

PROCEEDINGS
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THE GENERA *POLYEUNOA* McINTOSH,
HOLELEPIDELLA WILLEY, AND THREE NEW
GENERA (POLYCHAETA, POLYNOIDAE)

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The polynoid genera *Polyeunoa* McIntosh (1885) and *Hololepidella* Willey (1905) have been used by various polychaete workers to include identical species. The species referred to the two genera are generally elongate, with numerous segments and numerous pairs of elytra. In addition, the lateral antennae are inserted ventrally on the prostomium, i. e., harmothoid type of insertion. The elytra in the posterior segments may be rather irregularly arranged in these elongate species. In a study of numerous specimens of the type-species of *Polyeunoa*, *P. laevis* McIntosh, Bergström (1916) pointed out the unusual variability in the number and arrangement of the elytra. At the same time, he suggested that *Polynoe tuta* Grube and *Hololepidella commensalis* Willey might both be referred to *Polyeunoa*, since these two species also show variability in the arrangement of the elytra in the posterior regions. The elytral variability was well shown for *Polynoe tuta* (as *Halosydna*) by Johnson (1901). Augener (1918, 1922) suggested that *Hololepidella* be used for polynoids with a harmothoid prostomium and numerous elytra extending along the body. Neither Bergström nor Augener emphasized differences in the arrangement of the elytra in the anterior region or other parapodial differences. Berkeley and Berkeley (1948) and Pettibone (1953), following Bergström, referred *Polynoe tuta* Grube to *Polyeunoa* McIntosh; emended Bergström. The same species was referred to *Hololepidella*, following Augener, by Annenkova (1937), Hartman (1948), and Uschakov (1955). Similarly, *Polynoe nigropunctata* Horst was referred to *Hololepidella* by Day (1957) and to

Polyeunoa by Day (1967). Thus, it was more or less generally understood that the arrangement of the elytra in these elongate species was so variable that their exact arrangement was not especially important and, as such, often was not included in the original descriptions.

Recently, Devaney (1967) pointed out some characters of *Hololepidella* that had been overlooked, particularly concerning the arrangement of the elytra in the anterior region and some setal differences. It was of interest to follow this further and to re-examine as far as possible the species that have been referred to the two genera. Material was available for study in the British Museum (Natural History) (BMNH), Zoological Museum Amsterdam (ZMA), Zoological Museum Hamburg (ZMH), Zoological Museum Berlin (ZMB), and the United States National Museum (USNM). While the arrangement of the elytra in the posterior regions of these elongate species may vary considerably, their disposition in the anterior regions appears to be constant. Additional setal and parapodial differences, especially the shape of the neuropodial lobes, are sufficient to separate the species herein reviewed into five genera, three of which are new. The study is summarized by providing a key to these five polynoid genera.

The following genera and species are reviewed (species for which specimens were available for study are indicated by an asterisk):

<i>Polyeunoa</i> McIntosh; emended Bergström	* <i>P. laevis</i> McIntosh <i>P. flynni</i> (Benham) new combination <i>P. dubia</i> Hartmann-Schröder
<i>Hololepidella</i> Willey	<i>H. commensalis</i> Willey <i>H. venosa</i> (Grube) new combination * <i>H. nigropunctata</i> (Horst)
<i>Neohololepidella</i> new genus	* <i>N. murrayi</i> new species (= <i>Hololepidella commensalis</i> .— Monro, 1937; Not Willey, 1905)

Parahololepidella new genus **P. greeffi* (Augener) new combination (includes *Hololepidella fagei* Rullier)

Grubeopolynoë new genus **G. tuta* (Grube) new combination

G. semenovi (Annenkova) new combination

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FAMILY POLYNOIDAE MALMGREN

Genus *Polyeunoa* McIntosh, 1885; EMENDED Bergström, 1916

Type-species: *P. laevis* McIntosh, 1885, by monotypy. Gender: feminine.

Diagnosis: Body long, flattened, widest anteriorly, tapered posteriorly, segments numerous (up to 100). Elytra at least 15 pairs, arranged on segments 2, 4, 5, 7, alternate segments to 23, 26, 29, 32, with or without some additional elytra sporadically and irregularly arranged (1 to 14 or more extra pairs; may be asymmetrical). Elytra rather large in anterior region, nearly covering dorsum; small in posterior region, when present; without fringes of papillae or tubercles. Prostomium bilobed, with cephalic peaks distinct, poorly developed, or absent, with 2 palps and 3 antennae; ceratophore of median antenna in anterior notch of prostomium; lateral antennae with distinct ceratophores, inserted ventrally below level of median antenna. Tentacular segment (I) with 2 pairs tentacular cirri, without setae; without conical facial tubercle. Buccal segment (II) with long ventral buccal cirri; without nuchal fold. Parapodia subbiramous. Notopodia forming well-developed digitiform acicular lobes; notosetae stout (as stout as or stouter than neurosetae), short to long, smooth or very lightly striated, tapering to blunt tips. Neuropodia with prominent conical presetal acicular lobes and shorter rounded postsetal lobes; neurosetae stout, with enlarged spinous regions and bare, nearly straight, entire tips (may be weak indications of secondary tooth); neurosetae all similar except upper ones slightly stouter; neurosetae of buccal segment (II) more slender than those following.

Dorsal cirri with cylindrical cirrophores. Dorsal tubercles inconspicuous. Ventral cirri subulate. Nephridial papillae short, cylindrical.

Polyeunoa laevis McIntosh

Fig. 1

Polyeunoa laevis McIntosh, 1885, p. 76, pl. 12, fig. 2, pl. 20, fig. 8, pl. 7A, figs. 12, 13.—Bergström, 1916, p. 288, pl. 3, fig. 7.—Hartman, 1959, pp. 66, 98; 1964, p. 42, pl. 12, figs. 5-7; 1967, p. 38.—Uschakov, 1962, p. 175.—Day, 1967, p. 54, fig. 1.5, 1-q.

Enipo rhombigera Ehlers, 1908, p. 47, pl. 4, figs. 1-12.

Polyeunoa rhombigera.—Hartman, 1967, p. 39.

Material examined: *Challenger* station 145A, off Prince Edward Islands, 46° 41' S, 38° 10' E, 567 meters, volcanic sand, December 27, 1873—10 Syntypes (BMNH I885: 12: 1: 55); 2 Syntypes (USNM 4834, 38974).

U. S. Navy Antarctic Expedition, Marguerite Bay, Antarctica, February 19-22, 1948, D. C. Nutt, collector: Stations 189, 231, 236, in 64 and 73 meters—3 specimens (USNM 23863, 23864, 23870); 155-192 meters, on *Thouarella* (*Parathouarella*) *variabilis*—1 specimen (USNM 35302).

Deep Freeze II, USS *Staten Island*, Weddell Sea, Antarctica, W. H. Littlewood, collector: 71° 18' S, 13° 32' W, 238 meters, December 27, 1956.—1 specimen; 77° 32' S, 44° 45' W, 283 meters, January 21, 1957—1 specimen.

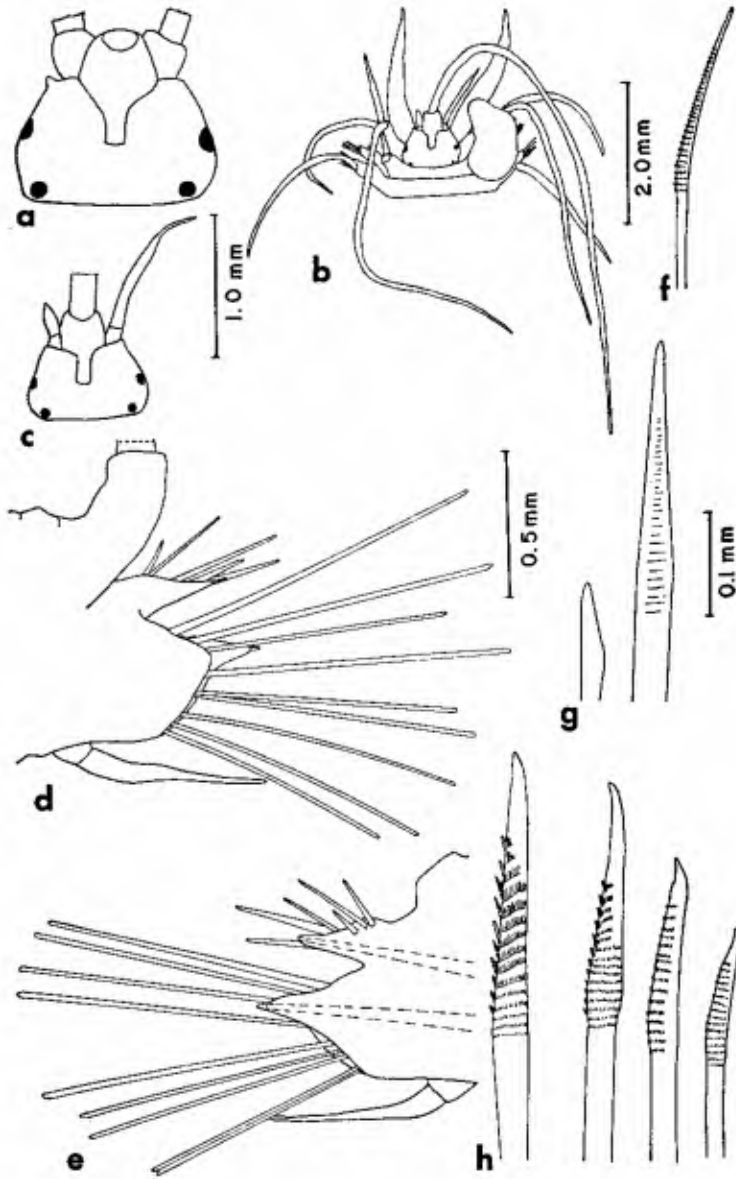
Deep Freeze II, USS *Northwind*, McMurdo Sound, Antarctica, J. Q. Tierney, collector, Station 5, 77° 51' S, 166° 37' E, March 11, 1957—1 specimen.

Deep Freeze IV, USS *Edisto*, Weddell Sea, Antarctica, J. Tyler, collector: Sta. ED-16, west of Cape Norwegia, 71° 45' S, 15° 36' W, 1271 meters, January 23, 1959—5 specimens. Sta. ED-18, 71° 40' S, 15° 35' W, 1554 meters, January 25, 1959—6 specimens. Sta. ED-20, off Duke Ernst Bay, 77° 40' S, 30° W, 384 meters, January 28, 1959—1 specimen. Sta. ED-21, 77° 40' S, 35° 30' W, 411 meters, January 30, 1959—1 specimen.

Deep Freeze IV, USS *Edisto*, Palmer Peninsula, J. Tyler, collector: Sta. ED-28, Victor Hugo Island, 65° 08' S, 66° 04' W, 133 meters,

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FIG. 1. *Polyeunoa laevis* (a, Paratype, USNM 4834; b-h, USNM 35302): a, Prostomium, dorsal view; cephalic peak developed on left side, absent on right side; b, anterior end, dorsal view; left antenna regenerating; left elytron missing; c, prostomium of same, dorsal view; d, cirrigerous parapodium, posterior view; only base of dorsal cirrus shown; e, elytrigerous parapodium, anterior view; elytron removed; f, neuroseta from segment II; g, short and longer notosetae; h, upper, middle and lower neurosetae.



March 22, 1959—1 specimen. Sta. ED-31, Nansen Island, 66° 20' S, 67° 47' W, 325 meters, March 24, 1959—4 specimens. Sta. ED-34, west coast Palmer Peninsula, 66° 09' S, 67° 53' W, 410 meters, April 1, 1959—1 specimen. Sta. ED-35, Nansen Island, 65° 58' S, 66° 51' W, 154 meters, April 4, 1959—8 specimens (USNM 35293-35304).

Description: As in generic diagnosis. One syntype of 66 segments has 16 pairs of elytra, the extra pair located on segment 45. Another incomplete syntype of 59 segments has an extra pair of elytra on segment 38. Another syntype of 75 segments has 3 extra pairs of elytra on segments 36, 54, and 59. The styles of the median antenna and upper tentacular cirri are very long; those of the lateral antennae are short. Eyes are variable in size, from moderate to rather large, the anterior pair located on the middle and widest part of the prostomium. Notosetae are few to moderate in number, usually 5-6 (1-15). Neurosetae are moderate in number (about 12). The neurosetae of the buccal segment (II) are similar to those of the following segments, but more slender. The styles of the dorsal cirri are variable in length, some may be exceedingly long. The ventral cirri extend to the tips of the neuropodia. The pharynx has 9 pairs of papillae and 2 pairs of jaws. The pygidium has a pair of long anal cirri. Nephridial papillae begin on segment VI. The dorsal surface has 2 transverse ciliated bands per segment.

Distribution: Antarctic and Subantarctic. Moderate to deep. Associated with arborescent alcyonarians and gorgoneans.

Remarks: Bergström (1916), in a detailed study of numerous specimens of this species obtained by the Swedish South-polar Expedition, commented on the extreme variability in number and arrangement of the elytra in the posterior regions (posterior to segment 32).

It is to be noted that *Polyeunoa* McIntosh, emended Bergström, was incorrectly defined by Berkeley and Berkeley (1948) and Pettibone (1953) when used to include *Polynoe tuta* Grube. This species is herein referred to *Grubeopolynoe* new genus (see below). Day (1967) included in *Polyeunoa*, *P. laevis* and *Polynoe nigropunctata* Horst. The latter species is herein referred to *Hololepidella*, as has been done by Day (1957) (see below).

***Polyeunoa flynni* (Benham) new combination**

Hololepidella flynni Benham, 1921, p. 33, pl. 5, figs. 14-20.—Hartman, 1959, p. 81.

Remarks: The types of *H. flynni* from off Tasmania, collected in 2377 meters, were not available for study. According to Benham, the elytra were arranged on segments 2, 4, 5, 7 . . . 23, 26, 29, 32, 35, 38, 41 (every third segment), 42, followed by an irregular arrangement of elytra and dorsal cirri, including alternate segments and 2 or 3 consecutive segments; some may be asymmetrical.

Polyeunoa dubia Hartmann-Schröder

Polyeunoë [sic] *dubia* Hartmann-Schröder, 1965, p. 69, figs. 13-17.

Remarks: *P. dubia*, described from specimens from Chile in 170 and 190 meters, appears to be close to *P. laevis*. The elytra were reported on alternate segments from 34 on, with some irregularity in more posterior segments.

Genus *Hololepidella* Willey, 1905

Type-species: *H. commensalis* Willey, 1905, by monotypy. Gender: feminine.

Diagnosis: Body rather short, flattened, tapering posteriorly, segments up to 55 or more. Elytra up to 26 or more pairs, on segments 2, 4, 5, 7, alternate segments to 23, 26, 29, 31, 34, alternate segments to end of body (may be some irregularity in posterior region). Elytra delicate, smooth or with scattered microtubercles, without fringes of papillae. Prostomium bilobed, with lobes subtriangular anteriorly, without distinct cephalic peaks, with 2 palps and 3 antennae. Ceratophore of median antenna in anterior notch of prostomium; lateral antennae with distinct ceratophores, inserted ventrally below level of median antenna. Tentacular segment (I) with 2 pairs tentacular cirri, without setae; without conical facial tubercle. Buccal segment (II) with longer ventral buccal cirri; without nuchal fold. Parapodia subbiramous. Notopodia with well-developed digitiform acicular lobes; notosetae as stout as or stouter than neurosetae, nearly smooth, with few widely separated spines, tapering to blunt tips. Neuropodia with prominent subtriangular presetal acicular lobes and shorter rounded postsetal lobes; neurosetae with longer to shorter spinous regions, with tips entire or bifid. Dorsal cirri with cylindrical cirrophores. Dorsal tubercles nodular. Ventral cirri subulate. Nephridial papillae short, cylindrical.

Hololepidella commensalis Willey

Hololepidella commensalis Willey, 1905, p. 251, pl. 1, figs. 17-20.—Hartman, 1959, p. 81.

Remarks: The type-specimen of *H. commensalis* Willey from Ceylon, taken in 20 to 36 meters from the echinoid *Clypeaster humilis*, apparently no longer exists; at least it is not present either in the British Museum (Natural History) (R. Sims, in litt.) or in the University of Liverpool (R. J. Pumphrey, in litt.). Willey indicated that the incomplete anterior fragment of 46 segments had 20 symmetrical pairs of elytra, arranged as indicated in the generic diagnosis; an additional pair of elytra were located on segments 44 (left side) and 45 (right side); a posterior fragment had the elytra and dorsal cirri irregularly alternating. The tips of the neurosetae were indicated as entire, thus differing from *H. nigropunctata* (Horst).

The record of *H. commensalis* by Augener (1922), based on 2 specimens from N. W. Australia on the echinoid *Peronella lesueurii*, is considered doubtful, since the subacicular neurosetae were indicated as having bifid tips. The arrangement of the elytra was not indicated.

The record of *H. commensalis* by Fauvel (1932), based on 2 speci-

mens from Mergui, is considered doubtful, since the subacicular neurosetae were stated to have a faint subterminal spur. Here again, the arrangement of the elytra was not indicated.

***Hololepidella venosa* (Grube) new combination**

Polynoe venosa Grube, 1878, p. 43, pl. 3, fig. 6.—Hartman, 1959, p. 107.

Remarks: Willey (1905, p. 251) indicated that his species, *Hololepidella commensalis*, was close to *Polynoe venosa* from the Philippine Islands. The latter species agrees with *Hololepidella* in the arrangement of the elytra, at least for the anterior 18 pairs. The type-specimen apparently no longer exists; at least it is not present either in the Zoological Museum Hamburg (G. Hartmann-Schröder, in litt.) or in the Zoological Museum Berlin (C. Hartwich, in litt.).

***Hololepidella nigropunctata* (Horst)**

Fig. 2

Polynoe nigropunctata Horst, 1915, p. 20; 1917, p. 104, pl. 21, figs. 15-17.

Hololepidella nigropunctata.—Day, 1957, p. 65, fig. 1, a-f.—Devaney, 1967, p. 287, figs. 1-5.

Polyeunoa nigropunctata.—Day, 1967, p. 54, fig. 1.5, r-u.

Material examined: Reef at Ambon anchorage, East Indies—Holotype (ZMA 1162). Waikiki, Oahu, Hawaii, 2 meters, ectocommensal on the ophiuroid, *Ophiocoma dentata* Müller and Troschel, June 4, 1965, D. M. Devaney, collector—6 specimens (USNM 33620, 33621).

Description: As in generic diagnosis. The maximum number of segments reported is 55, with 26 pairs of elytra. The elytra are moderately imbricated and cover the dorsum; they are smooth except for some microtubercles on anterior part. The prostomial eyes are moderate in size, the anterior pair located in the region of greatest prostomial width. The notosetae are slightly curved with widely spaced spines along curved edge (8-14 spines). The upper neurosetae are more slender, with longer spinous regions and slightly bifid tips; the middle neurosetae have distinctly bifid tips, the lower neurosetae have shorter spinous regions and slightly falcate entire or indistinctly bifid tips. The dorsal cirri are rather long and tapered; the ventral cirri are short, not extending beyond the tips of the neuropodia. The pharynx has 9 pairs of papillae and 2 pairs of jaws. The pygidium bears a pair of long anal cirri. Nephridial papillae begin on segment VII. The dorsal surface has 2 transverse dorsal ciliated bands per segment.

Distribution: East Indies, East Africa (Inhaca Island), Central Pacific (Hawaii, Johnston Island, Eniwetok). Intertidal and dredged. Commensal with echinoderms (ophiuroids, asteroids).

***Neohololepidella* new genus**

Type-species: *N. murrayi* new species. Gender: feminine.

Diagnosis: Body elongate, flattened, subrectangular, segments up to

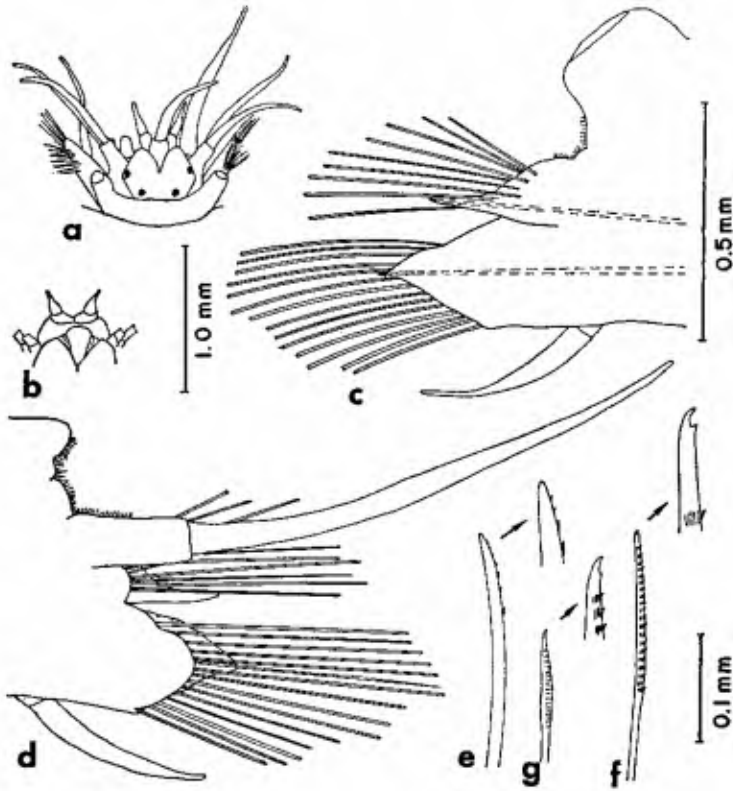


FIG. 2. *Hololeptidella nigropunctata* (USNM 33620): a, Anterior end, dorsal view; stub of left palp only present; elytra missing; b, anterior end, prostomium and upper lip, ventral view; c, elytrigerous parapodium, anterior view; elytron missing; d, cirriferous parapodium, posterior view; e, notoseta; f, middle neuroseta; g, lower neuroseta.

100 or more. Elytra up to 50 or more pairs, on segments 2, 4, 5, 7, alternate segments to 23, 26, 29, 32, 34, alternate segments to end of body. Elytra easily detached. Prostomium bilobed, without distinct cephalic peaks, with 2 pair palps and 3 antennae. Median antenna with ceratophore in anterior notch of prostomium; lateral antennae with distinct ceratophores, inserted ventral to median antenna. Tentacular segment (I) with 2 pairs tentacular cirri, with few setae; with bulbous facial tubercle. Buccal segment (II) with longer ventral buccal cirri; without dorsal nuchal fold. Parapodia subbiramous. Notopodia with projecting digitiform acicular lobes; notosetae numerous, thicker than neurosetae, nearly smooth, tapering to blunt tips. Neuropodia with long

subtriangular presetal acicular lobes and shorter rounded postsetal lobes; neurosetae numerous, with numerous spinous rows, with very short bare tips, slightly bifid and entire. Dorsal cirri with cylindrical cirrophores. Dorsal tubercles nodular. Ventral cirri subulate. Nephridial papillae short, cylindrical.

Neohololepidella murrayi new species

Fig. 3

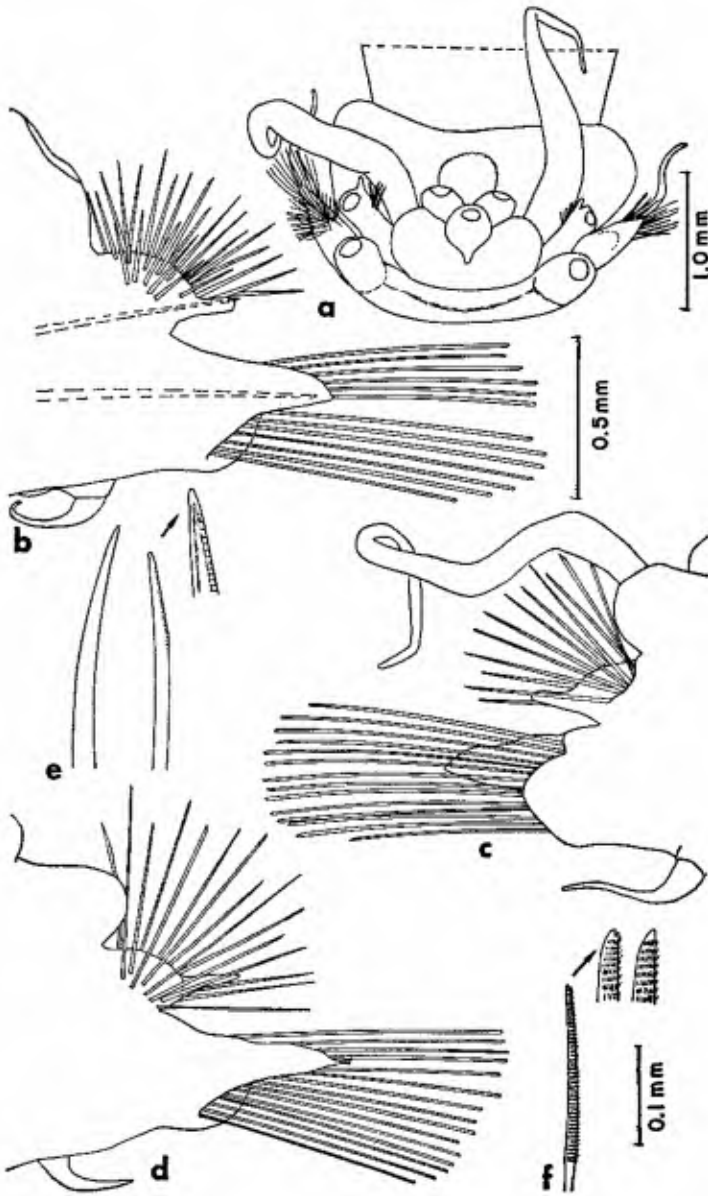
Hololepidella commensalis.—Monro, 1937, p. 259. Not *Hololepidella commensalis* Willey, 1905.

Material examined: The John Murray Expedition, station 152, Maldives, 609–915 meters, from central cavity of calcareous sponge—Holotype (BMNH 1937: 9: 2: 29).

Description: As in generic diagnosis. The holotype consists of 102 segments, incomplete posteriorly; it is 40 mm in length, 3 mm in width, including parapodia, and 5 mm in width, including setae. The styles of the antennae, tentacular cirri, most of the dorsal cirri, and all of the elytra are missing. The elytra, as indicated by the elytriphores, consist of 50 symmetrical pairs (for 102 incomplete segments). No eyes are visible on the prostomium (perhaps faded). The cirrophores of the tentacular segment (I) have a digitiform acicular lobe and 4 setae. Both the noto- and neuropodia have projecting acicular lobes, those of the notopodia being digitiform and subsetal in position, those of the neuropodia being subtriangular and presetal in position; the presetal lobes end bluntly in more anterior segments (fig. 3, b, c); they have a slender appendage in the middle and posterior segments (fig. 3, d). The notosetae are numerous, forming spreading bundles; they are stouter than the neurosetae, nearly smooth, with only faint spinous rows on one side near the blunt tip. The neurosetae are numerous, subequal in size, tapering to blunt tips; the lower ones have the tips entire, the rest have minutely bifid tips; the spinous rows extend nearly to the tips. The extended pharynx has 9 pairs of papillae and 2 pairs of chitinous jaws. The body has ciliated transverse dorsal bands between the elytriphores and dorsal tubercles, 2 per segment. The nephridial papillae are small and turned dorsally between the parapodia, making it difficult to determine on which segment they begin.

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FIG. 3. *Neohololepidella murrayi* (Holotype, BMNH 1937: 9: 2: 29): a, Anterior end, dorsal view; styles of antennae and tentacular cirri, elytra, and notopodia of segment II missing; only base of extended pharynx shown; b, elytrigerous parapodium from anterior region of body, anterior view; elytron missing; c, cirriferous parapodium from anterior region, posterior view; d, cirriferous parapodium from middle region of body, anterior view; style of dorsal cirrus missing; e, notosetae from same; f, neuroseta from same.



Distribution: Central Pacific (Maldives). In 609 to 915 meters. Associated with calcareous sponge.

***Parahololepidella* new genus**

Type-species: *Hololepidella greeffi* Augener, 1918. Gender: feminine.

Diagnosis: Body long, slender, flattened, with sides nearly parallel, tapered posteriorly, with numerous segments (up to 140 or more). Elytra numerous pairs, on segments 2, 4, 5, 7, alternate segments to 23, 26, 29, 32, 33, 35, alternate segments to end of body (may be some irregularity in posterior region). Elytra very small, smooth, leaving middorsum and parapodia uncovered. Prostomium bilobed, subtriangular anteriorly, with or without distinct cephalic peaks, with 2 palps and 3 antennae. Ceratophore of median antenna in anterior notch; ceratophores of lateral antennae distinct, inserted ventrally. Tentacular segment (1) with 2 pairs tentacular cirri, with single seta; with conical facial tubercle. Buccal segment (II) with long ventral buccal cirri; without nuchal fold. Parapodia subbiramous. Notopodia small, conical; notosetae short, stout (not as stout as neurosetae), tapering to blunt tips. Neuropodia with longer rounded presetal lobes bearing subacicular digitiform processes and shorter rounded postsetal lobes; neurosetae stout, with faint spinous regions, and slightly hooked, entire tips. Dorsal cirri with cylindrical cirrophores, bulbous basally. Dorsal tubercles inconspicuous. Ventral cirri tapering. Nephridial papillae short, bulbous.

***Parahololepidella greeffi* (Augener) new combination**

Fig. 4

Hololepidella greeffi Augener, 1918, p. 148, pl. 2, figs. 22-24, pl. 3, fig. 52, text-fig. 9.—Hartman, 1959, p. 81.—Rullier, 1964, p. 130, fig. 3.

Hololepidella fagei Rullier, 1964, p. 132, fig. 4.—Hartman, 1965, p. 9.

Material examined: Ilha das Rolas, Ilha São Thomé, Gulf of Guinea, West Africa, R. Greeff, collector—4 Syntypes (ZMH 5692).

Description: As in generic diagnosis. The 4 syntypes consist of one nearly complete specimen of 136 segments, 3 anterior fragments of 26, 19, and 17 segments, and a middle and a posterior fragment. They are rather hard and shrunken. The elytra are remarkable for their small size and are located on segments 2, 4, 5, 7, alternate segments to 23, 26, 29, 32, 33, 35 (not on segments 28, 31, 32, 34, 35, as indicated by Augener); from segments 35 to 85, they occur on alternate segments, followed by dorsal cirri on segments 86 and 87 and elytra on segment 88, alternating to end of body (segment 136). The posterior fragment has some asymmetrical segments with an elytron and dorsal cirrus on the same segment. The prostomium has distinct cephalic peaks and 2 pairs of large eyes. Notosetae are few in number (1-5), nearly smooth, with only faint spinous rows. The neurosetae are stouter than the notosetae, few in number (about 7), with faint spinous rows. The styles of the dorsal cirri are long, filiform. The pharynx was not extended and was not examined.

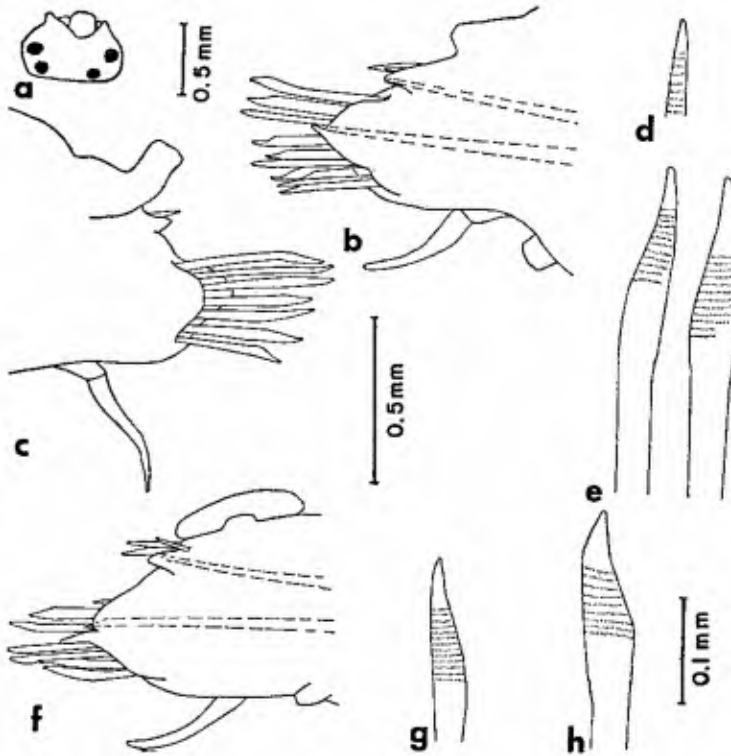


FIG. 4. *Parahololepidella greeffi* (Syntype, ZMH 5692): a, Prostomium, dorsal view; styles of all appendages missing; b, elytrigerous parapodium from middle region of body, anterior view; elytron missing; c, cirriferous parapodium from middle region of body, posterior view; style of dorsal cirrus missing; d, notoseta from same; e, upper and middle neurosetae from same; f, elytrigerous parapodium from posterior region of body, anterior view; g, notoseta from same; h, upper neuroseta from same.

The nephridial papillae begin on segment VI. The surface of the elytra and body are covered with scattered angular extraneous particles.

Distribution: West Africa (Gulf of Guinea), Cape Verde Islands.

Remarks: *Hololepidella fagei* Rullier (1964) appears to be just a young specimen of *H. greeffi*. Rullier reported specimens of *H. greeffi* occupying white mucous tubes, incrustated with sand grains and fragments of shells. Perhaps the tubes were formed by some commensal host. When comparing *H. fagei* with other polynoid species, Rullier (1964, p. 134) confused *Hololepidella* Willey with *Hololepida* Moore, which are very different genera.

Grubeopolynoe new genus

Type-species: Polynoe tuta Grube, 1855. Gender: feminine.

Diagnosis: Body long, flattened, tapering gradually posteriorly, with numerous segments (up to 100). Elytra numerous pairs (up to 50 or more), on segments 2, 4, 5, 7, alternate segments to 23, 26, 29, 32, 35, 36, 39, 40, continuing to end of body with two pairs elytra alternating with two pairs dorsal cirri; usually with some irregularity on segments of posterior region. Elytra large, nearly covering dorsum, smooth, without fringes of papillae or tubercles. Prostomium bilobed, without distinct cephalic peaks, with 2 palps and 3 antennae. Median antenna with ceratophore in anterior notch of prostomium; lateral antennae with distinct ceratophores, inserted ventrally. Tentacular segment (I) with 2 pairs tentacular cirri, with single seta or seta lacking; without facial tubercle. Buccal segment (II) with long ventral buccal cirri; without nuchal fold. Parapodia subbiramous. Notopodia with short digitiform acicular lobes; notosetae more slender than neurosetae, of 2 types: shorter, stouter, tapering to blunt tips; longer, more slender, tapering to slender tips. Neuropodia with diagonally truncate presetal lobes, forming longer supra-acicular lips and shorter rounded postsetal lobes; neurosetae all similar except upper ones with longer spinous regions; tips entire or with very slender secondary tooth or slight indication of one. Neurosetae of segment II different from those following, slender, tapering to slender tips; some may be bidentate. Dorsal cirri with cylindrical cirrophores, bulbous basally. Dorsal tubercles bulbous. Ventral cirri subulate. Nephridial papillae rather long, cylindrical.

Remarks: The diagnosis of *Hololepidella* Willey, as given by Annenkova (1937, p. 147) and Uschakov (1955, p. 135) to include *Polynoe tuta* Grube, applies rather to *Grubeopolynoe*. The same is true for the diagnosis of *Polyeunoa* McIntosh, emended Bergström, as given by Pettibone (1953, p. 54).

***Grubeopolynoe tuta* (Grube) new combination**

Figs. 5, 6

Polynoe tuta Grube, 1855, p. 82.

Harmothoe tuta.—Johnson, 1901, p. 394, pl. 2, figs. 18, 19, pl. 3, figs. 20–22.

Hololepidella tutta [sic].—Annenkova, 1937, p. 147, pl. 3, figs. 15, 16.

Hololepidella tuta.—Hartman, 1948, p. 13; 1959, pp. 81, 106.—Uschakov, 1955, p. 136, fig. 25.

Polyeunoa tuta.—Berkeley and Berkeley, 1948, p. 19.—Pettibone, 1953, p. 54, pl. 27.

Material examined: Sitka, Alaska, Dr. Bock, collector—Holotype (ZMB 1152).

Alaska Salmon Investigation, 1903, Karluk, Alaska—1 specimen (USNM 18140). Alaska King Crab Investigation, Station D 3–41, Castle Bay, off Chignik Bay, 38–95 meters, June 24, 1941—1 specimen (USNM 21380).

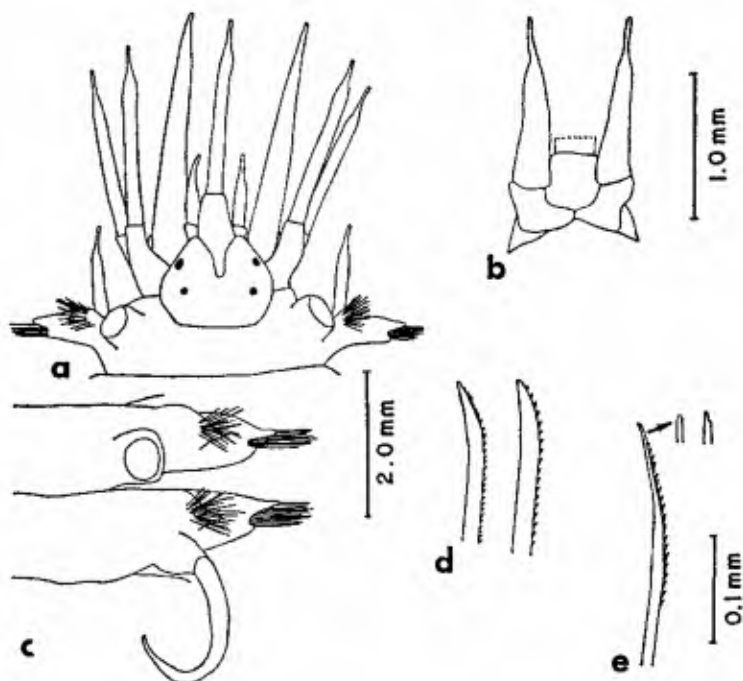


FIG. 5. *Grubeopolynoe tuta* (USNM 25233): a, Anterior end, dorsal view, elytra removed; b, prostomium, ventral view; c, two parapodia from middle region of body, dorsal view, elytron removed; d, noto-setae from segment II; e, neuroseta from segment II.

Gulf of Georgia, Halibut Bank, British Columbia, *Albatross* stations 4193 and 4197, 33–164 meters, 1903—2 specimens (USNM 5737, 5738). British Columbia, Mudge and Protection Islands, E. and C. Berkeley, collectors—30 specimens (USNM 35601–35603).

Washington, M. Pettibone, collector: Brown Island, Olga on Orcas Island, Shaw Island, San Juan Archipelago, shore. South John's Island, 25–46 meters. Off Foulweather Bluff, Puget Sound, 46–55 meters. Edmonds, Meadowdale, Ballard, West Seattle (Alki Point), Puget Sound, shore—50 specimens (USNM 25222–25233, 32319).

Description: As in generic diagnosis. The type-specimen consists of an anterior fragment of 45 segments and a posterior fragment of 81 segments. The elytra are distributed as indicated in the generic diagnosis; they are all symmetrically arranged, with 2 pairs of elytra alternating with 2 pairs of dorsal cirri from setiger 35 on, except for an irregularity occurring on segments 59 and 60 where only one pair of elytra occurs, instead of 2 consecutive pairs. On most of the other specimens examined,

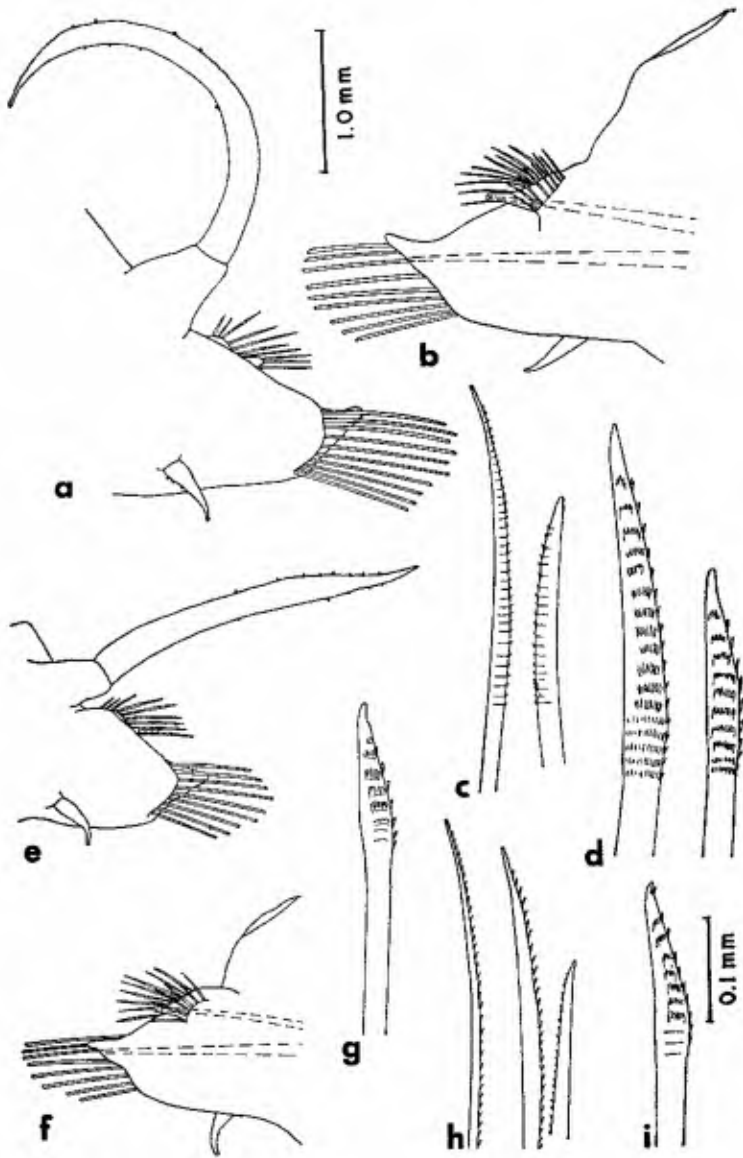


FIG. 6. *Grubeopolynoe tuta* (a-g, USNM 25233; h-i, USNM 25231): a, Cirriferous parapodium from middle region of body, posterior view; b, elytrigerous parapodium from middle region, anterior view, elytron removed; c, notosetae from same; d, upper and middle

there is some departure from this general pattern, beginning usually on segments 35 to 40, but occasionally from segments 29 to 63. This irregularity consists of asymmetry—an elytron and cirrus on the same segment, as well as up to 4 consecutive elytra or dorsal cirri. The notosetae form radiating bundles and are moderate in number (about 30). The neurosetae are also moderate in number (about 30), stouter than the notosetae, with short to longer spinous regions; the tips are nearly straight or slightly falcate, entire or they may have a delicate secondary tooth. The neurosetae of the buccal segment (II) differ from those following; they are more slender, tapering to slender tips, which may be entire or bifid (fig. 5, e). The styles of the dorsal cirri taper gradually to fine tips, with few scattered minute papillae. The pharynx has 9 pairs of papillae and 2 pairs of jaws. The nephridial papillae begin on segment VI; on the large specimens, they are extra long and may be equal in length to or longer than the ventral cirri. They are found intertidally, living commensally with the terebellids *Thelepus crispus* Johnson and *Amphitrite robusta* Johnson. The dredged forms are characteristically smaller and the notosetae may be more slender (fig. 6, h).

Distribution: North Pacific—Alaska to Oregon, North Japan Sea. Intertidal to 384 meters. Associated with other polychaetes (terebellids).

Grubeopolynoë semenovi (Annenkova) new combination

Hololepidella semenovi Annenkova, 1937, p. 148, pl. 3, figs. 17–19.—
Uschakov, 1955, p. 137, fig. 26.—Hartman, 1959, p. 81.

Distribution: North Japan Sea, in 170 to 210 meters. Associated with other polychaetes (ampharetids).

KEY TO THE GENERA FORMERLY REFERRED TO
Polyeunoa McINTOSH AND *HOLELEPIDELLA* WILLEY

1. Neuropodia with prominent subtriangular presetal acicular lobes and shorter rounded postsetal lobes. Notopodia with prominent acicular lobes. Notosetae as stout as or stouter than neurosetae, nearly smooth, tapering to blunt tips. [Neurosetae with longer to shorter spinous regions, with tips entire or bifid] 2
- 1'. Neuropodia without subtriangular presetal acicular lobes. Notopodia short, conical. Notosetae more slender than neurosetae. [Body elongate, with numerous segments (up to 100 or more)] 4
2. Body rather short (up to 55 or more segments). First 15 pairs of elytra arranged on segments 2, 4, 5, 7, alternate segments to 23, 26,

←

neurosetae from same; e, cirriferous parapodium from posterior region of body, posterior view; f, elytriferous parapodium from posterior region, anterior view; g, middle neuroseta from same, showing slight indication of secondary tooth; h, notosetae from middle parapodium of dredged specimen; i, neuroseta from same, with delicate secondary tooth.

- 29, 31, then on segments 34, 36, and alternate segments to end of body. [Neurosetae with long bare tips. Dorsal tubercles nodular] *Hololepidella* Willey
- 2'. Body elongate, with numerous segments (up to 100 or more). First 15 pairs of elytra arranged on segments 2, 4, 5, 7, alternate segments to 23, 26, 29, 32 3
3. With or without some additional elytra irregularly distributed posterior to segment 32, leaving most of posterior region uncovered. Neurosetae with long bare tips. Dorsal tubercles inconspicuous.....
..... *Polyeunoa* McIntosh
- 3'. Numerous pairs elytra arranged on segments 34 and alternate segments to end of body. Neurosetae with very short bare tips. Dorsal tubercles nodular *Neohololepidella* new genus
4. Elytra arranged on segments 35, 36, 39, 40, then continuing with 2 consecutive elytra alternating with 2 consecutive dorsal cirri (usually with some irregularity in posterior segments). Elytra large, nearly covering dorsum. Neuropodia with presetal lobes longer, diagonally truncate, forming longer supra-acicular lips and shorter rounded postsetal lobes. Notozetae moderate in number, spinous, of 2 types: shorter, stouter, curved, tapering to blunt tips and longer, more slender, tapering to slender tips. Neurosetae with distinct spinous regions, tips entire or with slender secondary tooth. Dorsal tubercles conical *Grubeopolynoe* new genus
- 4'. Elytra arranged on segments 33, 35, then continuing on alternate segments to end of body. Elytra very small, leaving middorsum and parapodia uncovered. Neuropodia with presetal lobes longer, rounded, with subacicular digitiform processes and short, rounded postsetal lobes. Notozetae few in number (1-5), all similar, short, stout, with faint spinous rows, tapering to blunt tips. Neurosetae with faint spinous rows and slightly hooked entire tips. Dorsal tubercles inconspicuous *Parahololepidella* new genus

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