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## Glyceriformia Fauchald, 1977 (Annelida: “Polychaeta”) from Lizard Island, Great Barrier Reef, Australia

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### Abstract

Eight species of Glyceridae (*Glycera brevicirris*, *Glycera* cf. *lapidum*, *Glycera onomichiensis*, *Glycera sagittariae*, *Glycera tessellata*, *Glycera tridactyla*, *Glycerella magellanica*, *Hemipodia* cf. *simplex*) and six species of Goniadidae (*Goniada antipoda*, *Goniada* cf. *brunnea*, *Goniada echinulata*, *Goniada emerita*, *Goniada grahami*, *Goniada paucidens*) have been collected during several expeditions to the vicinity of Lizard Island (Australia, Queensland). An identification key to the Glyceriformia that inhabit the region is presented. Detailed and illustrated morphological descriptions are given for all investigated species.

**Key words:** Annelida, Polychaetes, Glyceriformia, Glyceridae, Goniadidae, Great Barrier Reef, Australia, Queensland, Lizard Island

### Introduction

The habitats of the Lizard Island Group have been intensely investigated during the last forty years since the Australian Museum's Research Station inception in 1973 (Shuetrim 2013). The coral reefs and their different environments and dwellers have been the focus of many studies (see: <http://australianmuseum.net.au/Lizard-Island-Research-Station/>). Most of the publications concentrated on reef fishes and the corals themselves, but others with regard to endo-cryptolithic fauna and to bioerosion by grazers and micro- and macroborers including polychaetes have been examined (e.g. Hutchings 1977, 1983, 1986; Hutchings & Weate 1977, 1979; Hutchings & Murray 1982; Hutchings *et al.* 1992, 2005; Tribolett *et al.* 2002; Osorno *et al.* 2005). However, there is very little information in the literature on the Annelida of the sandy to muddy sediments around the corals. Therefore, it is not surprising that most of the herein studied Glyceriformia Fauchald, 1977, one of the widely distributed and very common groups in such soft sediments, have not been previously recorded from the northern Great Barrier Reef.

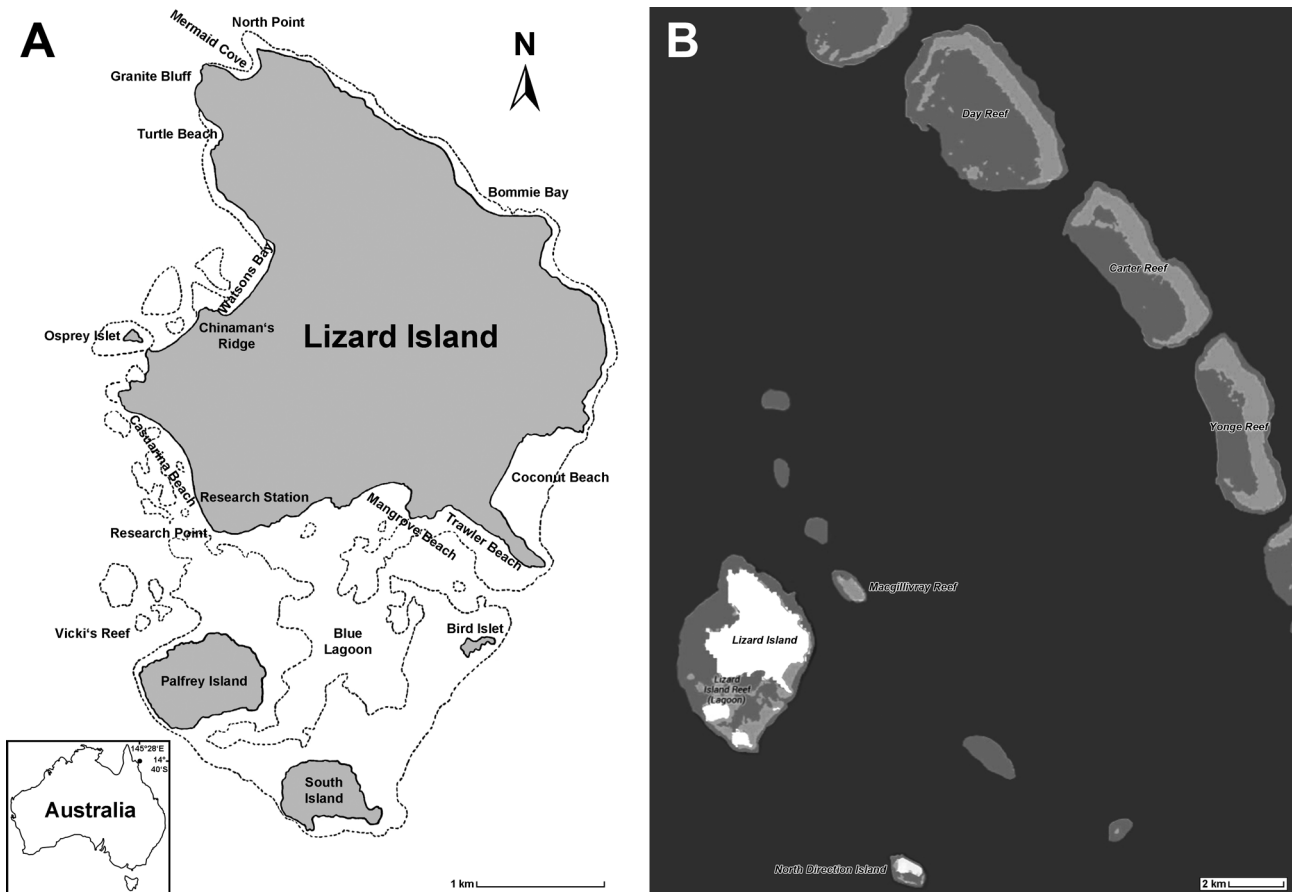
### Material and methods

Most of the materials examined were collected over the years 1975 to 2013 by different groups from several locations in the well-developed fringing reefs around the granitic Lizard Island Group (Fig. 1A). Furthermore, additional material comes from the Carter Reef, Day Reef, MacGillivray Reef, Yonge Reef and the North Direction Island (Fig. 1B). All of them are located in the northern portion of Australia's Great Barrier Reef. Sediment samples from the different stations were usually taken by large hand-held corer or directly by hand when snorkelling or diving.

Material was fixed in 5–10 % formalin diluted with seawater and later transferred to 80% ethanol or directly fixed in 95 % ethanol. Observations, measurements and figures were made using a Leica Wild M 3 stereo microscope, a Zeiss compound microscope, and an Olympus BX 41 compound microscope, each equipped with a camera lucida. For SEM investigation fragments of specimens were dehydrated in a graded ethanol series, critical-

point dried using CO<sub>2</sub>, mounted on aluminium stubs, coated with gold, and examined with a Jeol NeoScope JCM-6000.

Species descriptions are based on specimens newly reported in this study. This also applies to the distribution data provided, whereas the diagnoses provide more general information about each taxon. Locality descriptions of material collected during the August 2013 collection trip (MI QLD 2329 – MI QLD 2449) are listed as in Ribas & Hutchings (2015, *Zootaxa* 4019). Number of specimens collected is one unless otherwise specified.



**FIGURE 1.** Map of the Lizard Island Group (A) and outer barrier (B), with indications of the locations where the glyceriforms included in this study were collected (A: © Australian Museum, modified; B: © Google, modified).

Abbreviations used in the “Material examined” section for each species include: cs: complete specimen, af: anterior fragment, mf: middle fragment, and pf: posterior fragment. This is followed by: length of specimen (in mm); number of chaetigers; maximum width of specimen including and excluding parapodia (in mm). The following abbreviations are used: AM (Australian Museum, Sydney) and CReefs (Census of Coral Reefs Ecosystems - Census of Marine Life).

## Taxonomic account

### Glyceriformia Fauchald, 1977

#### Key to species from Lizard Island and adjacent areas

1. Proboscis with four jaws arranged in a cross (Figs 5A, 6A), each basally supported by an aileron (Figs 2C, 3C, 4C, 5C, 6C, 7C, 8C, 9C); prostomial appendages not articulated (Figs 2A, 3A, 4A, 5A, 6A, 7A, 8A, 9A) Glyceridae ..... 2
- Proboscis with ring of two macrognaths and variable number of micrognaths, sometimes with additional chevrons (Figs 15A, 16A, 17C–D, 17G–H); prostomial appendages biarticulated (Figs 11A, 12A, 13A, 14A, 15A, 16A) Goniadidae Kinberg, 1865 ..  
..... 13

2. (1)	Ailerons with outer and inner rami and sometimes an interrampal plate (Figs 2C, 3C, 4C, 5C, 6C, 7C)	3
-	Ailerons rod-like (Figs 8C, 9C)	11
3. (2)	Ailerons with interrampal plate (Figs 3C, 4C, 5C, 7C); postchaetal lobes variable; branchiae present or absent	4
-	Ailerons with deeply incised bases (Figs 2C, 6C); postchaetal lobes short, rounded; branchiae absent	10
4. (3)	All parapodia with one postchaetal lobe (Figs 3D–K)	5
-	Parapodia mainly with two postchaetal lobes (Figs 4D–K, 5D–K, 7D–K)	6
5. (4)	In mid-body notopodial prechaetal lobes distinctly shorter than neuropodial ones (Figs 3E–J); branchiae absent; ailerons with slight dent in upper edge of pointed triangular bases (Fig. 3C); main type of proboscoidal papillae digitiform with undulating ridge on one side	<i>Glycera lapidum</i> Quatrefages, 1866
-	In mid-body prechaetal lobes of about same length; branchiae absent; ailerons with slightly arched bases; main type of proboscoidal papillae conical with about 5–20 transverse ridges on one side	<i>Glycera oxycephala</i> Ehlers, 1887*
6. (4)	Main type of proboscoidal papillae with terminal fingernail structure on one side and some longitudinal ridges on nail (Figs 4B, 7B, 10C, 10F)	7
-	Main type of proboscoidal papillae conical, without terminal fingernail structure on one side (Figs 5B, 10D)	8
7. (6)	Main type of proboscoidal papillae with long stalk (Figs 4B, 10C); parapodia of mid-body with two slender triangular postchaetal lobes of about same length (Figs 4F–I); branchiae absent; ailerons with pointed triangular bases (Fig. 4C)	<i>Glycera onomichiensis</i> Izuka, 1912
-	Main type of proboscoidal papillae with short stalk (Figs 7B, 10F); parapodia of mid-body with slender triangular notopodial and shorter, more or less rounded neuropodial postchaetal lobes (Fig. 7F–I); simple, digitiform branchiae, situated termino-dorsally on parapodia (Fig. 7F–J); ailerons with triangular bases (Fig. 7C)	<i>Glycera tridactyla</i> Schmarda, 1861
8. (6)	Conical proboscoidal papillae with three transverse ridges on one side (Figs 5B, 10D)	9
-	Conical proboscoidal papillae with Y-shaped ridge on one side in combination with 1–3 vertical ridges apically; parapodia of mid-body with two slender triangular postchaetal lobes of about same length; retractile, bush-like branchiae, situated dorsally on posterior side of parapodial bases; ailerons with triangular bases	<i>Glycera ovigera</i> Schmarda, 1861*
9. (8)	In anterior parapodia only one, medially inserted, slender triangular postchaetal lobe, parapodia of mid-body with slender triangular notopodial and shorter, rounded neuropodial postchaetal lobes; 1–6 retractile, digitiform branchial rami, situated medially on anterior side of parapodia; ailerons with rounded triangular bases	<i>Glycera macintoshi</i> Grube, 1877*
-	All biramous parapodia with two rounded, sometimes slightly blunt triangular postchaetal lobes, notopodial lobes usually slightly broader and longer than neuropodial ones (Fig. 5D–K); simple retractile, digitiform branchiae, situated medially on anterior side of parapodia (Fig. 5F); ailerons with triangular bases (Fig. 5C)	<i>Glycera sagittariae</i> McIntosh, 1885
10. (3)	Main type of proboscoidal papillae digitiform with about 6–20 transverse ridges on one side (Figs 2B, 10A)	<i>Glycera brevicirris</i> Grube, 1870
-	Main type of proboscoidal papillae digitiform with a straight, median, longitudinal ridge on one side (Figs 6B, 10E)	<i>Glycera tessellata</i> Grube, 1863
11. (2)	All parapodia uniramous with one pre- and one postchaetal lobe (Fig. 9D–K); prostomium consisting of more than five rings, appendages relatively short (Fig. 9A)	12
-	First two parapodia uniramous, following ones biramous with two pre- and two postchaetal lobes (Fig. 8D–H); prostomium consisting of four rings, appendages relatively long (Fig. 8A); proboscoidal papillae digitiform with a straight, median, longitudinal ridge on one side (Fig. 8B)	<i>Glycerella magellanica</i> (McIntosh, 1885)
12. (11)	Main type of proboscoidal papillae conical with more or less distinct straight, median, longitudinal ridge on one side	<i>Hemipodia simplex</i> (Grube, 1857)
-	Main type of proboscoidal papillae conical with about 9–18 transverse ridges on one side	<i>Hemipodia yenourensis</i> (Izuka, 1912)*
13. (1)	Proboscis with chevrons (Figs 15A, 16A, 17C–D, 17G–H); proboscoidal papillae of slightly different types, more irregularly arranged; parapodia with one or two neuropodial prechaetal lobes	14
-	Proboscis without chevrons; proboscoidal papillae of several different types, arranged in distinct longitudinal rows; all parapodia with one neuropodial prechaetal lobe	23
14. (13)	Biramous parapodia present, with two neuropodial prechaetal lobes (Fig. 11B–F, 12B–D, 13C–I, 14B–F, 15B–I, 16B–I); spinigerous compound neurochaetae	15
-	All parapodia uniramous, with one neuropodial prechaetal lobe; falcigerous and/or spinigerous compound neurochaetae	<i>Progoniada regularis</i> Hartman, 1965*
15. (14)	Notochaetae acicular (Fig. 14D–F, 15D–I)	16
-	Notochaetae capillaries	20
16. (15)	Acicular notochaetae situated between dorsal cirrus and notopodium (Fig. 14D–F)	17
-	Acicular notochaetae situated dorsal to dorsal cirrus, between dorsal cirrus and notopodium, and below notopodium (Fig. 15D–I)	19
17. (16)	Less than 30 pairs of chevrons	18
-	41–150 pairs of chevrons; 33–40 uniramous chaetigers, following biramous	<i>Goniada multidentata</i> Arwidsson, 1899*
18. (17)	46–69 uniramous chaetigers, following biramous; 4–26 pairs of chevrons	<i>Goniada emerita</i> Audouin & Milne Edwards, 1933
-	36–45 uniramous chaetigers, transitional middle region with some subbiramous and biramous parapodia with reduced notopodia, following biramous; 6–24 pairs of chevrons	<i>Goniada japonica</i> Izuka, 1912*
19. (16)	64–90 uniramous chaetigers, following biramous; 9–24 pairs of chevrons; ventral proboscoidal papillae all small, heart-shaped to rounded	<i>Goniada grahami</i> Benham, 1932
-	39–57 uniramous chaetigers, following biramous; 6–21 pairs of chevrons; ventral proboscoidal papillae in median part triangu-	

- lar with broad base ..... *Goniada tripartita* Monro, 1931\*
20. (15) Proboscoidal papillae on distal part of proboscis more or less heart-shaped (Fig. 17E–F) ..... 21  
 - Longer conical papillae on distal part of proboscis with distal beaks and basally with two long stilts (Fig. 17A–B); 10–20 pairs of chevrons (Fig. 17C–D); 29–46 uniramous chaetigers, following biramous ..... *Goniada echinulata* Grube, 1870
21. (20) Only four simple inverted Y-shaped or rod-like dorsal micrognaths with small bifid tips. .... 22  
 - Numerous compound usually H+v/w-shaped and sometimes additional small H- or X-shaped dorsal micrognaths; 53–60 uniramous chaetigers, following biramous; 1–12 pairs of chevrons (Fig. 17G–H) ..... *Goniada paucidens* Grube, 1878
22. (21) Prostomium with pointed tip (Fig. 11A); 26–44 uniramous chaetigers, following biramous with single lobed notopodia (Fig. 11B–F); 4–12 pairs of chevrons ..... *Goniada antipoda* Augener, 1927  
 - Prostomium usually with blunt tip (Fig. 12A); 36–53 uniramous chaetigers (Fig. 12B–D), following biramous with notopodia subdivided into pre- and postchaetal lobes; 4–20 pairs of chevrons ..... *Goniada brunnea* Treadwell, 1906
23. (13) Biramous chaetigers present; acicular notochaetae, hooked at tip and with terminal pointed hood; spinigerous compound neurochaetae; proboscoidal area II-1 with unidentate papillae and area V with straight conical papillae ..... 24  
 - 12–31 uniramous chaetigers, following subbiramous; acicular notochaetae more or less straight, arising dorsal to dorsal cirri; falcigerous compound neurochaetae ..... *Goniadides falcigera* Hartmann-Schröder, 1962\*
24. (23) Full-grown specimens with more than four dorsal micrognaths; 19–26 uniramous chaetigers, following biramous .....  
 ..... *Glycinde bonhourei* Gravier, 1904\*  
 - Only four dorsal micrognaths; 19–30 uniramous chaetigers, following biramous ..... *Glycinde kameruniana* Augener, 1918\*

\* Species known from northern Australia, but not found during the present study.

## Glyceridae Grube, 1850

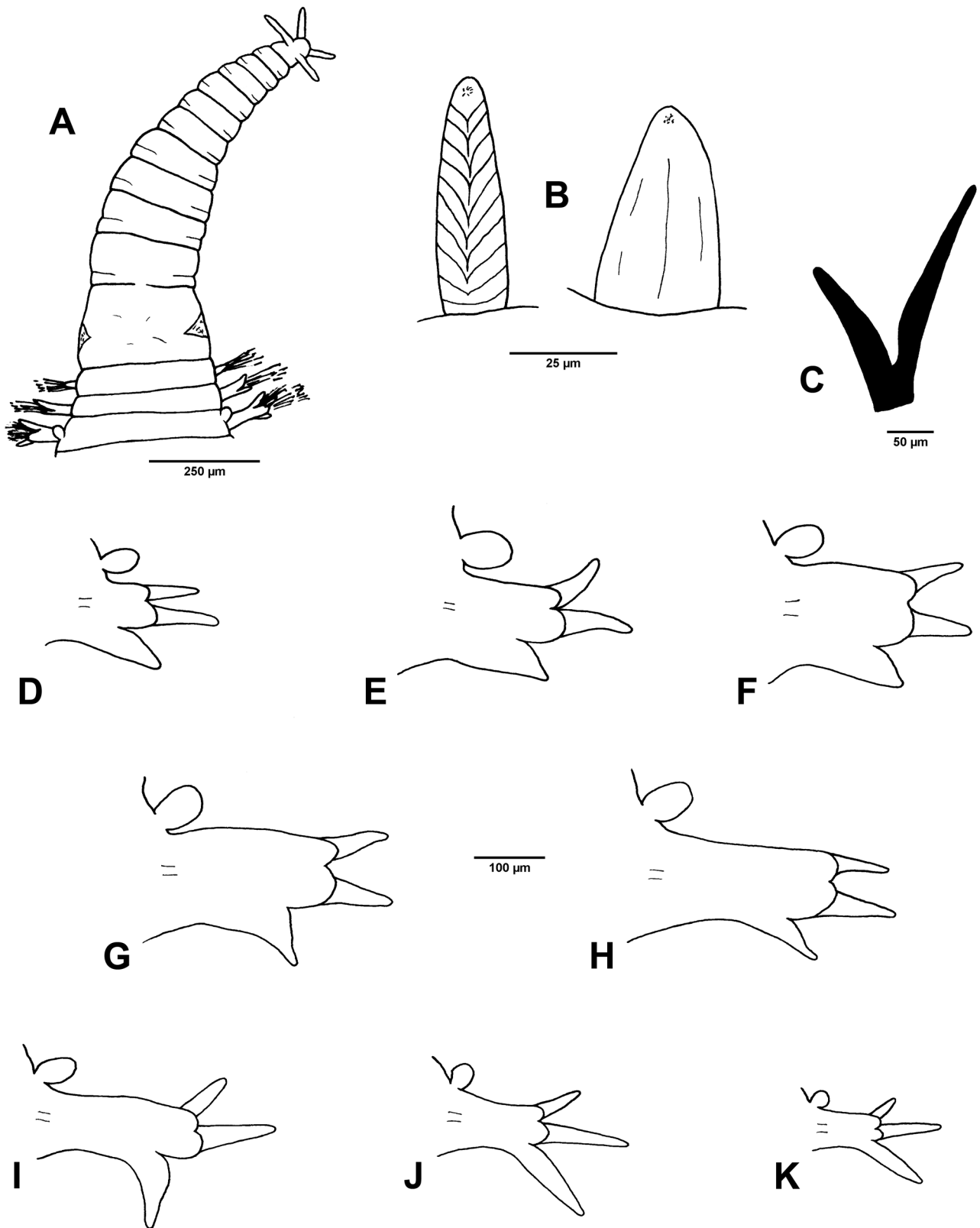
### *Glycera brevicirris* Grube, 1870

(Figs 2, 10A)

*Glycera brevicirris* Grube, 1870: 61.

Synonyms see Böggemann 2002

**Material examined.** AM W.45035, MI QLD 2441, af/16/69/1.3/0.9; AM W.45849, MI QLD 2440, af/11/49/2.6/1.7; AM W.46134, Lizard Island, off Chinaman's Point, 14°40'S, 145°28'E, 7 m, Aug 1977, cs/13/84/0.9/0.5; AM W.44580, MI QLD 2422 (2), cs/34/152/3.0/2.0, pf/25/115/1.7/1.1; AM W.44805, MI QLD 2429 (4), cs/38/161/2.3/1.5, af/35/131/3.0/1.9, af/20/87/2.9/1.9, pf/9/45/2.1/1.0; AM W.46218, Lizard Island Group, Blue Lagoon, 100 m off Mangrove Beach, 12 m from coral bommie on landward side, medium grained sediment, 3 m, 13 Oct 1978, af/17/62/2.2/1.4, pf/14/55/1.6/0.8; AM W.46219, Blue Lagoon, 100 m off Mangrove Beach, 12 m from coral bommie on landward side, medium grained sediment, 3 m, 13 Oct 1978, af/22/78/2.1/1.3, part of proboscis on SEM stub; AM W.46220 (2), inside caged area of sand at western end of Blue Lagoon, sand, 3 m, 13 Oct 1978, cs/39.5/133/2.5/1.5, af/13/64/0.9/0.5; AM W.46221 (2), outside caged area of sand at western end of Blue Lagoon, sand, 3 m, 5 Oct 1978, af/18/72/1.1/0.7, pf/9/33/0.7/0.2; AM W.46148, Lizard Island Group, between South Island and Palfrey Island, 14°41'54"S 145°26'45"E, dead coral, 15–17 m, by hand from SCUBA, 31 Mar 1995, af/36/87/3.4/2.0, part of proboscis on SEM stub; AM W.44848, MI QLD 2424, cs/20/89/1.6/1.1; AM W.46135, Lizard Island Group, between Bird Islet and South Island, 12 m, Jan 1978, cs/16/91/0.7/0.3; AM W.44482, MI QLD 2397, af/15/70/2.3/1.4, part of proboscis on SEM stub; AM W.44812, MI QLD 2396 (2), cs/29/147/3.0/2.2, cs/21.5/107/2.8/1.8; AM W.44849, MI QLD 2393, cs/13/89/1.5/1.1; AM W.46140, Lizard Island, 19 Oct 1987, cs/26/103/1.7/1.1; AM W.38626, Great Barrier Reef, Day Reef, 14°28'20"S 145°31'25"E, 18.1 m, by hand from SCUBA, 5 Sep 2010, CReefs, cs/12/72/1.5/1.0; AM W.46143, Great Barrier Reef, Carter Reef, 14°34'S 145°34'E, 30–36 m, plankton tow, 31 Jan 1982, cs/6/ca.48/0.7/0.4; AM W.46138, Great Barrier Reef, Yonge Reef, back reef, 14°36'S 145°37'E, dead *Acropora* heavily encrusted with *Lithothamnion*, 2 m, 19 Jan 1975, cs/17.5/81/1.5/0.9, part of proboscis on SEM stub; AM W.40749, Outer Yonge Reef, 14°36'S 145°38'E, 24 m, 12 Jan 1975, cs/15/106/1.0/0.6; AM W.46149, Outer Yonge Reef, dead coral, 10 m, 25 Jan 1977, cs/19/ca.90/0.8/0.4; AM W.46203, Outer Yonge Reef, dead coral, 10 m, 21 Jan 1977, cs/25/115/1.2/0.7; AM W.46204 (6), Outer Yonge Reef, bommie surrounded with rubble, covered in *Lithothamnion*, 30 m, 25 Jan 1977, cs/23/117/1.2/0.8, cs/15/82/0.9/0.5, cs/6.5/52/0.5/0.2, cs/4/34/0.7/0.4, cs/2.8/25/0.5/0.2, cs/2.2/20/0.5/0.2; AM W.46205, Outer Yonge Reef, isolated bommie, reef rock, 40 m, 3 Nov 1977, af/7/46/0.5/0.3; AM W.46132, North Direction Island, 14°44'43"S 145°30'18"E, sand, 8.5 m, by hand from SCUBA, 4 Sep 2010, CReefs, af/9.5/52/1.2/0.8.



**FIGURE 2.** *Glycera brevicirris* Grube, 1870, AM W.46140. A. Anterior end, dorsal view; B. Proboscis papillae; C. Aileron; D–K. Anterior to posterior parapodia, posterior view, aciculae suggested, chaetae omitted.

**Diagnosis.** Proboscoidal papillae mainly digitiform with about 6–20 ridges; ailerons with deeply incised bases; parapodia of mid-body with two short, rounded postchaetal lobes; branchiae absent.

**Description.** Body up to 39.5 mm long with up to 161 chaetigers. Mid-body segments bi-annulate.

Conical prostomium consisting of about 10–13 rings; terminal ring with four appendages and basal one with pair of nuchal organs (Fig. 2A).

Proboscis with two types of papillae: 1. numerous digitiform papillae with about 6–20 ridges; ridges U-shaped basally and V-shaped apically on posterior surface; 2. isolated, slightly shorter and broader, conical papillae with more or less distinctly straight, median, longitudinal ridge (Figs 2B, 10A). Terminal part of proboscis with four hook-shaped jaws arranged in a cross and accessory ailerons with deeply incised base (Fig. 2C).

First two pairs of parapodia uniramous; following parapodia biramous (Fig. 2D–K). Two slender triangular to digitiform prechaetal lobes; neuropodial lobe usually slightly longer and wider than notopodial lobe; both lobes becoming slightly thinner in posterior parapodia; in last parapodia notopodial lobe distinctly shorter than neuropodial one. Two shorter, rounded postchaetal lobes. Dorsal cirri from 3rd parapodium, conical to oval; inserted on body wall slightly above parapodial base. Ventral cirri slender triangular to digitiform, about as long as postchaetal lobes; in posterior parapodia slender and elongated; in last parapodia about as long as neuropodial prechaetal lobe; situated medio-ventrally on parapodia. Branchiae absent.

Noto- and neuropodia each with a single acicula (Fig. 2D–K). Notochaetae capillaries. Neurochaetae compound spinigers with blades of different lengths.

Pygidium with dorsal anus and terminal pair of slender, elongated cirri.

**Distribution.** Carter Reef, Day Reef, Lizard Island Group, North Direction Island, Yonge Reef; intertidal to 40 m.

### ***Glycera cf. lapidum* Quatrefages, 1866**

(Figs 3, 10B)

*Glycera lapidum* Quatrefages, 1866: 187.

Synonyms see Böggemann 2002

**Material examined.** AM W.46201, Great Barrier Reef, Outer Yonge Reef, rock with *Lithothamnion* and *Halimeda*, 30 m, 21 Jan 1977, cs/7.3/54/0.7/0.4, part of proboscis on SEM stub.

**Diagnosis.** Proboscoidal papillae mainly digitiform with undulating ridge; ailerons with slight dent in pointed triangular bases; parapodia of mid-body with distinctly longer neuropodial than notopodial prechaetal lobes; one rounded postchaetal lobe; branchiae absent.

**Description.** Body 7.3 mm long with 54 chaetigers. Mid-body segments more or less distinctly tri-annulate.

Conical prostomium consisting of about 11 rings; terminal ring with four appendages and basal one with pair of nuchal organs (Fig. 3A).

Proboscis with two types of papillae: 1. numerous digitiform papillae with indistinct ridges on posterior surface; 2. isolated, shorter and broader, more conical papillae without ridges (Figs 3B, 10B). Terminal part of proboscis with four hook-shaped jaws arranged in a cross and accessory ailerons with slight dent in pointed triangular base (Fig. 3C).

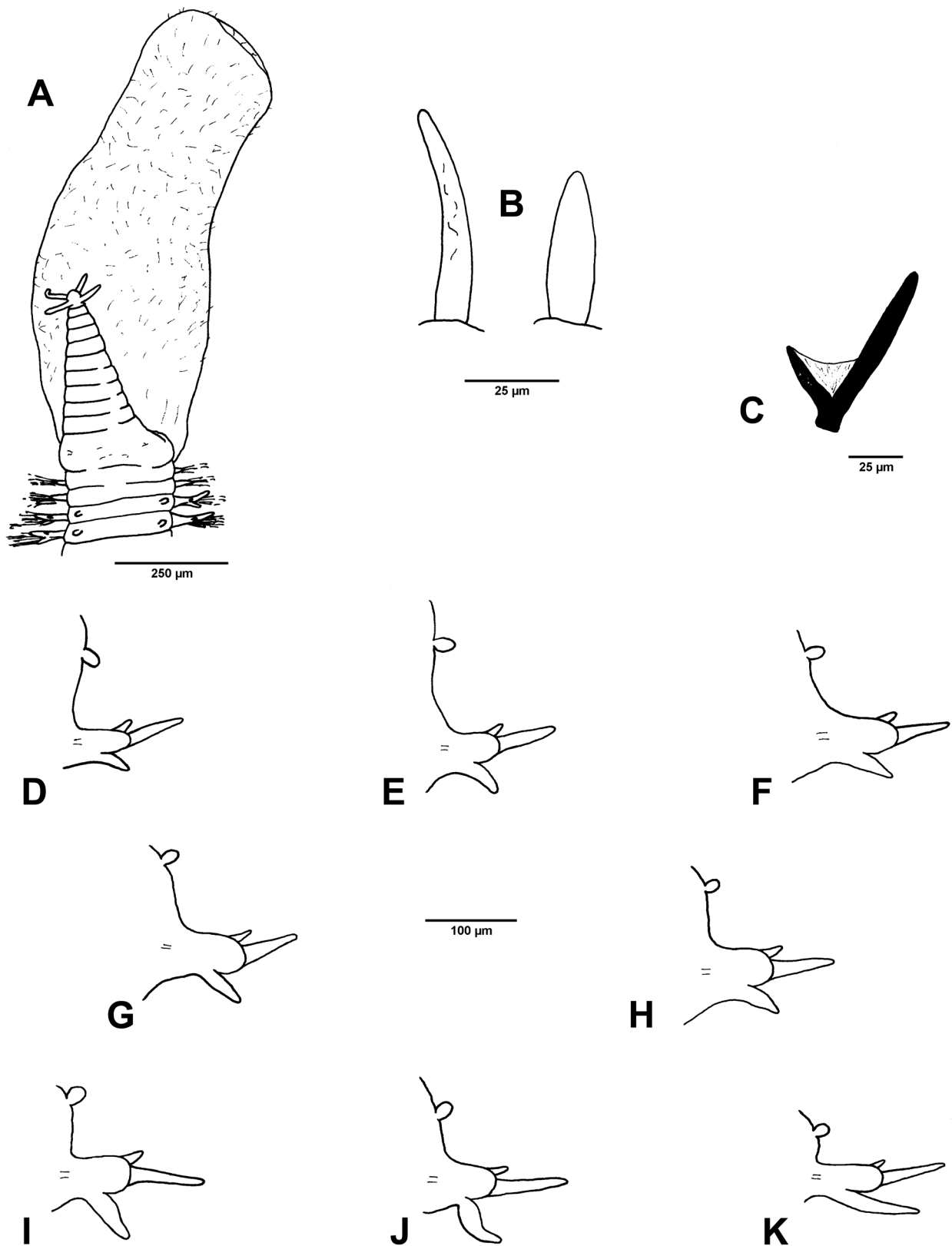
First two pairs of parapodia uniramous; following parapodia biramous (Fig. 3D–K). Two slender triangular to digitiform prechaetal lobes; neuropodial lobe always distinctly longer and wider than notopodial lobe; both lobes becoming slightly thinner in posterior parapodia; in last parapodia notopodial lobe much shorter than neuropodial one. One shorter, rounded postchaetal lobe. Dorsal cirri from 3rd parapodium, oval to globular; inserted - most clearly in anterior part of body - on body wall far above parapodial base. Ventral cirri slender triangular to digitiform, about as long as postchaetal lobes; in posterior parapodia slender and elongated; in last parapodia about as long as neuropodial prechaetal lobe; situated near parapodial base. Branchiae absent.

Noto- and neuropodia each with a single acicula (Fig. 3D–K). Notochaetae capillaries. Neurochaetae compound spinigers with blades of different lengths.

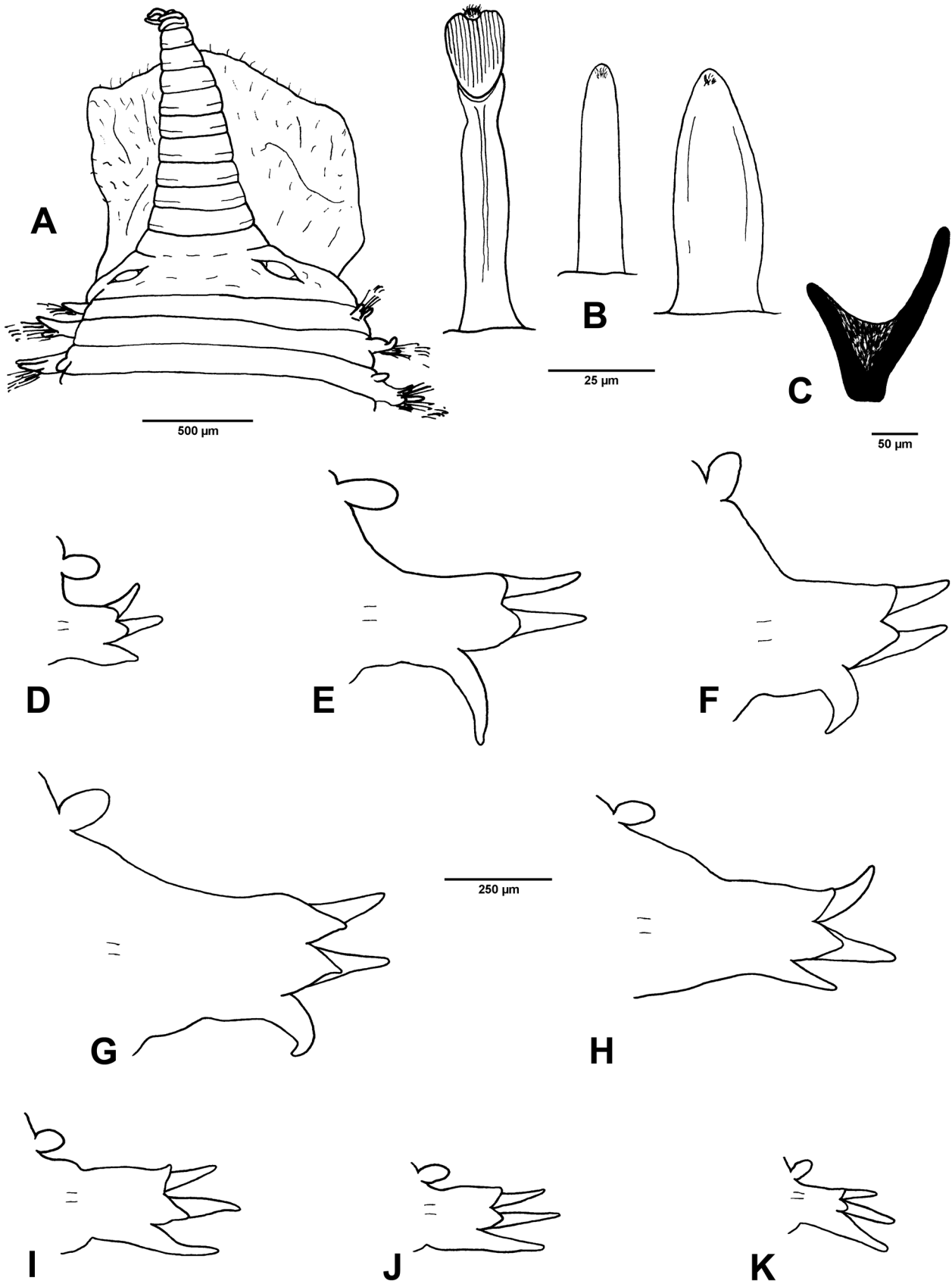
Pygidium with dorsal anus; cirri not observed.

**Remarks.** The specimen is a juvenile with, for example, incompletely hardened ailerons and poorly defined proboscoidal papillae and therefore only uncertainly referred to *Glycera lapidum*.

**Distribution.** Yonge Reef; 30 m.



**FIGURE 3.** *Glycera* cf. *lapidum* Quatrefages, 1866, AM W.46201. A. Anterior end with partly everted proboscis, dorsal view; B. Proboscis papillae; C. Aileron; D–K. Anterior to posterior parapodia, posterior view, aciculae suggested, chaetae omitted.



**FIGURE 4.** *Glycera onomichiensis* Izuka, 1912, AM W.46222. A; Anterior end with partly everted proboscis, dorsal view; B. Proboscis papillae; C. Aileron; D–K. Anterior to posterior parapodia, posterior view, aciculae suggested, chaetae omitted.



## ***Glycera onomichiensis* Izuka, 1912**

(Figs 4, 10C)

*Glycera onomichiensis* Izuka, 1912: 244; pl. 24, figs 10–12.

Synonyms see Böggemann 2002

**Material Examined.** AM W.46213, Lizard Island, 600 m south-west of Research Point, coarse to medium sand, 4.5 m, 10 Oct 1978, cs/5.5/52/1.0/0.7; AM W.46142 (3), Lizard Island Group, Blue Lagoon, 3 m, 24 Jul 1979, cs/10/72/1.4/1.0, af/12/81/1.5/1.0, af/7.5/52/1.4/1.0; AM W.47219, cs/16/106/2.0/1.3, part of proboscis on SEM stub; AM W.46144, Blue Lagoon, 6 m, 24 Jul 1979, cs/15/85/1.7/1.0, cs/14/87/1.3/0.7, cs/13/78/1.7/1.1, cs/13/76/1.3/0.8, af/16/74/1.9/1.1, af/15/71/2.0/1.2, af/12/65/1.9/1.1, af/5/32/1.4/0.8; AM W.47220, Lizard Island lagoon, 24 Jul 1979, cs/14/85/2.0/1.2, part of proboscis on SEM stub; AM W.46222 (2), Lizard Island Group, fringing reef between Bird Islet and South Island, mixed algae and sediment from seagrass beds at reef base, 24.4–37.6 m, 9 Oct 1978, cs/32/126/4.0/2.9, cs/20/108/2.0/1.3.

**Diagnosis.** Proboscoidal papillae mainly with terminal fingernail structure with long stalk and some longitudinal ridges on nail; ailerons with pointed triangular bases; parapodia of mid-body with two slender triangular postchaetal lobes of about same length; branchiae absent.

**Description.** Body up to 32 mm long with up to 126 chaetigers. Mid-body segments bi-annulate.

Conical prostomium consisting of about 10–13 rings; terminal ring with four appendages and basal one with pair of nuchal organs (Fig. 4A).

Proboscis with three types of papillae: 1. numerous papillae with terminal fingernail structure on posterior surface, with long stalk and some longitudinal ridges on nail; 2. less numerous and slightly shorter digitiform papillae; 3. isolated, broader, more conical papillae without ridges (Figs 4B, 10C). Terminal part of proboscis with four hook-shaped jaws arranged in a cross and accessory ailerons with pointed triangular base (Fig. 4C).

First two pairs of parapodia uniramous; following parapodia biramous (Fig. 4D–K). Two slender triangular to digitiform prechaetal lobes of about same length; both lobes becoming slightly thinner in posterior parapodia; in last parapodia notopodial lobe shorter than neuropodial one. Two shorter postchaetal lobes; anteriorly both lobes rounded, neuropodial lobe slightly longer than notopodial lobe; in following parapodia both lobes elongated and slender triangular, of about same length; in posteriormost parapodia both lobes generally shorter and more rounded. Dorsal cirri from 3rd parapodium, conical to oval; inserted on body wall slightly above parapodial base. Ventral cirri slender triangular to digitiform, about as long as postchaetal lobes; in posterior parapodia slender and elongated; in last parapodia about as long as neuropodial prechaetal lobe; situated medio-ventrally on parapodia. Branchiae absent.

Noto- and neuropodia each with a single acicula (Fig. 4D–K). Notochaetae capillaries. Neurochaetae compound spinigers with blades of different lengths.

Pygidium with dorsal anus and terminal pair of slender, elongated cirri.

**Distribution.** Lizard Island Group; 3–37.6 m.

## ***Glycera sagittariae* McIntosh, 1885**

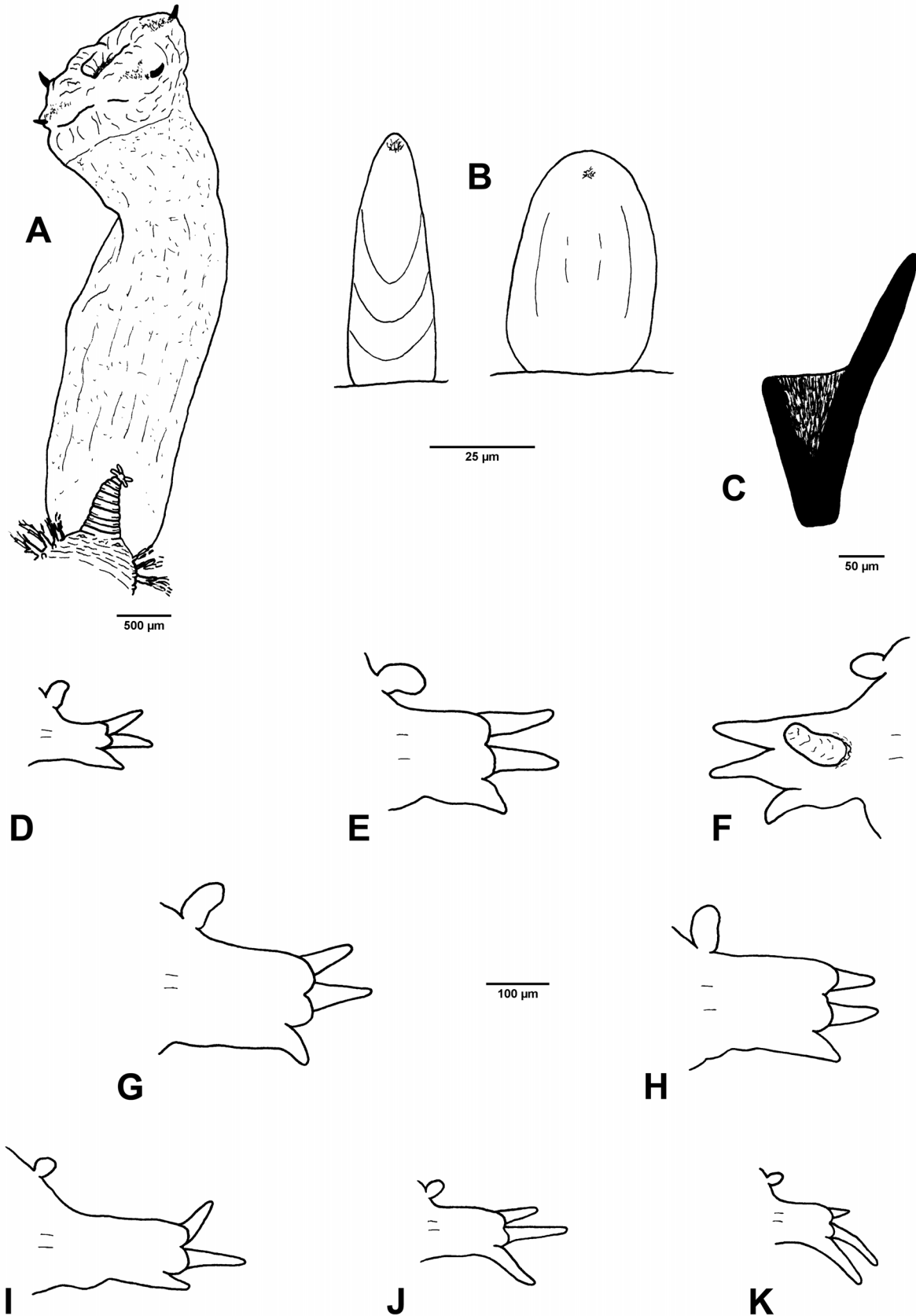
(Figs 5, 10D)

*Glycera sagittariae* McIntosh, 1885: 346; pl. 42, fig. 8; pl. 22A, fig. 10.

**Material examined.** AM W.45468, MI QLD 2444 (2), cs/9/88/0.9/0.5, cs/7/66/0.9/0.5; AM W.47221, MI QLD 2444, af/13/92/2.5/1.5, part of proboscis on SEM stub; AM W.46214, Lizard Island, 100 m off eastern end of Mangrove Beach, undulating sand, filamentous algae, 3 m, 11 Oct 1978, cs/52/192/2.0/1.4, part of proboscis on SEM stub.

**Diagnosis.** Proboscoidal papillae mainly conical with 3 ridges; ailerons with triangular bases; parapodia of mid-body with rounded, sometimes slightly blunt triangular postchaetal lobes, notopodial lobes usually slightly broader and longer than neuropodial lobes; simple, retractile, digitiform branchiae, situated medially on anterior side of parapodia.

**Description.** Body up to 52 mm long with up to 192 chaetigers. Mid-body segments bi-annulate.



**FIGURE 5.** *Glycera sagittariae* McIntosh, 1885, AM W.47221 (A), AM W.46214 (B–K). A. Anterior end with everted proboscis, dorsal view; B. Proboscis papillae; C. Aileron; D–K. Anterior to posterior parapodia; F: anterior view, D–E, G–K: posterior view, aciculae suggested, chaetae omitted.

Conical prostomium consisting of about 11–12 rings; terminal ring with four appendages and basal one with pair of nuchal organs (Fig. 5A).

Proboscis with two types of papillae: 1. numerous conical papillae with 3 U-shaped ridges, sometimes with additional subterminal straight, median, longitudinal ridge; 2. isolated, broader, oval to globular papillae without ridges (Figs 5B, 10D). Terminal part of proboscis with four hook-shaped jaws arranged in a cross and accessory ailerons with triangular base (Fig. 5A, C).

First two pairs of parapodia uniramous; following parapodia biramous (Fig. 5D–K). Two slender triangular to digitiform prechaetal lobes of about same length; both lobes becoming slightly thinner in posterior parapodia; in last parapodia notopodial lobe shorter than neuropodial one. Two shorter postchaetal lobes; anteriorly both lobes rounded; in following parapodia both lobes slightly elongated and rounded, sometimes slightly blunt triangular; notopodial lobe usually slightly longer than neuropodial lobe; in posteriormost parapodia both lobes generally shorter and rounded. Dorsal cirri from 3rd parapodium, conical to oval; inserted on body wall slightly above parapodial base. Ventral cirri slender triangular to digitiform, about as long as postchaetal lobes; in posterior parapodia slender and elongated; in last parapodia about as long as neuropodial prechaetal lobe; situated medio-ventrally on parapodia. Branchiae retractile, simple, digitiform (Fig. 5F); starting in anterior region to near posterior end; situated medially on anterior side of parapodia.

Noto- and neuropodia each with a single acicula (Fig. 5D–K). Notochaetae capillaries. Neurochaetae compound spinigers with blades of different lengths.

Pygidium with dorsal anus and terminal pair of slender, elongated cirri.

**Distribution.** Lizard Island; 3–24 m.

### ***Glycera tessellata* Grube, 1863**

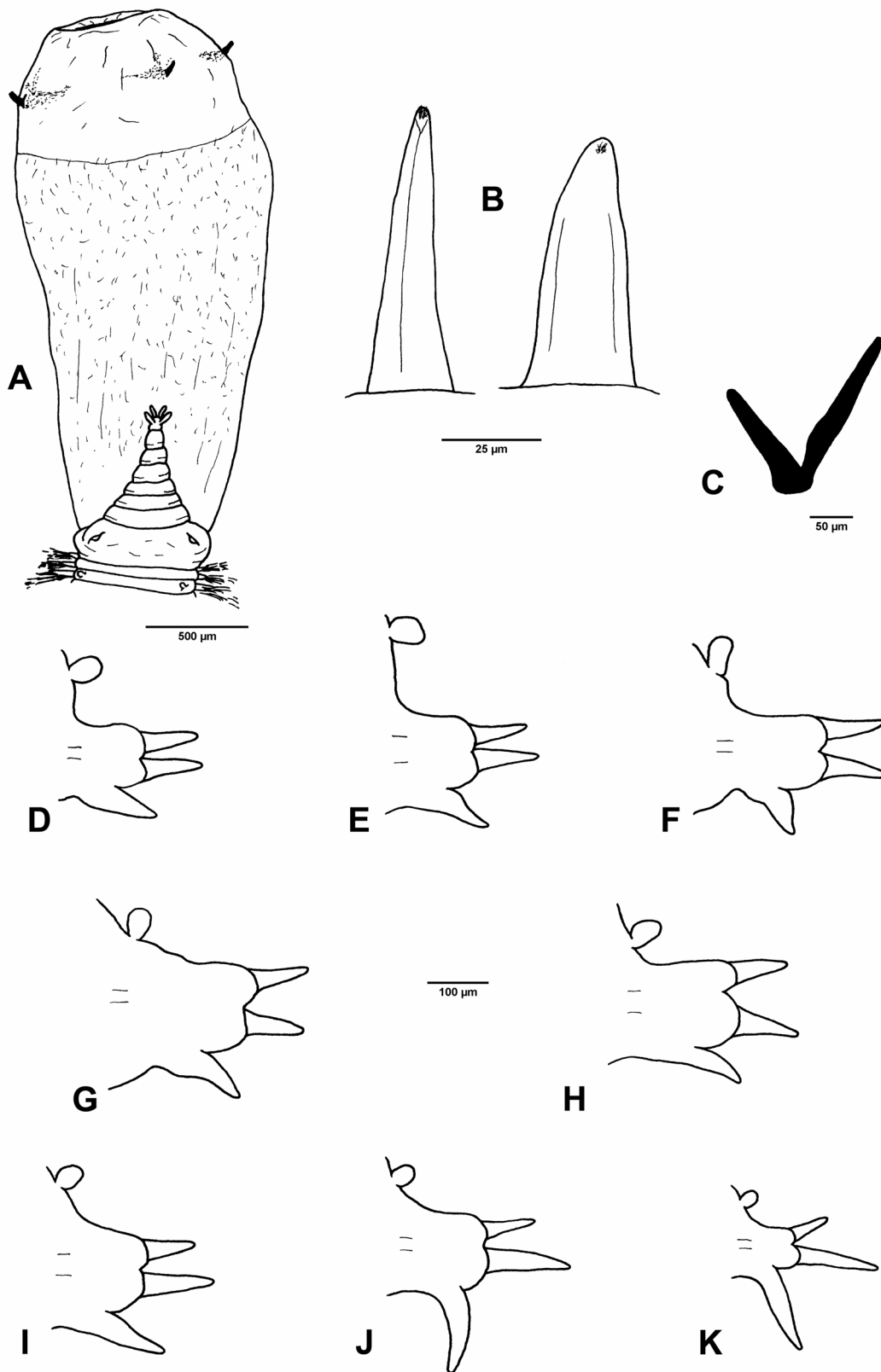
(Figs 6, 10E)

*Glycera tessellata* Grube, 1863: 41; pl. 4, figs 4, 4a.

Synonyms see Böggemann 2002

**Material examined.** AM W.47204, MI QLD 2444, af/5.3/34/1.0/0.7; AM W.45499, MI QLD 2445, cs/20/60/1.4/0.9, part of proboscis on SEM stub; AM W.44667, MI QLD 2410, cs/9/52/1.0/0.6; AM W.46146, Lizard Island, Granite Bluff, 14°39'S 145°27'E, reef rock, 6 m, by hand from SCUBA, 26 Aug 1976, af/4.5/42/0.8/0.5; AM W.45498, MI QLD 2446, cs/6/51/1.2/0.8; AM W.40427, Lizard Island, Chinaman's Head, 8 Apr 1977, cs/6.5/49/0.7/0.4; AM W.46133, off Chinaman's Point, 7 m, Apr 1977, cs/10/50/0.7/0.4; AM W.44576, MI QLD 2376, cs/7/39/0.6/0.3; AM W.44222, MI QLD 2371, cs/19/76/1.2/0.7; AM W.47218, MI QLD 2371 (2), cs/18/60/1.2/0.7, cs/12.5/57/1.2/0.7, parts of proboscis on SEM stub; AM W.44258, MI QLD 2371, cs/20/54/1.1/0.6; AM W.44854, MI QLD 2423, cs/9/53/1.1/0.7; AM W.40426, Lizard Island Group, fringing reef between Bird Islet and South Island, 12 m, 10 Apr 1977, cs/8/47/0.9/0.5; AM W.41210, Lizard Island, Bommie Bay, 14°39'35"S 145°28'16"W, coral rubble, 7.4–10.5 m, by hand from SCUBA, 9 Sep 2010, CReefs, af/6.5/59/1.3/0.9; AM W.44251, MI QLD 2380, cs/2.3/33/0.5/0.3; AM W.44291, MI QLD 2382, cs/6.2/45/0.8/0.5; AM W.44300, MI QLD 2383, af/2.5/23/0.5/0.3; AM W.44322, MI QLD 2387, cs/3.2/ca.37/0.5/0.3; AM W.44844, MI QLD 2387 (2), cs/2.7/31/0.5/0.3, af/3.2/33/0.6/0.3; AM W.41211, Yonge Reef, 14°34'40"S 145°37'E, coral rubble, 8 m, by hand on snorkel, 10 Sep 2010, CReefs, cs/4.6/46/0.8/0.4; AM W.40748, Yonge Reef, back reef, 14°36'S 145°37'E, 2 m, 19 Jan 1975, cs/5/40/0.9/0.5; AM W.40750, Yonge Reef, back reef, 14°36'S 145°37'E, 5 m, 7 Jan 1975, cs/3.2/34/0.5/0.3; AM W.47208, Yonge Reef, back reef, 14°36'S 145°37'E, dead *Acropora* heavily encrusted with *Lithothamnion*, 2 m, 19 Jan 1975, af/3.5/23/0.5/0.3; AM W.46136, Yonge Reef, outer slope, 14°36'S 145°38'E, solid reef habitat, 3 m, 10 Jan 1975, cs/11.5/59/1.3/0.8, part of proboscis on SEM stub; AM W.46145, Outer Yonge Reef, reef rock with *Lithothamnion* and *Halimeda*, 30 m, by hand from SCUBA, 24 Jan 1977, cs/5/35/0.5/0.3; AM W.46200 (few), Outer Yonge Reef, dead coral, 9 m, by hand from SCUBA, 15 Jan 1977, cs/7/43/0.7/0.3, af/7/34/0.8/0.4, af/5/30/0.5/0.3; AM W.46202 (few), Outer Yonge Reef, *Halimeda* covering pink coralline algae, 20 m, 21 Jan 1977, cs/7/41/0.7/0.4, cs/4.2/35/0.5/0.3, cs/2.3/28/0.3/0.1, cs/2.3/27/0.3/0.1, cs/2.2/23/0.3/0.1, cs/2.2/23/0.3/0.1, cs/2.1/21/0.3/0.1, cs/2/26/0.4/0.2, cs/2/21/0.3/0.1, cs/1.9/21/0.3/0.1, cs/1.5/17/0.3/0.1, cs/1.4/20/0.3/0.1, cs/1.4/20/0.3/0.1, cs/1.1/18/0.2/0.1, af/5.3/36/0.7/0.4, af/3.2/38/0.3/0.1, af/1.7/17/0.3/0.1, af/1.5/17/0.3/0.1, af/1.5/16/0.3/0.1, af/1.3/13/0.3/0.1, af/1.2/15/0.3/0.1, af/1.2/14/0.3/0.1, af/1/12/0.3/0.1; AM W.47213 (3), Outer Yonge Reef, bommie surrounded with rubble, covered in *Lithothamnion*, 30 m, 25 Jan 1977, cs/6.5/47/0.5/0.2, cs/6/53/0.5/0.2, cs/4.7/37/0.5/0.2; AM W.47214

(2), Outer Yonge Reef, isolated bommie, reef rock, 40 m, 3 Nov 1977, cs/5.5/38/0.7/0.4, af/3/26/0.3/0.2; AM W.46206, Outer Yonge Reef, large bommie, pink *Lithothamnion* and filamentous algae, 40 m, 6 Nov 1977; AM W.44171, MI QLD 2359, af/7/38/1.1/0.6; AM W.44172, MI QLD 2359 (2), cs/8.5/51/1.1/0.7, cs/8.5/48/1.0/0.6.



**FIGURE 6.** *Glycera tessellata* Grube, 1863, AM W.47218. A. Anterior end with everted proboscis, dorsal view; B. Proboscis papillae; C. Aileron; D–K. Anterior to posterior parapodia, posterior view, aciculae suggested, chaetae omitted.

**Diagnosis.** Proboscoidal papillae mainly digitiform with straight, median, longitudinal ridge; ailerons with deeply incised bases; parapodia of mid-body with slightly longer neuropodial than notopodial prechaetal lobes and two short postchaetal lobes; branchiae absent.

**Description.** Body up to 20 mm long with up to 76 chaetigers. Mid-body segments bi-annulate.

Conical prostomium consisting of about 8–9 rings; terminal ring with four appendages and basal one with pair of nuchal organs (Fig. 6A).

Proboscis with two types of papillae: 1. numerous digitiform papillae with straight, median, longitudinal ridge on posterior surface and sometimes additional V-shaped ridge near tip; 2. isolated, slightly shorter and broader, conical papillae without distinct ridges (Figs 6B, 10E). Terminal part of proboscis with four hook-shaped jaws arranged in a cross and accessory ailerons with deeply incised base (Fig. 6A, C).

First two pairs of parapodia uniramous; following parapodia biramous (Fig. 6D–K). Two slender triangular to digitiform prechaetal lobes; neuropodial lobe usually slightly longer and wider than notopodial lobe; both lobes becoming slightly thinner in posterior parapodia; in last parapodia notopodial lobe distinctly shorter than neuropodial one. Two shorter, rounded postchaetal lobes. Dorsal cirri from 3rd parapodium, conical to oval; inserted - most clearly in anterior part of body - on body wall far above parapodial base. Ventral cirri slender triangular to digitiform, about as long as postchaetal lobes; in posterior parapodia slender and elongated; in last parapodia about as long as neuropodial prechaetal lobe; situated medio-ventrally on parapodia. Branchiae absent.

Noto- and neuropodia each with a single acicula (Fig. 6D–K). Notochaetae capillaries. Neurochaetae compound spinigers with blades of different lengths.

Pygidium with dorsal anus and terminal pair of slender, elongated cirri.

**Distribution.** Lizard Island Group, North Direction Island, Yonge Reef; 0.5–40 m.

### *Glycera tridactyla* Schmarda, 1861

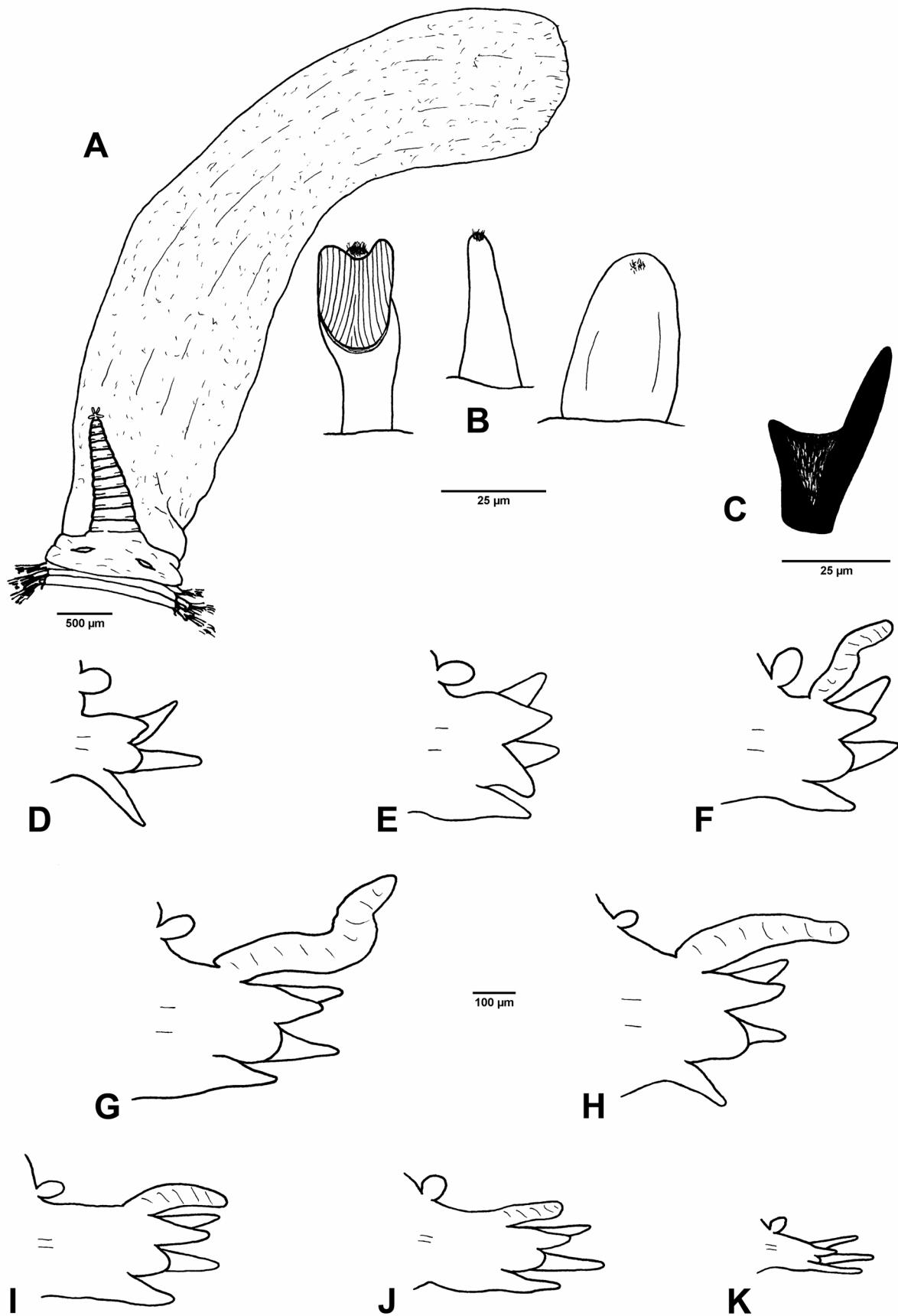
(Figs 7, 10F)

*Glycera tridactyla* Schmarda, 1861: 97; pl. 30, fig. 238; textfigs a–b, k.

Synonyms see Böggemann 2002

**Material examined.** AM W.47198, MI QLD 2376 (3), cs/32/113/2.1/1.4, cs/25/121/2.4/1.6, cs/25/116/1.9/1.2; AM W.47199, MI QLD 2422 (12), cs/31.5/122/2.3/1.4, cs/29/117/2.2/1.6, cs/27.5/117/2.2/1.5, cs/22.5/121/1.9/1.3, af/23/105/2.2/1.7, af/15/60/2.3/1.7, af/13/51/1.8/1.2, af/11/50/2.0/1.2, mf/4/14/1.9/0.9, pf/15/50/1.7/0.9, pf/10.5/60/2.0/1.1, pf/10/36/1.3/0.7; AM W.47202, MI QLD 2429 (7), cs/27/120/2.0/1.3, cs/26/112/1.9/1.2, cs/21/113/2.0/1.4, cs/20/111/2.0/1.5, cs/20/108/1.7/1.0, af/25/112/2.0/1.3, af/17/82/1.9/1.2; AM W.44815, MI QLD 2429, af/10.5/48/2.0/1.3; AM W.44847, MI QLD 2422, cs/22/118/1.8/1.1; AM W.45847, MI QLD 2422 (6), cs/34/118/2.0/1.3, cs/25.5/102/1.5/1.0, cs/24/114/1.9/1.2, cs/23/106/1.3/0.9, af/17/70/1.7/1.2, af/16.5/77/1.6/1.1; AM W.47222, MI QLD 2422 (2), af/20.5/71/1.8/1.1, af/17/71/1.9/1.2; AM W.45848, MI QLD 2429 (few), cs/25.5/120/2.0/1.3, cs/23/117/2.0/1.5, cs/18/93/1.9/1.1; AM W.28585, Lizard Island, 100 m off eastern end of Mangrove Beach, medium sand, 3 m, small hand-held corer from SCUBA, 30 Sep 1978, cs/36/119/2.0/1.4; AM W.46215, 100 m off eastern end of Mangrove Beach, undulating sand, filamentous algae, 3 m, 11 Sep 1978, cs/31/114/1.8/1.0; AM W.46216, 100 m off eastern end of Mangrove Beach, undulating sand, filamentous algae, 3 m, 11 Sep 1978, cs/37/125/3.0/2.3, part of proboscis on SEM stub; AM W.46217, 100 m off eastern end of Mangrove Beach, undulating sand, filamentous algae, 3 m, 11 Sep 1978, cs/35/113/2.2/1.5; AM W.28587, Lizard Island Group, lagoon entrance between Bird Islet and Trawler Beach, fine sand bottom with many mounds & hollows, 15.2 m, 5 Oct 1978, af/9/ca.34/ca.2.2/ca.1.4, mf/10/26/2.7/1.8, pf/19/50/2.1/1.6; AM W.46210 (several), Lizard Island Group, halfway between Mangrove Beach and South Island, fine sediment, 10 m, small hand-held corer from SCUBA, 30 Sep 1978, cs/26/101/1.7/1.1, af/29/92/1.8/1.2, af/10/38/1.5/1.0; AM W.47223, same, af/24/84/2.2/1.7, part of proboscis on SEM stub; AM W.47209, Lizard Island Group, Blue Lagoon, 3 m, 24 Jul 1979, cs/7/62/1.0/0.7; AM W.46212 (several), Lizard Island Group, 250 m east-south-east of Palfrey Island, south end of lagoon, very fine sticky sediment, 12 m, human dredge by hand from SCUBA, 12 Oct 1978, cs/45/121/2.4/1.5, cs/24/108/1.6/1.0, af/26/99/2.0/1.4, af/11/43/1.9/1.3.

**Diagnosis.** Proboscoidal papillae mainly with terminal fingernail structure with short stalk and same longitudinal ridges on nail; ailerons with triangular bases; parapodia of mid-body with slender triangular notopodial and shorter, more or less rounded neuropodial postchaetal lobes; simple, digitiform branchiae, situated termino-dorsally on parapodia, from anterior to near posterior end.



**FIGURE 7.** *Glyceria tridactyla* Schmarda, 1861, AM W.46216. A. Anterior end with partly everted proboscis, dorsal view; B. Proboscis papillae; C. Aileron; D–K. Anterior to posterior parapodia, posterior view, aciculae suggested, chaetae omitted.

**Description.** Body up to 45 mm long with up to 125 chaetigers. Mid-body segments bi-annulate.

Conical prostomium consisting of about 13–15 rings; terminal ring with four appendages and basal one with pair of nuchal organs (Fig. 7A).

Proboscis with three types of papillae: 1. numerous papillae with terminal fingernail structure on posterior surface, with short stalk and some longitudinal ridges on nail; 2. less numerous and slightly shorter conical papillae; 3. isolated, broader, oval to globular papillae without ridges (Figs 7B, 10F). Terminal part of proboscis with four hook-shaped jaws arranged in a cross and accessory ailerons with triangular base (Fig. 7C).

First two pairs of parapodia uniramous; following parapodia biramous (Fig. 7D–K). Two slender triangular to digitiform prechaetal lobes of about same length; both lobes becoming slightly thinner in posterior parapodia; in last parapodia notopodial lobe shorter than neuropodial one. Two shorter postchaetal lobes; anteriorly both lobes rounded; in following parapodia notopodial lobe elongated and slender triangular, distinctly longer than rounded, at first sometimes also slightly blunt triangular neuropodial lobe; notopodial lobe in posterior parapodia slender and elongated; in last parapodia notopodial lobe generally shorter. Dorsal cirri from 3rd parapodium, conical to oval; inserted on body wall slightly above parapodial base. Ventral cirri slender triangular to digitiform, about as long as neuropodial postchaetal lobe; in posterior parapodia slender and elongated; in last parapodia about as long as neuropodial prechaetal lobe; situated medio-ventrally on parapodia. Branchiae non-retractile, simple, digitiform (Fig. 7F–J); starting from about 21th to 32nd parapodium to near posterior end; situated termino-dorsally on parapodia; best developed in mid-body region, extending beyond prechaetal lobes.

Noto- and neuropodia each with a single acicula (Fig. 7D–K). Notochaetae capillaries. Neurochaetae compound spinigers with blades of different lengths.

Pygidium with dorsal anus and terminal pair of slender, elongated cirri.

**Remarks.** A few specimens with ectoparasitic nematodes on the body and on the parapodia (AM W.47199, AM W.47202).

**Distribution.** Lizard Island Group; intertidal to 15.2 m.

### ***Glycerella magellanica* (McIntosh, 1885)**

(Fig. 8)

*Hemipodus* (?) *magellanicus* McIntosh, 1885: 349; pl. 42, figs 11–15; pl. 22A, figs 12–15; pl. 35A, figs 5, 7.

Synonyms see Böggemann 2002

**Material examined.** AM W.47211 (2), Great Barrier Reef, Outer Yonge Reef, rock with *Lithothamnion* and *Halimeda*, 30 m, 21 Jan 1977, 30 m, cs/4.8/29/0.4/0.2, af/8/38/1.3/0.7.

**Diagnosis.** Proboscoidal papillae digitiform with straight, median, longitudinal ridge; ailerons rod-like; parapodia of mid-body with blunt triangular notopodial and slightly shorter, rounded neuropodial postchaetal lobes; branchiae absent.

**Description.** Body at least 8 mm long with at least 38 chaetigers. Mid-body segments tri-annulate.

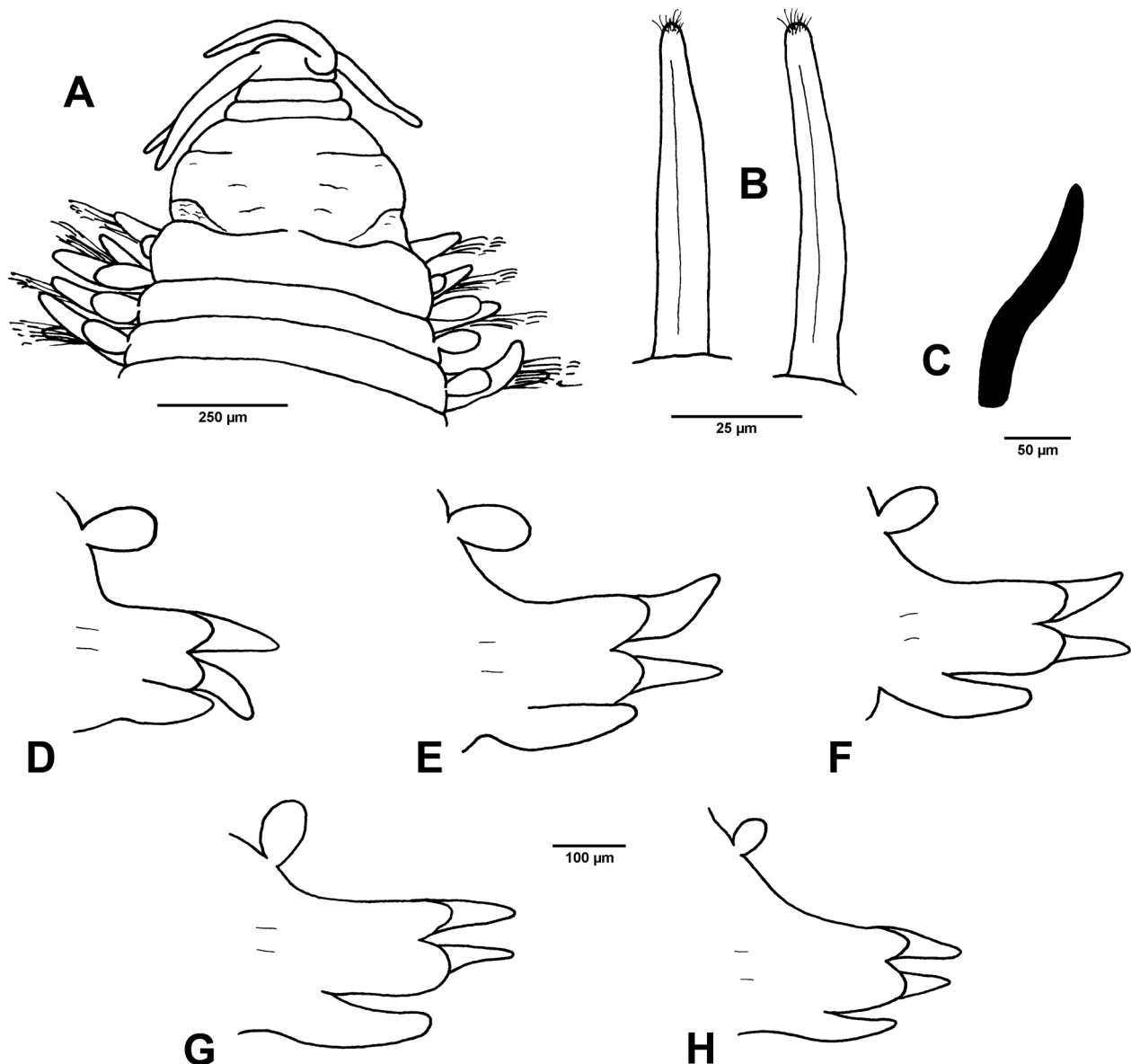
Conical prostomium consisting of 4 rings, posteriormost annulus with indication of a 5th ring; terminal ring with four long appendages and basal one with pair of nuchal organs (Fig. 8A).

Proboscis with one type of papillae: numerous digitiform papillae with more or less distinctly straight, median, longitudinal ridge on posterior surface (Fig. 8B). Terminal part of proboscis with four hook-shaped jaws arranged in a cross and accessory rod-like ailerons (Fig. 8C).

First two pairs of parapodia uniramous; following parapodia biramous (Fig. 8D–H). Two slender triangular to digitiform prechaetal lobes; notopodial lobe always slightly longer and wider than neuropodial lobe. Two shorter postchaetal lobes; anteriorly both lobes rounded; in following parapodia notopodial lobe elongated and blunt triangular, slightly longer than rounded neuropodial lobe. Dorsal cirri from 1st or 2nd parapodium, conical to oval; inserted - most clearly in anterior part of body - on body wall above parapodial base. Ventral cirri in anterior parapodia relatively wide and conical, in posterior parapodia more slender triangular to digitiform, about as long as neuropodial postchaetal lobe or slightly shorter; situated near parapodial base. Branchiae absent.

Noto- and neuropodia each with a single acicula (Fig. 8D–H). Notochaetae capillaries. Neurochaetae compound spinigers and falcigers with blades of different lengths.

Pygidium with dorsal anus and terminal pair of slender, elongated cirri.



**FIGURE 8.** *Glycerella magellanica* (McIntosh, 1885), AM W.47211. A. Anterior end, dorsal view; B. Proboscis papillae; C. Aileron; D–H. Anterior to mid-body parapodia, posterior view, aciculae suggested, chaetae omitted.

**Remarks.** Larger anterior fragment with dorsal cirri on 1st parapodium, which are very small and more oval to globular.

**Distribution.** Yonge Reef; 30 m.

***Hemipodia cf. simplex* (Grube, 1857)**

(Fig. 9)

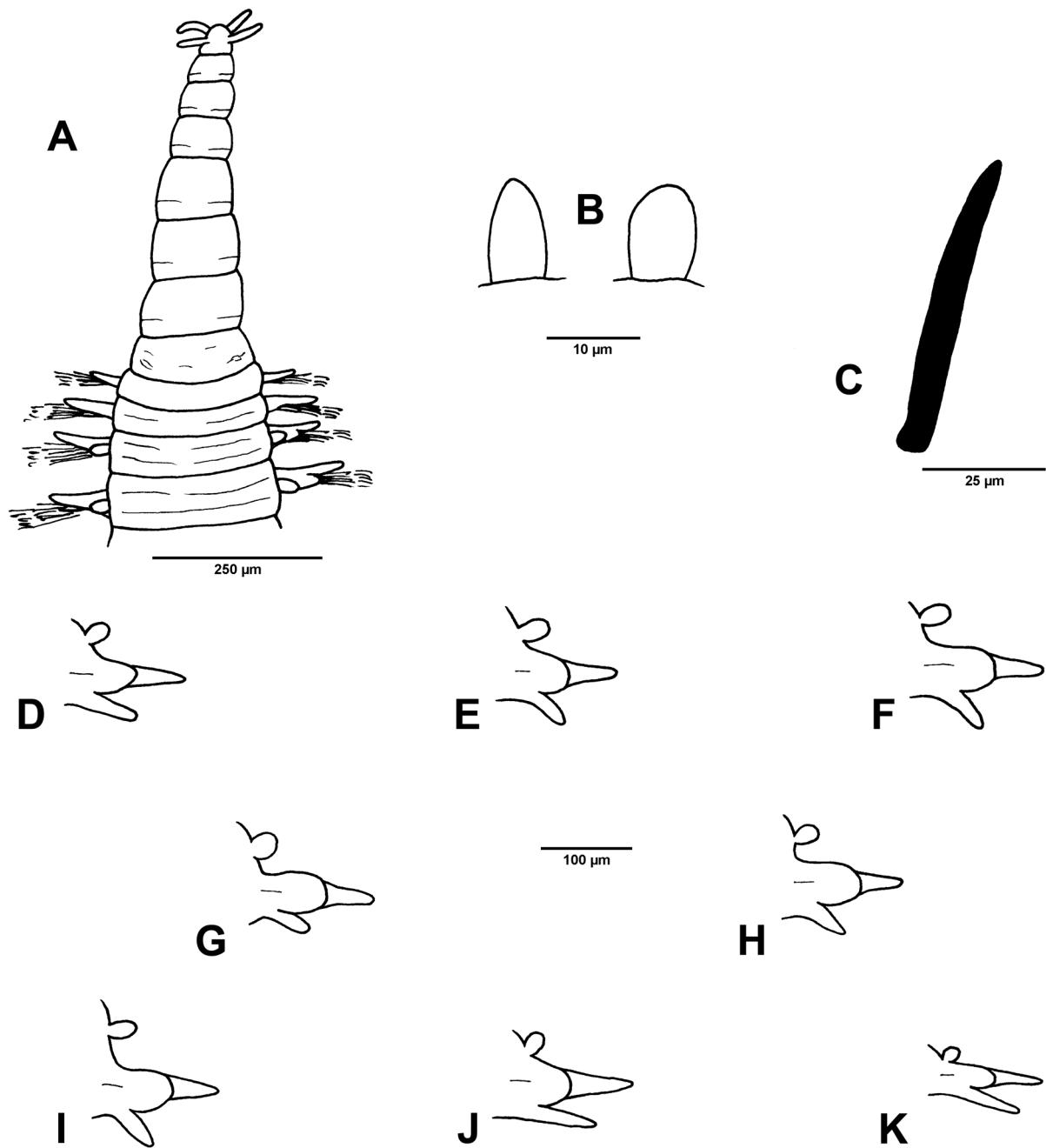
*Glycera simplex* Grube, 1857: 177.

Synonyms see Böggemann 2002

**Material examined.** AM W.28564 (2), Great Barrier Reef, Outer Yonge Reef, rock with *Lithothamnion* and *Halimeda*, 30 m, 21 Jan 1977, af/15.5/86/0.6/0.3, mf/6/26/0.5/0.3, pf/10.5/49/0.5/0.3.

**Diagnosis.** Proboscis papillae mainly conical with more or less distinctly straight, median, longitudinal ridge; ailerons rod-like; parapodia of mid-body with one short, rounded postchaetal lobe; branchiae absent; ventral cirri in anterior parapodia conical, in posterior parapodia elongated and more slender triangular to digitiform.





**FIGURE 9.** *Hemipodia* cf. *simplex* (Grube, 1857), AM W.28564. A. Anterior end, dorsal view; B. Proboscis papillae; C. Aileron; D–K. Anterior to posterior parapodia, posterior view, aciculae suggested, chaetae omitted.

**Description.** Body ca. 32 mm long with ca. 161 chaetigers. Mid-body segments more or less distinctly tri-annulate.

Conical prostomium consisting of about eight rings; terminal ring with four appendages and basal one with pair of nuchal organs (Fig. 9A).

Proboscis with two types of papillae: 1. numerous conical papillae; 2. isolated, broader, oval to globular papillae (Fig. 9B). Terminal part of proboscis with four hook-shaped jaws arranged in a cross and accessory rod-like ailerons (Fig. 9C).

All parapodia uniramous (Fig. 9D–K). One slender triangular to digitiform prechaetal lobe; in posterior parapodia slightly thinner and elongated. One short, rounded postchaetal lobe. Dorsal cirri from 3rd parapodium, conical to oval; inserted on body wall slightly above parapodial base. Ventral cirri in anterior parapodia conical,

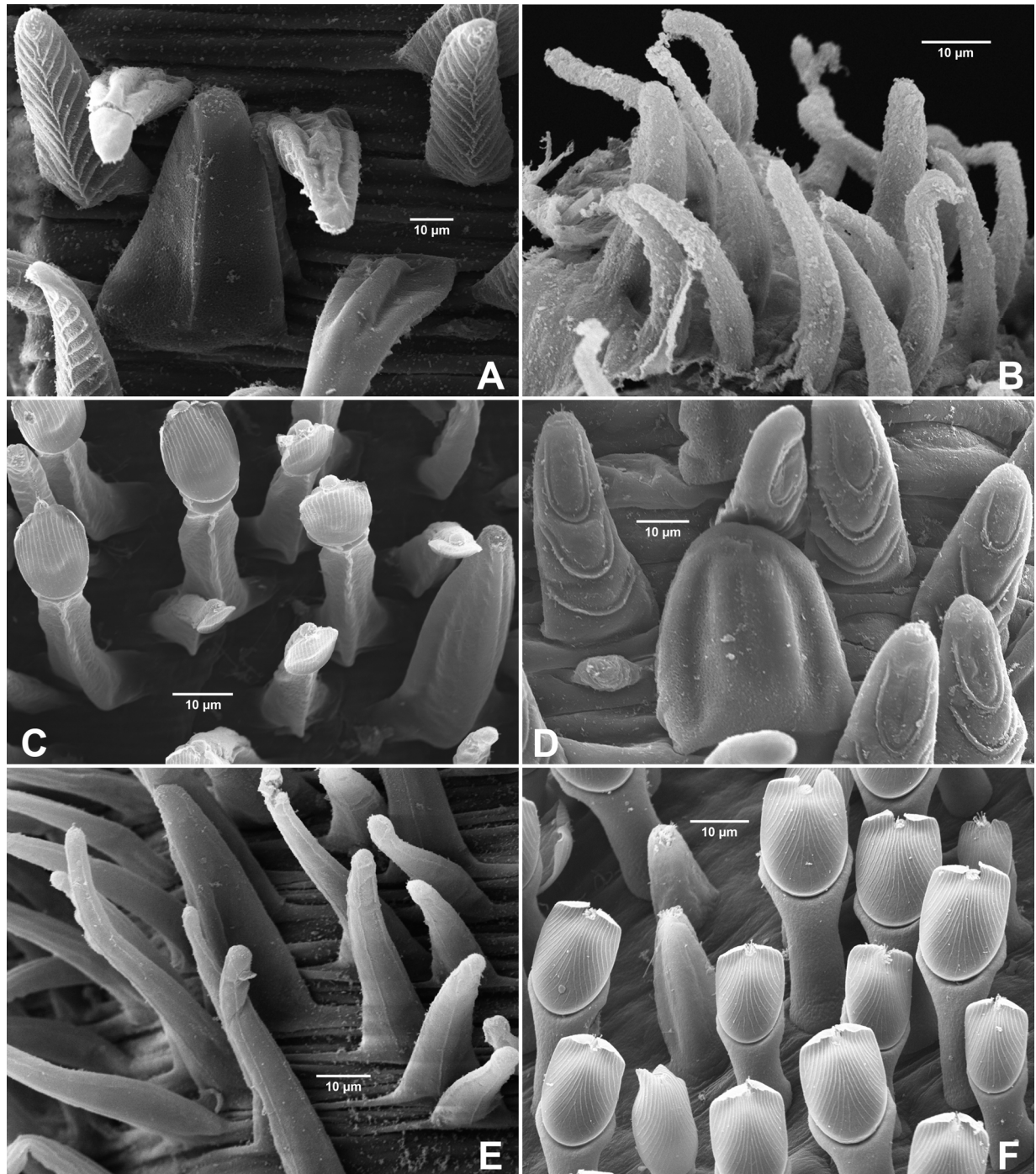
about as long as or slightly shorter than postchaetal lobe; in posterior parapodia elongated and more slender triangular to digitiform; in last parapodia about as long as prechaetal lobe; situated near parapodial base. Branchiae absent.

Parapodia with a single acicula (Fig. 9D–K). Only compound spinigers with blades of different lengths.

Pygidium with dorsal anus; cirri not observed.

**Remarks.** Only a short part of the proboscis with a few papillae near the jaws is present. These proboscis papillae are poorly defined and the structure on their posterior surface is indistinct. Therefore, the specimen is only uncertainly referred to *Hemipodia simplex*.

**Distribution.** Yonge Reef; 30 m.



**FIGURE 10.** Proboscis papillae of *Glycera* spp. A. *Glycera brevicirris*, AM W.44482; B. *Glycera* cf. *lapidum*, AM W.46201; C. *Glycera onomichiensis*, AM W.47220; D. *Glycera sagittariae*, AM W.47221; E. *Glycera tessellata*, AM W.45499; F. *Glycera tridactyla*, AM W.47222.

## Goniadidae Kinberg, 1865

### *Goniada antipoda* Augener, 1927

(Fig. 11)

*Goniada antipoda* Augener, 1927: 202, textfig. 10a–b.

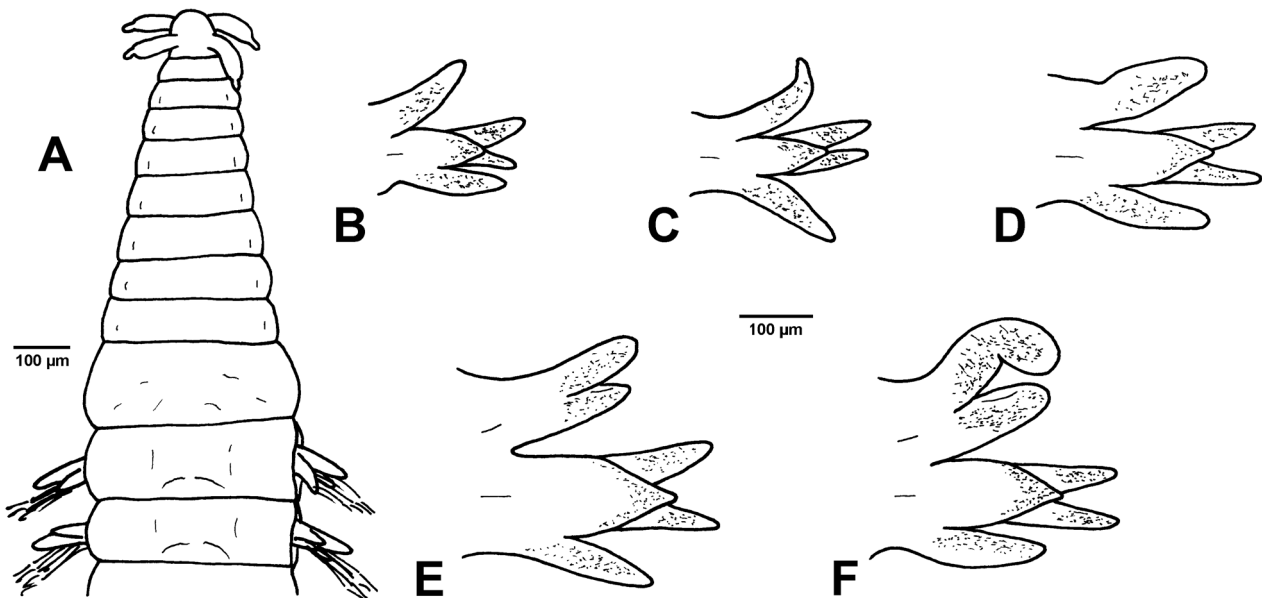
Synonyms see Böggemann 2005

**Material examined.** AM W.47206, MI QLD 2440, af/8/43/1.0/0.5.

**Diagnosis.** Prostomium with pointed tip; proboscis with slightly different types of papillae; only four inverted Y-shaped and rod-like dorsal and usually five H+v/w-shaped ventral compound micrognaths; 4–12 pairs of chevrons; lower neuropodial prechaetal lobe developed from parapodium 2–13; 26–44 uniramous chaetigers, following biramous with single lobed notopodia; notochaetae capillaries, neurochaetae compound spinigers.

**Description.** Anterior fragment 8 mm long with 43 chaetigers. Segments uni-annulate, but median part of dorsum usually appears to be bi-annulate.

Conical prostomium consisting of about ten rings; terminal annulus with four biarticulate appendages and pointed tip, basal one with pair of nuchal organs. Eyes absent (Fig. 11A).



**FIGURE 11.** *Goniada antipoda* Augener, 1927, AM W.47206. A. Anterior end, dorsal view; B–F. Anterior to mid-body parapodia, posterior view, aciculae suggested, chaetae omitted.

Proboscis with predominantly heart-shaped papillae on short stalks in more or less longitudinal rows. Macrognaths hexadentate; dorsal arc with four smaller, simple micrognaths, superior pair rod-like and inferior pair inverted Y-shaped, both with bifid tips, ventral arc with three H+v/w-shaped compound micrognaths. Five chevrons on each side of proboscis.

First chaetigers with only one neuropodial pre- and one postchaetal lobe; second, lower prechaetal lobe developed from chaetiger five; both prechaetal lobes digitiform and of about same length, upper one slightly broader than lower one; conical to triangular postchaetal lobe always distinctly shorter (Fig. 11B–D). 37 uniramous chaetigers, following parapodia biramous with conical to triangular notopodial lobes (Fig. 11E–F). From 34th to 35th chaetiger parapodia enlarged and with noto- and neuropodia clearly separated. Dorsal cirri on anterior chaetigers digitiform, about as long as neuropodial postchaetal lobes (Fig. 11B–D); in biramous parapodia more conical and slightly longer than notopodial lobes (Fig. 11E–F). Ventral cirri in anterior parapodia digitiform, about as long as neuropodial postchaetal lobes or slightly longer (Fig. 11B–D); in enlarged biramous parapodia more conical, slightly shorter than neuropodial postchaetal lobes (Fig. 11E–F).

Noto- and neuropodia each with a single acicula (Fig. 11B–F). Notochaetae capillaries. Neurochaetae compound spinigers with blades of different lengths.

**Remarks.** The specimen is very small and therefore only three ventral micrognaths are present instead of the typical five ones.

**Distribution.** Lizard Island; 14 m.

***Goniada cf. brunnea* Treadwell, 1906**

(Fig. 12)

*Goniada brunnea* Treadwell, 1906: 1174, figs 67–70.

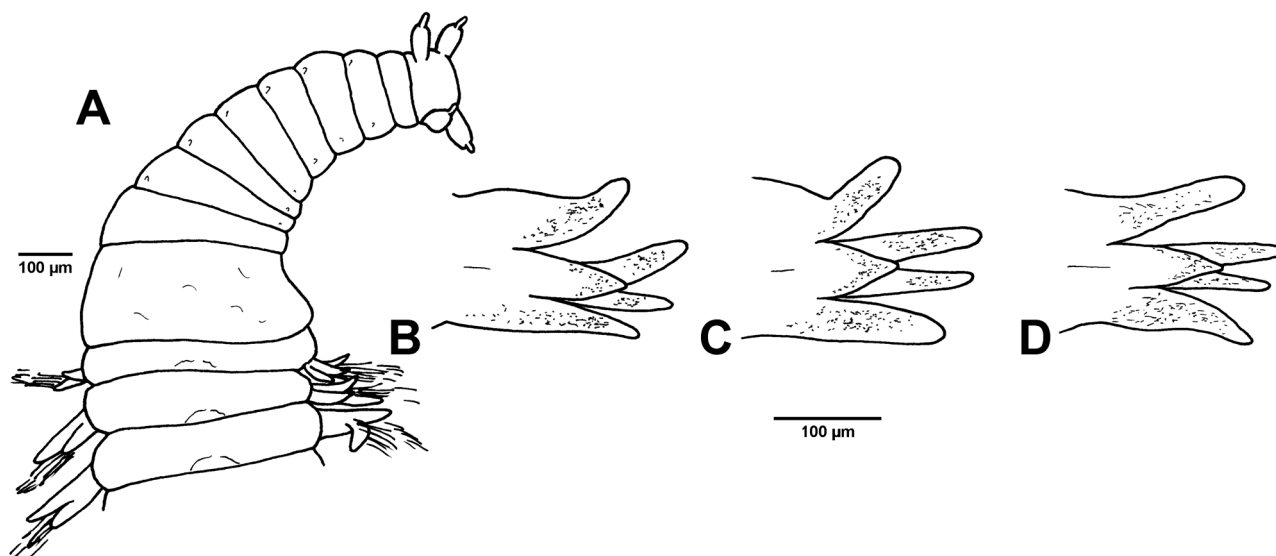
Synonyms see Böggemann 2005

**Material examined.** AM W.46207, Lizard Island, Watsons Bay, 400 m off Chinaman's Ridge, filamentous algae, 12 m, 13 Oct 1978, af/6.5/ca.29/0.7/0.4.

**Diagnosis.** Prostomium usually with blunt tip; proboscis with slightly different types of papillae; only four inverted Y-shaped dorsal micrognaths; 4–20 pairs of chevrons; lower neuropodial prechaetal lobe developed from parapodium 2–6; 36–53 uniramous chaetigers, following biramous with notopodia subdivided into pre- and postchaetal lobes; notochaetae capillaries, neurochaetae compound spinigers.

**Description.** Anterior fragment 6.5 mm long with about 29 chaetigers. Segments uni-annulate, but median part of dorsum sometimes appears to be bi-annulate.

Conical prostomium consisting of about ten rings; terminal annulus with four biarticulate appendages and blunt tip, basal one with pair of nuchal organs. Eyes absent (Fig. 12A).



**FIGURE 12.** *Goniada cf. brunnea* Treadwell, 1906, AM W.46207. A. Anterior end, dorsal view; B–D. Anterior parapodia, posterior view, aciculae suggested, chaetae omitted.

Proboscis with predominantly heart-shaped papillae on short stalks in more or less longitudinal rows. Macrognaths quadridentate; dorsal arc with four smaller, simple inverted Y-shaped micrognaths with bifid tips, ventral arc with three H+v/w-shaped compound micrognaths. Four (left side) respectively five chevrons (right side) on proboscis.

First chaetigers with only one neuropodial pre- and one postchaetal lobe; second, lower prechaetal lobe developed from chaetiger four; both prechaetal lobes digitiform, upper one slightly broader and longer than lower one; conical to triangular postchaetal lobe always distinctly shorter (Fig. 12B–D). Dorsal cirri on anterior chaetigers broadly conical to digitiform, about as long as neuropodial postchaetal lobes (Fig. 12B–D). Ventral cirri in anterior parapodia digitiform, about as long as neuropodial postchaetal lobes or slightly longer (Fig. 12B–D).

Noto- and neuropodia each with a single acicula (Fig. 12B–D). Notochaetae capillaries. Neurochaetae compound spinigers with blades of different lengths.

**Remarks.** Only uniramous parapodia are present on the short anterior fragment and therefore the specimen is uncertainly referred to *Goniada brunnea*. However, the prostomium have a typical blunt tip and the species is known from this general area (see Böggemann 2005).

**Distribution.** Lizard Island; 12 m.

### ***Goniada echinulata* Grube, 1870**

(Figs 13, 17A–D)

*Goniada echinulata* Grube, 1870: 67.

Synonyms see Böggemann 2005

**Material examined.** AM W.47203, MI QLD 2441, af/8/45/0.9/0.5, part of proboscis on SEM stub; AM W.47207, MI QLD 2440, af/14,5/81/0.9/0.4; AM W.47216 (2), Watsons Bay, 400 m off Chinaman's Ridge, filamentous algae, 12 m, 13 Oct 1978, af/13/58/1.1/0.7, pf/12.5/62/1.0/0.6; AM W.46211, Watsons Bay, 1000 m off Chinaman's Ridge, seagrasses, 12 m, 13 Oct 1978, af/22/98/1.0/0.6, pf/2.5/18/0.6/0.3; AM W.46208, Lizard Island Group, 250 m east-south-east of Palfrey Island, south end of lagoon, very fine sticky sediment, 12 m, large hand-held corer from SCUBA, 12 Oct 1978, af/14/68/1.0/0.5; AM W.46209, 250 m east-south-east of Palfrey Island, south end of lagoon, very fine sticky sediment, 12 m, large hand-held corer from SCUBA, 12 Oct 1978, af/22/113/1.0/0.5;

**Diagnosis.** Proboscis with different types of papillae, conical papillae with distal beaks and basally with two long stilts; 10–20 pairs of chevrons; 29–46 uniramous chaetigers, following biramous; notochaetae capillaries, neurochaetae compound spinigers.

**Description.** Body up to 25.5 mm long with up to 120 chaetigers. Segments uni-annulate, but median part of dorsum sometimes appears to be bi-annulate.

Conical prostomium consisting of about 8–9 rings; terminal annulus with four biarticulate appendages and basal one with pair of nuchal organs. Pair of basal subdermal eyes may be present (Fig. 13A).

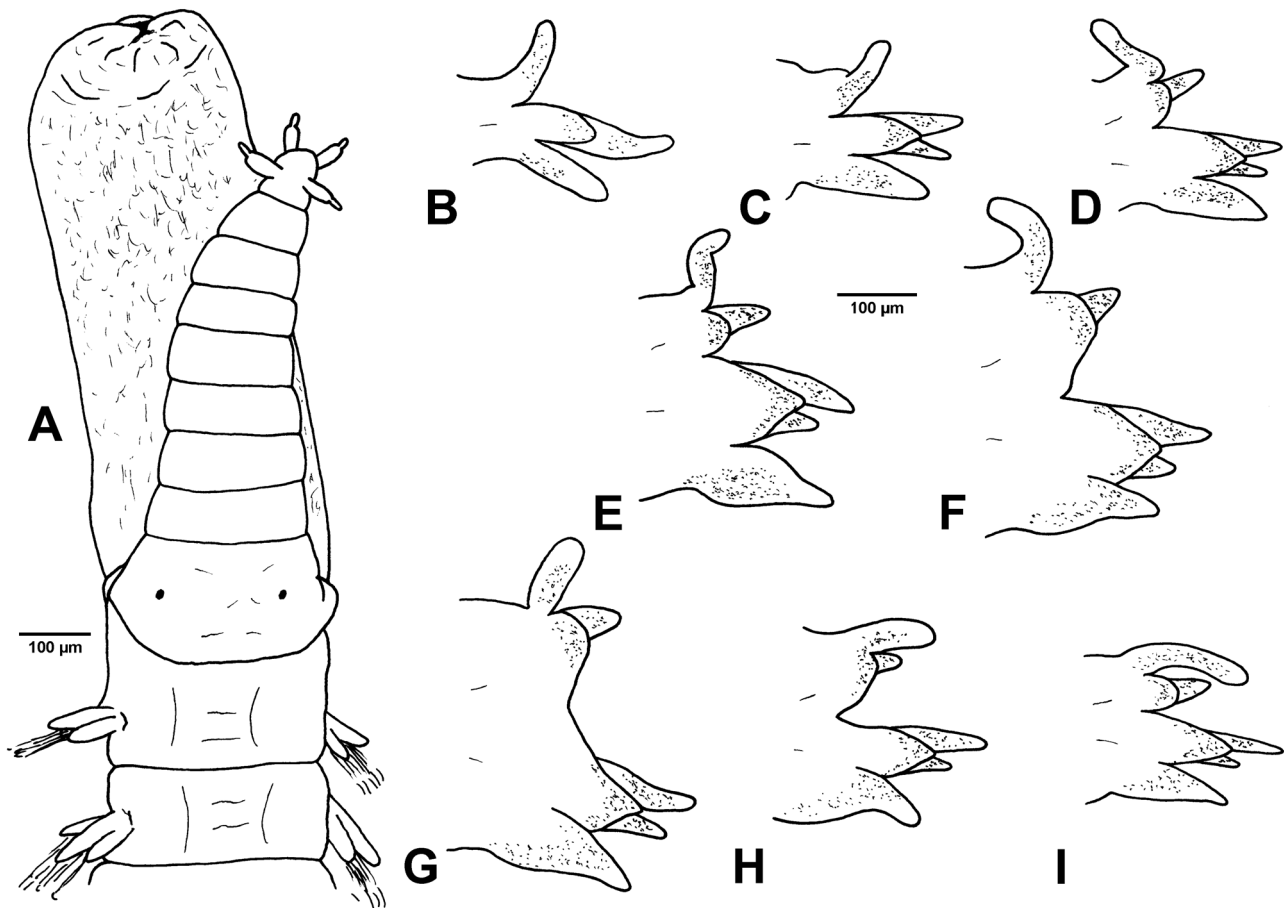
Proboscis on distal part with longer conical papillae with distal beaks and basally with two long stilts (Fig. 17A–B); other papillae more heart-shaped. Macrognaths quadri- to hexadentate; 2–4 H+v/w-shaped dorsal and 2–3 (usually three) H+v/w-shaped ventral compound micrognaths, dorsal arc additionally always with four slightly larger, simple rod-like micrognaths in outer position and between other ones. 16–20 chevrons on each side of proboscis; basal chevrons distinctly smaller than distal ones (Fig. 17C–D).

First chaetigers with only one neuropodial pre- and one postchaetal lobe (Fig. 13B); second, lower prechaetal lobe developed from chaetiger 12–13; both prechaetal lobes digitiform, upper one slightly longer and broader than lower one; conical to triangular postchaetal lobe always distinctly shorter (Fig. 13C). 36–38 uniramous chaetigers, following parapodia biramous with conical notopodial prechaetal lobes and shorter, rounded to conical postchaetal lobes (Fig. 13D). From 38th to 41th chaetiger parapodia enlarged and with noto- and neuropodia clearly separated (Fig. 13E–G); lobes of about same shape as before; in posterior parapodia notopodial lobes, lower neuropodial prechaetal lobes and neuropodial postchaetal lobes shorter and upper neuropodial prechaetal lobes slightly more slender (Fig. 13H–I). Dorsal cirri on anterior chaetigers digitiform, about as long as neuropodial postchaetal lobes (Fig. 13B–C); in anterior biramous parapodia slightly longer than notopodial prechaetal lobes (Fig. 13D); in enlarged biramous parapodia more conical, about as long as notopodial prechaetal lobes (Fig. 13E–G); in posterior parapodia slender, elongated and more digitiform (Fig. 13H–I). Ventral cirri in anterior parapodia digitiform, about as long as lower neuropodial prechaetal lobes (Fig. 13B–D); in enlarged biramous parapodia more conical, about as long as neuropodial postchaetal lobes (Fig. 13E–G); in posterior parapodia slender, elongated and more digitiform, slightly longer than neuropodial postchaetal lobes (Fig. 13H–I).

Noto- and neuropodia each with a single acicula (Fig. 13B–I). Notochaetae capillaries. Neurochaetae compound spinigers with blades of different lengths.

Pygidium with dorsal anus; cirri not observed.

**Distribution.** Lizard Island Group; 12–21.2 m.



**FIGURE 13.** *Goniada echimulata* Grube, 1870, AM W.47216, af (A–F), pf (G–I). A. Anterior end with partly everted proboscis, dorsal view; B–I. Anterior to posterior parapodia, posterior view, aciculae suggested, chaetae omitted.

***Goniada emerita* Audouin & Milne Edwards, 1833**

(Fig. 14)

*Goniada emerita* Audouin & Milne Edwards, 1833: 268; pl. 18, figs 1–4.

**Material examined.** AM W.44865, MI QLD 2435, af/25/117/1.7/0.9.

**Diagnosis.** Proboscis with a few different types of papillae; 4–26 pairs of chevrons; 46–69 uniramous chaetigers, following biramous; acicular notochaetae situated between dorsal cirrus and notopodium, neurochaetae compound spinigers.

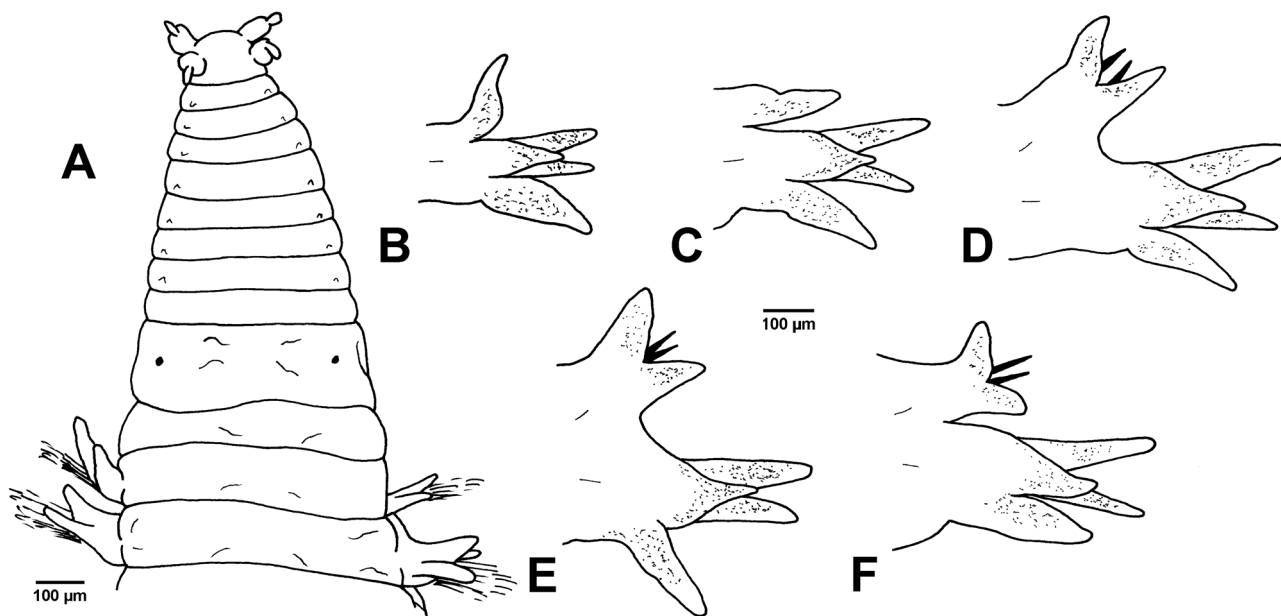
**Description.** Anterior fragment 25 mm long with 117 chaetigers. Segments uni-annulate, but median part of dorsum usually appears to be bi-annulate.

Conical prostomium consisting of 9–10 rings; terminal annulus with four biarticulate appendages and basal one with pair of nuchal organs. Pair of basal subdermal eyes present (Fig. 14A).

Proboscis with predominantly heart-shaped to rectangular papillae on short stalks in more or less longitudinal rows. Macrognaths quinquedentate (with 5 teeth); 13 H+v/w-shaped dorsal and 14 H+v/w-shaped ventral compound micrognaths, dorsal arc additionally with four smaller, simple rod-like micrognaths in outer position and between other ones. Six chevrons on each side of proboscis.

First segment partly apodous and achaetous; typical pair of small lateral cirri missing (Fig. 14A). First chaetiger mainly with only one neuropodial pre- and one postchaetal lobe; second, lower prechaetal lobe developed from chaetiger two; both prechaetal lobes digitiform, upper one slightly broader and longer than lower one; conical to triangular postchaetal lobe always distinctly shorter (Fig. 14B–C). 66 uniramous chaetigers, following parapodia biramous with conical to triangular notopodial lobes (Fig. 14D–F). From 66th chaetiger parapodia enlarged and

with noto- and neuropodia clearly separated. Dorsal cirri on anterior chaetigers digitiform, about as long as neuropodial postchaetal lobes or slightly shorter (Fig. 14B–C); in biramous parapodia more conical and about as long as notopodial lobes (Fig. 14D–F). Ventral cirri in anterior parapodia digitiform, about as long as neuropodial postchaetal lobes or slightly longer (Fig. 14B–C); in enlarged biramous parapodia more conical, about as long as neuropodial postchaetal lobes or slightly shorter (Fig. 14D–F).



**FIGURE 14.** *Goniada emerita* Audouin & Milne Edwards, 1933, AM W.44865. A. Anterior end, dorsal view; B–F. Anterior to mid-body parapodia, posterior view, aciculae suggested, neurochaetae omitted.

Noto- and neuropodia each with a single acicula (Fig. 14B–F). Usually two acicular notochaetae with straight tip, situated between dorsal cirrus and notopodium (Fig. 14D–F). Neurochaetae compound spinigers with blades of different lengths.

**Distribution.** Lizard Island, Macgillivray Reef; 14–18 m.

***Goniada grahami* Benham, 1932**  
(Fig. 15)

*Goniada grahami* Benham, 1932: 561, figs 6–9.

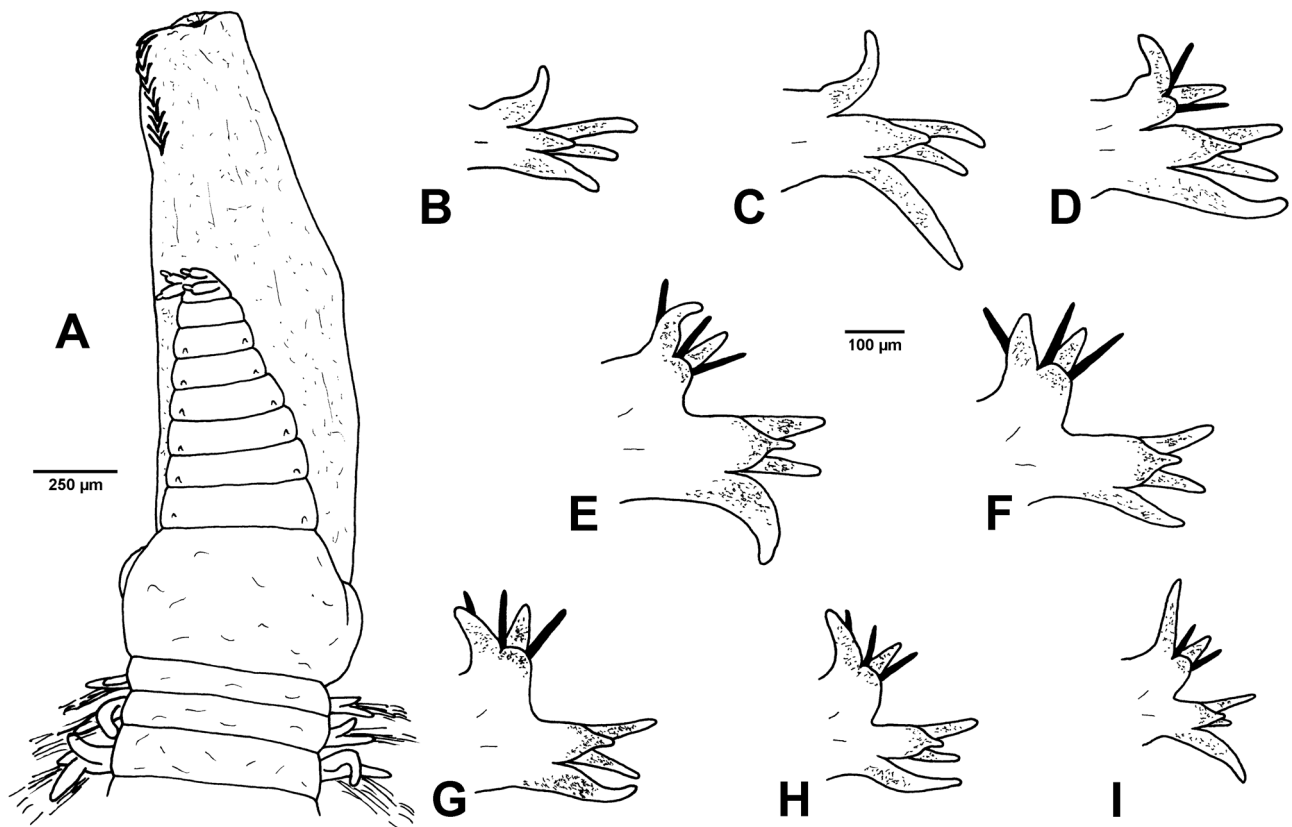
**Material examined.** AM W.28584, Lizard Island, Watsons Bay, 400 m off Chinaman's Ridge, filamentous algae, 12 m, 13 Oct 1978, af/35/77/1.8/1.0; AM W.46141, Osprey Island, near Lizard Island, 3 m, 16 Jul 1979, af/20/100/1.3/0.7, pf/2/20/1.3/0.7.

**Diagnosis.** Prostomium with 9–10 rings; proboscis with a few different types of papillae, ventral proboscidal papillae all small, heart-shaped to rounded; 9–24 pairs of chevrons; 53–90 uniramous chaetigers, following biramous; acicular notochaetae situated dorsal to dorsal cirrus, between dorsal cirrus and notopodium, and below notopodium, neurochaetae compound spinigers.

**Description.** Body at least 35 mm long with up to 120 chaetigers. Segments uni-annulate, but median part of dorsum sometimes appears to bi-annulate.

Conical prostomium consisting of about nine rings; terminal annulus with four biarticulate appendages and basal one with pair of nuchal organs. Eyes absent (Fig. 15A).

Proboscis with predominantly heart-shaped to rectangular papillae on short stalks in more or less longitudinal rows. Macrognaths tri- to quinquentate (with 3–5 teeth); 5–11 H+v/w-shaped dorsal and 3–7 H+v/w-shaped ventral compound micrognaths, dorsal arc additionally with four smaller, simple rod-like micrognaths in outer position and between other ones. 7–9 chevrons on each side of proboscis.



**FIGURE 15.** *Goniada grahami* Benham, 1932. AM W.28584 (A), AM W.46141, af (B–F), pf (G–I). A. Anterior end with partly everted proboscis, dorsal view, right side of proboscis missing; B–I. Anterior to posterior parapodia, posterior view, aciculae suggested, neurochaetae omitted.

First chaetigers with only one neuropodial pre- and one postchaetal lobe; second, lower prechaetal lobe developed from chaetiger 2–6; both prechaetal lobes digitiform, upper one slightly longer and broader than lower one; conical to triangular postchaetal lobe always distinctly shorter (Fig. 15B–C). 53–69 uniramous chaetigers, following parapodia biramous with slender digitiform to conical notopodial lobes (Fig. 15D). From 57th to about 78th chaetiger parapodia enlarged and with noto- and neuropodia clearly separated (Fig. 15E–G); notopodial lobes broader and more conical to triangular, neuropodial lobes of about same shape as before, but postchaetal lobes slightly elongated; in posterior parapodia notopodial lobes, lower neuropodial prechaetal lobes and neuropodial postchaetal lobes shorter and upper neuropodial prechaetal lobes slightly more slender (Fig. 15H–I). Dorsal cirri on anterior chaetigers digitiform, about as long as neuropodial postchaetal lobes or slightly shorter (Fig. 15B–C); in anterior biramous parapodia slightly longer than notopodial prechaetal lobes (Fig. 15D); in enlarged biramous parapodia more conical to triangular, about as long as notopodial prechaetal lobes (Fig. 15E–G); in posterior parapodia slender, elongated and more digitiform (Fig. 15H–I). Ventral cirri in anterior parapodia digitiform, about as long as lower neuropodial prechaetal lobes or slightly longer (Fig. 15B–D); in enlarged biramous parapodia more conical, about as long as neuropodial postchaetal lobes (Fig. 15E–G); in posterior parapodia slender, elongated and more digitiform, about as long as upper neuropodial prechaetal lobes (Fig. 15H–I).

Noto- and neuropodia each with a single acicula (Fig. 15B–I). Usually three acicular notochoetae with straight or slightly bent tip, one situated dorsal to dorsal cirrus, one between dorsal cirrus and notopodium, and one or two below notopodium (Fig. 15D–I). Neurochaetae compound spinigers with blades of different lengths.

Pygidium with dorsal anus; cirri not observed.

**Distribution.** Lizard Island Group; 3–12 m.

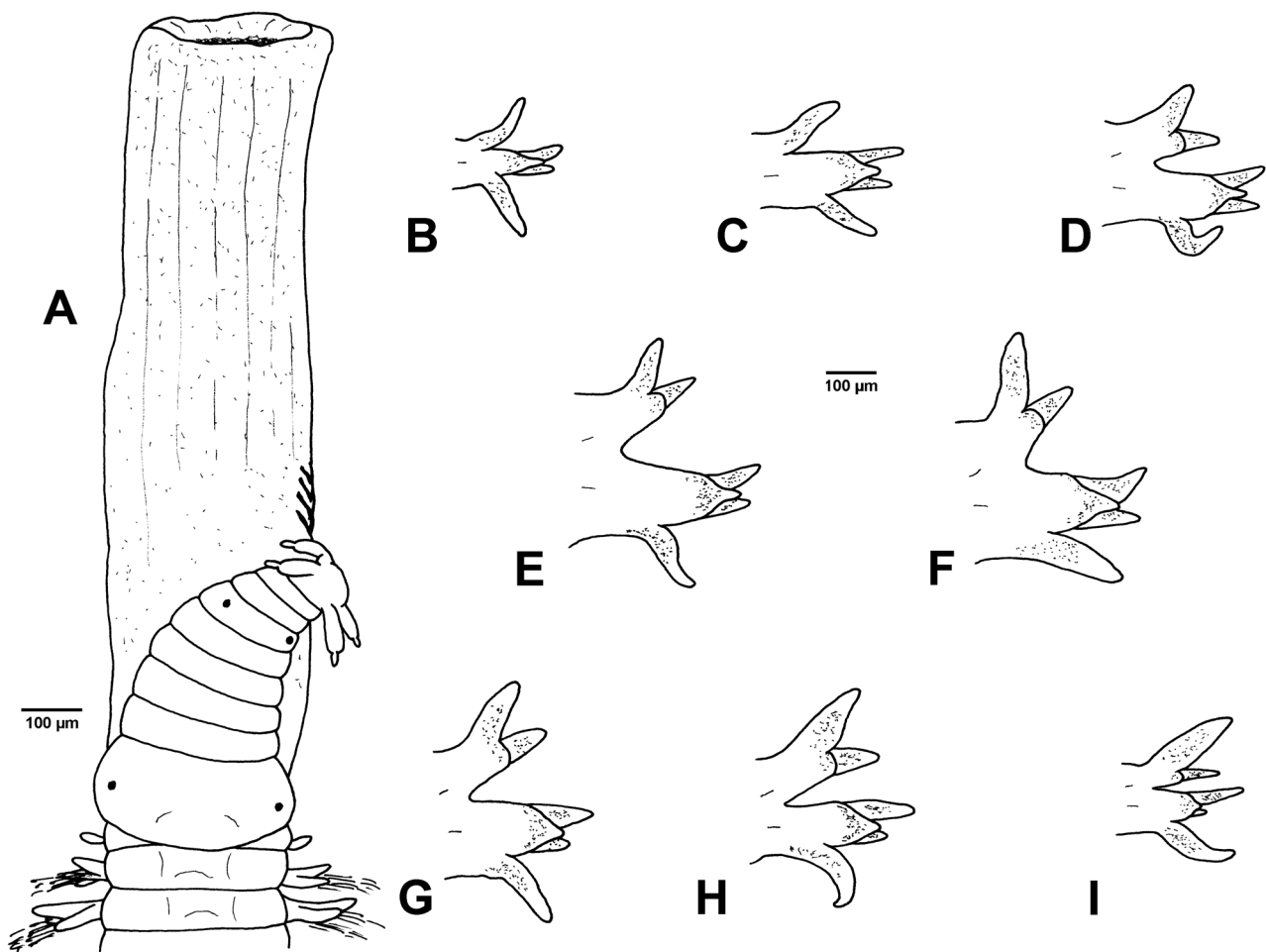


***Goniada paucidens* Grube, 1878**

(Figs 16, 17E–H)

*Goniada paucidens* Grube, 1878: 185.

**Material examined.** AM W.41212, Lizard Island, Mermaid Cove, North Point, 14°38'46"S 145°27'13"E, coral rubble, 9.5 m, by hand from SCUBA, 7 Sep 2010, CReefs, af/11/82/1.0/0.5, part of proboscis on SEM stub; AM W.44845, MI QLD 2370, cs/20/123/1.3/0.7; AM W.44039, MI QLD 2356 (few), cs/17/105/1.2/0.6, cs/13.5/106/1.0/0.5; AM W.46139, fringing reef between Bird Islet and South Island, 12 m, by hand from SCUBA, 1 Aug 1977, cs/10.8/86/1.0/0.5; AM W.46147, reef front between Bird Islet and South Island, 14°41'53"S 145°27'51"E, dead coral, 13 m, by hand from SCUBA, 30 Mar 1995, cs/17.8/108/1.3/0.7; AM W.46137, Lizard Island, north of Coconut Beach, dead reef rock encrusted with filamentous brown algae, 20 m, 17 Jan 1975, cs/ca.15/ca.76/1.0/0.5.

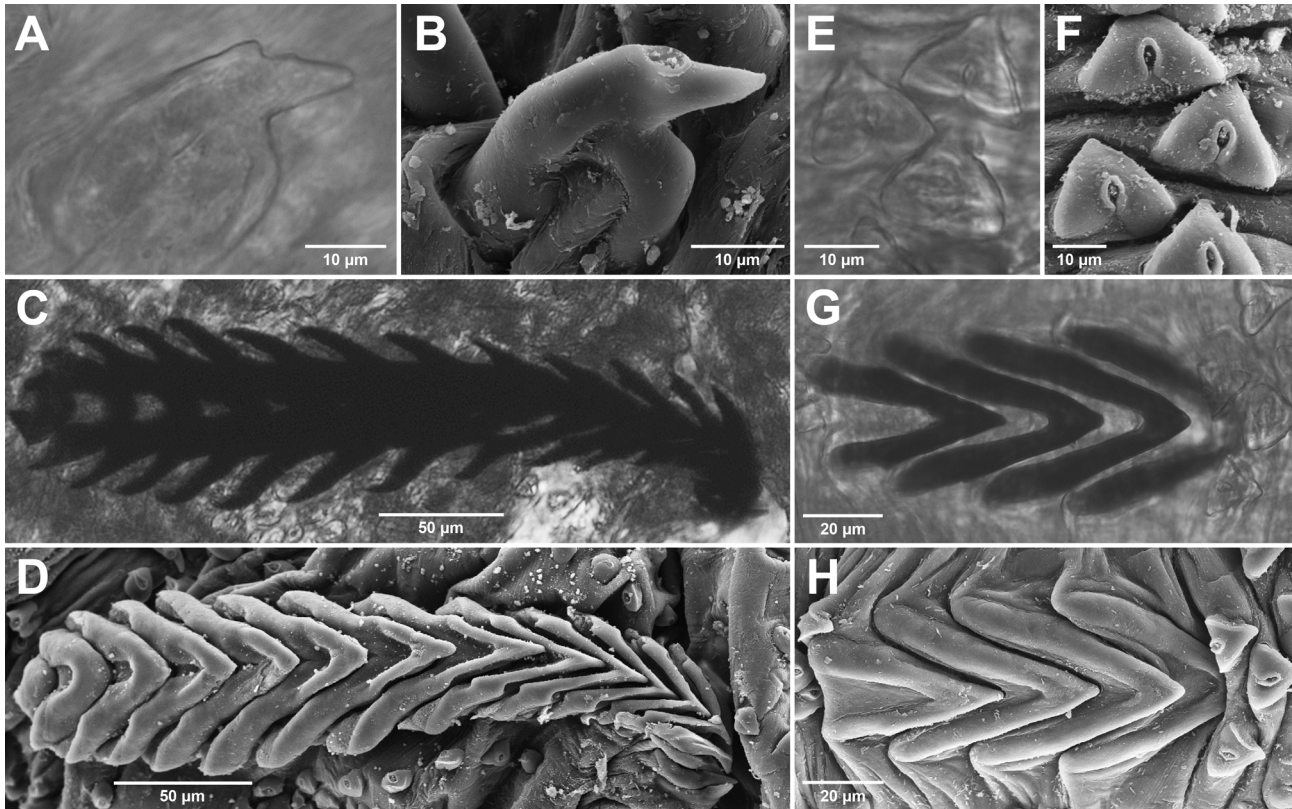


**FIGURE 16.** *Goniada paucidens* Grube, 1878, AM W.41212 (A), AM W.44845 (B–I). A. Anterior end with partly everted proboscis, dorsal view; B–I. Anterior to posterior parapodia, posterior view, aciculae suggested, chaetae omitted.

**Diagnosis.** Proboscis with a few different types of papillae, dorsal ones mainly heart-shaped with pointed tip; numerous H+v/w-shaped dorsal and ventral compound micrognaths; 1–12 pairs of chevrons; 53–60 uniramous chaetigers, following biramous; notochaetae capillaries, neurochaetae compound spinigers.

**Description.** Body up to 20 mm long with up to 123 chaetigers. Segments uni-annulate, but median part of dorsum usually appears to be bi-annulate.

Conical prostomium consisting of about 8–9 rings; terminal annulus with four biarticulate appendages and basal one with pair of nuchal organs. Pair of subdistal (4th ring) and/or basal subdermal eyes may be present; especially in smaller specimens (Fig. 16A).



**FIGURE 17.** *Goniada echimulata*, AM W.47203. A–B. Micrograph (A) and SEM picture (B) of larger, elongated conical papillae with distal beak; C–D. Micrograph (C) and SEM picture (D) of chevrons. *Goniada paucidens*, AM W.41212. E–F. Micrograph (E) and SEM picture (F) of heart-shaped papillae; G–H. Micrograph (G) and SEM picture (H) of chevrons.

Proboscis with predominantly heart-shaped papillae with pointed tip on short stalks in more or less longitudinal rows (Fig. 17E–F). Macrognaths tri- to quadridentate; 5–10 H+v/w-shaped dorsal and 6–12 H+v/w-shaped ventral compound micrognaths, dorsal arc sometimes additionally with four small H- or X-shaped micrognaths in outer position and between other ones. 2–12 chevrons on each side of proboscis (Fig. 17G–H).

First segment apodous and achaetous, only with a pair of small lateral cirri (Fig. 16A). First chaetigers with only one neuropodial pre- and one postchaetal lobe; second, lower prechaetal lobe developed from chaetiger 2–5; both prechaetal lobes digitiform, upper one always slightly or distinctly longer and broader than lower one; conical to triangular postchaetal lobe always shorter (Fig. 16B–C). 55–59 uniramous chaetigers, following parapodia biramous with digitiform to conical notopodial prechaetal lobes and shorter, rounded postchaetal lobes (Fig. 16D). From 50th to 60th chaetiger parapodia enlarged and with noto- and neuropodia clearly separated (Fig. 16E–G); lobes of about same shape as before; in posterior parapodia notopodial prechaetal lobes, lower neuropodial prechaetal lobes and neuropodial postchaetal lobes shorter and upper neuropodial prechaetal lobes slightly more slender (Fig. 16H–I). Dorsal cirri on anterior chaetigers digitiform, about as long as neuropodial postchaetal lobes or slightly shorter (Fig. 16B–C); in biramous parapodia more conical and about as long as notopodial prechaetal lobes (Fig. 16D–G); in posterior parapodia elongated and more digitiform (Fig. 16H–I). Ventral cirri in anterior parapodia digitiform, about as long as neuropodial postchaetal lobes (Fig. 16B–G); in posterior parapodia slender and elongated, about as long as upper neuropodial prechaetal lobes (Fig. 16H–I).

Noto- and neuropodia each with a single acicula (Fig. 16B–I). Notochaetae capillaries. Neurochaetae compound spinigers with blades of different lengths.

Pygidium with dorsal anus and terminal pair of slender, elongated cirri.

**Remarks.** Previously only specimens with up to six pairs of chevrons have been described.

**Distribution.** Lizard Island Group; 9–20 m.

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