

## Pilargidae (Annelida, Polychaeta) from Japan

(Part 1)

By

**Minoru IMAJIMA**

Department of Zoology, National Science Museum, Tokyo

**Abstract** Specimens of the family Pilargidae from Japanese waters are examined. Five genera and six species, including one new species and one new subspecies, are recognized. All species, except one species of *Synelmis*, are new to the Japanese fauna. *Synelmis dineti*, described from the Adriatic Sea, is recorded for the second time worldwide.

Three species of pilargid polychaetes, *Ancistrosyllis gracilis*, *A. hanaokai* and *Pilargis matsunagaensis* have been reported in Japanese waters by HESSLE (1925) and KITAMORI (1960). However, their identifications are questionable, based on confusing descriptions.

In the present study, five genera and six species, including a new species and a new subspecies of Pilargidae, are recognized. All species, except *Synelmis albini*, are new to the Japanese fauna. *Synelmis dineti* KATZMANN *et al.* (1974) described from the Adriatic Sea, in 120 m, is the second record for the world. A new species of *Litocorsa*, described below, is the third species of the genus. The first was described from Scotland and the second from Gulf of Mexico. Species of *Sigambra* will be treated in a second paper. The bulk of the collection, including type specimens, is deposited in the National Science Museum, Tokyo (NSMT).

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### Key to Japanese Species of Pilargidae excluding *Sigambra*

1. Palps fused dorsally with rounded anterior end; neuropodial acicular spines with minute apical teeth. . . . . *Litocorsa dentata*
- 1'. Palps separated from each other . . . . . 2
2. With stout emergent, acicular notosetae . . . . . 3
- 2'. Without such notosetae; with lateral antennae, without median antenna; integument minutely papillated. . . . . *Pilargis berkeleyae*
3. Integument smooth, not papillated; with straight or slightly curved acicular noto-



Fig. 1. Map of Japan, showing localities mentioned in the text.

- setae ..... *Synelmis* . . . . . 4
- 3'. Integument minutely papillated; with distally curved hooked notosetae . . . . . 5
- 4. With slender dorsal and ventral cirri; acicular notosetae straight. . . . .  
 . . . . . *Synelmis albini*
- 4'. With minute dorsal and ventral cirri; acicular notosetae slightly S-shaped with  
 distal tooth. . . . . *Synelmis dineti*
- 5. Prostomium with three antennae; parapodia deeply cut with distinct dorsal and  
 ventral cirri. . . . . *Ancistrosyllis groenlandica*
- 5'. Prostomium with two antennae; parapodia poorly developed with minute dorsal

and ventral cirri' ..... *Cabira pilargiformis japonica*

Genus *Ancistrostylis* MCINTOSH, 1879

*Ancistrostylis groenlandica* MCINTOSH, 1879

(Fig. 2 a-k)

*Ancistrostylis groenlandica* MCINTOSH, 1879, p. 502, pl. 65, figs. 3, 20; SOUTHWARD, 1956, pp. 260–261, fig. 1 e–j; PETTIBONE, 1963, pp. 110–111, fig. 30; 1966, pp. 166–168, fig. 3; HARTMAN, 1965, p. 71; PEARSON, 1970, p. 75; KATZMANN, LAUBIER & RAMOS, 1974, pp. 3–7, figs. 1, 2; KIRKEGAARD, 1983, pp. 210–211.

*Material examined.* Sagami Bay: 35°17.4'N, 139°28.0'E, 17 m (2 specimens); 35°07.4'N, 139°28.0'E, 830 m (1); 35°13.4'N, 139°26.0'E, 420 m (1); 35°17.4'N, 139°26.0'E, 19 m (1); 35°13.4'N, 139°24.0'E, 560 m (1); 35°17.4'N, 139°23.0'E, 60 m (1); 35°13.4'N, 139°10.0'E, 210 m (1). Off Oga: 39°53.6'N, 139°42.5'E–39°53.7'N, 139°43.2'E, 75–68 m (10); 39°45.3'N, 139°48.8'E–39°45.0'N, 139°48.3'E, 80–83 m (1); 39°53.6'N, 139°41.4'E–39°53.5'N, 139°42.3'E, 101–93 m (1). Tsukumo Bay, Noto Peninsula, 20 m (1). Suruga Bay, 34°40.6'N, 138°25.0'E, 450 m (1).

*Description.* A complete specimen measures 9 mm in length and 0.7 mm in width including parapodia, with 55 setigerous segments. The body is slightly tapered anteriorly and posteriorly, and it is depressed dorso-ventrally. The segments are divided by deep segmental grooves except anterior parts. The body surface, including parapodia, is covered by small papillae, with conspicuous rust-colored glandular areas above and below the parapodia (Fig. 2 a–c).

The prostomium has large palpophores with small button-like palpostyles on the antero-ventral side and short median and paired lateral antennae (Fig. 2 a, b). The proboscis is short and cylindrical with scattered brownish papillae. The tentacular segment is distinct from the prostomium, with two pairs of short, subequal tentacular cirri, similar to the antennae (Fig. 2 a–c).

The first two to four parapodia are uniramous and the others are biramous. Dorsal and ventral cirri are digitate and are irregularly papillated. The first dorsal cirri (Fig. 2 d) are much longer than the following, and the second cirri (Fig. 2 e) are about a half as long as the first ones. Sharply recurved, notopodial hooks are first present from the third parapodium in the most specimens, some from the fifth continuing to the end of the body (Fig. 2 f, k). The hooks are recurved upward and medially; their distal parts are roughened (Fig. 2 g). Neuropodial lobes are conical and have two kinds of distally hooked neurosetae: long, slender, with fine serrations and short, thicker setae with coarse serrations along the cutting edge (Fig. 2 h–j). The short setae number one to three and occur in the inferior position of the setal bundle. A short ventral cirrus emerges from the inferior end of the parapodium. The pygidium is conical and has paired long, anal cirri with scattered papillae (Fig. 2 k).

*Remarks.* In the specimens from the North Atlantic including Greenland the notopodial hooks begin on setigers 4 to 6, but mostly on setiger 3 or rarely 5 on the

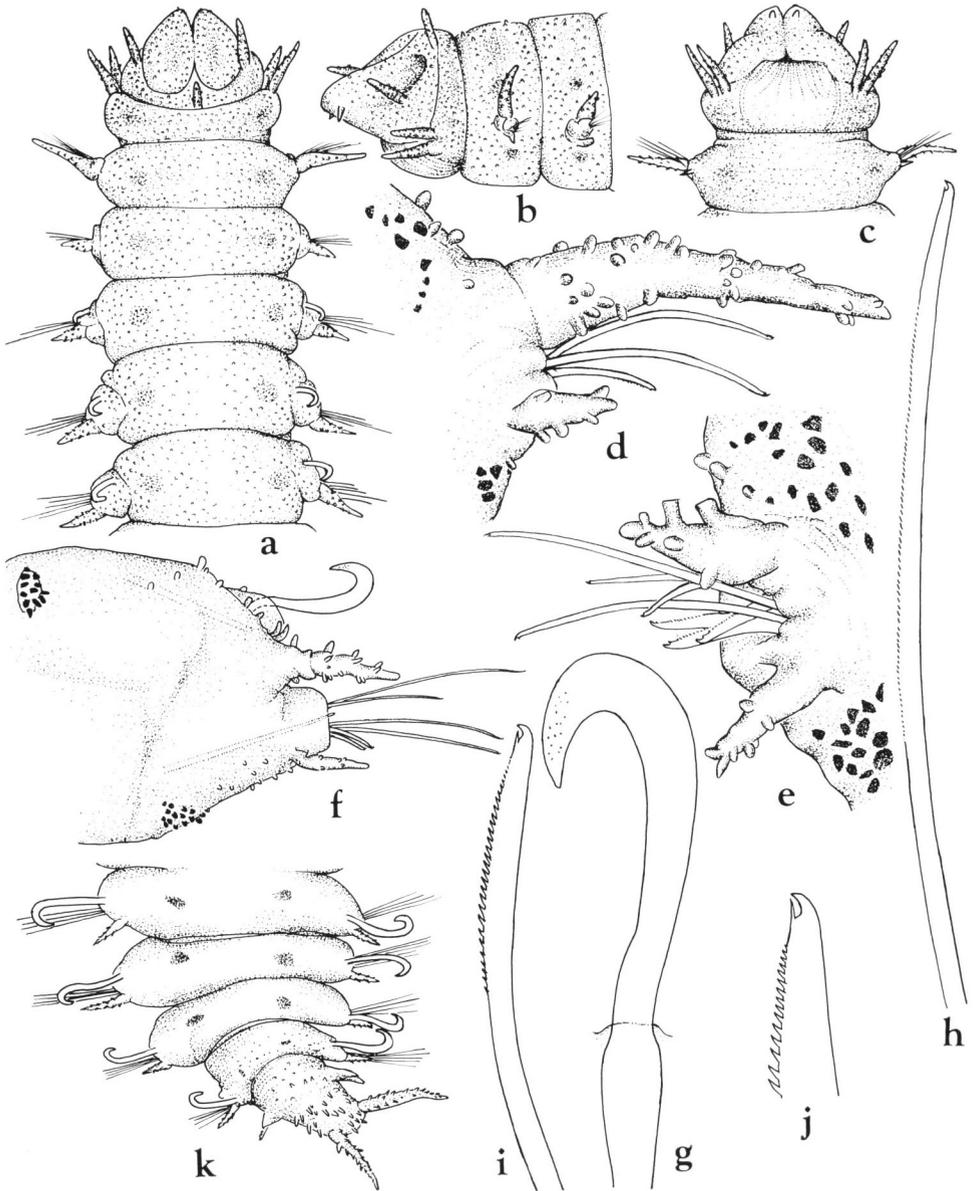


Fig. 2. *Ancistrosyllis groenlandica*. a–c, Anterior ends, in dorsal (a), lateral (b) and ventral (c) views,  $\times 74$ ; d, 1st parapodium, in posterior view,  $\times 350$ ; e, 2nd parapodium, in anterior view,  $\times 350$ ; f, 30th parapodium, in posterior view,  $\times 120$ ; g, emergent notopodial hook,  $\times 350$ ; h, superior neuroseta,  $\times 900$ ; i, inferior neuroseta,  $\times 900$ ; j, same, distal end,  $\times 1500$ ; k, posterior end, in dorsal view,  $\times 100$ .

Japanese specimens.

*Distribution.* West Greenland; British Isles; Gulf of St. Lawrence to offshore New Jersey; off northeastern South America; West Africa; Mediterranean; Japan.

Genus *Cabira* WEBSTER, 1879, revised by PETTIBONE, 1966

*Cabira pilargiformis japonica* subsp. nov.

(Fig. 3 a–p)

*Material examined.* Otsuchi Bay, 42–45 m (1). Tokyo Bay: 35°38.0'N, 140°00.0' E, 7 m (1); 35°36.0'N, 139°54.0'E, 9 m (1); 35°21.0'N, 139°40.0'E, 13 m (2). Off Shimoda, 34°39.7'N, 138°57.0'E–34°39.6'N, 138°56.9'E, 17–28 m (3). Sagami Bay: 35°13.4'N, 139°34.0'E, 63 m (1); 35°17.4'N, 139°27.0'E, 20 m (1); 35°12.4'N, 139°36.3' E, 8 m (1). Suruga Bay, 35°01.6'N, 138°51.1'E–35°02.5'N, 138°50.6'E, 88–99 m (1). Omura Bay: 33°03.4'N, 128°49.4'E, 5 m (1); 32°55.5'N, 128°55.4'E, 9 m (1); 32°51.0'N, 128°52.0'E, 10 m (1). Sasebo Bay: 33°05.0'N, 128°38.0'E, 35 m (1); 33°05.0'N, 128°42.1'E, 20 m (1). Maizuru Bay, 14–15 m (holotype and 2 paratypes).

*Description.* All of the specimens are anterior fragments. The holotype is largest, measuring 28 mm in length and 0.5 mm in width for 80 setigers. The anterior dorsum has seven to eight annulations on each segment; thereafter, annulations are not conspicuous. There are distinct, longitudinal midventral and two dorsolateral grooves throughout the body except for about the anterior ten setigers (Fig. 3 a–c).

The prostomium is distinctly separated from the peristomium. Palps are subtriangular, finely papillated, with small palpostyles located antero-ventrally. There is a pair of very short lateral antennae; eyes are not visible (Fig. 3 a). Numerous papillae are not concentrated on the anterior tips, as on *Cabira incerta*.

The peristomium is collar-like and wider than the prostomium, with two pairs of very short tentacular cirri and small pigmental spots posterior to the tentacular cirri (Fig. 3 d). The proboscis is cylindrical, with many cuticular, spindle-like papillae arranged in irregular longitudinal rows on the basal ring (Fig. 3 e). The papillae are gradually reduced in size proximally, and are replaced by numerous conical, soft papillae (Fig. 3 f).

The parapodium has short, conical dorsal and ventral cirri and short, poorly developed neuropodium with setal fascicle supported by a single embedded neuroaciculum (Fig. 3 g). The neurosetae are variable in length, with slightly hooked tips, and the cutting edges minutely serrated (Fig. 3 h, i). The neuroaciculum is distally tapered and obliquely curved, its tip projecting slightly from the parapodial lobe (Fig. 3 j). From the seventh parapodium a notoacicular hook emerges above the dorsal cirrus (Fig. 3 k). These hooks have a gentle sigmoid curve near the distal end, and are more or less constant in size throughout the parapodia (Fig. 3 l). From about setiger 20 the neurosetae number four; they are variable in length with distinctly bifurcated tips and minutely serrated cutting margins (Fig. 3 m). In more posterior setigers the neurosetae have capillary tips with minute serrations along the cutting margin (Fig.

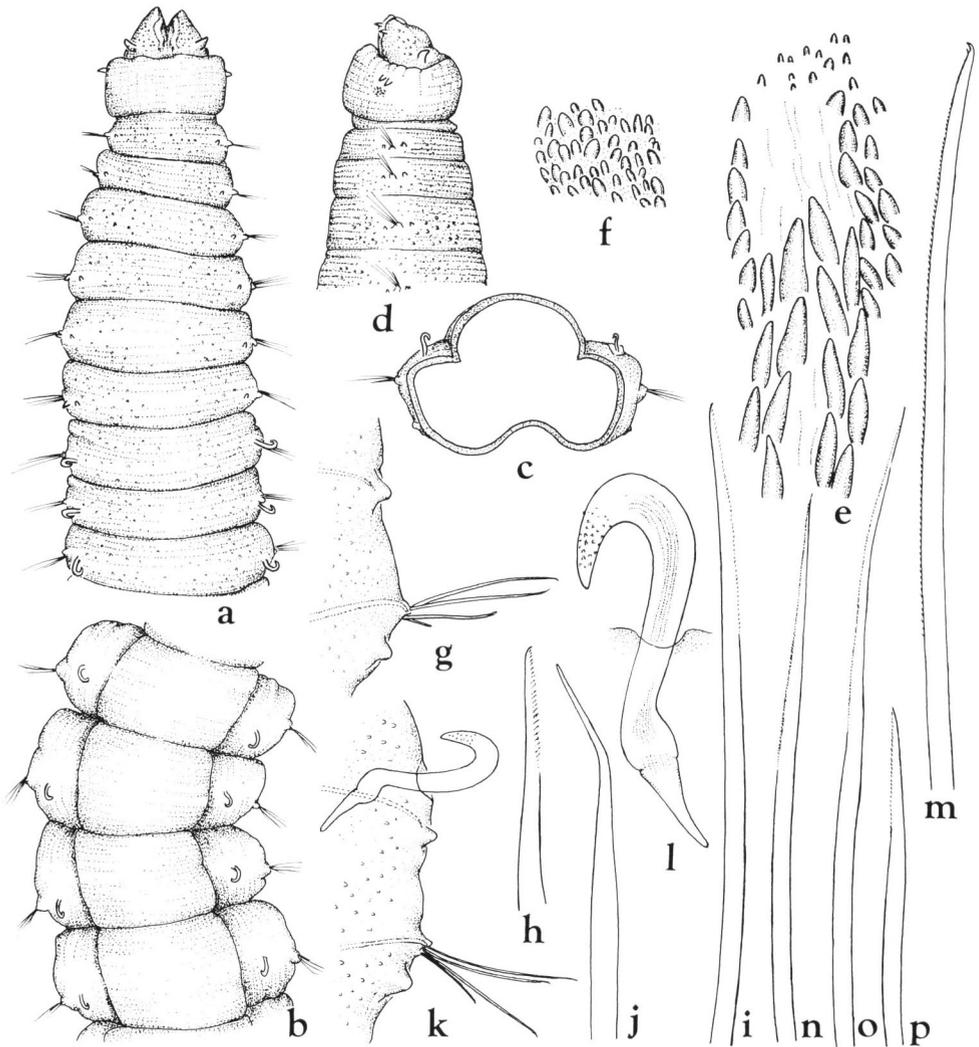


Fig. 3. *Cabira pilargiformis japonica* subsp. nov. a, Anterior end, in dorsal view,  $\times 45$ ; b, setigers 17 to 20, in dorsal view,  $\times 45$ ; c, transverse section of 20th setiger,  $\times 45$ ; d, anterior end, in lateral view,  $\times 45$ ; e, f, papillae on proboscis,  $\times 280$ ; g, 6th parapodium, in anterior view,  $\times 180$ ; h, i, neurosetae from 6th parapodium,  $\times 900$ ; j, neuroaciculum,  $\times 900$ ; k, 7th parapodium, in anterior view,  $\times 180$ ; l, emergent hook,  $\times 350$ ; m, neuroseta from 18th parapodium,  $\times 900$ ; n-p, neurosetae from 70th parapodium,  $\times 900$ .

3 n-p). The pygidium is unknown.

*Remarks.* *Cabira pilargiformis japonica* differs from the stem species, *Cabira pilargiformis* (USCHAKOV & WU, 1962) from the Yellow Sea, in having neurosetae with distinctly bifurcated tips at the median parapodia, instead of all distally pointed

capillary setae. Unfortunately, the stem species deposited in the Institute of Oceanology, Academia Sinica, Tsingtao was not available for study.

*Cabira pilargiformis japonica* is may be clearly distinguished from *C. bohajensis* BRITAEV et SAPHRONOVA, 1981 from the Sea of Japan by having a distinct division of the body from setiger 6, and a notoacicula hook emerges from setiger 7, instead of setiger 6.

*Type-series.* Holotype, NSMT-Pol. H 245; 2 paratypes, NSMT-Pol. P 246.

*Distribution.* Japan.

Genus *Synelmis* CHAMBERLIN, 1919

*Synelmis albini* (LANGERHANS, 1881)

(Fig. 4 a–k)

*Ancistrostylis albini* LANGERHANS, 1881, pp. 107–108, fig. 16 a–e.

*Ancistrostylis rigida* FAUVEL, 1919, p. 337, fig. 1 a–e; HARTMAN, 1947, pp. 498–501, pl. 62, figs. 1–7.

*Ancistrostylis gracilis* HESSLE, 1925, pp. 34–36, textfig. 12 a–d; IMAJIMA & HARTMAN, 1964, p. 86.

*Ancistrostylis gorgonensis* MONRO, 1933 a, pp. 26–28, fig. 12.

*Synelmis albini*: PETTIBONE, 1966, pp. 191–195, figs. 19–21.

*Material examined.* Sagami Bay: 35°06.5'N, 139°36.2'E, 50 m (1); 35°17.5'N, 139°32.5'E, 6 m (1). Off Shimoda, 34°44.9'N, 139°02.2'E–34°45.0'N, 139°01.9'E, 85–57 m (2). Suruga Bay, 34°36.7'N, 138°25.7'E–34°36.5'N, 138°25.5'E, 143–145 m (9). Kagoshima Bay, 31°35.8'N, 130°35.5'E, 44 m (1). Off Tanegashima, 30°47.1'N, 130°54.5'E, 69 m (8).

*Description.* The largest specimen measures 40 mm in length and 0.7 mm in width for 102 setigers. The dorsum is convex, with deep ventral and pair of lateral grooves extending throughout the length. The body is slender, smooth and rigid; segmental grooves are indistinct in the anterior dorsum.

The prostomium is subrectangular, wider than long, with a pair of dark, crescentic eyes (Fig. 4 a, b). Paired, fusiform antennae are inserted on the distal margin of the prostomium and a similar, median antenna is inserted on the posterior middle margin. Paired biarticulate palps are slightly turned ventrally, with small palpostyles on the ventro-lateral side. The peristomium is provided with two pairs of tentacular cirri. The proboscis, everted in one individual, is cylindrical, with a smooth surface.

Parapodia are subbiramous and similar to one another throughout the body; they are covered with a thick, iridescent cuticle extending to the bases of the dorsal and ventral cirri. The first parapodia have somewhat spindle-shaped dorsal and ventral cirri, a truncate setigerous neuropodial lobe, with embedded neuroaciculum and a neurosetal fascicle (Fig. 4 c). The neurosetae are distally pointed with large serrations along the cutting edge (Fig. 4 d). The dorsal and ventral cirri in the median parapodia are spindle-shaped with inner granulations (Fig. 4 e). A thick notopodial acicular spine extends from the fifth parapodium in almost specimens (Fig. 4 e, g). However, six specimens from Tanegashima have an acicular spine from setigers 15 to

23. The sizes of the spines are more or less constant; they are slightly falcate with rounded free ends (Fig. 4 f). The dorsal and ventral cirri in the posterior parapodia are long and digitiform (Fig. 4 g); neurosetae are well developed with broad limbate part (Fig. 4 h, i). A specimen from Sagami Bay, in 6 m, has two acicular spines in the neuropodium, from the 60th setiger (Fig. 4 j). This corresponds with specimens from Old Tampa Bay, Florida (PETTIBONE, 1966, p. 195). The posterior segments are distinctly annulated. The pygidium is rounded, with a pair of anal cirri similar to the dorsal and ventral cirri (Fig. 4 k).

*Distribution.* Widespread in tropical and subtropical waters. Canary Islands; southern to Lower California; Panama; Florida; Marshall Islands; Tuamotu Islands; Gambier Islands; Red Sea; Indian Ocean; Japan.

*Synelmis dineti* KATZMANN, LAUBIER et RAMOS, 1974

(Fig. 5 a-h)

*Synelmis dineti* KATZMANN, LAUBIER et RAMOS, 1974, pp. 28-31, fig. 11.

*Material examined.* Off Tanegashima, 30°37.8'N, 130°54.2'E, 45 m (1).

*Description.* A complete specimen measures 5.5 mm in length and about 0.2 mm in width, with 40 setigers.

The body is subcylindrical, with smooth and rigid integument and distinct segmental grooves (Fig. 5 a, b). The prostomium is subrectangular, wider than long, with a median antenna on the posterior middle margin and paired antennae on the distal margin; the paired palps are triangular, with ventral palpostyles. The peristomium is comparatively long, with two pairs of tentacular cirri as long as the median antenna (Fig. 5 a, b).

The parapodia are subbiramous. The dorsal cirrus on the first parapodium is thick basally and tapered distally; the neuropodium is cylindrical and provided with four limbate capillary setae; the ventral cirrus is smaller than the dorsal one (Fig. 5 c). A normal parapodium has a cylindrical dorsal cirrus, a pyriform ventral cirrus, and a bluntly rounded neuropodium (Fig. 5 d). Neurosetae are distally pointed with broad, serrated, limbate margins (Fig. 5 e). The acicular notopodial spine appears first from the ninth parapodium, above the dorsal cirrus; the spines are slightly S-shaped, with a bidentate tip, accompanied by a small distal tooth (Fig. 5 d, f, g). The pygidium is rounded, with a pair of slender, digitate anal cirri (Fig. 5 h).

*Distribution.* Adriatic Sea, in 120 m; Japan.

Genus *Litocorsa* PEARSON, 1970

*Litocorsa dentata* sp. nov.

(Fig. 6 a-j)

*Material examined.* Near Shimoda, 34°44.9'N, 139°02.2'E, 85-57 m, 19 Oct., 1981 (holotype).

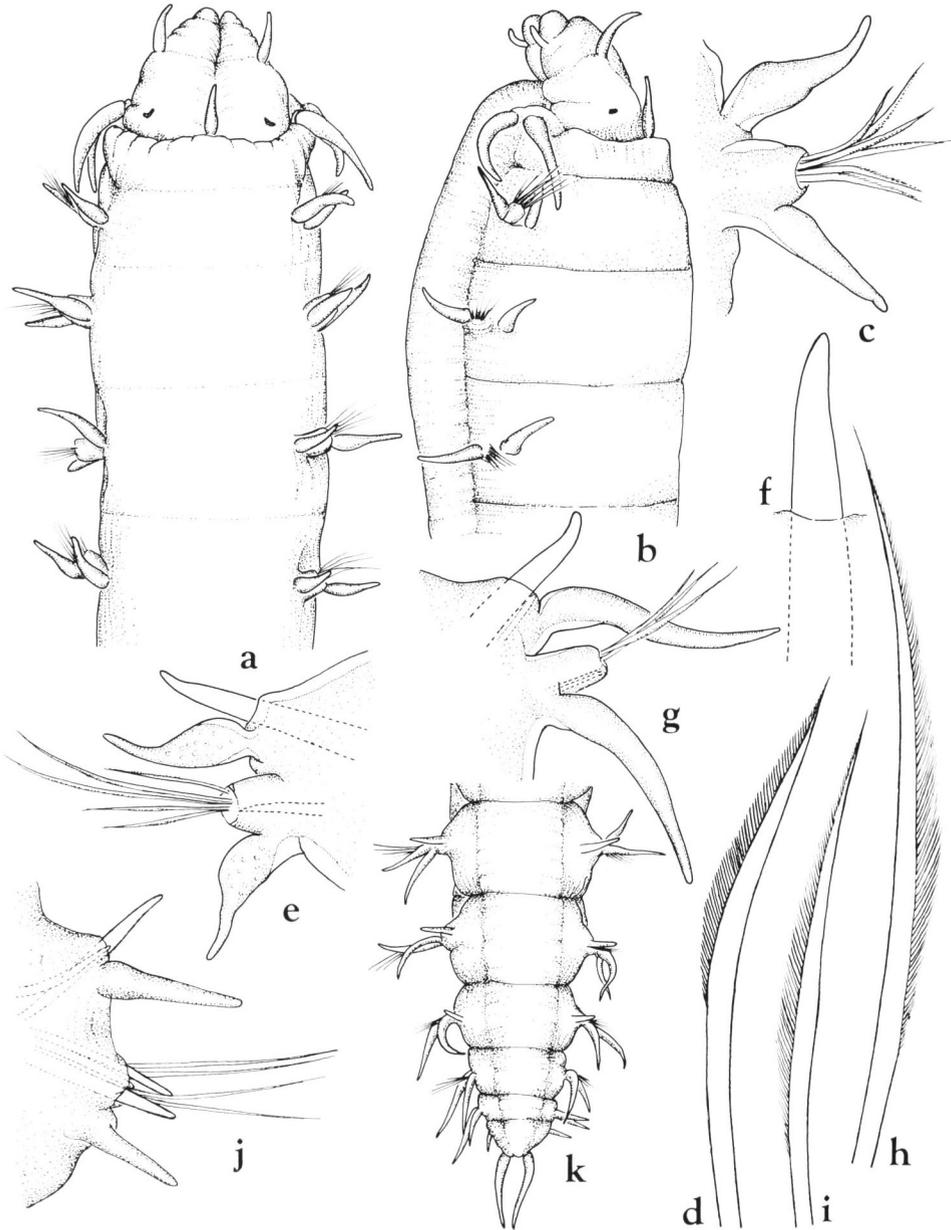


Fig. 4. *Synelmis albini*. a, Anterior ends, in dorsal (a) and lateral (b) views,  $\times 74$ ; c, 1st parapodium, in posterior view,  $\times 180$ ; d, neuroseta from 1st parapodium,  $\times 900$ ; e, 50th parapodium, in posterior view,  $\times 180$ ; f, emergent, acicular notoseta,  $\times 350$ ; g, 98th parapodium, in posterior view,  $\times 180$ ; h, i, neurosetae in 50th parapodium,  $\times 900$ ; j, posterior parapodium from other specimen,  $\times 240$ ; k, posterior end, in dorsal view,  $\times 50$ .

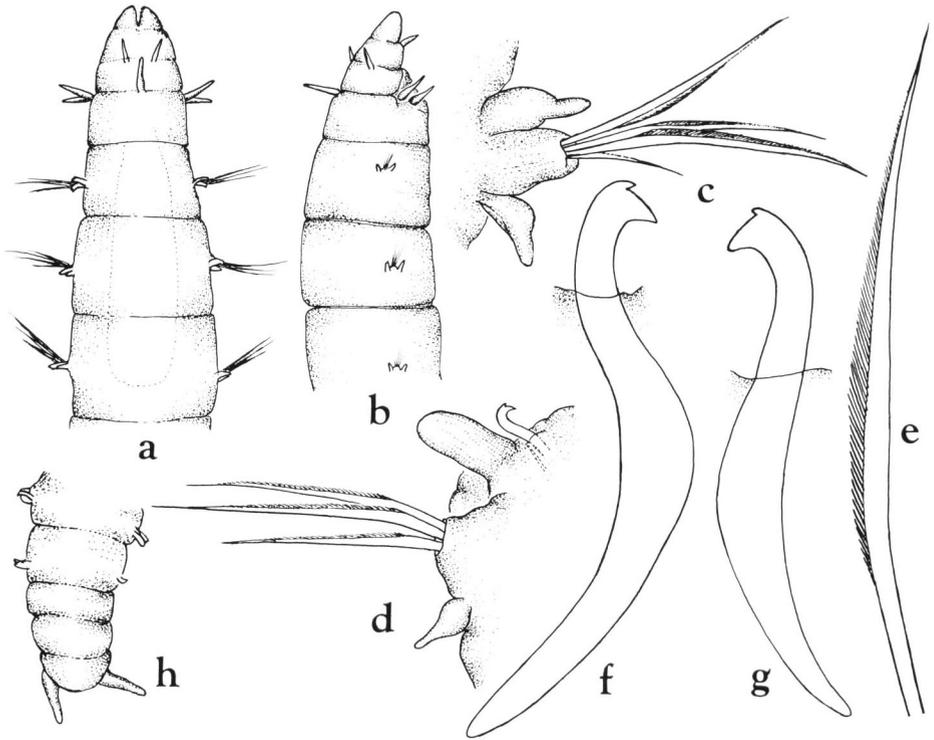


Fig. 5. *Synelmis dineti*. a, b, Anterior ends, in dorsal (a) and lateral (b) views,  $\times 100$ ; c, 1st parapodium, in anterior view,  $\times 375$ ; d, 25th parapodium, in anterior view,  $\times 375$ ; e, limbate capillary neuroseta from 25th parapodium,  $\times 960$ ; f, g, emergent acicular notosetae,  $\times 960$ ; h, posterior end, in dorsal view,  $\times 130$ .

*Description.* The complete holotype measures 4 mm in length and about 0.25 mm in width including parapodia, with 23 segments.

The body is subcylindrical, with smooth integument covered by a thick, iridescent cuticle. The prostomium is depressed and conical with a rounded anterior end; the palps are fused dorsally, with a mid-ventral longitudinal groove extending to the posterior mouth, two minute lateral antennae are present on the dorso-lateral margin of the prostomium (Fig. 6 a-c). A median antenna and palpostyles are absent. The tentacular segment is distinctly separated from the prostomium, with two pairs of short, digitate tentacular cirri; paired buccal cushions (lips) are present lateral to the mouth (Fig. 6 a-c). The proboscis is cylindrical with a smooth surface.

The parapodia are subbiramous with the parapodial lobes and cirri in the anterior half of the body larger than those in the posterior half. The first parapodium has conical dorsal and ventral cirri, the dorsal slightly larger than the ventral; the neuropodium is small and conical, with some limbate capillary setae (Fig. 6 d). On the fifth parapodium, the dorsal and ventral cirri and neuropodium are all subequal in

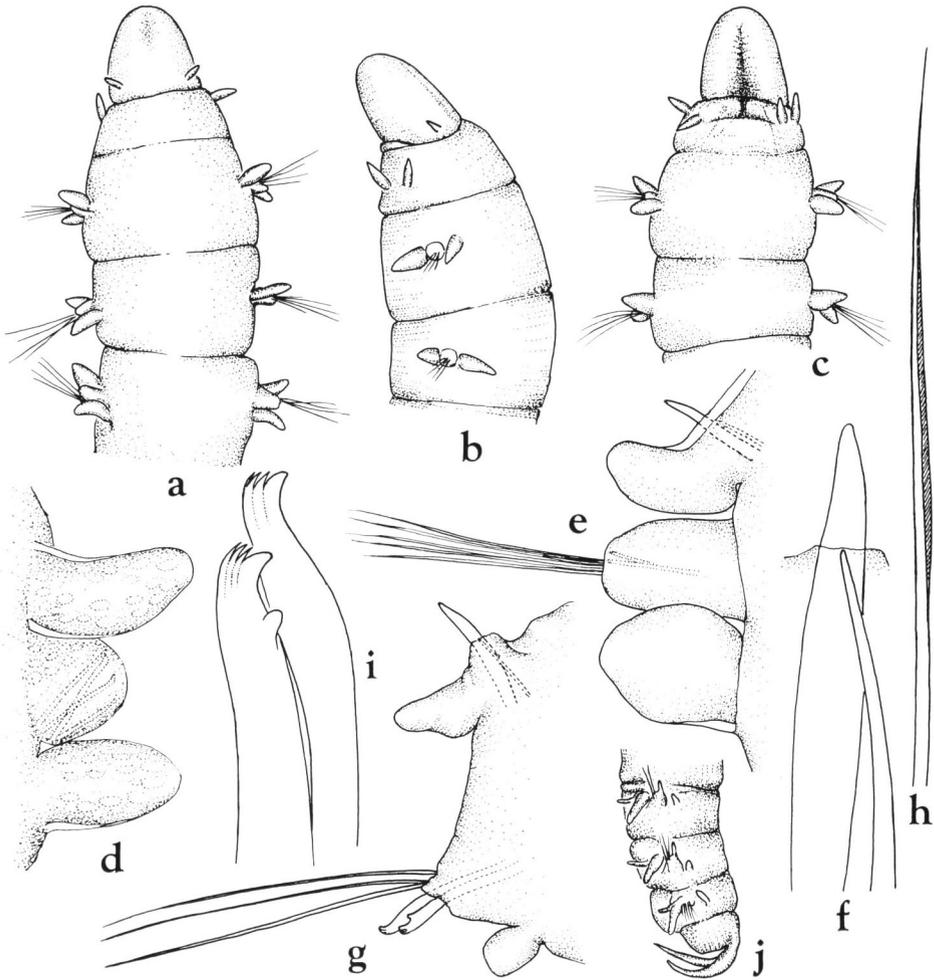


Fig. 6. *Litocorsa dentata* sp. nov. a-c, Anterior ends, in dorsal (a), lateral (b) and ventral (c) views,  $\times 107$ ; d, 1st parapodium, in posterior view,  $\times 375$ ; e, 5th parapodium, in posterior view,  $\times 375$ ; f, emergent acicular notoseta and notoaciculum,  $\times 960$ ; g, 18th parapodium, in posterior view,  $\times 375$ ; h, limbate capillary neuroseta,  $\times 960$ ; i, neuroacicular spines,  $\times 615$ ; j, posterior end, in lateral view,  $\times 107$ .

length; a stout emergent acicular notoseta accompanied by a slender internal notoaciculum arising from the upper side of the dorsal cirrus (Fig. 6 e, f). In the posterior parapodium the notopodium with the emergent acicular spine and dorsal cirrus is well separated from the neuropodium, and small, conical ventral cirrus (Fig. 6 g). The neuropodia have 3 to 4 limbate capillary setae (Fig. 6 h) and one or two stout acicular spines arising below the capillary fascicle. The neuropodial acicular spines appear first from the eighth neuropodium and continue posteriorly; they have a row of three

minute apical teeth above the main fang, with or without an accessory tooth beneath the fang (Fig. 6 i). The pygidium is distally rounded, with a pair of slender anal cirri (Fig. 6 j).

*Remarks.* The genus *Litocorsa* is characterized by having palps dorsally fused. At present, two species of *Litocorsa* are known: *L. stremma* PEARSON, 1970 from Scotland and *L. antennata* WOLF, 1986 from Gulf of Mexico. *Litocorsa dentata* and the two known species may be distinguished as follows:

	<i>L. stremma</i>	<i>L. antennata</i>	<i>L. dentata</i>
Median antenna	Absent	Present	Absent
Lateral antennae	Absent	Present	Present
Palpostyle	Absent	Present	Absent
1st ventral cirri	Absent	Absent	Present
Neuropodia	Slight swelling	Slight swelling	Conical
Neuropodial acicular spine	Spindle-shape with rounded end	Spindle-shape with rounded end	Hook with minute apical teeth

*Type.* Holotype, NSMT-Pol. H. 247.

*Distribution.* Japan.

#### Genus *Pilargis* SAINT-JOSEPH, 1899

##### *Pilargis berkeleyae* MONRO, 1933

(Fig. 7 a-i)

*Pilargis berkeleyi* MONRO, 1933 b, pp. 673-675, figs. 1-4; BERKELEY & BERKELEY, 1948, pp. 57-58, figs. 85, 86; HARTMAN, 1947, pp. 491-494, pl. 59, figs. 1-8; BUZHINSKAJA, 1980, pp. 43-45, fig. 1 F-H.

*Pilargis berkeleyae*: PETTIBONE, 1966, pp. 161-164, figs. 1, 2.

*Pilargis maculata* HARTMAN, 1947, pp. 494-496, pl. 60, figs. 1-5.

*Material examined.* Otsuchi Bay, 10 m (1). Off Akita, 39°47.0'N, 139°51.5'E, 60 m (1). Off Chiba, 8 m (1). Tsukumo Bay, Noto Peninsula, 25 m (1). Sagami Bay: 35°18.1'N, 139°23.0'E, 13 m (1); 35°17.0'N, 139°34.0'E, 6 m (2); 35°17.1'N, 139°32.2'E, 15 m (1); 35°16.4'N, 139°27.0'E, 57 m (1).

*Description.* A complete specimen measures 70 mm in length and about 2 mm in width, with 300 setigers. The body is flattened, ribbon-like, tapering anteriorly and posteriorly. The entire dorsal surface of the body and all appendages are finely papillated, the papillae in the middorsal region especially large and conspicuous.

The prostomium is small with paired, club-shaped lateral antennae; the palps are stout with minute palpostyles (Fig. 7 a, b). The tentacular segment is distinct, with two pairs of fusiform, papillated tentacular cirri, the dorsal pair slightly longer than the ventral pair (Fig. 7 a, b).

The dorsal cirri of the first setiger are somewhat larger than the following (Fig. 7 b). From the fifth or sixth setiger the dorsal cirri have thick cirrophores and are somewhat

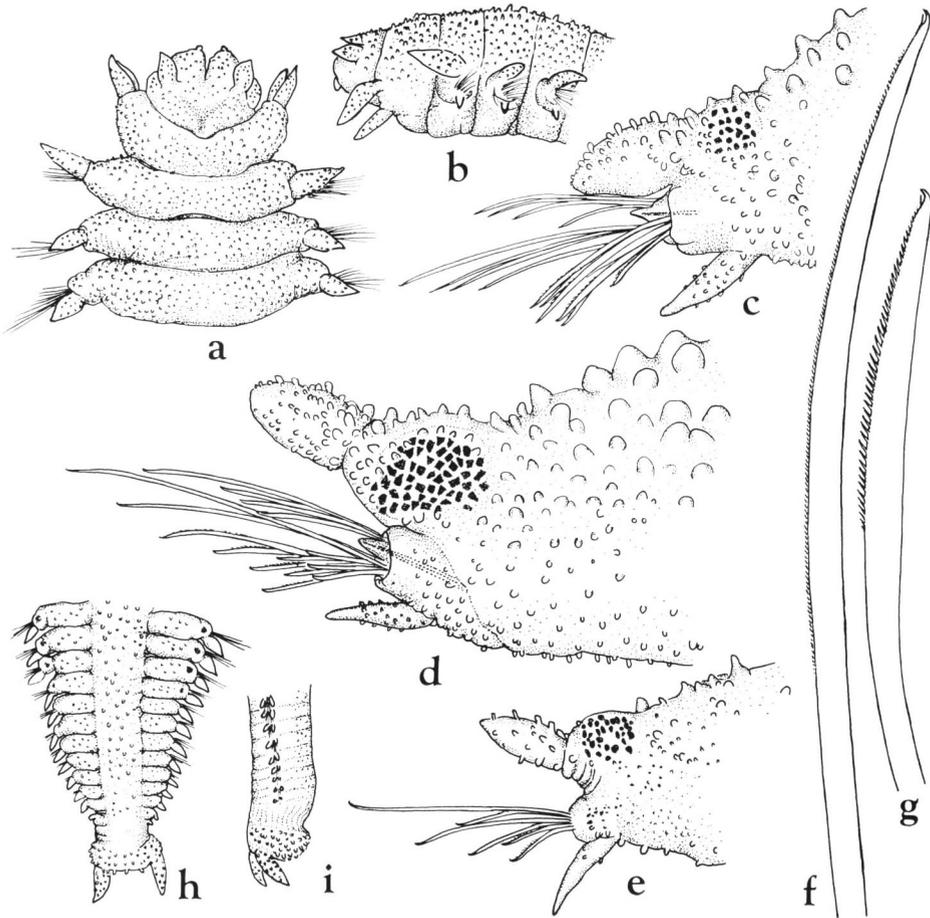


Fig. 7. *Pilargis berkeleyae*. a, b, Anterior ends, in dorsal (a) and lateral (b) views,  $\times 47$ ; c, 10th parapodium, in anterior view,  $\times 130$ ; d, 60th parapodium, in anterior view,  $\times 130$ ; e, posterior parapodium, in anterior view,  $\times 130$ ; f, superior neuroseta, above acicula,  $\times 960$ ; g, inferior neuroseta, beneath acicula,  $\times 960$ ; h, i, posterior ends, in dorsal (h) and lateral (i) views,  $\times 47$ .

pigmented (Fig. 7 c). Thereafter, the pigmented glandular areas are continued farther back through parapodia near the end of the body (Fig. 7 d, e). There are also small pigmented areas in the ventral bases of the neuropodia. Ventral cirri of the first few parapodia are small in size. The neuropodium is conical, with a stout neuroaciculum and bundle of neurosetae. The neurosetae are falcate with bifurcated tips, the cutting margin with single row of oblique teeth; the superiormost setae in a fascicle tend to be longest, decreasing in length inferiorly (Fig. 7 f, g). The body terminates posteriorly in a ring-like pygidium with two anal cirri, all closely papillated (Fig. 7 h, i).

*Distribution.* Washington to southern California; Posyet Bay (Sea of Japan); West Africa; Japan.

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