

Contribution to the knowledge of Leucosiidae II. *Euclosia* gen. nov. (Crustacea: Brachyura)

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A study of the genus *Leucosia* Weber, 1795, revealed subdivisions within the genus. A new genus, *Euclosia*, is established for *L. crosnieri* Chen, 1989, *L. obtusifrons* de Haan, 1841, *L. rotundifrons* Chopra, 1934, and *L. unidentata* de Haan, 1841 and five new species: *E. concinna*, *E. exquisita*, *E. nitida*, *E. scitula*, and *E. tornatilia*. They differ from all other species heretofore assigned to *Leucosia* in having anterior margin of thoracic sinus puckered, loop-shaped. The species are described or redescribed and illustrated, extended synonymies, geographical distribution and habitat are given, and a key for their identification is provided.

Introduction

Leucosia Weber, 1795, has been long considered a well-defined and homogenous genus, to such a degree that "characters of a kind which, in other genera of Brachyura, are merely indicative of variety or individual peculiarities, here become of specific importance" (Stimpson, 1907: 149). A study of the extensive collections of the Nationaal Natuurhistorisch Museum, Leiden (formerly Rijksmuseum van Natuurlijke Historie), together with other major collections (listed below) has enabled re-examination of many type specimens and much of the published material, and revealed subdivisions within the genus. In an earlier work (Galil, 2003) the identity of the type species of *Leucosia*, *L. craniolaris* (Linnaeus, 1758) was established, and the amended *Leucosia* restricted to three of the 79 previously recorded species. A new genus, *Euclosia*, is established for *L. crosnieri* Chen, 1989, *L. obtusifrons* de Haan, 1841, *L. rotundifrons* Chopra, 1934, and *L. unidentata* de Haan, 1841, and five new species: *E. concinna*, *E. exquisita*, *E. nitida*, *E. scitula*, and *E. tornatilia*. They differ from all other species heretofore assigned to *Leucosia* in having the anterior margin of the thoracic sinus puckered, loop-shaped. All species are described or redescribed and illustrated, extended synonymies are given, and a key for their identification is provided. Following contributions will discuss the placement of the other species formerly assigned to *Leucosia*.

Abbreviations: cl. – carapace length, measured along the vertical median line of the carapace; coll. – collected by; Exp. – Expedition; id. – identified by; I. – Island; Is.-Islands; stn – station.

The material examined was lent by the following institutions: Museo Zoologico dell'Università di Firenze (MZUF); Museum national d'Histoire naturelle, Paris (MNHN), the Natural History Museum, London (NHM), Naturhistorisches Museum, Wien (NMW), the National Science Museum, Tokyo (NSMT), National Taiwan Ocean

University, Keelung (NTOU), the Queensland Museum, Brisbane (QM), the Nationaal Natuurhistorisch Museum, Leiden (formerly Rijksmuseum van Natuurlijke Historie) (RMNH), the National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM), Western Australian Museum, Perth (WAM), the Zoological Museum, Amsterdam (ZMA), Zoologisches Museum der Humboldt Universität, Berlin (ZMB), and the Zoologisk Museum, København (ZMK).

***Euclisia* gen. nov.**

Type species.— *Leucosia obtusifrons* de Haan, 1841; gender: feminine.

Diagnosis.— Carapace subpentagonal, globose; regions of carapace indistinct. Dorsal surface of carapace glabrous, smooth or punctate. Frontal region produced, upcurved, laterally concave. Antennular fossa sealed by basal antennular segment. Antennae short, inserted between antennular fossa and orbit. Orbits small, rounded, outer orbital margin unisutured, anterior margin of efferent branchial channel forms part of lower orbital margin. Eyes retractable. External maxillipeds concealing trapezoid buccal opening; endopod merus triangulate, as long as ischium; in female, endopod with setose fringe lengthwise, ischium medially carinate. Anterolateral margin of carapace convex along hepatic region. Pterygostomian region posteriorly planate or with crescentic depression. Lateral angle of carapace rounded, overhanging thoracic sinus, margin beaded. Thoracic sinus tomentose, its anterior margin looped, prominently beaded; ventral margin bearing row of perliform granules. Posterolateral margins of carapace rounded, granulate, granules smaller, further apart posteriorly. Epimeral margin closely beaded, invisible in dorsal view, continuous with posterior margin. Posterior margin sinuous in male, rounded in female. Chelipeds subequal, robust, long, longer in adult male than in female specimens. Cheliped merus trigonal, bearing perliform tubercles on anterior, posterior margins, upper surface bearing coalesced cluster of 6-8 granules proximally, followed by two diverging rows of granules, lower surface coarsely granulate anteriorly, pitted proximally. Carpus, propodus inflated, upper surface of propodus rounded, smooth, lower surface granulate. Fingers as long as propodus. Pereiopods slender, short. Pereiopodal propodi keeled dorsally; dactyli longer than propodi, lanceolate. Male abdominal sulcus deep, elongate, nearly reaching buccal cavity; its lateral margin bearing distinct ridge fitting into suture between abdominal segments. Male abdomen with 2nd segment minute; segments 3-5 fused, vertically furrowed proximally; 6th segment bearing denticle medially; telson triangular, third of length of 6th segment. Female abdomen with segments 3-6 fused, greatly enlarged, shield-like, telson triangular. First male pleopod elongate, shaft stout, sinuous, tightly coiled three times on itself, bearing ruff of setae preapically, apical process cornute, variously shaped. Second male pleopod short, curved, apex scoop-like.

Remarks.— *Euclisia* gen. nov. differs from *Leucosia* Weber, 1795 (emendato) in having a pursed, loop-shaped anterior margin of thoracic sinus, the first male pleopod with shaft trice coiled on itself and lacking apical setose muff.

Etymology.— *Euclisia* is an anagram of *Leucosia* Weber, 1795.

Key to species of *Euclisia* gen. nov.

1. Frontal margin rounded 2
- Frontal margin unidentate 4
2. Third thoracic sternite with diagonal band of granules *E. rotundifrons*
- Third thoracic sternite smooth 3
3. Apical process of male 1st pleopod foliolate, twisted *E. crosnieri*
- Apical process of male 1st pleopod spoon-shaped *E. obtusifrons*
4. Crescentic indentation on pterygostomian region anterior to thoracic sinus 5
- Pterygostomian region anterior to thoracic sinus lacking crescentic indentation ... 7
5. Dorsal surface of carapace coarsely pitted; apical process of male 1st pleopod hook-like, curved interiorly *E. exquisita* spec. nov.
- Dorsal surface of carapace delicately, sparsely punctate; apical process of male 1st pleopod otherwise 6
6. Apical process of male 1st pleopod digitate; 2 pairs of reddish ocelli on gastric region *E. unidentata*
- Apical process of male 1st pleopod slender, acuminate; 3 pairs of reddish ocelli on gastric region *E. tornatilia* spec. nov.
7. Dorsal surface of carapace sparsely punctate; proximal half of dorsal surface of cheliped merus granulate, apical process of male 1st pleopod digitate 8
- Dorsal surface of carapace densely punctate; proximal 3/4 of dorsal surface of cheliped merus granulate, apical process of male 1st pleopod spoon-shaped
..... *E. concinna* spec. nov.
8. Apical process of male 1st pleopod laterally compressed, ventrally curved
..... *E. nitida* spec. nov.
- Apical process of male 1st pleopod laterally compressed, distally expanded
..... *E. scitula* spec. nov.

Euclisia concinna spec. nov.
(figs. 1A, 3A, 6A)

Material. — **New Caledonia**: holotype, 1 ♂ (26.0 mm cl), MNHN B28794, 21°45.37'S 166°37.06'E, 241-250 m depth, HALIPRO stn CP 853, 19.iii.1994, coll. B. Richer de Forges.

Description.— Dorsal surface of carapace densely punctate anteriorly. Frontal margin unidentate. Hepatic margin bearing line of granules, granules larger posteriorly. Margin of thoracic loop invisible in dorsal view. Pterygostomian region sparsely punctate laterally, planate. Loop-shaped anterior margin of thoracic sinus beaded, row of perliform granules above cheliped basis, decreasing in size posteriorly. Endopodal merus and exognath of external maxillipeds indistinctly granulate anteriorly. Third thoracic sternite smooth. Anterior and posterior margins of cheliped merus bearing perliform tubercles, median tubercles largest; upper surface with two diverging rows of granules ending short of distal margin. Carpus with row of granules on inner margin. Minutely granulate lower surface of propodus bearing line of conic granules on inner margin. Pereiopodal meri bearing rows of obsolescent granules on dorsal and ventral surfaces. Apical process of male 1st pleopod spoon-shaped, curved distad.

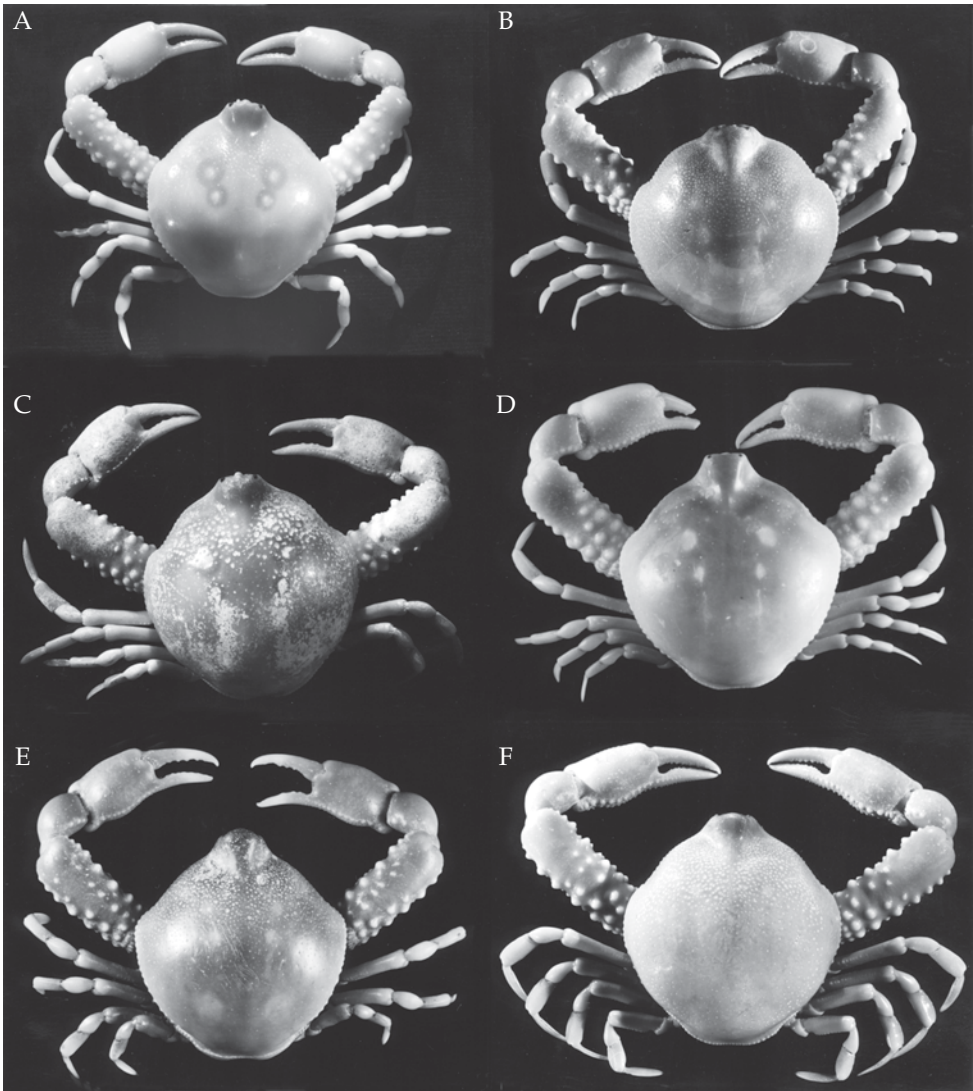


Fig. 1. A, *Euclisia concinna* spec. nov., holotype, 26.0 mm cl, MNHN B28794; B, *E. crosnieri* (Chen, 1989), 31.6 mm cl, ZRC 2001.0333; C, *E. exquisita* spec. nov., holotype, 33.3 mm cl, MNHN B28793; D, *E. nitida* spec. nov., 24.7 mm cl, NHM 1934.1.16.39; E, *E. obtusifrons* (de Haan, 1841), 28.1 mm cl, NTOU; F, *E. rotundifrons* (Chopra, 1934), 32.4 mm cl, NHM.

Colour (in alcohol).— Carapace pale tan, on each gastric region two pale-centered reddish circles, anterior circle larger; fingers and pereiopods marked with pale-orange bands.

Remarks.— *Euclisia concinna* spec. nov. differs from the closely allied *E. nitida* spec. nov. and *E. scitula* spec. nov., in its densely punctate anterodorsal surface of the carapace, distally granulate upper surface of the cheliped merus, spoon-shaped

apical process of the male 1st pleopod, and its colour pattern.

Distribution.— Known from a single specimen from the type-location.

Etymology.— *Concinus* L., beautiful.

Euclosia crosnieri (Chen, 1989)

(figs. 1B, 3B, 6B)

Leucosia obtusifrons; Serène & Vadon, 1981: 125.

Leucosia crosnieri Chen, 1989: 236, fig. 25, 26a-e, pl. 1, fig. 8.

Material.— **Philippines**: holotype, 1 ♂ (31.0 mm cl), MNHN B18115, MUSORSTOM 1, Stn 34, 14°01.0'N 120°15.8'E, 191-188 m depth, 23.iii.1976; 1 ♂ (31.0 mm cl), WAM C 24985, Panglao I., off Bohol I., 73-141 m depth, 8.ii.1964; 1 juvenile (20.4 mm cl), RMNH D 49840, Cebu Strait, SW of Bohol I., off Balicasag I., 9°31'N 123°41'E, 100-300 m depth, 19-22.xi.1999; 2 ♂♂ (31.6, 30.6 mm cl), 2 ♀♀ (29.6, 28.9 mm cl), ZRC 2001.0333, Cebu Strait, Bohol I., off Balicasag I., xii.2000; 1 ♀ juvenile (20.8 mm cl), ZRC 2001.0321, Bohol I., Balicasag I., off Panglao I., xii.2000; 1 juvenile (23.3 mm cl), USNM 322873, Balayam Bay, 141-196 m depth, 21.vi.1966.— **Indonesia**: 1 ♂ (31.3 mm cl), RMNH D 5305, Bali Sea, 7°33.2'N 114°36.00'E, 310 m depth, 4-5.iv.1929.— **Australia**: 1 ♂ (38.1 mm cl), QM w17000, Queensland, off Tully Heads, 18°00'S 147°03.4'E, 264 m depth, 9.i.1986; 1 ♀ ovigerous (37.3 mm cl), QM w17002, NE Queensland, off Babinda, 17°20.7'S 146°41.5'E, 200 m depth, 1.xii.1985.

Description.— Dorsal surface of carapace closely, delicately punctate anteriorly and laterally. Frontal margin rounded. Hepatic margin bearing line of granules, granules larger posteriorly. Margin of thoracic loop almost invisible in dorsal view. Epibranchial angle sloping, overhanging thoracic sinus. Pterygostomian region coarsely punctate laterally, slightly indented anterior to thoracic sinus. Loop-shaped anterior margin of thoracic sinus with thick, coalescent granules; row of perliform granules above cheliped basis, decreasing in size posteriorly. Endopodal merus and exognath of external maxillipeds closely granulate. Third thoracic sternite smooth. Anterior and posterior margins of cheliped merus bearing perliform tubercles, median tubercles largest; upper surface with two diverging rows of granules ending halfway to distal margin. Carpus with row of granules on inner margin. Minutely granulate lower surface of propodus bearing rows of conic granules on inner and outer margins. Pereiopodal meri bearing one dorsal and two ventral rows of obsolescent granules. Apical process of male 1st pleopod twisted, foliolate, bent at right angle to shaft.

Colour (in alcohol).— “Large reddish circle on each side of gastric region, with inside three small yellow spots” (Chen, 1989: 236).

Remarks.— *Euclosia crosnieri* differs from the closely allied *E. rotundifrons* in its sloping epibranchial angle, smooth third thoracic sternite, and longer apical process. It is easily distinguished from *L. obtusifrons* by its foliolate, rather than spoon-shaped, apical process of the male 1st pleopod.

Distribution.— Philippines, Indonesia, Australia; 73-310 m.

Euclosia exquisita spec. nov.

(figs. 1C, 3C, 6C)

Material.— **Madagascar**: holotype, 1 ♂ (33.3 mm cl), MNHN B28793, 12°41.3'S 48°16'E, 308-314 m depth, 15.iv.1971. Paratypes: 1 ♀ (32.4 mm cl), MNHN, 12°41.3'S 48°16'E, 308-314 m depth, 15.iv.1971;

1 ♀ (31.2 mm cl), MNHN, 22°22'S 43°08'E, 230-240 m depth, 6.xi.1973; 1 ♂ (16.3 mm cl), MNHN B18605, 12°40.0'S 48°18'E, 205-185 m depth, 1.viii.1973.

Description.— Dorsal surface of carapace coarsely pitted anteriorly. Frontal margin unidentate. Hepatic margin bearing line of granules, granules larger posteriorly. Margin of thoracic loop nearly invisible in dorsal view. Pterygostomian region coarsely punctate, slightly indented anterior to thoracic sinus. Loop-shaped anterior margin of thoracic sinus with coalescent granules; row of perliform granules above cheliped basis, decreasing in size posteriorly. Endopodal merus and exognath of external maxillipeds indistinctly granulate anteriorly. Third thoracic sternite smooth. Anterior and posterior margins of cheliped merus bearing prominent tubercles, median tubercles largest; distal half of upper surface smooth. Carpus with row of granules on inner margin. Minutely granulate lower surface of propodus bearing line of conic granules on inner margin. Pereiopodal meri bearing rows of obsolescent granules on dorsal and ventral surfaces. Apical process of male 1st pleopod elongate, hook-like, curved interiorly.

Colour (in alcohol).— Carapace pale tan, on each gastric region three pale-centered reddish circles, median circle largest.

Remarks.— *Euclosia exquisita* spec. nov. differs from its congeners in the hook-like apical process of the male 1st pleopod. It further differs from the other species possessing a unidentate frontal margin and posteriorly indented pterygostomian plate (*E. tornatilia* spec. nov., and *E. unidentata*) in its coarsely pitted carapace.

Distribution.— Known only from the type-location, 185-314 m.

Etymology.— *exquisitus* L., beautifully formed, fine.

Euclosia nitida spec. nov.

(figs. 1D, 3D, 6D)

Leucosia obtusifrons; Laurie, 1906: 362; Zarenkov, 1990: 57, pl. 1, figs 1-5, pl. 2 fig. 1.

Material.— **Gulf of Oman**: holotype, 1 ♂ (25.1 mm cl), NHM 2003.112, 25°38.18'N 56°26.36'E, 73 m depth, 'John Murray' stn 72, 26.xi.1933. Paratypes, 1 ♂ (24.9 mm cl), NHM 2003.113, 25°38.18'N 56°26.36'E, 73 m depth, 'John Murray' stn 72, 26.xi.1933.— **Sri Lanka**: 1 ♂ (24.7 mm cl), NHM 1934.1.16.39, off Kaltura, coll. W.A. Herdman, id. Laurie as *L. obtusifrons*.

Description.— Dorsal surface of carapace shiny, delicately and sparsely punctate. Frontal margin unidentate. Hepatic margin rounded, punctate. Margin of thoracic loop nearly invisible in dorsal view. Pterygostomian region smooth, planate. Loop-shaped anterior margin of thoracic sinus with coalescent granules; row of perliform granules above cheliped basis, decreasing in size posteriorly. Endopodal merus and exognath of external maxillipeds indistinctly granulate anteriorly. Third thoracic sternite smooth. Anterior and posterior margins of cheliped merus bearing perliform tubercles, median tubercles largest; upper surface distally inflated, smooth. Carpus with row of granules on inner margin. Distinctly granulate lower surface of propodus bearing row of conic granules on inner margin. Pereiopodal meri bearing lines of obsolescent granules on dorsal, ventral surfaces. Apical process of male 1st pleopod with apical process digitate, laterally compressed, leaning forward.

Colour.— “In addition to the two pairs of white gastric spots characteristic of the species there is a third pair of small but otherwise similar ones, anteriorly.” (Laurie, 1906: 362).

Remarks.— *Euclosia nitida* spec. nov. differs from the closely allied *E. scitula* spec. nov., in its digitate, ventrally curved, apical process of the male 1st pleopod, and its colour pattern. The specimen collected off Bombay (Zarenkov, 1990: 57, pl. 1, figs 1-5, pl. 2 fig. 1), is identified as *E. nitida*. It differs from *L. obtusifrons* in having a unidentate rather than rounded frontal margin, and a digitate rather than tongue-shaped apical process of the male 1st pleopod.

Distribution.— Gulf of Oman, Indian Ocean; 73-87 m.

Etymology.— *nitidus* L., shining, neat.

Euclosia obtusifrons (de Haan, 1841)
(figs. 1E, 4A, 6E)

Leucosia obtusifrons de Haan, 1841: 133, pl. 33, fig. 2; White, 1847: 48; Bell, 1855a: 362; 1855b: 284, 1855c: 6; Herklots, 1861: 27; Ortmann, 1892: 585; Doflein, 1902: 654; Parisi, 1914: 291, pl. 13, fig. 4; Ihle, 1918: 316; Balss, 1922: 127; Yokoya, 1933: 127; Sakai, 1934: 285; 1935: 60, pl. 11, fig. 2; 1937: 145, text-fig. 26d, 28a, pl. 15, fig. 3; 1965: 46, pl. 18, fig. 5, 6; 1976: 119, pl. 34, fig. 5, text-figs 65d, 67a; Uchida, 1948: 128, fig. 435; 1949: 718, fig. 2077; Utinomi, 1956: 71, pl. 36, fig. 4; Miyake, 1961a: 14; Miyake et al., 1962: 126; Shen & Dai, 1964: 26, fig.; Serène, 1968: 47; Takeda & Miyake, 1970: 229; Kim, 1973: 613; Takeda, 1973a: 33; 1973b: 12; 1979: 153; 1982a: 18; 1982b: 102, fig. 299; 2001: 228; Miyake, 1983: 67, pl. 23, fig. 3; Huang, 1989: 317, fig. 282; Chen, 1989: 238, fig. 26f; Yamaguchi & Baba, 1993: 328, fig. 106; Chen & Sun, 2002: 432, fig. 195, pl. 15, fig. 2.

Leucosia mimasensis Sakai, 1969: 249, text fig. 1b,b'; 1976: 120, pl. 36, figs. 1, text-fig. 68a, b.

Not *Leucosia obtusifrons*; Laurie, 1906: 362; Zarenkov, 1990: 57, pl. 1, figs 1-5, pl. 2 fig. 1 [= *E. nitida* spec. nov.].

Not *Leucosia obtusifrons*; Serène & Vadon, 1976: 125 [= *E. crosnieri* (Chen, 1989)].

Material.— **Japan**: lectotype, 1 ♂ (28.7 mm cl), RMNH D42214, 1823-1834, coll. P. F. von Siebold & H. Bürger, designated by Yamaguchi & Baba, 1993: 328, fig. 106. Paralectotypes, 7 ♂ (27.8-30.3 mm cl), 1 ♀ (25.7 mm cl), RMNH D42214, 1823-1834, coll. P. F. von Siebold & H. Bürger; 1 ♀ (17.8 mm cl), USNM 125868, off Mimase, Tosa Bay, Shikoku I., 120 m depth, coll. K. Sakai, holotype of *L. mimasensis* Sakai, 1969; 1 ♂ (28.2 mm cl), USNM, SE Seno Umi, off Honshu I., 75-57 m depth, 'Albatross' strn 3702, 7.v.1900; 1 ♂ (28.4 mm cl), USNM, SE of Hiro Misaki Light, 33°35.20'N 135°10.50'E, 350 m depth, 'Albatross' strn 4965, 28.viii.1906; 1 ♂ (29.2 mm cl), USNM 43331, Ito, Sagami Bay, i.1904; 1 ♂ (27.0 mm cl), NHM 1961.6.5.31, Sagami Bay, coll. T. Sakai; 2 ♂ (30.7, 28.4 mm cl), MZUF 2552, preserved dry; 1 ♂ (29.6 mm cl), NHM 1844.68, preserved dry; 1 ♂ (27.5 mm cl), NHM 1883.10, Enoshima, preserved dry; 1 ♂ (27.7 mm cl), ZMK, Misaki, 366 m depth, 30.vi.1914, coll. Dr. Th. Mortensen, det. J. Odhner; 1 ♂ (29.3 mm cl), NMW 19025, Yokohama, 19.vi.1903, coll. Dr. Haberer, det. O. Pesta as *L. Urania*; 1 ♂ (29.4 mm cl), USNM 45851, Loochoo Is., Okinawa; 3.ix.1987; 1 ♂ (29.4 mm cl), NSMT cr5947, Kainoura, coll. M. Saba, id. M. Takeda; 1 ♂ (27.4 mm cl), NSMT cr7399, Kiikaino, Wakayama prefecture.— **Taiwan**: 2 ♂ (27.2, 28.1 mm cl), NTOU, Shih-Cheag port, xi.1999, coll. S.H. Wu; 1 ♀ ovigerous (27.9 mm cl), NTOU, Tai-Shi port, 2.x.1997.

Description.— Dorsal surface of carapace densely punctate anteriorly. Frontal margin rounded. Hepatic margin rounded, punctate. Margin of thoracic loop invisible in dorsal view. Pterygostomial region coarsely punctate, planate. Loop-shaped anterior margin of thoracic sinus with coalescent granules; row of perliform granules above cheliped basis, decreasing in size posteriorly. Endopodal merus and exognath of

external maxillipeds closely granulate. Third thoracic sternite smooth. Anterior and posterior margins of cheliped merus bearing perliform tubercles, median tubercles largest; upper surface distally smooth. Carpus with row of granules on inner margin. Minutely granulate lower surface of propodus bearing line of slightly larger conic granules on inner margin. Pereiopodal meri bearing one dorsal and two ventral rows of obsolescent granules. Shaft of male 1st pleopod twisted on itself three times; apical process lingulate, bent at right angle to shaft.

Colour.— “The carapace of the fresh specimen of this species has three yellowish markings on either side of the gastric region, the anterior one of which is very small; also on either side of the intestinal region there is a large one. In the younger stage, no such markings may be seen and the carapace is marked with a number of spots and longitudinal stripes of brownish red” (Sakai, 1965: 45); colour photo in Miyake (1983).

Remarks.— *Euclosia obtusifrons* is easily distinguished from the other species possessing a rounded frontal margin: it differs from *E. rotundifrons* in its smooth thoracic sternite, and from *E. crosnieri* in its spoon-shaped apical process of male 1st pleopod, and colour pattern. The type specimen of *Leucosia mimasensis* Sakai, 1969 is a juvenile female, not a male as reported by the author (Sakai, 1969: 249).

Distribution.— Japan, Korea, Taiwan; 35–366 m.

Euclosia rotundifrons (Chopra, 1934)
(figs. 1F, 4B, 6F)

Leucosia rotundifrons Chopra, 1934: 34, text-fig. 1, 2; Serène, 1968: 47.

Material.— **Persian Gulf:** 2 ♂♂ (31.4, 34.1 mm cl), NHM 1900.4.20.5/6, 24°21'N 55°5'E, 311 m depth, 29.x.1900.— **Gulf of Oman:** 3 ♀♀ (29.3–31.7 mm cl), NHM, 25°34.12'N 57°23.30'E, 196 m depth, 'John Murray' stn 70, 25.xi.1933; 3 ♂♂ (31.2–32.4 mm cl), 3 ♀♀ (28.7–29.1 mm cl), NHM, 25°10.48'N 56°47.30'E, 201 m depth, 'John Murray' stn 75, 28.xi.1933.

Description.— Dorsal surface of carapace closely punctate anteriorly and laterally. Frontal margin rounded. Hepatic margin closely punctate, bearing granulate line. Margin of thoracic loop invisible in dorsal view. Pterygostomian region coarsely punctate, with crescentic indentation posteriorly. Epibranchial angle short. Loop-shaped anterior margin of thoracic sinus with coalescent granules; row of perliform granules above cheliped basis, decreasing in size posteriorly. Endopodal merus and exognath of external maxillipeds densely granulate. Third thoracic sternite with diagonal band of granules. Anterior and posterior margins of cheliped merus bearing perliform tubercles, median tubercles largest; upper surface distally smooth. Carpus with row of granules on inner margin. Coarsely granulate lower surface of propodus bearing row of conic granules on inner margin. Pereiopodal meri bearing one dorsal and two ventral rows of obsolescent granules. Shaft of male 1st pleopod twisted on itself three times, widened distally; apical process elongate, foliolate, arrow-shaped, bent at right angle to shaft.

Colour (in alcohol).— “slate-grey, with the pearly tubercles on the arm white” (Chopra, 1934: 37).

Remarks.— *Euclosia rotundifrons* differs from the closely allied *E. obtusifrons* and *E. crosnieri* in having a granulate band extending diagonally across the third thoracic

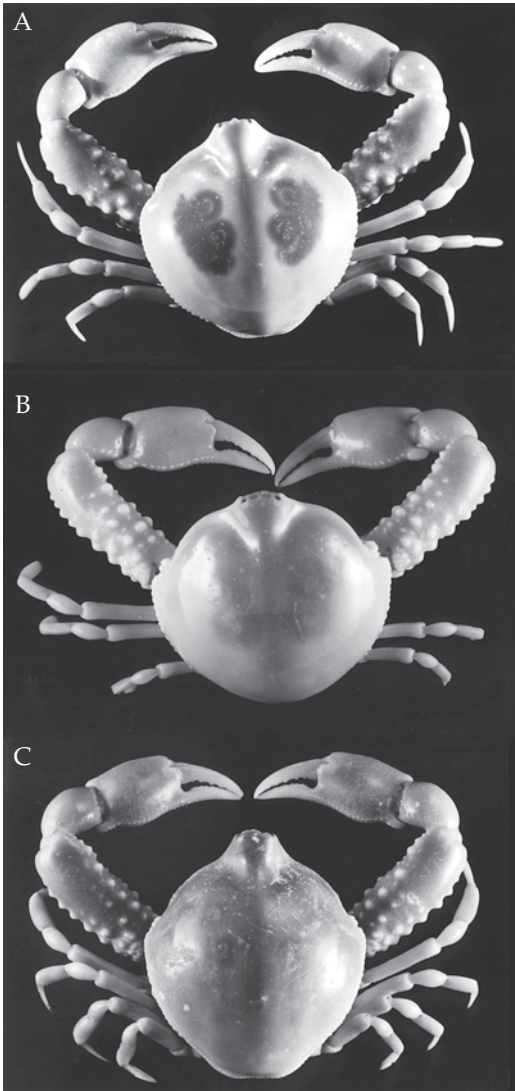


Fig. 2. A, *Euclosia scitula* spec. nov., holotype, 28.4 mm cl, ZRC 2001.0332; B, *E. tornatilia* spec. nov., holotype, 28.3 mm cl, WAM C24990; C, *E. unidentata* (de Haan, 1841), 28.4 mm cl, USNM.

sternite. It is easily distinguished from *L. obtusifrons* by its arrow-shaped apical process of male 1st pleopod; and from *L. crosnieri* by its shorter epi-branchial eave, and shorter apical process of the male 1st pleopod.

Distribution.— Persian Gulf, Gulf of Oman, Arabian Sea, Bay of Bengal, Laccadive Sea; 124–311 m.

Euclosia scitula spec. nov.
(figs. 2A, 4C, 6G)

Material.— **Philippines**: holotype, 1 ♂ (28.4 mm cl), ZRC 2001.0332, Bohol, Balicasag I., off Panglao Is., xii.2000. Paratypes, 1 ♂ (21.8 mm cl), 1 ♀ (30.2 mm cl), ZRC 2001.0332, Bohol, Balicasag I., off Panglao Is., xii.2000; 1 ♂ (30.1 mm cl), NSMT cr13012, Bohol, Balicasag I., ix.1998, coll. T. Kase.— **Thailand**: 1 ♀ juvenile (17.2 mm cl), ZMK, 8°14'N 97°51'E, 77 m depth, 7.i.1966.

Description.— Dorsal surface of carapace shiny, delicately and sparsely punctate anteriorly. Frontal margin unidentate. Hepatic margin rounded, sparsely punctate. Margin of thoracic loop nearly invisible in dorsal view. Pterygostomian region smooth, planate. Loop-shaped anterior margin of thoracic sinus with coalescent granules; row of perliform granules above cheliped basis, decreasing in size posteriorly. Endopodal merus and exognath of external maxillipeds indistinctly granulate anteriorly. Third thoracic sternite smooth. Anterior and posterior margins of cheliped merus bearing perliform tubercles, median tubercles largest; upper surface distally inflated, smooth. Carpus with row of granules on inner margin. Distinctly granulate lower surface of propodus bearing row of conic granules on inner margin. Pereiopodal meri bearing lines of obsolescent granules on dorsal and ventral surfaces. Apical process of male 1st pleopod digitate, laterally compressed, slightly flared distally.

Colour (in alcohol).— Carapace and legs dune-coloured; lobate reddish marks on

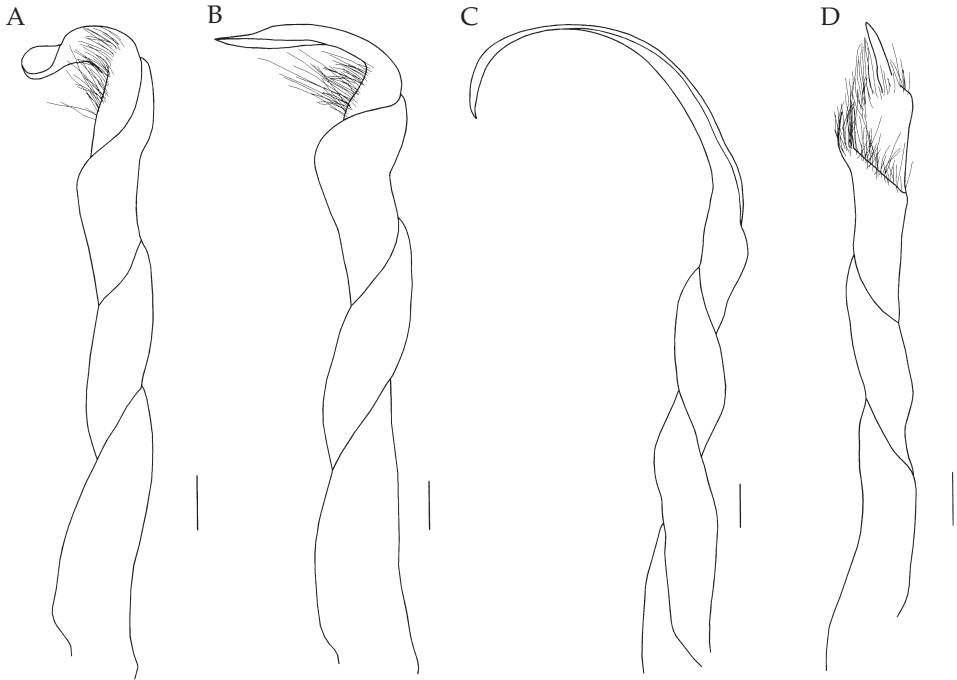


Fig. 3. First male pleopod. A, *Euclisia concinna* spec. nov., holotype, 26.0 mm cl, MNHN B28794; B, *E. crosnieri* (Chen, 1989), 31.0 mm cl, WAM C 24985; C, *E. exquisita* spec. nov., holotype, 33.3 mm cl, MNHN B28793; D, *E. nitida* spec. nov., 25.1 mm cl, NHM 2003.112.

each gastric region; reddish perliform tubercles on dorsal surface of cheliped merus ringed in orange, fingertips pale; pereiopods marked with orange-colour bands.

Remarks.— *Euclisia scitula* spec. nov. differs from the closely allied *E. nitida* spec. nov. in its distally flared apical process of male 1st pleopod, and its colour pattern.

Distribution.— Philippines, Thailand.

Etymology.— *scitulus* L., beautiful, pretty.

Euclisia tornatilia spec. nov.

(figs. 2B, 5A, 6H)

Leucosia unidentata; Haswell, 1880: 44; 1882: 118; Campbell, 1971: 42.

Material.— **Australia**: holotype, 1 ♂ (28.3 mm cl), WAM C24990, Dirk Hartog I., 25°31'S 112°29'E, 130 m depth, 9.x.1963. Paratypes, 2 ♂♂ (25.9, 28.3 mm cl), WAM cC24990, Dirk Hartog I., 25°31'S 112°29'E, 130 m depth, 9.x.1963; 1 ♂ (29.7 mm cl), 1 ♀ (28.3 mm cl), QM w3316, Cape Moreton, 119 m depth, coll. D. Harris; 2 ♀♀ (28.2, 28.6 mm cl), QM w2254, Cape Moreton, coll. B. Bentel, 22.vii.1965; 1 ♀ (29.0 mm cl), WAM c8604, off Queensland, 165 m depth, coll. W. Goode, 1964.

Description.— Dorsal surface of carapace shiny, delicately and sparsely punctate anteriorly. Frontal margin obscurely unidentate, deflexed. Hepatic margin rounded, delicately and sparsely punctate. Margin of thoracic loop visible in dorsal view. Ptery-

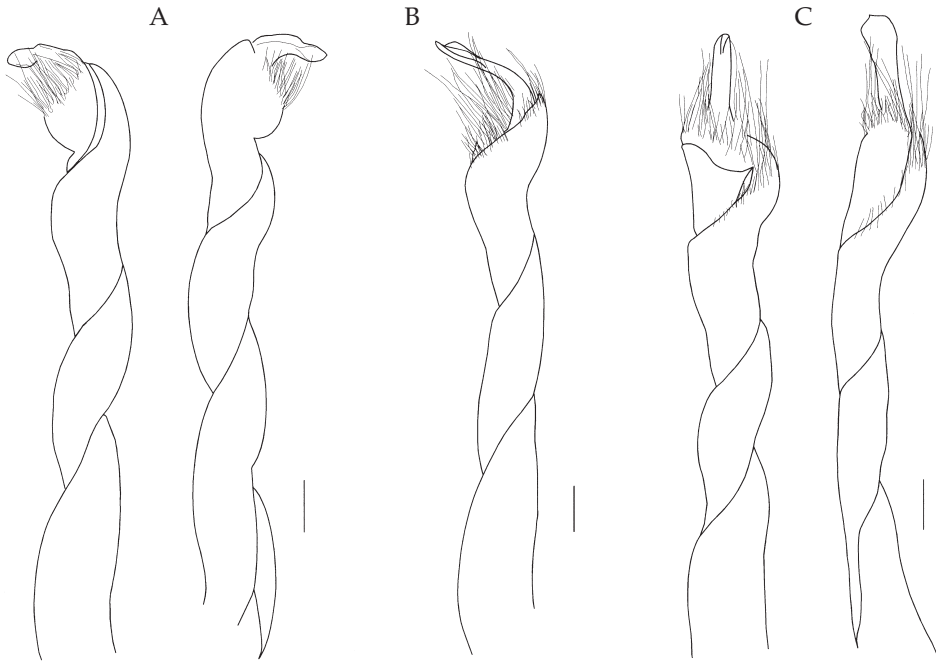


Fig. 4. First male pleopod. A, *Euclosia obtusifrons* (de Haan, 1841), 28.1 mm cl, NTOU; B, *E. rotundifrons* (Chopra, 1934), 34.1 mm cl, NHM 1900.4.20.5/6; C, *E. scitula* spec. nov., 30.1 mm cl, NSMT cr13012. Scale 1 mm.

gostomian region smooth, with deep crescentic indentation posteriorly. Loop-shaped anterior margin of thoracic sinus with coalescent granules; row of perliform granules above cheliped basis, median granules largest. Endopodal merus and exognath of external maxillipeds indistinctly granulate anteriorly. Third thoracic sternite smooth. Anterior and posterior margins of cheliped merus bearing perliform tubercles, median tubercles largest; upper surface distally smooth. Carpus with row of granules on inner margin. Distinctly granulate lower surface of propodus bearing row of conic granules on inner margin. Pereiopodal meri bearing lines of obsolescent granules on dorsal and ventral surfaces. Apical process of male 1st pleopod digitate, slender, acuminate.

Colour (in alcohol).— Three pairs of white-centered reddish ocelli on gastric region, anteriormost smallest, faintly marked.

Remarks.— *Euclosia tornatilia* spec. nov. is easily distinguished from the other species possessing a unidentate frontal margin and posteriorly indented pterygostomian plate. It differs from *E. exquisita* spec. nov. in having a sparsely punctate carapace and digitate, rather than hook-like, apical process of the male 1st pleopod; and from *E. unidentata* in having three, rather than two, reddish ocelli on the carapace, a downturned frontal margin, and a longer, acuminate apical process of the male 1st pleopod.

Distribution.— Australia, 119-165 m.

Etymology.— *tornatilis* L., beautifully rounded.

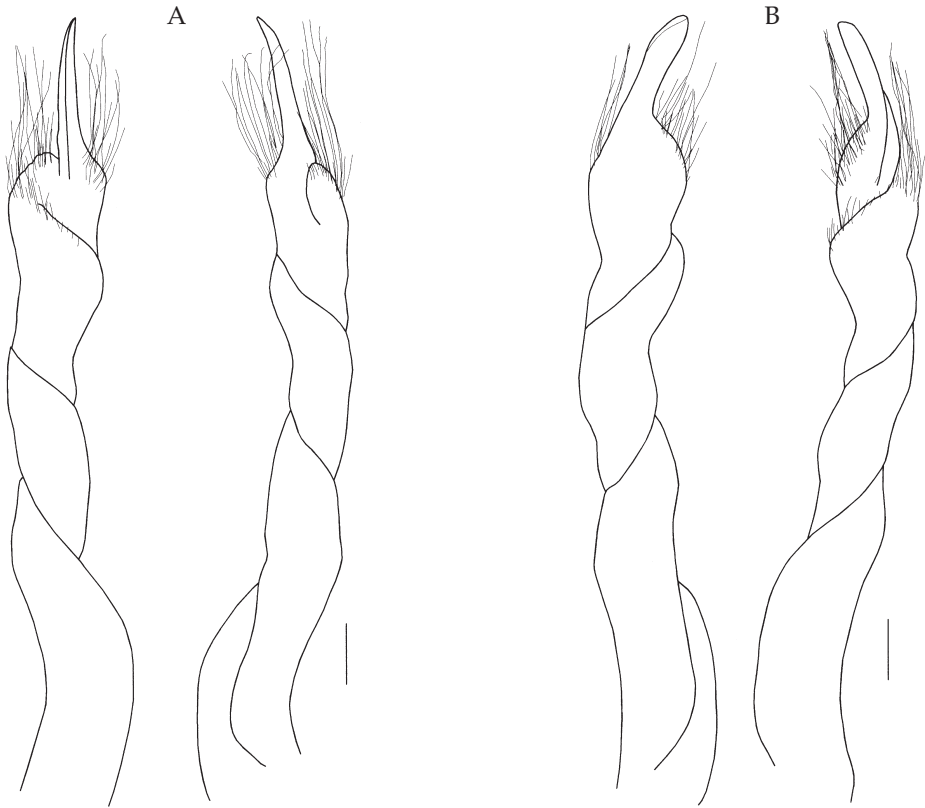


Fig. 5. First male pleopod. A, *Euclosia tornatilia* spec. nov., 29.7 mm cl, QM w3316; B, *E. unidentata* (de Haan, 1841), 28.4 mm cl, USNM. Scale 1 mm.

Euclosia unidentata (de Haan, 1841)
(figs. 2C, 5B, 6I)

Leucosia unidentata de Haan, 1841: 133, pl. 33, fig. 3; White, 1847: 48; Bell, 1855a: 362; 1855b: 284, 1855c: 6; Herklots, 1861: 27; Ives, 1891: 216; Alcock, 1896: 215 (part); Parisi, 1914: 292, pl.13, fig. 3; Ihle, 1918: 316; Balss, 1922: 127; André, 1931: 643; Sakai, 1935: 60, pl. 11, fig. 3; 1937: 146, fig. 26c, 28b, pl. 15, fig. 4; 1965: 47, pl. 19, fig. 3; 1976: 119, pl. 34, fig. 4, text-figs 65c, 67b; Miyake, 1961: 14; Miyake et al., 1962: 127; Chang, 1963: 2; Shen & Dai, 1964: 26, fig.; Serène, 1968: 47; Takeda & Miyake, 1970: 229; Takeda, 1982b: 103, fig. 301; 1987: 11; Huang, 1989: 316, fig. 281; 1994: 580; Dai & Yang, 1991: 94, pl.10 (5), fig. 43 (4,5); Zarenkov, 1990: 60, pl. 2, fig. 2, pl. 4, figs 1-4; Yamaguchi & Baba, 1993: 330, fig. 108; Chen, 1996: 300, fig. 24; Ng et al., 2001: 9; Chen & Sun, 2002: 430, fig. 194, pl. 15, fig. 6.

Leucosia obtusifrons unidentata Ortmann, 1892: 585; Balss, 1922: 128; Gee, 1925: 160; Sakai, 1934: 285. Not *Leucosia unidentata*; Haswell, 1880: 44; 1882: 118; Campbell, 1971: 42. [= *E. tornatilia* spec. nov.]

Material.— **Japan**: lectotype, 1 ♂ (29.5 mm cl), RMNH D 808, 1823-1834, coll. P. F. von Siebold & H. Bürger, designated by Yamaguchi & Baba, 1993: 331, fig. 108. Paralectotypes, 2 ♂♂ (29.6, 30.5 mm cl), RMNH D 42217, Japan, 1823-1834, coll. P. F. von Siebold & H. Bürger; 1 ♂ (28.4 mm cl), USNM, NE of Omai, Suruga Gulf, 34°46'N 138°21.50'E, 271 m depth, 'Albatross' stn 5073, 16.x.1906; 1 ♀ (27.7 mm cl), MNB 6901, Tokyo, coll. F. Hilgendorf; 1 ♂ (28.8 mm cl), USNM 18847, Loochoo Is., Okinawa.— **Hong**

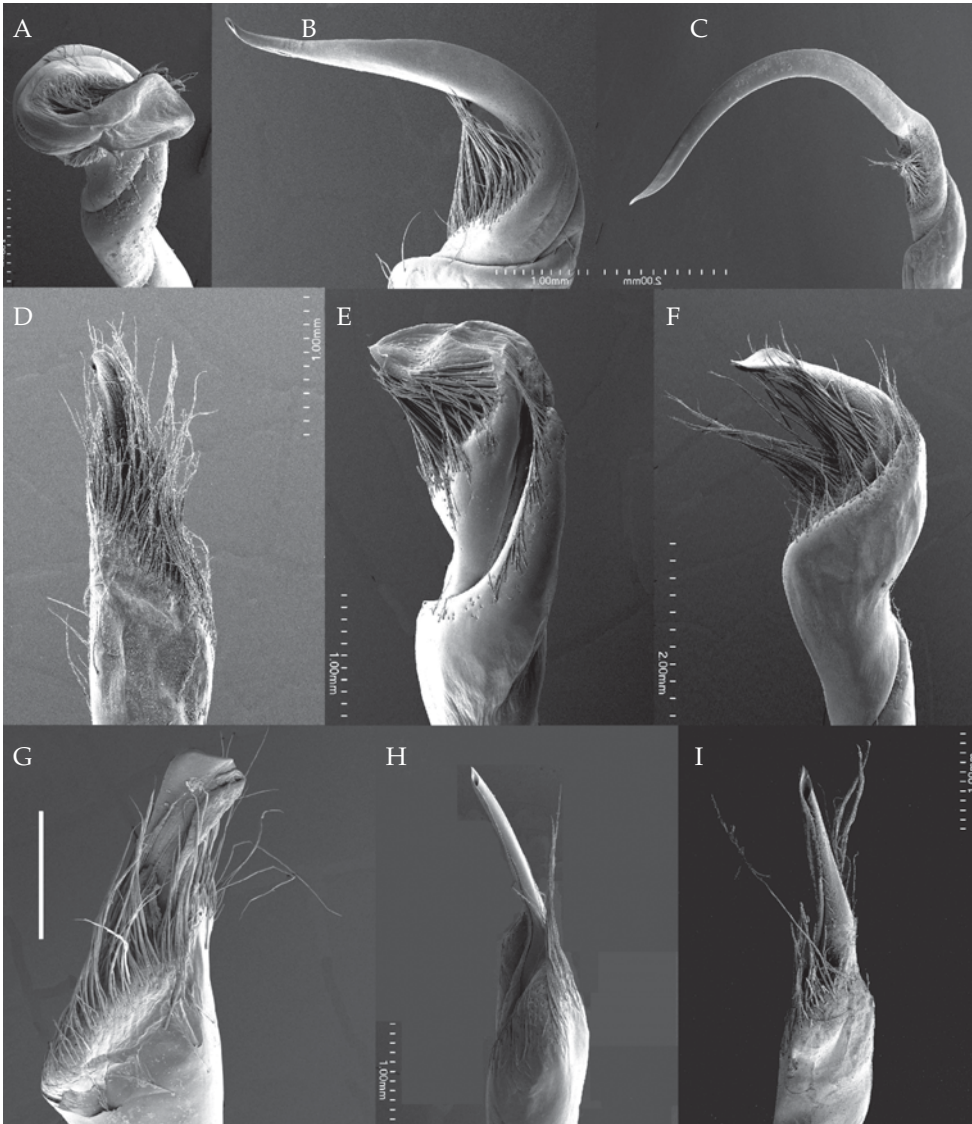


Fig. 6. First male pleopod, tip. A, *Euclosia concinna* spec. nov., holotype, 26.0 mm cl, MNHN B28794; B, *E. crosnieri* (Chen, 1989), 38.1 mm cl, QM w17000; C, *E. exquisita* spec. nov., holotype, 33.3 mm cl, MNHN B28793; D, *E. nitida* spec. nov., 25.1 mm cl, NHM 2003.112; E, *E. obtusifrons* (de Haan, 1841), 28.1 mm cl, NTOU; F, *E. rotundifrons* (Chopra, 1934), 34.1 mm cl, NHM 1900.4.20.5/6; G, *E. scitula* spec. nov., holotype, 28.4 mm cl, ZRC 2001.0332; H, *E. tornatilia* spec. nov., 29.7 mm cl, QM w3316; I, *E. unidentata* (de Haan, 1841), 29.4 mm cl, MNB 12437.

Kong: 1 ♀ ovigerous (28.9 mm cl), USNM, 21°44'N 114°48'E, 62 m depth, 'Albatross' stn 5303, 9.viii.1908; 1 ♂ (29.5 mm cl), 2 ♀♀ (27.9, 26.5 mm cl), NHM 1930.12.2.44-47, coll. Barney; 1 ♀ (26.1 mm cl), ZRC 1968.2.1.20, 1960.—**Taiwan:** 1 ♂ (29.4 mm cl), MNB 12437, coll. H. Sauter, 26.iii.1907; 1 ♀ (21.3

mm cl), MNHN, 22°16.5'N 120°26.4'E, CP 158, 123 m depth, 24.v.2002, colls. Chan, Cosel & Richer; 1 ♂ (29.4 mm cl), MNHN, 22°15.6'N 120°35.6'E CP 164, 60-90 m depth, 25.v.2002, colls. Chan, Cosel & Richer.— **China:** 2 ♂♂ (30.9, 31.7 mm cl), 1 ♀ (27.8 mm cl), ZMK, id. as *L. urania* Kröyer (preserved dry).

Description.— Dorsal surface of carapace shiny, minutely and sparsely punctate anteriorly. Frontal margin unidentate. Hepatic margin rounded, delicately and sparsely punctate. Margin of thoracic loop visible in dorsal view. Pterygostomial region smooth, with deep crescentic indentation posteriorly. Loop-shaped anterior margin of thoracic sinus with coalescent granules; row of perlimform granules above cheliped basis, median granules largest. Endopodal merus and exognath of external maxillipeds indistinctly granulate anteriorly. Third thoracic sternite smooth. Anterior and posterior margins of cheliped merus bearing perlimform tubercles, median tubercles largest; upper surface distally smooth. Carpus with row of granules on inner margin. Distinctly granulate lower surface of propodus bearing row of conic granules on inner margin. Pereiopodal meri bearing lines of obsolescent granules on dorsal and ventral surfaces. Apical process of male 1st pleopod digitate, slender.

Colour.— “upper surface [of carapace]...dark bluish gray, with 4 ocelli on gastric region, the ocelli, with purplish circumference and white center” (Dai & Yang, 1991: 94).

Distribution.— Japan, China, Hong-Kong, Gulf of Tonkin, Taiwan, Indonesia; 30-271 m.

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