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Deep-sea Shrimps and Lobsters (Crustacea: Decapoda: Dendrobranchiata and Pleocyemata) from the Sagami Sea and Izu Islands, Central Japan

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Abstract. A taxonomic report on deep-sea shrimps and lobsters from the Sagami Sea and Izu Islands, central Japan, is presented. Collections studied include those made during two major projects carried out by the National Museum of Nature and Science since 2001 and supplemental material from other sources accumulated by the author. Fifty-four species from Dendrobranchiata and six infraorders of Pleocyemata are reported. Of these, four species [*Alpheus nonalter* Kensley, 1969, *Glyphocrangon major* Komai, 2004, *Lebbeus unguiculatus* Chang, Komai and Chan, 2010 and *Plesionika nesisi* (Burukovsky, 1986)] are recorded from Japanese waters for the first time, while four are described as new: *Lebbeus brevicornis* sp. nov. (Caridea: Hippolytidae); *Paraspongicola acantholepis* sp. nov. (Stenopodidea: Spongicolidae); *Ambiaxiopsis altimanus* gen. et sp. nov. and *Calaxius izuensis* sp. nov. (Axiidea: Axiidae). Relationships of the four new taxa are discussed. Furthermore, it has been revealed that *Neocrangon orientalis* Han and Li, 2009, described from the East China Sea, is a junior synonym of *N. sagamiensis* Balss, 1913. The fauna comprises mainly of Japanese Archipelago endemic and Indo-West Pacific elements.
Key words: Crustacea, Decapoda, new genus, new species, Japan.

Introduction

The Sagami Sea is located at the Pacific side of central Honshu, Japan, surrounded by the Bōsō Peninsula in the east and Izu Peninsula in the west. The Izu Islands are an archipelago extending south to the Sagami Sea. The area is characterized by complex bottom topographies harboring a rich marine fauna. The deep-sea decapod crustaceans of the area have been rather well studied. Earlier studies reporting deep-sea species of shrimps and lobsters from the area include Bate (1888), Ortmann (1890, 1891) and Doflein (1902). Balss (1914) compiled records of those decapods known from Sagami Bay and adjacent areas at the time. There are also many scattered literature dealing with decapods from the area (e.g. Parisi, 1917, 1919; Yokoya, 1933; Kubo, 1949; Fujino, 1975; Hanamura, 1979; Ohta, 1983; Ohé and Takeda, 1986; Sakai, 1991, 1992; Watabe and Ikeda, 1994; Fujikura *et al*., 1995, 1996; Komai, 1997, 1999, 2001, 2006; Takeda, 1997; Watabe and Iizuka, 1999; Komai and Takeda, 1989, 2002, 2004; Hayashi and Mitsuhashi, 2003; Komai and Kim, 2004; Komai *et al*., 2005; Sakai and Ohta, 2005).

Since 2001, the National Museum of Nature and Science (NSMT) has been carrying out a series of trawl and dredge surveys and collections from local fisheries (gill nets and traps) in the Sagami Sea and Izu-Ogasawara Islands, during two major projects, "Study on Environmental Changes in the Sagami Sea and Adjacent Coastal Area with Time Serial Comparison of Fauna and Flora" (2001–2005) and "Studies on the Origin of Biodiversity in the Sagami Sea Fossa Magna Element and the Izu-Ogasawara (Bonin) Arc" (2006–2010). The present paper is a report on the shrimps and lobsters from two suborders and six infraorders (Dendrobranchiata and Pleocyemata

including Caridea, Stenopodidea, Polychelida, Achelata, Astacidea and Axiidea) mainly on the basis of collections made during these two projects, including cruises of R/V *Tansei-maru* of the Japan Agency of Marine Science and Technology (KT07-31 cruise) and TR/V *Shin'yo-maru* of the Tokyo University of Marine Science and Technology (2001 cruise). The collections came from depths ranging 140–1300 m. Material from other sources, housed in the Natural History Museum and Institute, Chiba, and NSMT were also examined. As a result, 54 species, including four new species and four new records for Japanese fauna, are reported herewith.

Materials and Methods

The material used in this study is deposited in NSMT, the Natural History Museum and Institute, Chiba (CBM), and the Muséum national d'Histoire naturelle, Paris (MNHN). Each species account includes the original reference to the species and primary synonym(s), and those relevant regional records and major works providing detailed morphological information. When possible, descriptions of the coloration of freshly caught or living specimen(s) are given for species in which such information is scarce or unavailable. Carapace length (cl) is primarily used as a standard measurement. For all taxa except Alpheidae, postorbital carapace length is given, measured from the rostral base to the midpoint of the posterodorsal margin of the carapace. For alpheids, in which the rostrum is very short, the measurements are taken between the rostral tip to the midpoint of the posterodorsal margin of the carapace. Within each suborder or infraorder, families, genera and species are arranged in alphabetical order. Abbreviations used in the text are: Jn, Japanese name; juv., juvenile(s); ovig., ovigerous female(s); stn, station.

Systematics

Suborder **Dendrobranchiata**

Family **Aristeidae**

Genus ***Aristaeomorpha*** Wood-Mason, 1891

1. ***Aristaeomorpha foliacea*** (Risso, 1827) [Japanese name: Tsunonaga-chihiro-ebi]

Penaeus foliaceus Risso, 1827: 69, pl. 2, fig. 6 [type locality: Mediterranean Sea].

Aristeus rostridentatus Bate, 1881: 189; 1888: 317, pl. 51 [type locality: near Fiji Islands, 300 fathoms].

Aristaeomorpha mediterranea Adensamer, 1898: 627 [type locality: Mediterranean Sea].

Aristaeomoprha rostridentata: Parisi, 1919, 59, figs. 1–2.

Aristeus japonicus Yokoya, 1933: 3, fig. 1 [type locality: off Owase, Mie Prefecture, Japan, 353, 61 m].

Aristaeomorpha folieacea: Miyake, 1982: 1, pl. 1, fig. 1; Hayashi, 1983: 281, figs. 53, 54a–e, 56a–f; 1992: 22, figs. 8, 14, 15; Komai and Komatsu, 2009: 503.

Materials examined. R/V *Tansei-maru*, KT07-31, stn L-3-500, SW of Izu-ōshima Island, 34°39.89′N, 139°12.19′E to 34°40.03′N, 139°13.87′E, 504–551 m, 27 November 2007, beam trawl, 1 male (cl 39.3 mm), 1 female (damaged, cl ca. 50 mm), CBM-ZC 10081.

Distribution. Widely distributed in tropical and temperate waters of the world oceans, 60–1300 m (Crosnier, 1978; Hayashi, 1992). In Japan, occurring in the Pacific side, from Iwate Prefecture to Kyūshū, and East China Sea (Hayashi, 1992; Komai, 1993).

Family **Benthesicymidae**

Genus ***Benthesicymus*** Bate, 1881

2. ***Benthesicymus investigatoris*** Alcock and Anderson, 1899 [Jn: Maru-soko-chihiro-ebi]

Benthesicymus investigatoris Alcock and Anderson, 1899a: 282 [type locality: Andaman Sea]; 1899b: pl. 41, fig. 2; Hayashi, 1983: 440, fig. 61a–e; 1986: 54 (fig. 14), 55, 238; 1992: 40,

fig. 22; Kikuchi and Nemoto, 1991: 88, figs. 16, 17; Komai and Komatsu, 2009: 506, fig. 18D.

Materials examined. R/V *Tansei-maru*, KT07-31, stn L-2'-1000, Sagami Bay, S of Jogashima, 35°02.78′N, 139°33.27′E to 35°03.04′N, 139°33.74′E, 716–633 m, 28 November 2007, beam trawl, 1 female (cl 12.5 mm), NSMT-Cr S838; stn L-8'-1000, E of Miyake Island, 34°08.21′N, 139°50.97′E to 34°07.28′N, 139°49.51′E, 1009–1029 m, 26 November 2007, beam trawl, 2 males (cl 18.0, 21.2 mm), 1 female (cl 23.3 mm), CBM-ZC10077.

Distribution. Widely distributed in the Indo-Wes Pacific, 400–1600 m (Hayashi, 1986; Kikuchi and Nemoto, 1991). In Japan, known from the Pacific side, off Iwate Prefecture to Tosa Bay (Kikuchi and Nemoto, 1991; Komai and Komatsu, 2009).

Family **Solenoceridae**
Genus ***Hymenopenaeus*** Smith, 1882

3. ***Hymenopenaeus halli*** Bruce, 1966 [Jn: Sorihashi-hime-kudahige-ebi]

Hymenopenaeus halli Bruce, 1966, 216, figs. 1, 2a–e [type locality: South China Sea, 720–783 m]; Crosnier, 1978: 120, figs. 39d, 40d, 42c, 43b, 45a–d, 46b, c; Hayashi, 1985: 22, figs. 81, 84; 1986: 44 (fig. 5), 45, 233; 1992: .

Material examined. R/V *Seiyo-maru*, 1995 cruise, stn NB-2, Tateyama Bay, 35°00.2′N, 139°45.6′E, 499 m, 16 November 1995, 1 female (cl 7.8 mm), CBM-ZC 10021.

Distribution. South Africa, Madagascar, Indonesia, South China Sea, Japan, 499–910 m (Bruce, 1966; Crosnier, 1978; De Freitas, 1985; Hayashi, 1992). In Japan, heretofore known only from Tosa Bay (Hayashi, 1992).

Family **Sicyonidae**
Genus ***Sicyonia*** H. Milne Edwards, 1830

4. ***Sicyonia adunca*** Crosnier, 2003 [New Jn: Tsunomata-ishi-ebi] (Fig. 1A)

Sicyonia adunca Crosnier, 2003: 265, figs. 42–44, 107F [type locality: New Caledonia, 233–258 m].

Materials examined. R/V *Tansei-maru*, KT07-31, stn L-2-100, W of Izu-ōshima Island, 35°05.68′N, 139°35,45′E to 35°05.66′N, 139°35.65′E, 100–146 m, 25 November 2007, dredge, 2 females (cl 6.3, 6.4 mm), CBM-ZC 10071.

Coloration in fresh. Body irregularly mottled with reddish brown, ventral part of abdomen whitish. Cornea brown. First to fifth pereopods generally white, with reddish brown spots. See Fig. 1A

Distribution. Japan and New Caledonia, 120–390 m (Crosnier, 2003). In Japan, recorded from off Kushimoto, Kii Peninsula, and Amami Islands.

5. ***Sicyonia laevis*** Bate, 1881 [Jn: Tsunoore-ishi-ebi] (Fig. 1B)

Sicyonia laevis Bate, 1881: 173 [type locality: Admiralty Islands, north of Papua New Guinea, 274 m]; 1888: 298, pl. 43, fig. 5; Crosnier, 2003: 284, figs. 65–67, 108C, D.

Eusicyonia nebulosa Kubo, 1949: 454, figs. 8N, 48C, 77B, H, 79K, 156G, 157 [type locality: Suruga Bay, off Heta (=Heda), Shizuoka Prefecture, ca. 350 m].

Sicyonia neblosa (sic): Hayashi, 1985: 260, figs. 92b, 93b, 95b.

Materials examined. R/V *Rinkai-maru*, stn 1, Sagami Bay, W of Misaki, 35°08.01′N, 139°32.92′E, 282–453 m, sand, 8 March 2002, dredge, coll. T. Komai, 1 female (cl 8.7 mm), CBM-ZC 10055. R/V *Tansei-maru*, KT07-31, stn L-2-100, W of Izu-ōshima Island, 35°05.68′N, 139°35,45′E to 35°05.66′N, 139°35.65′E, 100–146 m, 25 November 2007, dredge, 1 female (cl 5.6 mm), CBM-ZC 10072.

Coloration in fresh. Rostrum whitish. Carapace generally brown, posterolateral part white. Abdomen mottled with brown on tergites, pleura whitish. Cornea dark gray-brown. Antennal peduncles brownish. First to fifth pereopods white. See Fig. 1B.

Distribution. Madagascar, Japan, Philippines,

Fig. 1. A, *Sicyonia adunca* Crosnier, 2003, female (cl 6.4 mm), CBM-ZC 10071, lateral view; B, *Sicyonia laevis* Bate, 1888, female (cl 8.7 mm), CBM-ZC 10055, lateral view; C, *Metacrangon holthuisi* Komai, 2010, male (cl 4.4 mm), CBM-ZC 10092, lateral view; D, *Metacrangon similis* Komai, 1997, male, NSMT-Cr, lateral view; E, *Sclerocrangon unidentata* Komai, 1989, female (cl 20.2 mm), CBM-ZC 10093, dorsal view; F, same, lateral view; G, *Glyphocrangon major* Komai, 2004, female (cl 36.2 mm), CBM-ZC 10075, dorsal view; H, same, A, entire animal, lateral view; B, same, lateral view.

Indonesia, Papua New Guinea, New Caledonia, Vanuatu, Fiji, Wallis Islands, and Tonga; 100–570 m (Crosnier, 2003). In Japan, recorded from Sagami Sea to Tosa Bay (Crosnier, 2003).

Remarks. Crosnier (2003) showed that *Sicyonia nebulosa* Kubo, 1949 was synonymous with *S. laevis* (Bate, 1881). Therefore, literature records of *S. nebulosa* (e.g., Kubo, 1949; Hayashi, 1985; 1992) are here referred to *S. laevis*.

Suborder **Pleocyemata**
Infraorder **Caridea**
Family **Alpheidae**
Genus ***Alpheus*** Fabricius, 1898

6. ***Alpheus nonalter*** Kensley, 1969 [New Jn: Fukaba-hoso-ude-teppou-ebi] (Figs. 2, 3)

Alpheus nonalter Kensley, 1969: 172, fig. 15 [type locality: northeast of Durban, South Africa, 118 m]; 1981: 25; Banner and Banner,

1981: 232; Chace, 1988: 42, fig. 10.

Material examined. TR/V *Shin'yo-maru*, 2002 cruise, stn 19, Sagami Bay, SE of Hatsushima Island, 35°01.34′N, 139°11.81′E, 197–173 m, 22 October 2002, 1 female (cl 6.3 mm), CBM-ZC 10044.

Comparative materials. MAINBAZA, stn CC3174, Mozambique Strait, 25°34.17′S, 33°13.10′E, 253–262 m, 16 April 2009, 11 males (cl 5.2–9.4 mm), 15 females (cl 5.6–8.0 mm), 3 ovigerous females (cl 6.9–9.5 mm), MNHN-IU-2010-300.

Distribution. Western Indian Ocean from Natal to Mozambique Strait, and Madagascar, Philippines, Hong Kong, and Japan, 86–346 m (Kensley, 1969, 1981; Banner and Banner, 1981, 1983;

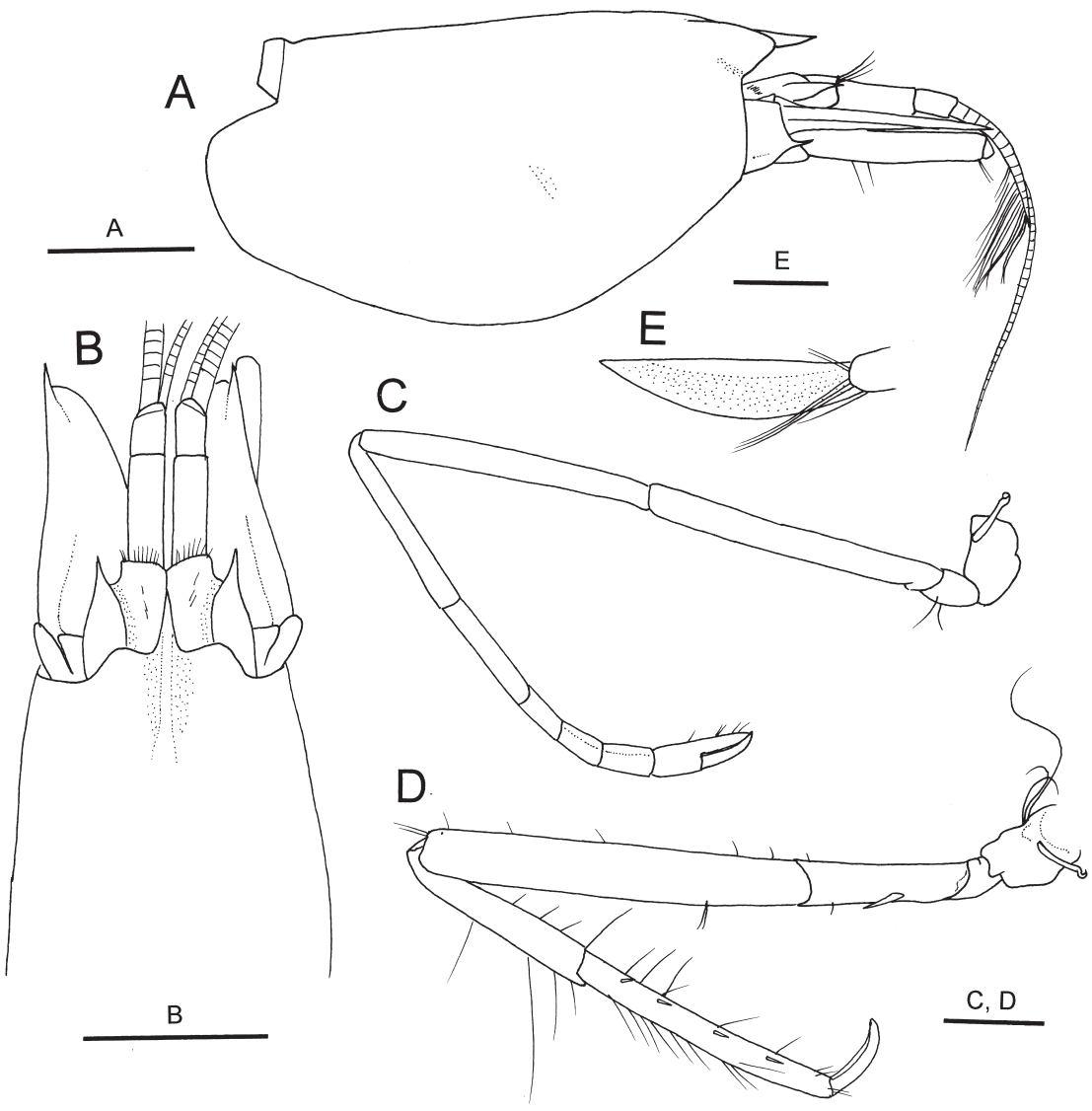

Fig. 2. *Alpheus nonalter* Kensley, 1969, female (cl 6.3 mm), CBM-ZC 10044. A, carapace and cephalic appendages, lateral view; B, anterior part of carapace and cephalic appendages, dorsal view (setae omitted); C, left second pereopod, lateral view; D, left third pereopod, lateral view; E, same, dactylus, flexor view. Scale bars: 2 mm for A, B; 1 mm for C, D; 0.5 mm for E.

Chace, 1988; this study).

Remarks. *Alpheus nonalter* was originally described on the basis of material from off Durban, South Africa (Kensley, 1969), and subsequently has been recorded from the southeast coast of Africa, Mozambique Strait, Madagascar, the Philippines and Hong Kong (Banner and Banner, 1981, 1983; Kensley, 1981; Chace, 1988).

The present female specimen agrees well with the diagnosis and figures of *A. nonalter* given by Chace (1988) based on two male specimens from the Philippines in the following diagnostic features: body not unusually compressed or setose (Fig. 2A, B); rostrum narrow, sharp, not reaching distal margin of first segment of antennular peduncle (Fig. 2A, B); postrostral carina disappearing on anterior gastric region, base not abruptly delimited from shallow adrostral furrows (Fig. 2B); second segment of antennular peduncle about 3.0 times longer than wide (Fig. 2B); antennal scale with lateral margin slightly sinuous, distolateral tooth moderately strong, but far overreaching distal lamella (Fig. 2B); first pereopod with merus armed with sharp distal tooth and low of long, slender spines on ventromesial margin (Fig. 3B, F); major chela about 6.0 times longer than wide, dactylus overreached by fixed finger, plunger little developed, palm somewhat compressed, with conspicuous notch at base of fixed finger (Fig. 3A–D); minor chela slender, palm granulate (Fig. 3E–G); second pereopod with proximal carpal article distinctly longer than second article (Fig. 2C); third pereopod with dactylus subspatulate, merus unarmed, ischium bearing spine (Fig. 2C, D). In addition, Banner and Banner (1981) noted that the minor chela of females is not balaeniceps with fingers being subequal to the palm, agreeing well with the present Japanese specimen (Fig. 3G). However, the Japanese and Philippines specimens substantially differs from the original figures given by Kensley (1969) in several points, including the proportion of the antennular peduncle and the third to fifth pereopods. Therefore, I compared the present Japanese specimen with many specimens recently collected from the Mozambique Strait. It has been found that the Japanese specimens agree very well with those from the latter comparative specimens, and there is little doubt that they are conspecific. Kensley' (1969) figure is not very accurate in the proportion of the antennular and antennal peduncles, which is too long against the actual condition.

Kensley (1981) included Japan in the geographical range of *Alpheus nonalter*, but no voucher specimens were indicated. The present specimen represents the first certain record of this species from Japanese waters.

Family **Crangonidae**

Genus ***Aegaeon*** Agassiz, 1846

7. ***Aegaeon rathbuni*** De Man, 1918 [Jn: Itsutogeiwa-ebi]

Aegeon Rathbuni De Man, 1918: 304 [type locality: Borneo, Indonesia]; 1920: 300, pl. 24, fig. 74b, pl. 25, figs. 74, 74a.

Pontocaris rathbuni: Chace, 1984: 44.

Aegaeon rathbuni: Chan, 1996: 281, fig. 4; Komai, 2001: 68, figs. 1–3.

Materials examined. R/V *Tansei-maru*, KT07-31, stn L-2-200, Sagami Sea, S of Jōgashima, 35°03.52′N, 139°37.43′E to 35°04.16′N, 139°37.53′E, 397–286 m, 25 November 2007, 1 female (cl 5.6 mm), CBM-ZC 10074. R/V *Seiyo-maru*, 1995 cruise, stn S1, Sagami Sea, off Izu-oshima Island, 34°33.4′N, 139°21.1′E, 257 m, 15 October 1995, 1 female (cl 8.5 mm), CBM-ZC 10023; stn S2, Sagami Sea, off Izu-ōshima Island, 34°34.6′N, 139°19.9′E, 280 m, 15 October 1995, 1 female (cl 7.3 mm), CBM-ZC 10024.

Distribution. Widely distributed in the Indo-West Pacific, and extending to Hawaii, 11–809 m (Chan, 1996). In Japan, recorded from off Bōsō Peninsula, Sagami Sea, and Tokara Islands (Komai, 2001).

Genus ***Lissosabinea*** Christoffersen, 1988

8. ***Lissosabinea indica*** (De Man, 1918) [New Jn: Tachi-ebijyako]

Sabinea indica De Man, 1918: 304 [type locality: N of Tanah Djampeah Island, Indonesia, 400

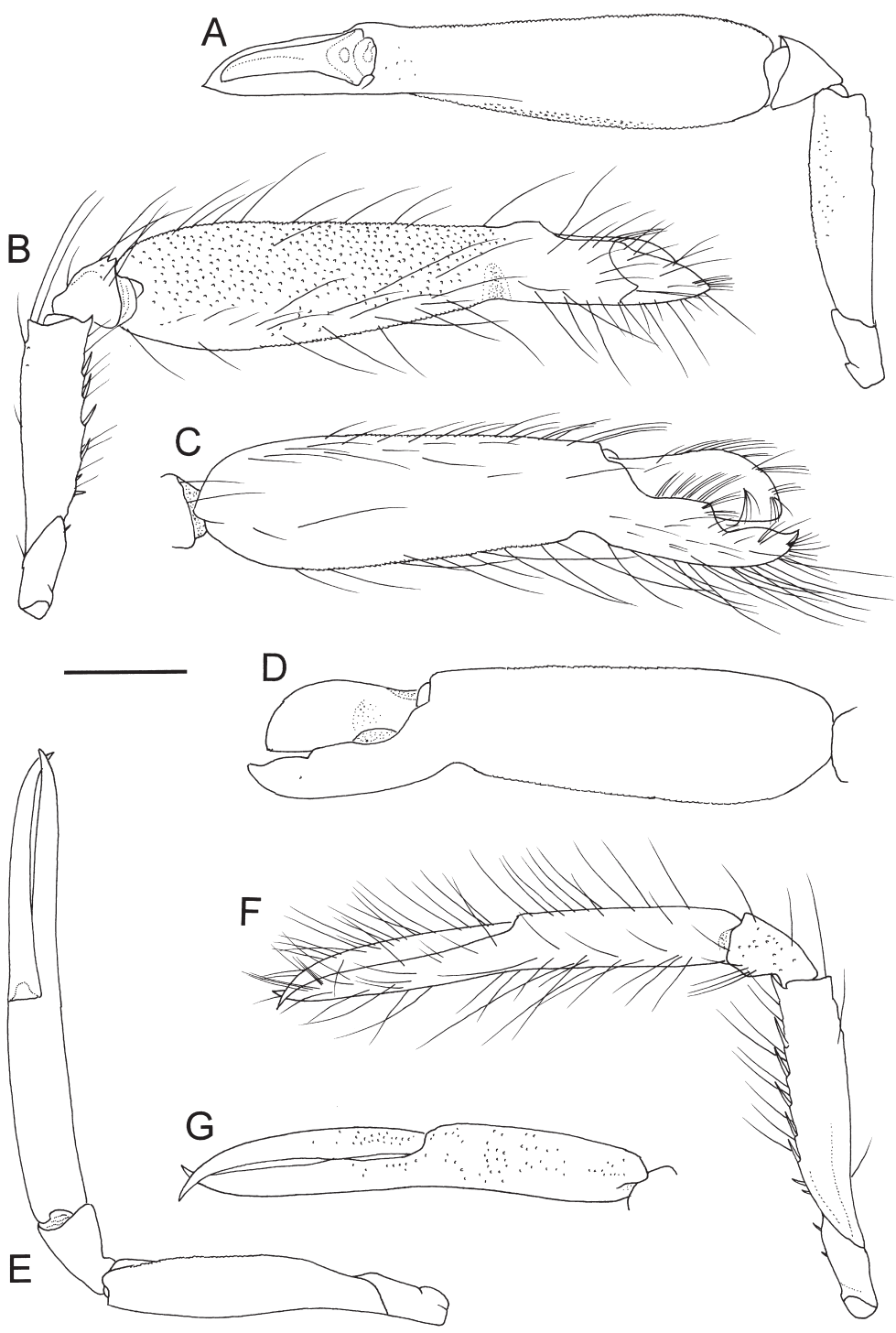

Fig. 3. *Alpheus nonalter* Kensley, 1969, female (cl 6.3 mm), CBM-ZC 10044. A, major (right cheliped), lateral view (setae omitted); B, same, mesial view; C, same, chela, dorsal view (surface granules omitted); D, same, ventral view (setae and surface granules omitted); E, minor (left) cheliped, lateral view (setae and surface granules omitted); F, same, mesial view; G, same, chela, dorsal view (setae omitted). Scale bar: 2 mm.

m]; 1920: 303, pl. 25, fig. 75, 75a–l.

Lissosabinea indica: Kim and Natsukari, 2000: 35, fig. 1a, b; Komai, 2006: 37, figs. 1–4; Taylor and Collins, 2009: 186, figs. 7, 9.

Material examined. R/V *Seiyo-maru*, 1995 cruise, stn S2, between Izu-ōshima Island and Toshima Island, 34°34.6′N, 139°19.9′E, 280 m, 15 October 1995, 1 male (cl 6.3 mm), CBM-ZC 7801.

Distribution. Japan, Philippines, Indonesia, New Caledonia, and northwestern Australia; 140–700 m (Komai, 2006; Taylor and Collins, 2009). In Japan, recorded from Sagami Sea and Tosa Bay (Kim and Natsukari, 2000; Komai, 2006).

Genus ***Metacrangon*** Zarenkov, 1965

9. ***Metacrangon holthuisi*** Komai, 2010 [New Jn: Kuriiro-toge-ebijyako] (Fig. 1C)

Metacrangon holthuisi Komai, 2010: [type locality: Sagami Sea, off Tateyama, 1039–1300 m].

Materials examined. R/V *Tansei-maru*, KT07-31, stn L-2'-1000, Sagami Sea, S of Jōgashima, 35°02.78′N, 139°33.27′E to 35°03.04′N, 139°33.74′E, 716–633 m, 28 November 2007, 2 males (cl 4.0, 4.4 mm), 2 females (cl 3.7, 4.0 mm), CBM-ZC 10092.

Coloration in fresh. Entirely brownish, darker on carapace. See Fig. 1C.

Distribution. Known only from the Sagami Sea area, 633–1300 m.

Remarks. *Metacrangon holthuisi* was recently described on the basis of a single damaged specimen from the Sagami Sea by Komai (2010). The present specimens agree well with the holotype in every diagnostic aspect (Komai, 2010).

10. ***Metacrangon proxima*** Kim, 2005 [New Jn: Sagami-toge-ebijyako]

Metacrangon proxima Kim, 2005: 242, figs. 1–3 [type locality: Amadaiba, Sagami Bay, Japan, 280 m].

Materials examined. R/V *Seiyo-maru*, 1995 cruise, stn S7, Sagami Sea, Tateyama Bay, 35°00.7′N, 139°44.9′E, 373 m, 14 September 1995, 1 male (cl 4.3 mm), CBM-ZC 10027; stn SQ, Sagami Sea, SW of Jōgashima, 35°05.9′N, 139°32.0′E, 742–748 m, 14 May 1995, 14 males (cl 4.0–4.8 mm), 17 females (cl 3.8–8.2 mm), 2 ovigerous females (cl 6.6, 8.3 mm), 3 juveniles (cl 3.1–3.8 mm), CBM-ZC 9537; stn S12, Sagami Sea, Tateyama Bay, 35°00.4′N, 139°48.0′E, 411 m, 14 September 1994, sledge, 2 males (cl 4.2, 4.4 mm), 1 juvenile (cl 3.0 mm), CBM-ZC 9538. R/V *Tansei-maru*, KT98-14 cruise, stn 17-1, off Katsuyama Ukishima Islet, Uraga Strait, 35°07.177′N, 139°49.114′E, 281–298 m, 30 August 1998, dredge, coll. T. Komai, 1 ovigerous female (cl 8.4 mm), CBM-ZC 9540.

Distribution. Probably Japanese endemic, only known from Sagami Sea area, 281–748 m (Kim, 2005; this study).

11. ***Metacrangon similis*** Komai, 1997 [Jn: Tsuno-ebijyako] (Fig. 1D)

Metacrangon similis Komai, 1997: 675, figs. 1H, 11, 12 [type locality: off Owase, Kumano Sea, 369–412 m].

Materials examined. R/V *Tansei-maru*, KT-07-31, stn L-1-800, Sagami Bay, NE of Hatsushima Island, 35°03.41′N, 139°12.55′E to 35°02.73′N, 139°13.73′E, 777–1001 m, 24 November 2007, beam trawl, 1 female (cl 15.8 mm), 1 ovigerous female (cl 16.0 mm), CBM-ZC 10068; stn L-2'-1000, Sagami Sea, S of Jōgashima, 35°02.78′N, 139°33.27′E to 35°03.04′N, 139°33.74′E, 716–633 m, 28 November 2007, beam trawl, 3 males (cl 7.6–8.8 mm), 2 ovigerous females (cl 13.6, 16.1 mm), 1 juvenile (cl 3.0 mm), NSMT-Cr S839.

Coloration in fresh. Body and appendages generally grayish brown. See Fig. 1D.

Distribution. Japanese endemic, off Bōsō Peninsula to Tosa Bay, 450–1000 m.

Genus ***Neocrangon*** Zarenkov, 1965

12. ***Neocrangon sagamiensis*** (Balss, 1913) [Jn: Soko-ebijyako]

Crangon (*Crangon*) *sagamiensis* Balss, 1913: 237 [type locality: Sagami Bay]; 1914: 63, figs. 38, 39.

Crangon (*Neocrangon*) *sagamiensis*: Hayashi, 1986: 141, 275, fig. 92.

Neocrangon sagamiensis: Komai and Komatsu, 2009: 527, figs. 7, 20B.

Neocrangon orientalis Han and Li, 2009: 65, figs. 1, 2 [type locality: East China Sea, 365–395 m]. **Syn. nov.**

Materials examined. R/V *Rinkai-maru*: stn 2, Sagami Bay, W of Misaki, 35°06.69′N, 139°34.67′E, 310–381 m, 8 March 2002, dredge, coll. T. Komai, 1 ovigerous female (cl 5.7 mm), CBM-ZC 10066. TR/V *Shin'yo-maru*, 2002 cruise, stn 42, Sagami Sea, W of Sunosaki, Tateyama, 34°51.37′N, 139°38.94′E, 452–381 m, 25 October 2002, 1 female (cl 7.4 mm), CBM-ZC 10051; stn 43, similar locality, 34°51.56′N, 139°38.12′E, 487–474 m, 24 October 2002, 1 male (cl 8.0 mm), 1 ovigerous female (cl 9.4 mm), CBM-ZC 10053. R/V *Tansei-maru*, KT07-31, stn L-3-500, W of Izu-ōshima Island, 34°39.89′N, 139°12.19′E to 34°40.03′N, 139°13.87′E, 504–551 m, 27 November 2007, beam trawl, 2 ovigerous females (cl 9.5, 11.0 mm), CBM-ZC 10090; same data, 1 male (cl 8.2 mm), 4 ovigerous females (cl 8.2–10.0 mm), NSMT-Cr S840. R/V *Seiyo-maru*, 1995 cruise, stn NB-2, Tateyama Bay, 35°00.2′N, 139°45.6′E, 499 m, 16 November 1995, 1 male (cl 7.2 mm), 1 female (cl 9.3 mm), CBM-ZC 10022; stn TF, Tateyama Bay, 34°59.7′N, 139°47.0′E, 343 m, 16 November 1995, 2 females (cl 4.7, 9.8 mm), 1 juvenile (cl 2.7 mm), CBM-ZC 10038.

Distribution. Pacific coast of Japan from Iwate Prefecture to Kyūshū, East China Sea, southern Korea; 150–400 m (Komai and Komatsu, 2009; Komai, unpublished data).

Remarks. Han and Li (2009) described a new taxon, *Neocrangon orientalis*, on the basis of eight specimens from the East China Sea. Unfortunately, the authors did omit *Neocrangon sagamiensis* for comparison. As there are no morphological differences between the present topotypic material of *N. sagamiensis* and the type series of *N. orientalis*, the latter taxon is here synonymized with *N. sagamiensis*.

Genus ***Paracrangon*** Dana, 1852

13. ***Paracrangon okutanii*** Ohé and Takeda, 1986 [Jn: Okutani-yatsuashi-ebi]

Paracrangon echinata: Balss, 1914: 72. Not *Paracrangon echinata* Dana, 1852.

Paracrangon okutanii Ohé and Takeda, 1986: 76, figs. 2, 3 [type locality: Sagami Bay, Japan]; Komai and Kim, 2004: 524, figs. 7, 8.

Materials examined. R/V *Tansei-maru*, KT07-31, stn L-2'-1000, Sagami Sea, S of Jogashima, 35°02.78′N, 139°33.27′E to 35°03.04′N, 139°33.74′E, 633–716 m, 28 November 2007, 1 female (cl 18.3 mm), CBM-ZC 10091; stn L-3-500, Sagami Sea, W of Izu-ōshima Island, 34°39.89′N, 139°12.19′E to 34°40.03′N, 139°13.87′E, 504–551 m, 27 November 2007, beam trawl, 1 male (cl 14.0 mm), CBM-ZC 10082.

Distribution. Pacific coast of Japan, from Sagami Bay to Kii Peninsula, Taiwan; 350–1400 m (Komai and Kim, 2004).

Remarks. Komai and Kim (2004) clarified that specimens from Sagami Bay referred to *Paracrangon echinata* Dana, 1852 by Balss (1914) actually represented *P. okutanii*. *Paracrangon echinata* is a common species in the northern part of Japan, but its occurrence in the Sagami Sea area has not been confirmed.

14. ***Paracrangon ostlingos*** Komai and Kim, 2004 [New Jn: Makige-yatsuashi-ebi]

Paracrangon ostlingos Komai and Kim, 2004: 531, figs. 11–13.

Materials examined. Paratypes: R/V *Tansei-maru*, KT97-01 cruise, stn OS-1, Sagami Sea, SW of Izu-ōshima Island, 278–300 m, 27 February 1997, dredge, 1 male (cl 7.5 mm), CBM-ZC 7589; KT98-14 cruise, stn 2, Sagami Sea, W of Izu-ōshima Island, 257–264 m, 29 August 1998, dredge, 1 male (cl 7.3 mm), CBM-ZC 7590.

Distribution. Known only from off Bōsō Peninsula and Sagami Sea, 257–323 m (Komai and Kim, 2004).

Genus ***Parapontophilus*** Christoffersen, 1988

15. ***Parapontophilus demani*** (Chace, 1984) [New Jn: Hime-shinkai-ebijyako]

Pontophilus demani Chace, 1984: 48 [type locality: Selat Roti, Lesser Sunda Islands, 520 m].

Parapontophilus demani: Komai, 2008: 310, figs. 21B, 22, 23.

Materials examined. TR/V *Shin'yo-maru*, 2002 cruise, stn 6, Sagami Sea, off Jogashima, 35°05.62′N, 139°32.29′E, 698–448 m, 20 October 2002, 1 male (cl 5.2 mm), CBM-ZC 10041; stn 44, Sagami Sea, W of Sunosaki, Tateyama, 34°51.63′N, 139°37.47′E, 500–519 m, 1 female (cl 3.3 mm), NSMT-Cr S841. R/V *Tansei-maru*, KT07-31, stn L-3-500, N of Toshima Island, 34°39.89′N, 139°12.19′E to 34°40.03′N, 139°13.87′E, 504–551 m, 4 males (cl 2.9–5.9 mm), 3 females (4.7–6.2 mm), CBM-ZC 10083; same data, 3 males (cl 5.7–6.0 m), 3 females (5.4–5.7 mm), NSMT-Cr S842.

Distribution. Japan (Sagami Sea and off Kii Peninsula), Indonesia, New Caledonia, and Austral Islands, French Polynesia; 350–700 m (Komai, 2008; this study). In Japan, recorded from Sagami Sea and off Kushimoto, Kii Peninsula (Komai, 2008; this study).

Genus ***Prionocrangon*** Wood-Mason and Alcock, 1891

16. ***Prionocrangon dofleini*** Balss, 1913 [Jn: Mekura-ebi]

Prionocrangon dofleini Balss, 1913: 238 [type locality: Sagami Bay, Japan]; 1914: 71, fig. 42; Kim and Chan, 2005: 1608, figs. 4–6, 11A.

Prionocrangon ommatosteres: Ohta, 1983: 230. Not *Prionocrangon ommatosteres* Wood-Mason and Alcock, 1891.

Materials examined. R/V *Seiyo-maru*, 1995 cruise, stn SZ, Sagami Bay, W of Arasaki, 35°11.1′N, 139°33.4′E, 6 July 1995, 240 m, 1 female (cl 7.5 mm), CBM-ZC 10035; stn TF, Sagami Sea, Tateyama Bay, 34°59.7′N, 139°47.0′E, 343 m, 2 females (cl 5.7, 7.8 mm), CBM-ZC 10037.

Distribution. Sagami Bay to Tosa Bay, Japan, and Taiwan; 200–600 m.

Remarks. This species was fully redescribed by Kim and Chan (2005) in their revision of the genus. They clarified that specimens referred to *Prionocrangon ommatosteres* by Ohta (1983) actually represented *P. dofleini*. The occurrence of *P. ommatosteres* in Japanese waters has not been confirmed.

Genus ***Sclerocrangon*** G.O. Sars, 1883

17. ***Sclerocrangon unidentata*** Komai and Takeda, 1989 [Jn: Toge-kijin-ebi] (Fig. 1E, F)

Sclerocrangon unidentata Komai and Takeda, 1989: 77, figs. 1–5 [type locality: off Miyako, Iwate Prefecture, 600–700 m].

Materials examined. R/V *Tansei-maru*, KT07-31, stn L-2'-1000, Sagami Sea, S of Jōgashima, 35°02.78′N, 139°33.27′E to 35°03.04′N, 139°33.74′E, 633–716 m, 28 November 2007, 1 female (cl 20.2 mm), 8 males (cl 15.2–20.5 mm), CBM-ZC 10093.

Coloration in fresh. Carapace generally chestnut brown, rostrum and tips of teeth whitish. First to fifth abdominal somites light brown with irregular brownish markings, sixth somite and tail fan chestnut brown, uropod with large whitish spots. Cornea black. Antennular peduncle lighter brown. Antennal scale chestnut brown. Pereopods chestnut brown, carpi and/or distal parts of meri of fourth and fifth pereopods whitish. See Fig. 1E, F.

Distribution. Japan endemic, Pacific side, from Iwate Prefecture to Suruga Bay; 200–1155 m (Komai and Takeda, 1989; this study).

Family **Eugonatonotidae**

Genus ***Eugonatonotus*** Schmitt, 1926

18. ***Eugonatonotus chacei*** Chan and Yu, 1991 [Jn: Mikawa-ebi]

Gonatonotus crassus: Kubo, 1937: 94, figs. 1–3.

Eugonatonotus crassus: Miyake, 1982: 25, pl. 9, fig. 2; Hayashi, 1986: 60, 99, fig. 59; Chan and Yu, 1988; 259, figs. 1, 2, pl. 1.

Eugonatonotus chacei Chan and Yu, 1991: 144,

fig. 1a–h, pl. 1A [type locality: off Ta-shi, I-Lan County, Taiwan]; Chace, 1997: 23, figs. 13a–f, 14; Hayashi, 2007: 82, figs. 34, 35.

Galatheacaris abyssalis Vereshchaka, 1997: 365, figs. 1–9 [type locality: Celebes Sea, bathypelagic, bottom depth 4940–4970 m]; De Grave et al., 2010: 522–526, figs. 1–3.

Material examined. Uraga Strait, off Kanaya, Bōsō Peninsula, 180–230 m, March 1996, commercial gill net, coll. T. Komai, 1 ovigerous female (damaged, cl ca. 46.0 mm), CBM-ZC 2418.

Distribution. Japan, Taiwan, Philippines, Flores Sea, Australia, New Caledonia, and Tonga; 100–610 m (Chan and Yu, 1991; Chace, 1997; Hayashi, 2007). In Japan, recorded from Pacific side only, Uraga Strait to Tosa Bay (Hayashi, 2007; this study).

Remarks. Based on a molecular comparison, De Grave *et al*. (2010) clarified that *Galatheacaris abyssalis* Vereshchaka, 1997, originally placed in its own family and superfamily, represents a megalopal stage of *Eugonatonotus chacei*.

Family **Glyphocrangonidae**

Genus ***Glyphocrangon*** A. Milne-Edwards, 1881

19. ***Glyphocrangon hastacauda*** Bate, 1888 [Jn: Toge-hirata-ebi]

Glyphocrangon hastacauda Bate, 1888: 519, pl. 93, fig. 5 [type locality: Sagami Bay, Japan, 631 m]; Hayashi, 1986: 147, 278, fig. 98; Komai, 2004: 403, figs. 8, 9, 114.

Glyphocrangon rimapes: Miyake, 1982: 67, pl. 23, fig. 1. Not *Glyphocrangon rimapes* Bate, 1888.

Materials examined. R/V *Tansei-maru*, KT07-31, stn L-1-700, Sagami Bay, NE of Hatsushima Island, 35°03.81′N, 139°12.22′E to 35°04.82′N, 139°12.59′E, 699–784 m, 24 November 2007, 2 females (cl 15.0, 20.3 mm), CBM-ZC; stn L-1-800, Sagami Bay, NE of Hatsushima Island, 35°03.41′N, 139°12.55′E to 35°02.73′N, 139°13.73′E, 777–1001 m, 24 November 2007, beam trawl, 3 males (cl 18.3–21.0 mm), 10 females (cl 16.0–21.5 mm), 1 ovigerous female (cl 23.7 mm), CBM-ZC 10067; stn L-2'-1000, Sagami Sea, S of Jōgashima, 35°02.78′N, 139°32.27′E to 35°03.04′N, 139°33.74′E, 633–716 m, 28 November 2007, 1 female (cl 19.4 mm), CBM-ZC 10094; same data, 1 male (cl 22.5 mm), 2 females (cl 22.3, 22.4 mm), NSMT-Cr S843.

Distribution. Japanese endemic, Sagami Sea to northern part of East China Sea; 300–1000 m (Komai, 2004; this study).

20. ***Glyphocrangon major*** Komai, 2004 [New Jn: Hiiro-oh-toge-hirate-ebi] (Fig. 4)

Glyphocrangon major Komai, 2004: 514, figs. 63, 64, 118 [type locality: N of Makassar Strait, Indonesia, 1301 m].

Materials examined. R/V *Tansei-maru*, KT-7-31, stn L-7-1300, Izu Islands, W of Hachijōjima Island, 33°12.20′N, 139°13.13′E to 33°10.90′N, 139°32.86′E, 1318–1330 m, 26 November 2007, beam trawl, 1 female (cl 36.2 mm), CBM-ZC 10075; stn L-8'-1000, Izu Islands, E of Miyakejima Island, 34°08.21′N, 139°50.97′E to 34°07.28′N, 139°49.51′E, 1009–1029 m, 26 November 2007, beam trawl, 1 male (cl 25.5 mm), CBM-ZC 10078.

Coloration in fresh. Body and appendages generally crimson, postorbital, gastric and hepatic regions of carapace and proximal part of antennal scale paler. See Fig. 4.

Distribution. Indonesia and Japan; 1280–1300 m (Komai, 2004; this study). The present specimens represent the first record of this species from Japanese waters.

Remarks. This species was heretofore known only from two female specimens from Indonesia (Komai, 2004). The present male specimen from off Miyake Island differs from the female specimen from off Hachijo Island in the slightly lower first (submedian) carinae on the carapace and relatively smaller intercarinal tubercles on the carapace (cf. Fig. 4A, B and Fig. 4C, D). These differences could be attributable to sexually related variation (see Komai, 2004).

The present specimens agree well with the type specimens in the following diagnostic characters (Komai, 2004): body integument naked on sur-

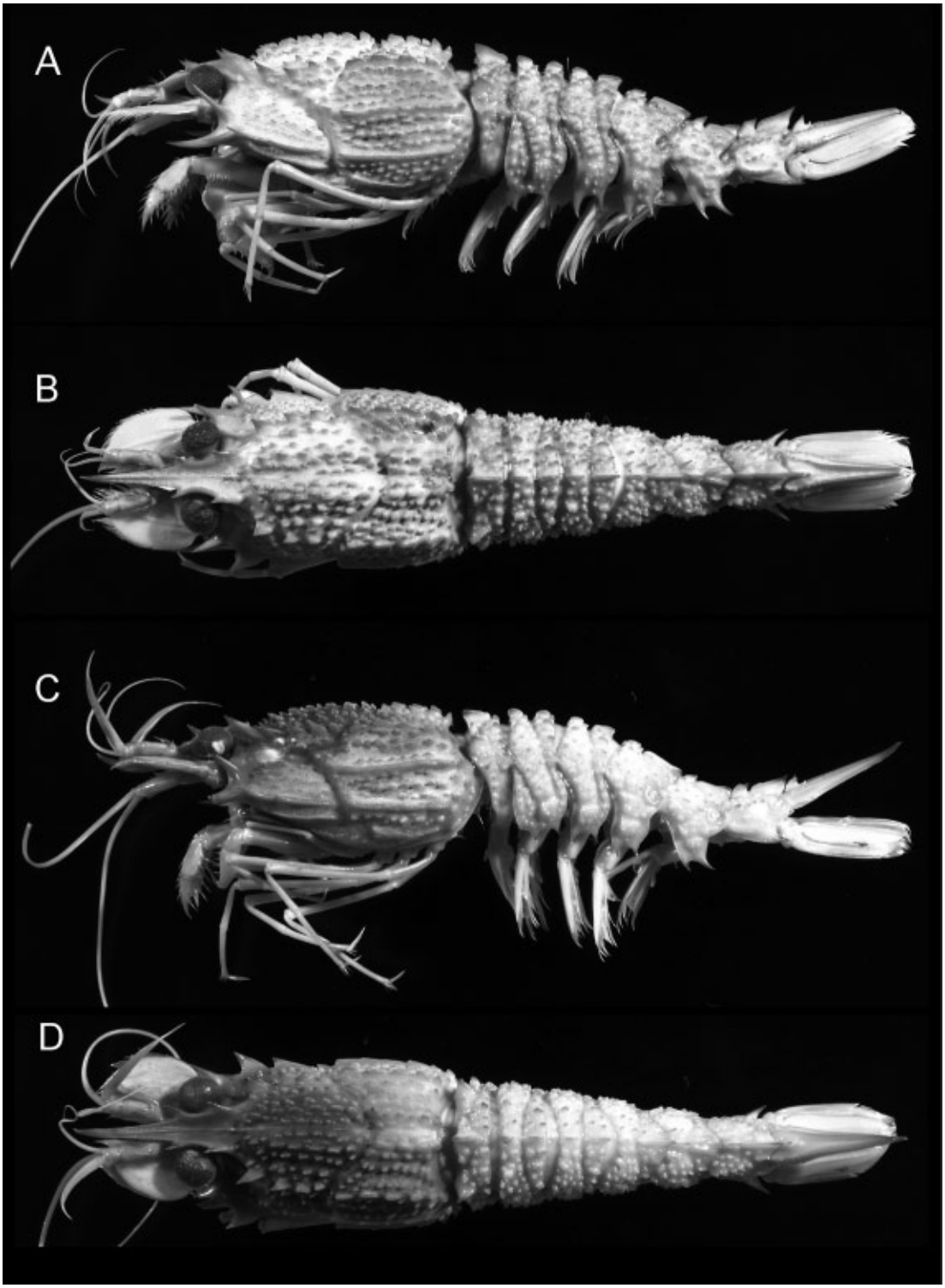

Fig. 4. *Glyphocrangon major* Komai, 2004, A, B, female (cl 36.2 mm), CBM-ZC 10075; C, D, male (cl 25.5 mm), CBM-ZC 10078. A, C, entire animals, lateral view; B, D, same, dorsal view.

face; rostrum with two pairs of lateral teeth, without dorsal septa or corrugation; intercarinal tubercles on carapace and abdomen prominent, markedly compressed laterally, but not spiniform; first carina and posterior section of second carina on carapace bearing blunt tubercles; posterior third carina on carapace terminating anteriorly in angle at most, never forming acute tooth; anterior fourth carina on carapace somewhat expanded, deeply divided in two sharply pointed teeth; branchiostegal tooth less than twice as long as antennal tooth; anterior vertical ridges on third and fourth pleura each terminating ventrally in blunt tubercle; and dactyli of fourth and fifth pereopods subspatulate, simple, not modified even in females.

Family **Hippolytidae**
Genus ***Lebbeus*** White, 1847

21. ***Lebbeus brevicornis*** sp. nov. [New Jn: Kotsuno-ibara-mo-ebi] (Figs. 5–8)

Materials examined. Holotype: R/V *Rinkai-maru*, Sagami Bay, off Misaki, 351–338 m, 22 January 2001, dredge, female (cl 5.9 mm), CBM-ZC 10057.

Paratypes: R/V *Tansei-maru*, KT07-31, stn L-2'-500, Sagami Sea, S of Jōgashima, 35°03.79′N, 139°35.53′E to 35°03.98′N, 139°35.33′E, 587–651 m, 28 November 2007, 1 male (cl 4.1 mm), CBM-ZC 10097; stn L-2'-600, similar locality, 35°03.97′N, 139°34.93′E to 35°04.27′N, 139°34.96′E, 407–604 m, 28 November 2007, 1 female (cl 4.7 mm), NSMT-Cr S844.

Diagnosis. Rostrum short, reaching or slightly overreaching midlength of first segment of antennular peduncle, 0.30–0.40 times as long as carapace, straight; dorsal margin with 3 teeth, posteriormost tooth located at 0.14–0.15 of carapace length; ventral margin with 1 minute subterminal tooth. Carapace with postrostral median carina low, extending to midlength; deep notch just inferior to base of supraorbital tooth; anterolateral margin between antennal and branchiostegal slightly convex, without conspicuous notch inferior to base of antennal tooth. Abdominal pleura rounded in anterior four somites; fifth pleuron with tiny posteroventral tooth. Telson armed with 3 pairs of dorsolateral spines. Corneal diameter 0.30–0.40 of carapace length; no ocellar spot. First segment of antennular peduncle armed with 3–4 teeth on dorsolateral distal margin. Antennal scale with distolateral tooth slightly falling short of rounded distal lamella. Strap-like epipods present on third maxilliped to second pereopod, no epipod on third pereopod. Third to fifth pereopods relatively long and slender.

Description. Females. Body (Fig. 5) moderately slender for genus; integument naked, glabrous, not particularly firm.

Rostrum (Fig. 6A, B) slightly ascending, straight, compressed laterally, slightly reaching beyond midlength of first segment of antennular peduncle, about 0.40 times carapace length; dorsal margin armed with 3 teeth, including 1 located at about midlength of rostrum and 2 on carapace (second tooth arising just above orbital margin and third one at 0.14 of carapace length); ventral margin straight, with 1 tiny subterminal tooth; lateral surface with distinct carina. Carapace (Figs 5, 6A, B) with low, blunt postrostral median carina extending to midlength of carapace and sloping toward rostral base; supraorbital tooth moderate in size, arising slightly anterior to rostral base; orbital margin generally concave, with deep notch just inferior to base of supraorbital tooth; suborbital lobe well developed, bluntly triangular, reaching to about 0.50 of antennal tooth; anterolateral margin between antennal and pterygostomial tooth gently convex, without excavation below antennal tooth; pterygostomial tooth small.

Abdomen (Fig. 5) dorsally rounded. Second somite with deep, clearly delineated transverse groove on tergum. Pleura of anterior four somites broadly rounded (Fig. 6C), fifth pleuron with sharply pointed posteroventral angle (Fig. 6C). Sixth somite 1.60 times as long as fifth somite and 1.70 times as long as high, bearing small posteroventral tooth; posterolateral process terminating in small tooth. Telson (Fig. 6D) about 1.30 times as long as sixth somite, 3.10 times longer

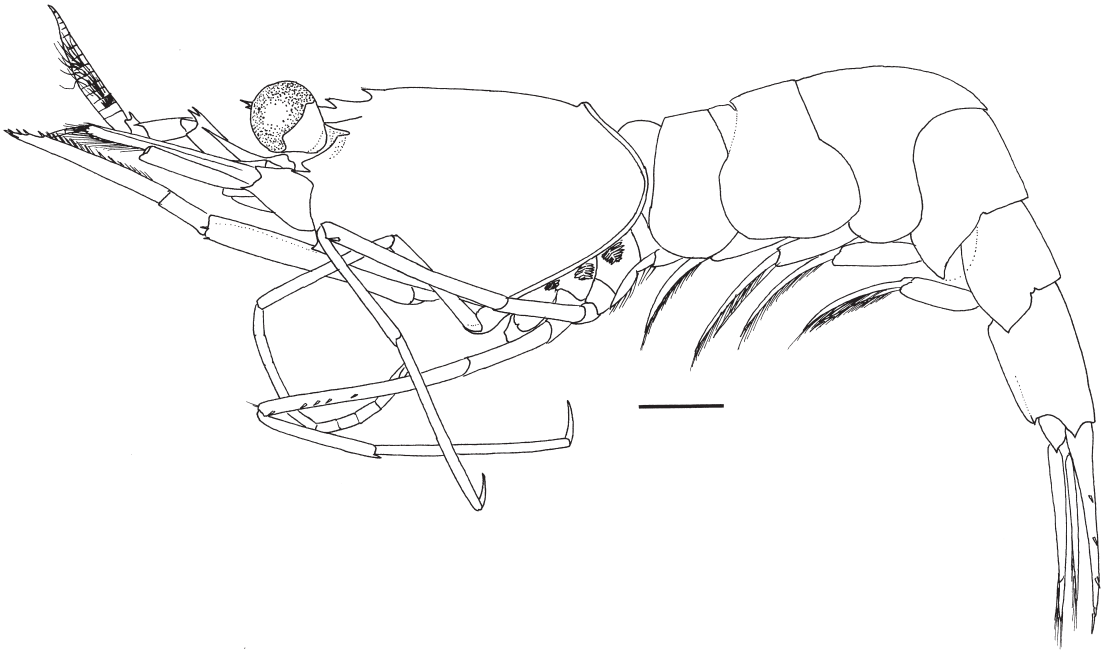

Fig. 5. *Lebbeus brevicornis* sp. nov., holotype, female (cl 5.9 mm), CBM-ZC 10057, entire animal, lateral view (first and third pereopods missing). Scale bar: 2 mm.

than anterior width, narrowing posteriorly to convex posterior margin, bearing 3 pairs of dorsolateral spines; posterior margin with 2 pairs of lateral spines (mesial pair longer) and 4 median spiniform plumose setae (Fig. 6E).

Eye (Fig. 5, 6B) subpyriform with cornea distinctly wider than eye-stalk; ocellus absent; maximum diameter of cornea 0.30 times carapace length.

Antennular peduncle (Fig. 6A, B) reaching distal 0.20 of antennal scale. First segment distinctly longer than distal two segments combined, reaching midlength of antennal scale, dorsodistal margin armed with 3–4 slender spines laterally; stylocerite falling short of distal margin of first segment, partially overlapping first segment, terminating in slender, sharp tooth, mesial margin sinuous. Second segment about half-length of first segment, with l long spine at dorsolateral distal angle. Third segment short, about half-length of second segment, bearing 1 small dorsodistal spine. Lateral flagellum with thickened aesthetasc-bearing portion about half length of carapace; slender distal portion shorter than thickened aesthetasc-bearing portion.

Antenna (Fig. 6A, B, F) with basicerite bearing moderately small ventrolateral tooth; carpocerite overreaching midlength of antennal scale. Antennal scale about 0.70 times as long as carapace, 3.00 times as long as wide; lateral margin nearly straight; distolateral spine slightly falling short of rounded distal margin of lamella.

Mouthparts not dissected. Third maxilliped (Fig. 7A) relatively long, overreaching antennal scale by about 0.4 length of ultimate segment; ultimate segment 2.60 times as long as penultimate segment, tapering distally, with short row of darkly pigmented corneous spines distally; antepenultimate segment subequal to distal two segments combined; distolateral margin with 1 slender spinule; lateral surface bluntly ridged and bearing only 1 subdistal spinule ventrolaterally.

Strap-like, terminally hooked epipods present only on third maxilliped to second pereopods (Fig. 6G).

First pereiopod (Fig. 7B, C) moderately stout,

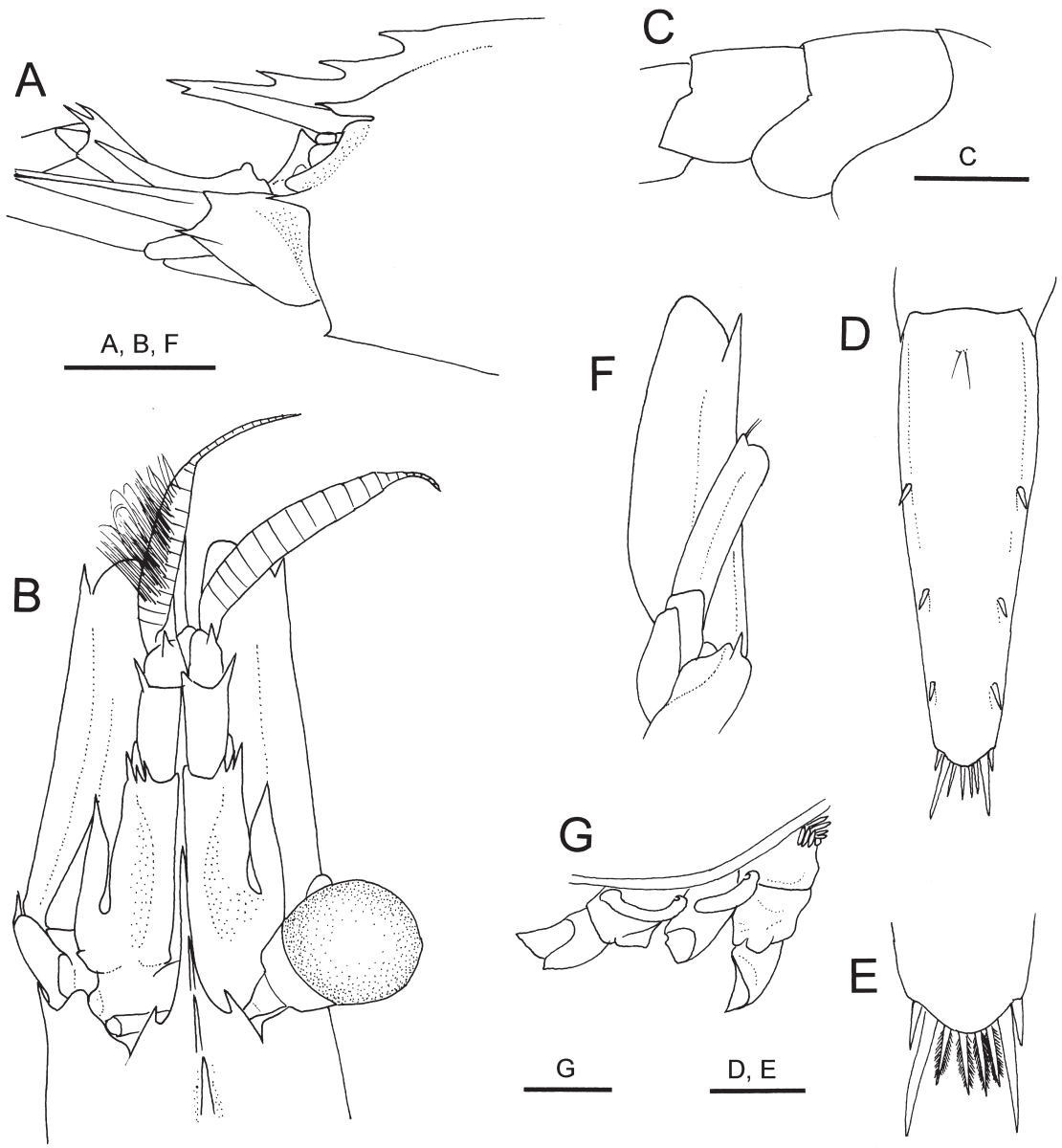

Fig. 6. *Lebbeus brevicornis* sp. nov., holotype, female (cl 5.9 mm), CBM-ZC 10057. A, anterior part of carapace and basal part of antennae, lateral view (left eye removed); B, anterior part of carapace and cephalic appendages, dorsal view (left eye removed); C, fourth and fifth abdominal somites, lateral view; D, telson, dorsal view; E, posterior part of telson, dorsal view; F, left antenna, ventral view (setae omitted, flagellum missing); G, coxae of first to third pereopod, showing presence of epipods on first and second pereopod. Scale bars: 2 mm for A–C, F; 1 mm for D, G; 0.5 mm for E.

almost reaching distal margin of antennal scale; dactylus about 0.60 times as long as palm, terminating in 2 darkly pigmented, greatly unequal corneous claws; merus bearing row of minute spinules on proximal half of ventral surface and minute denticle on dorsal surface proximally. Second pereiopod (Fig. 7D) overreaching antennal scale by length of chela and half of carpus;

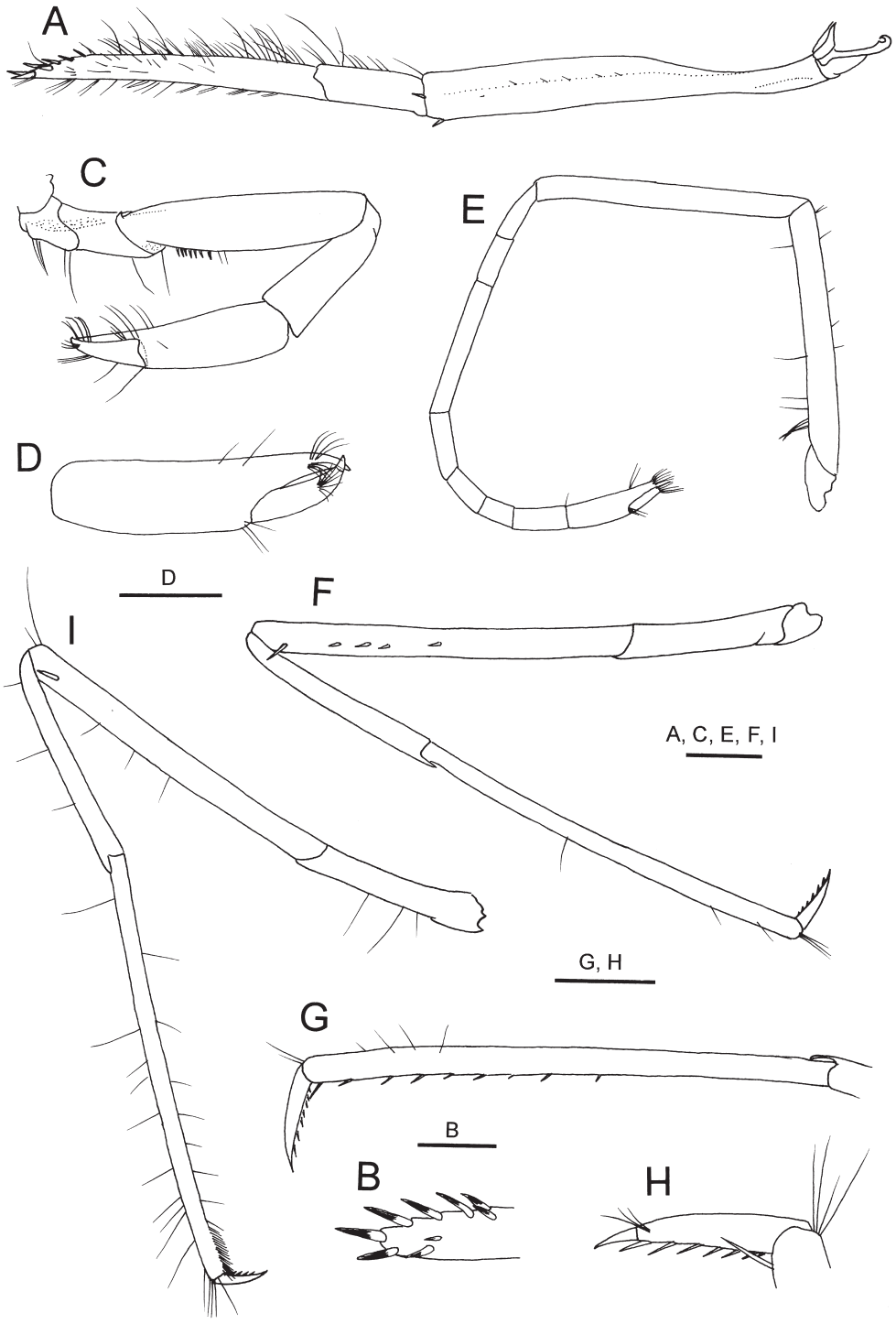

Fig. 7. *Lebbeus brevicornis* sp. nov., holotype, female (cl 5.9 mm), CBM-ZC 10057. A, left third maxilliped, lateral view; B, right first pereopod, lateral view; C, same, chela, extensor view; D, left second pereopod, lateral view; E, left fourth pereopod, lateral view; F, same, dactylus and propodus, lateral view; G, same, dactylus, lateral view. Scale bars: 1 mm for A, C–G, I; 0.5 mm for H.

carpus divided into 7 articles; ischium about 1.10 times as long as merus. Third pereopods missing; fourth and fifth pereopods relatively long and slender, similar. Fourth pereopod (Fig. 7E–G) overreaching antennal scale by length of dactylus and 0.40 of propodus; dactylus 0.20 times as long as propodus, about 5.90 times longer than high, terminating in acute, darkly pigmented unguis, armed with 7 slender accessory spinules on flexor margin (distalmost accessory spinule subterminal, making tip of dactylus appearing biunguiculate); propodus with 1 long, slender spine on ventrodistal margin followed by row of 8 spinules on ventral margin; carpus 0.50 times as long as propodus; merus armed with 5–6 lateral spines in distal half. Fifth pereopod (Fig. H) overreaching antennal scale by length of dactylus and 0.20 of propodus; dactylus with 8 accessory spinules; propodus with 1 ventrodistal spinule and grooming apparatus consisting of brush-like setae distally and sparse row of spinules in distal half; merus with 1 lateral spine located subdistally.

Uropod (Fig. 5) with protopod bearing small posterolateral tooth.

Male. Rostrum (Fig. 8A) reaching midlength of first segment of antennular peduncle, 0.30 times as long as carapace. Pterygostomial angle of carapace (Fig. 8A) pointed. Outer antennular flagellum (Fig. 8A) somewhat elongate, thickened aesthetasc-bearing portion about 0.70 times as long as carapace; inner flagellum longer than carapace. Merus of fourth pereopod with 6 spines laterally. Endopod of male first pleopod (Fig. 8B) tapering distally to somewhat elongate appendix interna. Male second pleopod with appendix masculina about half length of appendix interna, bearing about 12 long spiniform setae distally; appendix interna slightly curving, distinctly slenderer than appendix masculina (Fig. 8C).

Coloration in fresh. Body and appendages generally translucent; carapace with red patch on dorsal surface medially; first abdominal tergite reddish, second to fifth somites each transverse red band on posterior half. Antennular peduncle reddish. Third maxilliped and first pereopod reddish; second to fifth pereopods with scattered red dots.

Distribution. Known only from the Sagami Sea area, 338–651 m.

Remarks. The genus *Lebbeus* White, 1847 is one of the most species-rich genera in Hippolytidae, represented by 54 species at present (Komai *et al*., 2004; Jensen, 2006; Ahyong, 2009, 2010; Komai and Komatsu, 2009; Komai and Collins,

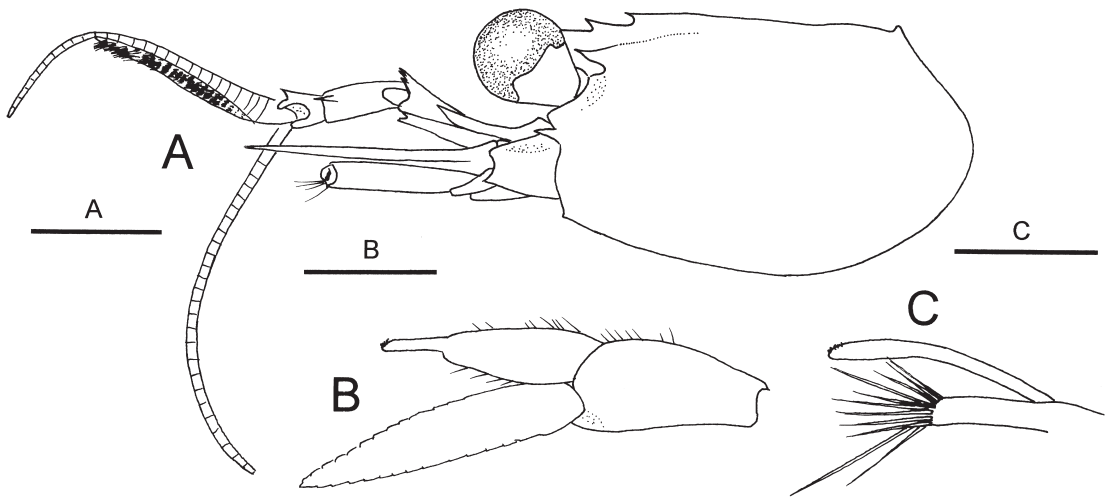

Fig. 8. *Lebbeus brevicornis* sp. nov., paratype, male (cl 4.1 mm), CBM-ZC 10097. A, carapace and cephalic appendages, lateral view; B, left first pereopod, ventral view (setae omitted); C, appendices interna and masculina of left second pereopod, ventromesial view. Scale bars: 2 mm for A; 1 mm for B; 0.5 mm for C.

2009; McCallum and Poore, 2010; Chang *et al*., 2010). *Lebbeus brevicornis* sp. nov. belongs to a group of species characterized by the possession of epipods on the anterior two pairs of pereopods, which includes 16 known species (Komai *et al*., 2004; Jensen, 2006). In the short rostrum not reaching the distal margin of the first segment of the antennular peduncle and the possession of multiple teeth on the dorsolateral distal margin of the first segment antennular peduncles, the new species is most similar to *L. brevirostris* Chang, Komai and Chan, 2010, recently described from Taiwan. However, *Lebbeus brevicornis* is easily distinguished from *L. brevirostris* by a number of morphological characters. In the new species, the rostrum is non-spiniform, bearing two conspicuous teeth on the dorsal margin and one minute subdistal tooth on the ventral margin, whereas in *L. brevirostris*, it is spiniform, without teeth. There is only one postrostral tooth in *L. brevicornis*, rather than three in *L. brevirostris*. The supraorbital tooth is only moderately small in *L. brevicornis*, but it is unusually strong, and extending beyond the dorsal rostral margin in *L. brevirostris*. The second abdominal tergite bears a sharply delimited, deep transverse groove in *L. brevicornis*, but only a shallow groove is present in *L. brevirostris*. The telson is armed only with three dorsolateral spines in *L. brevirostris*, instead of having more than three in *L. brevirostris*. Finally, the third to fifth pereopods are distinctly more slender and elongate in *L. brevicornis* than in *L. brevirostris*.

In the short rostrum, the possession of a deep notch just inferior to the base of the supraorbital tooth and the presence of multiple teeth on the dorsolateral distal margin of the first segment of the antennular peduncle, the new species also resembles *L. spongiaris* Komai, 2001 and *L. tosaensis* Hanamura and Abe, 2003, both known from the Sagami Sea area (Komai, 2001; Komai and Takeda, 2004). In addition to the absence of an epipod on the third pereopod, the presence of a sharply delimited transverse groove on the second abdominal tergite distinguish *L. brevicornis* from the latter two species. *Lebbeus spongiaris* further differs from *L. brevicornis* in having only two pairs of dorsolateral spines on the telson, rather than three pairs, and the distinctly stouter third to fifth pereopods. In addition, the fourth abdominal pleuron is always armed with a small posteroventral tooth in *L. spongiaris*, but it is rounded in *L. brevicornis*. *Lebbeus tosaensis* differs from the new species in having more numerous dorsolateral spines on the telson (four or five pairs versus three pairs).

Etymology. From the combination of the Latin *brevis* (short) and *cornis* (horned), referring to the short rostrum of this new species.

22. ***Lebbeus compressus*** Holthuis, 1947 [Jn: Tosaka-mo-ebi]

Spirontocaris gibberosa Yokoya, 1933: 24, fig. 8 [type locality: NE of Siwoya-zaki (Shioya-zaki), Fukushima Prefecture, 232 m]. Not *Spirontocaris gibberosa* Balss, 1914 [= *Saron marmoratus* (Olivier, 1811)]

Lebbeus compressus Holthuis, 1947: 40 (replacement name); Miyake, 1982: 53, pl. 18, fig. 4; Hayashi, 1986: 111, 264, fig. 68; 1992a: 116; 1992b: 436, figs. 233c, 234c; Komai and Komatsu, 2009: 539, fig. 21D; McCallum and Poore, 2010: 135.

Materials examined. TR/V *Shin'yo-maru*, 2002 cruise, stn 42, Sagami Sea, W of Sunosaki, Tateyama, 34°51.37′N, 139°38.94′E, 452–381 m, 25 October 2002, 1 female (cl 4.5 mm), 1 juvenile (cl 3.3 mm), CBM-ZC 10052.

Distribution. Japan endemic, Iwate Prefecture to Tosa Bay; 290–450 m (Hayashi, 1992a, 1992b).

23. ***Lebbeus nudirostris*** Komai and Takeda, 2004 [Jn: Sagami-ibara-mo-ebi]

Lebbeus nudirostris Komai and Takeda, 2004: figs. 1–3.

Material examined. Holotype: Sagami Sea, W of Taibusa-misaki, Bōsō Peninsula, 35°04.68′N, 139°45.32′E, 250 m, 8 March 2002, trap for scampi, coll. H. Namikawa and Y. Imahara, NSMT-Cr S004.

Distribution. Known only from Sagami Sea,

250 m.

24. ***Lebbeus spongiaris*** Komai, 2001 [Jn: Kaimen-yadori-ibara-mo-ebi]

Lebbeus spongiaris Komai, 2001: 57, figs. 1–4 [type locality: W of Izu-Oshima Island, Sagami Sea, 257–264 m]; Komai and Takeda, 2004: 83, fig. 4A.

Materials examined. Holotype: R/V *Tansei-maru*, KT98-14 cruise, stn 2, Sagami Sea, W of Izu-ōshima Island, 34°44.538′N, 139°19.723′E, 257–264 m, 29 August 1998, dredge, female (cl 4.8 mm), CBM-ZC 5567. Paratype: same data as holotype, 1 male (cl 4.3 mm), CBM-ZC 5568.

Non-type: R/V *Seiyo-maru*, 1995 cruise, stn S7, Sagami Sea, Tateyama Bay, 35°00.7′N, 139°44.9′E, 373 m, 14 September 1995, 1 juvenile (cl 2.3 mm), CBM-ZC 10028.

Distribution. Known only from the Sagami Sea area; 228–698 m (Komai, 2001; Komai and Takeda, 2004).

25. ***Lebbeus tosaensis*** Hanamura and Abe, 2003 [Jn: Tosa-ibara-mo-ebi]

Lebbeus tosaensis Hanamura and Abe, 2003: 17, figs. 1–5; Komai and Takeda, 2004: 84, figs. 1B, 4B, C; Chang *et al*., 2010: 736, fig. 6.

Material examined. FB *Idoinkyo-maru*, NW of Taibusa-misaki, Bōsō Peninsula, Uraga Strait, 35°04.68′N, 139°45.32′E, 250 m, commercial trap for scampi, 9 March 2002, 1 female (cl 8.7 mm), NSMT-Cr S335.

Distribution. Pacific coast of Japan (Uraga Strait to Tosa Bay) and Taiwan; 250–348 m (Komai and Takeda, 2004; Chang *et al*., 2010).

26. ***Lebbeus unguiculatus*** Chang, Komai and Chan, 2010 [New Jn: Hosotsume-ibara-mo-ebi] (Fig. 9)

Lebbeus ungucuilatus Chang, Komai and Chan, 2010: 737, figs. 7–9, 10D [type locality: off Taiwan, 1257–1262 m]

Material examined. R/V *Seiyo-maru*, 1995 cruise, stn SQ, Sagami Bay, SW of Jōgashima, 35°05.9′N, 139°32.0′E, 742–710 m, 14 May 1995, 1 female (cl 7.6 mm), CBM-ZC 10033.

Distribution. Heretofore known from off Taiwan, 635–1302 m. The present specimen represents the first record of this species from Japanese waters.

Remarks. This species was recently described from Taiwan. The present specimen agrees well with the type material in the following diagnostic characters: rostrum reaching distal margin of first segment of antennular peduncle, 0.50 times as long as carapace, bearing four moderately large dorsal teeth (posteriormost tooth located at anterior 0.1 of carapace) and three small ventral teeth in distal 0.3 (Fig. 9A); carapace with deep notch just inferior to base of supraorbital tooth (Fig. 9A); anterolateral margin of carapace with conspicuous U-shaped notch just inferior to antennal tooth (Fig. 9A); fourth abdominal pleuron unarmed (Fig. 9B); telson with 3 pairs of dorsolateral spines and 6 spiniform setae on posterior margin flanked by 2 pairs of posterolateral spines (Fig. 9C); first segment of antennular peduncle bearing 3 teeth on dorsolateral distal margin (Fig. 9A); dactyli of third to fifth pereopods each with elongate unguis (Fig. 9D).

Family **Nematocarcinidae**

Genus ***Nematocarcinus*** A. Milne-Edwards, 1881

27. ***Nematocarcinus gracilis*** Bate, 1888 [Jn.: Kushinoha-itoashi-ebi]

Nematocarcinus gracilis Bate, 1888: 815, pl. 132, fig. 8 [type locality: Fiji Islands, 1116 m, and near Kermadec Islands, 1097 m]; De Man, 1920: 90, pl. 8, fig. 21a–h, pl. 9, fig. 21; Chace, 1986: 71 (in part), fig. 38; Burukovsky, 2000: 1165, fig. 8; Hayashi, 2007: 89, figs. 36a, 37a, 38d, g, h, 39.

Nematocarcinus ensifer: Balss, 1914: 22, fig. 11. Not *Nematocarcinus ensifer* (Smith, 1882).

Materials examined. R/V *Tansei-maru*, KT07-31, stn L-2'-500, Sagami Sea, S of Jōgashima, 35°03.79′N, 139°35.53′E to 35°03.98′N, 139°35.33′E, 438–523 m, dredge, 1 female (cl 19.0 mm), CBM-ZC 10089; stn L-2'-1000, similar locality, 35°02.78′N, 139°33.27′E to 35°03.04′N, 139°33.78′E, 633–716 m, 28 No-

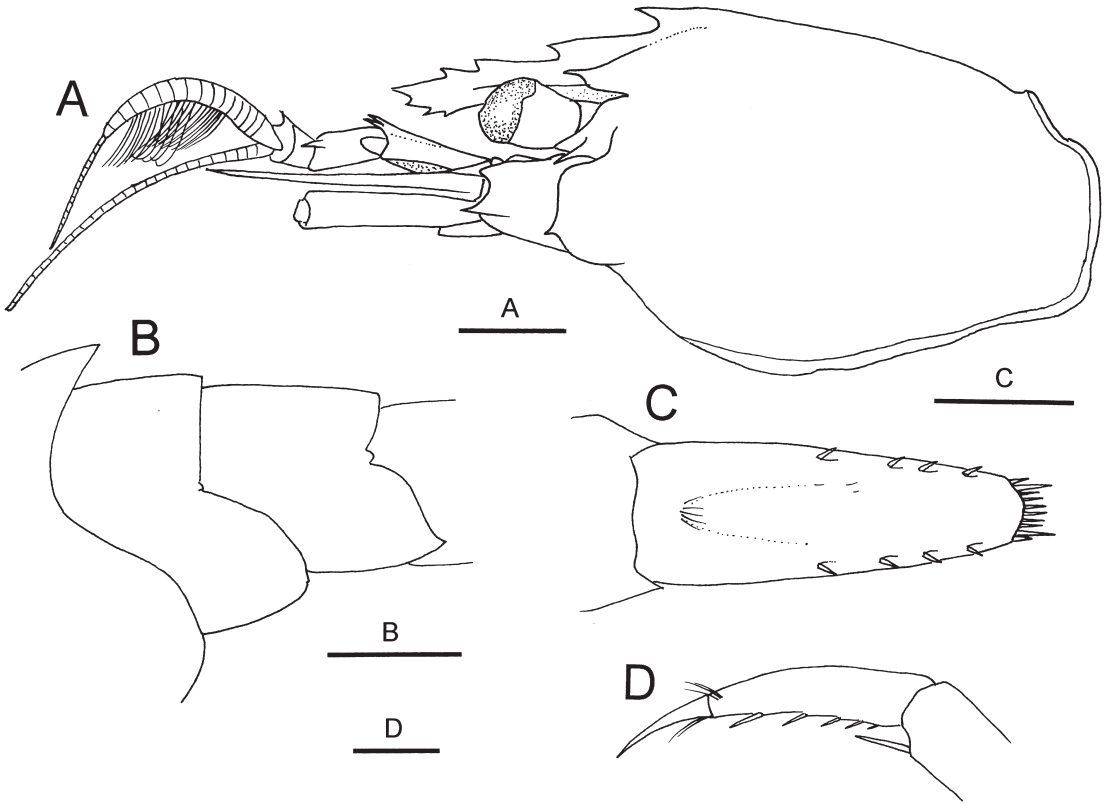

Fig. 9. *Lebbeus unguiculatus* Chang, Komai and Chan, 2010, female (cl 7.6 mm), CBM-ZC 10033. A, carapace and cephalic appendages, lateral view; B, fourth and fifth abdominal somites, lateral view; C, telson, dorsal view; D, dactylus of third pereopod, lateral view. Scale bars: 2 mm for A–C; 0.5 mm for D.

vember 2007, beam trawl, 1 female (cl 18.0 mm), CBM-ZC 10095; stn L-3-500, Sagami Sea, W of Izu-ōshima Island, 34°39.89′N, 139°12.19′E to 34°40.03′N, 139°13.87′E, 504–551 m, 27 November 2007, beam trawl, 3 males (cl 16.0–17.8 mm), 3 females (cl 15.9–21.1 mm), NSMT-Cr S845. R/V *Seiyo-maru*, 1995 cruise, stn SQ, Sagami Bay, SW of Jōgashima, 35°05.9′N, 139°32.0′E, 742–748 m, 14 May 1995, 1 juvenile (cl 9.4 mm), CBM-ZC 10034.

Distribution. Japan, Philippines, Indonesia, Australia, New Caledonia, Wallis and Futuna Islands, Fiji, Kermadec Islands, and Naska Ridge, 165–1475 m (Kensley *et al*., 1987; Hanamura and Evans, 1996; Burukovsky, 2000). In Japan, recorded from the Pacific side only, Sagami Sea and Tosa Bay (Hayashi, 2007; this study).

Family **Oplophoridae**

Genus ***Acanthephyra*** A. Milne-Edwards, 1881

28. ***Acanthephyra eximia*** Smith, 1884 [Jn.: Togehiodoshi-ebi]

Acanthephyra eximia Smith, 1884: 376, pl. 14, fig. 1; Chace, 1986: 18, figs. 2j, 4j, 6h, 9a; Hayashi, 1986: 86, 254, fig. 46; 1988: 122, fig. 144e, 145c; 2007, figs. 6e, 7c; Komai and Komatsu, 2009: 554.

Acanthephyra angusta Bate, 1888: 737, pl. 124, fig. 6, 6a [type locality: Banda Sea, Indonesia, 366 m].

Acanthephyra edwardsii Bate, 1888: 747, pl. 126, fig. 1, 1z [type locality: off Aracaju, Brazil, 1408 m].

Acanthephyra brachytelsonis Bate, 1888: 747, pl. 126, fig. 1 [type locality: the type material was

taken at eight widely separate stations: near Talaud Island, Indonesia, 914 m; Banda Sea, Indonesia, 366 m; Sagami Sea, Japan, 631 and 1417 m; off Kermadec Islands, New Zealand, 951, 1047 and 1152 m; and the western South Atlantic east of Península Valdís, Argentina, 3731 m].

Acanthephyra pulchra A. Milne-Edwards, 1890: 163 [type locality: off Monaco, 1650 m].

Material examined. R/V *Tansei-maru*, KT07-31, stn L-1-800, Sagami Bay, NE of Hatsushima Island, 35°03.41′N, 139°12.55′E to 35°02.73′N, 139°13.73′E, 777–1001 m, 24 November 2007, beam trawl, 1 female (cl 20.0 mm), CBM-ZC 10069.

Distribution. Cosmopolitan, 200–4700 m (Chace, 1986). In Japan, recorded from Hokkaido to Ryūkyū Islands (Komai, 1991; Hayashi, 2007).

Family **Pandalidae**

Genus ***Heterocarpus*** A. Milne-Edwards, 1881

29. ***Heterocarpus hayashii*** Crosnier, 1988 [Jn.: Mino-ebi]

Heterocarpus sibogae: Miyake, 1982: 65, pl. 22, fig. 4; Hayashi, 1986: 119, 268, fig. 76.

Heterocarpus hayashii Crosnier, 1988: 81–83, pl. 1, fig. d, pl. 3, fig. c–e [type locality: Chesterfield Island, New Caledonia, 600–615 m]; Hanamura and Evans, 1996: 7, fig. 2; Hayashi, 2007: 466, figs. 553a–c, 554a–c, 556a.

Materials examined. Uraga Strait, off Kyonan, Bōsō Peninsula, 35°10′N, 139°45′E, 180–230 m, 28 June 1995, gill net for scampi, coll. M. Miya, 1 female (cl 21.5 mm), CBM-ZC 1957; Uraga Strait, off Katsuyama Ukishima Islet, 250–300 m, 16 December 2002, gill net for scampi, coll. T. Komai, 1 female (cl 27.0 mm), CBM-ZC 6768.

Distribution. Japan, East and South China seas, Philippines, New Caledonia, Samoa, Australia, 200–700 m (Crosnier, 1988; Hanamura and Evans, 1996; Li and Komai, 2003). In Japan, recorded from Pacific side, Sagami Sea to East China Sea (Hayashi, 2007; this study).

Genus ***Pandalopsis*** Bate, 1888

30. ***Pandalopsis gibba*** Komai and Takeda, 2002 [Jn: Kobu-morotoge-ebi]

Pandalopsis gibba Komai and Takeda, 2002: 92, figs. 1–5 [type locality: Sagami Sea, NW of Taibusa-misaki, Boso Peninsula, 250 m].

Materials examined. Sagami Sea, off Tomiura, Boso Peninsula, 35°04.67′N, 139°04.40′E, 250–300 m, 26 March 2003, scampi trap, 3 males (cl 14.6–19.5 mm), CBM-ZC 7412.

Distribution. Known only from Sagami Sea area, 200–300 m (Komai and Takeda, 2002).

31. ***Pandalopsis miyakei*** Hayashi, 1986 [Jn: Budou-ebi]

Pandalopsis miyakei Hayashi, 1986: 122 (fig. 19, unnumbered fig.), 123 [type locality: Tosa Bay, 450–700 m]; Komai and Chan, 2002: 732, figs. 1, 2.

Material examined. R/V *Tansei-maru*, KT07-31, stn L-8'-1000, 34°08.21′N, 139°50.97′E to 34°07.28′N, 139°49.51′E, 1009–1029 m, 26 November 2007, beam trawl, 1 male (cl 29.0 mm), CBM-ZC 10080.

Distribution. Pacific coast of Japan (off Choshi, Chiba Prefecture, to East China Sea) and Taiwan; 400–1000 m (Komai and Chan, 2002).

Genus ***Pandalus*** Leach, 1814

32. ***Pandalus nipponensis*** Yokoya, 1933 [Jn: Botan-ebi]

Pandalus nipponensis Yokoya, 1933: 16, text-fig. 5 [type locality: Suruga Bay, off Totomi, Shizuoka Prefecture, 100 m; restricted by the lectotype designation of Komai (1999)]; Miyake, 1982: 60, pl. 20, fig. 5; Hayashi, 1986: 126, fig. 80, 127, 270; Komai, 1999: 1329, figs. 29, 30; Hayashi, 2008: 544, figs. 563e, f, 564d, 566e, f.

Materials examined. R/V *Seiyo-maru*, 1995 cruise, stn NB-1, Tateyama Bay, 35°00.6′N, 139°46.8′E, 372 m, 16 November 1995, sledge, 1 male (cl 24.0 mm), CBM-ZC 10064; stn S12, similar locality, 35°00.4′N, 139°48.0′E, 411 m, 14 September 1995, sledge, 1 juvenile (cl 7.2

mm), CBM-ZC 10030.

Distribution. Japanese endemic, restricted to the Pacific side, Kashima Sea to Kagoshima Bay, 100–480 m (Komai, 1999).

33. ***Pandalus teraoi*** Kubo, 1937 [Jn: Terao-botan-ebi]

Pandalus teraoi Kubo, 1937: 96, figs. 4–6 [type locality: off Ohyama, Aichi Prefecture, 250–306 m]; Komai, 1999: 1334, figs. 31, 32, 44A; Hayashi, 2008: 546, figs. 563i, j, 564f, g, 566i, j.

Materials examined. Uraga Strait, SE of Katsuyama Ukishima Islet, Bōsō Peninsula, 140–220 m, 10 May 1995, commercial gill net for scampi, coll. T. Komai and M. Miya, 1 female (cl 30.0 mm), CBM-ZC 1661; Uraga Strait, off Tomiyama, Boso Peninsula, 35°04.7′N, 139°44.6′E, 250–300 m, 7 April 2003, commercial gill net for scampi, 1 female (cl 27.4 mm), CBM-ZC 6892.

Distribution. Japanese endemic, restricted to the Pacific coast of Honshū, from Kashima Sea to Kumano Sea, 140–310 m (Komai, 1999).

Genus ***Plesionika*** Bate, 1888

34. ***Plesionika nesisi*** (Burukovsky, 1986) [New Jn.: Kurenai-mino-ebi-modoki] (Fig. 10A)

Heterocarpus nesisi Burukovsky, 1986: 62, fig. 1 [type locality: East Pacific sea-mount, 800 m].

Plesionika nesisi: Chan and Crosnier, 1997: 197, figs. 5–10, 28.

Materials examined. R/V *Tansei-maru*, KT07-31, stn L-2'-1000, Sagami Sea, S of Jōgashima, 35°02.78′N, 139°33.27′E to 35°03.04′N, 139°33.74′E, 633–716 m, 28 November 2007, beam trawl, 1 female (cl 19.5 mm), CBM-ZC 10096.

Other material. R/V *Tansei-maru*, KT04-6 cruise, stn KN-1(3), Shima Spur, Kumano Sea, 33°59.56′N, 136°55.12′E, 763–796 m, 1 May 2004, beam trawl, coll. H. Kohtsuka, 1 male (cl

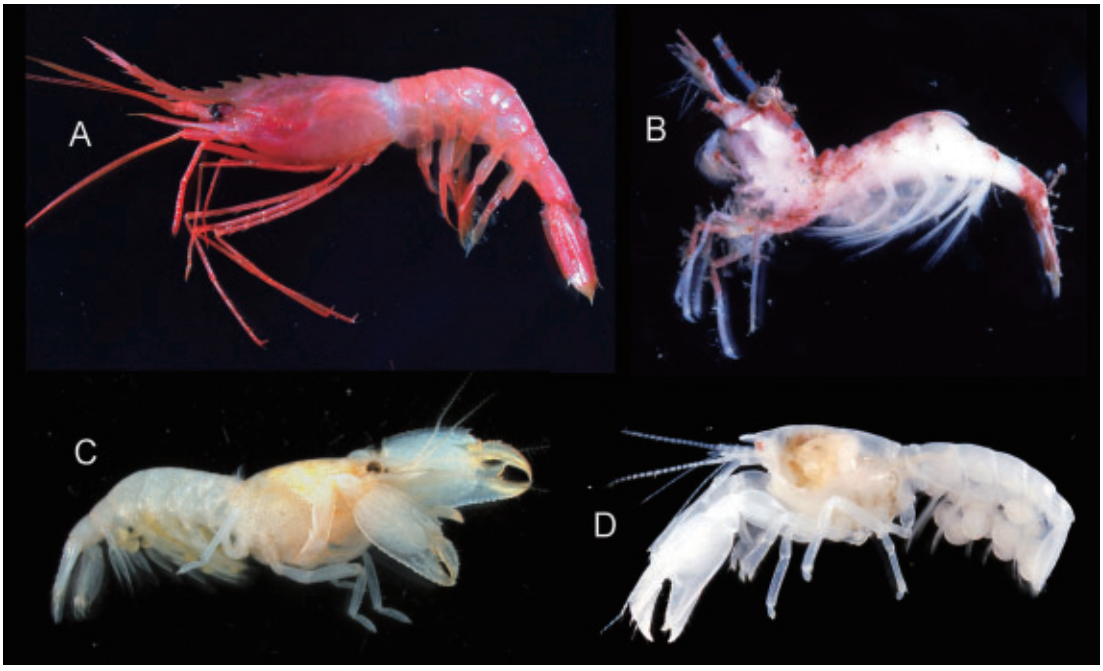

Fig. 10. A, *Plesionika nesisi* (Burukovsky, 1986), female (cl 19.5 mm), CBM-ZC 10096; B, *Parastylodactylus hayashii* (Komai, 1997), comb. nov., ovigerous female (cl 4.8 mm), CBM-ZC 10056; C, *Paraspongicola acantholepis* sp. nov., holotype, ovigerous female (cl 4.6 mm), CBM-ZC 10088; D, *Eiconaxius farreae* Ortmann, 1891, ovigerous female (cl 6.4 mm), CBM-ZC 10058.

27.4 mm), CBM-ZC 9971.

Coloration in fresh. Body and appendages entirely red, posterior part of carapace and proximal part of antennal scale paler. See Fig. 10A.

Distribution. Widely distributed in the Indo-Pacific from Madagascar to Seychelles, Philippines, Samoa, Kiribati, French Polynesia, and East Pacific sea-mount; 550–1080 m (Chan and Crosnier, 1997). The present specimens represent the first record of this species from Japanese waters.

Remarks. The present specimens are identified with *Plesionika nesisi* because of the combination of the following diagnostic characters (Chan and Crosnier, 1997): dorsal rostral series consisting of fixed teeth, extending to midlength of carapace; carapace without strong longitudinal carina, but with obsolete dorsal lateral carina originating posterior to orbit, not at or in line with antennal tooth; branchiostegal tooth supported by short, blunt carina; third abdominal somite with broad middorsal boss; third to fifth pereopods relatively slender, not greatly elongate, dactyli less than 0.25 times as long as propodi.

Although originally assigned to *Heterocarpus* (Burukovsky, 1986), Chan and Crosnier (1997) argued that *Heterocarpus nesisi* should be transferred to *Plesionika*, because this species, as well as some other species previously assigned to *Heterocarpus*, have characteristics intermediate between *Plesionika* and *Heterocarpus*. Nevertheless, in this species, the lateral carinae on the carapace are still traceable, the third abdominal tergite bears a median boss, and the second pereopods are greatly unequal with the shorter one being fairly stout. These characters are presumably apomorphic, suggesting a close relationship to certain species in *Heterocarpus* having sharp lateral carinae on the carapace.

35. ***Plesionika orientalis*** Chace, 1985 [Jn: Jinken-ebi]

Plesionika martia orientalis Chace, 1985: 84, figs. 38, 39, 53, 54 [type locality: Sulu Archipelago between Jolo and Tawitawi islands, 490 m]; Hanamura and Takeda, 1987: 111, fig. 3a, b.

Plesionika orientalis: Hanamura and Evans, 1996: 14; Hayashi, 2009: 304, figs. 583a, b, 584a–c, 586a–c.

Materials examined. R/V *Tansei-maru*, KT07-31, stn L-3-500, Sagami Sea, W of Izu-ōshima Island, 34°39.89′N, 139°12.19′E to 34°40.03′N, 139°13.87′E, 504–551 m, 27 November 2007, beam trawl, 3 males (cl 25.0–27.0 mm), 2 ovigerous females (cl 28.0, 29.3 mm), CBM-ZC 10084.

Distribution. Japan, Philippines, Indonesia, and Australia, 247–686 m (Chace, 1985; Hanamura and Takeda, 1987; Hanamura and Evans, 1996; Hayashi, 2009). In Japan, recorded from Izu Islands, Suruga Bay, Kagoshima Bay, and the East China Sea (Hayashi, 2009; this study).

Remarks. *Plesionika orientalis* was recently recorded from Japanese waters (Hayashi, 2009), although its occurrence was expected. The present specimens agree well with the original description by Chace (1985). This species is very similar to *Plesionika semilaevis*, which appears more common in Japanese waters, but the less oblique posterior part of the orbital margin of the carapace, different shape of the cornea, less elongate ventrolateral tooth on the antennal basicerite and the more elongate third and fourth pereopods distinguish *P. orientalis* from *P. semilaevis*, as Chace (1985) discussed.

36. ***Plesionika semilaevis*** Bate, 1888 [Jn: Hime-ama-ebi]

Plesionika semilaevis Bate, 1888: 644, pl. 13, fig. 3 [restricted by lectotype selection by Chace (1984): Moro Gulf east of Basilan Strait, Philippines, 457 m]; Ohtomi and Hayashi, 1995: 1035–1036, fig. 1; Hayashi, 2009: 303, figs. 583e, f, 584j–l, 586j–l.

Materials examined. R/V *Tansei-maru*, KT07-31, stn L-3-500, Sagami Sea, W of Izu-oshima Island, 34°39.89′N, 139°12.19′E to 34°40.03′N, 139°13.87′E, 504–551 m, 27 November 2007, beam trawl, 3 females (cl 14.2–19.1 mm), CBM-ZC 10085. R/V *Seiyo-maru*, 1995 cruise, stn SZ, Sagami Bay, W of Arasaki,

35°11.1′N, 139°33.4′E, 240 m, 6 July 1995, 1 juvenile (cl 9.2 mm), CBM-ZC 10036; stn S12, Sagami Sea, Tateyama Bay, 35°00.4′N, 139°48.0′E, 411 m, 14 September 1995, 1 juvenile (cl 10.0 mm), CBM-ZC 10031.

Distribution. Known with certainty from Japan, the Philippines, Indonesia, and French Polynesia; 176–700 m (Chace, 1985; Ohtomi and Hayashi, 1995; Chan and Crosnier, 1997; Hayashi, 1995). In Japan, occurring in the southern part of Kashima Sea to the East China Sea (Hayashi, 2009; Komai and Komatsu, 2009).

Remarks. *Plesionika semilaevis* and *P. orientalis* are very similar to the Atlantic *P. martia* (A. Milne-Edwards, 1881), and consequently previous records of *P. martia* from Japanese waters actually represent either species.

37. ***Plesionika sindoi*** (Rathbun, 1906) [Jn: Oshare-jinken-ebi]

Pandalus sindoi Rathbun, 1906: 915, pl. 21, fig. 4 [type locality: Hawaii].

Plesionika Sindoi: De Man, 1920: 126, pl. 11, fig. 27–27d, pl. 12, fig. 27e.

Plesionika ocellus: Chace, 1985: 90, fig. 40; Toriyama *et al*., 1990: 18, pl. 3a. Not *Plesionika ocellus* Bate, 1888.

Plesionika sindoi: Chan and Crosnier, 1997: 216, figs. 17, 36, 37; Hayashi, 2009: 306, figs. 583g, h, 584g–i, 586g–i.

Material examined. TR/V *Shin'yo-maru*, 2002 cruise, stn 29, Sagami Sea, SW of Izu-ōshima Island, 34°40.21′N, 139°18.62′E, 307–289 m, 24 October 2002, 1 male (cl 4.5 mm), CBM-ZC 10065.

Distribution. Known with certainty from Japan, South China Sea, Philippines, Indonesia, French Polynesia, and Hawaii; 150–800 m (Chan and Crosnier, 1997). Chan and Crosnier (1997) suggested the possible occurrence of the species in the Indian Ocean. In Japan, heretofore known only from Hyuga Sea (Hayashi, 2009).

38. ***Plesionika williamsi*** Forest, 1964 [Jn: Ittoujinnken-ebi]

Plesionika williamsi Forest, 1964: 620: figs. 1–4 [type locality: Gulf of Guinea]; Chan and Crosnier, 1997: 209, figs. 14, 15, 32, 33; Komai *et al*., 2005: 1002, figs. 1–3. Hayashi, 2009: 538, figs. 588d, 589d–f, 590d–f, 594a, b,

Plesionika crosnieri Burukovsky, 1992: 145, figs. 1–4 [type locality: Southeast Pacific seamount].

Plesionika alaini Burukovsky, 1993: 18 (replacement name for *P. crosnieri* Burukovsky, 1992).

Plesionika hypanodon: Hayashi, 2009: 427, figs. 588d, e, 589d–f, 590d–f. Not *Plesionika hypanodon* Doflein, 1902.

Material examined. Sagami Sea, off Tateyama, Bōsō Peninsula, 35°04.68′N, 139°45.32′E, 250 m, commercial trap for scampi, 8 March 2002, 1 ovigerous female (cl 30.2 mm), CBM-ZC 8332.

Distribution. World-wide tropical and subtropical seas, in the Atlantic from the French Antilles to western Africa, in the Indo-Pacific from Madagascar, Réunion, Seychelles, Japan, Taiwan, Kiribati, and French Polynesia to southeastern Pacific near Chile, 250–1140 m (Chan and Crosnier, 1997; Komai *et al*., 2005). In Japan, recorded from Sagami Sea and Tosa Bay (Komai *et al*., 2005).

Remarks. This species was reported recently from the Sagami Sea area by Komai *et al*. (2005), representing a new record for Japanese marine fauna. Hayashi (2009: 427) identified a small specimen with *Plesionika hypanodon*, but later he (2009: 538) referred that specimen to *P. williamsi*. As Komai *et al*. (2005) noted, the specific identity of *P. hypanodon* remains obscure.

Family **Pasiphaeidae**

Genus ***Leptochela*** Stimpson, 1860

39. ***Leptochela gracilis*** Stimpson, 1860 [Jn: Soko-shira-ebi]

Leptochela gracilis Stimpson, 1860: 42 [type locality: Kagoshima Bay, Kyushu, Japan]; Balss, 1914: 19; Chace, 1976: 11, figs. 8–10; Hayashi, 2007: 207, fig. 84.

Leptochela pellucida Boone, 1935: 105, pls. 26, 27 [type locality: near Equator, to the South

Brother's Island, south entrance of Durian Straits, Dutch East Indies, 14 fms].

Material examined. R/V *Seiyo-maru*, 1995 cruise, stn S2, Sagami Sea, off Izu-Oshima Island, 34°34.6′N, 139°19.9′E, 280 m, 15 September 1995, 1 female (cl 4.8 mm), CBM-ZC 10025.

Distribution. Japan, Korea, China and Indonesia; 30–280 m (Chace, 1976; this study). In Japan, recorded from Hokkaido to East China Sea (Hayashi, 2007).

Genus ***Pasiphaea*** Savigny, 1816

40. ***Pasiphaea japonica*** Omori, 1976 [Jn: Shiraebi]

Pasiphaea sirado (sic): Balss, 1914: 20. Not *Pasiphaea sivado* (Risso, 1816).

Pasiphaea japonica Omori, 1976: 250, figs. 1–8; Hayashi, 2000: 298, fig. 20; 2007: 224, figs. 92a, b, 93a.

Materials examined. R/V *Seiyo-maru*, 1995 cruise, stn S12, Tateyama Bay, Sagami Sea, 35°00.4′N, 139°48.0′E, 411 m, 14 September 1994, sledge, 3 females (cl 9.0–13.1 mm), 5 juveniles (cl 6.4–7.0 mm), CBM-ZC 10032.

Distribution. Japan, Indonesia, Madagascar, Réunion, and South Africa; 0–810 m (Hayashi, 2000). In Japan, recorded from Sagami Sea to East China Sea, Niigata, and Toyama Bay (Hayashi, 2007).

Family **Stylodactylidae**

Genus ***Parastylodactylus*** Figueira, 1971

41. ***Parastylodactylus hayashii*** (Komai, 1997), comb. nov. [New Jn: Hayashi-sango-ebi] (Fig. 10B, 11)

Neostylodactylus hayashii Komai, 1997: 125 (in part), figs. 1–3.

Not *Neostylodactylus hayashii*: Komai, 1997: fig. 4. = *Neostylodactylys* sp.

Materials examined. Holotype: R/V *Tansei-maru*, KT95-5 cruise, stn TB18-2, Okinoyama Bank, Sagami Sea, 34°59′N, 139°39′E, 105–113 m, 21 April 1995, dredge, male (cl 4.3 mm), CBM-ZC 2558.

Non-type: R/V *Rinkai-maru*, Sagami Bay, SW of Jōgashima, 35°06.69′N, 139°34.67′E to 35°06.75′N, 139°34.05′E, 310–381 m, 8 March 2002, dredge, 1 ovigerous female (cl 4.8 mm), CBM-ZC 10056.

Coloration in fresh. Body generally transparent, dorsal surface of carapace and abdomen reddish with spots or irregular markings; row of small red spots on rostrum. Sixth abdominal somite reddish in posterior half. Third to fifth pereopods generally transparent, reddish on carpi or meri.

Distribution. Presently known only from the Sagami Sea, 105–403 m.

Remarks. This species was originally described on the basis of one male (holotype) and three females (paratypes) from two different Japanese localities. Although Komai (1997) noted morphological differences between the holotype from the Sagami Sea and the paratype from the Kumano Sea off Kii Peninsula, he referred these specimens to the same species. The lack of arthrobranch gills above the bases of the first to fourth pereopods in the female paratypes led Komai (1997) to assign his new species to the genus *Neostylodactylus* Hayashi and Miyake, 1968. However, the present female specimen agrees well with the male holotype in most diagnostic aspects, including the only slightly curving rostrum (Fig. 11A), and the unarmed fourth abdominal pleuron (Fig. 11B), does possess well-developed arthrobranch gills above the bases of first to fourth pereopods. This finding requires the reassignment of this species to the genus *Parastylodactylus*. The three female paratypes represent an undescribed species of *Neostylodactylus*, which will be described as new in a separate paper.

Parastylodactylus hayashii closely resembles *P. moluccensis* Cleva, 1997, but it can be distinguished by the following characters: the rostrum is nearly straight or very slightly curved in *P. hayashii*, rather than noticeably curving dorsally in *P. moluccensis*; spines consisting of the ventral rostral series are much shorter in *P. hayashii* than in *P. moluccensis*; the telson is armed with five pairs dorsolateral spines in *P. hayashii*, instead of

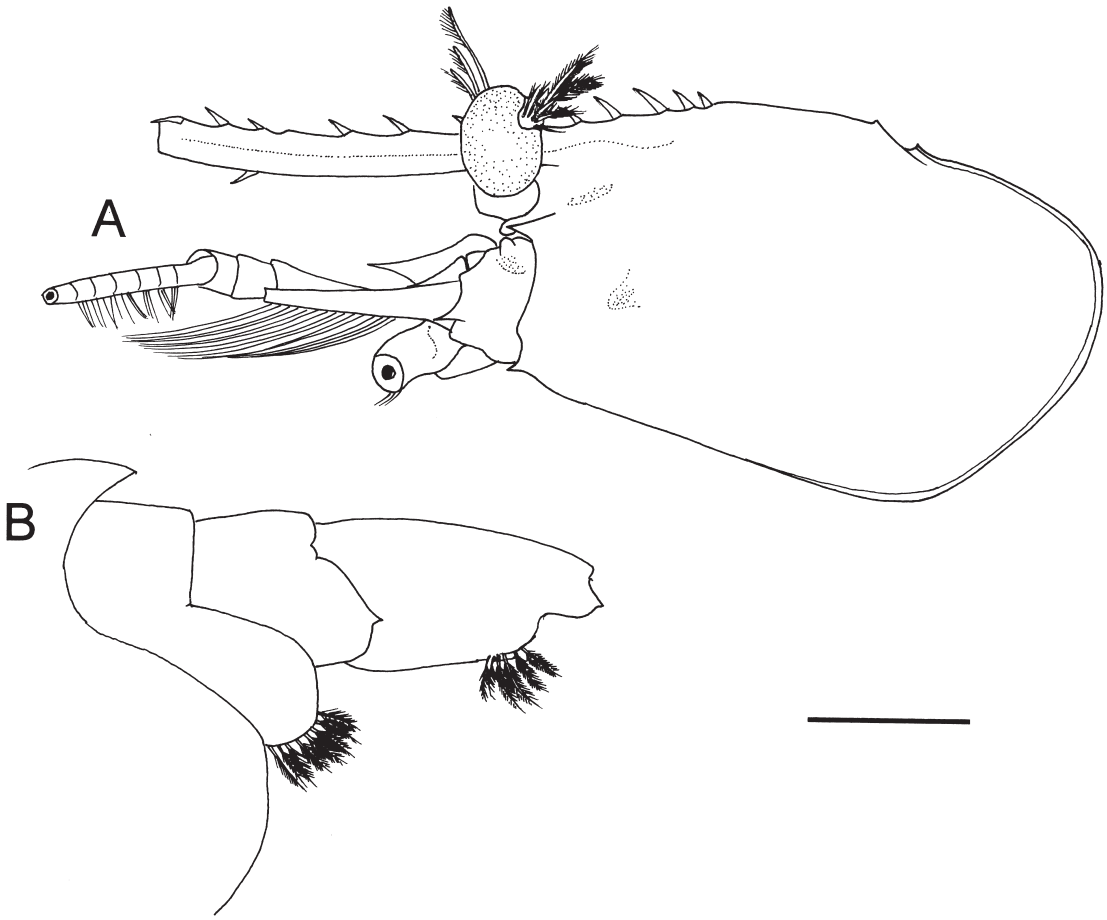

Fig. 11. *Parastylodactylus hayashii* (Komai, 1997), comb. nov., ovigerous female (cl 4.8 mm), CBM-ZC 10056. A, carapace and cephalic appendages, lateral view (rostrum, antennular flagella and antennal scale damaged); B, posterior part of third abdominal somite and fourth to sixth somites, lateral view. Scale bar: 2 mm.

four pairs in *P. moluccensis*; the meri of the third to fifth pereopods are unarmed on the dorsodistal margin in *P. hayashii*, whereas they possess one small spine respectively in *P. moluccensis* (Cleva, 1997).

Balss (1914) recorded *Parastylodactylus bimaxillaris* (Bate, 1888) from Sagami Bay, but this record needs to be verified. It is possible that Balss' record of *P. bimaxillaris* might actually represent *P. hayashii*.

Genus ***Stylodactylus*** A. Milne-Edwards, 1881

42. ***Stylodactylus licinus*** Chace, 1983 [Jn: Komon-sango-ebi]

Stylodactylus licinus Chace, 1983: 14, fig. 6 [type locality: Palawan Passage, Philippines, 686 m]; Hayashi, 1986: 92, fig. 52, 93, 257; 2007: 192, figs. 78b, e, g, j, l, n; Cleva, 1990: 87, figs. 3a–j, 18f, g; 1997: 390, fig. 4A–D.

Material examined. R/V *Tansei-maru*, KT07-31, stn L-3-500, Sagami Sea, W of Izu-ōshima Island, 34°39.89′N, 139°12.19′E to 34°40.03′N, 139°13.87′E, 504–551 m, 27 November 2007, beam trawl, 1 male (cl 10.2 mm), CBM-ZC 10086.

Distribution. Japan, Philippines, Indonesia, Western Australia, Wallis and Futuna Islands, Vanuatu, New Caledonia, and Fiji; 222–1000 m (Hanamura and Evans, 1996; Cleva, 1997). In Ja-

pan, recorded from Suruga Bay to East China Sea (Hayashi, 2007).

Infraorder **Stenopodidea**
Family **Spongicolidae**
Genus ***Paraspongicola*** de Saint Laurent and Cleva, 1981

43. ***Paraspongicola acantholepis*** sp. nov. [New Jn: Toge-hime-douketsu-ebi] (Figs. 12–15)

Material examined. R/V *Tansei-maru*, KT07-31, stn L3-200, Izu Islands, N of Toshima Island, 34°34.04′N, 139°18.37′E to 34°33.56′N, 139°17.81′E, 187–261 m, 27 November 2007, chain bag dredge, ovigerous female (cl 4.6 mm), CBM-ZC 10088.

Diagnosis. Rostrum reaching beyond distal margin of antennular peduncle, armed with 10 dorsal teeth increasing in size distally; ventral margin unarmed. Second to fourth abdominal pleura rounded, fifth pleuron with minute denticle ventrally; sixth somite unarmed on tergum or posterodorsal margin. Telson with lateral margin subparallel in anterior half, bearing 3 teeth in posterior half; dorsal surface with submedian teeth near base. Antennal scale with 9–10 strong teeth on lateral margin (including terminal tooth). Palm of first pereopod having patch of grooming setae extending over entire ventromesial surface. Merus of second pereopod unarmed. Palm of major third pereopod with 15 (left major) or 13 (right minor) denticles on dorsal margin in addition to sharp subdistal tooth; ventrolateral margin of each merus with only 1 tiny tubercle subdistally.

Description. Body (Fig. 12) moderately robust. Rostrum (Fig. 13A, C) 0.57 of carapace length, directed slightly downward, overreaching third segment of antennular peduncle; dorsal margin nearly straight, armed with 10 teeth increasing in size distally (posteriormost 2 teeth minute); ventral margin unarmed; lateral ridge sharply delimited, unarmed. Carapace (Fig. 12, 13A, C) with postrostral median ridge low, extending beyond level of postrostral submedian teeth; postrostral submedian tooth small; antennal tooth relatively large, acuminate; tiny hepatic tubercle present; 7 anterolateral spines forming double oblique row; anterolateral margin minutely denticulate (Fig. 13B); pterygostomial angle produced, terminating in acute point; cervical groove absent.

Sixth thoracic sternite (Fig. 13D) with slender, paired spiniform lobes, narrowly separated. Seventh sternite with moderately broad lobes, sepa-

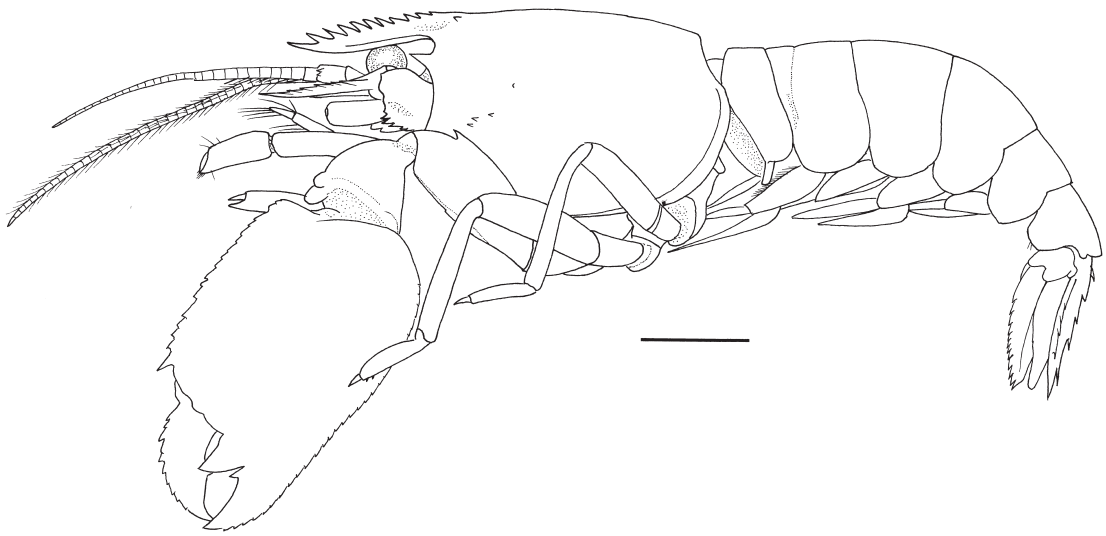

Fig. 12. *Paraspongicola acantholepis* sp. nov., holotype, ovigerous female (cl 4.6 mm), CBM-ZC 10088, entire animal, lateral view. Scale bar: 2 mm.

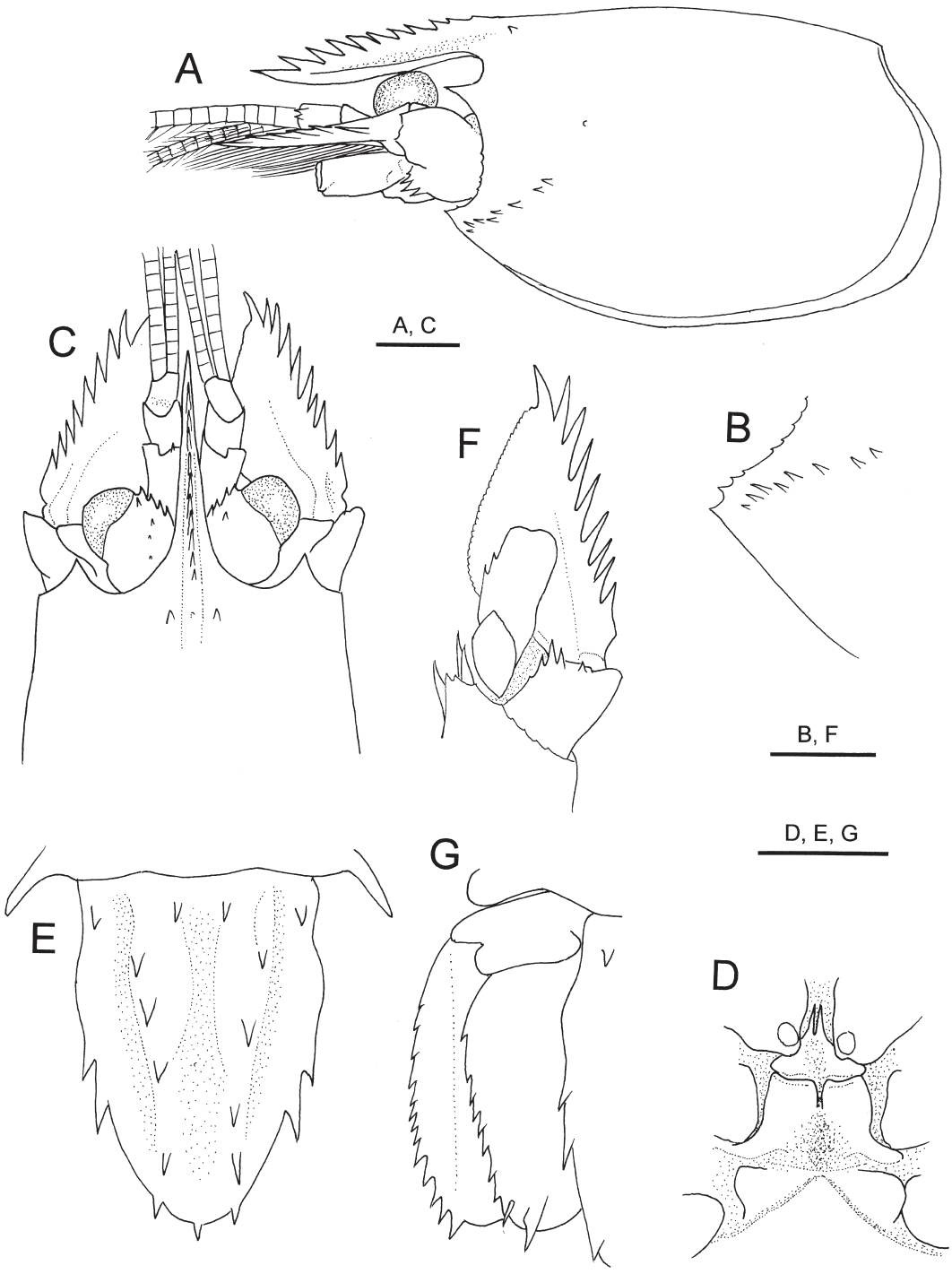

Fig. 13. *Paraspongicola acantholepis* sp. nov., holotype, ovigerous female (cl 4.6 mm), CBM-ZC 10088. A, carapace and cephalic appendages, lateral view; B, left pterygostomial angle of carapace, obliquely lateral view; C, anterior part of carapace and cephalic appendages, dorsal view (setae omitted); D, sixth to eighth thoracic sternites, ventral view; E, telson, dorsal view (setae omitted); F, left antenna, ventral view (flagellum missing); G, left uropod, dorsal view (perpendicular; setae omitted). Scale bars: 1 mm.

rated by narrow notch; each anterior margin sinuously truncate, anterolateral angle only slightly produced, anteromesial angle rounded; lateral margins faintly sinuous, unarmed. Eighth sternite with rounded, laterally directed lobes, smaller than those on seventh sternite.

Abdomen (Fig. 12) moderately depressed dorsoventrally. First somite with distinct transverse carina, its margin partially overhanging deeply depressed anterior section; pleuron with prominent ventral process, posterolateral margin rounded. Second somite without distinct transverse carina, only shallow transverse groove evident. Second to fourth pleura rounded. Pleuron of fifth somite generally rounded, with 1 minute denticle at middle portion. Sixth somite slightly widened posteriorly; tergum unarmed, posterodorsal margin also unarmed; pleuron subtruncate ventrally, unarmed. Telson (Fig. 13E) subtriangular, about 1.4 times longer than broad (exclusive of posteromedian tooth); dorsal surface with 2 pairs of proximal teeth, obtuse dorsolateral ridges each with 4 teeth; lateral margin slightly sinuous in anterior half, narrowing posterior half with 3 teeth (second tooth closer to first tooth), posterior margin flanked by third pair of teeth convex, with small median tooth.

Cornea (Fig. 13A, C) darkly pigmented, narrower than eyestalk; eyestalk somewhat inflated, armed with 1 or 2 tiny teeth dorsally and 4 teeth anteromesially.

Antennular peduncle (Fig. 13A, C) slightly overreaching midlength of antennal scale (except for terminal tooth). First segment with ventrodistal mesial angle produced in prominent tooth, ventromesial margin bearing 1 tooth slightly proximal to midlength; stylocerite short, subacute, straight, reaching nearly to midlength of first segment. Second segment armed with distally bifid tooth at dorsolateral distal angle.

Antenna (Fig. 13A, C, F) with basicerite stout; distolateral margin without sharp teeth, ventrolateral distal margin with 4 tiny teeth, ventromesial distal angle with elongate, distally bifid process (each tip acuminate). Carpocerite (fifth segment) with 2 small teeth on mesial face. Antennal scale subsemicircular, terminating in strong, slightly incurved tooth, about 2.5 times longer than wide; distal lamella poorly developed; lateral margin nearly straight, serrated with row of 9–10 strong teeth over entire length; dorsal surface with 1 obtuse longitudinal carinae. Carpocerite reaching nearly second segment of antennular peduncle.

Third maxilliped (Fig. 14A, B) reaching tip of terminal tooth of antennal scale; dactylus shorter than propodus; propodus subequal in length to carpus; carpus shorter than merus, ventrodistal margin not produced; merus somewhat twisted, distinctly shorter than ischium, with strong distolateral tooth; ischium with 2 tiny teeth on dorsolateral margin distally and with 3 teeth on ventromesial margin, distalmost tooth strongest. Exopod well developed, flagellar, distinctly overreaching midlength of ischium.

First pereopod (Fig. 14C, D) reaching tip of antennal scale. Dactylus 0.4 times as long as palm. Palm with patch of grooming setae extending over entire ventromesial surface. Carpus longest, 1.4 times longer than chela, with small grooming apparatus consisting of patch of short setae and few long setae on at distal portion of ventromesial face. Merus about 0.8 times as long as carpus. Ischium distinctly shorter than merus.

Second pereopod (Fig. 14E, F) slightly longer than carapace, overreaching tip of antennal scale by length of chela. Dactylus about 0.4 times as long as palm; palm subcylindrical, about 3.3 times longer than wide; carpus 1.2 times longer than chela; merus slightly shorter than carpus; ischium about half length of merus.

Third pereopods (Fig. 15) large, unequal. Major (left) third pereopod (Fig. 15A, B) overreaching tip of antennal scale by length of chela. Chela strongly compressed laterally, about 1.2 times longer than carapace. Dactylus about 0.7 times as long as palm, gently curving, terminating in acute tip; dorsal margin with row of small spiniform tubercles or denticles on proximal 0.7 (tubercles strongest at around middle); cutting edge with small triangular tooth at about midlength. Fixed finger slightly curving, terminating in acute tip; cutting edge bearing prominent, forwardly direct-

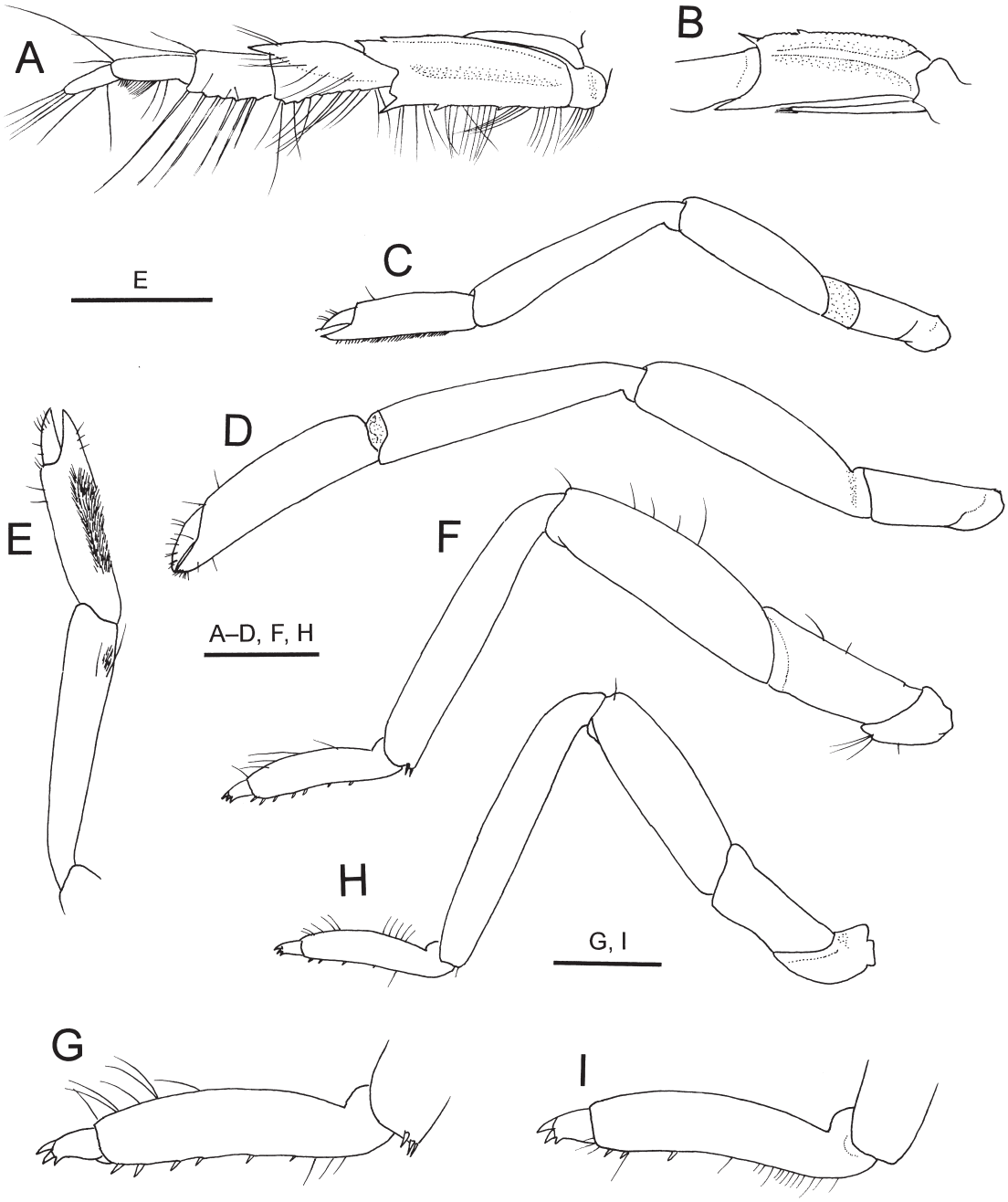

Fig. 14. *Paraspongicola acantholepis* sp. nov., holotype, ovigerous female (cl 4.6 mm), CBM-ZC 10088. A, left third maxilliped, lateral view; B, same, basis and ischium, dorsal view (setae omitted); C, left first pereopod, lateral view; D, same, chela and distal part of carpus, mesial view; E, left second pereopod, lateral view; F, same, chela and carpus, mesial view; G, left fourth pereopod, lateral view; H, same, dactylus, propodus and distal part of carpus, lateral view; I, left fifth pereopod, lateral view; J, same, dactylus, propodus and distal part of carpus, lateral view. Scale pars: 1 mm for A–G, I; 0.5 mm for H, J.

ed tooth and much smaller acute tooth adjacent to proximal tooth, otherwise smooth. Palm about 1.2 times longer than high; dorsal margin sharply keeled, with sharp subdistal tooth and row of 15 small denticles or tubercles over entire length; lateral surface weakly convex, with scattered minute granules in distal half; mesial face also weakly convex, with scattered small spiniform tubercles except for smooth proximoventral part; ventral margin faintly sinuous, sharply keeled, with row of small, forwardly directed tubercles becoming double row proximally. Carpus cup-like, with prominent lobe on dorsal margin subdistally; lateral face with 1 small tubercle. Merus with 1 small subdistal tooth on convex dorsal margin; ventrolateral margin with 1 small tubercle distal to midlength; ventromesial margin faintly tuberculate in proximal half and with 1 minute subterminal tooth. Ischium with large dorsodistal tooth, and row of small denticles on dorsal margin; ventral margin faintly tuberculate.

Minor (right) third pereopod (Fig. 15C, D) similar to left cheliped in general structure, but about 0.8 times as long. Chela subequal in length to carapace. Dactylus with row of small spiniform tubercles on over entire length of carinate dorsal margin; cutting edge with obtuse tooth proximal to midlength. Fixed finger with prominent, forwardly directed tooth and tiny acute tooth adjacent to proximal tooth, otherwise smooth. Palm about 1.4 times longer than high; dorsal margin carinate, with small subdistal tooth and row of 13 small denticles or tubercles over entire length; lateral face smooth; mesial face with scattered granules in distal half; ventral margin very slightly convex, sharply keeled, with row of small, forwardly directed, spiniform tubercles becoming double row proximally. Carpus similar to that of major third pereopod, but without tubercle on lateral face. Merus with 1 small subdistal tooth on slightly convex dorsal margin; ventrolateral margin with 1 small tubercle subterminally; ventromesial margin with 3 tiny spiniform tubercles. Ischium with large, subacute dorsodistal tooth, dorsal margin otherwise smooth; ventral margin with few tiny tubercles.

Fourth pereopod (Fig. 14G, H) moderately long and stout. Dactylus about 0.2 times as long as propodus, 2.0 times longer than high, triunguiculate (dorsal and ventral unguis subequal, accessory tooth on ventral margin small, less than half length of ventral unguis). Propodus not subdivided, about 0.4 times as long as carpus, with 6 movable spinules on flexor margin. Carpus longest, not subdivided, with 3 small movable spines at flexor distal margin, flexor margin unmarred; merus shorter than carpus; ischium shorter than merus.

Fifth pereopod (Fig. 14I, J) similar to fourth, but slightly shorter; propodus with 3 spinules on distal 0.4 of flexor margin. Carpus unarmed on flexor distal margin.

Exopod of uropod (Fig. 13G) with serration of 13 teeth increasing in size posteriorly on lateral margin, dorsal surface with trace of longitudinal ridge lateral to midline. Endopod with serration of 10 teeth on lateral margin, terminal tooth enlarged, and with 1 slender submarginal spine arising near base of penultimate tooth; dorsal surface with trace of median ridge.

Coloration in fresh. Entirely generally whitish with scattered red dots; carapace and fingers of third pereopods with tinge of yellowish brown; eggs pale yellow. See Fig. 10C.

Distribution and habitat. Known only from the type locality in Izu Islands, 187–261 m. The holotype was found to live in a broad cavity of an unidentified sponge. No male specimen was found.

Remarks. Saito and Komai (2008) revised *Paraspongicola*, and they recognized two species, *P. pusillus* de Saint Laurent and Cleva, 1981 and *P. inflatus* (de Saint Laurent and Cleva, 1981), in the genus. The latter species was originally assigned to *Spongicola*, but because of the possession of a well-developed, flagellum-like exopod on the third maxilliped, it was transferred to *Paraspongicola* by Saito and Komai (2008). Like *P. inflatus*, the present new species is superficially rather similar to species of *Spongicola* than to the type species, *P. pusillus*, but because of the possession of a flagellum-like exopod on the third

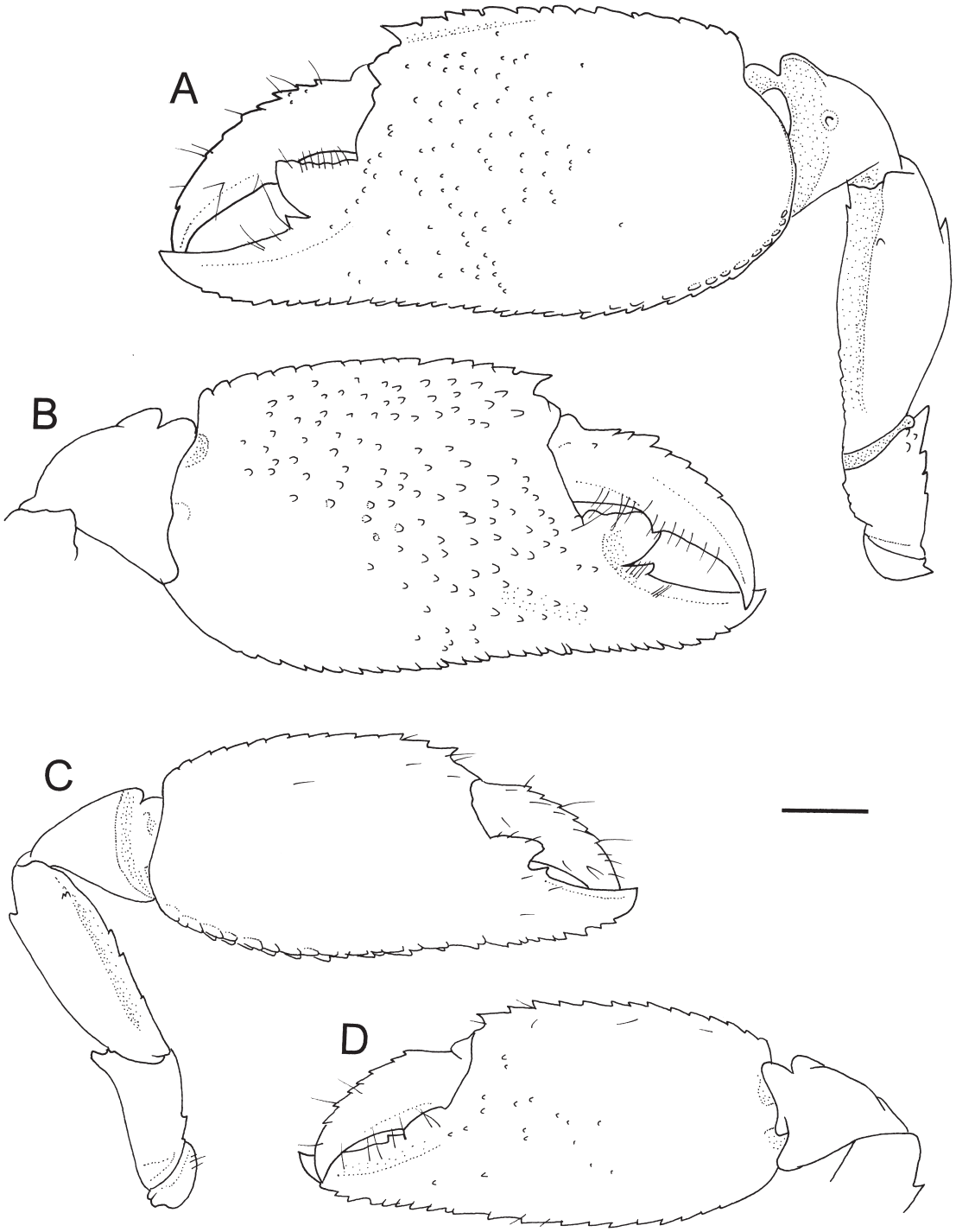

Fig. 15. *Paraspongicola acantholepis* sp. nov., holotype, ovigerous female (cl 4.6 mm), CBM-ZC 10088. A, major (left) third pereopod, lateral view; B, same, chela and carpus, mesial view; C, minor (right) third pereopod, lateral view; D, same, chela and carpus, mesial view. Scale bar: 1 mm.

maxilliped, the new species is assigned to *Paraspongicola*.

The new species is immediately distinguished from the two congeneric species by the teeth of the dorsal rostral series becoming stronger distally, the lack of paired tergal and posteromedian teeth on the sixth abdominal somite, the antennal scale bearing a row of strong teeth over the entire length of the lateral margin, and fewer and smaller flexor spines on the propodi of the fourth and fifth pereopods (the number is three to seven in the new species, 10 or more in the latter two species). In *P. inflatus* and *P. pusillus*, the teeth of the dorsal rostral series decrease in the size distally; the sixth abdominal somite is armed with a pair of small teeth on the tergum; and the lateral teeth of the antennal scale are restricted to the distal half and are much weaker. *Paraspongicola acantholepis* sp. nov. further differs from *P. inflatus* in the third maxilliped with a strong tooth on the dorsodistal angle of the merus and the only slightly produced ventrodistal margin of the carpus. In *P. inflatus*, the merus of the third maxilliped bears a minute tooth on the dorsodistal margin; the ventrodistal angle of the carpus is prominently produced. The new species further differs from *P. pusillus* in the following characters: the telson bears much fewer lateral serrations in *P. acantholepis* than in *P. pusillus* (two versus eight or nine); the merus of the second pereopod is unarmed in *P. acantholepis*, rather than bearing one subdistal tooth on the dorsal margin and a row of teeth on the ventral margin in *P. pusillus*.

At the time of capture, the holotype was found in a broad and shallow cavity of an unidentified demospongian sponge. It is known that spongicolids generally live in the atrium of hexactinellid sponges, but the use of a demospongian sponge is rather rare. Saito and Komai (2008) reported an example of association between *Spongicola goyi* Saito and Komai, 2008 and *Demonspongia* sp.

Etymology. Named after the strong serration on the lateral margin of the antennal scale.

Genus ***Spongicola*** De Haan, 1844

44. ***Spongicola andamanicus*** Alcock, 1901 [Jn: Andaman-douketsu-ebi]

Spongicola andamanica Alcock, 1901: 148, pl. 2, fig. 2 [type locality: Andaman Sea].

Spongicola andamanica andamanica: de Saint Laurent and Cleva 1981: 188.

Spongicola henshawi Rathbun, 1906: 901, pl. 24, fig. 8 [type locality: Molokai, Hawaii, 310–440 m].

Spongicola henshawi henshawi: de Saint Laurent and Cleva 1981: 171, figs 9, 10a, c–e, 11a, b, d–f, i.

Spongicola henshawi spinigera de Saint Laurent and Cleva, 1981: 174, figs 10b, 11c, g, h [type locality: Philippines, 333 m].

Spongicola holthuisi de Saint Laurent and Cleva, 1981: 177, fig. 12a-i [type locality: N of Lubang, Philippines, 188–192 m].

Materials examined. TR/V *Shin'yo-maru*, 2002 cruise, stn 33, Sagami Sea, N of Izu-ōshima Island, 34°42.17′N, 139°00.19′E, 124–126 m, 24 October 2002, 1 juvenile (cl 2.6 mm), CBM-ZC 10050; stn 35, similar locality, 34°43.24′N, 139°16.84′E, 171–181 m, 24 October 2002, 1 male (cl 3.1 mm), NSMT-Cr S846; stn 41, Sagami Sea, W of Sunosaki, 34°51.30′N, 139°40.1′E, 172–135 m, 24 October 2002, 1 male (cl 3.0 mm), 1 female (cl 2.9 mm), NSMT-Cr S847. R/V *Takunan*, 2007 cruise, stn 6, N of Hachijō Island, 33°27.509′N, 139°42.502′E, 200 m, 25 July 2007, dredge, 1 female (cl mm), NSMT-Cr S848.

Distribution. Madagascar, Andaman Sea, Australia, Japan, Philippines, Indonesia, New Caledonia, and Hawaii; 124–815 m (Saito and Komai, 2008). In Japan, recorded from Sagami Sea and Ryūkyū Islands (Saito and Komai, 2008).

Remarks. Saito and Komai (2008) revised the taxonomy of this species (see synonymy).

Infraorder **Polychelida**
Family **Polychelidae**
Genus ***Polycheles*** Heller, 1862

45. ***Polycheles helleri*** Bate, 1878 [Jn: Hime-sen-

jyu-ebi]

Polycheles helleri Bate, 1878: 277 (in part); 1888: 138, pl. 14, fig. 2; Galil, 2000: 327, fig. 18; Ahyong and Chan, 2004: 179, figs. 3H, I, 4G; Komai and Komatsu, 2009: 570, fig. 23H.

Stereomastis nana: Baba, 1986: 159, fig. 109 (on page 158), 284. Not *Stereomastis nana* Smith, 1884.

Material examined. R/V *Tansei-maru*, KT07-31, stn L-7-1300, Izu Islands, W of Hachijō Island, 33°12.20′N, 139°13.13′E to 33°10.90′N, 139°32.86′E, 1318–1330 m, 26 November 2007, beam trawl, 1 female (cl 36.7 mm), CBM-ZC 10076.

Distribution. Western Indian Ocean to Australia, Indonesia, New Guinea, New Caledonia, Taiwan, and Japan (Galil, 2000; Ahyong and Chan, 2004). In Japan, recorded from the Pacific side, Iwate Prefecture to Kagoshima Bay (Galil, 2000).

Infraorder **Achelata**
Family **Palinuridae**
Genus ***Puerulus*** Ortmann, 1897

46. ***Puerulus angulatus*** (Bate, 1888) [Jn: Kubo-ebi]

Panulirus angulatus Bate, 1888: 81, pl. 11, figs. 2–4 [type locality: north of New Guinea, 274 m].

Puer angulatus Ortmann, 1891: 37.

Puerulus angulatus: Miyake, 1982: 78; Baba, 1986: 155, fig. 106 (on page 154), 282; Chan and Yu, 1989: 2, pl. 1; Holthuis, 1991: 162, fig. 301.

Puerulus gracilis Kubo, 1939: 316, figs. [type locality: off Kominato, Bōsō Peninsula].

Material examined. Uraga Strait, off Kanaya, Bōsō Peninsula, 180–230 m, March 1996, gill net for scampi, coll. T. Komai, 1 male (cl 37.0 mm), CBM-ZC 2419.

Distribution. Eastern Africa, Nicobar Islands, Japan, Taiwan, Philippines, Indonesia, New Guinea, and Western Australia: 180–536 m (Chan and Yu, 1989; Holthuis, 1991). In Japan, recorded from the Pacific side only, off Bōsō Peninsula to East China Sea and Kyūshū-Palau Ridge (Baba, 1986).

Infraorder **Astacidea**
Family **Nephropidae**
Genus ***Metanephrops*** Jenkins, 1972

47. ***Metanephrops japonicus*** (Tapparone-Canefri, 1873) [Jn: Akaza-ebi]

Nephrops japonicus Tapparone-Canefri, 1873: 5, pl. 1 [type locality: Japan]; Ortmann, 1891: 6; 1897: 272, pl. 17, fig. 1; Doflein, 1902: 642; Balss, 1914: 84; Parisi, 1917: 15, fig. 4.

Nephrops intermedius Balss, 1921: 176 (in part) [type locality: Sagami Bay, Japan].

Metanephrops japoncius: Jenkins, 1972: 162, figs. 2–4; Miyake, 1982: 77, pl. 26, fig. 3; Baba, 1986: 149, fig. 100 (on page 148), 279; Chan and Yu, 1991: pls. 1a, 3a, 5a, 7a; Holthuis, 1991: 74, fig. 144.

Material examined. Uraga Strait, off Katsuyama, Boso Peninsula, 200–250 m, 21 April 2008, gill net for scampi, coll. T. Komai, 1 male (cl 53.8 mm), CBM-ZC 10100.

Distribution. Japanese endemic, from Chōshi, Chiba Prefecture to east coat of Kyūshū; 200–440 m (Chan and Yu, 1991; Holthuis, 1991).

48. ***Metanephrops sagamiensis*** Parisi, 1917 [Jn: Sagami-akaza-ebi]

Nephrops sagamiensis Parisi, 1917: 15 (in part) [type locality: Sagami Bay, Japan].

Metanephrops intermedius Balss, 1921: 176 (in part) [type locality: Sagami Bay, Japan].

Metanephrops sagamiensis Jenkins, 1972: 163, figs. 2–4; Miyake, 1982: 77, pl. 26, fig.4; Baba, 1986: 150 (fig. 101), 151, 280; Chan and Yu, 1991: 30, pls. 1d, 3d, 5c, 7c; Holthuis, 1991: 78, fig. 152.

Material examined. R/V *Tansei-maru*, KT07-31, stn L-3-500, Sagami Sea, W of Izu-ōshima Island, 34°39.89′N, 139°12.19′E to 34°40.03′N, 139°13.87′E, 504–551 m, 27 November 2007, beam trawl, 1 juvenile (cl 21.3 mm), CBM-ZC 10087.

Distribution. Japan and northern part of Tai-

wan; 300–500 m (Chan and Yu, 1991). In Japan, recorded from the Pacific side, Sagami Sea to Ryūkyū Islands (Baba, 1986).

Infraorder **Axiidea**
Family **Axiidae**

Ambiaxiopsis gen. nov. [New Jn: Subesube-shinkai-ana-ebi-zoku]

Type species. *Ambiaxiopsis altimanus* sp. nov., present designation and by monotypy.

Composition. Monotypic.

Diagnosis. Hermaphroditic. Rostrum spine-like, laterally weakly dentate, distinctly longer than eyestalks, depressed below level of carapace, continuous with lateral gastric carinae. Carapace smooth; supraocular teeth present; cervical groove rudimentary; submedian gastric carina absent; median gastric carina indistinct; postcervical carina absent. First abdominal pleuron triangular; second pleuron posteriorly subrectangular; third to fifth pleura posteriorly rounded. Telson with paired dorsal teeth; lateral margin with tiny lateral teeth and 1 spine at posterolateral angle. Eyestalks immovably attached to carapace, contiguous; cornea unpigmented, division of cornea and eyestalk indistinct. Antennal scaphocerite short, not reaching distal margin of fourth segment of peduncle. Third maxilliped with exopod not clearly bent at base of flagellum. Chelipeds (first pereopods) unequal and dissimilar; palm laterally compressed, high, unarmed on dorsal margin. Third and fourth pereopods each with propodi bearing row of slender spines ventrally on lateral face; dactyli of third and fourth pereopods not elongate, that of fifth pereopod somewhat elongate. Gill formula summarized in Table 1; pleurobranchs absent above first to fourth pereopods; 2 arthrobranchs above bases of third maxilliped to fourth pereopod, each bearing conspicuous gill elements; podobranchs rudimentary on third maxilliped to third pereopod, absent on fourth pereopod; epipods present on first maxilliped to fourth pereopod. First pleopod strongly flattened, distal segment subtriangular, with very short appendix interna located at proximomesial angle. Second pleopod with modified endopod consisting of 2 segments, distal segment corresponding to appendix masculina elongate triangular, longer than first segment (= endopod), mesial margin concave, with basal thumb-like appendix interna, appendix masculina with rows of dense spiniform setae in proximal half distal to appendix interna and row of longer setae extending to tip. Third to fifth pleopods slender, each with appendix interna. Uropodal exopod with transverse suture.

Table 1. Gill formula of *Ambiaxiopsis altimanus* gen. et sp. nov.

	Thoarcic somites							
	1	2	3	4	5	6	7	8
	Maxillipeds			Pereopods				
	1	2	3	1	2	3	4	5
Pleurobranchs	0	0	0	0	0	0	0	0
Arthrobranchs	0	0	2	2	2	2	2	0
Podobranchs	0	0	r	r	r	r	0	0
Epipods	1	1	1	1	1	1	1	0
Exopods	1	1	1	0	0	0	0	0
Mastigobranchs	0	0	1	1	1	1	1	0
Setobranchs	0	0	0	1	1	1	1	0

Remarks. This new genus belongs to a group of genera characterized by hermaphroditism and the possession of modified first and second pleopods into gonopods, and appears closest to *Ambiaxius* Sakai and de Saint Laurent, 1989. Shared characters include: eyestalks immovably attached to carapace, contiguous, division of cornea and eyestalk absent; inner ramus of second pleopod strongly modified, consisting of two segments, distal subtriangular segment representing appendix masculina articulated to distal end of endopod and bearing appendix interna reduced to thumb-like process fused at proximomesial angle. These characters are considered to be apomorphic, suggesting a close relationship between the two genera (Kensley, 1989). However, the new taxon can be easily distinguished from *Ambiaxius* by the rudimentary cervical groove on the carapace, the presence of gill filaments on the arthrobranchs, non-elongate cheliped palms and the telson armed with lateral and dorsal teeth. In *Ambiaxius*, the cervical groove is well defined, extending to the

lateral face; the arthrobranchs are simple; cheliped palms are somewhat elongate; and the telson is devoid of armature (Sakai, 1994; Kensley, 1996b; Poore and Collins, 2009; Komai *et al*., 2010). *Calocaris* Bell, 1853 also exhibits strong similarities to the new genus, particularly in the structure of the rostrum, the telson armature, the shape of the chelipeds and the gill structure. Nevertheless, *Ambiaxiopsis* can be readily differentiated from *Calocaris* by the well-developed, spike-like antennal scaphocerite as well as the rudimentary cervical groove and the strongly modified inner ramus of the second pleopod. In *Calocaris*, the antennal scaphocerite is strongly reduced to a barely visible scale; the appendix masculina is simple, tapering distally; the appendix interna is normally digitiform, articulated at the base of the appendix masculina (Kensley, 1989; 1996a; Ngoc-Ho, 2003).

Etymology. From the generic name *Ambiaxius* and the Greek suffix -opsis (meaning "relating to appearance"), in reference to the close similarity of the new species to *Ambiaxius*. Gender: masculine.

49. ***Ambiaxiopsis altimanus*** sp. nov. [New Jn: Subesube-shinkai-ana-ebi] (Figs. 16–19)

Material examined. Holotype: TR/V *Shin'yo-maru*, 2002 cruise, stn 20, Sagami Bay, SE of Hatsushima Island, 35°01.15′N, 139°12.02′E, 269–247 m, 23 October 2002, hermaphrodite (cl 6.6 mm), CBM-ZC 10045.

Diagnosis. See above.

Description. Body (Fig. 16) moderately robust. Rostrum (Fig. 17A–C) about 0.2 times as long as carapace, moderately slender, straight, directed forward, reaching distal margin of second segment of antennular peduncle, lateral margin armed with 5 (left) or 3 (right) tiny teeth; dorsal surface channeled medially. Carapace (Figs. 16, 17A–C) smooth, polished on surface; supraocular teeth small; gastric region gently convex, sloping to rostral base, with scattered short setae; lateral gastric carinae continuous with rostral lateral margins, diverging posteriorly, reaching anterior 0.1 of carapace; submedian gastric carinae absent; median gastric carina obsolete, not reaching cervical groove; cervical groove very shallow, restricted to dorsum; no postcervical groove; suborbital lobe obtusely triangular; pterygostomial margin rounded.

Thoracic sternum (Fig. 17D) with shield on seventh somite weakly delimited, medially divided by deep groove, anterior margin weakly produced medially.

First abdominal pleuron (Fig. 16) produced posteroventrally as triangular projection with subacute tip; second pleuron broad, anteroventrally rounded, lateral surface shallowly depressed; third pleuron rounded; fourth and fifth pleura obtusely angular ventrally or posteroventrally, respectively; sixth pleuron with broadly convex ventral margin, with blunt posterolateral process. Telson (Fig. 17E) 1.6 times longer than wide, widest proximally, then approximately parallel-sided, lateral margin armed with 3 (right) or 4 (left) tiny teeth, posterior margin strongly convex without posteromedian spine, posterolateral region with 1 small spine; dorsal face with 2 pairs of small teeth on obsolete oblique ridges.

Eyestalks (Fig.17B, C) very short, immovably attached to cephalothorax, contiguous, visible in dorsal view, anterolateral ventral portion vertically compressed; cornea unpigmented, unfaceted, division between cornea and eyestalk unclear. Antennular peduncle (Fig. 17B, C) slightly falling short of midlength of fourth segment of antennal peduncle; first segment with small tooth on statocyst lobe distolaterally; flagella subequal in length to carapace. Antennal peduncle (Fig. 17B, C) with first segment unarmed; second segment with strong distolateral tooth; scaphocerite long, directed forward, distinctly overreaching midlength of fourth segment; third segment with small tooth on ventromesial distal angle; fourth segment longest, slightly longer than second segment (except for dorsolateral distal tooth); fifth segment about 0.4 times as long as fourth segment; flagellum about twice length of carapace.

Third maxilliped (Fig. 19A, B) moderately slender. Coxa and basis unarmed. Ischium armed with 3 tiny teeth around middle portion of ventral

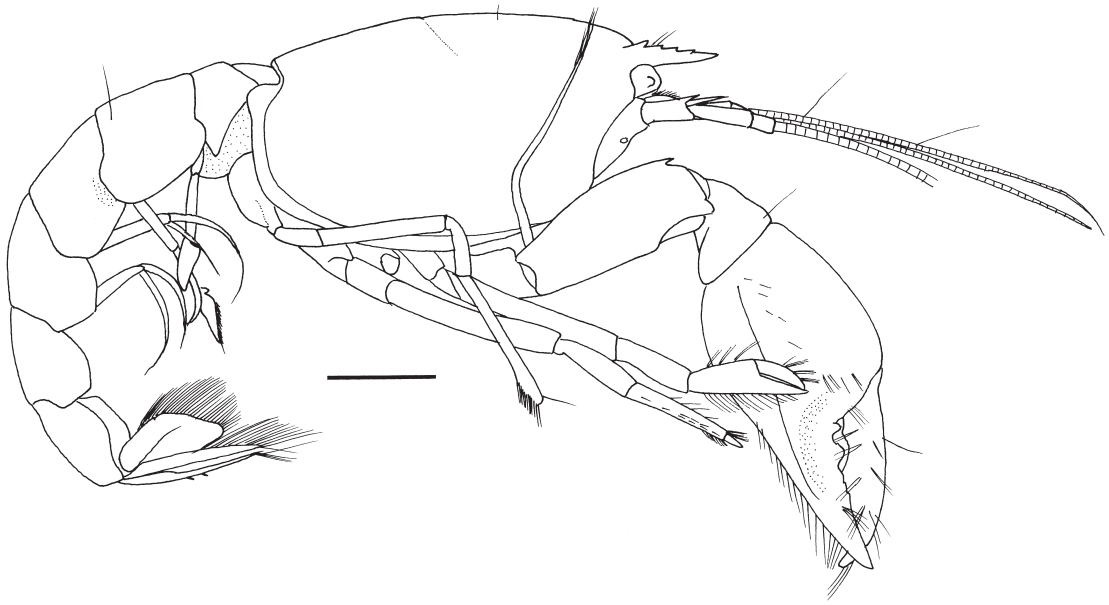

Fig. 16. *Ambiaxiopsis altimanus* gen., sp. nov., holotype, hermaphrodite (cl 6.6 mm), CBM-ZC 10045, entire animal, lateral view. Scale bar: 2 mm.

margin; crista dentata consisting of row of 11 small teeth. Merus with 2 subdistal teeth on ventral margin (first tooth much larger than second tooth). Carpus unarmed. Exopod longer than merus and ischium combined, multiarticulate in distal half.

Chelipeds (Fig. 18) unequal, not particularly elongate. Major (right) cheliped (Fig. 18A, B) with coxa bearing minute denticle on posteromesial distal angle. Basis unarmed. Ischium with 3 small teeth on ventromesial margin (distalmost tooth strongest, terminal). Merus 1.8 times longer than high, with 1 small subdistal tooth on gently convex dorsal margin; ventromesial margin with 1 small subdistal tooth (located proximal to subdistal tooth on dorsal margin) and row of minute denticles over entire length. Carpus very short, cup-shaped, higher than long, unarmed. Chela subequal in length to carapace and about 2.2 times longer than high, not strongly compressed, ventral margin faintly sinuous. Palm subrectangular, about as long as high; dorsal margin sharply carinate, unarmed; lateral surface generally slightly convex, but shallowly, depressed near base of fixed finger, bearing 2 tiny tubercles proximal to base of fixed finger, dorsal two-thirds almost naked, ventral one-third with longitudinal row of short stiff setae; sharp longitudinal keel bearing row of tuft of short stiff setae adjacent to ventral margin; mesial face also generally weakly convex, but shallowly depressed at base of fixed finger, with vertical row of 5 spiniform tubercles proximal to base of fixed finger; ventral surface rounded, with sparse setae. Fixed finger (Fig.) slightly curving, gradually tapering to subacute apex, bearing median row of tufts of long stiff setae on lateral surface, shallowly excavated longitudinally on mesial face, cutting edge bearing 2 prominent, rounded teeth proximally and otherwise faintly dentate. Dactylus 1.2 times longer than palm, slightly curving, gradually tapering distally to subacute tip, crossing fixed finger, bearing longitudinal rows of tufts of long stiff setae on lateral and mesial faces; dorsal margin bluntly carinate; lateral face slightly carinate on midline in proximal 0.3; mesial face rounded; cutting edge with 2 obtuse teeth; small hiatus formed proximally between fingers when dactylus closed.

Minor (left) cheliped (Fig. 18C, D) with coxa

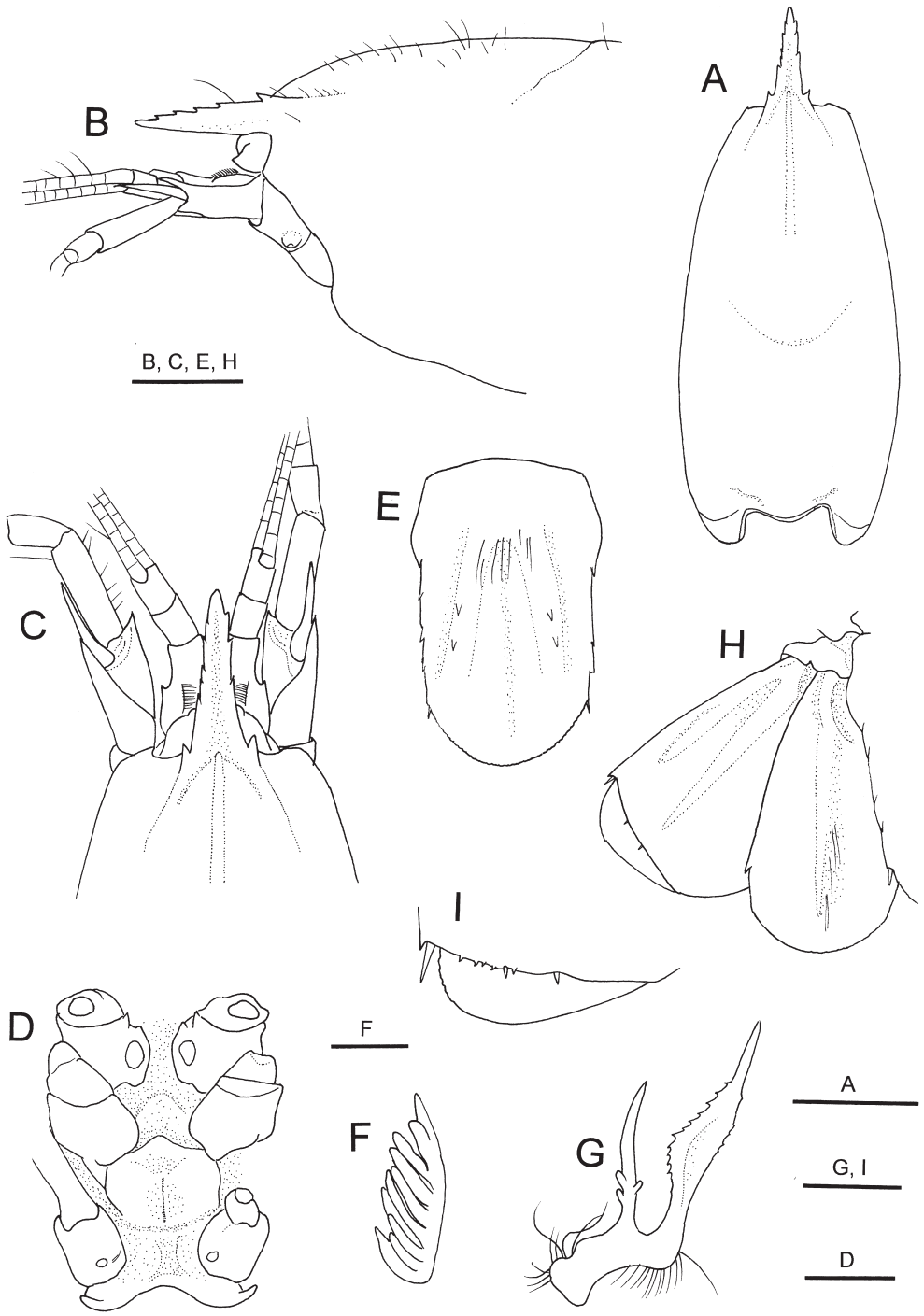

Fig. 17. *Ambiaxiopsis altimanus* gen., sp. nov., holotype, hermaphrodite (cl 6.6 mm), CBM-ZC 10045. A, carapace, dorsal view; B, anterior part of carapace and cephalic appendages, lateral view; C, same, dorsal view; D, sixth to eighth thoracic sternites and coxae of third to fifth pereopods, ventral view; E, telson, dorsal view; F, posterior arthrobranch gill above base of first pereopod, lateral view; G, epipod and podobranch on third maxilliped, lateral view. Scale bars: 2 mm for A; 1 mm for B–E, H; 0.5 mm for F, G, I.

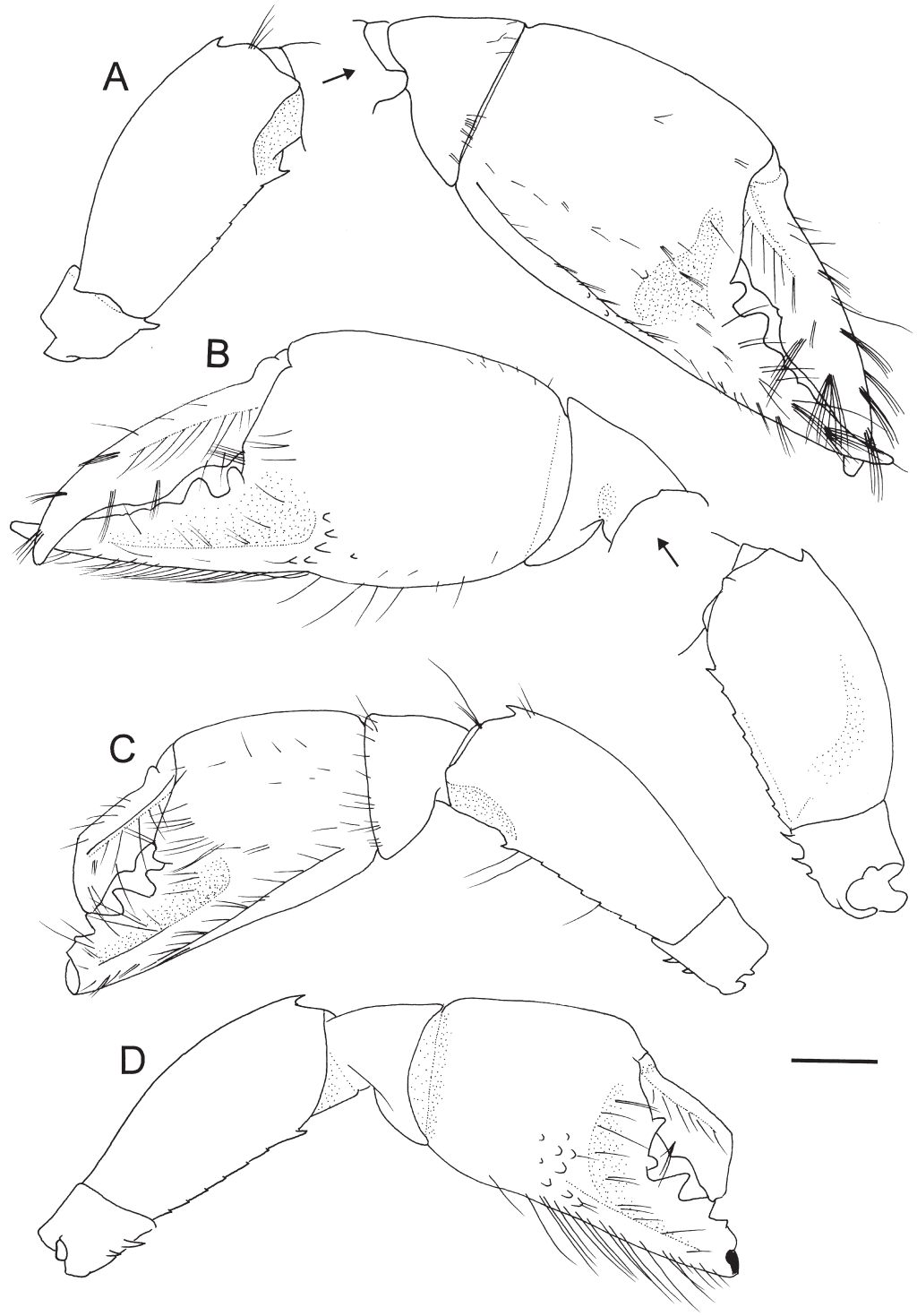

Fig. 18. *Ambiaxiopsis altimanus* gen., sp. nov., holotype, hermaphrodite (cl 6.6 mm), CBM-ZC 10045. A, major (right) cheliped, lateral view; B, same, mesial view; C, minor (left) cheliped, lateral view; D, same, mesial view. Scale bar: 1 mm.

bearing minute denticle on posteromesial distal angle. Basis unarmed. Ischium with 2 slender teeth on ventromesial margin. Merus 2.2 times longer than high, with 1 small subdistal tooth on gently convex dorsal margin; ventromesial margin with 1 subdistal tooth (located proximal to subdistal tooth on dorsal margin) and row of minute denticles over entire length. Carpus very short, cup-shaped, much higher than long, unarmed. Palm subrectangular, becoming slightly higher distally, about as long as high; dorsal margin sharply carinate, unarmed; lateral surface generally slightly convex, unarmed; distinct longitudinal carina bearing row of tuft of short stiff setae adjacent to ventral margin, extending onto fixed finger; mesial face also generally weakly convex, with cluster of small tubercles near base of fixed finger; ventral surface rounded. Fixed finger (Fig.) damaged; lateral face shallowly excavated along cutting edge, with several tufts of long stiff setae; mesial face also shallowly excavated, with tufts of setae along midline and ventral margin; cutting edge with at least four unequal, prominent, subtriangular teeth. Dactylus also broken in distal half; dorsal surface rounded, unarmed; mesial face with distinct carina on midline; cutting edge with at least 1 small blunt tooth proximally.

Second pereopod (Fig. 19C) moderately slender, unarmed on ischium to carpus; carpus about 0.7 length of chela; chela slightly higher than carpus, with sparse tufts of long setae on dorsal margin and numerous setae on ventral margin; fingers subequal in length to palm, each with row of minute corneous spinules on cutting edge. Third pereopod (Fig. 19D) moderately slender, unarmed on ischium to carpus; propodus with 4 slender spinules on lateral face adjacent to flexor margin and 2 spinules on flexor distal margin; dactylus (Fig. 19E, F) about 0.4 times as long as propodus, unarmed, with tufts of stiff setae. Fourth pereopod (Fig. 19G) moderately long, unarmed on ischium to carpus; propodus with 6 long, slender spinules on lateral surface along flexor margin, and distally with grooming apparatus consisting of stiff setae on mesial face and few stout setulose setae located flexor distal margin (Fig. 19H); dactylus (Fig. 19I, H) about 0.3 times as long as propodus, slightly twisted, bearing numerous stiff setae along extensor and flexor margins and 2 slender spinules on lateral face proximally. Fifth pereopod (Fig. 19J) unarmed on ischium to carpus; propodus distally with grooming apparatus consisting of cluster of setae, extending onto lateral and mesial faces, and transverse row of short, stout setae on flexor distal margin (Fig. 19K); dactylus (Fig. 19K, L) slender, about 0.4 times as long as propodus, flexor surface excavated near base, dorsal surface with numerous stiff setae in distal 0.6.

Gonopores present on coxae of third and fifth pereopods (Fig. 17D).

Pleurobranchs absent. Two arthrobranchs above bases of third maxilliped to fourth pereopod, all well lamellate (Fig. 17F). Podobranchs on third maxilliped to third pereopod slender, simple or bearing few rudimentary gill elements (Fig. 17G).

First pleopod (Fig. 19M) with first segment (protopod) strongly flattened, slightly twisted; articulation between two segments absent; second segment (ramus) about 0.3 length of first segment, rounded subrectangular, leaf-like, small proximomesial protrusion representing appendix interna, terminally faintly divided into two lobes. Appendix masculina of second pleopod (Fig. 19N) bearing thumb-like appendix interna located at proximomesial margin, subtriangular, not strongly expanded proximally, tapering distally, slightly longer than first segment, mesial margin gently sinuous, bearing rows of short spiniform setae in proximal half and row of longer setae distal to proximal 0.2. Third to fifth pleopods very slender.

Uropod (Fig. 17H) with endopod 1.9 times longer than wide, bearing 1 small posterolateral tooth, dorsal ridge unarmed. Exopod without lateral teeth, posterolateral angle with 1 minute tooth and with 1 slender spine; transverse suture with some minute denticles and few minute spinules.

Coloration in fresh. Not known.

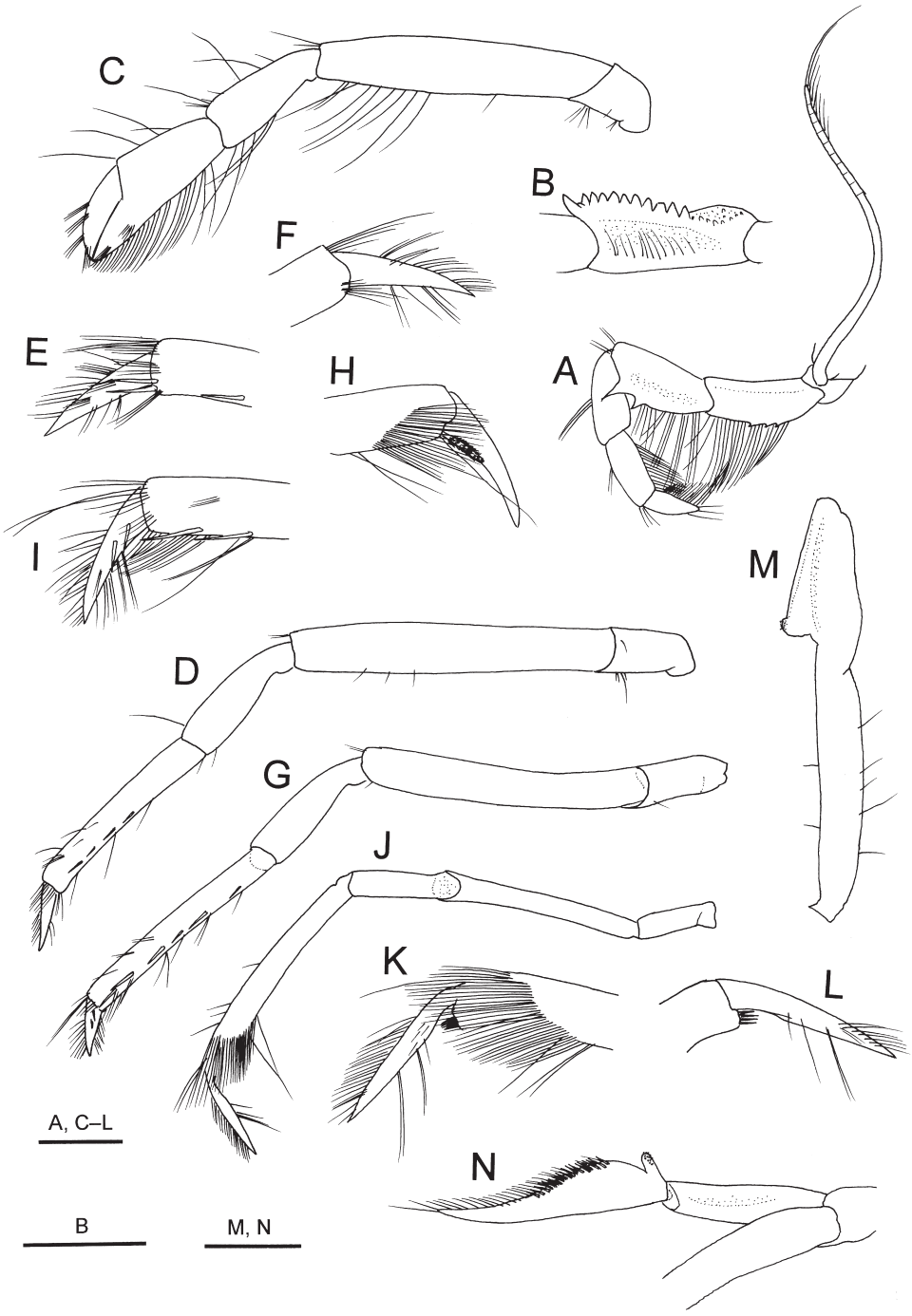

Fig. 19. *Ambiaxiopsis altimanus* gen., sp. nov., holotype, hermaphrodite (cl 6.6 mm), CBM-ZC 10045. A, left third maxilliped, lateral view; B, same, ischium, dorsal view; C, left second pereopod, lateral view; D, left third pereopod, lateral view; E, same, dactylus, lateral view; F, same, mesial view; G, left fourth pereopod, lateral view; H, same, dactylus, lateral view; I, same, mesial view; J, left fifth pereopod, lateral view; K, same, dactylus, lateral view; L, same, mesial view; M, left first pleopod, ventral view; N, endopod and appendix masculina of left second pleopod, mesial view. Scale bars: 1 mm for A–D, G, J; 0.5 mm for E, F, H, I, K–N.

Distribution. Known only from the type locality, off Izu-ōshima Island, Sagami Sea, 247–269 m.

Etymology. From the combination of the Latin *altus* (high or deep) and *manus* (hand), referring to the shape of the chela of the first pereopod. Considered to be a noun in apposition.

Genus ***Calaxius*** Sakai and de Saint Laurent, 1989

50. ***Calaxius izuensis*** sp. nov. [New Jn: Izu-benisuji-ana-ebi] (Figs. 20–24)

Materials examined. Holotype: TR/V *Shin'yo-maru* 1996 cruise, Hyōtan-se Bank, Izu Islands, 34°22.93′N, 139°04.86′E, 440–465 m, 22 October 1996, dredge, male (cl 8.5 mm), CBM-ZC 10039.

Paratypes: same data as holotype, 1 male (cl 5.3 mm), CBM-ZC 10040; same data as holotype, 1 male (cl 5.0 mm), NSMT-Cr S849.

Diagnosis. Rostrum slender, narrowly triangular in dorsal view, reaching distal margin of third segment of antennular peduncle, lateral margin bearing 2 subacute teeth. Carapace surface nearly smooth; gastric region with median carina bearing 1–3 tubercles and 1 low convexity; submedian carinae each with 3–6 tubercles or denticles; lateral carinae each with 1 tooth; trace of postcervical carina present. None of second to fifth pleura acuminate, posteroventral margin of fifth pleuron slightly angular. Telson with 1–3 pairs of minute to small teeth and 1 pair of slender spines on lateral margins and 2 pairs of submarginal spines on posterolateral portion; dorsal surface with 2 pairs of teeth. Eye not reaching midlength of rostrum, cornea opaque. Antennal scaphocerite not reaching tip of rostrum. Chelipeds massive, unequal; major chela with dactylus shorter than palm, minor chela with dactylus subequal in length to palm; palms moderately setose, each with 4 moderately large teeth on dorsal margin; meri unarmed on dorsal margin, ventromesial margins each with prominent subdistal tooth followed by row of small denticles decreasing in size proximally. Uropodal exopod with longitudinal row of tiny teeth on middorsal ridge.

Description. Body (Fig. 20) moderately stout. Rostrum (Fig. 21A–C) 0.5 times of distance between rostral base and cervical groove or 0.26 times as long as carapace, narrowly triangular with subacute tip in dorsal view; lateral margin with 2 or 3 small subacute teeth and supraocular tooth, continuous with distinct lateral gastric carina on carapace; dorsal surface shallowly concave. Carapace (Figs. 20, 21A–C) nearly smooth on surface; dorsal surface nearly straight, gastric re-

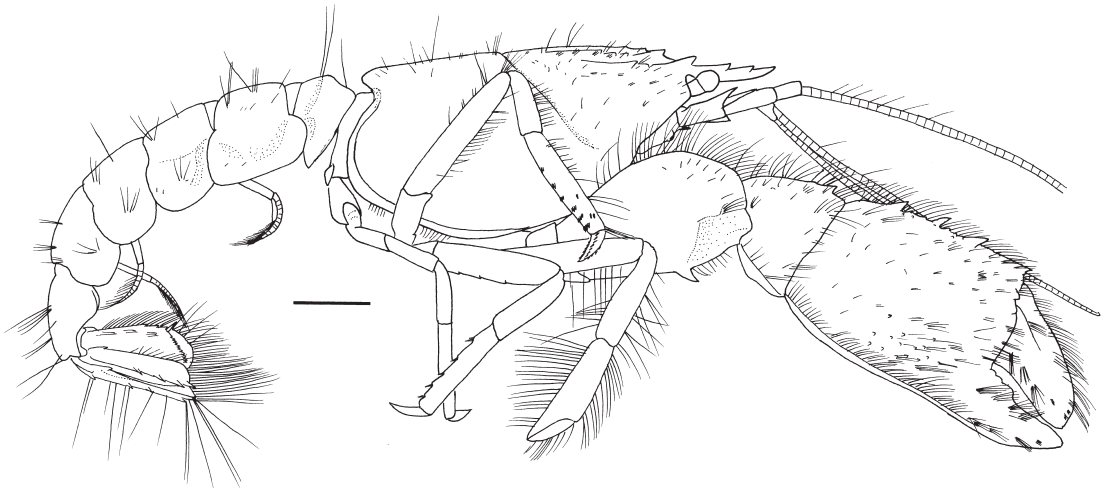

Fig. 20. *Calaxius izuensis* sp. nov., holotype, male (cl 8.5 mm), CBM-ZC 10039, entire animal, lateral view. Scale bar: 2 mm.

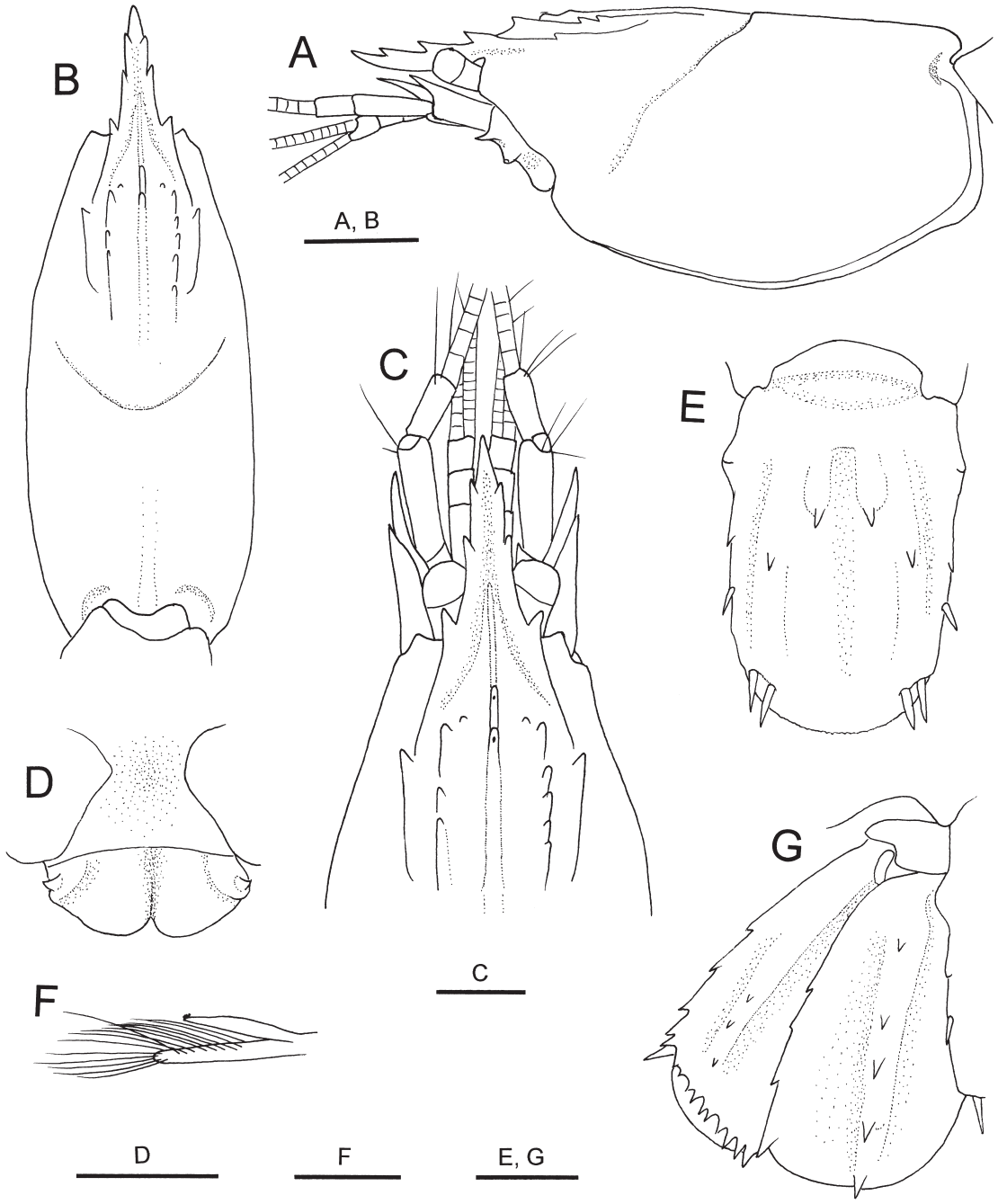

Fig. 21. *Calaxius izuensis* sp. nov., holotype, male (cl 8.5 mm), CBM-ZC 10039. A, carapace and cephalic appendages (setae omitted), lateral view; B, carapace, dorsal view; C, anterior part of carapace and cephalic appendages, dorsal view; D, thoracic shield on seventh sternite, ventral view; E, telson, dorsal view (setae omitted); F,, appendices interna and masculina of second pleopod, dorsal view; G, left uropod, dorsal view (setae omitted). Scale bars: 2 mm for A, B; 1 mm for C, D, E, G; 0.5 mm for F.

gion slightly sloping down to rostrum; median gastric carina distinct, extending beyond rostral base anteriorly and not reaching to cervical groove, with 1–3 small, unequal denticles plus obtuse convexity anterior to midway between rostral base and cervical groove; submedian carina with 3–5 small teeth or denticles; lateral gastric carina extending beyond midway between rostral base and cervical groove, bearing 1 small tooth at midlength; trace of postcervical carina discernible in posterior part (Fig. 21B); cervical groove distinct, extending to pterygostomial region; suborbital lobe rounded; pterygostomial margin broadly rounded.

Seventh thoracic sternite with shield (Fig. 21D) divided into two sections by distinct transverse ridge; anterior section triangular, slightly depressed below; posterior section deeply divided in midline, each lateral angle produced in subacute tooth directed ventrally.

Abdomen (Fig. 20) with some tufts of setae on each somite. First abdominal pleuron triangular, produced slightly beyond ventral margin of second pleuron. Second pleuron asymmetrical; lateral surface with shallow; ventral margin unarmed, rounded at either angle. Third to fifth pleura rounded. Sixth pleuron broadly rounded ventrally, with blunt posterolateral projection. Telson (Fig. 21E) subrectangular, 1.4 times as long as broad; lateral margin with low convexity proximally, 1–3 tiny teeth or denticles and 1 small spine slightly posterior to midlength; posterior margin convex without posteromedian spine, posterolateral area with 2 subequal spines; dorsal face shallowly sulcate medially, submedian ridges each terminating posteriorly in small tooth at anterior 0.4, dorsolateral ridges low, obsolete, with 1 small tooth located at about midlength of telson.

Eyestalk (Fig. 21A, C) about 0.4 length of rostrum; cornea subequal in length to and broader than eyestalk, lightly pigmented. Antennular peduncle (Fig. 21A, C) slightly overreaching distal margin of fourth segment of antennal peduncle; statocyst lobe on first segment unarmed; flagella longer than carapace. Antennal peduncle (Fig. 21A, C) with first segment bearing 1 tiny tooth at ventromesial distal angle and 1 longer tooth on ventrodistal margin medially; second segment with straight dorsolateral distal tooth reaching midlength of scaphocerite; scaphocerite simple, acuminate, distinctly overreaching midlength of fourth segment; third segment with 1 small tooth at ventromesial distal angle; fourth segment slightly longer than second segment (except for dorsolateral distal tooth); fifth segment about half length of fourth segment; flagellum exceeding twice of carapace length.

Third maxilliped (Fig. 22A) moderately slender. Coxa with 1 small ventrodistal tooth. Basis with 1 or 2 teeth ventrodistally. Ischium (Fig. 24A) with distomesial angle produced into strong, incurved tooth, crista dentata consisting of row of teeth (distal 11 teeth subequal in size, proximal denticles small, decreasing in size); ventral margin with 2 tiny teeth in proximal half. Merus with 2 greatly unequal teeth on ventral margin (distal tooth terminal, largest). Carpus with 1 small spine at ventrolateral distal angle. Exopod consisting of 2 segments, reaching distal margin of merus.

Chelipeds (Fig. 23) unequal. Major (right) cheliped (Fig. 23A, B) with coxa bearing 1 minute ventromesial distal denticle and 1 tiny posteromesial denticle. Basis unarmed. Ischium with 1 moderately large tooth and 2 minute denticles on ventral margin. Merus with dorsal margin fairly convex, sharply carinate, with 1 tiny tooth subdistally and row of setae; lateral face with scattered setae dorsally, with deep excavation distoventrally; mesial face smooth; ventrolateral margin unarmed, ventromesial margin with 1 conspicuous tooth arising distal to midlength and row of small teeth or denticles decreasing in size proximally. Carpus higher than long, dorsal margin with small subdistal tooth and row of numerous setae; lateral face with tufts of short to long setae dorsally and distally, and with sharp longitudinal carina along ventral margin; mesial face nearly smooth. Chela massive, 1.9–2.1 times longer than high. Palm 1.2–1.3 times longer than high, dorsal surface non-carinate, bearing 4–5 moderately large, forwardly directed teeth and small tubercles, these armature partially obscured by dense tufts of

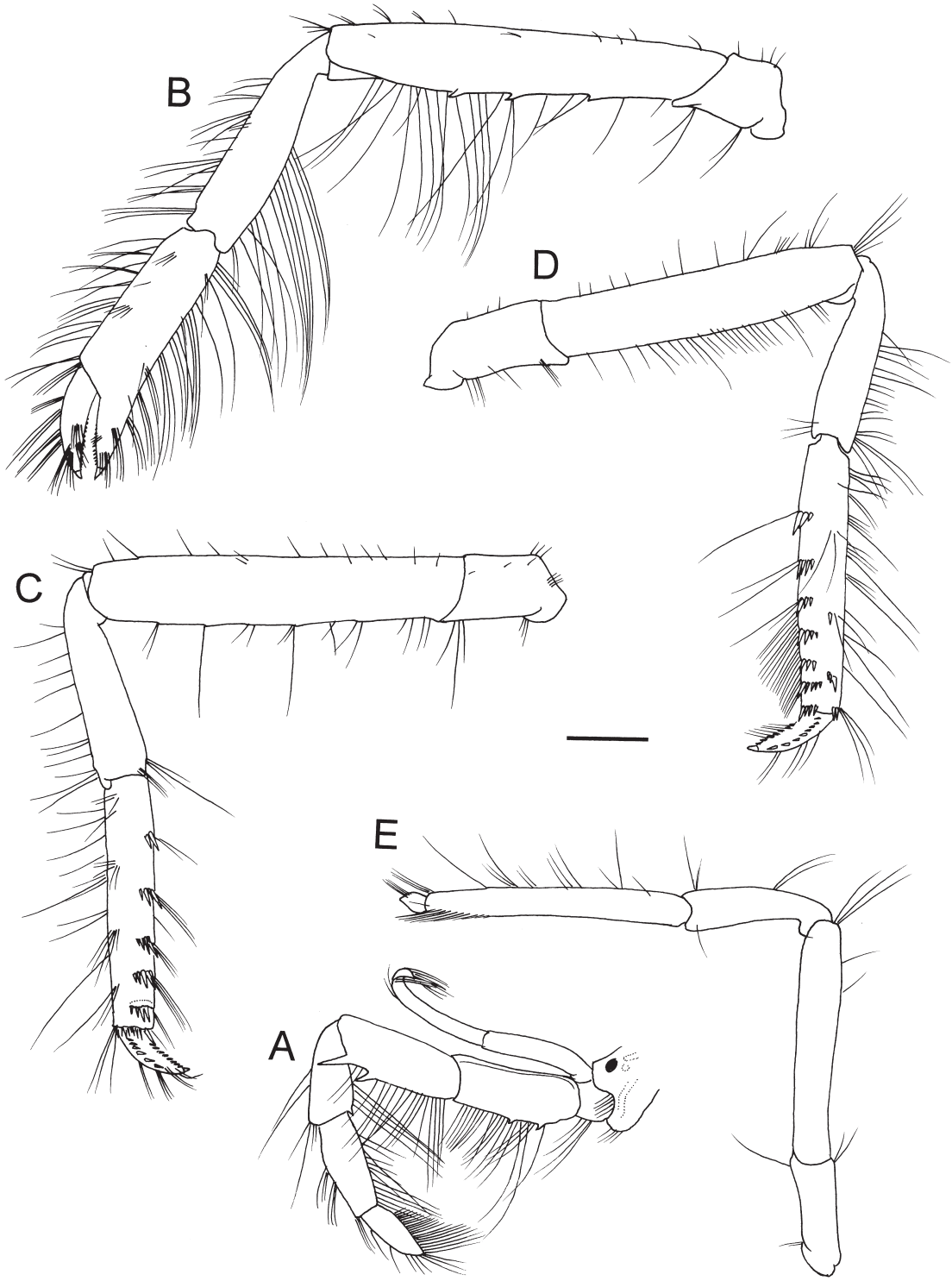

Fig. 22. *Calaxius izuensis* sp. nov., holotype, male (cl 8.5 mm), CBM-ZC 10039. A, left third maxilliped, lateral view (epipod missing); B, left second pereopod, lateral view; C, left third pereopod, lateral view; D, right fourth pereopod, lateral view; E, left fifth pereopod, lateral view. Scale bar: 2 mm.

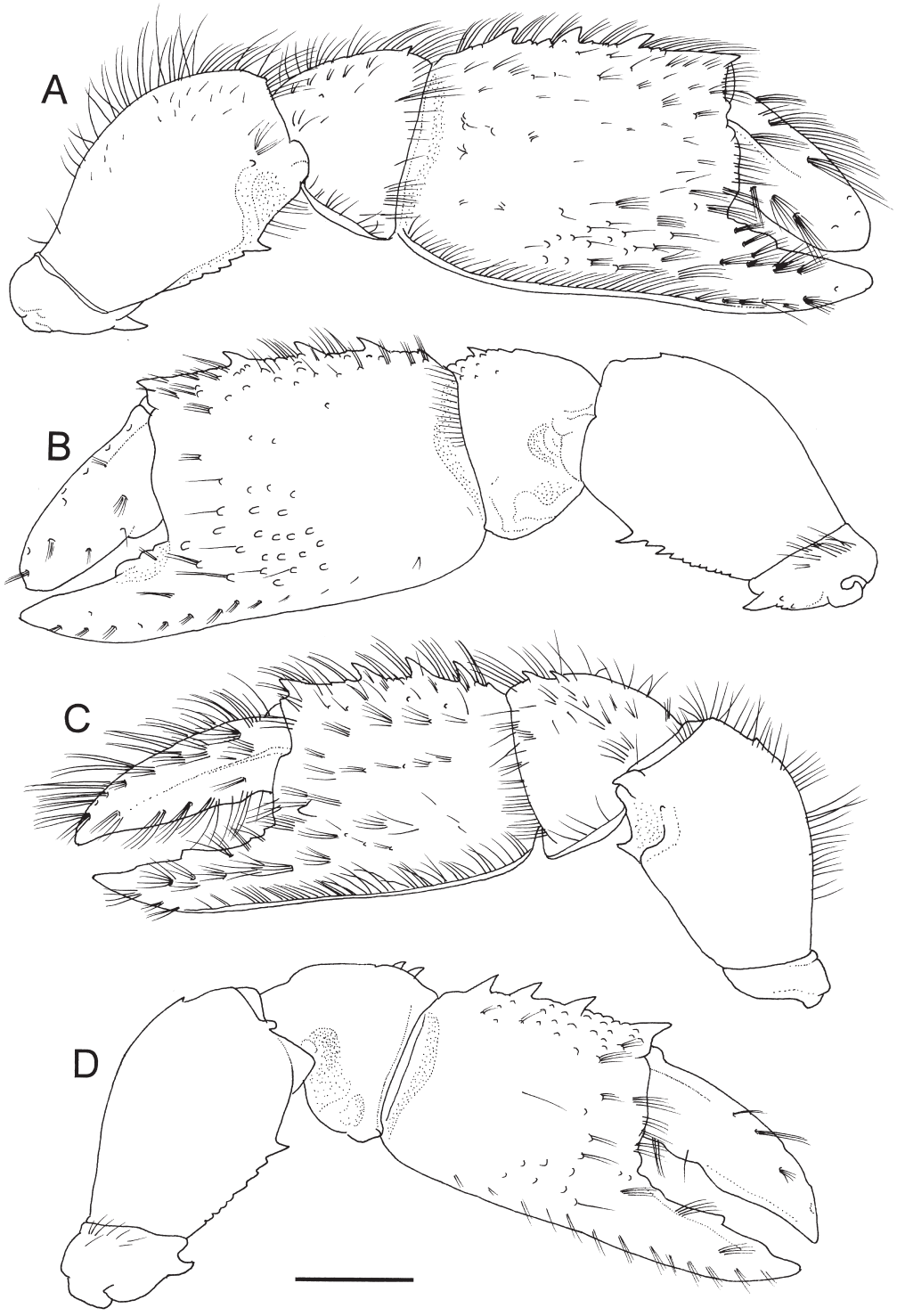

Fig. 23. *Calaxius izuensis* sp. nov., holotype, male (cl 8.5 mm), CBM-ZC 10039. A, major (right) cheliped, lateral view (setae partially omitted); B, same, mesial view (setae partially omitted); C, minor (left) cheliped, lateral view (setae partially omitted); D, same, mesial view (setae partially omitted). Scale bar: 1 mm.

moderately long plumose setae; lateral face slightly convex, with sparse tufts of short setae and small scattered tubercles ventrally proximal to base of fixed finger, sharp carina along ventral margin bearing numerous setae and extending onto fixed finger; mesial face with scattered small tubercles dorsally and distally, and with longitudinal row of tufts of short stiff setae extending onto fixed finger; ventral surface rounded. Fixed finger with slightly convex ventral margin; cutting edge with 3 low, broadly rounded teeth proximally. Dactylus nearly straight, with numerous tufts of long stiff setae on rounded dorsal surface; tip eroded; both lateral and mesial faces elevated in midline as distinct ridge in proximal half and bearing tufts of stiff setae; cutting edge without conspicuous teeth; narrow hiatus between fingers when dactylus closed.

Minor (left) cheliped (Fig. 23C, D) generally similar to major cheliped in shape and setation. Coxa similarly armed to right. Basis unarmed. Ischium with 1 moderately large tooth and few minute denticles on ventral margin. Merus with obtuse tubercle subdistally on dorsal margin; ventromesial margin with 1 conspicuous subdistal tooth and row of small tubercles decreasing in size proximally. Carpus with 2 small subdistal teeth on dorsal surface. Chela 2.1–2.2 times longer than high. Palm about as long as high, dorsal surface non-carinate, bearing 4 moderately large teeth and small tubercles; lateral face with 1 conspicuous spiniform tubercle proximal to base of fixed finger and some minute tubercles, ventrolateral carina sharp, extending onto mixed finger; mesial face with scattered small tubercles proximal to base of fixed finger. Fixed finger nearly straight, terminating in subacute tip, with 1 small but conspicuous tooth at midlength and 2 low, obtuse teeth proximally. Dactylus nearly straight, about 1.2 times longer than palm, terminating in subacute tip; both lateral and mesial faces elevated in midline as distinct ridge in proximal half; cutting edge with 2 very low teeth in proximal half; narrow hiatus between fingers when dactylus closed.

Second pereopod (Fig. 22B) moderately slender. Ischium unarmed. Merus with 3 small ventral teeth in proximal 0.6 Carpus 0.9 times as long as chela. Fingers about 0.6 times as long as palm, each with row of minute corneous spinules on cutting edge.

Third pereopod (Fig. 22C) unarmed on ischium to carpus. Merus with 0–3 minute denticles on ventral margin. Propodus with 5 transverse sets of corneous spinules and row of numerous spinules on distal margin. Dactylus (Fig. 24B, C) gently curving; lateral surface with row of small corneous spines along extensor margin and row of minute spinules along flexor margin; mesial face unarmed.

Fourth pereopod (Fig. 22D) unarmed on ischium to carpus. Propodus with 6 transverse sets of spinules on lateral face and obliquely longitudinal line of setae, representing grooming apparatus, on distal half of mesial face (Fig. 24D); distal margin also with row of spinules. Dactylus (Fig. 22E, F) about 0.4 times as long as propodus, slightly twisted proximally and gently curving; lateral surface with row of spinules along extensor margin and row of minute spinules along flexor margin, and with few prominent tufts of setae on extensor margin, mesial face unarmed.

Fifth pereopod (Fig. 22E) unarmed on ischium to carpus. Propodus unarmed on lateral face, bearing obliquely longitudinal line of grooming setae in distal half of mesial face; flexor distal margin slightly produced, bearing few spinules. Dactylus (Fig. 2H, I) lanceolate, terminating in acute unguis, somewhat twisted; extensor surface with tufts of setae; flexor surface excavated; outer margin with moderately spaced spinules distally, followed by closely set, microscopically minute denticles, outer margin with 5 spinules. Well developed gonopores present.

Gill formula summarized in Table 2.

First pleopod absent in males. Second to fifth pleopods moderately narrow, each with well-developed appendix interna. Appendix masculina on second pleopod longer than appendix interna (Fig. 21F), bearing numerous setae on apex to ventral surface.

Uropod (Fig. 21G) with endopod 1.8 times as

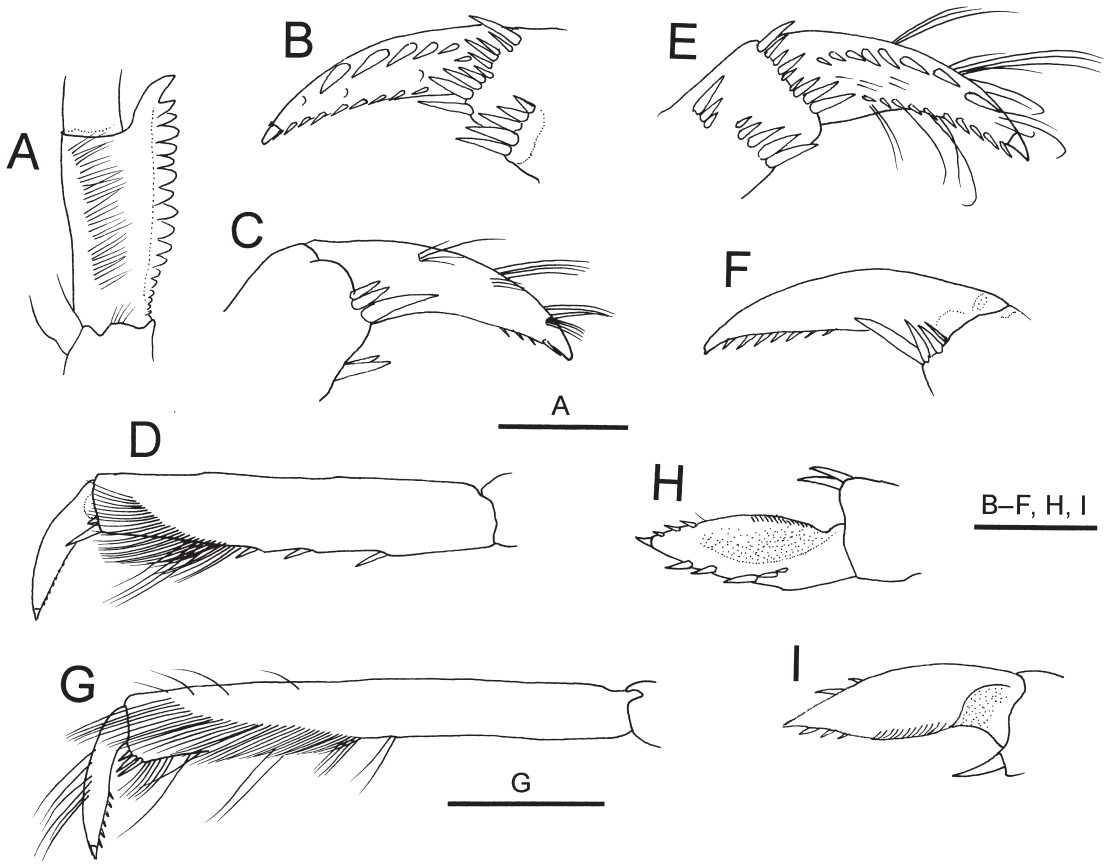

Fig. 24. *Calaxius izuensis* sp. nov., holotype, male (cl 8.5 mm), CBM-ZC 10039. A, ischium of left third maxilliped, dorsal view; B, dactylus of left third pereopod, lateral view; C, same, mesial view; D, dactylus and propodus of right fourth pereopod, mesial view; E, dactylus of right fourth pereopod, lateral view; F, same, mesial view; G, dactylus and propodus of left fifth pereopod, flexor-lateral view; H, dactylus of left fifth pereopod, flexor view; I, same, extensor view. Scale bars: 1 mm for A, D, G; 0.5 mm for B–C, E, F, H, I.

Table 2. Gill formula of *Calaxius izuensis* sp. nov.

	Thoarcic somites							
	1	2	3	4	5	6	7	8
	Maxillipeds			Pereopods				
	1	2	3	1	2	3	4	5
Pleurobranchs	0	0	0	1	1	1	1	0
Arthrobranchs	0	r	2	2	2	2	2	0
Podobranchs	0	0	1	1	1	1	0	0
Epipods	1	1	1	1	1	1	1	0
Exopods	1	1	1	0	0	0	0	0
Mastigobranchs	0	0	1	1	1	1	1	0
Setobranchs	0	0	0	1	1	1	1	0

long as wide, with 4 small teeth on posterior half of lateral margin (posterolateral tooth strongest); median ridge on dorsal surface with row of 4 or 5 teeth, posteriormost tooth submarginal, reaching beyond posterior margin. Exopod (Fig. 21G) subequal in length to endopod; lateral margin slightly convex, with 3 or 4 small teeth on posterior half, and with moderately long posterolateral spine; dorsal ridge with 3–5 small denticles in posterior half; transverse suture serrate.

Coloration in fresh. Carapace and abdomen generally red, with white median stripe extending from midlength of carapace to posterior end of sixth abdominal somite; first to sixth abdominal

tergites each with white obliquely longitudinal stripe on either lateral side. Chelipeds generally red, distal part of dactylus white; fixed finger with subdistal white band; carpus and distal half of merus red.

Distribution. Known only from Hyōtan-se Bank, Izu Islands, 440–465 m.

Remarks. The genus *Calaxius* was established by Sakai and de Saint Laurent (1989) for eight species: *Axius inaequalis* Rathbun, 1901, *Axius pailoloensis* Rathbun, 1906, *Calastacus euophthalmus* De Man, 1905, *Calocaris* (*Calastacus*) *sibogae* De Man, 1925, *Calocaris* (*Calastacus*) *mimasensis* Sakai, 1967, *Calocaris* (*Calastacus*) *jenneri* Williams, 1974, *Calocaris* (*Calastacus*) *oxypleura* Williams, 1974, and a newly described species, *Calaxius acutirostris* Sakai and de Saint Laurent, 1989 (type species). Later, five more species have been described: *C. manningi* Kensley, Lin & Yu, 2000, *C. tungi* Zhong, 2000, *C. galapagensis* Kensley and Hickman, 2001, *C. carneyi* Felder and Kensley, 2004, and *C. kensleyi* Clark, Galil and Poore, 2007. Clark *et al*. (2007) assigned *Axiopsis* (*Axiopsis*) *pitatucensis* De Man, 1925, a species designated as a type species of the genus *Manaxius* Kensley, 2003 (Kensley, 2003), to *Calaxius*, as they found that the species fits *Calaxius* in every diagnostic aspect.

The present new species fits closely the generic diagnosis emended by Clark *et al*. (2007), and is most similar to *C. pailoloensis*, *C. sibogae* and *C. kensleyi* in the armature of the gastric carina on the carapace, non-acuminate pleura of the fourth and fifth abdominal somites and the general armature of the cheliped palms. Nevertheless, the new species differs from these three species in having rounded second and third abdominal pleura and the cheliped meri each bearing a row of small denticles following conspicuous subdistal tooth on the ventromesial margin. In the latter three species, the posteroventral margins of the second and third pleura are angular; each cheliped merus bears a few conspicuous teeth on the ventromesial margin (Rathbun, 1906; De Man, 1925; Sakai and de Saint Laurent, 1989; Clark *et al*., 2007). *Calaxius kensleyi* further differs from the new species in having more elongate dorsal teeth of each cheliped palm (see Clark *et al*., 2007: Figure 4). *Calaxius izuensis* sp. nov. is further distinguished from *C. sibogae* by the less elongated ocular peduncle not reaching the midlength of the rostrum, the distinctly stouter third maxilliped bearing two, instead of one, prominent teeth on the ventral margin of the merus, and the lack of sharp teeth on the cutting edges of the chela fingers. In *C. sibogae*, the ocular peduncle reaches the midlength of the rostrum; the cheliped fingers bear prominent sharp tooth proximally on each cutting edge (De Man, 1925).

Calaxius euophthalmus is also similar to the new species, but it differs from *C. izuensis* in the lack of conspicuous teeth on the dorsal margin of the cheliped palms and the posteriorly narrowing telson bearing two spines on lateral margin (De Man, 1925). In the new species, the dorsal margin of the cheliped palm is armed with four or five conspicuous teeth; the telson has parallel-sided lateral margins, which bear only one spine on each side.

Etymology. Named after the Izu Islands, embracing the type locality of this new species.

Genus ***Calocarides*** Wollebaek, 1908

51. ***Calocarides soyoi*** (Yokoya, 1933) [Jn: Soyo-ana-ebi]

Axius soyoi Yokoya, 1933: 49, fig. 25 [type locality: seven Japanese localities].

Calocarides soyoi: Kensley and Komai, 1992: 81, fig. 1; Kensley, 1996: 66; Komatsu and Komai, 2009: 588, fig. 2A.

Material examined. TR/V *Shin'yo-maru*, 2002 cruise, stn 21, Izu Islands, S of Kōzu Island, 35°00.1′N, 139°12.28′E, 362–298 m, 23 October 2002, 1 male (cl 12.2 mm), CBM-ZC 10047.

Distribution. Japanese endemic, Pacific side from the Kashima Sea off Fukushima Prefecture to Kyūshū, 138–362 m (Kensley and Komai, 1992; Komatsu and Komai, 2009; this study).

Genus ***Eiconaxius*** Bate, 1888

52. ***Eiconaxius farreae*** Ortmann, 1891 [New Jn: Kaimen-yadori-ana-ebi] (Fig. 10D)

Eiconaxius farreae Ortmann, 1891: 49, pl. 1, fig. 4 [type locality: Sagami Bay, Japan, 180–360 m]; Sakai, 1992: 162: fig. 5; Sakai and Ohta, 2005: 70, figs. 1, 2.

Axius (*Eiconaxius*) *farreae*: De Man, 1925: 125, text-fig. 3–3d.

Materials examined. R/V *Rinkai-maru*, Sagami Bay, off Misaki, 35°11.51′N, 139°28.38′E, 491–580 m, 16 March 2001, dredge (stn 2), 1 male (cl 5.1 mm), 1 ovig. female (cl 4.7 mm), CBM-ZC 10054; Sagami Bay, W of Arasaki, 35°12.186′N, 139°29.619′E, 351–338 m, mud, 22 January 2003, dredge (stn 3), 3 males (cl 4.3–5.9 mm), 1 female (cl 5.3 mm), 1 ovigerous female (cl 6.4 mm), CBM-ZC 10058. FB *Idoinkyo-maru*, Uraga Strait off Kurihama, 250–300 m, 8 March 2002, commercial trap for scampi, coll. T. Komai, 1 ovigerous female (cl 6.5 mm), NSMT-Cr S850. TR/V *Shin'yo-maru*, 2002 cruise, stn 6, 3 males (cl 4.2–4.3 mm), 1 female (cl 5.5 mm), NSMT-Cr S851; stn 23, 1 juvenile (cl 3.5 mm), SE of Hatsushima Island, 35°00.51′N, 139°12.30′E, 486–549 m, 23 October 2002, dredge, CBM-ZC 10048. R/V *Tansei-maru*, KT07-31, stn L-2'-500, Sagami Sea, S of Jōgashima, 35°03.79′N, 139°35.53′E, 587–651 m, 28 November 2007, dredge, 2 males (cl 5.7, 6.1 mm), 1 female (cl 4.6 mm), CBM-ZC 10098; stn L-2'-600, 35°03.97′N, 139°34.93′E to 35°04.27′N, 139°34.96′E, 407–604 m, 28 November 2007, 1 female (cl 3.8 mm), CBM-ZC 10099.

Coloration in fresh. Body and appendages entirely whitish. Eggs also whitish. See Fig. 10D.

Distribution. Japanese endemic, Sagami Sea to Gotō Islands, 77–600 m (Sakai and Ohta, 2005).

Remarks. All specimens examined were found to live in colonies of a hexactinellid sponge *Farrea occa* Bowerbank, 1862.

53. ***Eiconaxius mortenseni*** Sakai, 1992 [New Jn: Marutsuno-kaimen-yadori-ana-ebi]

Eiconaxius mortenseni Sakai, 1992: 160, figs. 3, 4 [type locality: Sagami Bay, Japan, 366 m].

Materials examined. TR/V *Shin'yo-maru*, 2002 cruise, stn 29, Sagami Sea, SW of Izuōshima Island, 34°40.21′N, 139°18.62′E, 24 October 2002, 3 males (cl 2.8–3.4 mm), 2 females (cl 2.9, 3.4 mm), 1 ovigerous female (cl 3.3 mm), CBM-ZC 10049; same data, 1 male (cl 3.9 mm), 1 female (cl 3.8 mm), NSMT-Cr S852.

Distribution. Known only from the Sagami Sea area, 366–732 m (Sakai, 1992).

Genus ***Paracalocaris*** Sakai, 1991

54. ***Paracalocaris sagamiensis*** Sakai, 1991 [New Jn: Sagami-soko-ana-ebi]

Calocaris (*Calocaris*) *granulosus*: Sakai, 1987: 300. Not *Calocaris granulosus* Grebenyuk, 1975.

Paracalocaris sagamiensis Sakai, 1991: 31, figs. 1–5 [type locality: off Ōiso, Sagami Bay, Japan, 250–280 m].

Material examined. TR/V *Shin'yo-maru*, 2002 cruise, stn 15, Sagami Bay, 35°08.36′N, 139°19.47′E, 519–535 m, 22 October 2002, 1 hermaphrodite (cl 6.8 mm), CBM-ZC 10043.

Distribution. Presently known only from Sagami Bay, Japan, 250–535 m (Sakai, 1991; this study).

Concluding Remarks

This study records 54 benthic species from the area. As summarized in Table 3, three major groups categorized according to general distributional patterns can be recognized: (1) temperate water species restricted to East Asia, including Japanese endemics occurring only on the Pacific side; (2) West Pacific or Indo-West Pacific species; and (3) cosmopolitan species. The first category includes 25 species (46.2%), all of them do not occur in the Sea of Japan. The second category contains 24 species (44.4%), and most of them are widely distributed in the tropical or subtropical waters the Indo-West Pacific region. The third category includes only a single species, *Acanthe-*

Table 3. List of species found in the Sagami Sea area and Izu Islands, categorized according to general distributional pattern.

1. Temperate water species restricted to East Asia, including Japanese endemics (25 species) *Metacrangon holthuisi, M. proxima, M. similis, Neocrangon sagamiensis, Paracrangon okutanii, P. ostlingos, Prionocrangon dofleini, Sclerocrangon unidentata, Glyphocrangon hastacauda, Lebbeus compressus, L. nudirostris, L. spongiaris, L. tosaensis, L. unguiculatus, Pandalopsis gibba, P. miyakei, Pandalus nipponensis, P. teraoi, Parastylodactylus hayashii, Metanephrops japonicus, M. sagamiensis, Calocarides soyoi, Eiconaxius fareae, E. mortenseni, and Paracalocaris sagamiensis.*
2. West Pacific or Indo-West Pacific species (24 species) *Aristaeomorpha foliacea, Benthesicymys investigatoris, Hymenopenaeus halli, Sicyonia adunca, S. laevis, Aegaeon rathbuni, Lissosabinea indica, Parapontophilus demani, Eugonatonotus chacei, Glyphocrangon major, Nematocarcinus gracilis, Heterocarpus hayashii, Plesionika nesisi, P. orientalis, P. semilaevis, P. sindoi, P. williamsi, Leptochela gracilis, Pasiphaea japonica, Stylodactylus licinus, Spongicola andamanicus, Polycheles helleri, and Puerulus angulatus.*
3. Cosmopolitan (1 species) *Acanthephyra eximia.*
4. Information limited (4 species) *Lebbeus brevicornis* sp. nov., *Paraspongicola acantholepis* sp. nov., *Ambiaxiopsis altimanus* gen., sp. nov., *and Calaxius izuensis* sp. nov.

phyra eximia, which is widespread in the world oceans. The large proportion of the tropical West Pacific species present in the current collections supports the strong influence of the warm Kuroshio Current in the area (see Senou *et al*., 2006).

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相模灘およびその周辺海域のエビ類（甲殻亜門：十脚目）

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国立科学博物館主催のプロジェクト研究「相模灘およびその沿岸地域における動植物相の経時的比較に基づく環境変遷の解明」（2001～2005 年）および「相模灘における生物多様性の起源探求に関する研究　フォッサマグナ要素および伊豆－小笠原弧」（2006～2010 年）により，相模灘および伊豆諸島海域から採集された深海性エビ型十脚目甲殻類について分類学的な研究を行った．さらに，千葉県立中央博物館と国立科学博物館に所蔵されている材料もあわせて検討した．結果として，2 亜目 6 下目に所属する 54 種が同定された．そのうち，以下の 4 種が新種（1 種には新属を創設）として記載された：*Lebbeus brevicornis* sp. nov.（コエビ下目モエビ科）（新称：コツノイバラモエビ）；*Spongicola acantholepis* sp. nov.（オトヒメエビ下目ドウケツエビ科）（新称：トゲヒメドウケツエビ）；*Ambiaxiopsis altimanus* gen. et sp. nov.（アナエビ下目アナエビ科）（新称：スベスベシンカイアナエビ）；*Calaxius izuensis* sp. nov.（アナエビ下目アナエビ科）（新称：イズベニスジアナエビ）．以下の 4 種が本邦水域から初めて記録された：*Alpheus nonalter* Kensley, 1969（コエビ下目テッポウエビ科）（新称：フカバホソウデテッポウエビ）；*Glyphocrangon major* Komai, 2004（コエビ下目トゲヒラタエビ科）（新称：ヒイロオオトゲヒラタエビ）；*Lebbeus unguiculatus* Chang, Komai and Chan, 2010（コエビ下目モエビ科）（新称：ホソツメイバラモエビ）；*Plesionika nesisi* (Burukovsky, 1986)（コエビ下目タラバエビ科）（新称：クレナイミノエビモドキ）．さらに，最近東シナ海から記載された *Neocrangon oritalis* Han and Li, 2009 は *N. sagamiensis* Balss, 1913 と同種であることが判明し，前者は後者のシノニムとされた．新たに採集された雌標本を検討した結果，*Neostylodacytlus hayashii* Komai, 1997 のタイプシリーズには 2 種が混在し，そのうち一方はハネツキエビ属の未記載種で，*N. hayashii* はサンゴエビ属 *Parastylodactylus* に帰属することが判明した．このことにより，新組み合わせ *Parastylodactylus hayashii* を提唱した．この処置に伴い，本種の和名をハヤシサンゴエビと改称した．

和名のなかった以下の 9 種について新称を提唱した：*Sicyonia adunca* Crosnier, 2003（新称：ツノマタイシエビ）；*Lissosabinea indica* (De Man, 1918)（新称：タチエビジャコ）；*Metacrangon holthuisi* Komai, 2010（新称：クリイロトゲエビジャコ）；*M. proxima* Kim, 2005（新称：サガミトゲエビジャコ）；*Paracrangon ostlingos* Komai and Kim, 2004（新称：マキゲヤツアシエビ）；*Parapntophilus demani* (Chace, 1984)（新称：ヒメシンカイエビジャコ）；*Eiconaxius farreae* Ortmann, 1891（新称：カイメンヤドリアナエビ）；*Eixonaxius mortenseni* Sakai, 1992（新称：マルツノカイメンヤドリアナエビ）；*Paracalocaris sagamiensis* Sakai, 1991（新称：サガミソコアナエビ）．

出現した 54 種の分布を検討した結果，日本固有種を含む東アジア固有要素（25 種），インド太平洋熱帯域要素（24 種），汎世界的要素（1 種）の 3 カテゴリーが認められた．4 新種については本研究での記録に限られ，分布情報は不十分である．相模灘海域は冷水要素の卓越する三陸・鹿島灘海域に近接するが（Komai and Komatsu, 2009），冷水要素が完全に欠如し，暖流である黒潮の強い影響下にあることが支持される．