

The Genus *Euthalenessa* (Sigalionidae: Polychaeta) from Thai and Japanese Waters

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Abstract Two species of sigalionid polychaetes of the genus *Euthalenessa*, i.e., *E. festiva* (Grube, 1875) and *E. digitata* (McIntosh, 1885), are reported from the Andaman Sea, southwestern Thailand and Tanabe Bay, Japan. The latter species is also reported from the Gulf of Thailand and is a new record from Thai and Japanese waters. The position of the ceratophore of the median and lateral antennae, the occurrence of stylodes on the anterior and posterior lower lobes of segment 2-5, and the number of pairs of labial ctenidia are the main characters used for distinguishing these two species from other members of the genus.

Key words: Sigalionidae, *Euthalenessa*, Andaman Sea, Thailand, Tanabe Bay

INTRODUCTION

Euthalenessa Pettibone, 1970a is characterized by having the prostomium dorsally fused to the tentacular parapodia; all three antennae are small, each with a ceratophore, the lateral ones appearing to occur at an intermediate position between the prostomium and the tentacular parapodia; dorsal tentacular ridges extend dorsally on the distal part of the tentacular parapodia; the elytra have lateral fringes of branched papillae; the neurochaetae are compound falcigers; inner tentaculophore lobes are absent; the median antenna has a ceratophore without lateral auricles, although small ctenidia may be present.

Five species of *Euthalenessa* have been recognized (Pettibone, 1970a), i.e., *E. oculata* (Peters, 1854), *E. festiva* (Grube, 1875), *E. digitata* (McIntosh, 1885), *E. fimbriata* (McIntosh, 1885), and *E. chacei* (Pettibone, 1970a).

Euthalenessa festiva was reported from the Andaman Sea by Aungtonya (2002), this being the only record from Thailand. *E. festiva* has also been reported from Japanese waters: as *Thalenessa oculata* McIntosh in Sagami Bay (Izuka 1912); as *E. oculata* McIntosh in Yoriso Bay (Okuda 1939), as *T. digitata* (Imajima and Hartman 1964) and as *E. festiva* from Sagami Bay and around the Nansei Islands (Imajima 2003, 2005, 2006).

The aims of this study are to describe and illustrate these 2 species of *Euthalenessa* from the Andaman Sea and Tanabe Bay, Japan.

MATERIALS AND METHODS

The samples from the Andaman Sea included here were collected during the Fifth Thai-Danish

Expedition in 1966 (Seidenfaden et al., 1968; Phasuk, 1992), the 'Effects of Offshore Tin Mining on Benthic Communities Project on the west coast of Phuket Island during 1980-1982' (Hylleberg, Nateewathana and Bussarawit 1985; Hylleberg, Nateewathana and Chatananhawej, 1985), the Thai-Danish BIOSHELF Project during 1996-2000 (Aungtonya et al., 2000), and a quantitative survey of the benthic fauna along the southwest coast of Thailand during 1982-1983 (Chatananhawej and Bussarawit, 1987). Additional samples were collected from Phuket by the second author and Mr. Tom Schiøtte in 1995. Samples from the Gulf of Thailand were collected during the Royal Project of Coastal Resources Rehabilitation (Angsupanich et al., 2008).

The material of Japanese sigalionids was primarily collected by the third author in Tanabe Bay, Japan, on board the R/V *Janthina III*, using a Smith-McIntyre grab.

Examinations were carried out using a Nikon SMZ-U stereo microscope and a Nikon E600 compound microscope. A camera lucida was routinely used to facilitate drawing. The specimens were stained with Shirlastain (Petersen, 1998). Body width was measured at segment 10-15. The maximum number of segments was counted. Parapodia were removed from the left side of the body and illustrated in posterior and anterior views. Neurochaetae were illustrated from the same parapodia. Elytra were also removed from the left side and illustrated in dorsal view. SEM specimens were dehydrated, 'critical-point' dried, sputter-coated with gold and examined in a JSM-5800 scanning electron microscope.

The morphological terms used here are in accordance with Aungtonya (2003). The specimens are deposited in the Reference Collection at Phuket Marine Biological Center, Thailand (PMBC), Seto Marine Biological Laboratory, Kyoto University, Japan (SMBL), and the Zoological Museum, Natural History Museum of Denmark, Copenhagen University, Denmark (ZMUC).

TAXONOMY

Family Sigalionidae Kinberg, 1856

Genus *Euthalenessa* Darboux, 1900

Type species.

Thalenessa digitata McIntosh, 1885: 140-142, pl. 22, fig. 2, pl. 23, figs. 5-7, pl. 25, figs. 4-5, pl. 13A, figs. 7-10 (by subsequent designation in Pettibone, 1970a: 3).

Diagnosis.

Prostomium dorsally fused with tentacular parapodia. **Three small antennae; all with ceratophores**, style sometimes extending to same level; ceratophore of median antenna **without lateral auricles**. **Dorsal tentacular crests and inner tentacular lobes absent**. Dorsal ridges extend on distal part of tentacular parapodia (**dorsal tentacular ridge**). Single palpal sheath present. **Facial tubercle present**. **Ctenidia medial to lateral lips and to ventral cirri of some anterior segments**. Segment 2 with ventral buccal cirri. **Segment 3 with dorsal cirri, dorsal tubercles absent**. **Ventral cirri without outer basal knob**. **Elytral surface smooth; outer lateral margin with fringe of branched papillae**.

Notopodia with posterior upper lobe and anterior upper and lower lobes, all with stylodes. Notochaetae simple, coarsely to finely spinous capillaries. Ctenidial pads present between notopodium and dorsal tubercle or elytophore. Neuropodia of anterior segments with four short lobes at base of chaetae: anterior upper and lower lobes and posterior upper and lower lobes; digitiform lobe (**neuropodial ligule**) may be present on lower distal part of anterior upper lobe and stylodes may be

present on anterior and posterior lower lobes. On more posterior segments neuropodia with anterior upper and J-shaped lower lobes (in cross section overlapping lower end of posterior lobe) and a single C-shaped posterior lobe; stylodes absent, although neuropodial ligule may still be prominent. Anterior upper lobe on middle and posterior segments more or less fused with acicular lobe. **Neurochaetae compound falcigers**, with bifid tip, distal part of stem spinous or smooth.

Remarks.

The characters in bold in the above diagnosis are particularly important in recognizing members of this genus, although they are not necessarily autapomorphies for the genus. It is the combination of these characters that distinguishes *Euthalenessa*.

Pettibone (1790a) used the term ‘parapodial bracts’ in her revision of *Euthalenessa*, i.e., notopodia and neuropodia with well-developed bracts and notopodial bracts with stylodes throughout the body. There are four groups of neuropodial bracts, i.e., lower-anterior-ventral, upper-anterior, lower-posterior, and upper-posterior. In the present paper, the terms a ‘group of chaetae’ and a ‘parapodial lobe covering the base of the chaetae’ are used to avoid confusion with the term ‘parapodial bracts’, as in *Willeysthenelais* (Aungtonya et al., in manuscript).

Key to *Euthalenessa* species found in Thai and Japanese waters

- Ceratophore of lateral antennae at about same level as median ceratophore (Fig. 1A); stylodes present on anterior and posterior lower lobes of neuropodia of segments 2-5; with 1-4 pairs of labial ctenidia; anterior upper lobe of neuropodium with prominent ligule (Figs. 2F, 4D).....***E. digitata*** (McIntosh, 1885)
- Ceratophore of median antenna on anterior margin of prostomium, ceratophore of lateral antennae on dorsal side of tentacular parapodia (Figs. 5B, 6); without stylodes on anterior and posterior lower lobes of neuropodia on segments 2-5; with a single pair of labial ctenidia; neuropodial ligules not especially prominent.....***E. festiva*** (Grube, 1875)

Euthalenessa digitata (McIntosh, 1885)

Figs. 1A-B, 2A-F, 3A-E, 4A-I

Thalenessa digitata McIntosh, 1885: 140-142, pl. 22, fig. 2; pl. 23, figs. 5-7; pl. 25, figs. 4-5; pl. 13A, figs. 7-10. - Off Admiralty Islands, western Pacific, north of New Guinea.

Euthalenessa digitata. - Pettibone, 1970a: 19-23, figs. 12-13, with synonymy.

Thalenessa lewisii. - Phasuk, 1992: 81, part (st. 1006 according to label, not cited in Phasuk, 1992; 1018-1019), not *Sigalion lewisii* Berkeley and Berkeley, 1939.

Euthalenessa sp. - Aungtonya, 2003: figs. 1C, 4A, 6A-B.

Material examined.

Andaman Sea: PMBC 13634, 2 specimens, Fifth Thai-Danish Expedition, st. 1006, haul 4, 8°14'N, 98°15'E, 17 m, clayey coarse sand to gravel, 8 Jan 1966; PMBC 13637, 1 specimen, Fifth Thai-Danish Expedition, st. 1018, haul 4, 9°27'N, 98°16'E, 15 m, loose brown sand, 12 Jan 1966; PMBC 13639, 2 specimens, Fifth Thai-Danish Expedition, st. 1018, haul 6, 9°27'N, 98°16'E, 15 m, loose brown sand, 12 Jan 1966; PMBC 13642, 1 specimen, Fifth Thai-Danish Expedition, st. 1019, haul 4, 9°28'N, 98°07'E, 20 m, fine grey sand, 12 Jan 1966; PMBC 20383, 1 specimen, west coast of Phuket, st. 8/1, Kamala Bay, northern part, 10 m, 18 June 1982; PMBC 20384, 1 specimen, west coast of Phuket, st. 10/2, Kamala Bay, southern part, 10 m, 11 June 1980; PMBC 20382, 1 specimen, west coast of Phuket, st. 2/2, Airport Bay, 20 m, 17 Sep 1980; PMBC 19634, 1 specimen on SEM-stub, west coast of Phuket, st. 13/1, Patong Bay, central part, 20 m, 15 Oct 1980; PMBC 20381, 2

specimens, west coast of Phuket, st. 2/1, Airport Bay, 20 m, 15 Dec 1980; PMBC 20385, 1 specimen, west coast of Phuket, st. 10/3, Kamala Bay, southern part, 10 m, 15 Feb 1980; PMBC 20288, 1 specimen on SEM-stub, west coast of Phuket, st. 13/1, Patong Bay, central part, 20 m, 15 Dec 1980; PMBC 20386, 1 specimen, west coast of Phuket, st. 13/3, Patong Bay, central part, 20 m, 15 Dec 1980; PMBC 20387, 1 specimen, west coast of Phuket, st. 3/2, 2, 14 m, 8 Feb 1983; PMBC 19635, 1 specimen on SEM-stub, southwest coast of Thailand, st. 36/2, 1, 14 m (err. for 14 m, according to label), 12 Jan 1983; PMBC 20389, 1 specimen, Thai-Danish BIOSHELF, st. E-20m/OS, 8°30'N, 98°12'E, 20 m, muddy sand, 22 Apr 1996; ZMUC XXXX1, 2 specimens, st. TS-33, Naiyang Beach, Phuket, 5-8 m, sand, 6 Dec 1995 (2). Gulf of Thailand: PMBC 20388, 2 specimens, Tanyong, Narathiwas, 13-17 m, 14 May 2005. Japan: SMBL Inv-XXXX1, 1 specimen, West of Shiso Is., Seto, 5 m, shell sand, 20 May 2003.

Description.

Most specimens posteriorly incomplete, largest one in four pieces, posteriorly complete, anterior piece about 49 mm long (with about 86 segments), in total about 77 mm long and 3 mm wide including parapodia (about 4.25 mm wide including chaetae) (PMBC 20382).

Prostomium dorsally fused with tentacular parapodia, with three small antennae; ceratophore of median antenna located on anterior margin of prostomium, without lateral auricles; ceratophore of lateral antennae occur at about same level as median ceratophore, at an intermediate position between prostomium and tentacular parapodia; styles of median and lateral antennae subequal in size (Figs. 1A, 2A-B, 3A-C, 4A). Chaetae on tentacular parapodia absent. Dorsal tentacular ridges located on about the distal three-fourths of tentacular lobes (Figs. 1A, 2B, 4A). Eyes indistinct. Upper lip with facial tubercle (Figs. 1B, 2C-D, 3D, 4B). One to four pairs of stalked ctenidia medial to lateral lips, ctenidia arising between lateral lips and palp. Palps extend to about segment 8-15, with palpal sheath (Figs. 1B, 2C). Segment 2 with ventral buccal cirri. Segment 3 with short dorsal cirri, but without dorsal tubercles (Fig. 1B). Branchiae begin on segment 4-6. Ventral cirri slender, tapering, without basal knob.

Elytra change in size and shape along body. First pair of elytra without papillae. Anterior elytra with 9-15 fringe papillae along most of outer lateral margin; more posterior elytra with 6-12 papillae

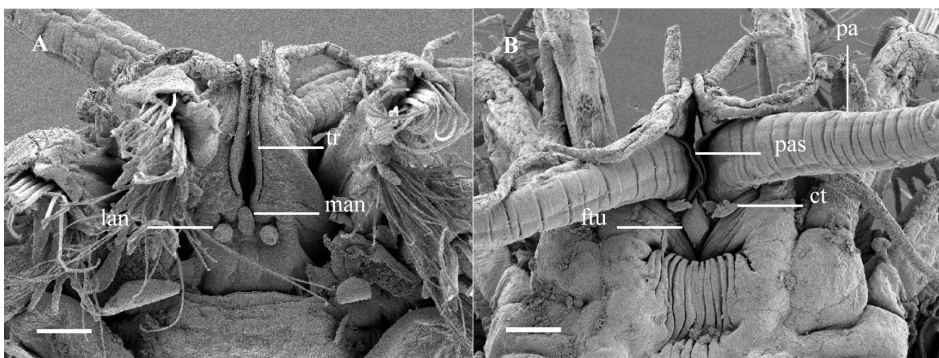


Fig. 1. *Euthalenessa digitata* (PMBC 19635), SEM micrographs: A. Anterior end, dorsal view, first pair of elytra on segment 2 removed; B. Anterior end, ventral view. Scales = 100 μ m. Abbreviations: ct, ctenidium; ftu, facial tubercle; pas, palpal sheath; lan, lateral antenna; man, median antenna; pa, palp; tr, tentacular ridge.

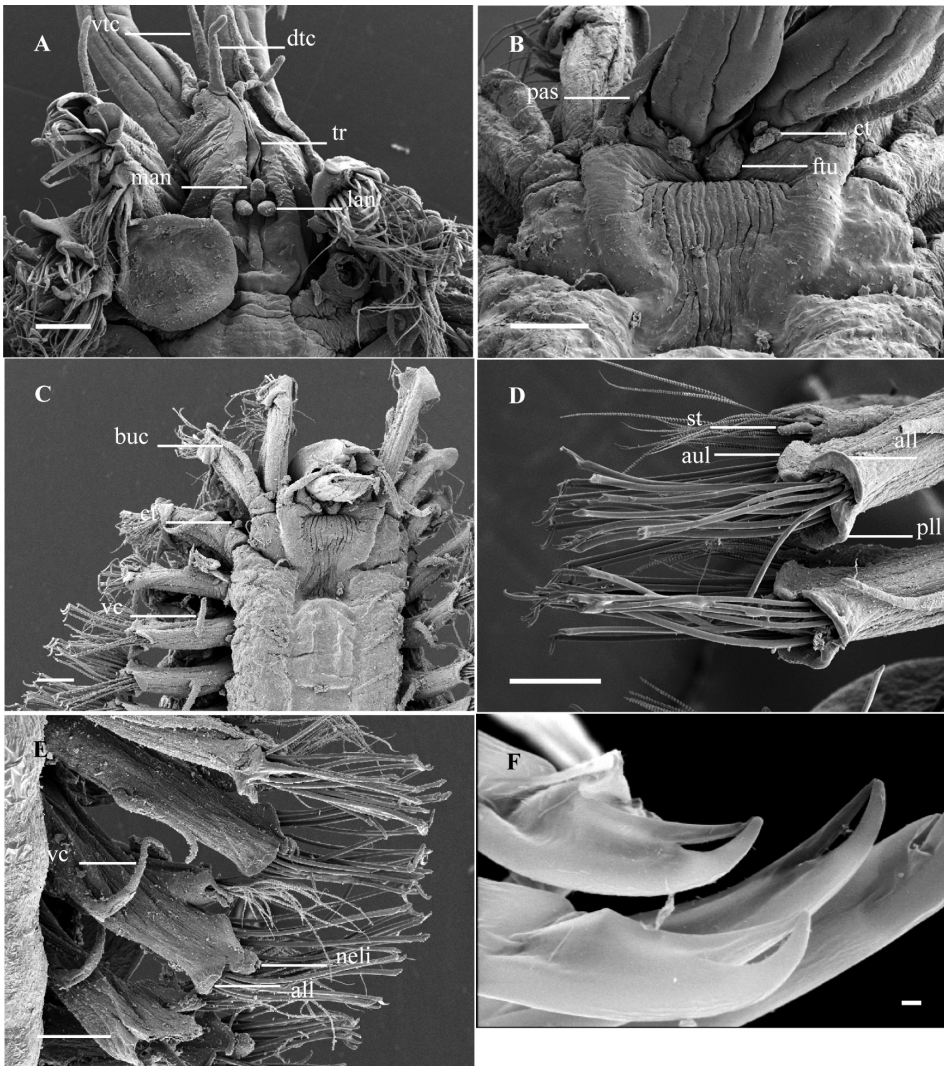


Fig. 2. *Euthalenessa digitata* (PMBC 19634), SEM micrographs: A. Anterior end, dorsal view, elytron on right side of segment 2 removed; B-C. Anterior end, ventral view; D. Right parapodia of anterior region, anteroventral view, most of neurochaetal blades broken; E. Left parapodia of more posterior region, anteroventral view, most of neurochaetal blades broken; F. close-up of compound neurochaetae, single-articled falcigers. Scales = 200 μ m (A), 100 μ m (B-F), and 1 μ m (G). Abbreviations: all, anterior lower lobe; aul, anterior upper lobe; buc, buccal cirrus; ct, ctenidium; dtc, dorsal tentacular cirrus; ftu, facial tubercle; pas, palpal sheath; man, median antenna; neli, neuropodial ligule; pll, posterior lower lobe; st, stylode; tr, tentacular ridge; vc, ventral cirrus; vtc, ventral tentacular cirrus.

confined to anterior half of outer lateral margin, elytral papillae with 2-5 filaments per papilla (Figs. 2A-B, 3A, 4H-I). Most papillae irregularly palmate or dichotomously branched.

Notopodial lobes encircle group of chaetae in anterior segments with numerous stylodes; on middle and posterior segments notopodia with posterior upper lobe and anterior upper and lower lobes. Notochaetae simple, coarsely to finely spinous capillaries (Fig. 3E). In anterior segments, neuropodia with four lobes, anterior upper and lower lobes and posterior upper and lower lobes (Fig. 2E); anterior and posterior lower lobes on segments 2-5 furnished with stylodes. On more posterior segments anterior upper lobe with prominent neuropodial ligule (Figs. 2F); neuropodial stylode absent. In middle and posterior segments neuropodia with a single C-shaped posterior lobe, J-shaped anterior lower lobes; anterior upper lobe more or less fused with acicular lobe, neuropodial ligule prominent

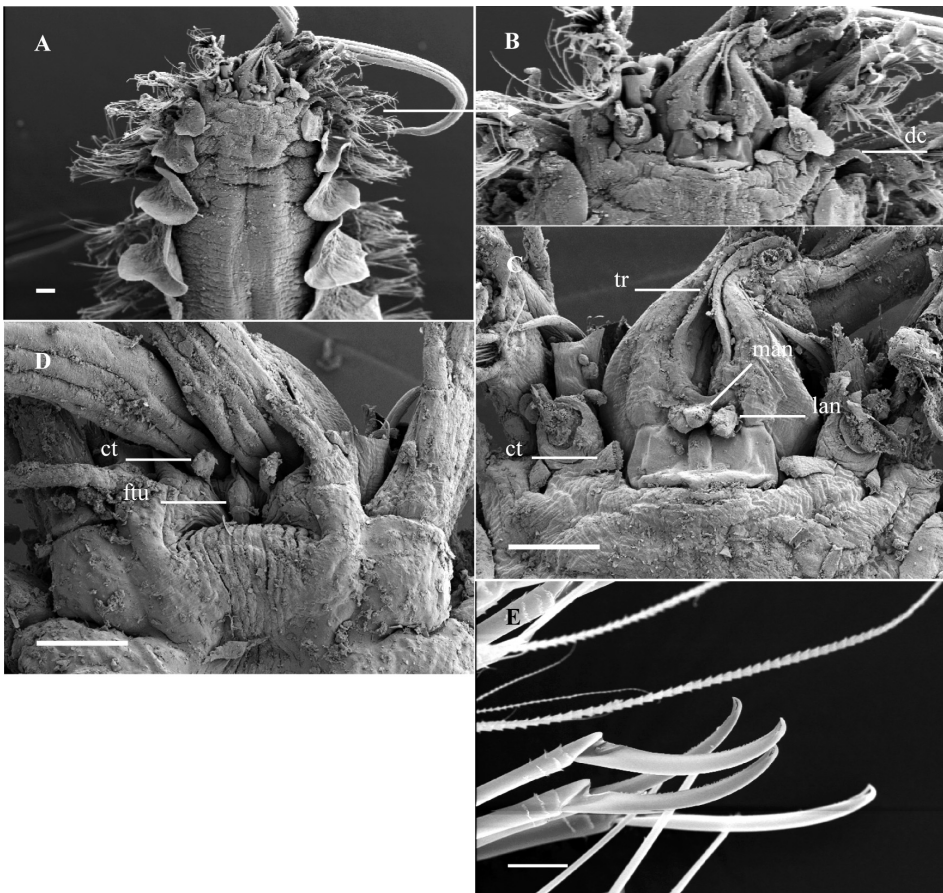


Fig. 3. *Euthalenessa digitata* (PMBC 20288), SEM micrographs: A-C. Anterior end, dorsal view, first pair of elytra on segment 2 removed, B. Enlargement of anterior end in A; D. Anterior end, ventral view; E. Compound neurochaetae and spinous capillary notochaetae from anterior segment. Scales = 100 μm (A, C-D) and 10 μm (E). Abbreviations: ct, ctenidium; dc, dorsal cirrus; ftu, facial tubercle; man, median antenna; tr, tentacular ridge.

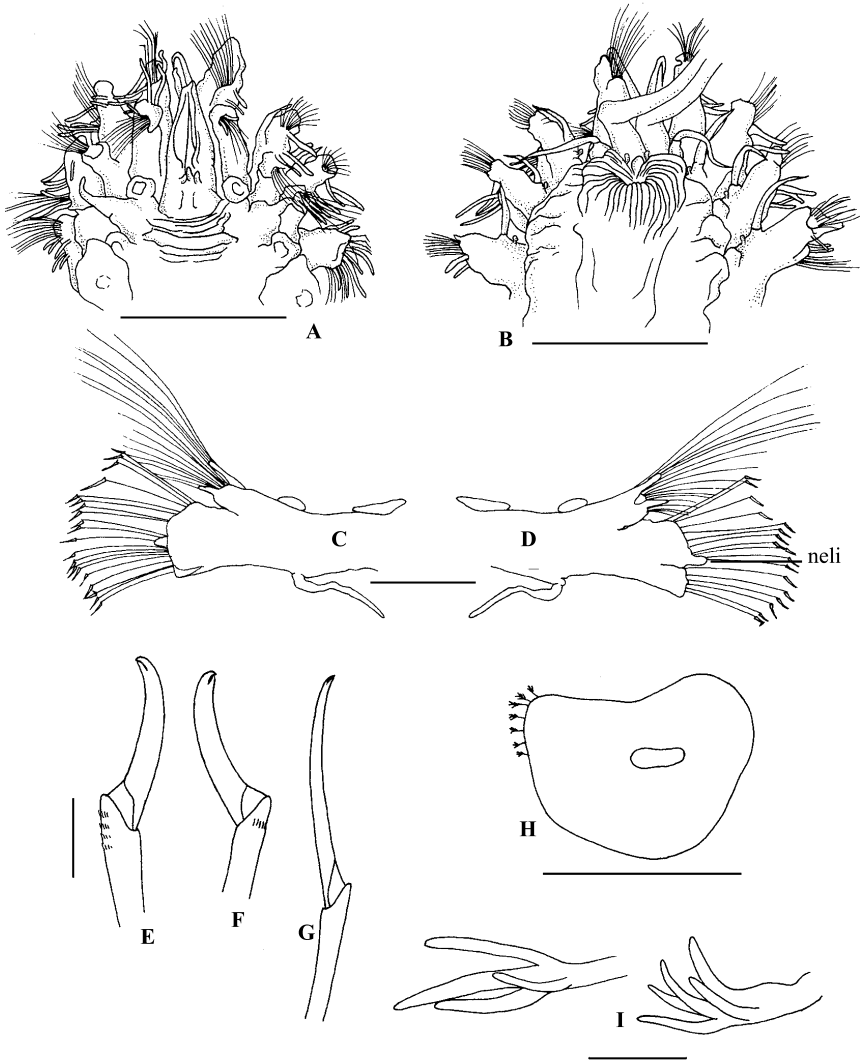


Fig. 4. *Euthalenessa digitata* (PMBC 20383): A. Anterior end, dorsal view; B. Anterior end, ventral view; C. Parapodium of segment 29, posterior view; D. Anterior view of same; E-G. Neurochaetae from same; H. Left elytron from segment 30, position of attachment scar indicated; I. Enlargement of two papillae from margin of elytron in H, showing details of branching pattern. Scales = 1.0 mm (A-B, H), 0.5 mm (C-D), and 50 μ m (E-G, I). Abbreviation: neli, neuropodial ligule.

(Fig. 4C-D). Neurochaetae stout with short blades, upper and lower groups with slightly longer blades; all with bifid tip, distal part of stem smooth or with a few spinous rows (Figs. 3E, 4E-G).

Remarks.

The characters of the present specimens agree well with those of *Euthalenessa digitata* as described and figured by Pettibone (1970a) based on the type materials (holotype and syntypes); these specimens are about 4-6 mm in width, including chaetae. Regarding differences between this species

and other members of *Euthalenessa*, see Table 1.

However, the elytra in the present specimens have fringes with about 6-12 papillae, with 2-5 filaments per papilla, whereas there are 8-12 papillae, with up to 5 filaments per papilla, according to Pettibone (1970a). This difference does not appear to be size-related and is not considered significant.

It should be noted that several specimens in the present study did not possess labial ctenidia, i.e., PMBC 13634 (small specimen), 13637, 13639 (small specimen), 20381, 20385, 20386, and ZMUC XXXXX (small specimen). Furthermore, stylodes on the anterior and posterior lower neuropodial lobes of segments 2-5 were not observed in PMBC 13634 (small specimen), 13637, 13639 (small specimen), 20381, 20385, 20386, 20389 or ZMUC XXXXX. These differences are believed to reflect the fact that the latter specimens are juveniles.

Distribution.

Western Pacific Ocean (Admiralty Islands, north of New Guinea), Red Sea, Persian Gulf, Gulf of Oman, Maldives?, Sri Lanka?, Thailand (Andaman Sea and the Gulf of Thailand), and Japan (Tanabe Bay); at 5-45 m.

Euthalenessa festiva (Grube, 1875)

Figs. 5A-D, 6-7, 8A-D, 9A-D

Leanira festiva Grube, 1875: 78. - Philippine Islands

Euthalenessa festiva. - Pettibone, 1970a: 12-19, figs. 6-11, with synonymy. - Aungtonya, 2002: 211-213, figs. 2-3. - Imajima, 2003: 49-55, figs. 27-31.

Thalenessa lewisii. - Phasuk, 1992: 81, part (st. 1006 according to label, not cited in Phasuk, 1992), not *Sigalion lewisii* Berkeley and Berkeley, 1939.

Material examined.

Andaman Sea: PMBC 13633, 2 specimens, Fifth Thai-Danish Expedition, st. 1006, haul 3, 8°14'N, 98°15'E, 18 m, clayey coarse sand to gravel, 8 Jan 1966; PMBC 20399, 1 specimen, west coast of Phuket, st. 2/1, 20 m, 9 Apr 1980; PMBC 20390, 1 specimen on SEM-stub, Thai-Danish BIOSHELF, st. G-3/BC, 8°00'N, 97°54'E, 76 m, muddy sand, 23 Apr 1996; PMBC 15803, 1 specimen, Thai-Danish BIOSHELF, st. H-3/BC, 7°45'N, 97°58'E, 70 m, coarse sand, 9 May 1996; PMBC 15804, 1 specimen, Thai-Danish BIOSHELF, st. H-3/BC, 7°45'N, 97°58'E, 70 m, coarse sand, 9 May 1996. Japan: SMBL Inv-XXXX2, 1 specimen, Tanabe Bay, Wakayama, Japan, st. 1, 39.6 m, shell, 17 xxx 2003; SMBL Inv-XXXX3, 2 specimens, st. 2, 46.9 m, Otsuchi Bay, Japan, coarse sand, 7 May 1997; PMBC XXXXX, 2 specimens, st. 2, 46.9 m, Otsuchi Bay, Japan, coarse sand, 7 May 1997; SMBL Inv-XXXX4, 3 specimens, outside of Tsukumo Bay, Japan, 20m, sand and gravel, 16 May 1995.

Description.

All specimens posteriorly incomplete, largest one about 28 mm long (with about 45 segments) and 4.5 mm wide including parapodia (SMBL Inv-XXXX4). One specimens in PMBC 13633 about 23 mm long (with about 89 segments) and 1.25 mm wide including parapodia (about 1.5 mm wide including chaetae).

Prostomium dorsally fused with tentacular parapodia, with three small antennae; ceratophore of median antenna located on anterior margin of prostomium, without lateral auricles; ceratophore of lateral antennae located on dorsal side of tentacular parapodia; styles of median and lateral antennae subequal (Figs. 5A-B, 6-7). Chaetae absent on tentacular parapodia. Dorsal tentacular ridges located

on distal third of tentacular lobes (Fig. 5A). Two pairs of eyes. Upper lip with facial tubercle. Only single pair of ctenidia medial to lateral lips. Palps extend to about segment 7-8, with single palpal sheath. Segment 2 with ventral buccal cirri. Segment 3 with short dorsal cirri, but without dorsal tubercles. Branchiae begin on segment 5. Ventral cirri slender, tapering, without basal knob.

Elytra change in size and shape along body. First pair of elytra without papillae. Anterior elytra with 8-11 fringe papillae along most of outer lateral margin; more posterior elytra with 5-12 papillae confined to anterior half of outer lateral margin, with 4-7 filaments per papilla (Figs. 8D, 9D). Most papillae irregularly palmate or dichotomously branched.

Notopodial lobes with numerous stylodes encircle group of chaetae on anterior segments (Fig. 5A-B); on middle and posterior segments notopodia with posterior upper lobe and anterior upper and

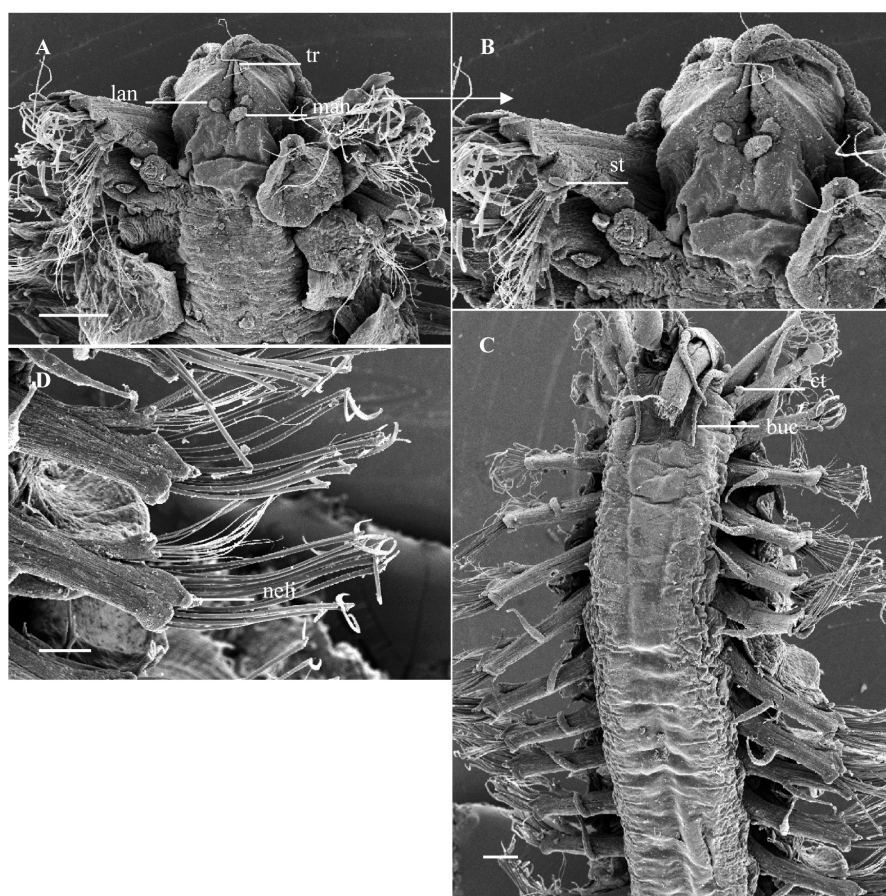


Fig. 5. *Euthalenessa festiva* (PMBC 20390), SEM micrographs: A. Anterior end, dorsal view; B. Enlargement of A; C. Anterior end, ventral view; D. Left parapodia of anterior region, anteroventral view. Scales = 100 μ m (A, C) and 50 μ m (D). Abbreviations: buc, buccal cirrus; ct, ctenidium; lan, lateral antenna; man, median antenna; st, stylode; tr, tentacular ridge.

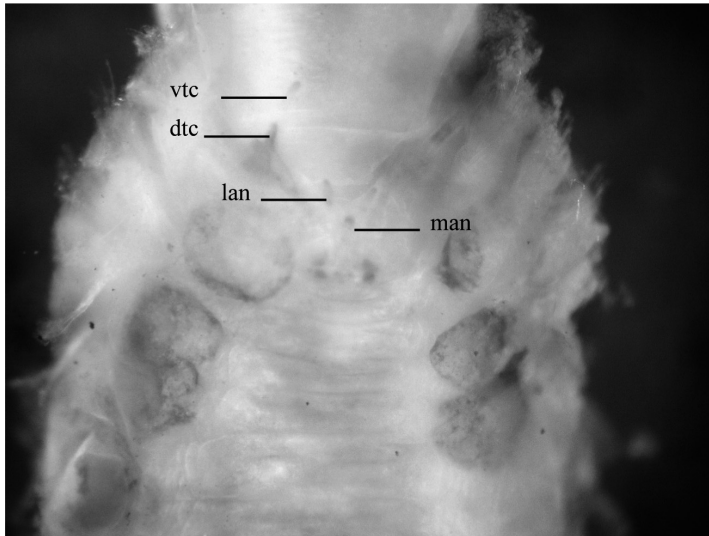


Fig. 6. *Euthalenessa festiva* (SMBL Inv-XXXX4). Anterior end of largest specimen, dorsal view, pharynx extended. Abbreviations: lan, lateral antenna; man, median antenna; dtc, dorsal tentacular cirrus; vtc, ventral tentacular cirrus.

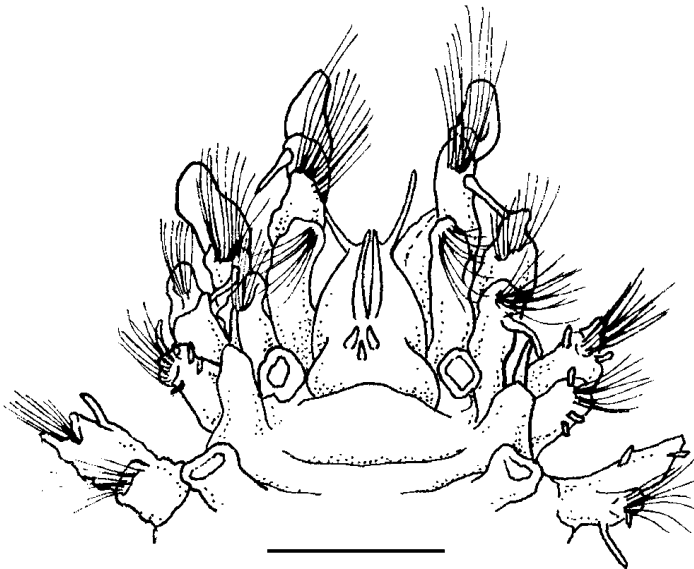


Fig. 7. *Euthalenessa festiva* (PMBC 20399). Anterior end, dorsal view. Scale = 0.5 mm.

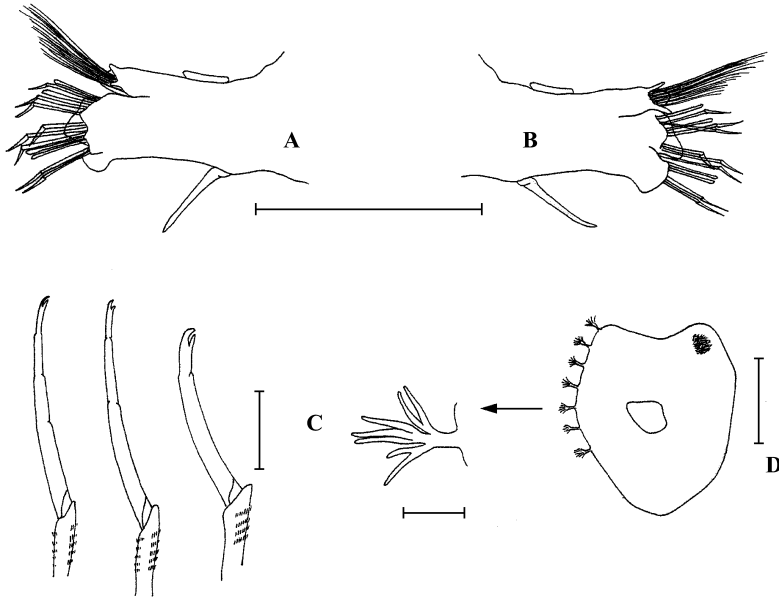


Fig. 8. *Euthalenessa festiva* (PMBC 15803): A. Parapodium of segment 23, posterior view. B. Anterior view of same. C. Neurochaetae from segment 13. D. Left elytron from segment 19, position of scar and pigmentation indicated, with enlargement of single papilla showing details of branching pattern. Scales = 0.5 mm (A-B, D), 50 μ m (C and enlargement of single papilla in D). From Aungtonya, 2002.

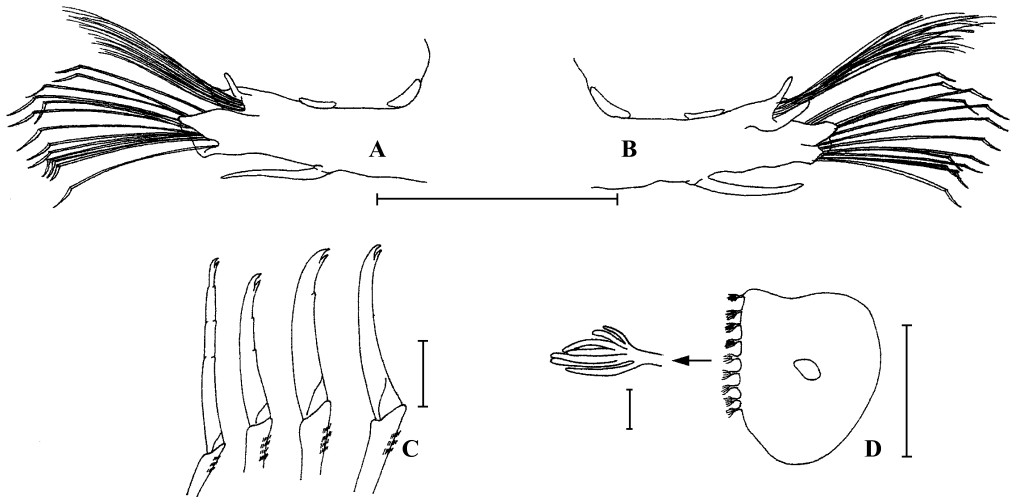


Fig. 9. *Euthalenessa festiva* (PMBC 15804): A. Parapodium of segment 21, posterior view. B. Anterior view of same. C. Neurochaetae from same. D. Left elytron from segment 21, position of scar indicated, with enlargement of single papilla showing details of branching pattern. Scales = 1.0 mm (D), 0.5 mm (A-B), 50 μ m (C and enlargement of single papilla in D). From Aungtonya, 2002.

Table 1. Comparison of characters of known species of *Euthalenessa*, adapted from Pettibone (1970a), Imajima (2003), and this study.

<i>Euthalenessa</i>	<i>E. digitata</i> (McIntosh, 1885)	<i>E. chacei</i> Pettibone, 1970a	<i>E. oculata</i> (Peters, 1854)	<i>E. festiva</i> (Grube, 1875)	<i>E. fimbriata</i> (McIntosh, 1885)
Stylodes on anterior and posterior lower lobes of neuropodia on segments 2–5	present	absent	absent	absent	absent
Pairs of labial ctenidia	up to 4	1	1	1	1
Number of elytral papillae	6–12	about 8	9–14	5–13	about 13
Number of filaments per elytral papilla	1–5	3–9	2–7 (up to 14?)	2–9	4–14
Body color	colorless	colorless	reddish-brown	reddish-brown	reddish-brown
Elytra	opaque	colorless, delicate, transparent	pigmented, opaque	pigmented, opaque	pigmented, opaque
Position of ceratophore of lateral antennae relative to median antenna	same level	same level	extend beyond	extend beyond	extend beyond
tentacular chaetae	few or absent	moderate in number	few or absent	few or absent	few or absent
Position of tentacular ridge on tentacular lobes	on distal 3/4	on distal 1/4	on distal 1/2	on distal 1/3	on distal 1/2
Ligules on anterior upper lobe of neuropodia from middle region of body	prominent	not especially prominent	not especially prominent	not especially prominent	prominent
Blades of neurochaetae of anterior segments	short	most short, upper group with 2 articles and lower group with 2–3 articles	short, with 3–5 articles	short to longer, lower group with 2–3 articles	with 1–2 articles, some of upper and lower groups with 3 articles
Blades of neurochaetae of middle segments	similar to the anterior neurochaetae, upper and lower groups with slightly longer blades	middle group with 2–3 articles, upper group with 3–5 articles, and lower group with 4–5 articles	with longer blades, with 3–5 articles	upper group with 2–3 articles and lower group with 3–5 articles	middle group with 1–3 articles, upper and lower groups with 4 articles

lower lobes. Notochaetae simple, coarsely to finely spinous capillaries. In anterior segments neuropodia with posterior upper and lower lobes and anterior upper and lower lobes; stylodes absent on anterior and posterior lower lobes of neuropodia on segments 2-5; neuropodial ligules present (Fig. 5C). In middle and posterior segments neuropodia with a single C-shaped posterior lobe, J-shaped anterior lower lobes, anterior upper lobe more or less fused with acicular lobe; neuropodial ligules not especially prominent; neuropodial stylodes absent. Neurochaetae with 1-4 distal articles and bifid tip; distal part of stem with a few spinous rows (Figs. 8A-C, 9A-C).

Remarks.

The characters of the specimens reported here agree well with those of *Euthalenessa festiva* as described and figured by Pettibone (1970a). Her specimens were about 4-6 mm wide, including chaetae. Regarding differences between this species and other members of *Euthalenessa*, see Table 1.

There is, however, some degree of variation in the elytral papillae, as the present specimens have fringes of about 5-12 papillae with 4-7 filaments per papilla, whereas Pettibone (1970a) reported the presence of 7-13 papillae per elytron, with 2-9 filaments per papilla.

Distribution.

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

Euthalenessa, unidentifiable

Thalenessa lewisii. - Phasuk, 1992: 81, part (st. 1008, 1018-9), not *Sigalion lewisii* Berkeley and Berkeley, 1939.

Material examined.

PMBC 13635, 1 specimen, Fifth Thai-Danish Expedition, st. 1008, haul 1, 8°43'N, 98°11'E, 20 m, medium coarse "Amphioxus" sand, 8 Jan 1966; PMBC 13636, 1 specimen, Fifth Thai-Danish Expedition, st. 1018, haul 3 9°27'N, 98°16'E, 15 m, loose brown sand, 12 Jan 1966; PMBC 13640, 1 specimen, Fifth Thai-Danish Expedition, st. 1018, haul 9, 9°27'N, 98°16'E, 15 m, loose brown sand, 12 Jan 1966; PMBC 13641, 1 specimen, Fifth Thai-Danish Expedition, st. 1019, haul 1, 9°28'N, 98°07'E, 21 m, fine grey sand, 12 Jan 1966.

Remarks.

All specimens are posteriorly incomplete. All are damaged, some having previously been dried, and some of them are fragmented. In all likelihood they belong to *Euthalenessa*, but it is not possible to identify them to species.

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REFERENCES

- Angsupanich, S., Aungtonya, C., Samphuntarat, P., Kaeoprakan, P., Himyi, S., Phuttapreecha, R. and Phetchaiya, T. 2008. Effects of Artificial Reefs on the Zooplankton in the coasts of Pattani and Narathiwat Provinces. Distribution report of the royal project of coastal resources rehabilitation, Prince of Songkla University, pp. (3) 26-(3) 66. (in Thai)
- Aungtonya, C. 2002. A preliminary study of Sigalionidae (Annelida: Polychaeta) from the Andaman Sea off southwestern Thailand with an overview of presently recognized genera. Phuket Marine Biological Center Special Publication, 24, 205-235.
- Aungtonya, C. 2003. Scanning electron microscopy (SEM) and light microscopy (LM) study of important characters in the identification of Sigalionidae (Annelida: Polychaeta). Hydrobiologia, 496, 1-16.
- Aungtonya, C., Thaipal, S. and Tendal, O. 2000. A preliminary report on the Thai-Danish BIOSHELF surveys (1996-2000) of the west coast of Thailand, Andaman Sea. Phuket Marine Biological Center Research Bulletin, 63, 53-76.
- Aungtonya, C., Eibye-Jacobsen, D. and Angsupanich, S. (in manuscript). The genus *Willeysthenelais* (Sigalionidae: Polychaeta) from Thai waters. Phuket Marine Biological Center Research Bulletin.
- Chatananthawej, B. and Bussarawit, S. 1987. Quantitative survey of the macrobenthic fauna along the west coast of Thailand in the Andaman Sea. Phuket Marine Biological Center Research Bulletin, 47, 1-23.
- Grube, A.E. 1875. Bemerkungen über die Familie der Aphroditeen (Gruppe Hermionea und Sigalionina). Schlesische Gesellschaft für vaterländische Cultur. Breslau Jahresbericht, 52, 57-79.
- Hylleberg, J., Nateewathana, A. and Bussarawit, S. 1985. Temporal changes in sediment characteristics on the west coast of Phuket Island. Phuket Marine Biological Center Research Bulletin, 37, 1-16.
- Hylleberg, J., Nateewathana, A. and Chatananthawej, B. 1985. Temporal changes in the macrobenthos on the west coast of Phuket Island, with emphasis on the effects of offshore tin mining. Phuket Marine Biological Center Research Bulletin, 38, 1-32.
- Imajima, M. 2003. Polychaetous annelids from Sagami Bay and Sagami Sea collected by the Emperor Showa of Japan and deposited at the Showa Memorial Institute, National Science Museum, Tokyo (II). Orders included within the Phyllodocida, Amphinomida, Spintherida and Eunicida. National Science Museum Monographs, 23, 1-221.
- Imajima, M. 2005. Deep-sea benthic polychaetous annelids from around Nansei Islands. National Science Museum Monographs, 29, 37-99.
- Imajima, M. 2006. Polychaetous annelids from Sagami Bay and the Sagami Sea, Central Japan. Memoirs of the National Science Museum, 40, 317-408.
- Imajima, M. and Hartman, O. 1964. The polychaetous annelids of Japan, Part I. Occasional Paper of the Allan Hancock Foundation, 26, 1-237.
- Izuka, A. 1912. The errantiate Polychaeta of Japan. Journal of the College of Science, Imperial University of Tokyo, 30 (2), 1-262.
- McIntosh, W.C. 1885. Report on the Annelida Polychaeta collected by H.M.S. Challenger during the years 1873-1876. Report on the Scientific Results of the Voyage of H.M.S. Challenger during the years 1872-76, Zoology, 12, 1-554.
- Okuda, S. 1939. Annelida Polychaeta in Onagawa Bay and its vicinity. II. Polychaeta Errantia with some addenda of Polychaeta Sdentaria. Science Reports of Tâhoku Imperial University, Biology, 14, 219-244.
- Petersen, M.E. 1998. *Pholoe* (Polychaeta: Pholoidae) from northern Europe: a key and notes on the nearshore species. Journal of the Marine Biological Association of the United Kingdom, 78, 1373-1376.
- Pettibone, M.H. 1970a. Revision of the genus *Euthalenessa* Darboux (Polychaeta: Sigalionidae). Smithsonian Contributions to Zoology, 52, 1-30.
- Phasuk, B. 1992. Preliminary report on the polychaetes from the Fifth Thai-Danish Expedition along the Andaman Sea coast of Thailand. Phuket Marine Biological Center Research Bulletin, 57, 77-88.
- Seidenfaden, G., Smitinand T., and Thorson, G. 1968. Report on the fifth Thai-Danish Expedition 1966. The Natural History Bulletin of the Siam Society, 22, 245-261.