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A PRELIMINARY STUDY OF SIGALIONIDAE (ANNELIDA: POLYCHAETA) FROM THE ANDAMAN SEA OFF SOUTHWESTERN THAILAND, WITH AN OVERVIEW OF PRESENTLY RECOGNIZED GENERA

Charatsee Aungtonya

Phuket Marine Biological Center, P.O. Box 60, Phuket 83000, Thailand (charatsee@hotmail.com)

ABSTRACT

Sigalionids have proven to be especially common in soft sediments and are an important component of the polychaetes collected during the Thai–Danish BIOSHELF surveys in the Andaman Sea off southwestern Thailand, in 1996–2000. Twenty-one genera of the Sigalionidae are recognized in this paper. Thirteen species representing 12 genera have presently been recorded from the BIOSHELF materials. Of these, 9 species representing 9 genera are included in this interim report. Only one of these species, *Sthenelanella* cf. *uniformis*, has previously been recorded from the southwest coast of Thailand. *Euthalenessa festiva*, *Willeysthenelais horsti*, *Fimbriosthenelais longipinnis*, *Labiosthenolepis* cf. *sibogae*, *Labioleanira* cf. *tentaculata*, *Ehlersileanira incisa*, *Leanira* cf. *coeca*, and *Sigalion* sp. A are new distribution records for the area. An overview of the genera of Sigalionidae known to date, including a key to the genera and definitions of each genus, is included.

INTRODUCTION

Sigalionids are carnivores, belonging to the large group of polychaetes commonly called scale worms. Sigalionid polychaetes have been found ranging from the intertidal zone to the deep sea, at depths of 4000 m, on soft as well as rocky bottoms and as a group they have a worldwide distribution. Substantial scientific treatments of the Sigalionidae have previously been published by, *e.g.*, Willey (1905) for Ceylon, Fauvel (1953) for the coasts of India and the neighboring seas, Uschakov (1965) for the Far Eastern Seas of the U.S.S.R., Gallardo (1968) for South Viet Nam, Day (1967) for Southern Africa, Wolf (1984) for the Gulf of Mexico, Hartman (1939, 1961, 1968) and Blake (1996) for California, and Imajima (1997) for Central Japan.

Taxonomic studies of sigalionid species from the Andaman Sea are scattered and inadequate. Only one species, *Sthenolepis japonica* (McIntosh, 1885) (as *Leanira),* was recorded in a list of polychaetes from the Andaman Islands group, India (Tampi and Rangarajan 1964).

The most important previous collection of sigalionids from the Thai part of the Andaman Sea was undertaken by the 1966 5th Thai–Danish Expedition and reported on by Phasuk (1992) in a list of the polychaetes collected. He listed 11 species of sigalionids in 6 genera, with additional unidentified species. However, not all sigalionid specimens were deposited in the Reference Collection of Phuket Marine Biological Center (PMBC). The total of 58 accession numbers of sigalionids from the survey contains only 9 species belonging to 6 genera. The names recorded by Phasuk were: *Sigalion capense* Day, 1960, *Thalenessa lewisii* (Berkeley and Berkeley, 1939), *Thalenessa* sp. A, *Sthenelanella uniformis* Moore, 1910, *Sthenelais articulata* Kinberg, 1856, *S. orientalis* Potts, 1910, *S. zeylanica* Willey, 1905, *Sthenolepis yhlenis* (Malmgren, 1867), *Sthenolepis* spp., *Psammolyce antipoda* (Schmarda, 1861), and *P. malayana* Horst, 1913. Specimens labeled as unidentified species and the rest, which was kept in Phasuk's private collection, were considered to represent new species or new taxa and were to be

described later on by Phasuk. However, he retired several years ago. All sigalionid specimens from the 5th Thai–Danish Expedition will subsequently be studied and included in a future revision of sigalionids from the area.

The aims of this interim study are to investigate and provisionally describe and illustrate the sigalionid species found during the Thai–Danish BIOSHELF surveys in the Andaman Sea off southwestern Thailand and to provide a dichotomous key for the practical sorting of sigalionid genera.

MATERIALS AND METHODS

The polychaete worms reported in this study were primarily collected by the R/V 'Chakratong Tongyai' during the Thai–Danish BIOSHELF project field surveys off southwestern Thailand, in the Andaman Sea, during the years 1996–2000. Details on how material was collected and treated during the BIOSHELF surveys are provided in Aungtonya *et al.* (2000).

Sigalionid material from 1996–1997 was sorted out during the International Workshop on the Thai–Danish BIOSHELF Polychaetes, held at the PMBC Reference Collection in 1997, while specimens from 1999 were sorted out in 2000. However, many sigalionid specimens are in poor condition, being damaged or fragmentary, and having lost all their elytra. These animals could only be identified to family or genus. A large collection of BIOSHELF polychaetes from 1998 and 2000 is presently being sorted. Some sigalionids from those years are also treated in this interim report.

In order to see morphological details on undissected specimens under the microscope, the specimens were stained with Shirlastain. Examinations were carried out using a Nikon SMZ-U stereo microscope (maximum magnification 75 x), and a Nikon E600 compound microscope (maximum magnification 1000 x). Body width was measured at about segment 10–15. Maximum number of segments was observed on all species. Parapodia and elytra for illustration were removed from the left side of the body only. Parapodia are figured in posterior and anterior view. Most illustrations of neurosetae are from same parapodia. Elytra are drawn in dorsal view.

At present, thirteen species representing 12 genera have been recorded from the BIOSHELF materials. Of these, 9 species representing 9 genera are included in this interim report. Additional specimens of three species were prepared for further examination using scanning electron microscopy (SEM).

Abbreviations used in the figures are: au, auricle; ct, ctenidium; dTc, dorsal tentacular cirrus; ItL, inner tentacular lobe; IpaS, inner palpal sheath; laL, labial lobe on lateral lip; lAn, lateral antenna; mAn, median antenna.

TAXONOMY

Overview of presently recognized genera of Sigalionidae

The Sigalionidae is a relatively species-rich family. According to Fauchald (1977), the Sigalionidae comprised 17 valid genera and 9 invalid genera, while Pettibone (1982) recognized 20 genera (with about 160 species) in the family, without providing a list of the genera.

The Sigalionidae has been partly revised in a number of recent papers (see Pettibone 1969, 1970a, 1970b, 1970c, 1971, 1992a, 1992b, 1997; Mackie and Chambers 1990). Twenty-one genera are recognized in this paper. A dichotomous key to these genera is presented herein. The key is a work in progress. Some of the characters mentioned in it are illustrated and explained in greater detail in another paper (Aungtonya, submitted). Following the key, the genera (including diagnoses) are treated in the order of their appearance in the key.

Family Sigalionidae (Kinberg, 1856)

Sigalionina Kinberg, 1856: 387.
Sigalionidae Malmgren, 1867: 139. – Pettibone 1992b: 2.

Type genus: *Sigalion* Audouin and Milne Edwards in Cuvier, 1830: 207.

Phuket Marine Biological Center Special Publication 24: 205–235 (2002)

Diagnosis: Body elongate and narrow, usually with numerous segments (up to 300). Elytra attached to knob-like elytrophores on segments 2, 4, 5, and 7, on alternate segments to 25 or 27, and then on every segment. Branchiae cirriform, attached to lateral sides of elytrophores or dorsal tubercles on all segments except a few anterior ones. Ciliated ctenidial pads between elytrophores/dorsal tubercles and notopodia. Neuropodia triangular to conical, usually surrounded by basal bracts, often with fringes of finger-like papillae or stylodes. Neurosetae compound spinigers and/or falcigers.

Key to world genera of Sigalionidae (Kinberg, 1856)

1. Two or three antennae, all located on prostomium; elytra with lateral fringes of branched papillae .. 2
– Three antennae, median antenna located on prostomium, lateral antennae fused to tentacular parapodia (segment I); fringing papillae of elytra, when present, without lateral branches 3

2. Two or three small antennae, without ceratophores; median antenna, if present, arises from dorsal surface of prostomium; lateral antennae emerge from anterior margin of prostomium .... *Sigalion* Audouin and Milne Edwards, 1830
– Three small antennae, with ceratophores, all emerging from anterior border of prostomium .... *Euthalenessa* Darboux, 1900

3. Ceratophore of median antenna with lateral auricles (Fig. 8A) 4
– Ceratophore of median antenna without lateral auricles, although small ctenidia may be present 13

4. Neurosetae chiefly of one kind, compound spinigers, most with blades typically short, sickle- or rod-shaped; parapodial stylodes absent; notopodial spinning glands may be present in middle body segments ..... *Sthenelanella* Moore, 1910
– Neurosetae include several types, some of which may be simple spinose capillaries, in addition to compound falcigers and/or spinigers with short and long blades; parapodial stylodes present; notopodial spinning glands absent 5

5. Compound neurosetae falcigers (in *Sthenelais* some spinigers may be present); tentacular parapodia with inner tentacular lobes 6
– Compound neurosetae spinigers (in *Horstileanira* some of the lower compound neurosetae of segments II and III may be falcigers); inner tentacular lobes may be present 8

6. Ventral cirri with long papillae on medial base; lateral lips of mouth without paired ctenidia .... *Willeysthenelais* Pettibone, 1971
– Ventral cirri without long papillae on medial base; lateral lips of mouth with paired ctenidia (Fig. 8B) 7

7. Parapodial stylodes papillated (Fig. 8C) ..... *Fimbriosthenelais* Pettibone, 1971
– Parapodial stylodes not papillated ..... *Sthenelais* Kinberg, 1856

8. Tentacular parapodia with inner tentacular lobes 9
– Tentacular parapodia without inner tentacular lobes 12

9. Segment III with long dorsal cirri; lateral antennae rather long ..... *Neoleanira* Pettibone, 1970
– Segment III without dorsal cirri; lateral antennae small, inconspicuous 10

10. Lateral lips of mouth with flattened or lobulate labial lobes (Figs. 10A, 12B); neuropodia with only one conical presetal acicular lobe ..... *Labiosthenolepis* Pettibone, 1992
– Lateral lips of mouth without labial lobes; neuropodia with one or two presetal bracts 11

11. Neuropodia with two presetal bracts ..... *Horstileanira* Pettibone, 1970
– Neuropodia with one conical presetal acicular lobe ..... *Sthenolepis* Willey, 1905

12. Median antenna with long style (Fig. 12A); lateral lips of mouth with fleshy or flat, plate-like labial lobes (Figs. 10A, 12B) ..... *Labioleanira* Pettibone, 1992
– Median antenna with short style; lateral lips of mouth without labial lobes .... *Ehlersileanira* Pettibone, 1970

13. Lateral antennae with ceratophores; elytral surface smooth ..... *Leanira* Kinberg, 1856
– Lateral antennae without ceratophores; elytra with lateral fringes of papillae, surfaces with short and long filiform papillae and adhesive papillae with flattened tops, more or less covered with sand grains and foreign material 14

14. Segment III with dorsal cirri 15
– Segment III without dorsal cirri 18

15. Neuropodia of segment II with long filiform appendages ..... *Claparedepelogenia* Pettibone, 1997
– Neuropodia of segment II without long appendages 16

16. Neuropodia of segment III with digitiform presetal extensions on acicular lobe; elytral and parapodial papillae clearly articulated; bulbous ctenidia on prostomium (not on ceratophore of median antenna) ..... *Heteropelogenia* Pettibone, 1997
– Neuropodia of segment III without digitiform extensions; elytral and parapodial papillae not articulated; without bulbous ctenidia on prostomium 17

17. Upper lip with large, bulbous facial tubercle with short stalk; ceratophore of median antenna with small lateral ctenidia ..... *Pottsipelogenia* Pettibone, 1997
– Upper lip without facial tubercle; ceratophore of median antenna without ctenidia .... *Pelogenia* Schmarda, 1861

18. Neuropodia of segment II with long appendages; neurosetae compound spinigers, blades tapered, with furcated tips ..... *Psammolyce* Kinberg, 1856
– Neuropodia of segment II without long appendages; neurosetae compound falcigers 19

19. Neuropodia of segment III with balloon-like lobes on distal tips; eyes absent .... *Hartmanipsammolyce* Pettibone, 1997
– Neuropodia of segment III without balloon-like lobes; eyes present 20

20. Upper lip with large bulbous facial tubercle with stalk; ceratophore of median antenna with small lateral ctenidia ..... *Dayipsammolyce* Pettibone, 1997
– Upper lip without facial tubercle; ceratophore of median antenna without ctenidia .... *Neopsammolyce* Pettibone, 1997

Phuket Marine Biological Center Special Publication 24: 205–235 (2002)

Sigalion Audouin and Milne Edwards, 1830

Sigalion Audouin and Milne Edwards in Cuvier, 1830: 207. – Audouin and Milne Edwards 1832: 438–441. – Mackie and Chambers 1990: 52–53.

Thalenessa Baird, 1866: 34. Type species: *Sigalion edwardsi* Kinberg, 1856: 387. – Mackie & Chambers 1990: 46–48, figs. 6–7.

Eusigalion Augener, 1918: 112–113. Type species: *Eusigalion vazensis* Augener, 1918: 113–118, pl. 2, fig. 14, pl. 3, figs. 44–46, textfig. 3 [= *Sigalion vazensis* (Augener, 1918). – Mackie and Chambers 1990: 48–50, fig. 9].

Type species: *Sigalion mathildae* Audouin and Milne Edwards in Cuvier, 1830: 207. – Audouin & Milne Edwards 1832: 441–443, pl. 9, figs. 1–10. – Mackie and Chambers 1990: 40–44, figs. 1–5.

Diagnosis: Prostomium subrectangular to subpentagonal, with raised dome-like posterior half, situated dorsally on segments 1 and 2. Two or three small antennae present; lateral antennae emerge from anterior margin of prostomium, without ceratophore; median antenna, when present, arises from dorsal surface of prostomium, without ceratophore or lateral auricles. Facial tubercle may be present on upper lip. Segment III with dorsal cirri but without dorsal tubercles. Elytra smooth, with lateral fringes of branched papillae on external margin. Notopodia with single presetal stylode, bracts absent. Neuropodia may have single superior presetal tubercle and up to 2 postsetal lobes, well-developed bracts absent. Several types of neurosetae may be present, *e.g.*, simple spinose capillaries, single-article falcigers, and multi-articulate falcigers; distal part of shaft spinose or smooth, may be hooked.

Remarks: *Thalenessa* Baird, 1866 and *Eusigalion* Augener, 1918 were shown to be junior synonyms of *Sigalion* Audouin and Milne Edwards, 1830 by Mackie and Chambers (1990) based on a revision of the type species of those genera. Several species of *Sigalion*, *e.g.*, *S. amboinensis* and *S. bandaensis*, are not yet known to possess a median antenna; however, this antenna might be very small or easily detached (Mackie and Chambers 1990).

Sigalion sp. A

Fig. 1A–G

Material examined: BIOSHELF st. A-3/BC, 9°30′ N, 97°38′ E, 82 m, 19 Apr 1996 (1, PMBC 15802).

Description: Body about 18 mm long and 2 mm wide including parapodia, with about 65 segments. Prostomium with two pairs of subdermal eyes. Median antenna smaller than lateral antennae, located on posterior half of prostomium. Upper lip with facial tubercle. Parapodia long throughout, notopodium of tentacular parapodia (segment I) shorter than neuropodium, but gradually increasing in length so as to extend distally beyond neuropodium (Fig. 1A–B) by about segment 6. Notosetae of median segments long, simple capillaries, curving slightly over dorsal surface of notopodium. Neurosetae of median segments include 4–6 simple, spinose capillaries (Fig. 1E) and 6–7 multiarticulate falcigers (Fig. 1D) in upper position, 30–40 multiarticulate falcigers (Fig. 1C) in lower position, and 2–3 elongate, single-article falcigers (Fig. 1F) in middle position. Shafts of all compound neurosetae smooth.

Elytra change in size and shape along the body. First and last pairs of elytra with few lateral fringes of papillae. Outer lateral margin of other elytra with fringe of stout papillae (Fig. 1G). Papillae pinnate with long slender pinnules on both sides. Additional pinnules occur on lower sections of fringe papilla. Last fringe papillae on each elytron followed by lateral row of pinnules.

Remarks: The present specimen has setal types and a distribution pattern of neurosetae which in general resemble those of *S. mathildae* as described and figured by Mackie and Chambers (1990), except that the shafts of most compound neurosetae are more or less spiny according to those authors. More or less spiny shafts are also found in *S. edwardsi* (Mackie and Chambers 1990), *S. spinosus* (Hartman 1939) and *S. squamosus* (Day 1960). The setae of the present specimen seem to resemble those of *Sigalion* sp. B as described by Mackie and Chambers (1990) in having smooth shaft heads, except that the latter species has 1 or 2 of the upper multiarticulate falcigers with a few coarse, subrostral spines.

The original description of the setae of *Sigalion lewisii* by Berkeley and Berkeley (1939) did not describe or figure the detailed morphology of the neurosetae. According to Berkeley and Berkeley, the setae of *S. lewisii* agree in general with those of *S. mathildae* (as described and figured in Fauvel 1923), except that all neurosetae have the ends of the shafts more or less spiny in the latter. Thus, the neurosetae of *S. lewisii* appear to resemble those of the species treated here.

However, the elytra of the present specimen do not seem to resemble those of *Sigalion lewisii* as described by Berkeley and Berkeley. The elytral fringe papillae of *S. lewisii* are more slender, with only 4 pinnules on each side, observed on a large specimen (4.5 mm wide). The present specimen has elytral characteristics in common with *S. mathildae* as described and figured by Mackie and Chambers (1990), except that additional pinnules occur in the mid-dorsal row of fringe papillae, and solitary short papillae occur on the posterior margin of the elytra (observed using SEM). Until more material is available for comparative study, it seems best to record the Thai species as *Sigalion* sp. A.

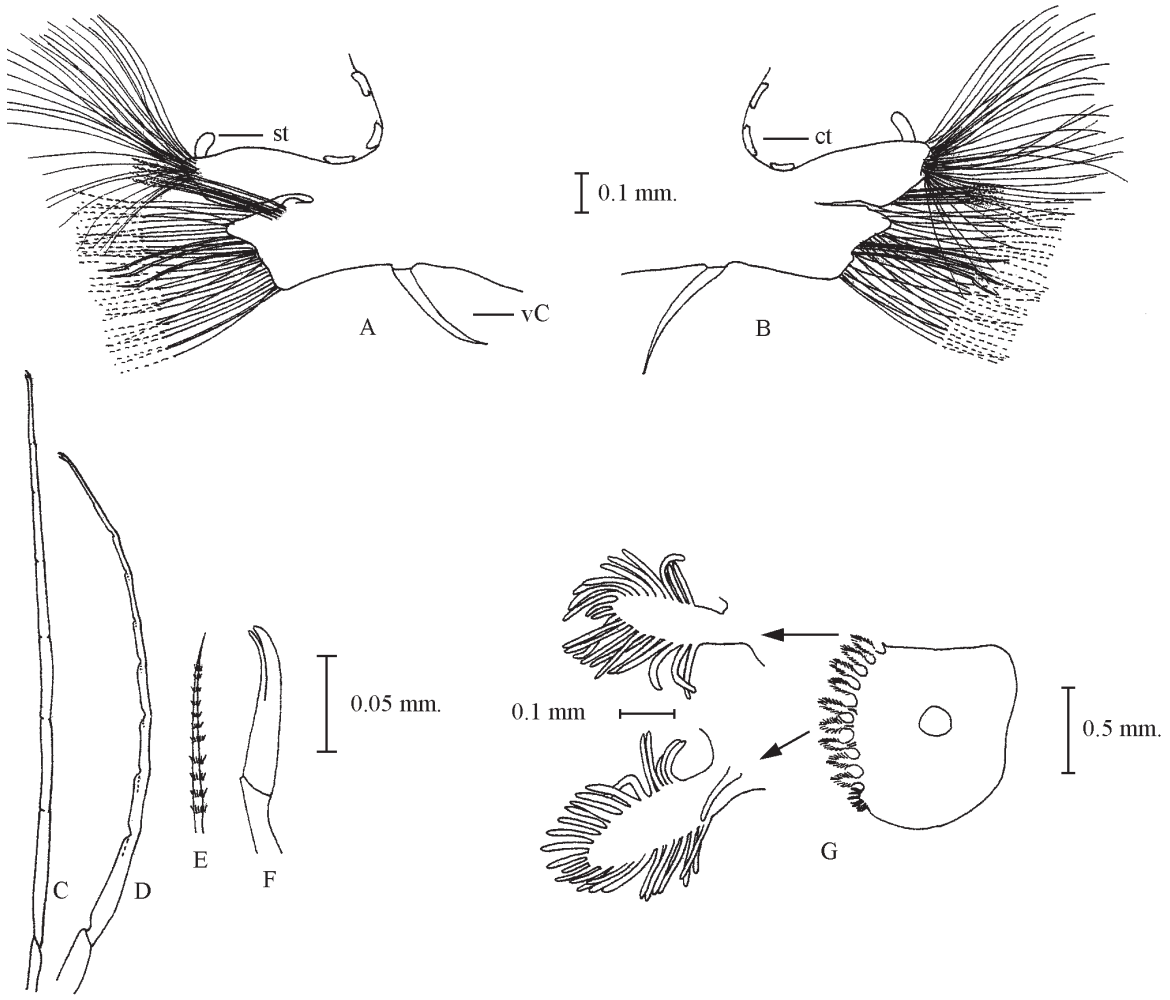

Figure 1 *Sigalion* sp. A, PMBC 15802: A. Parapodium of segment 23, posterior view, setae indicated. B. Anterior view of same. C–F. Neurosetae from same. G. Left elytron from segment 23, position of scar indicated, with enlargement of two pinnules showing details of branching pattern.

Phuket Marine Biological Center Special Publication 24: 205–235 (2002)

Euthalenessa **Darboux, 1900**

Euthalenessa Darboux, 1900: 114. – Pettibone, 1970a: 3.
Haswellia Darboux, 1900: 116. Type species: *Thalenessa microceras* Haswell, 1883: 294 [= *Euthalenessa festiva* (Grube, 1875). – Pettibone, 1970a: 12–19, figs. 6–11].

Type species: *Thalenessa digitata* McIntosh, 1885: 140–142, pl. 22, fig. 2, pl. 23, figs. 5–7, pl. 25, figs. 4–5, pl. 32A, fig. 7–10. [= *Euthalenessa digitata* (McIntosh, 1885). – Pettibone, 1970a: 19–23, figs. 12–13].

Diagnosis: Prostomium subcordiform in shape, anterior visible part appearing subrectangular and wider than long, posterior part covered dorsally by segments II and III. Three small antennae with ceratophores emerging from anterior border of prostomium, median antenna without lateral auricles. Inner longitudinal tentacular ridge or convex lamella extends dorsally on distal part of tentacular parapodium. Upper lip with bulbous facial tubercle, lateral lips usually with up to four pairs of small ctenidia. Segment III with dorsal cirri but without dorsal tubercles. Elytra smooth, with lateral fringe of branched papillae. Notopodia and neuropodia with well developed bracts. Notopodial bracts bilobed, provided with a few anterior and posterior stylodes. Neuropodia with C-shaped posterior bract (in cross section), with upper and lower ends; anterior lower bract overlaps posterior lower bract; anterior upper bract overlaps posterior upper bract. Several types of neurosetae may be present, *e.g.*, simple spinose capillaries, single-article falcigers, and multiarticulate falcigers; distal part of shaft spinose or smooth.

Remarks: *Haswellia* Darboux, 1900 was established for *Thalenessa microceras* Haswell, 1833. The type species was subsequently placed in the Polyodontidae (= Acoetidae) by Hartman (1959). *Euthalenessa* was revised by Pettibone (1970a), and the type species of *Haswellia* was referred to *E. festiva* (Grube, 1875). Some species previously referred to four other sigalionid genera, *Sigalion*, *Sthenelais*, *Leanira*, and *Thalenessa*, were also referred to *Euthalenessa*.

Euthalenessa festiva (Grube, 1875)
Figs. 2A–D, 3A–D

Leanira festiva Grube, 1875: 78; 1878: 56.
Thalenessa microceras Haswell, 1883: 294.
Thalenesssa oculata McIntosh, 1885: 142–144, pl. 21, figs, 1–2, pl. 23, fig. 12, pl. 25, fig. 3, pl. 13A, figs. 11–12.
Haswellia microceras. – Darboux, 1900: 116.
Euthalenessa digitata. – Augener 1927a: 124.
Euthalenessa oculata. – Okuda 1939: 226.
Thalenessa tropica Hartman, 1954: 228, fig. 1a–d. – Gallardo 1968: 53, pl. 6, figs. 7–12, pl. 7, figs. 1–5.
Euthalenessa festiva. – Pettibone 1970a: 12–19, figs. 6–11.

Material examined: BIOSHELF st. H-3/BC, 7°45´ N, 97°58´ E, 70 m, 9 May 1996 (1, PMBC 15803; 1, PMBC 15804).

Description: Body about 20 mm long and 2 mm wide including parapodia, with about 59 segments, specimen posteriorly incomplete (PMBC 15803), and about 14 mm long and 2 mm wide including parapodia, with about 44 segments, specimen posteriorly incomplete (PMBC 15804). Lateral antennae extend beyond median antenna. Parapodia of anterior segments with small club-shaped notopodia and larger neuropodia. Neurosetae compound falcigers, moderately stout. Neurosetae of segment 2–6 with moderately long blades, most multiarticulate falcigers, distal tips of shafts finely spinose. On subsequent anterior segments, neurosetae with short blades, and longer on middle and posterior segments.

Parapodia of middle and posterior regions of body somewhat modified. Notopodia similar, having 1 posterior and 2 anterior stylodes (Figs. 2A–B, 3A–B). Neuropodia show more marked changes, posterior bract more elongate and subconical, whereas upper-anterior bract is smaller and more or less fused with acicular lobe. Some neurosetae with blades articulated, moderately long, distal tips of shafts finely spinose (Figs. 2C, 3C).

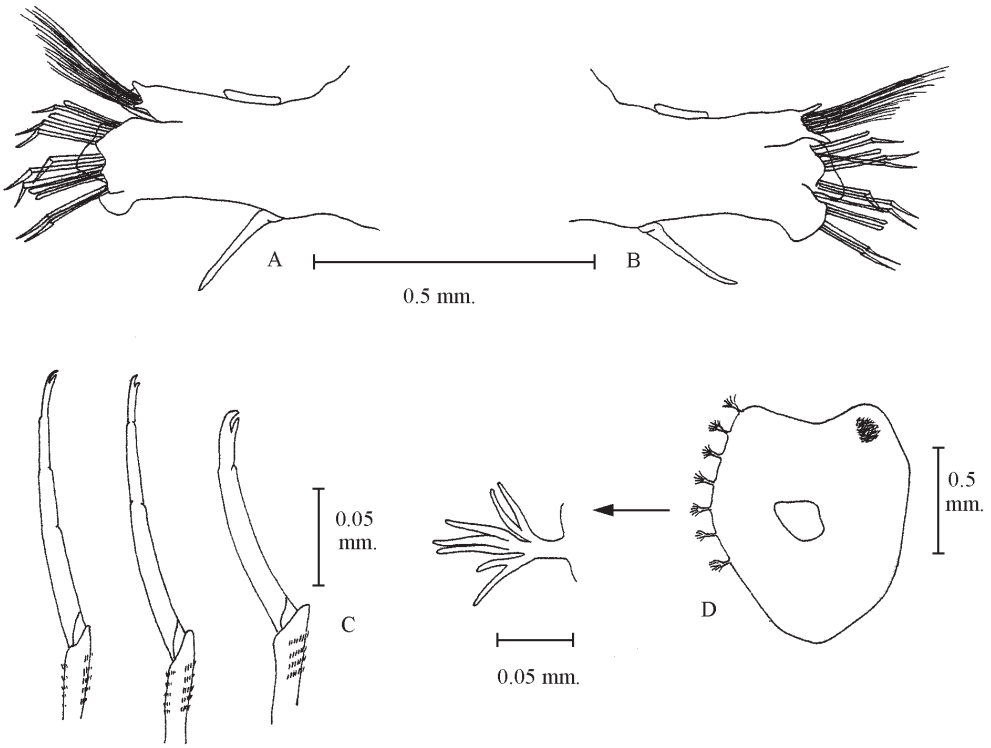

Figure 2 *Euthalenessa festiva* (Grube, 1875), PMBC 15803: A. Parapodium of segment 23, posterior view, setae indicated. B. Anterior view of same. C. Neurosetae from segment 13. D. Left elytron from segment 19, position of scar and pigment indicated, with enlargement of single pinnule showing details of branching pattern.

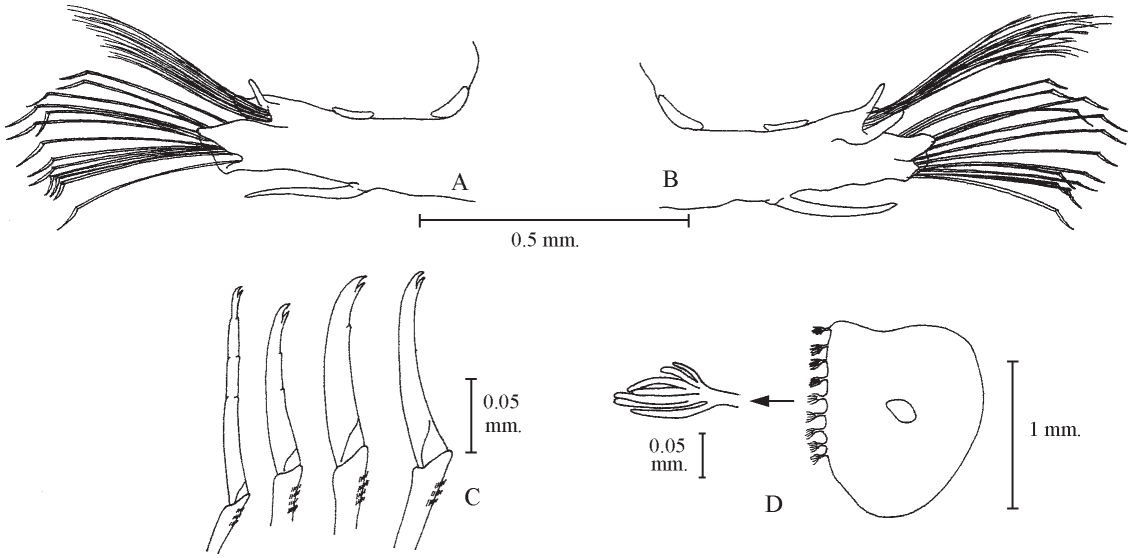

Figure 3 *Euthalenessa festiva* (Grube, 1875), PMBC 15804: A. Parapodium of segment 21, posterior view, setae indicated. B. Anterior view of same. C. Neurosetae from same. D. Left elytron from segment 21, position of scar indicated, with enlargement of single pinnule showing details of branching pattern.

Phuket Marine Biological Center Special Publication 24: 205–235 (2002)

Elytra change in size and shape along body. At first small and oval, then larger, subtriangular, subquadrangular, subreniform to subcordiform. First pair of elytra without papillae. Outer lateral margin of other elytra with 5–10 fringe papillae, fewer on anterior segments (Figs. 2D, 3D). Papillae each with 4–7 pinnules. Additional pinnules may occur on basal section of fringe papillae and on dorsal surface of elytra between bases of fringe papillae. Most papillae irregularly palmate or dichotomously branched.

Remarks: The characters of the present specimens match quite well with those mentioned in the general description and figures of Pettibone (1970a).

Distribution: Gulf of Iran, Andaman Sea, Japan, Philippine Islands, Malay Archipelago, New Guinea, Australia, Kiribati, New Zealand, Marshall Islands; from intertidal to 83 m.

Sthenelanella Moore, 1910

Sthenelanella Moore, 1910: 391–395. – Pettibone, 1969: 431.

Euleanira Horst, 1916: 12–14, figs. 1–2. Type species: *Euleanira ehlersi* Horst, 1916: 12–14 [= *Sthenelanella ehlersi* (Horst, 1916). – Pettibone, 1969: 434–437, figs. 4–5].

Type species: *Sthenelanella uniformis* Moore, 1910: 391–395, pl. 33, figs. 105–112. – Pettibone, 1969: 431–434, figs. 1–3.

Diagnosis: Prostomium rounded, fused with tentacular segment. Three antennae: median antenna with short style, ceratophore with lateral auricles; lateral antennae very short, fused to tentacular parapodia. Tentacular lamellae may be present, medial to tentacular parapodia. Segment III with dorsal tubercle but without dorsal cirri. Parapodial stylodes absent. Notopodia with conical acicular lobe and inflated rounded upper lobe. Middle body segments may have notopodial spinning glands. Neuropodia with rounded presetal and postsetal lobes. Neurosetae forming vertical bundles, all compound spinigers, most with blades typically short, sickle- or rod-shaped, blades on segments 2–4 longer.

Remarks: *Sthenelanella* Moore, 1910 has never been comprehensively reviewed or revised. However, Pettibone (1969) referred the type species of *Euleanira* Horst, 1916, *E. ehlersi* Horst, 1916, to *Sthenelanella*.

Tentacular lamellae are found in some species of this genus, *e.g.*, *S. uniformis* (illustrated by Pettibone 1969). Further studies are necessary in order to determine whether the tentacular lamellae in *Sthenelanella* are homologous to the inner tentacular lobes of other sigalionid genera, *e.g.*, *Willeysthenelais* Pettibone, 1971.

Sthenelanella cf. *uniformis* Moore, 1910
Fig. 4A–D

Sthenelanella uniformis Moore, 1910: 391–395, pl. 33, figs. 105–112. – Hartman 1939: 69, pl.18, figs. 226–231; 1961: 54; 1968: 169, figs. 1–6. – Pettibone 1969: 431–434, figs. 1–3.

Material examined: BIOSHELF st. E-1/TD, 8°30′ N, 98°06′ E, 38 m, 22 Apr 1996 (1, PMBC 15805).

Description: Body about 9 mm long (with about 37 segments, specimen posteriorly incomplete) and 1.2 mm wide including parapodia. Anterior elytra with mottled pigmentation (observed on preserved specimen). Tentacular parapodia without ctenidia, but oval ctenidia present dorsally between segments II and III. Tentacular lamellae medial to tentacular parapodia. Parapodia short, blunt (Fig. 4A–B). Spinning glands not observed. Neuropodia diagonally truncate, with subequal rounded presetal and postsetal lobes; presetal lobes with slight acicular notch (Fig. 4B). Neurosetae of segments 2–4 include compound multiarticulate falcigers, the appendages of the superiormost ones being longest. On segment 20 all 10–14 neurosetae similar, with short blades; all but 5 of them with a few coarse spines on end of shaft (Fig. 4C).

The first pair of elytra orbicular, with fringe of short, crowded papillae on anterior margin;

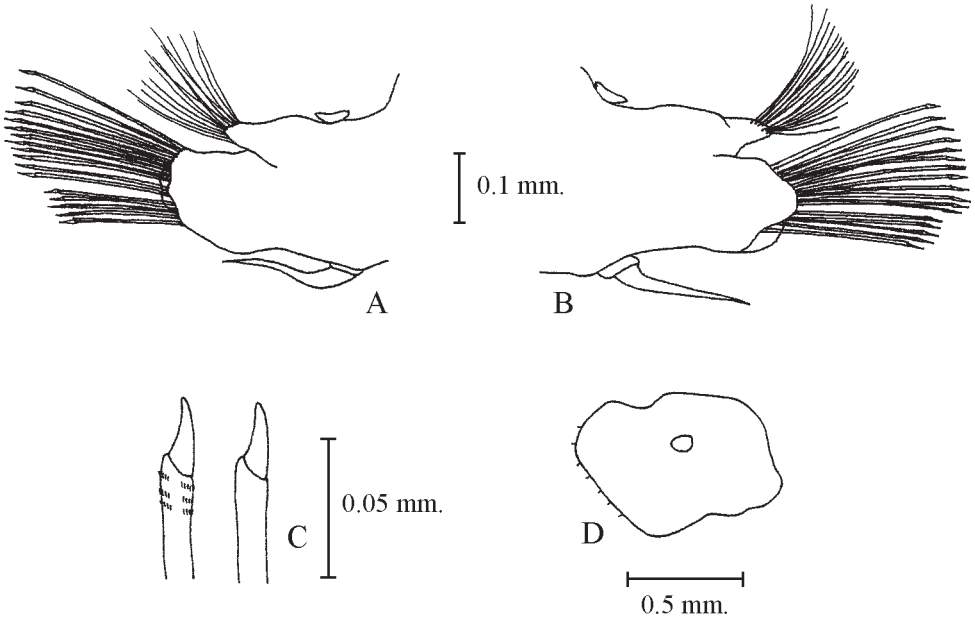

Figure 4 *Sthenelanella* cf. *uniformis* Moore, 1910, PMBC 15805: A. Parapodium from segment 20, posterior view, setae indicated. B. Anterior view of same. C. Neurosetae from same. D. Left elytron from segment 33, position of scar indicated.

remaining elytra subrectangular to rhomboidal, with papillae on lateral margin (Fig. 4D).

Remarks: *Sthenelanella uniformis* has previously been recorded from the area by Phasuk (1992). The present specimen agrees in the general description with the species as described and figured by Pettibone (1969).

However, spinning glands were not observed in the present specimen, whereas according to Pettibone (1969) feltage notosetae and spinning glands are present in this species. The examination of further BIOSHELF material may clarify this issue. Unfortunately, the present specimen can not be studied further since it has been dried.

Sthenelanella uniformis is known from Southern California, the Gulf of California to Ecuador, western Mexico; from littoral to 73 m.

Willeysthenelais Pettibone, 1971

Willeysthenelais Pettibone, 1971: 9–10.

Type species: *Sthenelais diplocirrus* Grube, 1875: 77–78. [= *Willeysthenelais diplocirrus* (Gurbe, 1875). – Petttibone, 1971: 11–15, figs. 6–8].

Diagnosis: Prostomium rounded, fused to tentacular parapodia. Three antennae: median antenna with stout cylindrical ceratophore, lateral auricles present; lateral antennae fused to inner dorsal sides of tentacular parapodia. Tentacular parapodia with dorsal auricles and inner tentacular lobes, obvious in ventral view. Segment III with dorsal tubercles. Ventral cirri subulate, with outer basal bulb or long papillae on medial base. Elytral surface with microtubercles and lateral fringes of papillae.

Parapodia with accessory bracts and stylodes. Notopodia clavate, with bracts nearly encircling acicular lobe. Neuropodia with conical acicular lobe, bilobed C-shaped posterior bracts directed anteriorly at upper and lower margins, crescent-shaped anterior lower bract, and anterior upper bract. Neurosetae arranged in three groups: upper

group within anterior upper bract, C-shaped group of stouter neurosetae within posterior bract, and lower group within anterior lower bract. Neurosetae include several types, *e.g.*, simple spinose capillaries, single-article falcigers, and multiarticulate falcigers; distal parts of shafts spinose or smooth.

Remarks: *Willeysthenelais* Pettibone, 1971 was established for *Sthenelais diplocirrus* Grube, 1875. A group of other species were also separated from *Sthenelais* and assigned to this genus (Pettibone 1971).

Willeysthenelais is characterized by having ventral cirri with an outer basal bulb or a group of long papillae at the medial base. However, in some species of Pelogeniinae, *e.g.*, *Claparedepelogenia inclusa*, *Pelogenia zeylanica* and *Neopsammolyce floccifera* (illustrated by Pettibone 1997), the ventral cirri also have cirrophores with short or

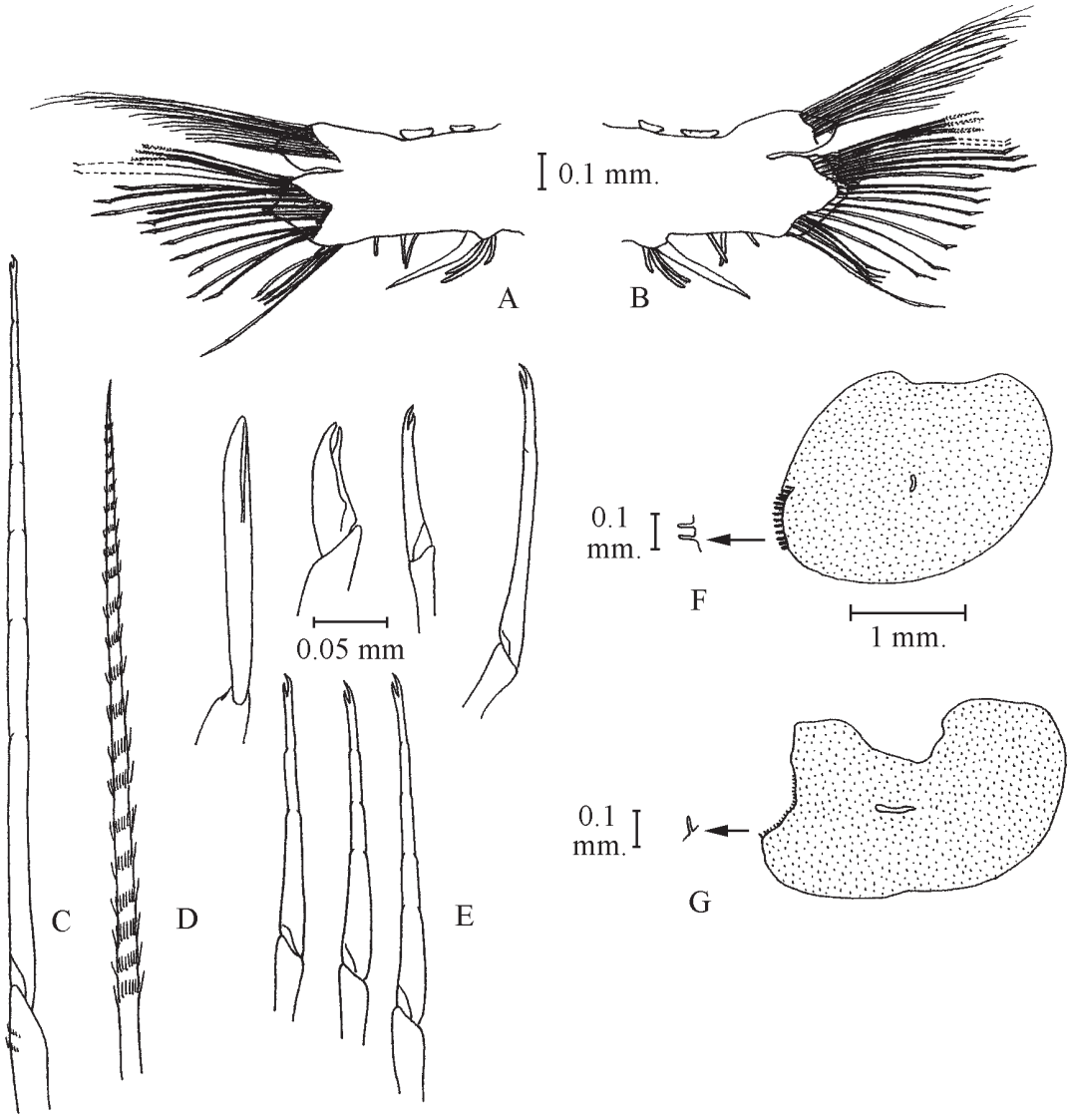

Figure 5 *Willeysthenelais horsti* Pettibone, 1971, PMBC 15806: A. Parapodium of segment 21, posterior view, setae indicated. B. Anterior view of same. C–E. Neurosetae from same. F–G. Left elytra from anterior region of specimen, position of scar indicated, with detail of elytral fringe.

long papillae. Future studies should attempt to determine whether these papillae are homologous in the two groups.

Willeysthenelais horsti Pettibone, 1971
Figs. 5A–G, 6A–F

Willeysthenelais horsti Pettibone, 1971: 15–18, figs. 9–10.

Material examined: BIOSHELF st. C-1/TD, 9°00′ N, 98°02′ E, 43 m, 17 Feb 1998 (1, PMBC 15806); st. RY-1/TD, 7°35′ N, 98°16′ E, 70 m, 22 Feb 1998 (1, PMBC 15807).

Description: Body about 45 mm long (with about 61 segments, specimen posteriorly incomplete) and 5 mm wide including parapodia (PMBC 15806) and about 36 mm long (first fragment about 25 segments and second fragment about 11 segments, specimen posteriorly incomplete) and 5 mm wide including parapodia (PMBC 15807). Several long papillae on medial bases of ventral cirri (Figs. 5A–B, 6A–B). Neurosetae of segment 21 include: in

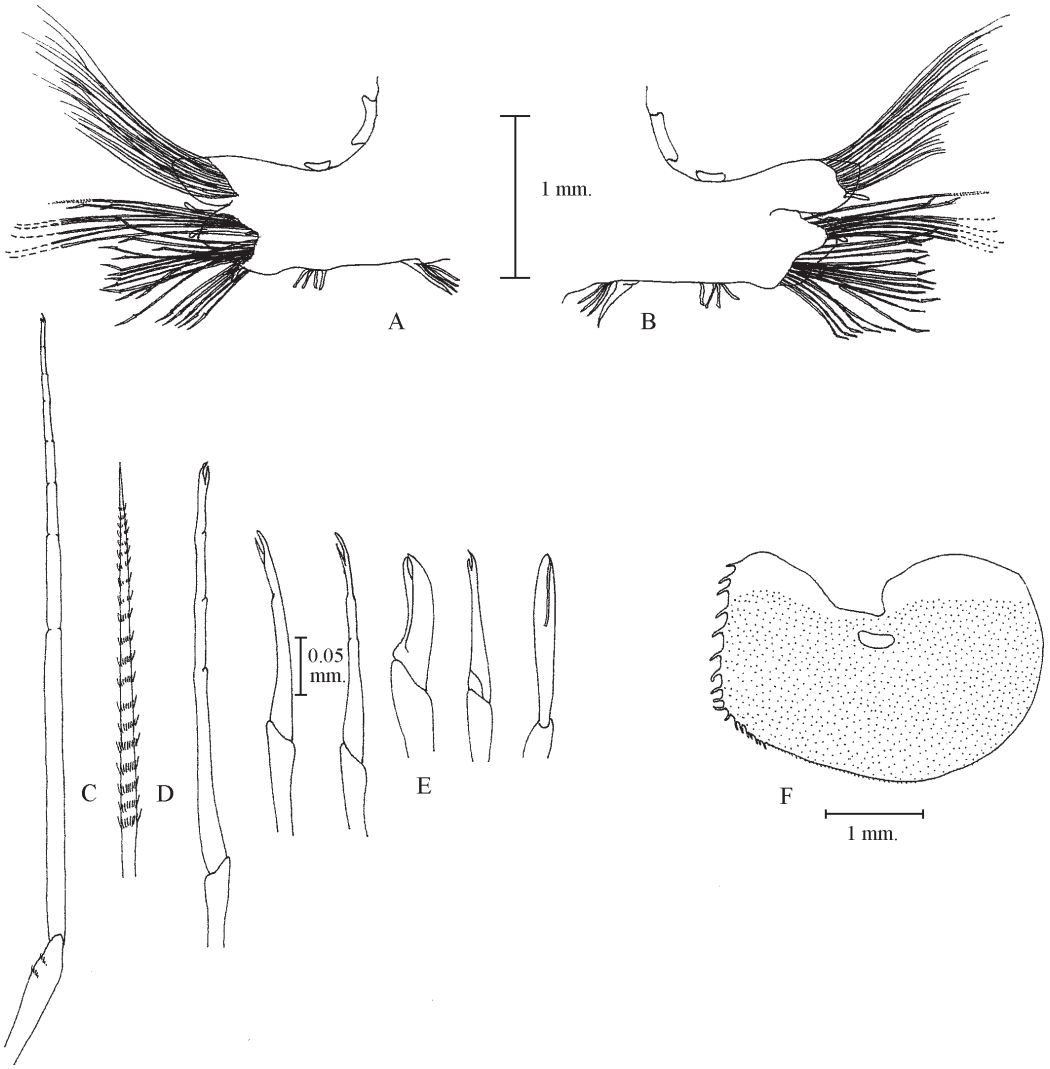

Figure 6 *Willeysthenelais horsti* Pettibone, 1971, PMBC 15807: A. Parapodium of segment 21, posterior view, setae indicated. B. Anterior view of same. C–E. Neurosetae from same. F. Left elytron from posterior region of anterior fragment, position of scar indicated.

Phuket Marine Biological Center Special Publication 24: 205–235 (2002)

upper position simple spinose capillaries and long multiarticulate falcigers with few a spines on shafts (Figs. 5C–D, 6C–D); in middle (C-shaped group) and inferior (anterior lower) positions, stout compound bifid falcigers with short to middle-length blades, in some cases with a few articles, and smooth shafts (Figs. 5E, 6E).

Elytra oval to subreniform, lateral borders with long papillae; microtubercles on entire elytral surface on first few anterior segments (Fig. 5F–G), absent on anterior part of elytron on subsequent segments (Fig. 6F).

Remarks: The present specimens agree well with *Willeysthenelais horsti* as described and figured by Pettibone (1971).

Distribution: Indonesia, Andaman Sea; at 32–91 m.

Fimbriosthenelais **Pettibone, 1971**

Fimbriosthenelais Pettibone, 1971: 25.

Type species: *Sthenelais longipinnis* Grube, 1870: 490–491. [= *Fimbriosthenelais longipinnis* (Grube, 1870). – Pettibone, 1971: 26–29. figs. 15–17].

Diagnosis: Prostomium rounded, fused to tentacular parapodia. Three antennae: median antenna with stout cylindrical ceratophore, lateral auricles present; lateral antennae fused to inner dorsal sides of tentacular parapodia. Tentacular parapodia with dorsal auricles and inner tentacular lobes, obvious in ventral view. Paired small ctenidia on lateral lips. Segment III with dorsal tubercles. Ventral cirri with outer basal knob but without long papillae on medial base. Elytral surface with microtubercles or papillae and lateral fringe of papillae.

Parapodia with accessory bracts and papillate stylodes. Notopodia clavate, with bracts nearly encircling acicular lobe. Neuropodia with conical acicular lobe, bilobed C-shaped posterior bract directed anteriorly at upper and lower margins, crescent-shaped anterior lower bract, and anterior upper bract. Neurosetae arranged in three groups: upper group within anterior upper bract, C-shaped group of stouter neurosetae within posterior bract, and lower group within anterior lower bract. Neurosetae may include several types, *e.g.*, simple spinose capillaries, single-article falcigers, and multiarticulate falcigers; distal parts of shafts spinose or smooth.

Remarks: *Fimbriosthenelais* Pettibone, 1971 was established for *Sthenelais longipinnis* Grube, 1870. A group of other species was also separated from *Sthenelais* and assigned to this genus.

At present, two specimens have been found in the BIOSHELF material. One is treated herein. Unfortunately, the other specimen had been dried before its identity could be established. However, it was similar to *Fimbriosthenelais minor* (Pruvot and Racovitza, 1895), as described by Pettibone (1971), since the elytral surface was characteristically covered with scattered foreign material, including sand grains. *F. minor* is known from the English Channel, France, and the Mediterranean Sea (Pettibone 1971).

Fimbriosthenelais longipinnis (Grube, 1870)
Figs. 7A–F, 8A–F

Sthenelais longipinnis Grube, 1870: 493; 1875: 75, 77.
Sthenelais dubiosa Horst, 1917: 111, pl. 22, fig. 7.
Fimbriosthenelais longipinnis. – Pettibone 1971: 26–29, figs. 15–17.

Material examined: BIOSHELF st. C-1/OS, 9°00′ N, 98°02′ E, 41 m, 17 Feb 1998 (1, PMBC 15808; 1 spec. on SEM-stub, PMBC 15809).

Description: Body about 13 mm long (with 31 segments, specimen posteriorly incomplete) and 2.5 mm wide including parapodia. Prostomium rounded, median antenna with lateral auricles (Fig. 8A). Ventral surface finely papillate. Parapodial stylodes papillated (Figs. 7A–B, 8C). Lateral lips with small, paired ctenidia (Fig. 8B). Neuropodial posterior bracts bilobed (Fig. 7A). Compound falcigerous neurosetae differing markedly in length and width (Fig. 7D–E). Neurosetae of segment 19 include: simple spinose capillaries and long multiarticulate falcigers with a few spines on shaft in superior position (Fig. 7C–D); shorter multiarticulate and single-article falcigers with

smooth shafts in middle positions; multiarticulate falcigers with moderately long blades in inferior position (Fig. 7E).

Elytra oval to subreniform, with simple lateral fringes of papillae, microtubercles on entire elytral surface on first few anterior segments, confined chiefly to anterior and medial areas on subsequent segments (Figs. 7F, 8D–F).

Remarks: The present specimen agrees with *Fimbriosthenelais longipinnis* (Grube, 1870) as described and figured by Pettibone (1971).

Distribution: Red Sea, Zanzibar, Maldives, Andaman Sea, Indonesia, Marianas; from shallow water to 75 m.

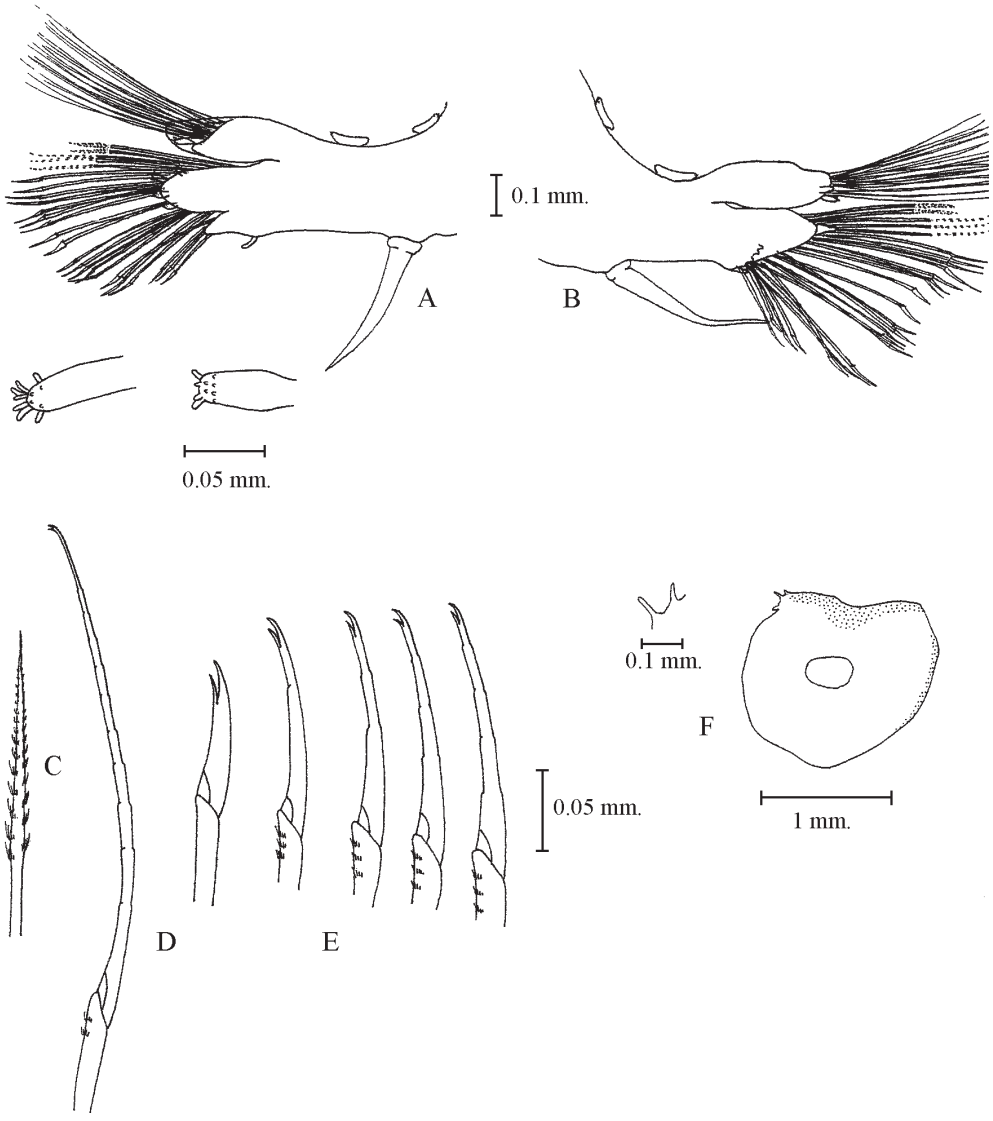

Figure 7 *Fimbriosthenelais longipinnis* (Grube, 1870), PMBC 15808: A. Parapodium of segment 19, posterior view, setae indicated, with enlargement of two papillate stylodes. B. Anterior view of same. C–E. Neurosetae from same. F. Left elytron from posterior region of specimen, position of scar indicated, with detail of fringe papillae.

Phuket Marine Biological Center Special Publication 24: 205–235 (2002)

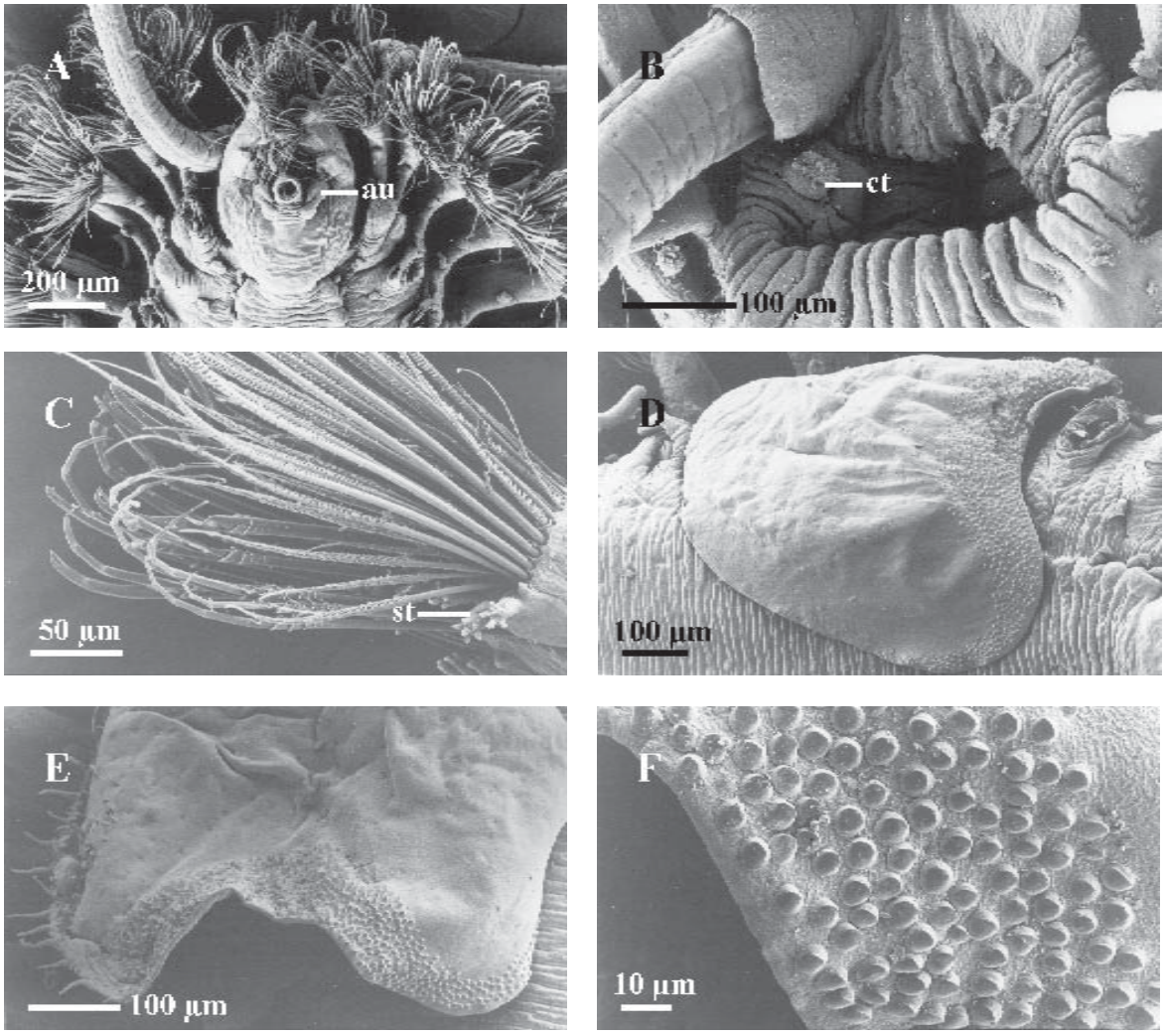

Figure 8 *Fimbriosthenelais longipinnis* (Grube, 1870), SEM micrographs of PMBC 15809: A. Anterior segments, dorsal view, median antenna lost. B. Paired ctenidia on lateral lips. C. Neuropodium in anterior view; note various types of setae and papillated stylodes. D–F. Elytron; note that microtubercles (seen in detail on F) are confined to anterior region (D–E); lateral fringe papillae seen on E.

Sthenelais Kinberg, 1856

Sthenelais Kinberg, 1856: 387. – Pettibone, 1971: 2.
Conconia Schmarda, 1861: 150. Type species: *Conconia caerulea* Schmarda, 1861: 150–151, pl. 37, fig. 319 [= *Sthenelais helenae* Kinberg, 1856. – Pettibone, 1971: 3–7, figs. 1–3].

Type species: *Sthenelais helenae* Kinberg, 1856: 387. – Pettibone, 1971: 3–7, figs. 1–3.

Diagnosis: Prostomium rounded, fused to tentacular parapodia. Three antennae: median antenna with stout cylindrical ceratophore, lateral auricles present; lateral antennae fused to inner dorsal sides of tentacular parapodia. Tentacular parapodia with dorsal auricles and inner tentacular lobes, obvious in ventral view. Paired small ctenidia on lateral lips. Segment III with dorsal tubercles. Ventral cirri with outer basal knob but without long papillae on medial base. Elytral surface with microtubercles or papillae and lateral fringe of papillae.

Parapodia with accessory bracts and stylodes; stylodes not papillate. Notopodia clavate, with bracts nearly encircling acicular lobe. Neuropodia with conical acicular lobe, bilobed C-shaped posterior bract directed anteriorly at upper and lower margins, crescent-shaped anterior lower bract, and anterior upper bract. Neurosetae arranged in three groups: upper group within anterior upper bract, C-shaped group of stouter neurosetae within posterior bract, and lower group within anterior lower bract. Neurosetae may include several types, *e.g.*, simple spinose capillaries, single-article falcigers, and multiarticulate falcigers; distal part of shafts spinose or smooth.

Remarks: *Conconia* Schmarda, 1861 was referred to *Sthenelais* Kinberg, 1856 by Quatrefages (1865). *Sthenelais* was subsequently revised in part by Pettibone (1971), who separated two groups of species from *Sthenelais* and assigned them to new genera: *Willeysthenelais* and *Fimbriosthenelais*.

Sthenelais is characterized by having compound neuropodial falcigers, ventral cirri without long papillae at the medial base, and parapodial stylodes without papillae. However, the neurosetae of segments II and III may include some compound spinigers in, *e.g.*, *S. articulata* (Pettibone 1971).

At present, one specimen from the BIOSHELF material probably belongs to this genus. However, more material must be studied before its identity can be ascertained.

Neoleanira Pettibone, 1970

Neoleanira Pettibone, 1970c: 367.

Type species: *Sigalion tetragonum* Öersted, 1845: 404–405, pl. 2, figs. 5, 11. [= *Neoleanira tetragona* (Öersted, 1845). – Pettibone, 1970c: 368–372, figs. 1–4].

Diagnosis: Prostomium oval, partially fused to tentacular parapodia. Three antennae: median antenna with long style and stout cylindrical ceratophore with small lateral auricles; lateral antennae rather long, fused to inner sides of tentacular parapodia. Tentacular parapodia with inner tentacular lobes, obvious in ventral view, and may have small dorsal auricles. Segment III with long dorsal cirri. Elytra smooth, without tubercles, delicate lateral borders of papillae may be present. Notopodia with circlet of stylodes. Neuropodia with two postsetal bracts and only one presetal bract. Neurosetae form upper group anterior to upper postsetal bract, middle group dorsal to lower postsetal bract, and lower group within presetal bract. Neurosetae compound spinigers with relatively short, canaliculate blades.

Remarks: *Neoleanira* Pettibone, 1970 was established for *Sigalion tetragonum* Oersted, 1845. Some species previously assigned to *Leanira* and *Sthenolepis* were also referred to this genus.

Neoleanira is characterized by having dorsal cirri on segment III. Future studies should attempt to determine whether the occurrence of dorsal cirri on segment III in *Neoleanira* is homologous to that of *Claparedepelogenia*, *Heteropelogenia*, *Pottsipelogenia* and *Pelogenia*, all of which are members of Pelogeniinae Chamberlin, 1919.

Neoleanira has not been found in the BIOSHELF material.

Labiosthenolepis Pettibone, 1992

Labiosthenolepis Pettibone, 1992a: 614–615.

Type species: *Leanira laevis* McIntosh, 1885: 156–157, pl. 20, fig. 4, pl. 23, figs. 10–11, pl. 14A, fig. 3. [= *Labiosthenolepis laevis* (McIntosh, 1885). – Pettibone, 1992a: 615–618, figs. 1–2].

Diagnosis: Prostomium oval, fused to tentacular parapodia. Three antennae: median antenna with long style, and long, stout ceratophore with lateral auricles; lateral antennae small, attached to inner dorsal sides of tentacular parapodia. Tentacular parapodia with small dorsal auricles and inner tentacular lobes, obvious in ventral view. Segment III without dorsal cirri, small dorsal tubercles may be present. Lateral lips of mouth each with fleshy or flat, plate-like labial lobes. Elytra smooth, without tubercles or papillae. Notopodia with subdistal bract with circlet of stylodes and large distal

Phuket Marine Biological Center Special Publication 24: 205–235 (2002)

stylode. Neuropodia with only one conical presetal lobe and two postsetal bracts. Neurosetae compound spinigers, with canaliculate blades; simple spinose capillaries absent.

Remarks: *Labiosthenolepis* Pettibone, 1992 was established for *Leanira laevis* McIntosh, 1885. Some other species, previously assigned to *Sthenolepis* and *Leanira*, were also referred to this genus.

Labiosthenolepis is characterized by having labial lobes on the lateral lips of the mouth, as is *Labioleanira* (Pettibone 1992a). *Labiosthenolepis* differs from *Labioleanira* in having inner tentacular lobes. However, labial lobes are also found in some species of *Leanira*, *e.g.*, *L. denensis*, *L. hystricis* and the type species, *L. quatrefagesi* (Pettibone 1970b). *Labiosthenolepis* and *Labioleanira* differ from *Leanira* in having lateral auricles on the ceratophore of the median antenna (Pettibone 1970b, 1992a). Future studies should attempt to determine the homologies of the labial lobes found in these three genera.

Labiosthenolepis* cf. *sibogae (Horst, 1917)
Figs. 9A–D, 10A–B

Leanira sibogae Horst, 1917: 115, pl. 24: figs. 1–3.
Labiosthenolepis sibogae. – Bailey-Brock 1984: 62A (abstract). – Pettibone 1992a: 618–619, figs. 3–4.

Material examined: BIOSHELF st. I-1/OS, 7°30′ N, 98°57′ E, 38 m, 3 May 1996 (1, PMBC 15810); st. 3, Andaman Sea, W coast of Phuket Island, Thailand, 4 April 1980 (1, PMBC 15811).

Description: Body about 16 mm long (with about 44 segments, specimen posteriorly incomplete) and 1.7 mm wide including parapodia. Labial lobes on

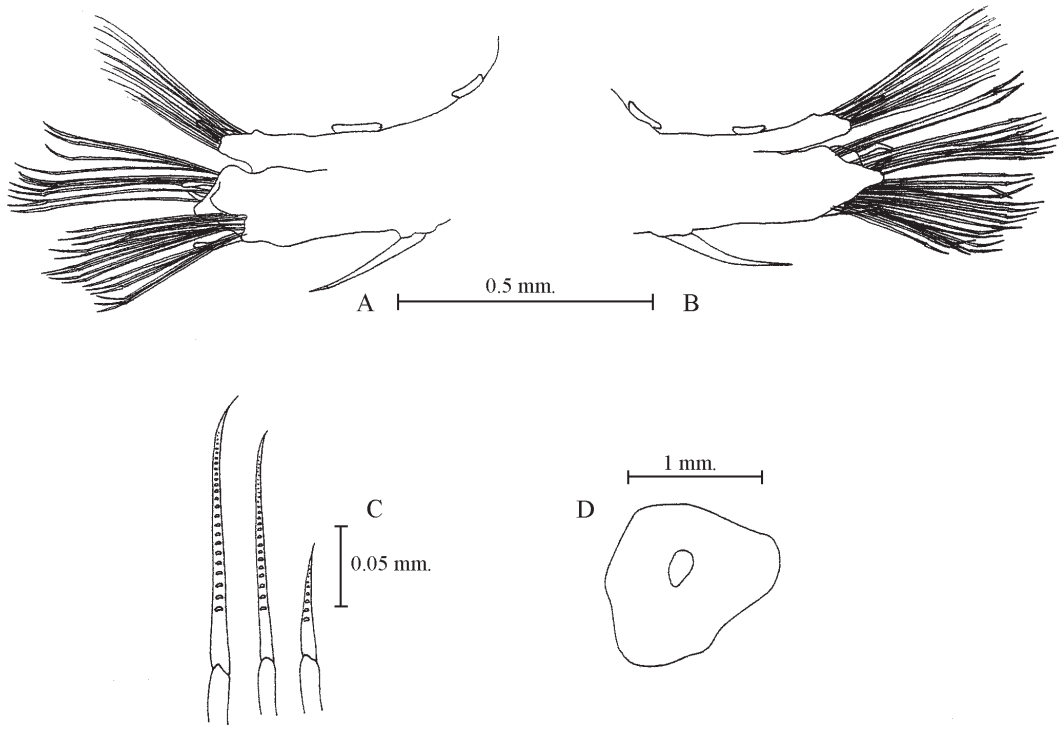

Figure 9 *Labiosthenolepis* cf. *sibogae* (Horst, 1917), PMBC 15810: A. Parapodium of segment 19, posterior view, parapodial stylodes and setae indicated. B. Anterior view of same. C. Neurosetae from same. D. Left elytron from middle region of specimen, position of scar indicated.

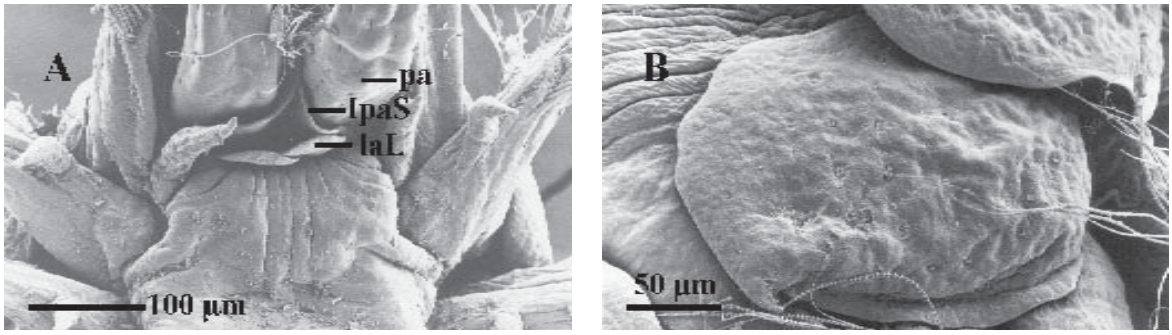

Figure 10 *Labiosthenolepis* cf. *sibogae* (Horst, 1917), SEM micrographs of PMBC 15811 from the Andaman Sea, the west coast of Phuket Island, Thailand, st. 3, 4 April 1980 (see map in Bussarawit *et al.* 1984): A. Ventral view of anterior end showing labial lobes on lateral lips. B. Elytron.

lateral lips of mouth oval, thin, flattened (Fig. 10A). Segment III without dorsal cirri or dorsal tubercles. Ventral cirri moderately long, with articulate tip (Fig. 9A–B). Neurosetae all compound spinigers with rather long, canaliculate blades (Fig. 9C); lower ones more slender, with shorter blades; neurosetae of middle parapodia long. Elytra small and oval on a few anterior segments, becoming progressively larger, subtriangular, covering dorsum, without papillae or tubercles (Figs. 9D, 10B).

Remarks: The present specimen generally agrees with *Labiosthenolepis sibogae* (Horst, 1917), as described by Pettibone (1992a).

However, the present specimen has moderately long ventral cirri and large elytra, more or less subtriangular which cover the dorsum, whereas the species described by Pettibone (1992a) has short ventral cirri and oval elytra which leave the mid-dorsum uncovered. These small differences are not considered sufficient to justify the description of a new species in this interim report. The examination of further BIOSHELF material may clarify this issue.

Labiosthenolepis sibogae is known from the Malay Archipelago, Maldives, Australia, Tonga; from intertidal to depths of 91 m.

Horstileanira Pettibone, 1970

Horstileanira Pettibone, 1970c: 377–378.

Type species: *Horstileanira vanderspoeli* Pettibone, 1970c: 377–378, figs. 8–10.

Diagnosis: Prostomium oval, partially fused to tentacular parapodia. Three antennae: median antenna with long style and long, cylindrical ceratophore with lateral auricles; lateral antennae small, fused to inner sides of tentacular parapodia. Tentacular parapodia with dorsal auricles and inner tentacular lobes, obvious in ventral view. Segment III with prominent conical dorsal tubercles but without dorsal cirri. Lateral lips of mouth without labial lobes. Elytra smooth, without tubercles or papillae. Notopodia with circlet of stylodes. Neuropodia with four bracts, each provided with stylodes: two postsetal and two presetal. Neurosetae form upper group and a lower group within the anterior lower bract, mostly compound spinigers with short and canaliculate blades, simple spinose capillaries may be present in upper position; blades of a few lower neurosetae sometimes with tips minutely bifid, falcigerous.

Remarks: The type specimen of *Horstileanira vanderspoeli*, the type species of the genus, was originally described as a syntype of *Leanira sibogae* Horst, 1917.

Horstileanira is characterized by having dorsal tubercles on segment III, and having 'prominent ctenidia or auricles' on the tentacular parapodia as well as on the ceratophore of the median antenna

Phuket Marine Biological Center Special Publication 24: 205–235 (2002)

(Pettibone 1970c). However, Pettibone (1971, 1992a) distinguished between auricles and ctenidia: the appendages on the ceratophore of the median antenna were termed auricles, whereas the very similar organs on the tentacular parapodia were called ctenidia. Further study is necessary to clarify whether this distinction is valid.

Horstileanira is also characterized by having compound neuropodial spinigers; however, some of lower compound neurosetae of segments II and III are bifid falcigers in, *e.g.*, *H. crosslandi* Pettibone, 1970.

Furthermore, *Horstileanira* closely resembles *Sthenolepis* in having inner tentacular lobes on segment I, dorsal tubercles on segment III, and the ceratophore of the median antenna with lateral auricles (Pettibone 1992a). It differs from *Sthenolepis* in having four rather than three parapodial bracts, two presetal and two postsetal. The validity of the distinction between the two genera will be tested in a future paper by the author on phylogenetic relationships within the Sigalionidae.

Horstileanira has not been found in the BIOSHELF material.

Sthenolepis **Willey, 1905**

Sthenolepis Willey, 1905: 259.

Type species: *Leanira japonica* McIntosh, 1885: 154, pl. 22, fig. 3, pl.14A, figs. 1–2. [= *Sthenolepis japonica* (McIntosh, 1885). – Willey, 1905: 259–260, pl.2, fig. 49].

Diagnosis: Prostomium rounded, fused to tentacular parapodia. Three antennae: median antenna with stout cylindrical ceratophore, lateral auricles present; lateral antennae fused to inner sides of tentacular parapodia. Tentacular parapodia with dorsal auricles and inner tentacular lobes, obvious in ventral view. Segment III with dorsal tubercles but without dorsal cirri. Lateral lips of mouth without labial lobes. Elytra smooth or with tubercles and papillae. Neuropodia with only one conical presetal lobe and two postsetal bracts. Neurosetae compound spinigers, with canaliculate blades; simple spinose capillaries may be present in upper position.

Remarks: *Sthenolepis* was established by Willey (1905). The genus has been revised in part (Pettibone 1970c, 1992a) with certain species being treated only in order to assign them to new genera, *i.e.*, *Neoleanira* Pettibone, 1970, *Labiosthenolepis* Pettibone, 1992 and *Labioleanira* Pettibone, 1992. A complete revision of this genus is needed.

Sthenolepis closely resembles *Horstileanira* in having inner tentacular lobes on segment I, dorsal tubercles on segment III, and the ceratophore of the median antenna with lateral auricles (Pettibone 1992a). It differs from *Horstileanira* in having three rather than four parapodial bracts, one presetal and two postsetal (see remarks above on *Horstileanira*).

At present, one specimen that probably belongs to this genus has been found in the BIOSHELF material. More material must be studied before its identity can be determined.

Labioleanira **Pettibone, 1992**

Labioleanira Pettibone, 1992a: 619–621.

Type species: *Leanira yhleni* Malmgren, 1867: 140. [= *Labioleanira yhleni* (Malmgren, 1867). – Pettibone, 1992a: 621–624, figs. 5–6].

Diagnosis: Prostomium oval, fused to tentacular parapodia. Three antennae: median antenna with long style and long, stout ceratophore with lateral auricles; lateral antennae small, attached to inner dorsal sides of tentacular parapodia. Tentacular parapodia without dorsal auricles or inner tentacular lobes. Segment III without dorsal cirri or dorsal tubercles. Lateral lips of mouth each with fleshy or flat, plate-like labial lobe. Elytra smooth, without tubercles or papillae. Notopodia with subdistal bract with circlet of stylodes. Neuropodia with subconical presetal lobe and two postsetal bracts, all provided with stylodes. Neurosetae compound spinigers, with rather short, canaliculate blades; simple spinose capillaries may be present.

Remarks: *Labioleanira* Pettibone, 1992 was established for *Leanira yhleni* Malmgren, 1867. Some other species previously assigned to *Sthenolepis* and *Leanira* were also referred to this genus by Pettibone (1992a).

Labioleanira differs from other sigalionid genera in having labial lobes on the lateral lips of the mouth and auricles on the ceratophore of the median antenna but lacking inner tentacular lobes. For a discussion of the homologies of appendages on the lateral lips of the mouth in this genus, *Labiosthenolepis*, and some species of *Leanira*, see remarks on *Labiosthenolepis*.

Labioleanira* cf. *tentaculata (Horst, 1917)
Figs. 11A–D, 12A–C

Leanira tentaculata Horst, 1917: 117, pl. 24: figs. 4–5.
Labioleanira tentaculata. – Pettibone 1992a: 624–627, figs. 7–8.

Material examined: BIOSHELF st. I-1/OS, 7°30′ N, 98°55′ E, 42 m, 22 Feb 1998 (1, PMBC 15812); st. L-2/OS, 6°43′ N, 99°03′ E, 61 m, 25 Feb 1998 (1 spec. on SEM-stub, PMBC 15813).

Description: Body about 12 mm long (with 38 segments, specimen posteriorly incomplete) and 1.2 mm wide including parapodia. Median antenna long (Fig. 12A) with small lateral auricles on ceratophore. Labial lobes on lateral lips thick, fleshy (Fig. 12B). Tubular segmental papilla present, near base of ventral cirrus, beginning at about segment 22. Neurosetae compound spinigers, with long canaliculate blades (Fig. 11A–C), lower ones with blades shorter and more slender (Fig. 12C). Elytra small and moderately oval on anterior few

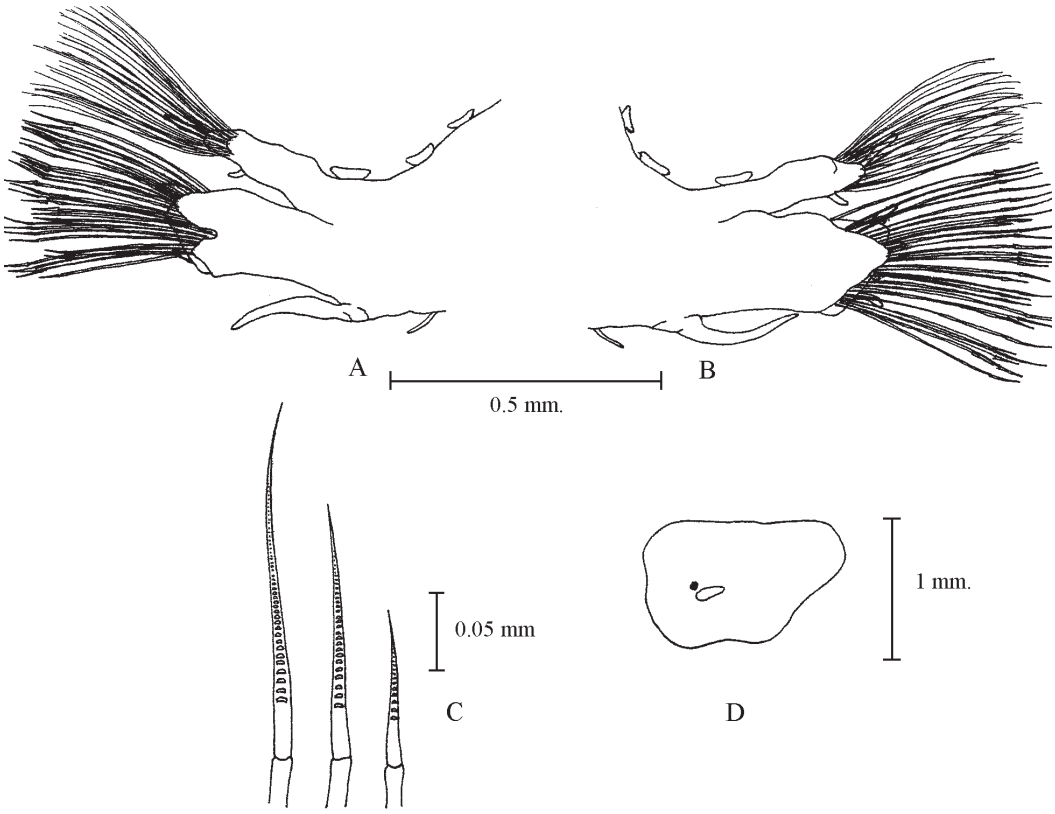

Figure 11 *Labioleanira* cf. *tentaculata* (Horst, 1917), PMBC 15812: A. Parapodium of segment 23, posterior view, parapodial stylodes and setae indicated. B. Anterior view of same. C. Neurosetae from same. D. Left elytron from middle region of body, position of scar indicated.

Phuket Marine Biological Center Special Publication 24: 205–235 (2002)

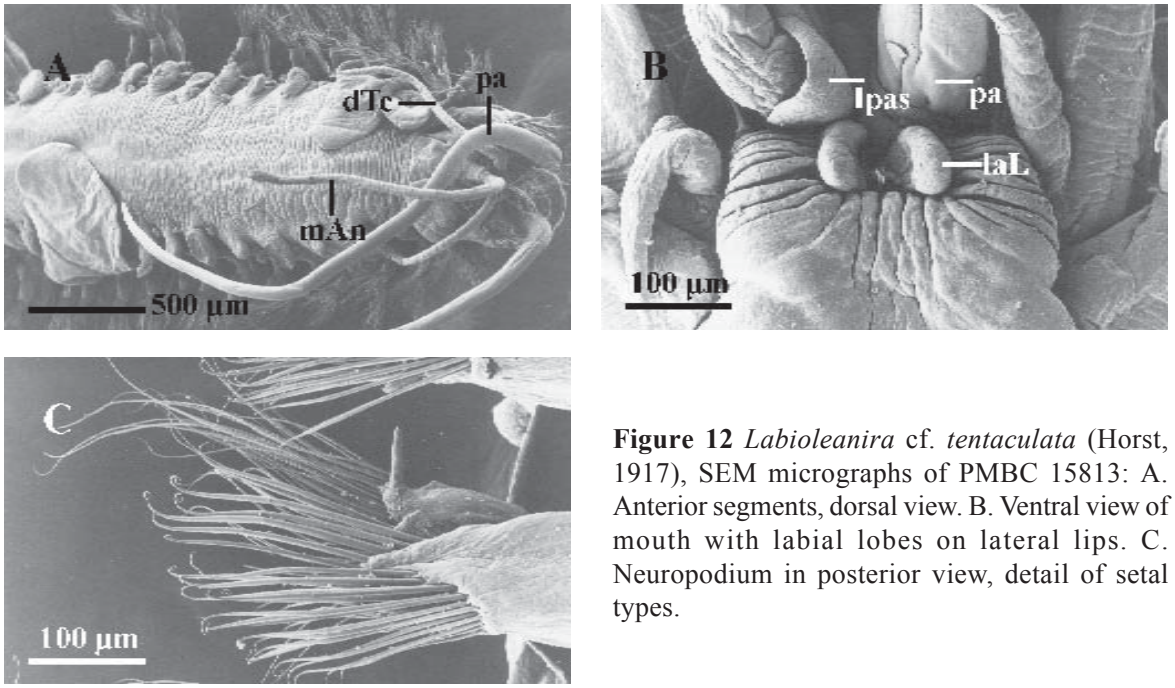

Figure 12 *Labioleanira* cf. *tentaculata* (Horst, 1917), SEM micrographs of PMBC 15813: A. Anterior segments, dorsal view. B. Ventral view of mouth with labial lobes on lateral lips. C. Neuropodium in posterior view, detail of setal types.

segments, becoming progressively larger and subpyriform in shape, with opaque spot lateral to area of attachment (Figs. 11D, 12A).

Remarks: The present specimen agrees in general with *Labioleanira tentaculata* (Horst, 1917) as described by Pettibone (1992a).

However, according to Pettibone (1992a), *L. tentaculata* has thick, fleshy, lobulate labial lobes, tubular segmental papillae beginning at about segment 30, and middle parapodia with additional simple spinose neurosetae. In the present specimen the labial lobes do not appear to be lobulate, the tubular segmental papillae begin at about segment 22, and simple spinose neurosetae were not observed. These small differences are not considered sufficient to justify the description of a new species in this interim report. The examination of further BIOSHELF material may clarify this issue.

Labioleanira tentaculata is known from Indonesia, the Philippines, South China Sea; at 51–82 m.

Ehlersileanira Pettibone, 1970

Ehlersileanira Pettibone, 1970b: 19.

Type species: *Sthenelais incisa* Grube, 1877: 519–520. [= *Ehlersileanira incisa* (Grube, 1877). – Pettibone, 1970b: 19–23, figs. 10–12].

Diagnosis: Prostomium oval, partially fused to tentacular parapodia. Three antennae: median antenna with short style, ceratophore with lateral auricles; lateral antennae fused to tentacular parapodia, with short style. Tentacular parapodia without inner tentacular lobes. Bulbous facial tubercle present medial to inner palpal sheaths. Segment III without dorsal tubercles or dorsal cirri. Elytra smooth, without tubercles or papillae. Notopodia with well developed bracts with stylodes. Neuropodia with bilobed posterior bracts bearing stylodes; anterior acicular lobe and U-shaped anterior lower bract (beneath posterior lower bract) without stylodes. Neurosetae compound spinigers, with relatively short and canaliculate blades; simple spinose capillaries may be present.

Remarks: *Ehlersileanira* Pettibone, 1970 was established for *Sthenelais incisa* Grube, 1877 and was stated to be closely related to *Leanira*. Some species previously assigned to *Sthenelais*, *Stheno-*

lepis and *Leanira* were referred to *E. incisa* by Pettibone (1970b).

Ehlersileanira incisa (Grube, 1877)
Fig. 13A–D

Sthenelais incisa Grube, 1877: 519.
Ehlersileanira incisa. – Pettibone 1970b: 19–23, figs. 10–12.

Material examined: BIOSHELF st. L-2/AT, 6°45′ N, 99°04′ E, 59–63 m, 28 Feb 2000 (1, PMBC 15814).

Description: Body about 14 mm long (with 37 segments, specimen posteriorly incomplete) and 2.5 mm wide including parapodia. Median antenna located on the anterior third of prostomium, style short, subulate, biarticulate; ceratophore with lateral auricles. Lateral antennae fused to tentacular parapodia, style short, with ceratophores. Neurosetae compound spinigers, with moderately long and canaliculate blades; a few simple spinose capillaries present in upper part of middle neuropodia (Fig. 13A–C). Elytra small and oval on a few anterior segments, becoming progressively larger and subpyriform in shape, with lateral notches (Fig. 13D).

Remarks: The specimen agrees in general with *Ehlersileanira incisa* as described by Pettibone (1970b), in particular as regards details of the antennae. Unfortunately, the present specimen can not be studied further since it has been dried.

Distribution: *Ehlersileanira incisa* is known from off West Africa, South and Central America, Gulf of Mexico, Florida, West Indies, Malay Archipelago, Andaman Sea, Philippine Islands, and Japan; at 15–930 m.

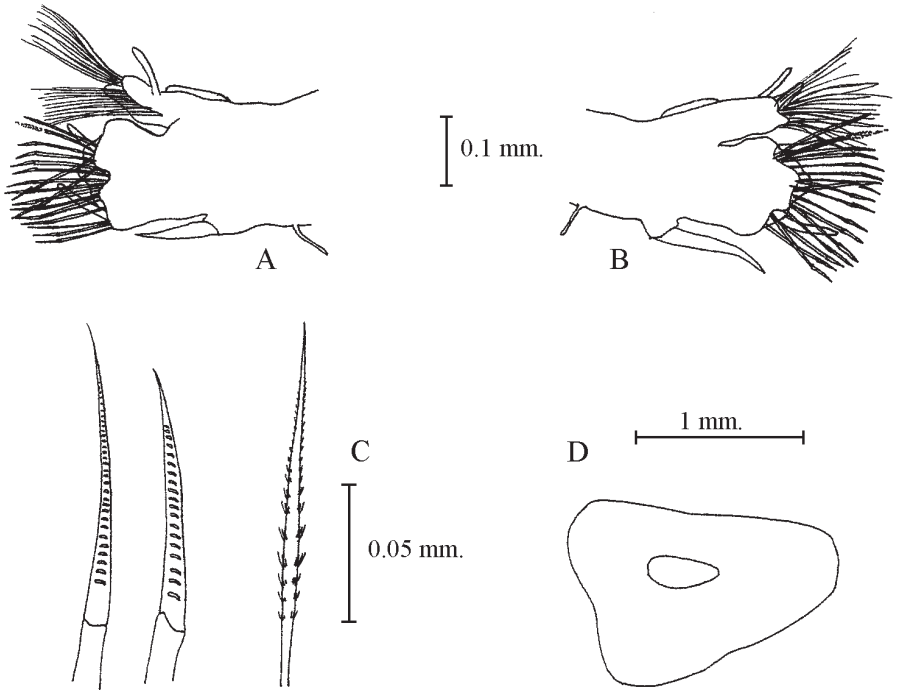

Figure 13 *Ehlersileanira* cf. *incisa* (Grube, 1877), PMBC 15814: A. Parapodium of segment 23, posterior view, parapodial stylodes and setae indicated. B. Anterior view of same. C. Neurosetae from same. D. Left elytron from middle region of the specimen, position of scar indicated.

Phuket Marine Biological Center Special Publication 24: 205–235 (2002)

Leanira Kinberg, 1856

Leanira Kinberg, 1856: 388. – Pettibone, 1970b: 3–4.

Leanithalessa Hartmann-Schröder, 1965: 88. Type species: *Leanithalessa antennata* Hartmann-Schröder, 1965: 88–92 [= *Leanira quatrefagesi* Kinberg, 1856. – Pettibone, 1970b: 4–8, figs. 1–3].

Type species: *Leanira quatrefagesi* Kinberg, 1856: 388. – Pettibone, 1970b: 4–8, figs. 1–3.

Diagnosis: Prostomium oval, partially fused to tentacular parapodia. Three small subulate antennae; ceratophore of median antenna without lateral auricles; lateral antennae fused to tentacular parapodia. Bulbous facial tubercle medial to inner palpal sheaths. Segment III without dorsal cirri or dorsal tubercles. Elytra smooth, without tubercles or papillae. Notopodia with well developed bracts with stylodes. Neuropodia with bilobed posterior bracts bearing stylodes; anterior acicular lobe and U-shaped anterior lower bract (beneath posterior lower bract) without stylodes. Neurosetae compound spinigers, with blades relatively short and canaliculate; simple spinose capillaries may be present.

Remarks: *Leanira* Kinberg, 1856 was partly revised by Pettibone (1970b). Furthermore, some species previously assigned to *Leanira* were later referred to other, new genera in a series of papers by Pettibone (1970b, 1970c, 1992a), *i.e.*, *Ehlersileanira*, *Neoleanira*, *Horstileanira*, *Labiosthenolepis*, and *Labioleanira*.

Leanira differs from other sigalionid genera in lacking auricles on the ceratophore of the median antenna but having lateral antennae with ceratophores. Some species of *Leanira* have labial lobes on the lateral lips of the mouth, *e.g.*, *L. denensis*, *L. hystricis* and the type species, *L. quatrefagesi*

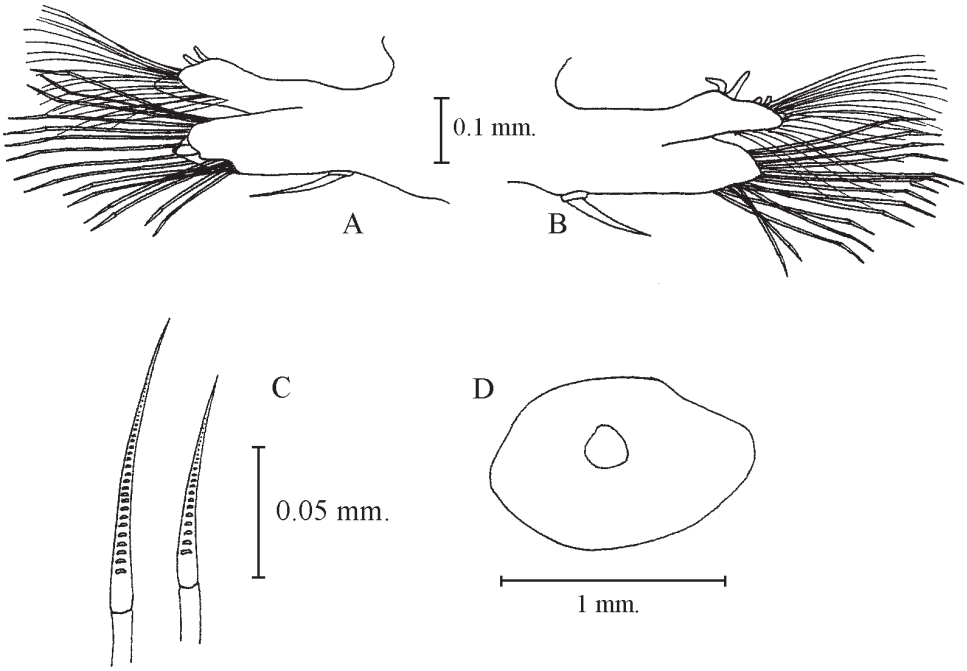

Figure 14 *Leanira* cf. *coeca* Horst, 1917, PMBC 15815: A. Parapodium of segment 23, posterior view, setae indicated. B. Anterior view of same. C. Neurosetae from same. D. Left elytron from anterior region of specimen, position of scar indicated.

(Pettibone 1970b), as in *Labiosthenolepis* and *Labioleanira* (see remarks on *Labiosthenolepis*).

Leanira* cf. *coeca Horst, 1917
Fig. 14A–D

Leanira coeca Horst, 1917: 120, pl. 26, figs. 5–7. – Pettibone 1970b: 13–15, fig. 7.

Material examined: BIOSHELF st. K-11/HS, 7°02´ N, 97°18´ E, 760–764 m, 17 Nov 1999 (1, PMBC 15815).

Description: Body about 11 mm long (with about 35 segments, specimen posteriorly incomplete) and 1.2 mm wide including parapodia. Median antenna short, attached to short, free portion of indistinct ridge on anterior third of prostomium. Tentacular parapodia with few stylodes. Lateral lips without labial lobes. Notopodia and neuropodia subequal in length in anterior and middle regions (Fig. 14A–B); more posteriorly neuropodia surpass notopodia in length. Neurosetae compound spinigers, blades canaliculate (Fig. 14C). Elytra small and oval on first few anterior segments, progressively larger on posterior segments (Fig. 14D).

Remarks: The present specimen agrees in general with *Leanira coeca* as described by Pettibone (1970b).

However, according to Pettibone (1970b) slender tubular segmental papillae are present in *L. coeca*, anteromedial to the ventral cirri from about segment 30, whereas tubular segmental papillae were not observed in the present specimen. The elytra of this species, as described and figured by Pettibone (1970b), become progressively larger and subreniform to subpyriform in shape. Unfortunately, this could not be confirmed on the present specimen because only a few anterior elytra have been preserved. More material must be studied before the identity of the present specimen can be verified.

Leanira coeca is known from the Malay Archipelago; at 330–1788 m.

***Claparedepelogenia* Pettibone, 1997**

Claparedepelogenia Pettibone, 1997: 68.
Lepidopleurus Claparède, 1868: 415.

Type species: *Lepidopleurus inclusus* Claparède, 1868: 415–417, pl. 6, fig. 4A–E. [= *Claparedepelogenia inclusa* (Claparède, 1868). – Pettibone, 1997: 68–71, figs. 49–50].

Diagnosis: Prostomium oval. Median antenna with stout bulbous ceratophore, ceratophore without lateral auricles or small ctenidia but with enlarged bulbous base and middorsal ridge. Short lateral antennae are fused to the dorsal sides of the tentaculophores. Upper lip without facial tubercle. Segment II with middorsal ridge and neuropodia with long, filiform appendages. Segment III with long dorsal cirri, styles longer than cirrophores. Ventral surface papillate. Elytra with fringe of papillae, surface with short and long, filiform papillae and adhesive papillae with flattened tips, more or less covered with sand grains and foreign material. First pair of elytra greatly elongated, indented anteriorly. Neurosetae compound falcigers, blades with bifid tip.

Remarks: *Lepidopleurus* Claparède, 1868 was erected for the new species *L. inclusus*. This species was subsequently referred to as *Psammolyce inclusa* (Claparède, 1868) by, *e.g.*, Fauvel (1923) and Hartman (1959). However, Pettibone (1997) proposed *Claparedepelogenia* as a replacement name for *Lepidopleurus*, as the latter was preoccupied (used by Risso 1826 in Mollusca). Some species previously assigned to *Psammolyce* were synonymized with *Claparedepelogenia inclusa* by Pettibone (1997).

Claparedepelogenia is characterized by having dorsal cirri on segment III, as in *Heteropelogenia*, *Pottsipelogenia*, *Pelogenia* and *Neoleanira* (see remarks on *Neoleanira*).

Furthermore, in *Claparedepelogenia inclusa*, long papillae are present at the medial base of the ventral cirri (see remarks on *Willeysthenelais*).

Claparedepelogenia has not been found in the BIOSHELF material.

Phuket Marine Biological Center Special Publication 24: 205–235 (2002)

Heteropelogenia Pettibone, 1997

Heteropelogenia Pettibone, 1997: 84.

Type species: *Psammolyce articulata* Day, 1960: 293–294, fig. 4g–l. [= *Heteropelogenia articulata* (Day, 1960). – Pettibone, 1997: 84–86, fig. 60].

Diagnosis: Prostomium oval with bulbous ctenidia. Ceratophore of median antenna without lateral auricles or small ctenidia. Short lateral antennae are fused to the dorsal sides of the tentaculophores. Upper lip with facial tubercle. Segment III with dorsal cirri, with styles about as long as cirrophores. Elytra with fringe of papillae, surface with short and long, filiform papillae and adhesive papillae with flattened tips, more or less covered with sand grains and foreign material. Elytral and neuropodial filiform papillae articulated. Neuropodia of segment II without long terminal appendages. Neuropodia of segment III with digitiform presetal extensions. Neurosetae compound falcigers with long and short blades, mostly with bifid tips.

Remarks: *Heteropelogenia* Pettibone, 1997 was established for *Psammolyce articulata* Day, 1960. Some other species previously assigned to *Psammolyce* were also referred to this species by Pettibone (1997).

Heteropelogenia possesses dorsal cirri on segment III, as in *Claparedepelogenia*, *Pottsipelogenia*, *Pelogenia* and *Neoleanira* (see remarks on *Neoleanira*).

Furthermore, *Heteropelogenia* is characterized by having bulbous ctenidia on the prostomium. Future studies should attempt to verify the occurrence of ctenidia on the prostomium and determine whether they are homologous to the ctenidia occurring on the ceratophore of the median antenna of *Pottsipelogenia*, *Dayipsammolyce*, and *Hartmanipsammolyce*.

Heteropelogenia has not been found in the BIOSHELF material.

Pottsipelogenia Pettibone, 1997

Pottsipelogenia Pettibone, 1997: 71.

Type species: *Psammolyce gracilis* Potts, 1910: 348, pl. 19, fig. 20, pl. 21, figs. 60–61. [= *Pottsipelogenia gracilis* (Potts, 1910). – Pettibone, 1997: 71–74, figs. 51–52].

Diagnosis: Prostomium oval. Ceratophore of median antenna without lateral auricles but with small lateral ctenidia (except *P. malayana*). Short lateral antennae are fused to the dorsal sides of the tentaculophores. Upper lip with large, bulbous facial tubercle. Segment III with dorsal cirri, with short cirrophores and very long styles. Elytra with fringe of papillae, surface with short and long, filiform papillae and adhesive papillae with flattened tips, more or less covered with sand grains and foreign material. Elytral and neuropodial filiform papillae not articulated. Neuropodia of segments II and III without long terminal appendages. Neurosetae compound falcigers, blades all with bifid tips, shafts mostly with rows of spines.

Remarks: *Pottsipelogenia* Pettibone, 1997 was established for *Psammolyce gracilis* Potts, 1910. Some other species previously assigned to *Psammolyce* were also referred to this genus by Pettibone (1997).

Pottsipelogenia has dorsal cirri on segment III, as in *Heteropelogenia*, *Claparedepelogenia*, *Pelogenia* and *Neoleanira* (see remarks on *Neoleanira*).

Furthermore, all members of *Pottsipelogenia* except *P. malayana* possess small lateral ctenidia on the ceratophore of the median antenna, as in *Dayipsammolyce* and *Hartmanipsammolyce* (see remarks on *Heteropelogenia*).

At present, one specimen from the BIOSHELF material probably belongs to this genus. Unfortunately, it had been dried before its identity could be verified. More material must be available before the species can be reported and treated in detail.

Pelogenia Schmarda, 1861

Pelogenia Schmarda, 1861: 159. – Pettibone, 1997: 30.

Type species: *Pelogenia antipoda* Schmarda, 1861: 160. – Pettibone, 1997: 31–34, figs. 21–23].

Diagnosis: Prostomium oval, without ctenidia. Ceratophore of median antenna without lateral auricles or small ctenidia. Short lateral antennae are fused to the dorsal sides of the tentaculophores and may be hidden from view by the ceratophore of the median antenna. Upper lip without facial tubercle. Segment III with long dorsal cirri, with cirrophores shorter than, as long as, or longer than styles. Elytra with fringe of papillae, surface with short and long, filiform papillae and adhesive papillae with flattened tips, more or less covered with sand grains and foreign material. Elytral and neuropodial filiform papillae not articulated. First pair of elytra not greatly elongated and not deeply incised anteriorly. Neuropodia of segment II without long terminal appendages. Neurosetae compound falcigers.

Remarks: *Pelogenia* was referred to *Psammolyce* by Ehlers (1905) and maintained in that genus by, *e.g.*, Fauvel (1917), Augener (1927a, b), and Hartman (1959). It was reinstated by Pettibone (1997) and *Eupholoe* McIntosh, 1885 was referred to it. Some other species previously assigned to *Psammolyce* were also assigned to *Pelogenia* by Pettibone.

Pelogenia has dorsal cirri on segment III, as in *Claparedepelogenia*, *Heteropelogenia*, *Pottsipelogenia* and *Neoleanira* (see remarks on *Neoleanira*).

Pelogenia has not been found in the BIOSHELF material.

Psammolyce Kinberg, 1856

Psammolyce Kinberg, 1856: 388. – Pettibone, 1997: 4.

Type species: *Psammolyce flava* Kinberg, 1856: 388. – Pettibone, 1997: 4–8, figs. 1–3.

Diagnosis: Prostomium oval. Ceratophore of median antenna without lateral auricles or small ctenidia. Short lateral antennae are fused to the dorsal sides of the tentaculophores. Upper lip without facial tubercle. Segment III without dorsal cirri but dorsal tubercles present (but absent in, *e.g.*, *P. horsti*). Elytra with fringe of papillae, surface with short and long, filiform papillae and adhesive papillae with flattened tips, more or less covered with sand grains and foreign material. First pair of elytra elongated, deeply incised anteriorly; posterior elytra with medial process, without posterior process. Elytral and neuropodial filiform papillae not articulated. Neuropodia of segment II with long terminal appendages. Neurosetae compound spinigers, with blades tapered, at least some with furcated tip.

Remarks: *Psammolyce* Kinberg, 1856 was revised by Pettibone (1997). Some species previously assigned to it were referred to *Pelogenia* and others were assigned to 5 new genera: *Heteropelogenia*, *Pottsipelogenia*, *Hartmanipsammolyce*, *Dayipsammolyce*, and *Neopsammolyce*.

Psammolyce has not been found in the BIOSHELF material.

Neopsammolyce Pettibone 1997

Neopsammolyce Pettibone, 1997: 10.

Type species: *Psammolyce petersi* Kinberg, 1856: 388. [= *Neopsammolyce petersi* (Kinber, 1856). – Pettibone, 1997: 11–12, fig. 6].

Diagnosis: Prostomium oval. Ceratophore of median antenna without lateral auricles or small ctenidia. Short lateral antennae are fused to the dorsal sides of the tentaculophores. Upper lip with or without facial tubercle. Segment III without dorsal cirri but dorsal tubercles present. Elytra with fringe of papillae, surface with short and long, filiform papillae and adhesive papillae with flattened tips, more or less covered with sand grains and foreign material. First pair of elytra not deeply incised anteriorly (except in *N. occidentalis*); posterior elytra with medial process, without posterior process (except in *N. spinosa*). Elytral and neuropodial filiform papillae not articulated (except in *N. catenulata*). Neuropodia of segment

Phuket Marine Biological Center Special Publication 24: 205–235 (2002)

II without long terminal appendages. Neurosetae compound falcigers with short blades and bifid tips (some entire).

Remarks: *Neopsammolyce* Pettibone, 1997 was established for *Psammolyce petersi* Kinberg, 1856. Some other species previously assigned to *Psammolyce* were also referred to *Neopsammolyce* by Pettibone.

Neopsammolyce has not been found in the BIOSHELF material.

Hartmanipsammolyce Pettibone, 1997

Hartmanipsammolyce Pettibone, 1997: 23.

Type species: *Psammolyce pendula* Hartman, 1942: 91–92, pl. 8, figs. 6–8, pl. 9, figs. 18–20. [= *Hartmanipsammolyce pendula* (Hartman, 1942). – Pettibone, 1997: 23–26, figs. 15–17].

Diagnosis: Prostomium oval. Ceratophore of median antenna without lateral auricles but with lateral ctenidia. Short lateral antennae are fused to the dorsal sides of the tentaculophores. Upper lip without facial tubercle. Segment III without dorsal cirri but dorsal tubercles present. Elytra with fringe of papillae, surface with short and long, filiform papillae and adhesive papillae with flattened tips, more or less covered with sand grains and foreign material. First pair of elytra not deeply incised anteriorly. Elytral and neuropodial filiform papillae not articulated. Neuropodia of segment II without long appendages. Neuropodia of segment III with large, balloon-like or drop-like lobes on distal tips. Neurosetae compound falcigers, with short blades and bifid tips, shafts smooth.

Remarks: *Hartmanipsammolyce* Pettibone, 1997 was established for *Psammolyce pendula* Hartman, 1942. Some other species previously assigned to *Psammolyce* were also referred to this species by Pettibone (1997).

Hartmanipsammolyce possesses small lateral ctenidia on the ceratophore of the median antenna, as in *Pottsipelogenia* and *Dayipsammolyce* (see remarks on *Heteropelogenia*).

Hartmanipsammolyce has not been found in the BIOSHELF material.

Dayipsammolyce Pettibone, 1997

Dayipsammolyce Pettibone, 1997: 27.

Type species: *Psammolyce ctenidophora* Day, 1973: 11–12, fig. 1m–t. [= *Dayipsammolyce ctenidophora* (Day, 1973). – Pettibone, 1997: 27–29, figs. 18–20].

Diagnosis: Prostomium oval. Ceratophore of median antenna without lateral auricles, but with lateral ctenidia. Short lateral antennae are fused to the dorsal sides of the tentaculophores. Upper lip with stalked, bulbous facial tubercle. Segment III without dorsal cirri and without balloon-like lobes on distal tips of neuropodia but dorsal tubercles present. Elytra with fringe of papillae, surface with short and long, filiform papillae and adhesive papillae with flattened tips, more or less covered with sand grains and foreign material. First pair of elytra not deeply incised anteriorly. Posterior elytra with medial and posterior processes. Elytral and neuropodial filiform papillae not articulated. Neuropodia of segment II without long appendages. Neurosetae compound falcigers with short and long blades, shafts with rows of spines.

Remarks: *Dayipsammolyce* Pettibone, 1997 was established for *Psammolyce ctenidophora* Day, 1973. Some other species previously assigned to *Psammolyce* were also referred to this species by Pettibone (1997).

Dayipsammolyce possesses small lateral ctenidia on ceratophore of median antenna, as in *Pottsipelogenia* and *Hartmanipsammolyce* (see remarks on *Heteropelogenia*).

Dayipsammolyce has not been found in the BIOSHELF material.

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