella revizee* sp. nov. in having acicular notochaetae immediately below or on the dorsal cirrus (Hartman, 1950: plate 5, figure 7). In *Goniadella revizee* sp. nov. the dorsal cirrus is next to the neuropodial lobe in both the uniramous and the biramous

chaetigers. Moreover, these species have more uniramous chaetigers than does *Goniadella revizee* sp. nov. (Table 2).

Specimens from the Gulf of Mexico were first identified as *Goniadella* sp. and *G. gracilis*. These specimens were later transferred to *Goniadella* sp. A by Gilbert (1984), because they did not share certain taxonomic characters with *G. gracilis*, a species known from northern temperate waters. *Goniadella* sp. A differs from *Goniadella revizee* sp. nov. in having: (a) 14–15 uniramous chaetigers; (b) macrognaths with two cuspids; (c) straight acicular notochaeta; and (d) a pair of eyes on the basal prostomial ring (from figure 33–2f, Gilbert, 1984).

Morphological differences were found between the specimens from the Brazilian south-east coast and those from the Caribbean region. The specimens from off Brazil have: (a) 20–21 uniramous chaetigers; (b) macrognaths with three cusps; (c) acicular notochaetae with the ends slightly curved; and (d) eyes not evident. Gilbert (1984) described the proboscideal papillae of *Goniadella* sp. A as being of a single type, sub-triangular with only a cusp. The SEM observations for the Brazilian population revealed the existence of two types, with one or two cusps. Although the specimens from both localities share certain taxonomic characters, such as the number and position of the acicular notochaetae and the number of pairs of chevrons, we decided to consider them two distinct species. Our reasoning was based mainly on the different number of uniramous chaetigers, which is usually the first characteristic used to separate species in other genera of goniadids. Additional differences between these two species are the size (length×width), the number of cusps in the macrognaths, the presence or absence of eyes, and the range of depths where both species were found. In our opinion, the differences between *Goniadella gilbertae* sp. nov. and other species are sufficient to justify designating a new species.

Bathymetric distribution

Goniadella revizee sp. nov. occurred from 99 to 808 m.

Geographic distribution

Western Atlantic Ocean: off Brazil, from Rio de Janeiro to Rio Grande do Sul.

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