

ACKNOWLEDGMENTS

I thank Torben Wolff, deputy leader of the "Galathea" Expedition, who kindly made the present material available for study. I owe much to his patience for very long delay in completion of this study. The color notes on living animals included in this paper were provided by Dr. Wolff. Comparative materials were made available on loan from Julie W. Ambler then of Texas A&M University, Paul F. Clark, Sheila Halsey and Raymond W. Ingle of the Natural History Museum, London, Charles Oliver Coleman of the Museum für Naturkunde an der Humboldt-Universität zu Berlin, Berlin, Ken-Ichi Hayashi of the National Fisheries University, Shimonoseki, Eiichi Iizuka at Numadsu, Shizuoka, Rafael Lemaitre and the late Raymond B. Manning of the Smithsonian Institution, Washington, D.C., Elizabeth Louw and Michelle G. van der Merwe of the South African Museum, Cape Town, Masatsune Takeda and Masayuki Osawa of the National Science Museum, Tokyo, Michael Türkay of the Senckenberg Museum, Frankfurt a.M., and Kyoichiro Ueda of the Kitakyushu Museum of Natural History, Kitakyushu. Access to type and comparative materials was made possible by the late Fenner A. Chace, Jr. of the Smithsonian Institution, Lipke B. Holthuis and Charles H.J.M. Fransen of the Nationaal Natuurhistorisch Museum, Leiden, Alain Crosnier and the late Michèle de Saint Laurent of the Muséum national d'Histoire naturelle, Paris, Dirk Platvoet of the Zoological Museum, Amsterdam, M. Türkay, and Elisabeth Lang of the Musée Zoologique, Strasbourg, during my visits to these institutions. At my request the late Janet Haig, then of the University of Southern California, Los Angeles, kindly examined the "Velero" specimens of

Munidopsis depressa, as also did Rafael Lemaitre the type material of *Munida* species in the USNM collection. Rodolfo Quintana then of Hokkaido University, Sapporo translated the Spanish article of Bahamonde (1964), and I. V. Khodkina of the University of Moscow, Moscow provided me with station data for her publication of 1975. Arthur Anker of the University of Alberta, Edmonton translated a Russian article of Khodkina (1973). Paul Clark, Charles Oliver Coleman, Nguyen Ngoc-Ho of the Muséum national d'Histoire naturelle, Paris, Dirk Platvoet, Rafael Lemaitre and Karen Reed of the Smithsonian Institution, and Karin Sindemark of the Swedish Museum of Natural History, Stockholm helped me by locating type materials under their care. Tin-Yam Chan of the National Taiwan Ocean University, Keelung, Gustavo A. S. de Melo and Marcos Tavares of the University of Sao Paulo, and Rafael Lemaitre helped me with references inaccessible to me. The manuscript was reviewed by Shane T. Ahyong of the Australian Museum, Sydney, Enrique Macpherson of the Centro de Estudios Avanzados de Blanes, Gerona, Colin L. McLay of the University of Canterbury, Christchurch, and Gary C. B. Poore of Museum Victoria, Melbourne. The manuscript also benefited from discussions with Enrique Macpherson and Shane Ahyong. Alain Crosnier allowed me to include part of the collections made by MUSORSTOM projects in the present report. Michel E. Hendrickx of the Instituto de Ciencias del Mar y Limnología, Mazatlan, helped me with checking some characters of eastern Pacific species of *Munida*. To all of them I wish to express my sincere appreciation.

SYSTEMATIC ACCOUNT

Family CHIROSTYLIDAE Ortmann, 1892

Diptycinés A. Milne Edwards & Bouvier, 1894: 296, 312.

Chirostylidae Ortmann, 1892: 241. — Balss, 1957: 1594. Davie, 2002: 29.

Uroptychidae Alcock, 1901: 278.

Diagnosis: Carapace with or without transverse striae, rostrum and supraocular spines present or absent. Sternal plastron consisting of sternites 3–7, no sternal

plate for thoracic somite 8. Tailfan folded beneath preceding abdominal segment, telson transversely divided into 2 lobes. Antennal peduncle consisting of 5 articles, antennal acicle present or absent. Mandible with incisor ridge serrated. Mxp 3 lacking epipod.

Remarks: The thoracic sternites in the Chirostylidae are divided into anterior and posterior parts. The anterior part is usually depressed in ventral view. In the genera *Chirostylus* Ortmann, 1892 and *Uroptychus* Henderson, 1888 and one of two groups of species in

Gastroptychus Caullery 1896 (including *G. brachyterus* n. sp., for example; see below under the “Remarks” of *Gastroptychus*), it is excavated or strongly depressed from the level of the sternal plastron in order to accommodate distal segments of the Mxps 3 when folded. When the Mxps 3 are extended forward, this part and corresponding appendages, the Mxps 1–3, are visible by careful examination in a ventral aspect. Apparently, the Mxps 3 arise from the excavated part directly anterior to the anterior-most part of the sternal plastron. In *Eumunida* Smith, 1883 and another group of species in *Gastroptychus* (including *G. rogeri* Baba, 2000, for example), the anterior-most part of the sternal plastron is gradually sloping down anteriorly (in ventral aspect), smoothly continuous to the excavated sternum without cliff between submedian processes or lobes. In *Eumunida* and *Pseudomunida* the excavated sternum anteriorly terminates between the closely placed Mxps 2. In *Chirostylus* and one of two groups in *Gastroptychus*, it reaches between Mxps 1 that are widely separated.

The family contains six genera: *Chirostylus* Ortmann, 1892; *Eumunida* Smith, 1883; *Gastroptychus* Caullery, 1896; *Pseudomunida* Haig, 1979; *Uroptychodes* Baba, 2004; *Uroptychus* Henderson, 1888.

Key to genera

1. Posterolateral margin of carapace strongly excavated. Anterior margin of sternite 3 straight transverse. Basal articles of ocular peduncles visible in dorsal view by short rostral base *Chirostylus* Ortmann, 1892
- Posterolateral margin of carapace not distinctly defined or slightly excavated. Anterior margin of sternite 3 concave or sinuous. Basal articles of ocular peduncles barely visible in dorsal view by presence of well-developed rostrum 2
2. Supraocular spines present 3
- Supraocular spines absent 4
3. Lateral and mesial supraocular spines well developed. Oblique row of hepatic spines *Eumunida* Smith, 1883
- Lateral supraocular spine very small or barely discernible. Oblique row of hepatic spines absent *Pseudomunida* Haig, 1979
4. Rostrum spiniform. Anterior margin of sternal plastron representing two forms: one with somewhat concave anterior margin with row of spines; another one with sinuous anterior

- margin without median cliff bordering sternal plastron and excavated sternum, bearing pair of accompanying spines on anterior surface *Gastroptychus* Caullery, 1896
- Rostrum flattish, narrowly or broadly triangular. Anterior margin of sternal plastron bearing distinct cliff with or without pair of submedian spines 5
 - 5. P2 more slender than P3, dactylus entire on flexor margin *Uroptychodes* Baba, 2004
 - P2 as broad as P3, dactylus with spines on flexor margin *Uroptychus* Henderson, 1888

Genus *Chirostylus* Ortmann, 1892

Chirostylus Ortmann, 1892: 246. — Miyake & Baba, 1968: 379. — Osawa & Nishikiori, 1998: 386.

Diagnosis: Carapace dorsally rather smooth, with a number of spines or covered with numerous small spines. Pair of epigastric spines usually present. Lateral margin strongly excavated on posterior portion. Rostral base short (so as to allow basal articles of ocular peduncles visible in dorsal view), convex, with or without median spine. Anterior margin of sternal plastron nearly transverse, with row of spines; excavated sternum anteriorly terminating between Mxps 1. Abdomen lacking transverse ridges, segment 2 without anterolateral spine on pleura. G1 and G2 present. Ocular peduncles elongate, cornea barely or slightly dilated. Antennal acicle absent. Mxps 2, as well as Mxps 3 widely separated from each other. P1–4 very slender, spinose. P2–4 propodi very long relative to dactyli.

Remarks: The genus now contains five species, all from the Indo-West Pacific: *C. dolichopus* Ortmann, 1892 (35–140 m); *C. micheleae* Tirmizi & Khan, 1979 (75–140 m); *C. novaecaledoniae* Baba, 1991 (236–270 m); *C. ortmanni* Miyake & Baba, 1968 (10–90 m); *C. rostratus* Osawa & Nishikiori, 1998 (180 m). An unnamed species, very possibly new to science, was illustrated in color by Minemizu (2000) from a specimen taken from Iriomote-jima of the Ryukyu Islands. The members of the genus may be found on soft corals: *C. ortmanni* lives with alcyonaceans, gorgonaceans and antipatharians (Kato & Okuno, 2001; Minemizu, 2000) and *C. sp.* is found on gorgonaceans and antipatharians (Minemizu, 2000).

Osawa & Nishikiori (1998) noted that the diagnosis

of the genus given by Miyake & Baba (1968) should be modified to accommodate *C. rostratus*: the species bears a distinct rostral spine which is much smaller and often absent in the other species. However, the rostral structure of *Chirostylus* including *C. rostratus* is not exactly the same as that of *Gastroptychus*, the rostral base being much smaller as diagnosed above. They also suggested that a generic character of *Chirostylus* is the strongly excavated posterolateral portion of the carapace that exposes the coxa of the P4 in dorsal view. This feature, however, is also applicable to some species of *Gastroptychus* in which the excavation is not strong but the coxa of the P4 is visible dorsally.

The genus is close to one of two groups in *Gastroptychus* (see below under "Remarks" of *Gastroptychus*). *Chirostylus* is differentiated from *Gastroptychus* by the following: 1) the rostral base in *Chirostylus* is very short subtriangular or convex with or without a relatively small median spine so as to allow the basal articles of ocular peduncles visible in a dorsal view, whereas the basal articles of ocular peduncles in *Gastroptychus* are usually not visible in a dorsal view, being placed under the subtriangular rostral base with a well developed rostral spine; 2) the posterolateral margin of the carapace is strongly excavated instead of being barely or weakly so as in *Gastroptychus*; 3) the anterior margin of the sternal plastron is nearly straight and transverse with a row of spines, instead of being concave with a row of spines or sinuous with a pair of accompanying spines (see Fig. 3).

The present collection includes *C. dolichopus* only.

***Chirostylus dolichopus* Ortmann, 1892**

Figs. 2, 3a

Synonymy: see p. 208.

Material:

Th. Mortensen's Java-South Africa Expedition 1929-30, "Maurice" St. 38, off Tombeau Bay, Mauritius, 40 fm (73 m), sand, corals, swab, 08 Oct 1929: 1 ov. ♀ (5.7 mm), ZMUC CRU-11107.

Th. Mortensen's Java-South Africa Expedition 1929-30, "Maurice" St. 47, N of Port Louis, Mauritius, ca. 238 m, mud & corals, Sigsbee trawl, 6 Nov 1929: — 3 ♂ (2.6–5.1 mm), 1 ov. ♀ (3.7 mm), ZMUC CRU-11124.

Diagnosis: Carapace with pair of spines behind ocular peduncles, and 1 or 2 spines near anterior extremity of

branchial region. Rostrum not produced, rounded, with or without spine. Anterior margin of sternal plastron with 6 spines on transverse anterior margin. Basal article of antennular peduncle with distolateral process bearing 3–4 spines. Pterygostomian flap with a few to several spines. P2–4 dactyli having flexor margin with 6–8 spines, penultimate one stronger than ultimate.

Eggs: Eight eggs, measuring 1.02–1.40 x 1.08–1.10 mm.

Remarks: The size of the penultimate of the dactylar flexor marginal spines of the P2–4 seems to be a consistent character distinguishing *C. dolichopus* from *C. ortmanni* (see Miyake & Baba, 1968: 386, figs. 1, 2). This was verified by examination of the holotype (♂, 5.6 mm) of *C. dolichopus* now in the collection of the Musée Zoologique, Strasbourg (MZS 347) and specimens to hand of *C. ortmanni* (2 ♂, 6.1, 6.3 mm) found in association with a gorgonacean coral taken from Kagoshima Bay, Japan, in 25 m.

Ogawa & Matsuzaki (1993: 65) believed that *C. dolichopus* and *C. ortmanni* were identical, a conclusion drawn from the wide variations in spination of the carapace, pterygostomian flap and sternal plastron that they found on 14 specimens. They claimed that the variations fully encompass the differences between the two species noted by Miyake & Baba (1968). In the illustration provided by Ogawa & Matsuzaki (1993: fig. 2), however, no specimens bear a spine on the anterior branchial region directly behind the cervical groove, a feature characteristic of *C. dolichopus*. Conversely, the presence of a spine slightly posterior to the mid-branchial margin shown in their figure is typical of *C. ortmanni*. Further, they noted the number of anterior marginal spines of the sternite 3 ranges from two to four, but none of their material bears six as in *C. dolichopus*. Although their discussion does not include the dactylar spination of the P2–4, all these features suggest that their material is referable to *C. ortmanni* Miyake & Baba, 1968.

Masayuki Osawa read the above part in the manuscript of this paper, examined the material reported by Ogawa & Matsuzaki (1993), and confirmed that it could be referred to *C. dolichopus* (see Osawa & Nishikiori, 1998).

Range: Sulu Archipelago, Western Australia, off Tanzania, Mauritius and Japan; 35–238 m. This species seems to be a shallow-water inhabitant, but one of the present lots was taken from a transitional depth.

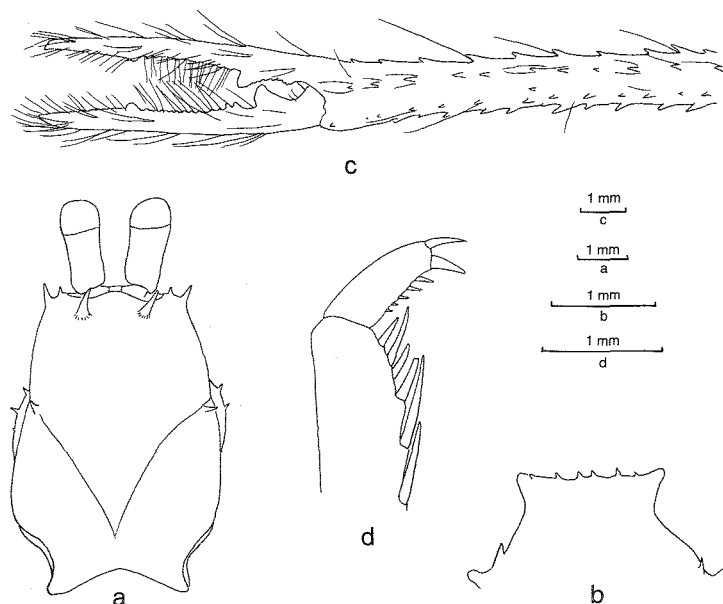


Fig. 2. *Chirostylus dolichopus* Ortmann, 1892, holotype, ♂, MZS 347: a, carapace, dorsal; b, anterior part of sternal plastron; c, distal articles of P1, right, dorsal; d, distal part of P4, left, mesial.

Genus *Eumunida* Smith, 1883

Eumunida Smith, 1883: 44. — Henderson, 1888: 168.

— A. Milne Edwards & Bouvier, 1894: 308.

Diagnosis: Carapace with oblique, posteriorly diverging row of 3 spines on hepato-gastric border; transverse striae usually distinct, rarely obsolete. Rostrum spiniform. Two supraocular spines well developed. Sternal plastron with 2 submedian processes or spines on anterior margin. Pleuron of abdominal segment 2 produced into spine. G1 absent, G2 reduced to small size or absent. Antennal peduncles with distal spine on each of articles 2–5, antennal acicle spiniform. Mxps 1, as well as Mxps 2 close to each other. P1 carpus with 2 or 3 terminal spines, palm often with ventral pad of velvet-like setae. P2–4 meri armed with row of spine on dorsal crest continued on to carpus.

Type species: *Eumunida picta* Smith, 1883, by monotypy.

Remarks: De Saint Laurent & Poupin (1996) revised the Indo-West Pacific species of the genus, described six new species, and provided a key to species from the Indo-West Pacific. They divided the species of the genus into two subgenera, *Eumunida* (= Group A of Gordon, 1930) and *Eumunidopsis* (Group B of Gordon, 1930), the former defined by the presence of a pair of well-developed spines on the sternite 4 and the latter by absence of the spines. In this paper the subgenera

are not used.

The present collection includes the following five species.

Eumunida ampliata de Saint Laurent & Poupin, 1996

Synonymy: see p. 208.

Material:

Manado Bight, 1°31'N, 124°47'E, 458 m, 12 Mar 1913, Great Northern Telegraph Co., Capt. Christiansen: — 1 ♂ (25.0 mm), 3 ♀ (8.3, 24.0 mm, largest specimen broken), ZMUC CRU-11596.

W of Nagasaki, Japan, 32°25'N, 128°33'E, 366 m, 1 Apr 1913, Great Northern Telegraph Co., Capt. Christiansen: — 2 ♂ (27.3, 35.3 mm), 1 ov. ♀ (16.8 mm), ZMUC CRU-11593.

Diagnosis: Carapace dorsally with 6 uninterrupted transverse ridges on posterior half, laterally with 3 spines in front of posterior cervical groove. Sternite 3 with 2 acute submedian spines on anterior margin, sternite 4 without lateral spines. P1 relatively massive, carpus with 3 distal spines; palm covered with soft fine setae; ventrally bearing row of spines and pad of setae. Pleopods wanting on abdominal segments 2–5 in male.

Remarks: De Saint Laurent & Poupin (1996) recently found that part of the material previously reported under *E. smithii* [material from S of Timor (Gordon,

1930; Baba, 1988) and from "Siboga" St. 251 and 253 off the Kei Islands (van Dam (1933)] was a distinct species that they named *E. ampliata*. *Eumunida smithii* is characterized by the Mxps 3 lacking a distolateral spine on the merus, rudimentary pleopods present on the abdominal segments 2–5, the P1 palm lacking a ventral pad of setae, the carapace bearing two lateral spines in front of the posterior cervical groove, and the sternite 4 unarmed anterolaterally.

Range: South of Timor, Kei Islands, Manado Bight, South China Sea off SW Formosa, and Japan; 204–458 m.

***Eumunida balssi* Gordon, 1930**

Synonymy: see p. 209.

Material:

W of Nagasaki, Japan, 32°22'N, 128°42'E, 311 m, 25 Dec 1900, coll. Suenson: — 2 ♀ (14.1, 18.0 mm), ZMUC CRU-11529.

W of Nagasaki, Japan, 32°26'N, 128°37'E, 249 m, bottom temp. 13°C, sand, rock, Great Northern Telegraph Co., 17 Jul 1933: — 1 ♀ (13.2 mm), ZMUC CRU-11239.

32°21' N, 128°41' E, 98–110 fm, coral-sand, rock, 08 Jul 1928 — 2 ♂ (13.2, 13.4 mm), 2 ov. ♀ (12.5, 12.6 mm), ZMUC CRU-11205.

12 Miles W of Nagasaki, 32°2' N, 128°45' E, 105 fm, 12 May 1898, Suenson: — 7 ♂ (10.6–19.9 mm), 3 ov. ♀ (14.2–18.5 mm), ZMUC CRU-11131, 11214.

Th. Mortensen's Pacific Expedition 1914–16, Sagami Bay, 732 m, 7 Jun 1914: — 1 ♀ (5.7 mm), ZMUC CRU-11545.

Diagnosis: Carapace with distinct transverse striae, lacking gastric spines between oblique rows of hepatic spines. Mxp 3 merus with 1 distolateral and 1 flexor median marginal spine. Sternite 3 with 2 acute anterior spines, sternite 4 unarmed laterally. P1 palm thickly covered with fine setae, bearing line of ventral spines near mesial margin, lacking ventral pad or any of its rudiment. Dorsal margins of P2–4 propodus with spines proximally but occasionally absent. [Pleopods absent from abdominal segments in male (de Saint Laurent & Poupin, 1996)].

Remarks: De Saint Laurent & Macpherson (1990a) noted that other than morphological differences, bathymetric ranges help to discriminate between *E.*

balssi (600 m) and its closest relative *E. minor* de Saint Laurent & Macpherson, 1990 (230–270 m). However, the present records indicate a wider range of *E. balssi* that overlaps that of the latter species.

Range: Restricted to Japan in Sagami Bay and W of Nagasaki; between 179–201 m and 732 m.

***Eumunida capillata* de Saint Laurent & Macpherson, 1990**

Synonymy: see p. 209.

Material:

Th. Mortensen's Java-South Africa Expedition 1929–30, "Dog" St. 16, Bali Sea, Indonesia, 7°35'S, 114°42'E, ca. 200 m, mud, 10 Apr 1929: — 1 ♂ (24.0 mm), ZMUC CRU-11080.

Diagnosis: Carapace strongly broadened posteriorly, with 2 spines in front of posterior cervical groove. Sternite 3 with pair of submedian spines on anterior margin, sternite 4 unarmed laterally. Mxp 3 merus with small but distinct spine somewhat distal to midlength of flexor margin. P1 palm unarmed, with ventral pad of setae, carpus with 3 terminal spines. Pleopods absent in males.

Remarks: The "Albatross" material of *E. smithii* reported by Baba (1988) was identified with this species (de Saint Laurent & Poupin, 1996). In *E. smithii*, the pad of densely packed hairs is absent from the ventral side of the P1 palm and rudimentary pleopods in males are present on the abdominal segments 2–5.

Range: New South Wales, New Caledonia, Chesterfield Islands, Bali Sea, Kei Islands, and South China Sea off Taiwan; 200–650 m.

***Eumunida funambulus* Gordon, 1930**

Synonymy: see p. 209.

Material:

San Bernardino Strait between Luzon and Samar, 12°27'N, 124°03'E, 50–100 fm (92–183 m), bottom temp, 61°F, 03 Aug 1911, Suenson: — 7 ♂ (15.0–33.5 mm), 5 ov. ♀ (22.7–28.3 mm), 9 ♀ (11.3–27.2 mm), ZMUC CRU-11595.

Diagnosis: Carapace with 5 complete striae on posterior half, 3 lateral marginal spines in front of cervical groove; pair of epigastric spines; hepatic spines (b of Gordon (1930) often absent. Sternite 4 with pair of well-developed spines anteriorly. Mxp 3 merus with 1 distolateral and 2 flexor marginal spines. P1 carpus with 3 terminal spines; palm massive, covered with short soft setae, bearing 2 rows of spines (dorsomesial and ventromesial, latter pronounced), ventral pad of setae small but distinct. Abdominal segments 2–5 lacking pleopods in male.

Range: Gulf of Aden, Socotra Channel between Aden and Bombay, Philippines, N. Celebes, Madura Strait (Java); South China Sea off SW Luzon, Sahul Bank (S of Timor), 130–732 m.

Eumunida pacifica Gordon, 1930

Synonymy: see p. 210.

Material:

Manado Bight, 1°31'N, 124°47'E, 458 m, 12 Mar 1913, Great Northern Telegraph Co., Capt. Christiansen: — 4 ♂ (13.0–19.3 mm), ZMUC CRU-11598.

Off N Mindoro, 13°37'00"N, 120°52'00"E, 525 m, from cables, mud and rock, 10 May 1930, Great Northern Telegraph Co.: — 1 ♀ (13.0+ mm), ZMUC CRU-11599.

W of Nagasaki, Japan, 32°25'N, 128°33'E, 366 m, 1 Apr 1913, Great Northern Telegraph Co., Capt. Christiansen: — 1 ♂ (20.8 mm), ZMUC CRU-11594.

Diagnosis: Carapace with 6 distinct striae on posterior half, without gastric spines between mesial hepatic spines; lateral margin with 3 spines in front of posterior cervical groove; mesial of 3 hepatic spines somewhat larger than median one. Sternite 4 with pair of well-developed spines anteriorly. P1 palm with 2 rows of spines: 1 dorsal near mesial margin, 1 ventral near mesial margin, latter usually prominent; ventral surface lacking pad of setae. Pleopods absent in males.

Remarks: The female examined here has an additional row of dorsal spines on the P1 palm near the mesial margin, which seems at variance with the definition of *E. pacifica* given by de Saint Laurent & Poupin (1996). One male and one female of the specimens from the Kyushu-Palau Ridge reported under *E. pacifica* by

Baba in Baba *et al.* (1986) were named *E. depressa*, and one ovigerous from the same source was named *E. macphersoni* (de Saint Laurent & Poupin, 1996). The male from Japan examined here lacks all pereopods but may in all probability be referred to *E. pacifica*.

The species is very close to *E. keijii* de Saint Laurent & Macpherson, 1990. According to de Saint Laurent & Macpherson (1990a) and de Saint Laurent & Poupin (1996), the two species differ from each other in: 1) mesial pair of hepatic spines is well developed and stronger than the others in *E. pacifica*, while it is small in *E. keijii*; 2) the anterior spines on the sternite 3 are shallowly separated in *E. pacifica*, deeply separated in *E. keijii*; 3) the P1 palm bears well-developed dorsomesial spines in *E. pacifica*, instead of reduced spines in *E. keijii*; the P4 propodus is at most three times longer than the dactylus in *E. pacifica*, while less than three times longer in *E. keijii*. These morphological differences are very slight but their coloration helps distinguish the two species. In *E. pacifica*, the carapace is orange red with supraocular spines darker, and abdominal tergites evenly orange red; in *E. keijii*, the carapace is orange red, rostral spines white, abdominal tergites 2–4 bear red and white transverse bands (de Saint Laurent & Poupin, 1996).

Range: Off N Mindoro, Savu Sea off Roti, Ceram Sea off Obi Island, and W of Nagasaki, Japan; 293–1320 m.

Genus *Gastroptychus* Caullery, 1896

Ptychogaster A. Milne Edwards, 1880: 63. — Henderson, 1888: 170.

Gastroptychus Caullery, 1896: 390 [replacement name for *Ptychogaster* A. Milne Edwards, 1880 (junior homonym of *Ptychogaster* Pomel, 1847: fossil Reptilia Chelonia). — Miyake & Baba, 1968: 379.

Diagnosis: Carapace with spines laterally and dorsally, dorsal surface lacking transverse striae; posterior lateral margin weakly or barely excavated. Rostrum spini-form, basal part subtriangular. Supraocular spines absent. Sternal plastron with lateral spine on each side at least on sternite 4, anterior margin somewhat concave with row of spines, widely separating Mxps 3 in one of two groups of species, or medially produced and ridged, sloping down to anterior sternite, bearing Mxps 3 rather close to each other in another group of species. Segment 2 of abdomen without anterolateral

spine on pleura, G1 and G2 present. Antennal acicle present or absent. Mxps 2 distinctly separated, Mxps 1 close to each other. P1–4 with numerous spines usually arranged in longitudinal rows.

Remarks: Bouvier (1896) believed that *Gastroptychus* Caullery, 1896, a replacement name for *Ptychogaster* A. Milne Edwards, 1880, is identical with *Chirostylus* Ortmann, 1892. This was followed by Doflein & Balss (1913), van Dam (1933), Chace (1942), Tirmizi (1964), and Haig (1968). Now *Gastroptychus* is regarded as a distinct genus clearly separate from *Chirostylus* (see Miyake & Baba, 1968). *Gastroptychus ciliatus* (van Dam, 1933) and *G. spinirostris* Ahyong & Poore (2004) are transferred to *Uroptychus*, according to a newly defined diagnosis of *Uroptychus* in the present paper (see below). The genus now contains 21 species, including a new species described in this paper, 13 from the Indo-West Pacific, 4 from the eastern Pacific, 3 from the western Atlantic and 1 from the eastern Atlantic.

Two groups can be recognized in the genus. One of these is characterized by having the sternal plastron with a somewhat concave anterior margin bearing a row of spines and the Mxps 3 widely separated at base from each other (Fig. 3b). This group includes *G. brachyterus* n. sp.; *G. breviproodus* Baba, 1991; *G. laevis* (Henderson, 1885); *G. novaezelandiae* Baba, 1974; *G. paucispina* Baba, 1991; *G. sternoornatus* (van Dam, 1933), *G. valdiviae* (Balss, 1913) [confirmed by examination of the type material now registered under ZMB 17479] and *G. affinis* (Chace, 1942), the last species being from the western Atlantic. The other group has the anterior end of the sternal plastron medially ridged, produced and anteriorly sloping down, followed by a pair of spines directly behind it on the ventral surface, and the Mxps 3 close to each other (Fig. 3c, d). This group includes *G. cavimurus* Baba, 1977, *G. defensa* (Benedict, 1902), *G. hawaiiensis* Baba, 1977, *G. hendersoni* (Alcock & Anderson, 1899), *G. iaspis* Baba & Haig, 1900, *G. investigatoris* (Alcock & Anderson, 1899), *G. milneedwardsi* (Henderson, 1884), *G. perarmatus* (Haig, 1968), and *G. rogeri* Baba, 2000, all from the Indo-Pacific, and *G. formosus* (Filhol, 1884), *G. salvadori* Rice & Miller, 1991, and *G. spinifer* (A. Milne Edwards, 1880), from the Atlantic. The groups are definitely worthy of generic importance, with the latter group being referred to *Gastroptychus* in the strict sense. This will be discussed later elsewhere.

Gastroptychus may be defined by the following

characters that separate it from *Chirostylus*: 1) the rostral base is triangular, extending anteriorly into upcurved spine distinctly overreaching the ocular peduncle; 2) the posterolateral margin of the carapace is not excavated at all, or somewhat excavated but not strongly so as in *Chirostylus*; 3) the sternal plastron bears the anterior margin somewhat concave with a row of spines or is medially produced anteriorly into a rounded process followed by a pair of spines on the anterior part of ventral surface.

The members of the genus seem to be associated with other marine invertebrates, although information is available only on a few species: *Gastroptychus iaspis* Baba & Haig, 1990, from the eastern Pacific, is found in association with gorgonaceans and antipatharians at 600–1189 m; *Gastroptychus salvadori* Rice & Miller, 1991, from Bahamas, was found on the starfish *Novodinia antillensis* (A.H. Clark) taken at 874 m depth.

The present collection includes the following three species.

Gastroptychus brachyterus n. sp.

Figs. 3b, 4

Material:

Kei Islands Expedition St. 56, 5°30'20"S, 132°51'E, 345 m, 10 May 1922: — 1 ♀ (8.8 mm), holotype, ZMUC CRU-11331.

Diagnosis: Carapace covered with spinules in moderate density, with pair of prominent epigastric spines followed by 3 strong spines in midline. Sternite 3 with somewhat concave anterior margin bearing 8 small spines, sternite 4 with strong lateral spine on each side. Abdomen covered with small spines. Cornea dilated, eyestalk constricted on mesial margin. Distal 2 articles of antennal peduncle with distinct spine distoventrally; acicle absent. Mxp 3 merus with 3–5 lateral spines, distal-most strong, carpus with 2 lateral spines distally. P1 slender, palm 2.5 times as long as fingers, bearing 5 rows of spines (3 rows visible in dorsal view). P2–4 propodi short, relatively broad, about 3 times length of dactyli, 1/7 length of carpi, dactyli very short, extensor margin strongly convex, flexor margin nearly straight, with 7–8 spines, penultimate strongest.

Description: Carapace excluding rostrum, 1.3 times as long as its greatest width. Dorsal surface covered with

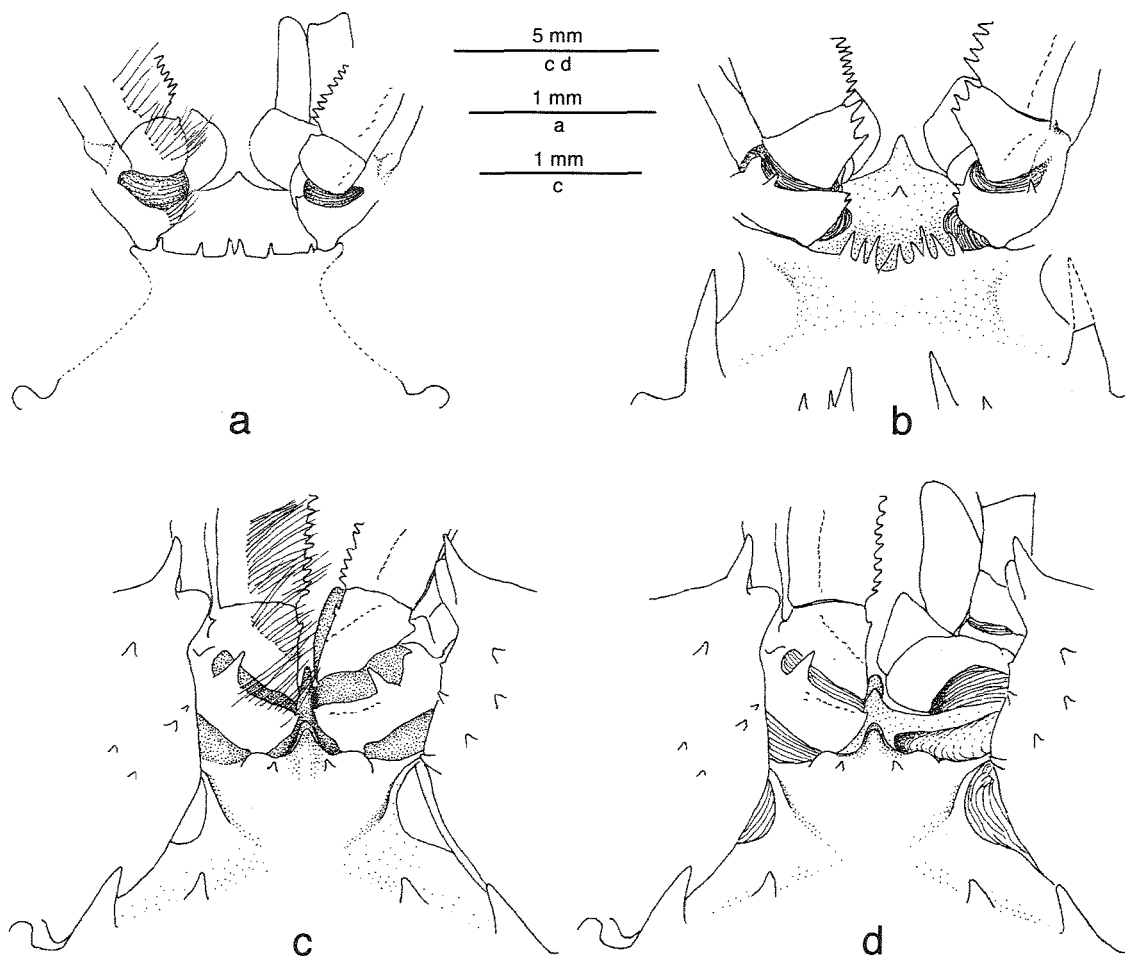


Fig. 3. Anterior part of sternal plastron, including proximal parts of Mxps and P1: a, *Chirostylus dolichopus* Ortmann, 1892, ov. ♀ (5.7 mm), ZMUC CRU-11107; b, *Gastroptychus brachyterus* n. sp., holotype, ♀, ZMUC CRU-11331; c, *Gastroptychus rogeri* Baba, 2000, holotype, ♂, TM G3497; d, same, right Mxp 3 removed.

prominent and small spines, as illustrated (Fig. 4a, b); 5 prominent spines: 2 behind ocular peduncles and 3 in midline — 1 posterior gastric, 1 anterior cardiac, 1 posterior cardiac; 4 spines directly anterior to posterior margin somewhat larger than remaining scattered spines. Gastric region moderately convex, separated from cardiac region by deep groove slightly anterior to midpoint of postorbital carapace length; not distinctly bordered from hepatic and branchial regions. Lateral limit of orbit with small spine. Lateral margins of carapace convex on branchial region, anterolateral spine relatively remote from and larger than lateral orbital spine. Rostrum $1/5$ postorbital carapace length; basal portion broad, rostral spine sharp, curving dorsad. Pterygostomian flap anteriorly ending in rounded margin, surface with very small scattered spines.

Sternal plastron posteriorly broad. Sternite 3 having anterior margin with 8 spines (3 on right side, 5 on left

side), width less than half that of last sternite. Sternite 4 with strong lateral spine on each side, bearing 2 pairs of spines between (mesial pair larger than lateral), followed by another pair. Sternite 5 also with a few moderate-sized lateral spines on each side and 2 small submedian spines between. Sternites 6 and 7 with spinulose lateral margins.

Abdominal segments covered with small spines. Pleura of segments 2–4 tapering.

Eyestalk strongly constricted on mesial margin. Corneas dilated.

Basal article of antennular peduncle with well-developed distolateral spine. Article 2 of antennal peduncle with small distolateral spine; distal 2 articles each with sharp, moderate-sized spine on distoventral margin, article 5 more than twice as long as article 4 when measured along lateral margin. Antennal acicle absent.

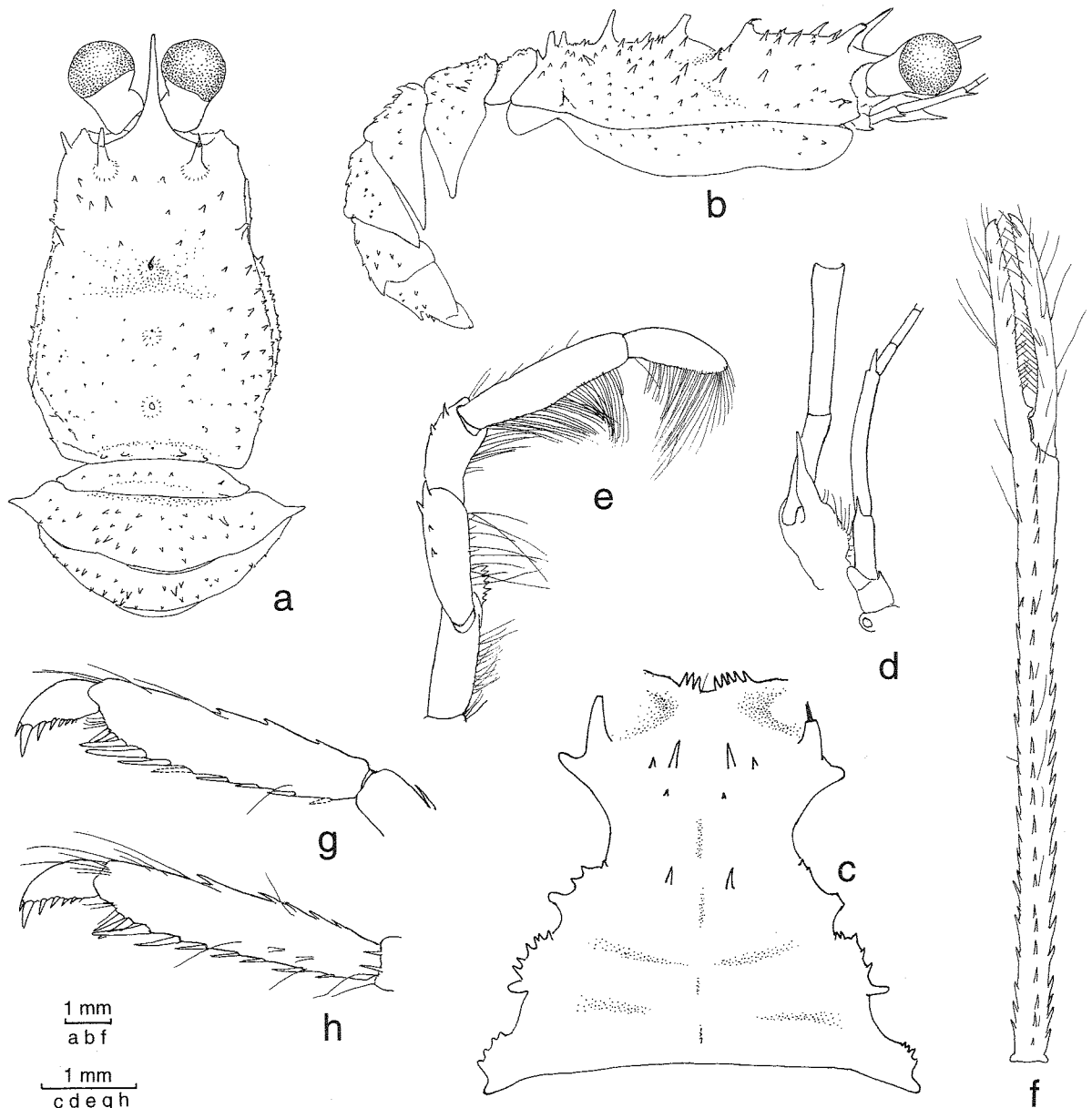


Fig. 4. *Gastroptychus brachyterus* n. sp., holotype, ♀, ZMUC CRU-11331: a, carapace and abdomen, dorsal; b, same, lateral; c, sternal plastron; d, antennule and antenna, left, ventral; e, endopod of Mxp 3, right, lateral; f, chela, left, dorsal; g, distal articles of P3, left, lateral; h, distal articles of P4, left, lateral.

Endopod of Mxp 3 slender. Ischium with 18–20 denticles on mesial ridge. Merus with 3–5 lateral spines, distal one strongest. Carpus also with 2 lateral spines distally. Propodus unarmed.

P1 6.8 times as long as carapace including rostrum, subcylindrical, sparsely setose, covered with spines in 7 rows on merus, 6 rows on carpus, 5 rows on palm. Merus 1.5 times as long as carpus. Carpus 1.25 times as long as palm. Palm about 20 times as long as broad, 2.5 times as long as movable finger. Fingers more

setose than other articles, moderately gaping, distally ending in small, slightly incurved spine; each opposable margin with proximal process of moderate size.

P2–4 slender, spinose, sparsely with coarse setae; successively diminishing in size posteriorly. Merus slightly shorter than carpus, spines along dorsal margin larger. Carpus 7 times as long as propodus, with numerous inclined slender spines along dorsal margin, less numerous spines along ventral margin. Propodus

relatively short, 3.3 times as long as dactylus excluding spines, dorsal margin with several inclined spines, ventral margin with row of 8–10 movable slender spines along whole length, distal 2 subequal and much smaller than antepenultimate. Dactylus very short, flexor margin with 7–8 spines, ultimate small and slender, penultimate strongest, remaining spines slender and proximally diminishing. P2 reaching end of P1 carpus.

Remarks: The short P2–4 propodi link the species to *G. brevipropodus* Baba, 1991, from the Loyalty and Chesterfield Islands, and *G. novaezelandiae* Baba, 1974, from New Zealand. However, *G. brevipropodus* has the abdominal segments smooth without spines, the distolateral process of the antennular basal article bearing accompanying spines, and the sternite 3 bearing 3 pairs of spines on the anterior margin. In *Gastroptychus novaezelandiae*, an antennal acicle is present, the abdominal segments 1–5 bear pronounced spines, and the Mxp 3 propodus is unarmed.

Etymology: From the Greek *brachyteros* (shorter), in reference to relatively short P2–4 propodi.

***Gastroptychus laevis* (Henderson, 1885)**

Fig. 5

Synonymy: see p. 213.

Material:

Kei Islands Expedition St. 42, 5°35'S, 132°29'E, 225 m, mud, trawl, 26 Apr 1922: — 1 ♂ (4.8 mm), ZMUC CRU-11434.

Diagnosis: Carapace with pair of strong spines directly behind ocular peduncles, laterally with 5 sharp spines. Sternite 3 with 5–6 small spines on anterior margin, sternite 4 with small lateral spine on each side. Abdominal segments smooth and glabrous. Ocular peduncles relatively narrow and elongate, cornea slightly broader than remaining eyestalk. Antennal peduncle with distoventral spine on article 5, unarmed on article 4, antennal acicle reaching end of article 5. P1 palm less than twice as long as fingers. P2–4 propodi slightly longer than carpi, distinctly more than twice length of dactyli; dactyli with somewhat convex flexor margin bearing 9 slender spines nearly perpendicular to margin, ultimate spine much smaller, nearly contiguous to penultimate one, remaining spines

diminishing in size toward base of article.

Description: Carapace somewhat longer than broad. Dorsal surface smooth, glabrous, moderately convex. Gastric region separated by deep groove from cardiac and branchial regions; anteriorly bearing 4 spines in transverse row, 2 lateral prominent, 2 submedian very small; also laterally with small spine near left anterior branchial region. Lateral margin convex on branchial region, bearing 5 sharp spines, other than smaller one at lateral limit of orbit, situated on anterior 2/3 of length; ridge distinct along posterior third. Rostrum less than half as long as remaining carapace, distally spine-like, directed antero-dorsad.

Pterygostomian flap also smooth, glabrous, anteriorly rounded.

Sternal plastron with rows of long coarse setae, as illustrated; greatest width much more than greatest length. Sternite 3 moderately depressed, anterior margin shallowly excavated, with 5 small spines: 3 on right side, 2 on left side. Sternite 4 with distinct lateral spine on each side.

Abdominal segments smooth and glabrous. Pleura of segments 2–5 not tapering, rounded.

Ocular peduncles elongate, slightly overreaching end of rostrum. Cornea slightly dilated, length less than 1/3 that of remaining eyestalk.

Basal article of antennular peduncle with distally bifurcate distolateral process. Antennal peduncles slender, overreaching end of cornea; article 5 3.5 times as long as article 4, bearing well-developed distoventral spine; article 4 unarmed. Antennal acicle slender, almost reaching end of article 5 excluding spine.

Mxp 3 ischium with 23 (right) or 24 (left) denticles on mesial ridge. Merus elongate, bearing distinct distolateral spine. Carpus unarmed.

Right P1 missing. Left P1 5.9 times as long as carapace including rostrum; with sparse long setae; covered with small spines roughly in 7 rows on merus and carpus, 6 rows on palm (proximally 7 rows). Merus 1.3 times length of carpus. Palm 0.89 times length of carpus, 1.7 times that of movable finger. Fingers more setose than elsewhere, gaping proximally, slightly incurved distally; opposable margins fitting each other when closed on distal 1/3; truncate process on gaping portion of movable finger proximal to level of opposing process on fixed finger.

Left P2–3 present, others missing; both with sparse long setae, P3 shorter; P2 ending in midlength of P1 carpus. Meri with row of spines on dorsal margin and distal spine on ventral margin. Carpi slightly shorter

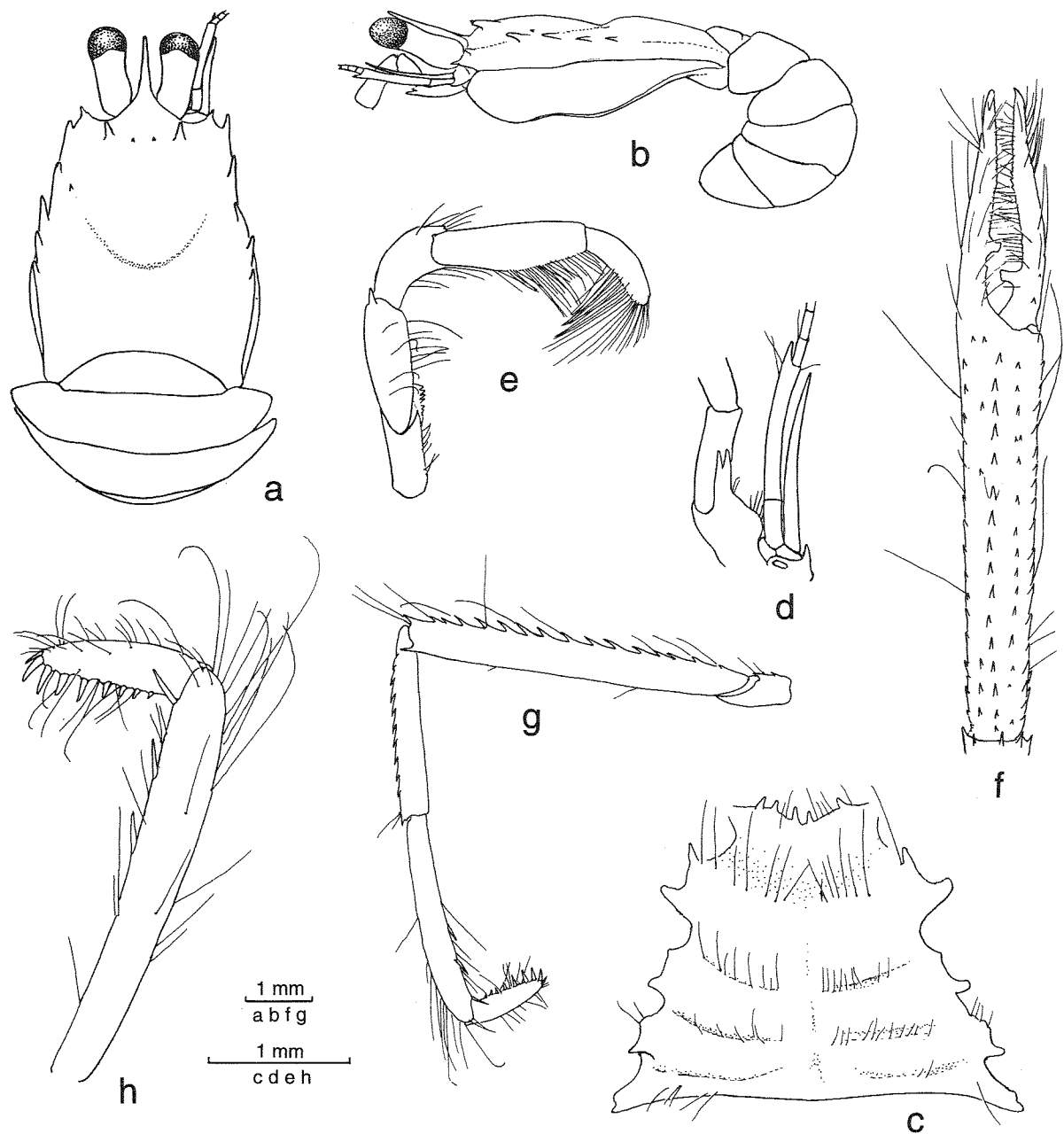


Fig. 5. *Gastroptychus laevis* (Henderson, 1885), ♂ (4.8 mm), ZMUC CRU-11434: a, carapace and abdomen, dorsal; b, same, lateral; c, sternal plastron; d, antennule and antenna, left, ventral; e, endopod of Mxp 3, right, lateral; f, chela, left, dorsal; g, P2, left, lateral; h, same, distal articles, lateral.

than propodi, dorsal margin with 11 spines on P2, 7 on P3. Each propodus distinctly more than twice length of dactylus excluding spines; ventral margin ending in pair of spines preceded by 3 (on P2) or 2 (on P3) slender, movable spines. Dactyli nearly straight, flexor margin with 9 spines, ultimate spine very slender, much shorter than and almost contiguous to penultimate, other spines more or less distant from one another, proximally diminishing in size, and subperpendicular

to flexor margin.

Remarks: Owing to the brevity of the description of the species given by Henderson (1885, 1888), a full description is provided above. To verify this identification the type material (BMNH 1888:33), which is now in poor condition, was examined. The illustration provided by Henderson (1888) inaccurately shows the ocular peduncles of the type to be extremely

slender, rather than as illustrated for the present material (Fig. 5a).

Range: This is the first record since the holotype taken by the "Challenger" from the Kei Islands, Indonesia, in 236 m.

***Gastroptychus sternoornatus* (van Dam, 1933)**

Synonymy: see p. 214.

Material:

Th. Mortensen's Pacific Expedition 1914–16, off Victoria, 38°5'S, 149°45'E, 128–146 m, sand, mud, trawl, on board "Endeavour," 11 Sep 1914: — 1 ♂ (5.8 mm), ZMUC CRU-11070.

Th. Mortensen's Pacific Expedition 1914–16, off Victoria, Australia, 37°45'S, 150°10'E, 275–476 m, on board "Endeavour," 14 Sep 1914: — 1 ♀ (5.8 mm), ZMUC CRU-11516.

Th. Mortensen's Pacific Expedition 1914–16, NE of Flinders Island, Furneaux Group, 39°10'S, 149°55'E, 366–458 m, ring trawl, on board "Endeavour," 15 Sep 1914: — 1 ♂ (6.9 mm), ZMUC CRU-11552.

Diagnosis: Carapace covered with spines of small and good size in moderate density; pair of prominent spines behind ocular peduncles, followed posteriorly by 3 large spines in midline, and another strong spine at anterior lateral margin of branchial region. Sternite 3 with 6 spines on concave anterior margin, sternite 4 with strong spine on each side and 1 or 2 pairs of spines in transverse row. Abdomen smooth and glabrous. Ocular peduncles relatively large, strongly concave on mesial margin; cornea moderately dilated. Article 5 of antennal peduncle with strong distoventral spine, article 4 unarmed, antennal acicle overreaching midlength of but falling far short of end of article 5. P1 palm about twice as long as fingers. P2–4 propodi distinctly longer than carpi, more than twice as long as dactyli, ventral margin with pair of distal spines preceded by a number of spines on P2, 0 or 1 on P3 and P4; dactyli sharp, ending in corneous curved claw preceded by 4–5 spines nearly perpendicular to flexor margin, diminishing toward base of article.

Remarks: Recently Ah Yong & Poore (2004) reported the species from New South Wales and Victoria, in 329–512 m. No additional characters of significance

were noted.

Range: Off the Kei Islands, vicinity of Mindoro (Philippines), Loyalty Islands, New South Wales, and Victoria; in 128–512 m.

Genus *Pseudomunida* Haig, 1979

Pseudomunida Haig, 1979: 89.

Diagnosis: Carapace with very weak, interrupted transverse striae. Dorsal surface unarmed. Rostrum spiniform. Mesial supraocular spines well developed, lateral supraocular spines vestigial or barely discernible. Anterior margin of sternal plastron with submedian processes. Segment 2 of abdomen having pleura each ending in strong spine. Antennal peduncles having each article with distal spines, antennal acicle distinct. Mandible with a few teeth on incisor margin. Mxps 3 somewhat separated from each other to make Mxps 2 visible but Mxps 1 not visible. Mxps 2 close to each other. P1 carpus with 2 ventrodistal spines. P2–4 meri and carpi with row of spines on dorsal crest.

Remarks: The genus is differentiated from *Eumunida* Smith, 1883, by having only one pair of supraocular spines and absence of a oblique row of hepatic spines. Males are presently unknown. Haig (1968) suggested that gonopods may be absent in the genus, as in *Eumunida*.

***Pseudomunida fragilis* Haig, 1979**

Synonymy: see p. 214.

Material:

Bonin Islands, 1370 m, sandy bottom, Great Northern Telegraph Co., 14 May 1957: — 1 ♀ (18.3 mm), ZMUC CRU-11528.

Diagnosis: Rostrum spiniform, mesial supraocular spines distinct, lateral supraocular spines very reduced in size or barely discernible. Carapace with very feeble transverse ridges, all interrupted; unarmed on dorsal surface; lateral margin with 5 spines, anterior 2 located in front of posterior cervical groove. Abdominal segment 2 with strongly produced spine on anterolateral angle of each of left and right pleura. Sternite 4 unarmed. P1 slender, subcylindrical, palm fully twice as long as fingers, with 1–3 ventral spines,

lacking ventral pad of densely packed setae. P2–4 meri and carpi each with row of spines on dorsal margin, propodi with row of about 10–13 slender movable spines on ventral margin.

Remarks: The genus is monotypic. The present specimen bears a vestigial lateral supraocular spine on each side.

Range: The present specimen from the Bonin Islands constitutes the first record since the type material was collected (holotype and 1 paratype) from the Hawaiian Islands off Oahu, in 969–1280 m.

Genus *Uroptychodes* Baba, 2004

Uroptychodes Baba, 2004: 98.

Diagnosis: Body and appendages usually covered with fine setae. Carapace armed with row of lateral spines. Rostrum basally broad but elongate, often more than length of remaining carapace, ventral surface carinate in midline. Supraocular spines absent. Excavated sternum bearing longitudinal ridge in midline. Abdominal segment 2 having pleuron anterolaterally rounded, not produced into spine. Antennal flagellum very short, not extending beyond end of rostrum. Mxp 3 ischium with distinct spine lateral to rounded flexor distal margin. P1 relatively slender, spinose or covered with denticular small spines. P2 definitely more slender than P3–4, dactylus usually unarmed on flexor margin; carpus longer than that of P3. P3–4 dactyli with row of spines on flexor margin, penultimate usually pronounced; carpus much shorter relative to that of P2, about half as long as propodus.

Remarks: In a recent paper (Baba, 2004), *Uroptychodes* has been proposed to accommodate the *Uroptychus spinimarginatus* group (Baba, 1977b). The genus now contains 11 species, including *Uroptychus nowra* (Ahyong & Poore, 2004) described from New South Wales.

The genus is differentiated from *Uroptychus* Henderson, 1888 by the combination of the following characters: the long, broad rostrum is carinate in midline on the ventral surface and the P2 is much more slender than the P3–4, with the dactylus entire on the flexor margin. *Uroptychus naso* van Dam, 1933 possesses the long, broad rostrum but the P2 dactylus is similar to those of P3–4.

The present collection includes three species.

Uroptychodes albatrossae Baba, 1988

Synonymy: see p. 215.

Material:

Th. Mortensen's Java-South Africa Expedition 1929–30, "Dog" St. 3, Bali Sea, Indonesia, 7°42'S, 114°00'E, 450 m, mud with corals, Sigsbee trawl, 4 Apr 1929: — 1 ♀ (6.6 mm), ZMUC CRU-11574. Off Nagasaki, Japan, 32°48'N, 129°37'E, 73 m, 23 Apr 1913, coll. H. Christiansen: — 1 ♂ (7.5 mm), ZMUC CRU-11206.

Diagnosis: Carapace with 7 strong lateral spines on branchial region and a few small spines on hepatic region, anterolateral spine distinct but smaller than those on brachial region. Cervical groove very deep between gastric and cardiac regions. Rostrum fully as long as remaining carapace, ventral surface carinate, dorsal surface excavated longitudinally, bearing scattered denticular spines laterally; lateral margin with 8–12 spinules. Pterygostomian flap covered with spinules. Anterior margin of sternite 3 with broad median sinus separating 2 small submedian spines. Distal 2 articles of antennal peduncle each with strong distomesial spine, antennal scale reaching end of article 5. Mxp 3 merus with well-developed distolateral spine, and a few small flexor marginal spines at midlength, carpus with distinct spine on extensor distal margin. P2 more slender than P2–4, carpus longer than those of P3 and P4, dactylus unarmed; P3–4 dactyli each with 8 or 9 flexor marginal spines, penultimate broader than ultimate, remaining spines more slender than ultimate.

Remarks: The specimen agrees well with the type of *U. albatrossae*. The spination of the P3–4 dactyli seems constant in the species. The penultimate spine is much broader than the ultimate, and the others proximal to it are more slender than the ultimate.

Range: Indonesia in the Bali Sea and the Philippines off N Mindanao, between Negros and Siquijor, and between Cebu and Bohol; 73–510 m.

Uroptychodes mortenseni (van Dam, 1939)

Synonymy: see p. 216.

Material:

Th. Mortensen's Pacific Expedition 1914–16, 25 miles

E by S of Zamboanga, trawl, 293–366 m, hard bottom, 3 Mar 1914; — 1 ov. ♀ (10.5 mm), ZMUC CRU-11519.

Diagnosis: Body and appendages thickly covered with fine setae. Lateral margin with anterolateral spine of moderate size, followed by 3 small spines and 1 larger one along hepatic region, prominent spines along branchial region, anterior-most largest. Rostrum horizontal in profile, narrowly triangular, relatively long, slightly less than postorbital carapace length; dorsal surface flattish, ventral surface carinate. Sternite 3 semicircularly concave on anterior margin, bearing small median notch. Ocular peduncles partly concealed beneath rostrum. Antennal peduncle having distal 2 articles subequal in length, each with terminal spine; antennal scale laterally setose, slightly overreaching midlength of article 5. Mxp 3 ischium with 2 spines directly lateral to flexor distal margin; merus with distolateral spine and 3 spines on flexor margin; carpus with distolateral spine. P1 slender, merus and carpus with small spines; no spines elsewhere. P2 more slender than P3–4, dactylus unarmed. P3–4 similar; meri and carpi with small spines; flexor marginal spines of dactyli obscured by setae, ultimate slender, penultimate broad at base, preceded by slender, inclined spines distinctly smaller than ultimate.

Eggs: About 30 eggs carried, measuring 0.89 x 0.90 – 1.03 x 0.96 mm.

Remarks: Two very small spines flanking a median notch on the anterior margin of the sternite 3 are present in one of the type specimens and the present material but absent in the lectotype, the “Albatross” Philippine specimen and the “Karubar” specimen (Baba, 1988; 2004).

Range: Kei Islands, Celebes Sea off N Sulawesi, off Zamboanga and South China Sea off SW Luzon; 250–366 m.

***Urotychodes spinimarginatus* (Henderson, 1885)**

Synonymy: see p. 216.

Material:

Manado Bight, 1°31'N, 124°47'E, 458 m, 12 Mar 1914, Great Northern Telegraph Co., Capt. Christiansen; — 1 ov. ♀ (11.7 mm), ZMUC CRU-

11191.

Diagnosis: Carapace covered with fine setae, spineless on surface; lateral margin with 6 strong spines on branchial region, preceded by anterolateral spine of moderate-size and 2 small spines on hepatic region. Rostrum with 3–5 small spines on distolateral margin. Sternite 3 with broad V-shaped excavation on anterior margin. Antennal peduncle having article 4 with small distoventral spine, article 5 unarmed; antennal scale slightly overreaching midlength of article 5. Mxp 3 ischium with 3 or 4 small spines lateral to rounded flexor distal margin, mesial ridge with obsolescent denticles. P1 with setiferous scale-like ridges.

Eggs: Size, 0.95 x 1.14 – 1.09 x 1.19 mm.

Remarks: The P2–5 are missing in the specimen examined. Their dactylar spination is as displayed by most of the species in the genus: the penultimate of the flexor marginal spines is broad whereas the ultimate and other spines proximal to the penultimate are much more slender (Baba, 1988, 2004). It is in *C. musorstomi* Baba, 2004 that the penultimate spine is not pronouncedly larger than the other spines. No additional characters of significance were noted.

Range: Off Kermadec Islands, Kepulauan Talaud S of Mindanao, Palawan Passage, and Manado Bight (N Sulawesi); 458–952 m.

Genus *Urotychus* Henderson, 1888

Diptychus A. Milne Edwards, 1880: 63.

Urotychus Henderson, 1888: 173 [replacement name for *Diptychus* A. Milne Edwards, 1880 (junior homonym of *Diptychus* Steindachner, 1866, Pisces). — Alcock, 1901: 281. — Baba, 1988: 17.

Diagnosis: Carapace dorsally smooth or with spines. Rostrum narrowly or broadly triangular, mostly flattish, rarely with ridge in ventral midline. Supraocular spines absent. Anterior margin of sternal plastron distinctly concave, with or without submedian spines, with or without median notch. Excavated sternum anteriorly ending between bases of Mxps 1. Mxps 2 broadly separated. Mxps 3 also widely separated, with distal parts accommodated in excavated sternum when folded, propodus elongated. Antennal peduncle having distinct antennal acicle, flagellum of no great length, never overreaching P1. P1 spinose or unarmed. P2–4

dactyli with flexor marginal spines of various arrangement.

Remarks: The members of this genus are usually found in association with gorgonacean and pennatulacean corals in deep waters. With this mode of life, their legs vary markedly, such that spination of P2–4 dactyli and propodi is diagnostic for species.

Since the publication of Baba (1988), in which 62 species and two subspecies including seven species transferred to *Uroptychodes* are recognized in the Indo-West Pacific, 28 additional species have been described (Baba, 1990, 2000; Baba & de Saint Laurent, 1992; Baba & Williams, 1998; Ah Yong & Poore, 2004a). According to the definitions proposed in this paper for *Chirostylus* and *Gastroptychus* (see above), it is suggested that *Chirostylus ciliatus* van Dam, 1933, *Gastroptychus chacei* Baba, 1986, and *Gastroptychus spinirostris* Ah Yong & Poore, 2004 be transferred to *Uroptychus*. *Uroptychus zezuensis* Kim, 1972, synonymized with *U. tridentatus* (Henderson, 1885) by Baba (1988), is revived. *Uroptychus tridentatus*, *U. zezuensis* and *U. inclinis* n. sp. are very closely related so *U. tridentatus* is described here based upon the holotype and additional material in the collection of the Paris Museum. The material reported under *U. granulatus* Benedict, 1902 from Madagascar (1990), the identity of which was questioned during my study, was described as *U. babai* Ah Yong & Poore (2004). *Uroptychus alcocki* Ah Yong & Poore, 2004, *U. mauritius* n. sp., *U. latirostris* Yokoya, and *U. cavirostris* Alcock and Anderson, 1899 constitute a species complex. In order to settle the systematic status of *U. latirostris*, a neotype was chosen. The morphology of *U. cavirostris* is still not well known. In this paper, nine new species are described. Overall, 104 species are known from the Indo-Pacific including Southern Ocean, four of which are confined to the eastern Pacific (for more about the distribution, see under the list of species).

The characters that distinguish *Uroptychus* from other genera are: 1) the rostrum is usually subtriangular (rarely very narrow), dorsally flattish or excavated; 2) the sternite 3 is distinctly excavated on the anterior margin usually with median notch separating submedian spines (without median notch and submedian spines in some species).

The Mxps 3 in *Uroptychus* are widely separated at the base as in *Chirostylus* whereas they are close to each other in one of the two groups in *Gastroptychus* but widely separated in the other group of that genus

(see above under *Gastroptychus*).

The present collection includes 25 species, other than *U. tridentatus* that is incorporated in this report to settle its systematic status on the basis of the holotype and additional material from the Paris Museum.

Uroptychus alcocki Ah Yong & Poore, 2004

Fig. 6

Synonymy: see p. 223.

Material:

Japan, 12 miles W of Nagasaki, 32°02' N, 128°45' E, 105 fm (192 m), 12 May 1898, Suenson: — 1 ♂ (6.5 mm), 1 ov. ♀ (8.5 mm), 1 ♀ (8.2 mm), ZMUC CRU-11067.

Formosa Canal, 35 fm (64 m), Suenson: — 1 ♀ (4.5 mm), ZMUC CRU-11045.

Diagnosis: Carapace smooth, glabrous; lateral margin with 2 spines, first anterolateral, second somewhat larger than first, placed at anterior end of branchial region. Rostrum nearly horizontal, broad triangular, dorsally excavated, breadth at proximal third 0.5 distance between lateral orbital spines. Excavated sternum anteriorly ending in spine between close Mxps 1; sternite 3 strongly depressed, anterior margin deeply concave with pair of distinct submedian spines. Telson having posterior lobe relatively long and narrow, about 2.5 times that of anterior lobe. Ocular peduncles very slender, length more than twice width, cornea less than half length of remaining eyestalk. Antennal peduncle having article 5 more than 4.5 times as long as broad; flagellum consisting of 17–20 segments barely reaching end of P1 merus; antennal scale barely reaching end of article 5. Mxp 3 merus 2.5 times as long as ischium, bearing small distolateral spine; carpus with small distolateral spine and small extensor marginal spine proximally. P1 basi-ischium with strong dorsal spine; merus and carpus with tubercles on ventral surface, smooth elsewhere; merus more than postorbital carapace length. P2–4 meri each about as long as carpus and propodus combined; propodi slightly more than twice as long as dactyli, flexor margin ending in pair of spines preceded by 6–8 spines; dactyli curving at proximal third, flexor margin with 8 or 9 relatively broad, somewhat inclined spines successively diminishing toward base of article.

Remarks: The species strongly resembles *U. latirostris*

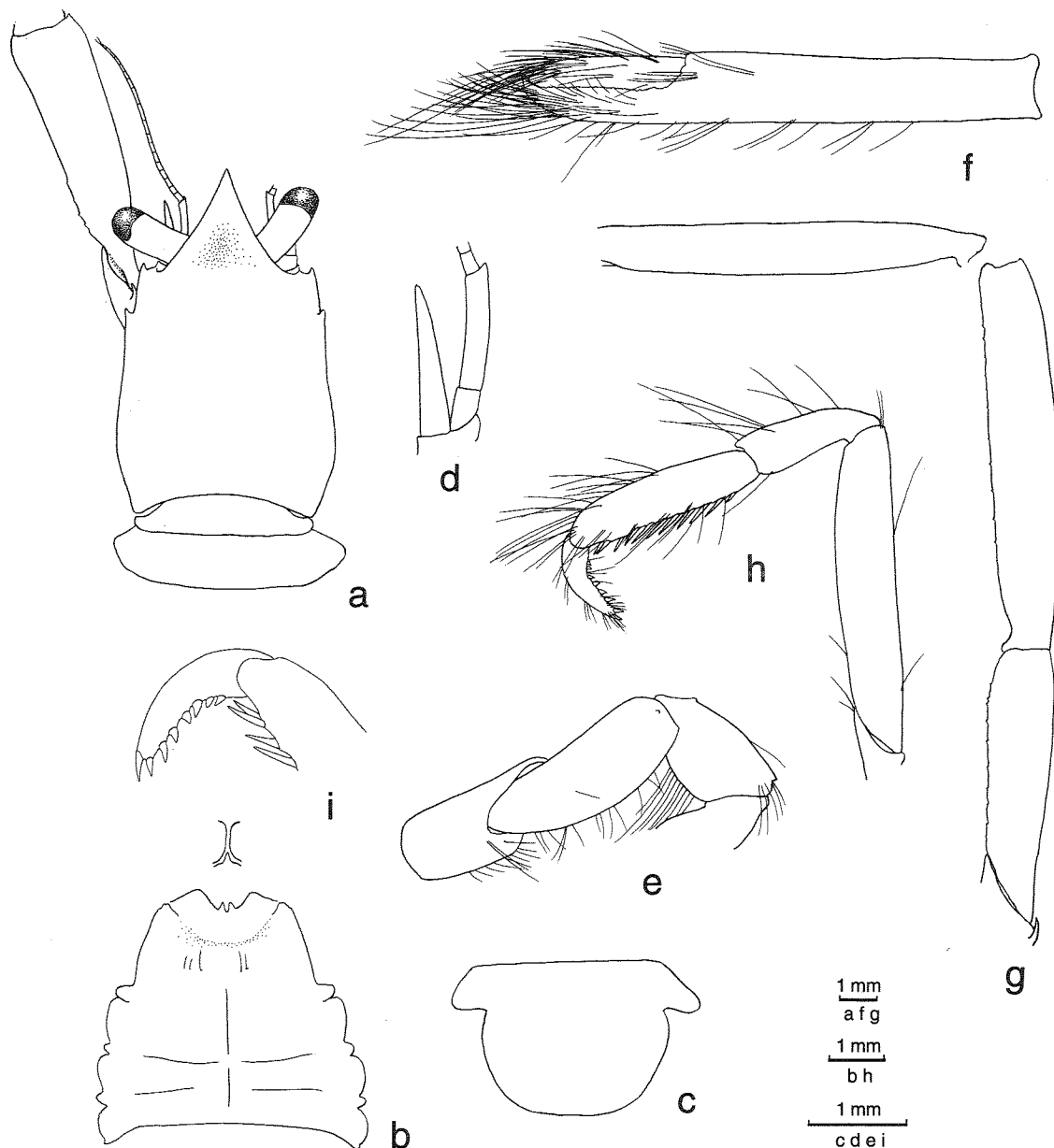


Fig. 6. *Uroptychus alcocki* Ah Yong & Poore, 2004, ov. ♀ (8.5 mm), ZMUC CRU-11067: a, carapace and anterior part of abdomen, proximal part of left P1 included, dorsal; b, sternal plastron; c, telson; d, antenna, right, ventral; e, endopod of Mxp 3, distal part omitted, right, lateral; f, P1, distal part, left, dorsal; g, same, fingers and setae omitted, lateral; h, P2, left, lateral; i, same, distal part, setae omitted, lateral.

Yokoya, 1933 in nearly all aspects (see below). However, I believe the combination of the following characters distinguish *U. alcocki* from *U. latirostris*: the sternite 3 bears a broad V-shaped anterior margin with a pair of submedian spines in *U. alcocki*, whereas the anterior margin is narrowly V-shaped, bearing obsolescent submedian spines in *U. latirostris*; the P1 bears small tubercles at least on the ventral surface of the carpus and merus (those on the palm are wanting

in the present specimens) in *U. latirostris*, instead of being smooth as in *U. latirostris*; and the anterolateral extremity of the sternite 5 in *U. alcocki* laterally expands more strongly than does that of *U. latirostris* (see Fig. 11).

Range: New South Wales, Queensland, and Tasman Sea, Formosa Channel, and Japan; 64–419 m.

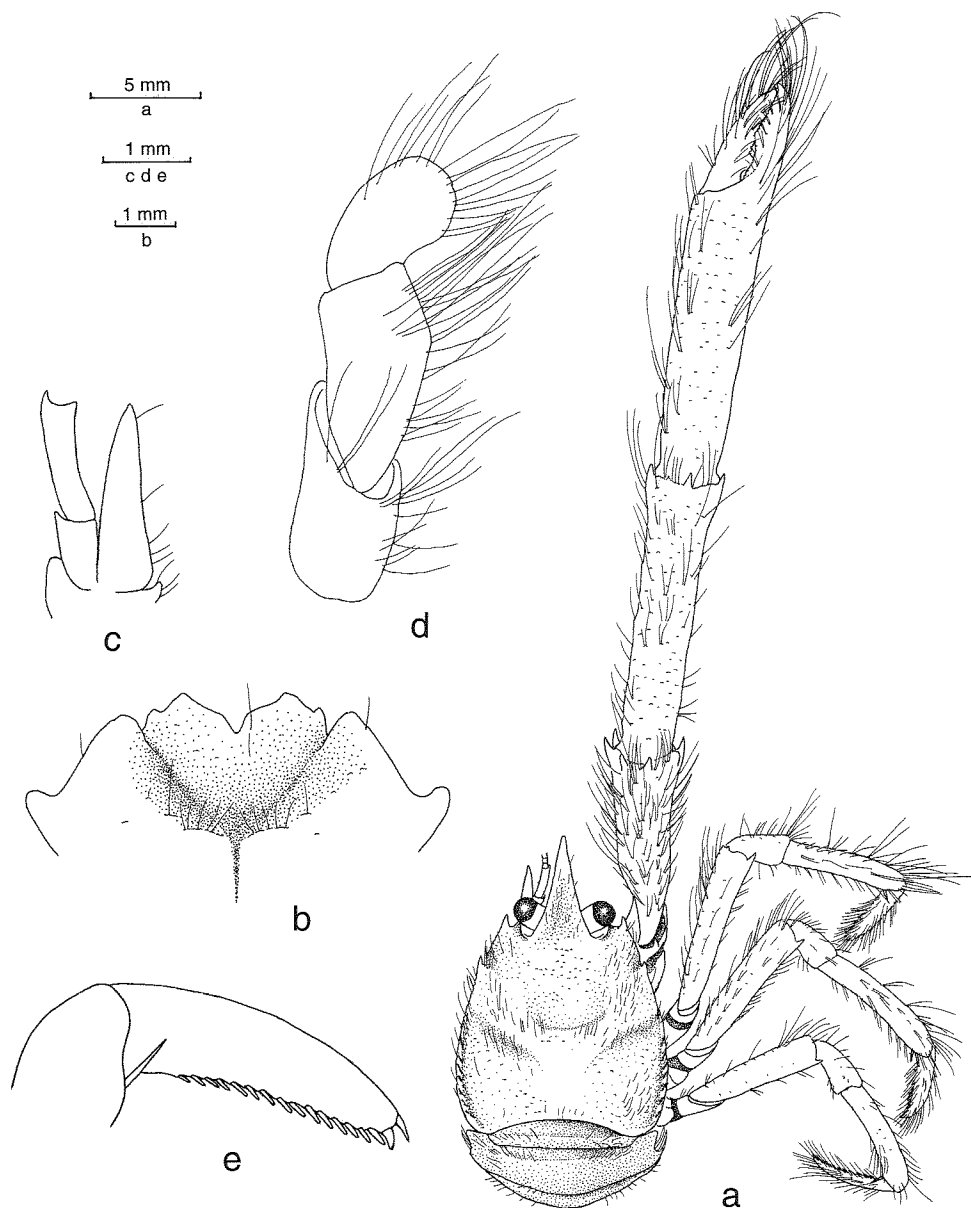


Fig. 7. *Uroptychus alius* n. sp., holotype, ♂, ZMUC CRU-11484: a, dorsal; b, anterior part of sternal plastron; c, antenna, left, ventral; d, endopod of Mxp 3, distal articles omitted, right, lateral; e, distal article of P2, fine setae omitted, right, lateral.

***Uroptychus alius* n. sp.**

Fig. 7

Material:

“Galathea” Sta. 302, Bay of Bengal, 19°42’N, 86°48’E, 1210–1240 m, clay, 25 Apr 1951: — 1 ♂ (12.7 mm), holotype, ZMUC CRU-11484.

Diagnosis: Carapace finely granulose and setose on dorsal surface, lateral margins with well-developed anterolateral spine and another smaller one directly

behind cervical groove. Rostrum sharply triangular, somewhat excavated on dorsal surface. Sternite 3 strongly depressed, anterior margin with V-shaped median notch, lacking submedian spines; sternite 4 unarmed laterally. Cornea as long as remaining eyestalk. Distal 2 articles of antennal peduncle with small but distinct terminal spine, antennal scale relatively broad, reaching end of peduncle. P1 finely granulose, subcylindrical but palm and fingers somewhat depressed; merus and carpus with 5 acute terminal spines; merus more than postorbital carapace

length; palm spineless; fingers barely half as long as palm. P2–4 slender and setose; meri with distinct spine on ventral distal margin, P2 merus as long as postorbital carapace length; propodi with pair of distoventral spines; dactyli gently curving, relatively broad distally, flexor margin with row of 17–20 short, inclined spines obscured by dense setae, ultimate sharp slender, penultimate broad, remaining spines truncate.

Description: Carapace, excluding rostrum, broader than long, dorsal surface finely granulose and sparsely provided with fine setae; distinct ridge present along posterior half of lateral margin, provided with short, oblique, finely granulated and elevated striae. Gastric region moderately convex, distinctly separated from cardiac region by distinct depression. Cervical groove indistinct between gastric and anterior branchial regions; shallow but distinct depression between anterior and posterior branchial regions. Lateral margins convexly divergent posteriorly, bearing 2 distinct spines: larger one at anterolateral angle and smaller one directly behind cervical groove. Lateral angle of orbit ending in small spine. Rostrum broadly triangular, its length more than half that of remaining carapace, dorsal surface slightly excavated, feebly granulose and sparsely setose.

Pterygostomian flap finely granulose like carapace, sparsely with fine setae, deeply excavated directly below second lateral marginal spine of carapace, anteriorly produced into small spine.

Excavated sternum roundly produced between bases of Mxps 1. Sternite 3 strongly depressed below level of sternite 4, anterior margin moderately concave, with V-shaped median notch, lacking submedian spines. Sternite 4 unarmed on lateral margin.

Abdominal segments smooth, spineless, and sparsely setose. Segment 1 with transverse ridge provided with setae. Segment 2 also with anterior transverse ridge fringed with setae. Telson slightly less than twice as broad as long, posterior part 1.5 times as long as anterior part; posterior margin distinctly concave medially.

Ocular peduncles short, barely reaching midlength of rostrum. Cornea not dilated, about as long as remaining eyestalk.

Articles 4 and 5 of antennal peduncle each with small but distinct distomesial spine; article 4 slightly more than half that of article 5. Antennal scale broader than peduncle, reaching end of article 5. Article 2 with blunt process at distolateral margin.

Endopod of Mxp 3 setose. Ischium with about 32

denticles on mesial ridge. Merus and carpus spineless.

P1 fully 3 times as long as carapace including rostrum, with finely granulate ridges supporting setae, subcylindrical on merus and carpus but somewhat depressed on palm and fingers, merus and fingers markedly setose, setae on fingers coarse and long. Ischium with short but sharp dorsal spine. Merus as longer than postorbital carapace length, with 5 acute terminal spines. Carpus also with 5 or 6 terminal spines. Palm somewhat broadened distally, 7 times as long as greatest width, equally long as carpus, lacking spines. Fingers barely half as long as palm, slightly gaping in proximal half, distally crossing. Movable finger with prominent tooth at base of opposable margin.

P2–4 slender, slightly compressed laterally, markedly setose distally. Meri with terminal spine on ventral margin, dorsal margin with small distal spine on P2, no spine on P3 and P4. P2 merus as long as postorbital carapace length. Carpi nearly spineless, but small distodorsal spine discernible on P2, length less than that of dactylus. Propodi with pair of terminal spines only on ventral margin. Each dactylus about half as long as propodus, gently curving, flexor margin with row of 17–18 slender, truncate spines on P2, 19 on P3, 20 on P4, penultimate largest; all obscured by dense setae.

Remarks: *Uroptychus alius* n. sp. closely resembles *U. occultispinatus* Baba, 1988 [= *U. granulatus japonicus* Balss, 1913] previously known from Japan and the Philippines in the sternite 3 having the anterior margin without submedian spines and the P2–4 dactyli bearing a row of numerous flexor marginal spines usually obscured by dense setae. However, they differ from each other in: the carapace in *U. alius* bears two spines on the lateral margin, i.e., one at the anterolateral angle and the other present directly behind the cervical groove; in *U. occultispinatus*, it bears additional two or three spines, though irregular in size, in one of the syntypes examined (Baba, 1988); the terminal spines on the distal two articles of the antennal peduncle are very small in *U. alius*, instead of being very strong as in *U. occultispinatus*; and the P1 is comparatively slender, with the merus and carpus bearing terminal spines in *U. alius*, instead of being unarmed as in *U. occultispinatus*.

Etymology: From the Latin *alius* (= another, different) alluding to the differences between the new species and *Uroptychus occultispinatus* Baba, 1988.

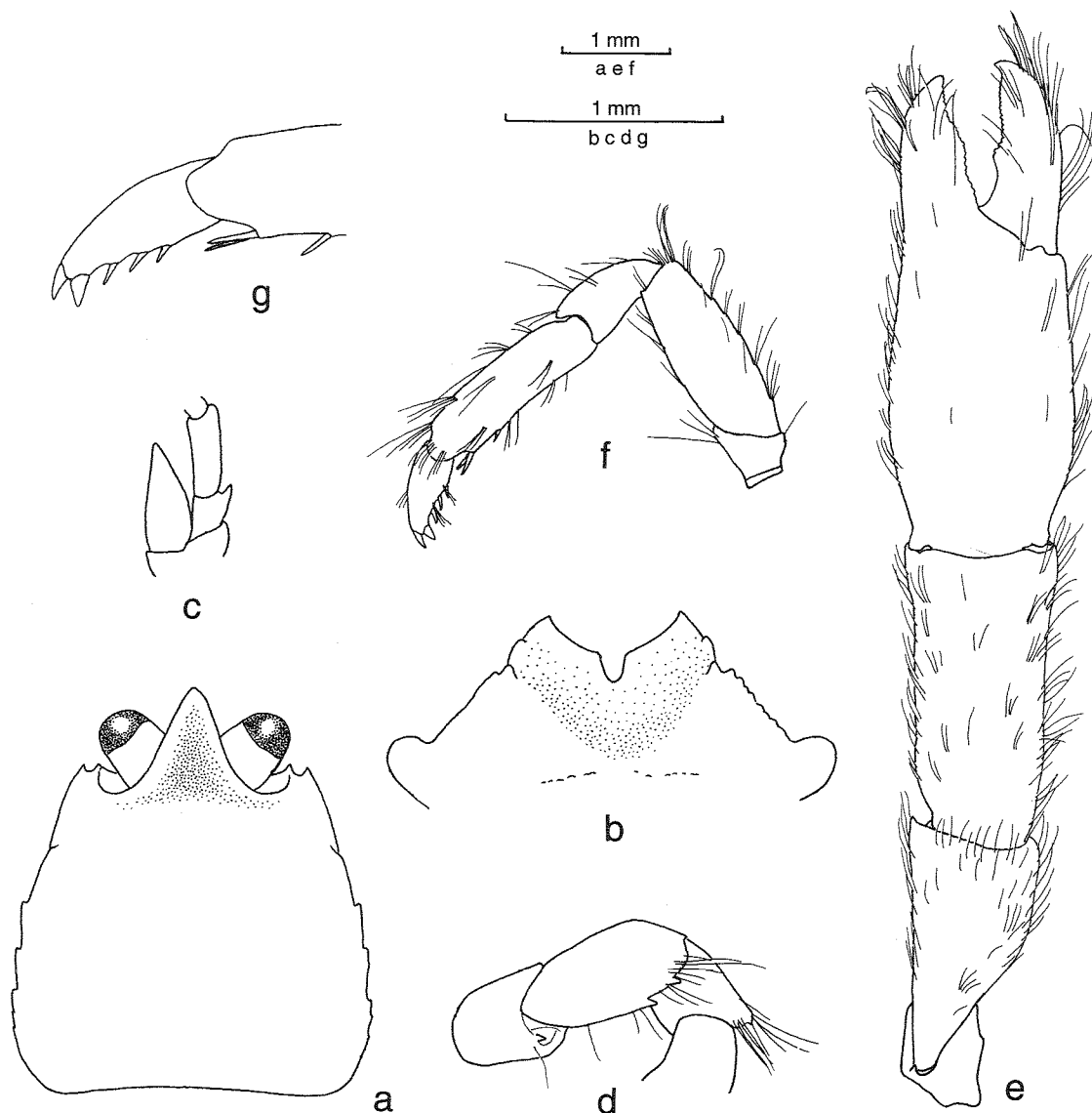


Fig. 8. *Uroptychus altus* n. sp., holotype, ♂, ZMUC CRU-11446: a, carapace, dorsal; b, anterior part of sternal plastron; c, antenna, right, ventral; d, endopod of Mxp 3, distal articles omitted, right, lateral; e, P1, left, dorsal; f, P2, left, lateral; g, same, distal articles, setae omitted, lateral.

***Uroptychus altus* n. sp.**

Fig. 8

Material:

Kei Islands Expedition St. 12, 5°30'S, 132°35'E, 325 m, sand, shells, corals, trawl, 9 Apr 1922: — 1 ♂ (3.7 mm), holotype, ZMUC CRU-11446.

Diagnosis: Cephalothorax very high. Carapace posteriorly broadened, convex from anterior to posterior end, lateral margin convexly divergent, anterolateral spine small, followed by 5 very reduced, posteriorly diminishing spines on branchial region.

Rostrum triangular, broad at base, dorsally excavated. Excavated sternum anteriorly ending in convex margin separating bases of Mxps 1. Sternite 3 depressed, anterior margin with V-shaped median notch. Cornea not broader than peduncle; article 5 of antennal peduncle unarmed, twice as long as article 4; article 4 with distinct terminal spine; antennal scale falling short of end of article 5. Mxp 3 ischium with small spine lateral to distal end of flexor margin; merus with 1 small distolateral and 2 small flexor marginal spines. P1 massive, merus with row of 4 ventral spines. P2–4 propodi each with pair of distoventral spines preceded by another spine; dactylus distally narrowed, ending

in spine of moderate-size, preceded by larger spine and 3 smaller spines.

Description: Carapace markedly high, convex from anterior to posterior end, without distinct groove, posteriorly broadened, 1.2 times as broad as long, exclusive of rostrum. Dorsal surface smooth and glabrous. Lateral margins moderately convex somewhat divergent posteriorly, anterolateral spine small, followed by 5 posteriorly diminishing short spines located on branchial margin. Rostrum broad triangular, dorsal surface excavated, length 0.35 that of remaining carapace. Outer orbital angle produced, ending in small spine.

Pterygostomian flap high relative to length, anteriorly ending in very small spine.

Excavated sternum anteriorly ending in convex margin separating bases of Mxps 1. Sternal plastron strongly widened posteriorly. Sternite 3 with V-shaped median notch on concave anterior margin, anterolateral angle sharp, posterior limit of sternite deeply convex posteriorly. Lateral margin of sternite 4 nearly straight, anteriorly with small blunt processes, anterior-most one somewhat larger.

Abdominal segments smooth. Pleura of segment 2 with subparallel lateral margins. Pleura of segments 3 and 4 each posteriorly diverging, ending in rounded posterolateral corner. Telson slightly less than twice as broad as long, posterior part 1.5 times as long as anterior part, posterior margin feebly emarginate.

Ocular peduncles barely reaching end of rostrum, relatively broad, somewhat narrowed distally, cornea slightly shorter than remaining eyestalk when measured in dorsal view (invisible portion omitted).

Article 5 of antennal peduncle spineless, twice as long as article 4. Article 4 with short, stout spine at distomesial margin. Flagellum consisting of 7 or 8 segments. Antennal scale relatively short and broad, overreaching midlength of but falling short of end of article 5. Article 2 barely produced at distolateral angle.

Mxp 3 ischium with row of very small denticles, about 23 in number, on mesial ridge and small spine lateral to distal end of flexor margin. Merus more than twice as long as ischium when measured in midlateral row, bearing very small distolateral spine and 2 flexor marginal spines distal to midlength.

Right P1 missing. Left P1 2.7 times as long as carapace including rostrum, rather massive, moderately setose. Basi-ischium with well-developed subterminal spine on mesial margin, followed proximally with posteriorly diminishing tubercle-like spines, dorsally

with short, sharp spine. Merus with 4 ventromesial spines along whole length and 1 small ventrolateral spine distally, length much less than postorbital carapace length. Carpus slightly shorter than palm, 2.3 times as long as broad when measured at midlength, bearing 2 distoventral spines, one mesial and other lateral. Palm moderately depressed, 1.9 times as long as broad. Fingers broad relative to length, 0.65 as long as palm, distally ending in short sharp point, curving and crossing; low process on each opposable margin, that of movable finger somewhat proximal to level of opposing one on fixed finger.

Right P2–4 missing. Left P2–4 detached from body, all nearly similar, short and broad, moderately setose. Meri with convex dorsal and ventral margins, dorsal margin with 4 or 5 eminences, P2 merus much shorter than postorbital carapace length, length 3 times breadth. Carpi as long as dactyli. Propodi 3.5 times as broad as long when measured on lateral face, twice as long as dactyli, ventral margin with pair of terminal spines preceded by another spine. Dactyli sharply narrowed distally, feebly curving, ending in moderate-sized spine preceded by 1 much broader and 3 smaller spines.

Remarks: *Uroptychus altus* is closely related to *U. convexus* Baba, 1988 from the Philippines in the carapace ornamentation and massive P1 but they differ in the following particulars: in *U. altus*, the distal two of the flexor marginal spines on P2–4 dactyli are prominent especially the penultimate one, whereas in *U. convexus*, the ultimate is slender and the penultimate and antepenultimate spines both are prominent; the P2–4 propodi in *U. altus* bear an extra spine proximal to the pair of terminal spines on the ventral margin, which is absent in *U. convexus*; the Mxp 3 ischium in *U. altus* bears a distinct terminal spine lateral to the distal end of the flexor margin, whereas such a spine is absent in *U. convexus*, a fact confirmed by re-examination of the type material of *U. convexus*.

Etymology: From the Latin *altus* (= high) in reference to the high cephalothorax, characteristic of the species.

Uroptychus ciliatus (van Dam, 1933), n. comb.

Fig. 9

Synonymy: see p. 225.

Material:

Kei Islands Expedition St. 50, 5°54'S, 132°25'40"E,

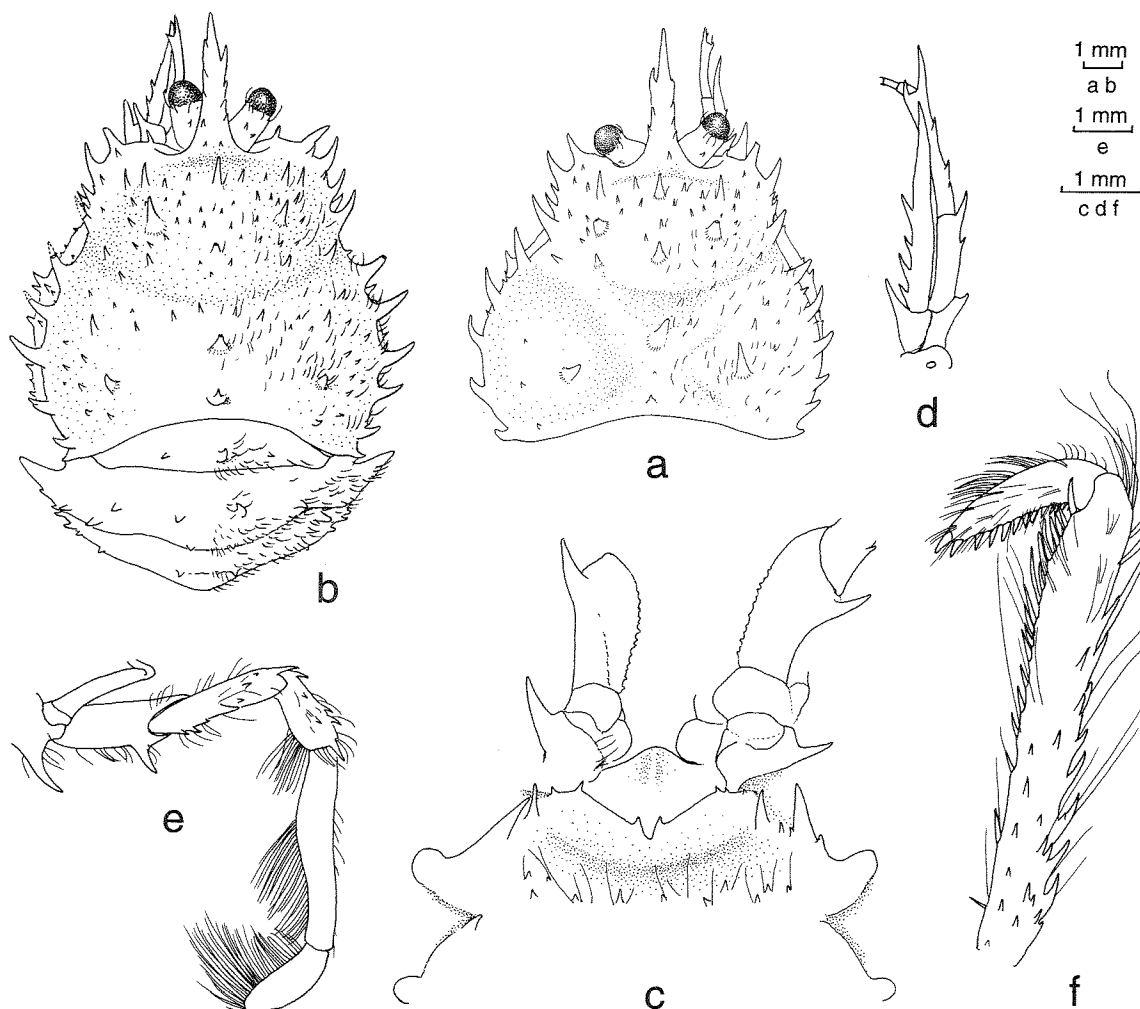


Fig. 9. *Uroptychus ciliatus* (van Dam, 1933), a, ov. ♀ (9.4 mm), ZMUC CRU-11336; b–f, ov. ♀ (9.8 mm), ZMUC CRU-332: a, carapace, dorsal; b, carapace and abdomen, dorsal; c, anterior part of sternal plastron and proximal parts of Mxps 3, ventral; d, antenna, right, ventral; e, Mxp 3, right, lateral; f, distal articles of P2, left, lateral.

233 m, sand, 4 May 1922: — 1 ov. ♀ (9.4 mm), ZMUC CRU-11336.

Kei Islands Expedition St. 58, 5°29'S, 132°37'E, 290 m, mud, 12 May 1922: — 1 ov. ♀ (9.8 mm), ZMUC CRU-11332.

Diagnosis: Carapace broader than long, covered with pronounced and small spines and short setae moderate in density; pronounced spines about 10 in number along lateral margin, 5 or 6 of these situated on convex branchial margin, posterior-most situated at posterior end of lateral margin; 6 prominent spines on gastric region and a few on branchial region. Rostrum narrow and flattish, laterally with a few to several small spines. Orbit well defined, lateral limit not produced. Excavated part of sternites anterior to sternal plastron

ridged in midline, anterior margin convex, anteriorly ending between bases of Mxps 1. Sternite 3 having somewhat concave anterior margin with 2 submedian spines separated by small notch; sternite 4 with 2 lateral spines on each side, posterior larger, ventral surface with transverse row of tubercle-like spines. Abdomen covered with small spines sparse on tergites, numerous on pleura, and short setae: segment 1 with prominent median spine flanked by small spine; segment 2 with spines in 2 rows, anterior row of 2 pair of spines, posterior row of pair of submedian spines flanked by stronger one somewhat lateral to lateral limit of tergite; segments 3–6 each with anterior and posterior pairs of 2 submedian spines, often additional pair on segment 6, posterior pair obsolescent on segment 3; those on segment 6 larger than others. Ocular peduncles

elongate, terminating in midlength of rostrum, bearing 1 or 2 small dorsal spines and coarse distal setae; cornea not dilated, length about half that of remaining eyestalk. Antennal peduncles slender, distal 2 articles each with strong mesioventral terminal spine, article 5 with additional spine on opposite angle of distolateral margin and a few small spines along ventral margin; antennal scale elongate, terminating in distal end of peduncle; article 3 with distinct distomesial spine; article 2 strongly produced on distolateral margin. Mxp 3 having very strong lateral spine on coxa, at distal part of ischium and midpoint of merus; merus with a few additional small spines along lateral margin and 1 well-developed spine on distal end of extensor margin; carpus with well developed distolateral spine and a few small spines on flexor margin. P1 with small spines arranged in longitudinal rows on merus, carpus and palm, not on fingers. P2–4 also spinose; propodus nearly as long as carpus, more than twice length of dactylus, dorsally and laterally with fixed spines, ventral margin with inclined slender spines rather distant from one another in proximal half, close to one another in distal half, more distally arranged in 2 rows; each dactylus about 1/3 as long as propodus, flexor margin with 13–14 proximally diminishing spines, terminal spine largest.

Eggs: Diameter, 0.90 mm.

Remarks: The gastric region and rostrum in the present material bear more numerous spines than in the type material. This is the first record of the species since the female holotype was taken from the “Siboga” St. 251. This species can not be placed in *Chirostylus* or *Gastroptychus* as defined in this paper (see above), and the flattish rostrum and the deeply excavated anterior margin of the sternite 3 displayed by the species are characteristic of *Uroptychus*. It is worthy of note that the Mxps 3 bear strong spines, especially on the coxa, ischium, and merus; all of the spines are directed laterad so as to be visible in ventral view. No males are known.

Uroptychus ciliatus and *U. spinirostris* (Ahyong & Poore, 2004) possess the spinose body and appendages but they are distinguished by the following: 1) the rostrum in *U. ciliatus* bears a few to several small spines on the lateral margins and dorsal surface, instead of two pairs of distinct spines on the lateral margin as in *U. spinirostris*; 2) the dorsal surface of the carapace in *U. ciliatus* bears very small spines in addition to well-developed spines, instead of well-developed spines only as in *U. spinirostris*; 3) the antennal scale

in *U. ciliatus* is much longer, only slightly falling short of the end of the article 5, whereas slightly overreaching the end of the article 4 in *U. spinirostris*; and 4) the P2–4 dactyli are about one-third as long as propodi in *U. ciliatus*, about half as long in *U. spinirostris*.

Range: Kei Islands; 204–290 m.

Uroptychus crassipes van Dam, 1933

Synonymy: see p. 225.

Material:

Kei Islands Expedition St. 58, 5°29'S, 132°37'E, 290 m, mud, trawl, 12 May 1922: — 2 ♂ (4.7, 5.7 mm), 1 ov. ♀ (10.6 mm), 2 ♀ (3.8, 5.1 mm), ZMUC CRU-11424.

Diagnosis: Carapace and P1–4 covered with long fine setae. Carapace lateral margin convex, with 7 spines, first anterolateral, well-developed, second and third small, located on hepatic region, fourth to seventh acute, well developed, located on branchial region. Rostrum triangular, with small subterminal spine on each lateral margin; dorsal surface excavated. Excavated part anterior to sternal plastron with convex anterior margin separating bases of Mxps 1. Sternite 3 with deep median notch separating 2 spines. Sternite 4 with straight oblique lateral margin. Ocular peduncles very elongate, about twice as long as broad, cornea not dilated. Distal 2 articles of antennal peduncle with strong distomesial spine; flagellum of about 16–18 segments overreaching P1 merus; antennal scale overreaching end of peduncle. Mxp 3 ischium with rounded distal corner on flexor distal margin; well-developed distolateral spine on merus and carpus. P1 comparatively massive, merus and carpus with distal spines. P2–4 propodi with pair of distoventral spines, preceded by a few spines in large specimens; dactyli distinctly more than half length of propodi; ultimate spine on flexor margin slender, penultimate broad, preceded by slender, moderately inclined spines.

Eggs: Diameter, 0.90–1.00 mm.

Remarks: In small specimens, the carapace is less setose, as also are the P2–4. The non-ovigerous female has additional subterminal spine on the rostral lateral margin of left side.

Range: Kei Islands and Philippines off E coast of

Mindoro; 290–518 m.

***Uroptychus gracilimanus* (Henderson, 1885)**

Synonymy: see p. 226.

Material:

Th. Mortensen's Pacific Expedition 1914–16, 25 miles E of Zamboanga, ca. 458 m, trawl, 4 Mar 1914: — 1 ov. ♀ (8.0 mm), ZMUC CRU-11577.

Diagnosis: Carapace glabrous and smooth, without dorsal spines; lateral margin with ridge along posterior half; anterolateral spine small. Rostrum triangular, dorsally flattish, length less than half that of remaining carapace. Lateral limit of orbit with very small process. Cornea of eye not dilated. Sternite 3 with narrow median notch separating 2 submedian spines; sternite 4 having anterolateral margin convex, with a few small spines anteriorly. Ocular peduncles less than twice as long as broad. Antennal peduncle unarmed on distal 2 articles, antennal scale falling short of end of article 5. Mxp 3 unarmed on merus and carpus. P1 slender, unarmed, and smooth, merus longer than carapace. P2 merus shorter than carapace; P2–4 carpi more than half length of propodi, longer than dactyli; propodi with slender movable spines on distal third of ventral margin on P2, more distal on P3 and P4, ultimate one located near distal end, single, not paired; dactyli with 8–10 proximally diminishing spines on flexor margin.

Eggs: Number of eggs, 17; size, 1.10–1.20 mm.

Remarks: Identification was verified by examination of the ovigerous female holotype (BMNH 88:33) from Port Jackson. The type and the present material bear P2–4 broken at the tip. Other material (5 ♂, 13 ♀) at hand from the Kei Islands (KARUBAR Expedition St. 19, 20, 21), in the collection of the MNHN, shows that the flexor marginal spines of the P2–4 dactyli are diminishing in size toward the base of the article, the terminal one being the largest.

Reexamination of the specimens from Madagascar reported earlier (Baba, 1990) discloses that they belong to another species apparently new to science, the differences being distinct in that the P2–4 bear relatively long carpi and have different spination of the propodi: the distal of the ventral marginal spines of each propodus is located near the juncture with the dactylus in *U. gracilimanus*, whereas it is considerably

distant from the juncture in the Madagascar specimens. This material will be described elsewhere.

One of the specimens from “Valdivia” St. 250 off the south coast of Somali Republic, 1668 m, now in the collection of the Musée Zoologique, Strasbourg (1 ovigerous female, MZS 349), is referred to *U. remotispinatus* Baba & Tirmizi, 1979. One male from the “Valdivia” St. 245 in Zanzibar Canal, reported by Doflein & Balss (1913) and now in the collection of the Senckenberg Museum at Frankfurt a. M. (SMF 4549), was synonymized with *U. vandamae* Baba, 1988 for a unique armature of the dactyli of the P2–4 (Baba, 1990). The identity of the other specimens reported from “Valdivia” St. 191, 246, 252, 253 in the Mozambique Channel, off S Somali Republic, and off W coast of Sumatra, in 638–1019 m, remains questionable.

Range: Zanzibar, W coast of Sumatra, Moluccas, off Zamboanga, New South Wales, East China Sea, and Japan; 421–1668 m.

***Uroptychus inclinis* n. sp.**

Fig. 10

Material:

Kei Islands Expedition St. 3, 5°32'S, 132°36'E, 245 m, sand, 31 Mar 1922: — 1 ♂ (4.3 mm), 1 ♀ (5.6 mm, holotype), ZMUC CRU-11334.

Diagnosis: Carapace with relatively long sparse setae; lateral margins convex bearing 7 spines, first anterolateral, moderate in size, second and third much smaller than following 4 spines. Rostrum narrowly triangular, deeply excavated dorsally, laterally bearing small subapical spine on each side. Lateral limit of orbit angular, ending in small spine. Pterygostomian flap with small spines on anterior half. Excavated sternum with distinct ridge in midline, anterior margin broadly triangular, separating Mxps 1 rather distantly; sternite 3 shallowly depressed, anterior margin weakly concave, with narrow U-shaped median notch. Ocular peduncles elongate, cornea about half as long as remaining eyestalk. Distal 2 articles of antennal peduncle each with very strong distomesial spine; flagellum of 7–10 segments barely reaching end of P1 merus; antennal scale overreaching tip of distal spine of article 5. Mxp 3 ischium with small spine directly lateral to rounded distal corner of flexor margin, denticles on mesial ridge rather small; merus short

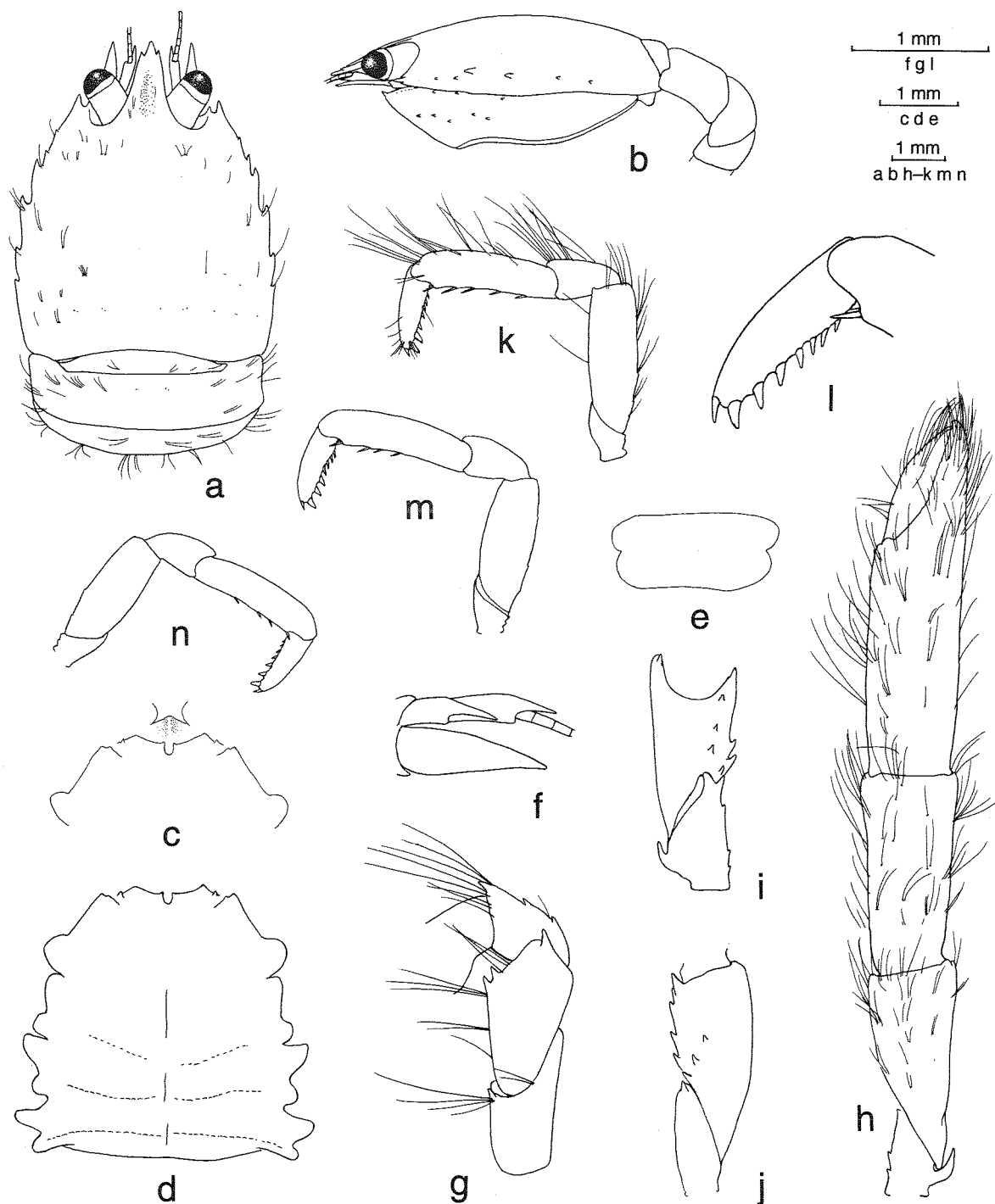


Fig. 10. *Uroptychus inclinis* n. sp., holotype, ♀, ZMUC CRU-11334: a, carapace and anterior part of abdomen, dorsal; b, same, setae omitted, lateral; c, excavated sternum and sternite 3; d, sternal plastron; e, telson; f, antenna, left, ventral; g, endopod of Mxp 3, distal part omitted, left; h, P1, right, dorsal; i, same, proximal part, ventral; j, same, mesial; k, P2, left, lateral; l, same, distal part, setae omitted, lateral; m, P3, left; n, P4, right.

relative to length, with 1 distolateral and 1 or 2 small spines on distal 1/3 of flexor margin; carpus with distolateral spine and 1 or 2 extensor marginal spines. P1 with distally softened long setae; basi-ischium with 2 dorsal spines; merus with row of 3 spines on proximal

part of ventromesial surface and 3 spines on ventral surface. P2–4 moderately broad in lateral view, bearing long, distally softened setae; meri having dorsal crest with a few proximal spines or eminences distinct on P2, obsolete on P3 and P4; P2 merus much shorter

than postorbital carapace length; propodi having ventral margin with pair of terminal spines preceded by 3 or 4 spines (2 on P3, 1 on P4 in paratype); each dactylus slightly less than half length of propodus, flexor margin nearly straight, bearing slender terminal spine preceded by 7 (6 on P4 in paratype) proximally diminishing spines somewhat inclined, not perpendicular to margin.

Description of holotype: Carapace smooth, with scattered, relatively long setae on surface, slightly broader than long. Dorsal surface convex from anterior to posterior end, without distinct groove. Lateral margins convex, with 7 spines, first anterolateral, reaching proximal end of antennal scale, second and third small and somewhat ventral to level of fourth, fourth and fifth as large as first, sixth and seventh smaller. Rostrum narrow triangular, with somewhat concave lateral margin bearing subapical spine. Dorsal surface deeply excavated. Lateral angle of orbit with small spine rather close to anterolateral spine of carapace.

Pterygostomian flap produced anteriorly, ending in small spine, anterior half of surface with small spines, a few of these located directly below linea anomurica.

Excavated sternum having anterior margin broadly subtriangular, surface with longitudinal ridge in midline. Sternite 3 shallowly depressed, anterior margin slightly concave between well produced anterolateral angles, with U-shaped median notch separating very small submedian spines. Sternite 4 having anterolateral margin nearly straight, anteriorly not strongly produced, bearing 2 denticles.

Abdomen smooth, sparingly setose. Segment 1 without transverse ridge. Segment 2 relatively long, pleural margins feebly concave and subparallel. Pleura of segments 3 and 4 laterally not angular, ending in rounded margin. Telson about 2.4 times as broad as long, posterior lobe 1.5 times as long as anterior lobe, posterior margin somewhat concave.

Ocular peduncles overreaching midlength of rostrum, distally narrowed; cornea half as long as remaining eyestalk.

Ultimate article of antennular peduncle 3 times as long as broad. Antennal peduncles overreaching end of ocular peduncle, distal 2 articles each with strong ventral distomesial spine, article 5 1.3 times as long as article 4, breadth 4/5 that of ultimate article of antennule. Antennal scale slightly overreaching end of ultimate article including spine. Flagellum consisting of 8 or 9 segments falling short of end of P1 merus.

Article 2 with strong lateral spine.

Mxps 1 widely separated. Mxp 3 sparingly with long setae on lateral face. Ischium with distal spine lateral to rounded distal corner of flexor margin, mesial ridge with about 20 denticles distally diminishing. Merus strongly compressed mesio-laterally, distolateral spine distinct; flexor margin sharply ridged, bearing 2 small close spines on angularly produced portion at distal third. Carpus with distolateral spine and 2 extensor marginal spines.

Pereopods smooth, with distally softened long setae. P1 slender, 4.5 times length of carapace, somewhat massive distally. Ischium dorsally with 2 spines, distal one strong, proximal one small, ventrally with subterminal spine on mesial margin. Merus slightly shorter than carapace, bearing 2 distoventral spines (1 large mesial, 1 lateral), 1 distodorsal spine (mesial), 3 ventromesial spines in oblique line on proximal portion, and 3 ventral spines. Carpus with distomesial and distolateral spines ventrally. Palm slightly longer than carpus. Movable finger slightly more than half as long as palm, opposable margin with low median process fitting to opposing concavity of fixed finger when closed.

P2–4 relatively short and broad, somewhat compressed. Meri subequal on P2 and P3, that of P4 shorter; dorsally with 2–5 eminences provided with setae. P2 merus much shorter than carapace. Carpus shorter than dactylus. Propodus subequal on P2–4, about twice as long as carpus, 3.4–3.8 times as long as broad, flexor margin ending in pair of spines preceded by 4 slender spines on P2, 3 spines on P3–4. Each dactylus distinctly more than half length of propodus, tapering distally, flexor margin nearly straight, bearing 8 spines, ultimate slender, others somewhat inclined, proximally diminishing, penultimate broader than ultimate.

Paratype: Antennal articles 4 and 5 on the right side are much shorter than those on the left side, so that the antennal scale extends far beyond the end of the distomesial spine of the article 5. Those on the left side is normal, about the same as those of the holotype. Telson 0.43 times as long as broad, posterior lobe 1.5 times as long as anterior lobe, posterior margin not concave. P2 merus with 2 or 3 spines instead of eminences as in the holotype.

Remarks: The lateral marginal spination and dorsal setation of the carapace, and the shape of the rostrum strongly link the species to *U. tridentatus* (Henderson,

1885). The new species is distinguished from that species by the antennal scale that overreaches the tip of the distal spine of the article 5 or the end of the proximal second segment of the antennal flagellum rather than falling short of end of the distal spine of the article 5 or terminating in the end of the first segment of the antennal flagellum as in *U. tridentatus*; and the P2–4 dactyli that bear eight somewhat inclined flexor marginal spines whereas there are six spines, of which the distal second, third and fourth are perpendicular to the flexor margin in *U. tridentatus*.

Etymology: From the Latin *inclinis* (= inclined), referring to the inclined flexor marginal spines of the P2–4 dactylus that are not perpendicular to the margin as in *U. tridentatus*.

***Uroptychus joloensis* van Dam, 1939**

Synonymy: see p. 227.

Material:

Kei Islands Expedition St. 5, 5°31'30"S, 132°38'E, 250–90 m, sand, stones, 4 Apr. 1922: — 1 ♂ (2.3 mm), ZMUC CRU-11368.

Diagnosis: Carapace dorsally unarmed, laterally with 3 spines: first anterolateral, of moderate-size, second small, more close to third than to first; third prominent, anterior to midlength of lateral margin, followed by distinct ridge leading to posterior end. Rostrum subtriangular, somewhat deflexed, dorsally excavated, length slightly less than half that of remaining carapace. Lateral orbital spine close to anterolateral spine of carapace. Anterior margin of sternite 3 with narrow U-shaped median sinus flanked by very small spine. Ocular peduncles distally narrowed. Distal 2 articles of antennal peduncle each with distinct distomesial spine; flagellum of 8 segments falling short of end of P1 merus; antennal scale barely reaching end of article 5. Mxp 3 ischium with rounded corner at flexor distal margin; merus with well-developed distolateral spine and 1 or 2 small spines on flexor margin; carpus also with 1 distal and 1 proximal spine. P1 nearly spineless but two well-developed dorsal spines on basi-ischium; with plumose setae more numerous distally. P2–4 short relative to P1 length, P2 merus shorter than postorbital carapace length; propodus with pair of movable spines on distal end of ventral margin; dactylus relatively stout, straight, less than half length of propodus, flexor margin with 5 spines, ultimate slender, penultimate and

antepenultimate prominent, nearly perpendicular to flexor margin, proximal 2 much slender.

Remarks: The subapical spines of the rostrum, characteristic of the species (van Dam, 1939), are missing in the present specimen, as well as in other material at hand (see below). Such a suppression of spines is also observed in Japanese specimens of *U. occultispinatus* Baba, 1988 (unpublished).

Three specimens available to me, taken on soft corals (unidentified) at Kushimoto, Kii Peninsula, the Pacific coast of Central Japan by K. I. Hayashi, are without doubt referable to *U. kudayagi* by the characteristic color spots as originally described (Miyake, 1961: fig. 1). With these specimens, it is apparent that *U. kudayagi* should be merged with *U. joloensis*. The lateral angle of the orbit is distinctly spine-like and a ridge is present behind the posterior-most lateral spine of the carapace, characters not mentioned by Miyake. The smaller of the lateral spines of the carapace as seen in the type of *U. joloensis* is absent at least on one side in two of the three specimens examined, and it is barely discernible in the remaining specimen. The subapical spines of the rostrum as described for the type of *U. joloensis* are distinct in one (female) of the three specimens, vestigial in another female and absent on the left side in the remaining male.

This species is very closely related to *U. amabilis* Baba, 1977 from New Caledonia, in dactylar spination of the P2–4. However, *U. amabilis* has no lateral spine on the carapace other than the anterolateral spine and the antennal article 5 unarmed.

Minemizu (2000) noted that the typical red spots around ocular peduncles and joints of the P1–4 fit in well with spots of the same color of host alcyonacean polyps.

Range: Jolo, Kei Islands, and Japan; 56.7–250 m. Presumably this species may be a continental shelf form but it is included here in this report based on the present depth record. Associated with the alcyonacean *Siphonogorgia dipsacea* (Wright & Studer) and *Siphonogorgia dofleini* Kükenthal (see Miyake, 1982; Minemizu, 2000).

***Uroptychus latirostris* Yokoya, 1933**

Figs. 11, 12

Synonymy: see p. 227.

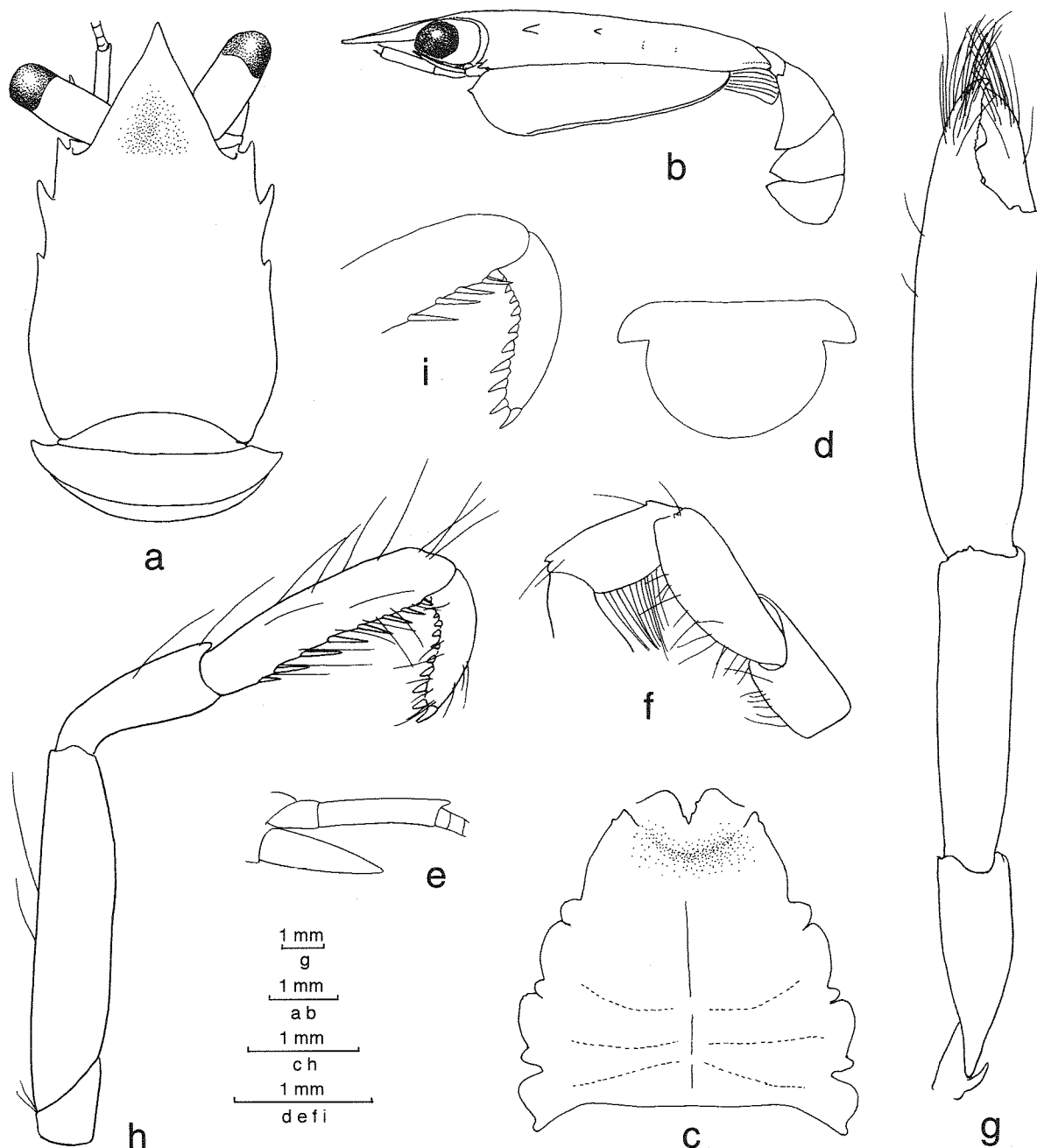


Fig. 11. *Uroptychus latirostris* Yokoya, 1933, neotype, ♂, ZLKU 12993: a, carapace and anterior part of abdomen, dorsal; b, same, lateral; c, sternal plastron; d, telson; e, antenna, left, ventral; f, endopod of Mxp 3, distal articles omitted, left, lateral; g, P1, left, dorsal; g, P3, right, lateral; h, same, distal part, setae omitted, lateral.

Material:

Japan, Ashizuri-zaki, Tosa Bay, 150 m, 29 Sept. 1965, coll. T. Habe: — 1 ♂ (5.9 mm), neotype, ZLKU 12993.

Japan, Tosa-shimizu, Tosa Bay, 9–27 m, 28 Sept. 1960, coll. K. Kurohara: — 1 ♂ (5.0 mm), 1 ♀ (6.4 mm), ZLKU 8009-10.

Hachijo-jima, Izu Islands, 200 m, 15 Aug. 1952: — 2 ov. ♀ (5.9, 6.5 mm), 1 sp. (sex indet., 5.0 mm), ZLKU 4697-99.

Th. Mortensen's Pacific Expedition 1914–16, Okinose, Sagami Bay, 100 fm (183 m), hard bottom, swabs, 25 Jun 1914, Th Mortensen: — 1 ov. ♀ (7.8 mm), ZMUC CRU-11005.

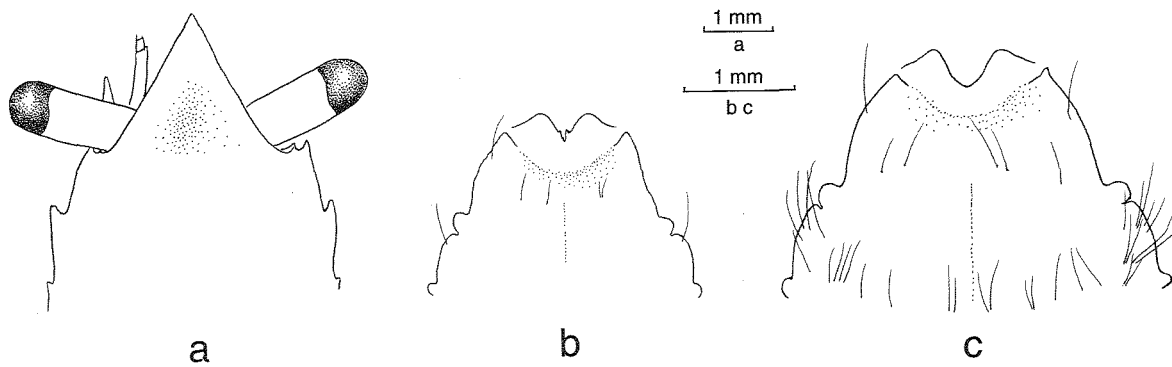


Fig. 12. *Uroptychus latirostris* Yokoya, 1933: a, ♀ (6.4 mm); b, ♂ (5.0 mm), ZLKU 8009-10: a, anterior part of carapace, dorsal; b, c, anterior part of sternal plastron.

Neotype: The male, ZLKU 12993, is selected as a neotype.

Diagnosis: Carapace dorsally smooth and glabrous. Lateral margin with moderate-sized anterolateral spine followed by large spine placed at anterior end of branchial region and another spine located somewhat anterior to midlength. Rostrum broadly triangular, slightly deflexed, dorsally excavated; breadth at proximal third 0.65 distance between lateral limits of orbits. Sternal plastron posteriorly broader; excavated sternum with triangularly produced sharp anterior end between close bases of Mxps 1; sternite 3 strongly depressed, bearing narrowly excavated, V-shaped anterior margin with obsolescent submedian spinules. Telson with semicircular posterior margin. Ocular peduncles about twice as long as broad, cornea slightly less than half that of remaining eyestalk. Article 5 of antennal peduncle with small ventral distomesial process; flagellum consisting of more than 20 segments reaching end of P1 merus; antennal scale terminating in or slightly overreaching midlength of article 5. Mxps 1 close to each other at base. Mxp 3 merus 2.5 times as long as ischium, with very small distolateral spine; carpus with distolateral spine and 1 spine on extensor proximal margin, both very small. P1 nearly glabrous but fingers with thick setae; basi-ischium with well developed distodorsal spine; merus ventrally with distomesial spine and fine granules on proximal portion, length greater than postorbital carapace length; palm smooth. P2–4 slender, P2 merus slightly longer than postorbital carapace length; meri unarmed, length subequal to that of carpus and propodus combined; carpi more than half as long as propodi; P2–4 propodi ending in pair of terminal spines preceded by 7–9 spines (fewer on P4); dactyli with 9 or 10 somewhat

inclined, relatively broad spines successively diminishing toward base of article.

Description of neotype: Carapace slightly longer than broad, dorsal surface smooth and glabrous. Lateral margin convex on posterior branchial region, anterolateral spine of moderate size directed anteroventrad, followed by 2 spines: larger spine placed at anterior end of branchial region and smaller spine located somewhat anterior to midlength. Rostrum broadly triangular, slightly deflexed, dorsally excavated; breadth at proximal third 0.65 distance between lateral limits of orbits. Lateral orbital spine short, relatively broad at base, directed anterolaterad and close to anterolateral spine of carapace.

Pterygostomian flap anteriorly ending in very small spine, surface unarmed.

Sternal plastron posteriorly broadened, greatest breadth subequal to greatest length. Excavated sternum with triangularly produced sharp anterior end between close bases of Mxps 1, surface with obsolescent ridge in midline. Sternite 3 strongly depressed, bearing narrowly excavated anterior margin with obsolescent submedian spinules. Sternite 4 having anterolateral margins convexly divergent, relatively long, length 0.69 width of sternite 3.

Abdominal segment 1 without transverse ridge. Segment 2 with pleural lateral margins concavely divergent posteriorly, posterolaterally angular. Pleura of segments 3 and 4 with angular lateral margin. Telson with semicircular posterior margin, 1.7 times as broad as long, posterior lobe 2.6 times as long as anterior lobe.

Ocular peduncles elongate, about twice as long as broad, nearly reaching end of rostrum, cornea not dilated, length slightly less than half that of remaining

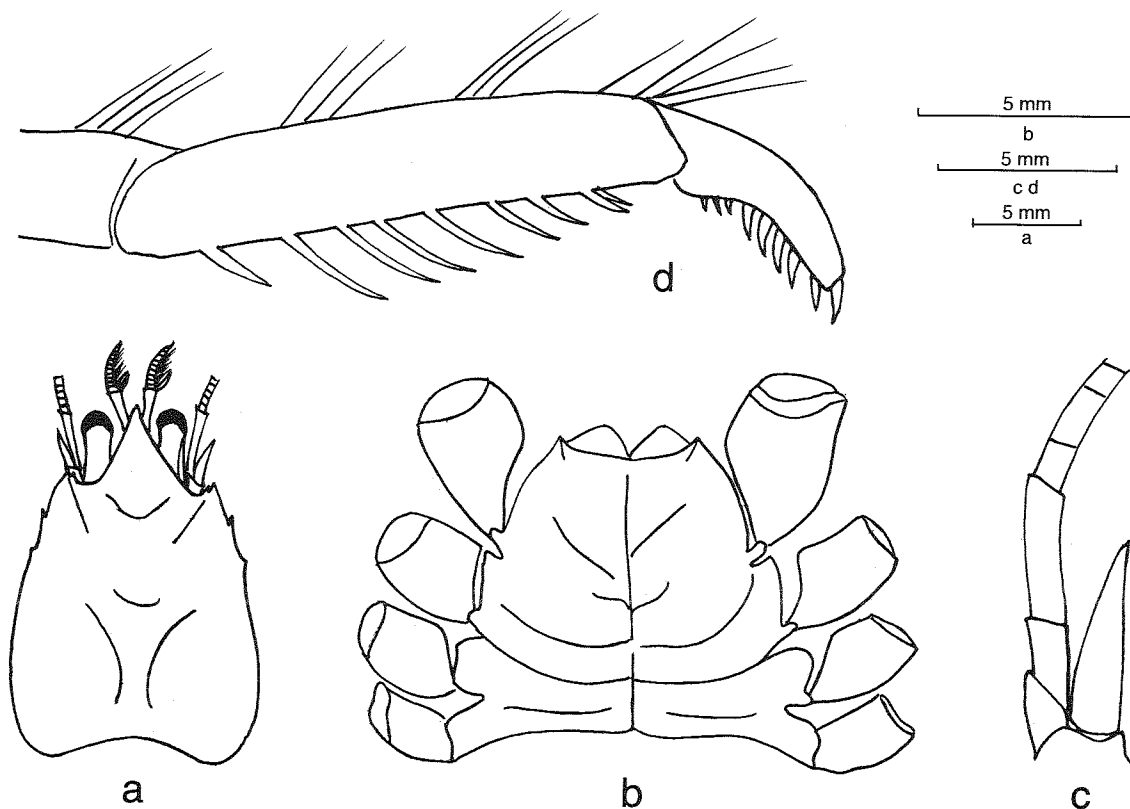


Fig. 13. *Uroptychus cavirostris* Alcock & Anderson, 1899, holotype, ♀, ZSIC 2672/10: a, carapace, dorsal; b, sternal plastron, including basal parts of P1–4; c, antenna, left, ventral; d, walking leg, distal articles, lateral.

eyestalk.

Article 5 of antennal peduncle 4.7 times as long as broad, breadth slightly less than half that of ultimate article of antennule; ventral distomesial process small. Flagellum consisting of more than 20 segments reaching end of P1 merus. Antennal scale terminating in midlength of article 5. Article 2 barely produced on distolateral angle.

Mxps 1 close to each other at base. Mxp 3 ischium with 27 or 28 denticles on mesial ridge. Merus 2.5 times as long as ischium, with very small distolateral spine. Carpus with distolateral spine and 1 spine on extensor proximal margin, both very small.

P1 nearly glabrous but fingers with thick setae. Basischium with well developed distodorsal spine, unarmed on mesial margin. Merus ventrally with distomesial spine and fine granules on proximal portion, length more than postorbital carapace length. Carpus slightly shorter than palm, smooth. Palm moderately depressed, surface smooth, length 2.5 times that of movable finger. Fingers gaping, distally crossing, opposable margin of movable finger with low

broad process at proximal third.

P2–4 slender, moderately compressed, P2 merus slightly longer than postorbital carapace length. Meri successively shorter posteriorly, distally narrowed, unarmed, length subequal to that of carpus and propodus combined. Carpi more than half as long as propodi. Propodi longer on P4 than on P2 and P3, length twice as long as dactyli, ventral margin with pair of terminal spines preceded by 7 (on P2 and P3), 6 (on P4) slender spines. Dactyli curving proximally, flexor margin with 9 or 10 somewhat inclined, relatively broad spines successively diminishing toward base of article.

Eggs: Number of eggs carried 28; size, 0.96 x 1.03–1.06 x 1.08 mm.

Variations: The third spine of the carapace lateral margin is rather reduced in small specimens (♂, ZLKU 8009-10; 1 sp. sex indet., ZLKU 4697-99). The specimen from Sagami Bay, which is much larger than the other specimens, has the third spine reduced to very

small size and another spine between the second and third. One of the ovigerous females (ZLKU 4697–99) and the female from Tosa Bay (ZLKU 8009–10) have the anterior margin of the sternite 3 somewhat widely concave without submedian spines (Fig. 12c), as illustrated by Baba (1973). Possibly the spines there may have been broken during the life time. Pleura of abdominal segments 2–4 are somewhat angular on the posterolateral margin in the neotype, rather rounded in the other specimens.

Remarks: *Uroptychus alcocki* Ah Yong & Poore, 2004, *U. cavirostris* Alcock & Anderson, 1899, *U. latirostris*, *U. mauritius* sp. nov., and *U. yokoyai* Ah Yong & Poore, 2004, are very similar to one another and constitute a species complex. The original description of *U. latirostris* is very brief, and the type material is no longer extant, so that a neotype is selected and described here.

The rostrum in *U. latirostris* is broader, its basal width being 0.82–0.83 the distance between the lateral margins of the anterolateral spine of the carapace measured at level of the orbital margin (frontal margin), rather than being 0.64 in *U. mauritius* n. sp. The anterior margin of the sternal plastron in *U. latirostris* lacks submedian spines or bears at most obsolescent submedian spines, instead of bearing a distinct pair as in *U. mauritanus* sp. nov. and *U. alcocki*. *Uroptychus yokoyai* is characterized by the P1 merus that is narrowed distally and proximally, representing a shape of bowling pin instead of being distally not narrowed, and the telson that bears a long posterior lobe (about as long as broad instead of being at most half as long as broad in the other related species).

Uroptychus cavirostris Alcock & Anderson, 1899, the problematic species among the species complex, is not well described and its systematic status is still not well established. In 1980, K. K. Tiwari then of the Zoological Survey of India, sent me drawings of the holotype (♀, 5.4 mm, ZSIC 2672/10) of that species (see Fig. 13). The anterior margin of the sternite 3 is narrowly excavated like that of *U. latirostris* but has no submedian spines. The posterior margin of the telson is apparently emarginate (Alcock & Anderson, 1899: pl. 44: fig. 3), not semicircular as in *U. latirostris*. Reexamination of this holotype is needed.

Ah Yong & Poore (2004a) questioned the identification of the “John Murray” material of *U. cavirostris* by Tirmizi (1994) and considered it to be a young stage of *U. longiocularis* Baba, 1990. However, I believe *U. longiocularis* has a different spination of

the carapace lateral margin, which character is apparent in specimens of *U. longiocularis* with the same size as the Tirmizi’s specimen.

Range: Tosa Bay and Sagami Bay, Japan; between 9–27 m and 200 m.

Uroptychus longior n. sp.

Fig. 14

Material:

Kei Islands Expedition St. 59, 5°28’S, 132°36’E, 385 m, corals & sponges, trawl, 12 May 1922: — 1 ov. ♀ (9.1 mm), 1 ♀ (8.0 mm), ZMUC CRU-11524.

Th. Mortensen’s Java-South Africa Expedition 1929–30, “Dog” Sta. 15, Bali Sea, Indonesia, 7°29’S, 114°49’E, ca. 240 m, sand and mud with concretions, trawl, 10 Apr 1929: — 1 ♂ (9.9 mm, holotype), 1 ♀ (9.3 mm), ZMUC CRU-11075.

Diagnosis: Carapace with 8 spines on lateral margin, first anterolateral, second and third smaller (third very small in holotype), placed on hepatic region, and 5 acute, posteriorly diminishing spines on branchial region. Rostrum narrow triangular, dorsally flattish. Sternite 3 having anterior margin with semicircular notch separating incurved submedian spines; sternite 4 with anterolaterally directed anterior spines not reaching anterior end of preceding sternite. Ocular peduncles somewhat elongate; cornea not dilated, much shorter than remaining eyestalk. Antennal peduncle having strong distomesial spine on distal 2 articles; antennal scale overreaching distomesial spine of article 5. Mxp 3 ischium with rounded corner on flexor distal margin; merus and carpus each with distolateral spine, flexor margin of merus with 2 spines on distal half. P1 basi-ischium with strong distodorsal and distoventral spine, merus and carpus with spines, those on carpus small. P2–4 meri and carpi with spines on dorsal margin; propodi with pair of spines preceded by row of spines; dactyli bearing 12 or 13 spines on straight flexor margin, ultimate slender, penultimate broad, remaining spines slender, inclined, and contiguous to one another.

Description of holotype: Carapace, excluding spines, somewhat broader than long, posteriorly broadened. Dorsal surface very weakly convex from side to side, without distinct grooves, smooth and sparsely setose, with scattered small spines on hepatic and lateral protogastric regions. Lateral margin with anterolateral

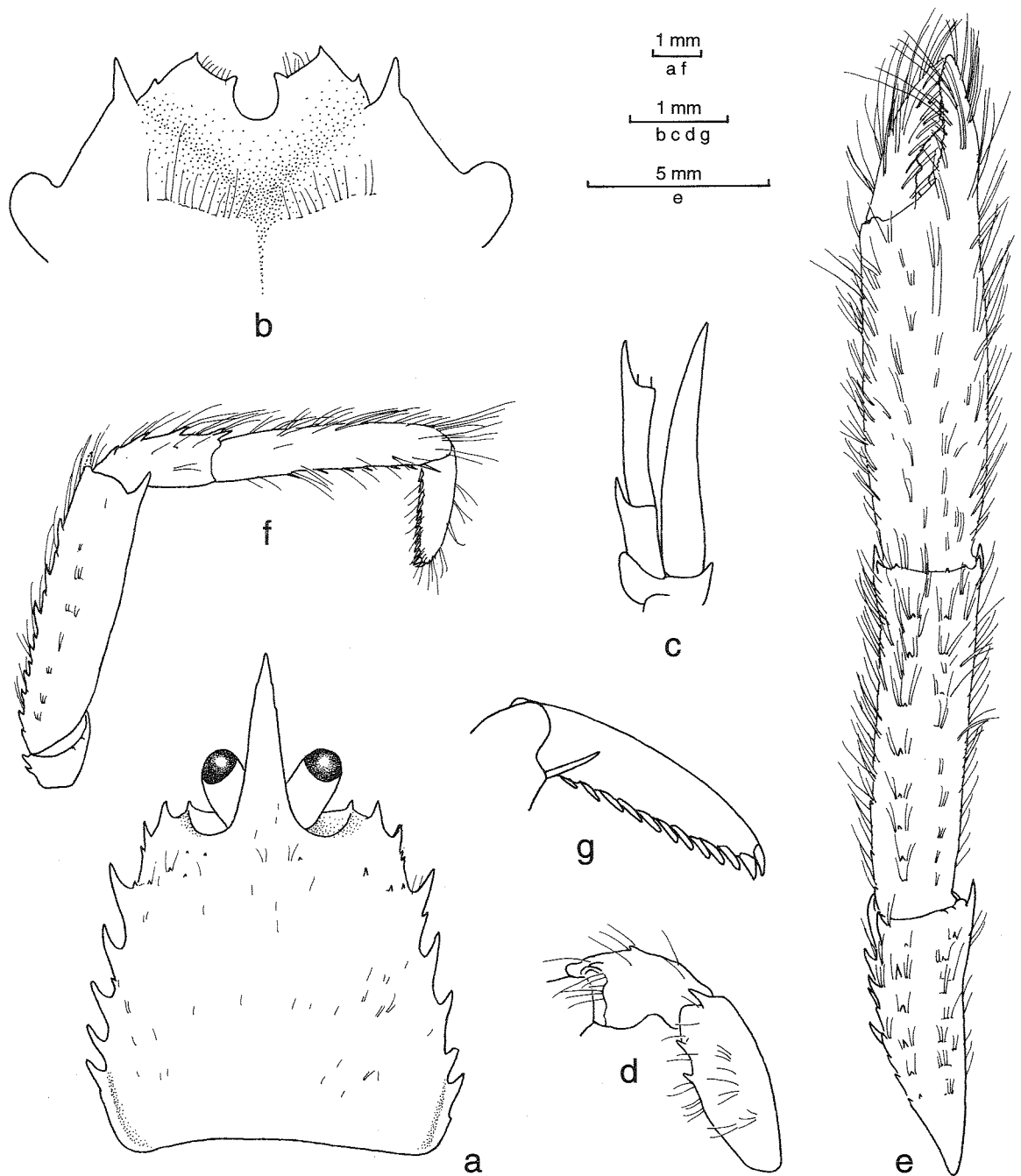


Fig. 14. *Uroptychus longior* n. sp., holotype, ♂, ZMUC CRU-11075: a, carapace, dorsal; b, anterior part of sternal plastron; c, antenna, left, ventral; d, merus and carpus of Mxp 3, left, lateral; e, P1, right, dorsal; f, P2, right, lateral; g, same, distal article, fine setae omitted.

spine small but distinct, followed by 1–3 smaller spines on hepatic region, 5 stout, posteriorly diminishing spines on branchial region (right first and left second of latter followed by spinule in holotype), last spine followed by salient margin leading to posterior end. Lateral orbital angle with small spine. Rostrum narrowly triangular, length slightly more than half that of remaining carapace, dorsal surface flattish, lateral

margin with 2 small denticles distally.

Excavated sternum with subtriangular anterior margin, bearing ridge in midline on surface. Sternal plastron slightly broadened posteriorly. Sternite 3 depressed well, anterior margin concave with semicircular median excavation separating 2 small submedian processes, anterolateral angle sharply produced, lateral margin with small spine near

proximal end. Sternite 4 with prominent anterolateral spine directed slightly anterolaterad.

Abdomen smooth and glabrous. Segment 1 with transversely ridged. Pleura of segment 2 convexly divergent posteriorly, anterolateral and posterolateral corner angular. Pleura of segments 3 and 4 also angular on posterolateral margin. Telson 2.3 times as broad as long, posterior part 1.5 times as long as anterior part, posterior margin somewhat concave.

Ocular peduncles more or less elongate, ending in midlength of rostrum. Cornea not dilated.

Antennal peduncles having distal 2 articles each with strong distomesial spine, article 5 more than 1.5 times as long as article 4. Flagellum of 15 segments not reaching end of P1 merus. Antennal scale slightly wider than opposite peduncle, sharply narrowed distally, somewhat curving laterad, distinctly overreaching end of peduncle including distal spine. Article 2 sharply produced distolaterally.

Mxp 3 ischium denticulate on mesial ridge, 9 denticles rather loose on proximal half, 17 or 18 close to one another on distal half, flexor distal margin rounded. Merus with 2 small flexor marginal and 1 strong distolateral spine on left appendage, additional one dorsal to distolateral one on right appendage. Carpus with mid-dorsal and distolateral spines.

P1 covered with soft setae of moderate length, 3.6 times as long as carapace including rostrum. Merus and carpus granulate. Basi-ischium dorsally with strong curved spine, ventromesially with strong subterminal spine followed by a few proximally diminishing, small spines. Merus with spines arranged in roughly 4 rows, in addition to prominent distolateral spine: 2 dorsal rows of spines much smaller and rather obsolescent; mesial row of 5 prominent spines accompanied proximally by 1 or 2 small spines; ventromesial row of 3 prominent spines, terminal one accompanying small spine near base; length more than postorbital carapace length. Carpus as long as palm, with tubercular small spines roughly in 3 rows on dorsal surface and mesial margin; 4 terminal spines (2 mesial and 2 lateral) more or less pronounced. Palm medially somewhat depressed, spineless, slightly less than 3 times as long as broad when measured at midlength. Fingers half as long as palm, gaping, cutting edges on distal third nearly straight, opposable margin of fixed finger with low process at proximal third on right appendage, very reduced one on left appendage; opposing margin with basally broad, low, tuberculate process (lobe-like in dorsal aspect) at distal third, and additional small smooth process at proximal third on

right appendage.

P2–4 similar, moderately compressed, with fine setae in moderate density; relatively broad in lateral view, but spines of meri and carpi posteriorly diminishing. P2 merus with 11 (left) or 13 (right) spines on dorsal margin, and 1 distolateral and 1 distomesial spine on ventral surface, distolateral larger; length less than postorbital carapace length. Carpus shorter than dactylus, with 6 (left) or 4 (right) spines on dorsal margin and 2–3 spinules on dorsolateral surface. Propodus twice as long as dactylus, ventral margin with pair of terminal spines preceded by 6 or 7 spines. Dactylus nearly straight on flexor margin, distally not strongly narrowed, flexor margin with 12 or 13 spines including terminal one, ultimate spine slender, penultimate one basally broad, remaining spines slender, ending in blunt tip, inclined and nearly contiguous. P3–4 having meri without spine on mesial margin of ventral surface.

Variations: Hepatic dorsal spines that are distinct in the holotype tend to be reduced in all paratypes, but a small spine dorsal and mesial to the first branchial marginal spine is usually present, only except for the female from the Bali Sea in which they are absent. Fingers of the P1 in all female paratypes are not gaping; tuberculate opposable margins are sinuous, each bearing 2 lobe-like processes, the proximal lobe on the movable finger being more distinctly process-like.

Eggs: Number of eggs, 9; size, 1.00 x 1.08 mm.

Parasites: One of the ovigerous females taken from the Kei Islands bears an externa of a rhizocephalan parasite.

Remarks: The slender rostrum and carapace ornamentation of *U. longior* are similar to those of *U. nanophyes* McArdle, 1901. The two species are very close to each other but I am inclined to believe that the following differences are consistent: the antennal scale distinctly overreaches the distomesial spine of the antennal article 5 in *U. longior*, whereas it reaches the article 5, not overreaching the distomesial spine in *U. nanophyes*; the sternite 4 has the anterolateral spine directed anterolaterad in *U. longior*, straight forward in *U. nanophyes*; the P2 merus bears only one distomesial spine on the ventral face in *U. longior*, instead of a row of spines on mesial margin of the ventral face in *U. nanophyes*.

The P1, antennae, Mxps 3 and carapace in *U. longior*

are very much like those of *U. undecimspinosa* Kensley, 1977 from South Africa. However, the latter species is distinct in that the carapace bears 11 anterior gastric spines in a transverse row; the lateral marginal spines on the branchial region that are less prominent than in *U. longior*; the anterior median sinus of the sternite 3 that is V-shaped, not widely U-shaped as in *U. longior*; and there are 12–23 closely spaced dactylar flexor marginal spines on the P2–4 of *U. longior* instead of 9 distinctly spaced spines in Kensley's species.

Etymology: From the Latin *longior* (= longer), in reference to the longer antennal scale of the species, one of the characteristics to separate the species from *U. nanophyes*.

***Uroptychus mauritius* n. sp.**

Fig. 15

Material:

Th. Mortensen's Java-South Africa Expedition 1929–30, "Maurice" St. 43, Tombeau Bay, Mauritius, 238 m, swab, 11 Oct 1929: — 2 ♂ (6.1, 7.7 mm), 1 ov. ♀ (8.7 mm), ZMUC CRU-11109.

Th. Mortensen's Java-South Africa Expedition 1929–30, "Maurice" St. 47, N of Port Louis, Mauritius, ca. 238 m, mud, corals, Sigsbee trawl, 6 Nov 1929: — 1 ov. ♀ (7.0 mm), holotype, ZMUC CRU-11128.

Diagnosis: Carapace dorsally smooth and glabrous except for a few small tubercles behind each ocular peduncle, lateral margin having anterolateral spine of moderate size followed by larger spine placed at anterior end of branchial region and 2 small spines behind it. Rostrum broadly triangular, dorsally excavated. Sternal plastron posteriorly broader; excavated sternum with triangularly produced sharp anterior end between close bases of Mxps 1; sternite 3 strongly depressed, with pair of submedian spines on deeply excavated anterior margin. Ocular peduncles elongate, about twice as long as broad, cornea length slightly less than half that of remaining eyestalk. Ultimate article of antennal peduncle fully 4 times as long as broad, breadth half that of ultimate article of antennule; ventral distomesial process small and obsolescent; flagellum of more than 20 segments not reaching end of P1 merus; antennal scale barely reaching end of antennal article 5, article 2 bluntly produced on distolateral angle. Mxp 3 merus with very small distolateral spine; carpus unarmed. P1 basischium with well developed distodorsal spine; merus

ventrally with distomesial spine and fine granules on proximal portion, length greater than postorbital carapace length; palm with fine granules on dorsal surface, length 2.5 times that of movable finger. P2–4 slender, P2 merus slightly longer than postorbital carapace length; meri unarmed; carpi more than half as long as propodi; propodus fully twice as long as dactyli, ventral margin with pair of terminal spines preceded by 7–9 slender spines; dactyli curving, flexor margin with 11 somewhat inclined, relatively broad spines successively diminishing toward base of article.

Description of holotype: Carapace longer than broad, dorsal surface spineless and glabrous except for a few very small tubercles behind each ocular peduncle. Lateral margins subparallel but convexly convergent on posterior branchial region; anterolateral spine of moderate size directed anteroventrad, followed by large spine placed at anterior end of branchial region and again 2 small spines behind it. Rostrum broadly triangular, slightly deflexed, dorsally excavated, breadth at proximal third 0.48 distance between lateral limits of orbits. Lateral orbital spine small, directed anterolaterad, rather close to anterolateral spine of carapace.

Pterygostomian flap anteriorly ending in very small spine, surface unarmed.

Sternal plastron posteriorly broader, greatest breadth subequal to greatest length. Excavated sternum with triangularly produced sharp anterior end between close bases of Mxps 1, surface with obsolescent ridge in midline. Sternite 3 strongly depressed, with pair of submedian spines on deeply excavated anterior margin. Sternite 4 having anterolateral margins gently divergent, relatively long (length 0.87 width of sternite 3).

Abdominal segment 1 without transverse ridge. Segment 2 with pleural lateral margin concavely divergent posteriorly. Pleura of segments 3 and 4 with rounded lateral margin. Telson 1.7 times as broad as long, posterior lobe 1.5 times as long as anterior lobe, posterior margin rounded.

Ocular peduncles elongate, about twice as long as broad, distinctly overreaching midlength but barely reaching end of rostrum, cornea not dilated, length slightly less than half that of remaining eyestalk.

Article 5 of antennal peduncle fully 4 times as long as broad, breadth half that of ultimate article of antennular peduncle; ventral distomesial process small and obsolescent. Flagellum of more than 20 articles relatively long, not reaching end of P1 merus. Antennal

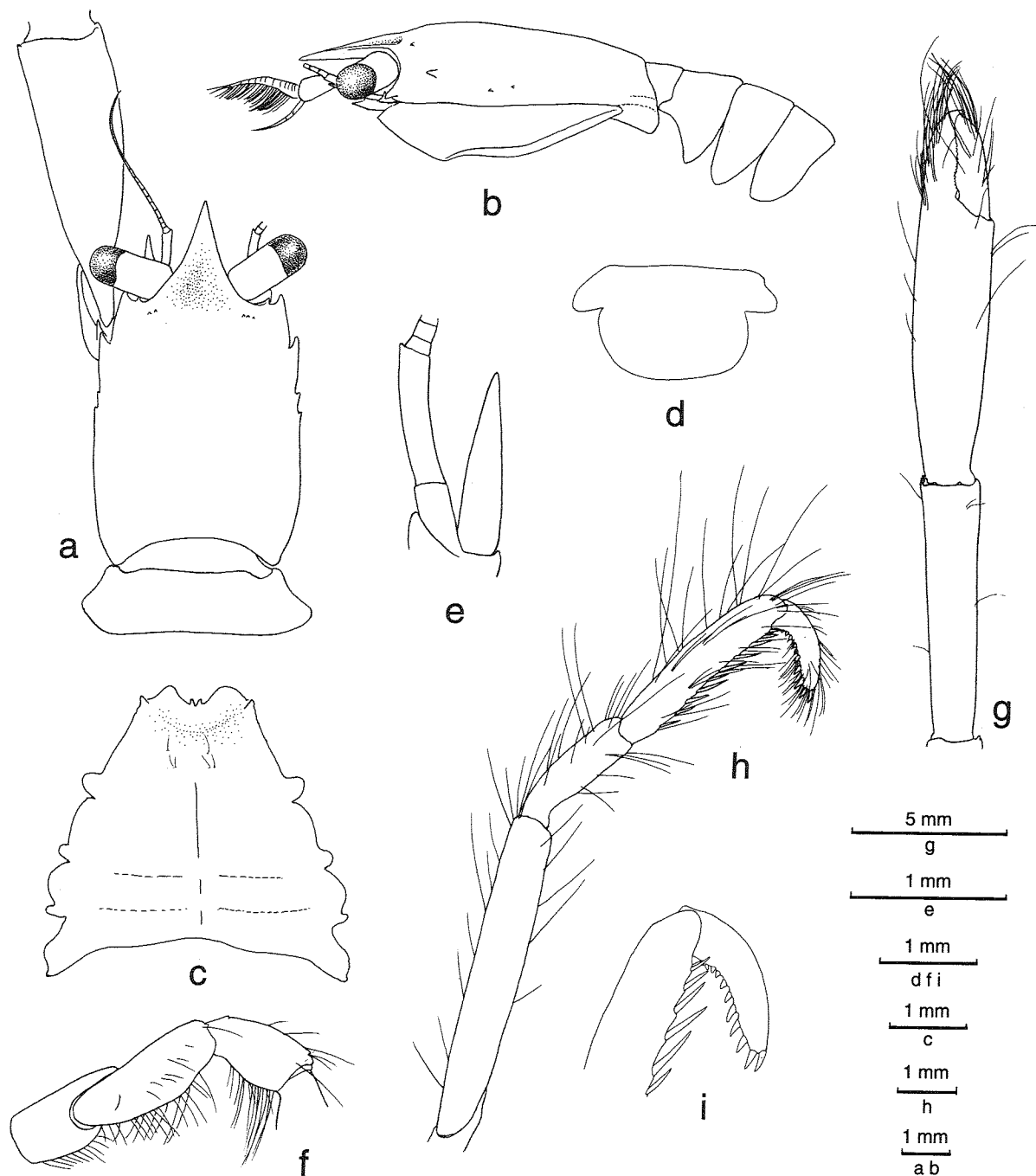


Fig. 15. *Uroptychus mauritius* n. sp., holotype, ov. ♀, ZMUC CRU-11128: a, carapace and anterior part of abdomen, including proximal part of P1, dorsal; b, same, lateral; c, sternal plastron; d, telson; e, antenna, left, ventral; f, endopod of Mxp 3, distal part omitted, right, lateral; g, P1, left, dorsal; h, P2, right, lateral; i, same, distal part, setae omitted, lateral.

scale overreaching midlength, barely reaching end of article 5. Article 2 bluntly produced on distolateral angle.

Mxps 1 close to each other at base. Mxp 3 ischium with 28 denticles on mesial ridge. Merus 2.5 times as long as ischium (when measured in lateral midline), with very small distolateral spine. Distolateral spine

and extensor proximal marginal spine of carpus very small.

P1 sparsely setose but fingers with thicker setae. Basi-ischium with well developed distodorsal spine, ventrally without spine on mesial margin. Merus ventrally with distomesial spine and fine granules on proximal portion, length greater than postorbital

carapace length. Palm moderately depressed, dorsal surface with fine granules discernible under high magnification, length 2.5 times that of movable finger. Fingers not gaping, distally crossing, opposable margin of movable finger with low process proximally.

P2–4 slender, moderately compressed, P2 merus slightly longer than postorbital carapace length. Meri successively shorter posteriorly, unarmed, length subequal to that of carpus and propodus combined. Carpi more than half as long as propodi. Propodus longer on P4 than on P2 and P3, length fully twice that of dactylus, ventral margin with pair of terminal spines preceded by 8 or 9 (P2), 7 (P3 and P4) slender spines. Dactyli curving proximally, flexor margin with 11 somewhat inclined, relatively broad spines successively diminishing toward base of article.

Eggs: Number of eggs, 12–18; size, 1.16 x 1.33–1.30 x 1.55 mm.

Variations: The larger male from the “Maurice” St. 43 has obsolescent submedian spines on the anterior margin of the sternite 3, the condition showing that the spines may have been injured. The smaller male from the same station bears two additional small spines behind the second lateral spine of the carapace. The posterior margin of the telson varies from being slightly concave to barely so.

Remarks: The species is distinguished from *U. alcocki* Ahyong & Poore, 2004 by bearing tubercles behind each ocular peduncle, lacking tubercles on the P1, the shape of the ocular peduncles that is less slender, about twice as long as broad instead of being more slender, distinctly more than twice as long in *U. alcocki*, and the telson that is rounded, not narrowed on the posterior margin as in *U. alcocki*.

The species is also separated from *U. latirostris* Yokoya, 1933 by the presence of epigastric tubercles, the antennal scale slightly falling short of the end of the antennal article 5 instead of being terminating at the midlength of that article as in *U. latirostris*, the rostrum being narrower than that of *U. latirostris*, and the sternite 3 bearing a pair of submedian spines.

Etymology: Named for the locality; noun in apposition.

***Uroptychus nanophyes* McArdle, 1901**

Fig. 16

Synonymy: see p. 228.

Material:

Kei Islands Expedition St. 46, 5°47'20"S, 132°13'E, 300 m, clay, mud, 2 May 1922: — 1 ov. ♀ (13.2 mm), ZMUC CRU-11323.

Kei Islands Expedition St. 71, 5°40'S, 106°08'E, 54 m, sand, stones, 28 July 1922: — 1 ♂ (12.5 mm), ZMUC CRU-11322.

Diagnosis: Carapace with 8 principal lateral spines, fourth and seventh spines each accompanying spine anterior or posterior to it and even another tiny spine dorsomesial to it; dorsal surface granulate, bearing small ridges; 2 dorsal spines mesial to third lateral spine on each side. Rostrum triangular, lateral margin with several small spines on distal half. Excavated sternum anteriorly subtriangular, bearing ridge in midline; sternite 3 with U-shaped median excavation separating incurved submedian spines; anterolateral angle of sternite 4 with strong spine directed forward or somewhat anteromesad. Abdomen glabrous, first segment transversely ridged. Antennal peduncle slender, distal 2 articles each with distomesial spine; flagellum of 19–21 segments not reaching end of P1 merus; antennal scale much broader than opposite peduncle, distally rather wide, fully reaching end of article 5 but not its distomesial spine. Mxp 3 ischium with numerous (ca. 30) denticles on mesial ridge, flexor margin distally rounded; merus with small distolateral spine, flexor margin sharply ridged, bearing a few small spines on distal half; carpus with strong distolateral spine. P1 granulose or rather tuberculous; basi-ischium with strong distodorsal spine and 2 rows of mesial spines; merus with 3 rows of spines, mesioventral one pronounced; carpus granulate, with obsolescent spines; palm unarmed. P2–4 moderately setose, with row of spines on dorsal margins of meri and carpi; P2 merus shorter than postorbital carapace length; propodal ventral margin with pair of terminal spines preceded by several spines rather distant from one another; dactylus with 12–13 spines obscured by setae, ultimate slender, penultimate pronouncedly broad at base, remaining spines inclined, slender, blunt, contiguous to one another.

Eggs: About 50 eggs, measuring 0.95 x 0.97 – 1.09 x 1.09 mm.

Remarks: Van Dam (1940) reported the species from a rather shallow depth (66 m) while the other records are from deeper parts (440–926 m). This record seems to present a problem in either its identification or depth

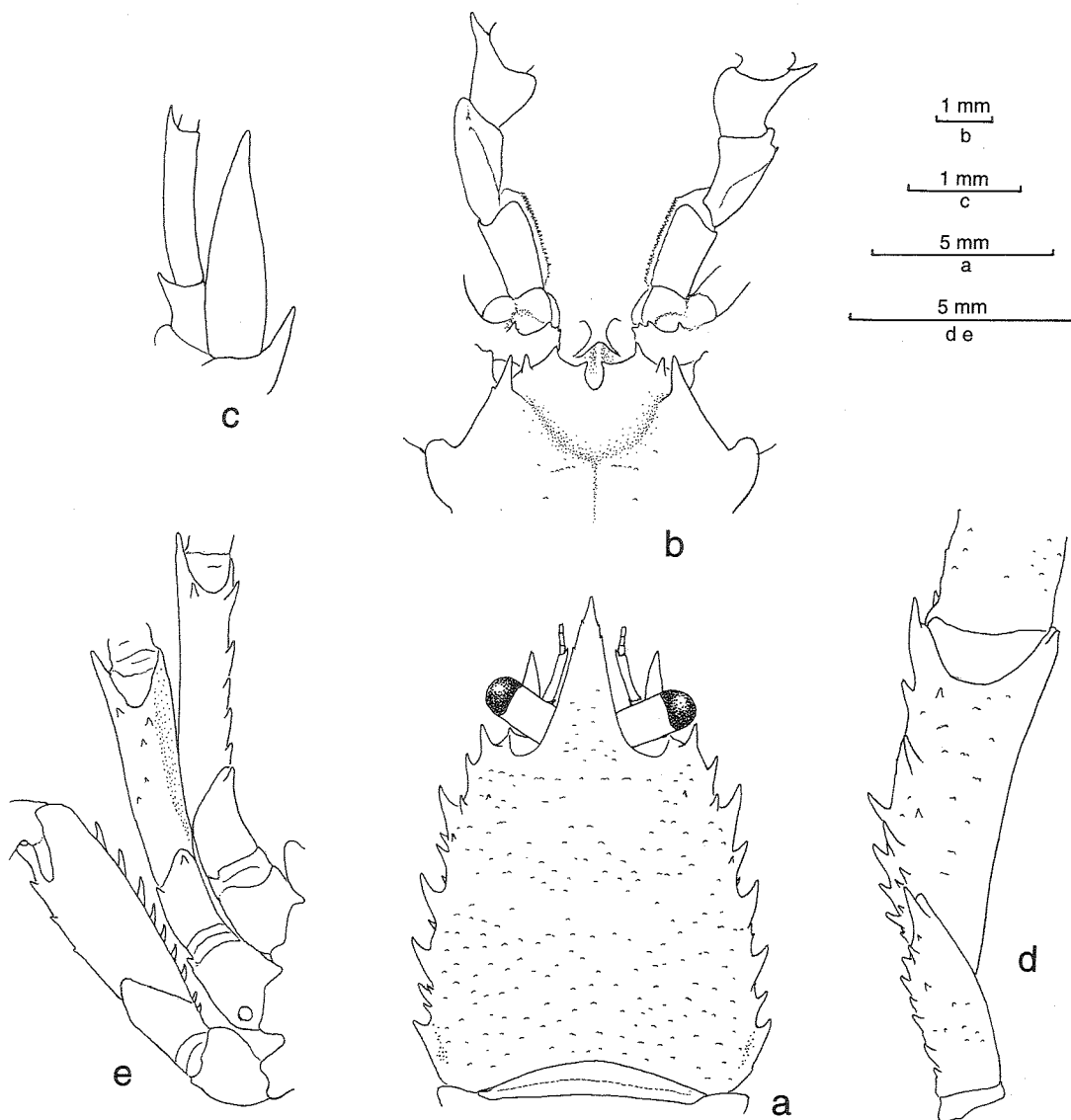


Fig. 16. *Uroptychus nanophyes* McArdle, 1901, ov. ♀ (13.2 mm), ZMUC CRU-11323: a, carapace, dorsal; b, anterior part of sternal plastron and Mxps 3, ventral; c, antenna, left, ventral; d, proximal articles of P1, left, ventral; e, proximal articles of P2-4, right, ventral.

record. However, one of the lots here examined is likewise from shallow-water. Therefore, a wide bathymetric range can now be accepted.

The species is very close to *U. longior* n. sp. Their relationships are discussed under the "Remarks" of that species (see above).

Range: NE coast of Sri Lanka, Java Sea, Kei Islands, and Izu Shoto, Japan; 54–926 m.

Uroptychus naso van Dam, 1933

Synonymy: see p. 228.

Material:

Hirado, Nagasaki, Japan, Sueuson 1900: — 1 ♂ (9.3 mm), ZMUC CRU-11200.

Kei Islands Expedition St. 44, 268 m, mud, 30 Apr 1922: — 1 ♀ (16.9 mm), ZMUC CRU-11335.

Kei Islands Expedition St. 49, 5°37'10"S, 132°24'E, 245 m, sand, 3 May 1922: — 1 ♂ (13.6 mm), ZMUC CRU-11333.

Diagnosis: Carapace dorsally granulate, bearing tubercles on lateral portion, with deep groove bordering gastric and cardiac regions. Lateral margins divergent posteriorly, anterolateral spine small, followed by tubercular processes and 2 small blunt spines on hepatic

region, 7 large spines on branchial region. Rostrum broad and long triangular, granulate like carapace, moderately excavated dorsally, carinate ventrally, lateral margin with small spines. Pterygostomian flap with scattered small spines. Excavated part anterior to sternal plastron anteriorly convex, bearing longitudinal ridge in midline; sternite 3 with U-shaped median notch on anterior margin, lacking submedian spines. Ocular peduncles short, partly hidden under rostrum, cornea not dilated. Distal 2 articles of antennal peduncle each with terminal spine, flagellum short, as long as distal 2 articles combined of peduncle, antennal scale relatively broad, falling short of end of antennal peduncle. Mxp 3 ischium with spine directly lateral to rounded corner of flexor distal margin, mesial ridge with obsolescent denticles; merus with 1 distolateral spine and 5–6 flexor marginal spines on distal half. P1 covered with small spines and tubercles, palm and fingers strongly depressed. P2–4 granulate, broad relative to length in lateral view; meri and carpi with row of spines on dorsal margin; merus with row of ventral marginal spines proximally diminishing, as equally large as those on dorsal margin; propodi with pair of distal spines preceded by smaller spines about in 2 rows; dactyli less than half length of propodi, flexor margin with row of corneous spines, ultimate slender, penultimate broad, remaining spines slender and moderately inclined.

Remarks: The bundles of setae on the distal two articles of the P2 observed in the material from the Tosa Bay (Baba, 1969c) are visible in both the male from Hirado and the female from St. 44 off the Kei Islands, but barely discernible on the male from St. 49.

The female examined from the Kei Islands bear an externa of a rhizocephalan parasite.

Range: Java Sea, Kei Islands, Moluccas off W coast of Halmahera (Sulu Archipelago), Taiwan, East China Sea, and Japan; 68–439 m.

***Uroptychus nigricapillis* Alcock, 1901**

Synonymy: see p. 228.

Material:

“Galathea” Sta. 241, off Kenya, 4°00’S, 41°27’E, 1551 m, globigerina, 15 Mar 1951: — 1 ♂ (14.3 mm), 1 ov. ♀ (12.2 mm), ZMUC CRU-11279.

Diagnosis: Carapace distinctly longer than broad, dorsally glabrous and smooth, bearing pair of epigastric spines. Lateral margins slightly diverging posteriorly, anterolateral (first) spine small; second spine small, situated at anterior end of branchial region, followed by a few small tubercle-like spines. Lateral angle of orbit with very small spine. Rostrum narrow triangular, dorsally flattish. Excavated sternum produced anteriorly into spine, bearing a spine in center; sternite 3 strongly depressed, anterior margin deeply excavated, with 2 submedian spines separated by shallow notch, ventral surface with distinct process near each of lateral and anterior ends. Ocular peduncles comparatively long, moderately concave on mesial margin. Distal 2 articles of antennal peduncle spineless, article 5 more than 2.5 times as long as article 4, flagellum of 14 segments falling short of end of P1 merus, antennal scale overreaching midlength of, but not reaching end of article 5. Mxp 3 unarmed, ischium with 14 denticles on mesial ridge. P1 subcylindrical but palm moderately depressed; fingers distally more setose than elsewhere. P2–4 similar, slender; with long coarse setae especially on distal 2 articles; propodi with slender spines on ventral margin, ultimate not paired, single, somewhat distant from junction of propodus and dactylus; dactyli relatively slender, gently curving, barely half as long as propodi, flexor margin with row of relatively broad spines diminishing in size toward base of article, penultimate closer to ultimate than to antepenultimate and subequal to it or slightly smaller.

Egg: Diameter, 1.90 x 2.00 mm.

Remarks: The branchial lateral spines of the carapace in the male of the present material are much smaller than those of the female holotype (Alcock, 1901: pl. 3: fig. 3), and in the ovigerous female these spines are much smaller than in the male, being reduced to small tubercles that are discernible under high magnification. A few small tubercle-like spines are also present on the hepatic region in the male. This is one of the eurybathic species in the Chirostyliidae, as reported earlier (Baba, 1981b).

Range: Zanzibar, South Arabian coast, Madagascar, Saya de Malha Bank, Maldives, Andaman Sea, Java Sea, Flores Sea, Philippines between SW Luzon and Bohol, and Japan; 66–2000 m. Most of the previous records are from the transitional to upper bathyal depths, but only one is from the shelf in 66 m (van Dam, 1940).

Urotychus paenultimus n. sp.

Fig. 17

Material:

Kei Islands Expedition St. 12, 5°30'S, 132°35'E, 320 m, sand, 9 Apr 1922: — 1 ov. ♀ (4.6 mm), holotype, ZMUC CRU-11318.

Diagnosis: Carapace unarmed dorsally, lateral margins convex, bearing small denticles; anterolateral spine small, close to lateral orbital spine but somewhat posterior and lateral to it. Rostrum broadly triangular, dorsally concave. Excavated sternum having anterior margin weakly convex, widely separating bases of Mxps 1; sternite 3 shallowly depressed, anterior margin with narrow U-shaped median notch. Cornea shorter than remaining eyestalk. Article 4 of antennal peduncle with short, blunt distomesial spine ventrally, antennal scale slightly overreaching midlength of article 5. Mxp 3 ischium with tuft of long setae lateral to rounded flexor distal margin, mesial ridge with very small denticles; merus short relative to width, bearing 1 or 2 denticular spines distal to midlength flexor margin and 1 small distolateral spine. P1 very setose, unarmed but merus with flattish short dorsal spine. P2–4 meri having dorsal margin with several small spines on proximal half distinct on P2 and P3, obsolescent on P4; propodi with pair of distal spines on ventral margin; dactyli with 8–9 spines on flexor margin, ultimate slender and short; penultimate strong, remaining spines slender, inclined, not contiguous, diminishing toward base of article.

Description of holotype: Carapace, excluding rostrum, slightly wider than long. Dorsal surface moderately convex from side to side, slightly so from anterior to posterior end, without distinct groove, sparsely bearing fine setae. Lateral margins moderately convex, with finely denticulate short ridges, as illustrated, anterolateral spine small, relatively close to but somewhat posterior and dorsal to level of lateral orbital spine; distinctly ridged along posterior fifth of length. Rostrum broadly triangular, barely half as long as remaining carapace, dorsal surface moderately excavated, with sparse fine setae, lateral margins smooth. Orbit delimited laterally by spine subequal to anterolateral spine of carapace.

Pterygostomian flap with scattered denticles, anteriorly ending in small spine.

Excavated sternum having weakly convex anterior margin widely separating bases of Mxps 1, surface with

weak ridge in midline. Sternite 3 shallowly depressed, anterior margin with narrow U-shaped median notch.

Abdominal segments moderately setose, smooth. Segment 1 without transverse ridge. Pleura of segment 2 concavely divergent posteriorly, ending in rounded corner. Pleura of segments 3 and 4 convexly divergent posteriorly, ending in rounded corner. Telson slightly less than twice as broad as long, posterior lobe 1.3 times as long as anterior lobe, posterior margin feebly concave.

Ocular peduncles ending in anterior fourth of rostrum, lateral and mesial margins somewhat convex. Cornea not dilated, length about half that of remaining eyestalk.

Antennal peduncle relatively broad. Article 5 1.5 times as long as article 4, article 4 with short, blunt distoventral spine. Flagellum of 10 segments barely reaching end of P1 merus. Antennal scale wider than peduncle at base, slightly overreaching midlength of article 5. Article 2 with sharp distolateral spine.

Mxp 3 ischium bearing long setae lateral to rounded distal corner of flexor margin, mesial ridge with more than 25 very small denticles. Merus relatively short, sharply ridged along flexor margin, bearing small distolateral spine and 1 or 2 denticular spines distal to midlength of flexor margin.

P1 dissimilar, right one smaller, possibly regenerated; left P1 3 times as long as carapace including rostrum; unarmed; very setose, setae simple, non-plumose. Basi-ischium with flattish short dorsal spine. Merus distinctly longer than postorbital carapace length. Carpus slightly shorter and narrower than palm. Palm 3 times as long as broad, slightly more than twice as long as movable finger. Fingers not crossing when closed; opposable margins denticulate, with 2 low processes as illustrated.

P2–4 moderately setose. Meri relatively high (broad in lateral view), dorsal margin with 4–5 denticular teeth on proximal half on P2 and P3, a few obsolescent ones on third. P2 merus much shorter than postorbital carapace length. Carpi unarmed, shorter than dactyli, less than half as long as propodi. Propodi shorter on P2 than on P3 and P4, ventral margin with pair of movable spines distally (mesial one not visible in lateral view). Dactyli slightly curving, more than half as long as propodi even on P3 and P4, extensor margin with plumose setae on proximal half, sparse simple setae on distal half; flexor margin with 8–9 spines rather obsolescent with simple fine setae, ultimate slender, penultimate very strong, rather close to ultimate, remaining spines slender, inclined, not

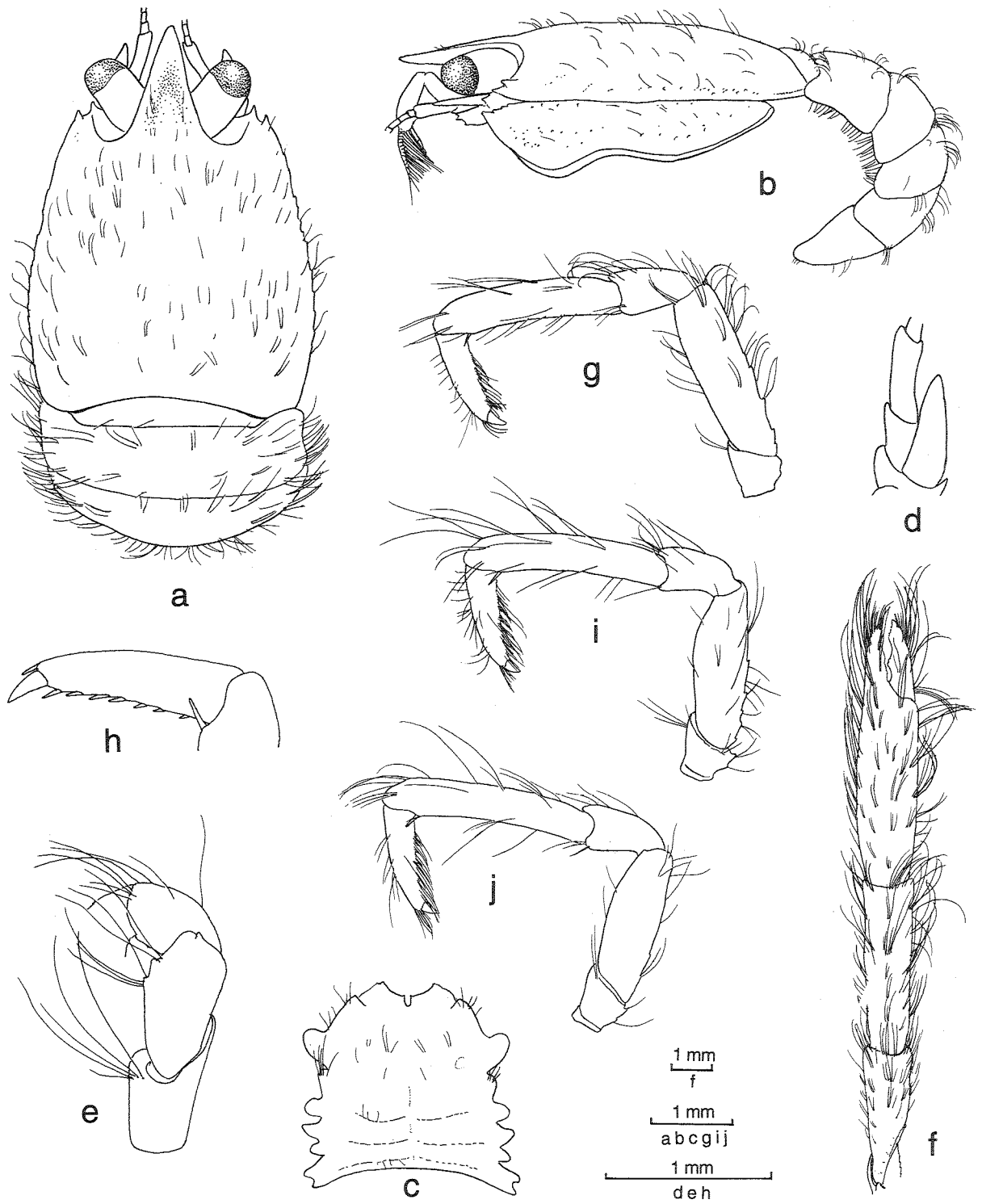


Fig. 17. *Uroptychus paenultimus* n. sp., holotype, ov. ♀, ZMUC CRU-11318: a, carapace and abdomen, dorsal; b, same, lateral; c, sternal plastron; d, antenna, left, ventral; e, endopod of Mxp 3, distal articles omitted, left, lateral; f, P1, left, dorsal; g, P2, left, lateral; h, same, distal article, setae omitted; i, P3, left, lateral; j, P4, left, lateral.

contiguous to one another, diminishing toward base of article.

Egg: Only one egg, ready to hatch, 1.16 x 1.26 mm.

Remarks: The new species resembles *U. gordonae* Tirmizi, 1964 and *U. siraji* Tirmizi, 1964, both from the Maldives, in the carapace ornamentation. These two relatives are not well diagnosed so their type materials were examined on loan. *Uroptychus gordonae* is characterized by the anterolateral spine of the carapace being situated at the same level as the lateral orbital spine, the P2–4 propodi being nearly as long as dactyli, with a pair of terminal spines preceded by a few spines (not indicated in Tirmizi's figure); dactyli of the same appendages bearing proximally diminishing spines (not so slender as illustrated by Tirmizi (1966: fig. 13)) rather distant from one another and only slightly oblique, all to mention the distinctive differences from the new species. *Uroptychus siraji* is characterized by the anterolateral spine much like that of *U. gordonae*, the P2–4 propodi being much longer than the dactyli, with a pair of terminal spines preceded by five spines; dactyli strongly curving with relatively broad, subtriangular spines, distal four of which are subequal.

Etymology: From the Latin *paenultimus* (penultimate) in reference to the penultimate being the strongest among flexor marginal spines of the P2–4 dactyli.

Uroptychus pilosus Baba, 1981

Synonymy: see p. 230.

Material:

"Galathea" Sta. 491, Makassar Strait, 04°56'S, 117°39'E, clay, 1600 m, 14 Sep 1951: — 1 ♀ (6.0 mm), ZMUC CRU-11508.

Diagnosis: Body and appendages thickly covered with soft fine setae. Carapace excluding rostrum wider than long, nearly spineless only excepting a small spine on rounded anterolateral corner. Gastric region convex, anteriorly bordered from excavated dorsal surface of rostrum. Lateral margins convex on branchial region. Rostrum short triangular, horizontal, excavated on dorsal surface. Sternite 3 shallowly depressed, anterior margin with U-shaped median notch, submedian spines obsolete. Ocular peduncles elongate, distally narrowed; cornea less than half that of remaining eyestalk. Distal

2 articles of antennal peduncle spineless, flagellum of 13–14 segments not reaching end of P1 merus, antennal scale short, slightly overreaching article 4. Mxp 3 ischium with 14–16 denticles on mesial ridge; merus sharply ridged on distal half of flexor margin bearing a few small tubercles. P1 slender, spineless; palm relatively long, more than 3 times as long as movable finger. P2–4 meri with row of small dorsal spines on proximal half of length on P2 and P3, more proximal on P4; propodi with pair of very small spines on ventral distal margin; dactyli less than half length of propodi, with 2 pronounced terminal spines only.

Remarks: This specimen differs from the types of *Uroptychus pilosus* in the following particulars: the rostrum is more broadly triangular; the ocular peduncles are not so strongly elongate as in the types; the antennal scale is longer, and less spinose laterally, bearing a single proximal lateral spine on the left appendage; distal two of the flexor marginal spines on the P2–4 dactyli are not subequal, the penultimate one being somewhat larger; dorsal marginal spines on meri of the same are fewer and rather obsolete. I believe, however, that these differences fall within the limits of variation.

The presence of a pair of spines on the distoventral margin of the P2–4 propodi, apparent in the present specimen, has been confirmed by reexamination of the type material.

Range: Japan S of Kyushu and off the E coast of Kii Peninsula, Makassar Strait, and New South Wales; between 987–1025 m and 1120–1600 m.

Uroptychus pronus n. sp.

Fig. 18

Material:

Kei Islands Expedition St. 46, 5°47'20"S, 132°13'E, 300 m, clay, mud, 2 May 1922: — 1 ♂ (6.6 mm), holotype, ZMUC CRU-11317.

Diagnosis: Carapace dorsally unarmed, laterally with row of spines, hepatic marginal spines small, branchial marginal spines well-developed, posteriorly diminishing. Rostrum subtriangular, lateral margin with 1 or 2 small subterminal spines. Excavated sternum convex anteriorly, widely separating Mxps 1, surface with weak ridge in midline; sternal plastron having anterior margin weakly convex, with broad,

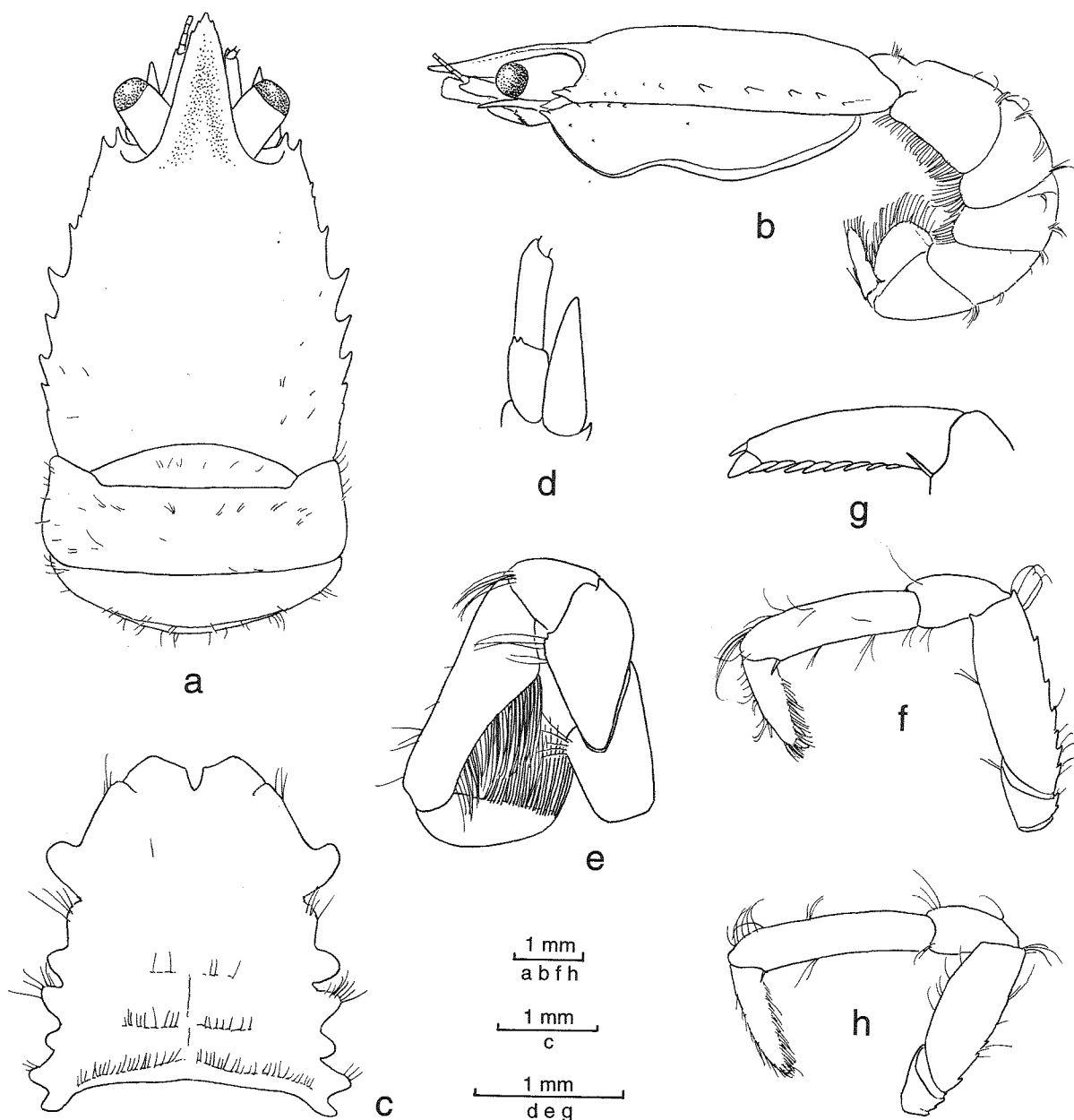


Fig. 18. *Uroptychus pronus* n. sp., holotype, ♂, ZMUC CRU-11317: a, carapace and abdomen, dorsal; b, same, lateral; c, sternal plastron; d, antenna, left, ventral; e, endopod of Mxp 3, left, lateral; f, P2, left, lateral; g, same, distal article, fine setae omitted; h, P4, left, lateral.

deep excavation medially. Pterygostomian flap with scattered small spines. Ocular peduncles somewhat elongate, cornea much shorter than remaining eyestalk. Antennal peduncle having 2 distal articles each bearing small distoventral spine; flagellum relatively short, composed of 10 segments; antennal scale overreaching midlength of article 5. P2–4 having meri with spines on dorsal margin, carpi shorter than dactyli, propodi with pair of terminal spines on ventral margin, each dactylus more than half as long as propodus, bearing

10 flexor marginal spines obscured by dense setae, ultimate slender, penultimate spine very strong, remaining spines slender, inclined, contiguous to one another.

Description of holotype: Carapace, excluding rostrum, slightly broader than long. Dorsal surface moderately convex from side to side, with very sparse short setae on posterior portion; areas not delimited. Lateral margins posteriorly divergent to point behind last

lateral spines, then convergent; bearing about 10 spines, first (anterolateral) small, close to but somewhat posterior to level of lateral orbital spine, 2–3 very small spines in front of ordinary end of cervical groove; other 6 spines behind it, first of these subequal to anterolateral, second to fourth much larger than first, last 2 very small; ridge distinct between posterior-most spine and posterior end. Rostrum broadly subtriangular, length slightly more than half that of remaining carapace; lateral margin with 1–2 denticular spines near apex; dorsal surface excavated. Lateral limit of orbit sharply produced into spine subequal to anterolateral spine of carapace.

Pterygostomian flap anteriorly ending in distinct spine, bearing scattered small spines, several of these spines arranged in row along anterior dorsal border near linea anomurica.

Excavated sternum having anterior margin convex, widely separating bases of Mxps 1. Sternal plastron relatively long, lateral extremities between fourth and seventh sternites subparallel. Sternite 3 moderately depressed, anterior margin weakly convex, with relatively broad median notch. Sternite 4 with rounded anterolateral margin.

Abdominal segments smooth, bearing short sparse setae. Pleura of segment 2 slightly divergent posteriorly, pleura of segments 3 and 4 ending in rounded margin. Telson 2.3 times as long as broad, posterior part nearly as long as anterior part, posterior margin very feebly concave.

Ocular peduncles somewhat elongate, overreaching midlength of rostrum; cornea not dilated, length about 1/3 that of remaining eyestalk.

Antennal peduncles relatively short, article 5 1.5 times that of article 4; both articles with small distomesial spine; flagellum of 10 segments, relatively short (possibly not reaching end of P1 merus); antennal scale slightly overreaching midlength of article 5; greatest width somewhat more than that of peduncle.

Mxp 3 ischium with very small, rather reduced denticles on mesial ridge, tuft of setae lateral to rounded corner of flexor distal margin. Merus relatively short, ridged along flexor margin, bearing distolateral spine and a few denticles distal to midlength of flexor margin.

P1 missing.

P2–4 relatively high (broad in lateral view), sparsely setose. Meri posteriorly shorter; dorsal margin with 7 small spines along entire length on P2 and P3, 3 on proximal half on P4; ventral margin with distal spine on P2 and P3, unarmed on P4. P2 merus 3 times as long as broad, much shorter than postorbital carapace

length. Carpi unarmed, subequal on all legs, length about half that of propodi. Propodus slightly longer on P4 than on P2 and P3; ventral margin with pair of terminal spines. Dactyli more than half length of propodi, slightly curving; flexor margin with thick setae obscuring row of 10 spines, ultimate slender, penultimate prominent, remaining spines slender, inclined, contiguous to one another, and proximally diminishing in size.

Eggs: About 25 eggs, measuring 0.73 x 0.74 mm.

Remarks: The new species is closely related to *U. tridentatus* Henderson, in the shape of the carapace including the rostrum. However, *U. tridentatus* differs in having the distal two articles of the antennae each bearing a prominent distoventral spine, the antennal scale distinctly overreaching the end of the peduncle, and the P2–4 dactyli having loosely arranged, more erect spines on the flexor margin, in which the penultimate spine is not as prominent as in *U. pronus* (see below for *U. tridentatus*).

Etymology: From the Latin *pronus* (inclined), alluding to inclined slender spines on the flexor margins of the P2–4 dactyli, by which the new species is differentiated from *U. tridentatus* Henderson.

***Uroptychus remotispinatus* Baba & Tirmizi, 1979**

Synonymy: see p. 230.

Material:

“Galathea” Sta. 491, Makassar Strait, 04°56’S, 117°39’E, 1600 m, clay, 14 Sep 1951: — 1 ov. ♀ (12.0 mm), ZMUC CRU-11509.

Diagnosis: Carapace dorsally smooth and glabrous, bearing ridges along posterolateral margin. Lateral margins with very feeble granules, posterolaterally diverging. Anterolateral spines small. Rostrum barely half as long as remaining carapace, basally broad, distally narrowed, curving dorsad. Sternite 3 shallowly depressed, short relative to width, anterior margin widely concave, with pair of small submedian spines; sternite 4 having anterolateral margin as long as posterolateral margin. Ocular peduncles overreaching midlength of rostrum, comparatively broad (widest at proximal end of cornea), cornea as long as remaining eyestalk. Antennal peduncles slender, distal 2 articles unarmed; antennal scale slightly overreaching end of

article 4. Endopod of Mxp 3 spineless, mesial ridge of ischium with about 18 denticles. P2–4 very slender, moderately depressed, surface smooth, with long coarse setae numerous on carpi and propodi; each carpus relatively long, 0.6 as long as propodus; propodus with 4 long movable spines on distal half of ventral margin, distal-most remote from distal end of article; dactyli strongly curved at proximal third, flexor margin with 2 groups of spines remotely separated from each other on P2–3, distal group consisting of 2 subequal-sized spines, proximal group consisting of 4–5 spines; P4 with additional spine interspersed between.

Eggs: Diameter, 1.30–1.50 mm.

Remarks: That the P2–4 dactyli bear two groups of flexor marginal spines is one of the characteristics of this species, for which the species is named (Baba & Tirmizi, 1979; Baba, 1988; 1990). The propodal spination of the P2–4 also suggests use of this name: the distal-most of the flexor marginal spines is very remote from the juncture of propodus and dactylus.

Range: Japan, Makassar Strait, Madagascar, off Mozambique, off Durban; in 850–2000 m.

Uroptychus sagamiae n. sp.

Fig. 19

Material:

Th. Mortensen's Pacific Expedition 1914–16, Sagami Bay, Okinose, 732 m, 7 Jul 1914: — 1 ♀ (12.1 mm), holotype, ZMUC CRU-11521.

Diagnosis: Carapace smooth on surface; pair of small epigastric spines. Lateral margin with small anterolateral spine, no spines elsewhere. Excavated sternum anteriorly triangular, surface with small spine in center; sternite 3 strongly depressed, anterior margin deeply excavated, with pair of submedian spines; sternite 4 with convexly divergent lateral margin. Ocular peduncles moderately elongate, cornea slightly more dilated than remaining eyestalk. Antennal peduncle unarmed on distal articles, antennal scale overreaching article 5. Mxps 1 close to each other at base; Mxp 3 ischium with 15 denticles on mesial ridge, merus and carpus unarmed, flexor margin of merus not cristate but rounded. P1 almost spineless but small distodorsal spine on basi-ischium; merus, carpus and

palm ventrally granulate. P2–4 relatively broad in lateral view; with long setae especially thick on mesial surface; meri and carpi unarmed; P2 merus much shorter than postorbital carapace length; carpi much longer than dactylus; propodi more than twice as long as dactylus, ventral margin with pair of spines slightly distant from juncture with dactylus and preceded by row of spines; dactyli with broad, short, distally sharp, successively diminishing spines on flexor margin, penultimate much closer to ultimate than to antepenultimate.

Description: Carapace smooth, barely setose on surface, moderately convex from side to side, weakly so from anterior to posterior end; pair of small epigastric spines. Lateral margins divergent posteriorly, with small anterolateral spine, no spine elsewhere but very small denticles on anterior end of indistinct branchial region. Rostrum subtriangular but distally narrowed, dorsal surface flattish, ventral surface horizontal, length distinctly less than half that of remaining carapace.

Pterygostomian flap anteriorly ending in small spine.

Sternal plastron with lateral margins posteriorly diverging. Excavated sternum anteriorly triangular, surface with small spine in center; sternite 3 strongly depressed, anterior margin deeply excavated, with pair of submedian spines; sternite 4 with convexly divergent lateral margin.

Abdominal segment 1 without transverse ridge. Telson about 3/4 as long as broad, posterior lobe 1.5 times length of anterior lobe, posterior margin medially emarginate.

Ocular peduncles long relative to width, slightly narrowed proximally, cornea somewhat dilated, length more than half that of remaining eyestalk.

Antennal peduncles relatively slender, unarmed on articles 4–5; article 5 2.8 times length of article 4. Flagellum of 16 segments falling short of end of P1 merus. Antennal scale overreaching opposite peduncle. Article 2 with small distolateral spine.

Mxp 3 ischium and merus barely setose laterally, sparingly so mesially. Ischium with 15 distally diminishing denticles on mesial ridge, flexor distal margin not rounded. Merus unarmed, relatively long, not flattish but moderately thick mesiolaterally, flexor margin rounded, not cristate.

Left P1 missing. Right P1 3.5 times as long as carapace; setose distally; subcylindrical on proximal articles but somewhat depressed on palm; granulate

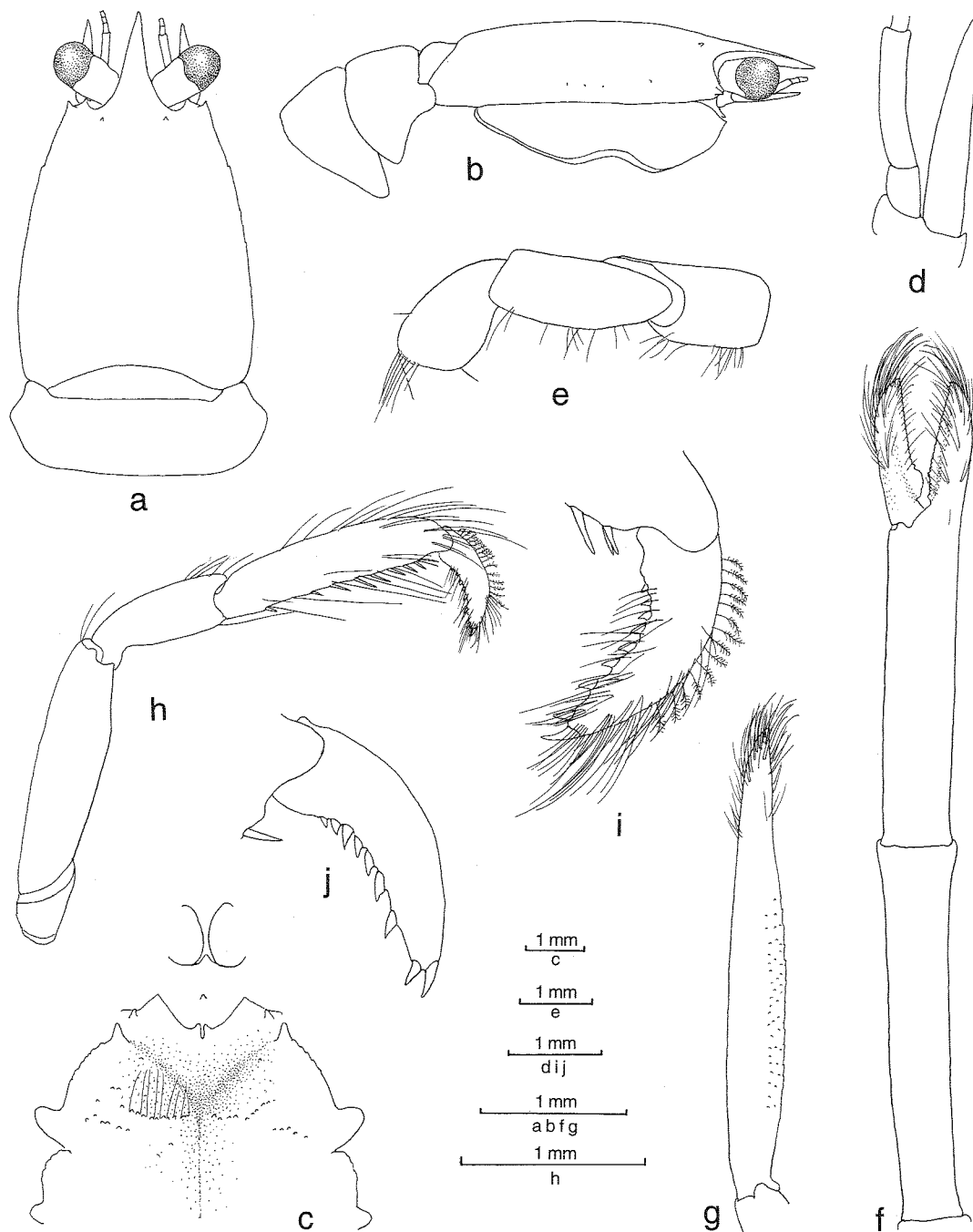


Fig. 19. *Uroptychus sagamiae* n. sp., holotype, ♀, ZMUC CRU-11521: a, carapace and anterior part of abdomen, dorsal; b, same, lateral; c, anterior part of sternal plastron; d, antenna, left, ventral; e, endopod of Mxp 3, distal articles omitted, left, lateral; f, P1, proximal articles omitted, left, dorsal; g, same, chela, lateral; h, P2, right, lateral; i, same, distal article, lateral; j, distal article of P3, setae omitted, right, lateral.

ventrally; basi-ischium with small distodorsal spine; carpus longer than palm.

P2–4 relatively broad in lateral view, with long setae especially thick on mesial face; P2–3 similar in shape and size, P2 merus much shorter than postorbital

carapace length. Propodus longer on P2 than on P3, P4 much shorter. Meri and carpi unarmed. Propodi more than twice length of dactyli, ventral margin with pair of spines somewhat proximal to junction of propodus and dactylus, preceded by row of 8 or 9

spines. Dactylus strongly curving at proximal fourth, flexor margin with relatively broad, short, successively diminishing spines, penultimate very close to ultimate, rather distant from antepenultimate.

Remarks: The presence of a pair of epigastric spines on the carapace links the species to *U. nigricapillis* Alcock, 1901 and *U. vandamae* Baba, 1988. From *U. nigricapillis*, the new species differs in the more elongate ocular peduncles, longer antennal scales, much broader P2–4 bearing pair of ventral spines on the propodus near the juncture with the dactylus. *Uroptychus vandamae* is characterized by 1) the P2–4 propodi bearing the distal-most of the ventral marginal spines single, not paired and somewhat distant from the juncture with the dactylus and considerably distant from the penultimate, 2) the P2–4 dactyli bearing two groups of spines, and 3) the antennal scale being much shorter, terminating at the midlength of the antennal article 5.

Etymology: For the collection locality of the species, a noun in the genitive.

***Uroptychus scambus* Benedict, 1902**

Synonymy: see p. 230.

Material:

“Galathea” Sta. 453, Makassar Strait, 03°56'S, 118°26'E, 2084 m, clay, 24 Aug 1951: — 2 ♂ (4.5, 7.3 mm), ZMUC CRU-11506.

Diagnosis: Carapace very broad relative to length, dorsal surface smooth, glabrous; lateral margin strongly convex posteriorly, anterolateral spine well-developed, directed straight forward. Excavated sternum anteriorly sharp triangular between bases of Mxps 3; sternite 3 having anterior margin widely and shallowly excavated, with median notch separating submedian spines. Rostrum short, broadly or narrowly triangular, tapering. Ocular peduncles medially inflated, proximally and distally narrowed, cornea as broad as proximal portion of remaining eyestalk. Antennal peduncle unarmed, flagellum of 10 segments somewhat overreaching midlength of P1 palm; antennal scale barely reaching end of antennal article 4. Mxp 3 ischium with obsolete denticles on mesial ridge. P2–4 slender, carpi long, slightly shorter than propodi on P2–3, much shorter on P4; distal 2 articles subprehensile, gaping when folded, margins bearing

plumose setae; flexor margin of dactylus with 15–16 spines nearly perpendicular to margin, all spines obscured by dense setae.

Remarks: The synonymy of *U. scambus* with *U. edwardi* Kensley was discussed in a previous paper (Baba, 1988). The two male specimens here examined are rather different from each other but are undoubtedly referable to *U. scambus*, by its unique sternal plastron, broad carapace, and setose distal two articles of the P2–4. Several major differences noted below may represent age variations. In the larger specimen, the carapace lateral margin bears a distinct low process at a point one-fifth from the anterior end, but such a process is not discernible in the smaller specimen or, in previously examined material including the type of *U. scambus* (see Baba, 1988). The palm of the P1 in the larger male is distinctly ridged and cristiform on the mesial margin, as in the males from Japan and the Philippines (Baba, 1981b; 1988); however, in the smaller male such a cristate margin is barely discernible. The carpus in the larger male is middorsally ridged and trigonal in cross section, the mesial margin bearing about 10 distinct spines. Such spination was not noted in earlier descriptions. The holotype of *U. scambus* that I have examined has no such spination; but in a specimen reported from the Philippines (Baba, 1988), a few spines are present on the distal third of the article. Also, Kensley's illustration suggests the presence of such spination. Terminal spines on both the carpus and merus are rather conspicuous in the larger male here examined, as mentioned by MacGilchrist (1905) for *U. glyphodactylus* which had been synonymized with *U. scambus* (see Doflein & Balss, 1913; van Dam, 1933; Baba, 1981b), while rather obsolete in the smaller male, and slightly produced in the type of *U. scambus*.

Range: Off E coast of South Africa, Andaman Sea, Nicobar Islands, Solor Strait, Sulawesi, Makassar Strait, and Japan; between 296–805 m and 2084 m.

***Uroptychus scandens* Benedict, 1902**

Synonymy: see p. 230.

Material:

Th. Mortensen's Pacific Expedition 1913–1916, 25 miles E by S of Zamboanga, 293–366 m, trawl, hard bottom, 3 Mar 1914: — 1 ov. ♀ (6.1 mm), 1 ♀ (4.2 mm), ZMUC CRU-11590.

Th. Mortensen's Pacific Expedition 1914–16, off NW Kyushu, Japan, 33°41'N, 128°50'E, 50 fm (137 m), sand, 17 May 1914: — 1 ♂ (6.1 mm), ZMUC CRU-11264.

Kei Islands Expedition St. 50, 5°34'S, 132°25'40"E, 233 m, sand, trawl, 4 May 1922: — 1 ♂ (4.9 mm), ZMUC CRU-11394.

Diagnosis: Carapace convexly divergent, dorsally with soft fine setae, anteriorly and laterally covered with spinules, anterolateral spine small but distinctly larger than those on lateral margin. Rostrum narrow, feebly serrated laterally, terminating in or slightly overreaching end of ocular peduncle. Excavated sternum with transverse or slightly convex anterior margin widely separating bases of Mxps 1, sternite 3 having anterior margin with deep, widely U-shaped median sinus bearing 2 small submedian spines without notch between. Ocular peduncles elongate, mesial margin concave at midlength. Antennal peduncles overreaching rostrum, distal 2 articles each with distomesial spine, that of article 5 smaller; flagellum of 9 segments falling short of end of P1 merus; antennal scale barely reaching midlength of article 5, bearing 1–3 lateral spines. Mxp 3 ischium with distal spine directly lateral to distal corner of flexor margin, mesial ridge with obsolete denticles; merus with a few spinules on distal half of flexor margin. P1 unarmed, slender, subcylindrical, bearing long setae. P2–4 also with long setae particularly thick on mesial surface, propodi with pair of small spines on ventral distal margin; dactyli very short, straight and truncate, flexor margin with 7–8 slender spines obscured by dense setae, 4 of them located on truncate terminal margin.

Eggs: Diameter, 0.90 x 1.00 mm.

Remarks: This species is rather common in Japanese waters, usually found in the dorsal grooves of the pennatulacean *Leiopterus fimbriatus* (Herklots).

Range: Japanese waters from off E Boshu, Sagami Bay, Suruga Bay, Izu Islands, Bungo Strait and off SW Kyushu, Jeju Island, East China Sea, off Zamboanga, Java Sea, Banda Sea; 68–495 m.

***Uroptychus sibogae* van Dam, 1933**

Synonymy: see p. 231.

Material:

Kei Islands Expedition St. 56, 5°30'20"S, 132°51'E,

345 m, mud, 10 May 1922: — 2 ov. ♀ (8.5, 10.0 mm), ZMUC CRU-11320.

Th. Mortensen's Java-South Africa Expedition 1929–30, "Dog" St. 15, Bali Sea, 7°29' S, 114°49' E, ca. 240 m, sand & mud with concretions, 10 Apr 1929: — 1 ♂ (7.0 mm), ZMUC CRU-11077.

NW Kyushu, Japan, 32°12' N, 128°10' E, 183 m, 20 Oct 1897, Suenson 1900: — 1 ov. ♀ (7.8 mm), ZMUC CRU-11193.

Diagnosis: Carapace dorsally smooth, convexly diverging posteriorly, anterolateral spine distinct, followed by smaller spine directly behind end of indistinct cervical groove, and several obsolescent denticles on branchial margin. Rostrum triangular, ending in sharp point, dorsally excavated. Lateral limit of orbit produced. Excavated sternum with sharp spine on anterior margin; sternite 3 strongly depressed, anterior margin deeply excavated, with 2 submedian spines separated by V- or U-shaped notch, anterolateral corner rounded. Ocular peduncles elongate, cornea somewhat dilated. Antennal peduncle slender, unarmed on distal articles; flagellum nearly reaching end of P1 merus; antennal scale reaching end of article 5. Mxp 3 ischium with about 20 denticles on mesial ridge, flexor margin not rounded distally; merus with ridged flexor margin. P1 massive, unarmed. P2–4 with long setae especially thick on distal 3 articles; each carpus more than half of propodus, longer than dactylus; propodal ventral margin ending in pair of spines preceded by row of spines; each dactylus curving at proximal fourth, flexor margin with 8–9 relatively broad spines diminishing toward proximal end of article.

Eggs: Size, 0.96 x 1.02 – 1.42 x 1.46 mm.

Range: W of Manado, Moluccas off W coast of Halmahera, and Japan; between 430–495 and 1901 m.

***Uroptychus simiae* Kensley, 1977**

Synonymy: see p. 231.

Material:

"Galathea" St. 196, off Durban, 29°55'S, 30°20'E, 460–445 m, sandy mud and stones, 14 Feb 1951: — 1 ♂ (5.1 mm), ZMUC CRU-11272.

Th. Mortensen's Java-South Africa Exp. 1929–30, "Pickle" St. 25, off Durban, 29°56'S, 31°19'30" E, 412 m, sandy mud, 26 Aug 1929: — 7 ♂ (3.8–6.0 mm), 5 ov. ♀ (5.0–6.0 mm), ZMUC CRU-11525.

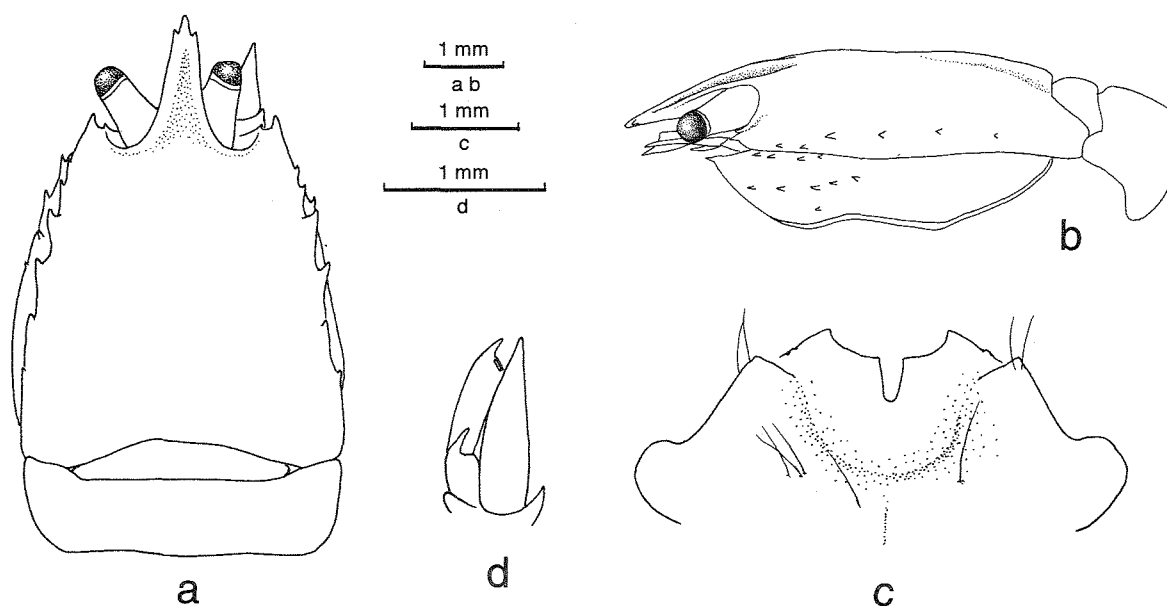


Fig. 20. *Uroptychus tridentatus* (Henderson, 1885), holotype, ov. ♀, BMNH 1888:33: a, carapace and anterior part of abdomen, dorsal; b, same, lateral; c, anterior part of sternal plastron; d, antenna, left, ventral.

Diagnosis: Carapace as long as broad, dorsally spineless and setaless, lateral margin somewhat convex, anterolateral spine well developed, another strong spine present at 1/3 from anterior end, mostly small but distinct, occasionally strong, rarely very small, occasionally followed by a few obsolescent denticles. Rostrum broadly triangular, very short, ending or overreaching opposite midlength of ocular peduncle but falling short of end of cornea, dorsal surface concave somewhat. Ocular peduncles somewhat elongate, proximally narrowed, cornea shorter than remaining eyestalk. Excavated sternum anteriorly produced between close bases of Mxps 1, sternite 3 strongly depressed below level of sternite 4, anterior margin deeply excavated, with pair of submedian spines, lateral margin with 2–3 denticles. Pterygostomial flap with row of 3–5 small spines or tubercular processes directly below linea anomurica. Distal 2 articles of antennal peduncle lacking terminal spine; flagellum of 14–16 segments barely reaching end of P1 merus; antennal scale terminating in or overreaching midlength of article 5 but falling short of end of peduncle; article 2 strongly produced at distolateral margin. Mxp 3 ischium with 20–25 denticles on mesial ridge, flexor distal margin not rounded; merus relatively long, spineless, flexor

margin ridged along whole length. P1 smooth and spineless, distally setose; basi-ischium with strong distoventral and distodorsal spines; palm moderately depressed, about as long as carpus, fingers half as long as palm. P2–4 meri and carpi unarmed; propodi about twice as long as dactyli, ventral margin with pair of terminal spines preceded by 7–8 slender spines; dactyli relatively slender, somewhat curved, flexor margin with 8–9 relatively broad corneous spines diminishing toward base of article.

Eggs: Number of eggs, 4–6, measuring 1.20–1.50 mm; the smaller eggs are yolky and the larger ones are in advanced stages.

Remarks: Kensley (1977) believed that the shape of the teeth on the opposable margin of the P1 movable finger represents a sexual distinction: a triangular tooth and an accompanying small proximal one for the males, and a broad, low, truncate tooth for the females. In the present specimens, however, Kensley's 'female' character was also observed in the males. In the smallest male (cl 3.8 mm) both the left and right P1s bear a broad, low, truncate tooth. Two of the seven males examined that are much larger (4.6, 5.3 mm) have Kensley's male character on one P1 and the

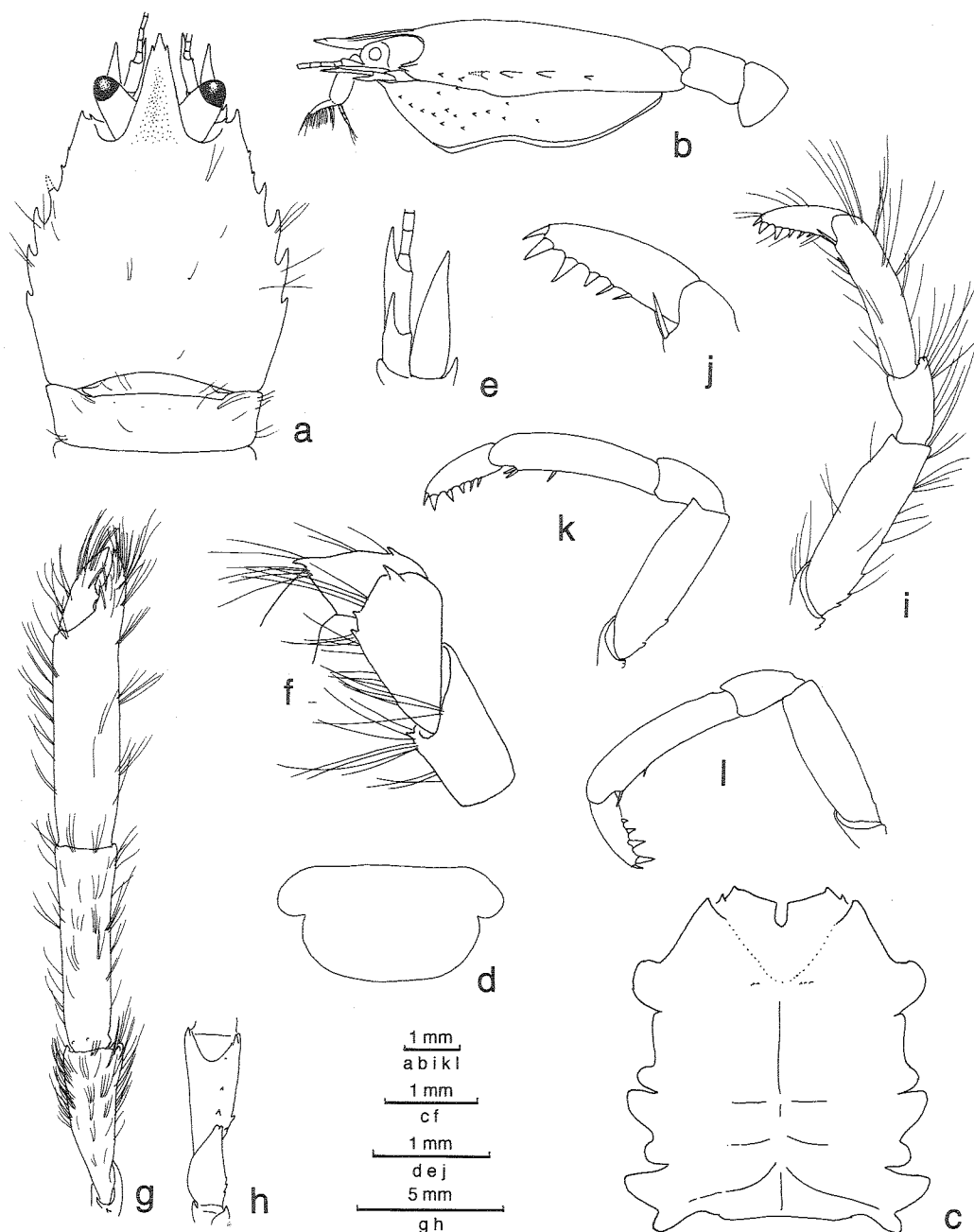


Fig. 21. *Uroptychus tridentatus* (Henderson, 1885), ♂ (6.0 mm), MNHN Ga-4612: a, carapace and anterior part of abdomen, dorsal; b, same, lateral; c, sternal plastron; d, telson; e, antenna, left, ventral; f, endopod of Mxp 3, left, distal part omitted, lateral; g, P1, right, dorsal; h, same, proximal articles, setae omitted, ventral; i, P2, lateral; j, same, distal part, setae omitted, lateral; k, P3, setae omitted, lateral; l, P4, setae omitted, lateral.

‘female’ character on the other. None of the females examined show Kensley’s male character. It is only in the largest male (cl 6.0 mm) of the specimens examined that both P1s bear a full ‘male’ character. A P1 in one of the males (cl 5.0 mm) has a much broader process with a deep median concavity that seems to approach Kensley’s typical male character.

Range: Off St. Mary’s Hill and Durban, eastern South Africa, in 400–450 m.

***Uroptychus tridentatus* (Henderson, 1885)**

Figs. 20, 21

Synonymy: see p. 232.

Material:

- "Challenger," Indonesia (Ambon), 15 fms (27 m): — 1 ov. ♀ (5.4 mm), holotype, BMNH 1888: 33.
"Azteque" St. 1, New Caledonia, 23°16.7'S, 168°04.7'E, 290–460 m, 12 Feb. 1990: — 1 ♂ (6.0 mm), MNHN Ga-4612.
"Norfolk 1" St. 1671, Norfolk Islands, DW 1671, 23°41'S, 168°00'E, 320–397 m, 21 Jun. 2001: — 1 ov. ♀ (5.8 mm), MNHN Ga 4613.

Diagnosis: Carapace with sparse, relatively long setae; lateral margins convex or convexly divergent posteriorly, bearing 7 spines, first anterolateral, moderate in size, second and third much smaller, fourth to sixth acute, much larger than first, last one smaller than sixth. Rostrum narrowly triangular, deeply excavated dorsally, laterally bearing small subapical tooth on each side. Lateral limit of orbit angular, ending in small laterally inclined spine. Excavated sternum with distinct ridge in midline, anterior margin widely convex or sub-triangular, separating Mxps 1 rather distantly; sternite 3 shallowly depressed, anterior margin weakly concave, with narrow U-shaped median notch. Pterygostomian flap with spinules on anterior half surface. Telson about twice as broad as long, posterior lobe convex, not emarginate on posterior margin, length slightly less than 1.5 times that of anterior lobe. Ocular peduncles elongate, distally narrowed, cornea about half as long as remaining eyestalk. Distal 2 articles of antennal peduncle relatively short, each with very strong distomesial spine; flagellum of 10 segments barely reaching end of P1 merus; antennal scale overreaching end of article 5 (excluding distoventral spine). Mxp 3 ischium with small spine directly lateral to rounded distal corner of flexor margin, denticles on mesial ridge rather reduced to small size; merus short relative to length, with 1 distolateral and 1 or 2 small spines on distal third of flexor margin; carpus with distolateral spine and 1 or 2 extensor marginal spines. P1 sparingly setose, thickly so on fingers and merus; basi-ischium with strong dorsal spine; merus and carpus usually with distomesial and distolateral spines ventrally, merus with 2 spines on proximal part of mesial surface and 2 spines (distal one may be obsolescent) on ventral surface. P2–4 moderately broad in lateral view, bearing long, distally soft setae; meri having dorsal crest with 2 or 3 proximal spines distinct on P2 and P3, obsolete on P4; P2 merus much shorter than postorbital carapace length; propodi having ventral margin with pair of terminal spines preceded by 1–3 spines; each dactylus slightly less than

half length of propodus, flexor margin nearly straight, bearing slender terminal spine preceded by 3 proximally diminishing spines perpendicular to flexor margin and 2 slender, somewhat oblique proximal spines.

Eggs: Number of eggs carried, 13; size, 0.93 x 0.87 mm.

Remarks: The ovigerous female holotype of *U. tridentatus* (BMNH 1888:33), in which all pereopods are missing, was examined (see Fig. 20). Two additional specimens examined here agree well with the type material so the diagnosis given above helps to distinguish the species from *U. zezuensis* (see below) and *U. inclinis* n. sp. (see above).

In my earlier papers (Baba, 1988; 1990), *U. zezuensis* Kim, 1972 was considered to be identical with *U. tridentatus*. However, careful examination of specimens referable to each species has led to conclude that Kim's species is valid (see below under the "Remarks" of *U. zezuensis*).

Range: Madagascar, N of the Sulu Islands, Taam Island of the Kei Islands, Ambon, Solor Strait, New Caledonia, Norfolk Islands, Yaeyama Group of the Ryukyus, off Hachijo-jima (Izu Islands), and near Muko-jima of the Bonin Islands; 290[?27]–460 m. The depth record at Ambon, 27 m, for the "Challenger" material was doubted by Henderson (1888).

Uroptychus wolffi n. sp.

Fig. 22

Material:

- Kei Islands Expedition St. 59, 5°28'S, 132°36'E, 385 m, corals & sponges, trawl, 12 May 1922: — 2 ♂ (6.1, 6.3 mm [smaller, holotype]), 1 ov. ♀ (5.8 mm), 2 ♀ (6.1, 6.2 mm), ZMUC CRU-11518.

Diagnosis: Carapace covered with fine setae moderate in density, dorsal surface unarmed, lateral margin convex, with 4–7 small spines. Rostrum short triangular, dorsally excavated, slightly overreaching ocular peduncle. Excavated sternum with convex anterior margin widely separating Mxps 1; sternite 3 depressed, anterior margin shallowly excavated, with U-shaped narrow median sinus. Telson half as broad as long, posterior lobe less than 1.5 times as long as anterior lobe, posterior margin barely or feebly

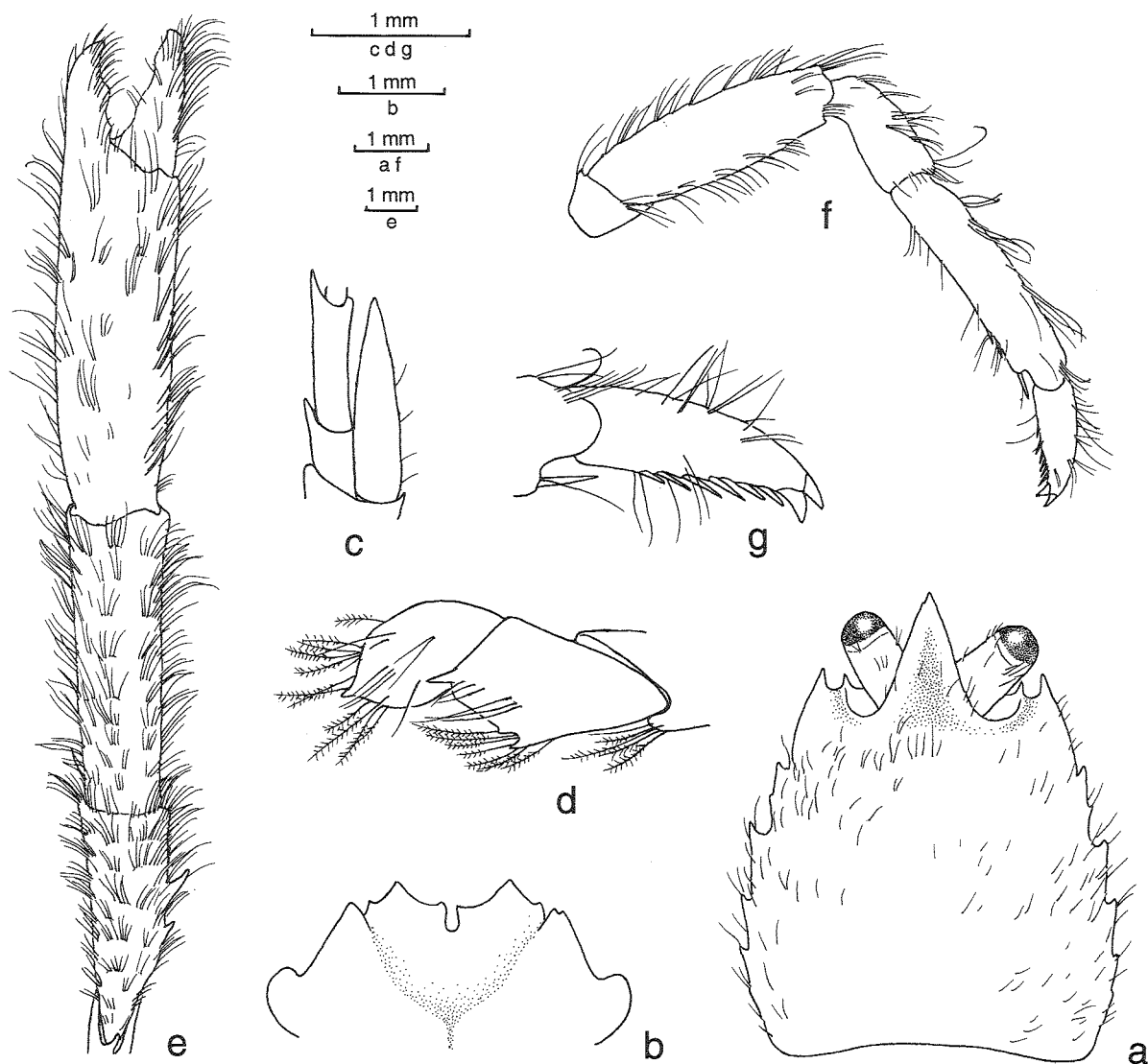


Fig. 22. *Uroptychus wolffi* n. sp., holotype, ♂, ZMUC CRU-11518: a, carapace, dorsal; b, anterior part of sternal plastron; c, antenna, left, ventral; d, merus and carpus of Mxp 3, left, lateral; e, P1, left, dorsal; f, P2, right, lateral; g, same, distal article.

emarginate. Ocular peduncles somewhat elongate, cornea not dilated, much shorter than remaining eyestalk. Antennal peduncle nearly reaching rostral tip; distal 2 articles each with distomesial spine; flagellum of 11–12 segments almost reaching end of P1 merus; antennal scale terminating in end of article 5. Mxp 3 ischium with many small denticles on mesial ridge, flexor distal margin not rounded; merus with well-developed distolateral spine and somewhat smaller spine at midlength of flexor margin; carpus with distolateral spine. P1 setose, merus with 2 mesial marginal and 1 distomesial spine. P2–4 relatively stout, moderately setose; P2 merus shorter than postorbital carapace length; meri and carpi unarmed; propodi with

pair of terminal spines preceded by 2 spines on ventral margin; dactyli with straight flexor margin bearing 8 spines, distal 2 prominent, penultimate much larger than ultimate, remaining 6 slender and inclined.

Description of holotype: Carapace, exclusive of rostrum, moderately high, distinctly broader than long, dorsally unarmed, sparsely setose, and convex in profile. Lateral margin with 6 spines, first anterolateral and well developed, second smaller than and distantly separated from first, present directly behind ordinary end of cervical groove, third very small, closer to second than to fourth, fourth and fifth subequal to second in size, fourth equidistant between second and

fifth, sixth very small. Lateral limit of orbit with distinct spine straight mesial to anterolateral spine of carapace. Rostrum broad relative to length, dorsally excavated, less than half that of remaining carapace.

Pterygostomian flap anteriorly not strongly narrowed, ending in small spine, surface unarmed.

Excavated sternum ridged in midline, anterior margin convex between separated bases of Mxps 1; sternite 3 widely and shallowly convex on anterior margin, with narrow U-shaped median sinus, anterolateral corner sharply angular, laterally with small process on proximal portion; sternite 4 anterolaterally produced on left side, ending in biramous, low, small processes on right side.

Abdomen sparsely setose. Segment 1 without transverse ridge. Pleura of segment 2 with somewhat concave lateral margin not strongly divergent posteriorly. Pleura of segments 3–4 ending in blunt end, not sharply produced. Telson half as broad as long, posterior lobe 1.2 times as long as anterior lobe, posterior margin not emarginate.

Ocular peduncles long relative to length, cornea not dilated, less than half as long as remaining eyestalk, barely reaching end of rostrum.

Antennal peduncles nearly reaching end of rostral tip; article 5 about twice as long as article 4, both articles with strongly produced distomesial spine; flagellum of 11 segments almost reaching end of P1 merus; antennal scale reaching end of peduncle excluding spine. Article 2 with small, sharp distolateral spine.

Mxp 3 ischium with very small, distally diminishing denticles on mesial ridge, flexor distal margin not rounded. Merus having flexor margin strongly carinate on distal half, bearing sharp median spine accompanied by 1 or 2 small denticles distal to it, distolateral spine distinct. Carpus also with distolateral process.

P1 3.3 times as long as carapace including rostrum, covered with fine setae. Basi-ischium with sharp distodorsal and distoventral spine; merus with 1 distomesial and 1 distolateral spine ventrally and 2 mesial marginal spines: distal one prominent, situated at distal third of length; carpus slightly shorter than palm, bearing 1 distomesial spine ventrally. Palm somewhat depressed, about 3 times as long as broad, somewhat narrowed proximally, 2.4 times as long as movable finger. Fingers relatively broad, ending in blunt point, opposable margins sinuous, not gaping.

P2–4 relatively thick, not strongly compressed. Meri and carpi unarmed. P2 merus much shorter than postorbital carapace length. Propodi nearly 5 times as

long as broad, twice as long as dactyli, ventral margin with pair of terminal spines preceded by 2 slender spines. Dactyli nearly straight, relatively thick, flexor margin with 8 spines, distal 2 spines prominent, ultimate one somewhat smaller than penultimate, remaining 6 spines slender, inclined.

Variations: The number of lateral marginal spines of the carapace vary from four to seven, the ovigerous female, which has four, lacks the hind-most one as in the holotype, and the larger male, which has seven, bears additional small spines: one between the first and second or between the first spine and the one directly behind the ordinary end of the cervical groove, and the other between the third and fourth. This larger male has another small spine posterior to the anterolateral and dorsal to the additional anterior spine. The posterior margin of the telson is feebly or barely concave. Flexor marginal spines of the Mxp 3 merus are reduced to two or three denticles in the male and two non-ovigerous female paratypes. The P1 has one to four spines on the mesial margin of the merus.

Remarks: The arrangement of the lateral marginal spines of the carapace, the shapes of the P1–4, and elongate ocular peduncles suggest that the species is close to *U. convexus* Baba, 1988 from the Philippines. The new species is distinguished from that species by: 1) the article 5 of the antennal peduncle is unarmed in *U. convexus*, strongly produced on the distomesial margin in *U. wolffi*; 2) the hepatic region directly anterior to the typical end of the cervical groove is markedly depressed in *U. convexus*, indistinctly so in *U. wolffi*; 3) the P2–4 dactyli in *U. convexus* bear six flexor marginal spines including terminal one, with the penultimate and antepenultimate being distinctly larger, while those in *U. wolffi* bear eight spines, with the distal two being pronounced and remaining six slender and inclined.

Etymology: It is a pleasure to dedicate this species to Torben Wolff, deputy leader of the “Galathea” Expedition.

Uroptychus zezuensis Kim, 1972

Fig. 23

Synonymy: see p. 232.

Material:

Japan, 100 miles W of Nagasaki, 32°22'N, 128°42'E,

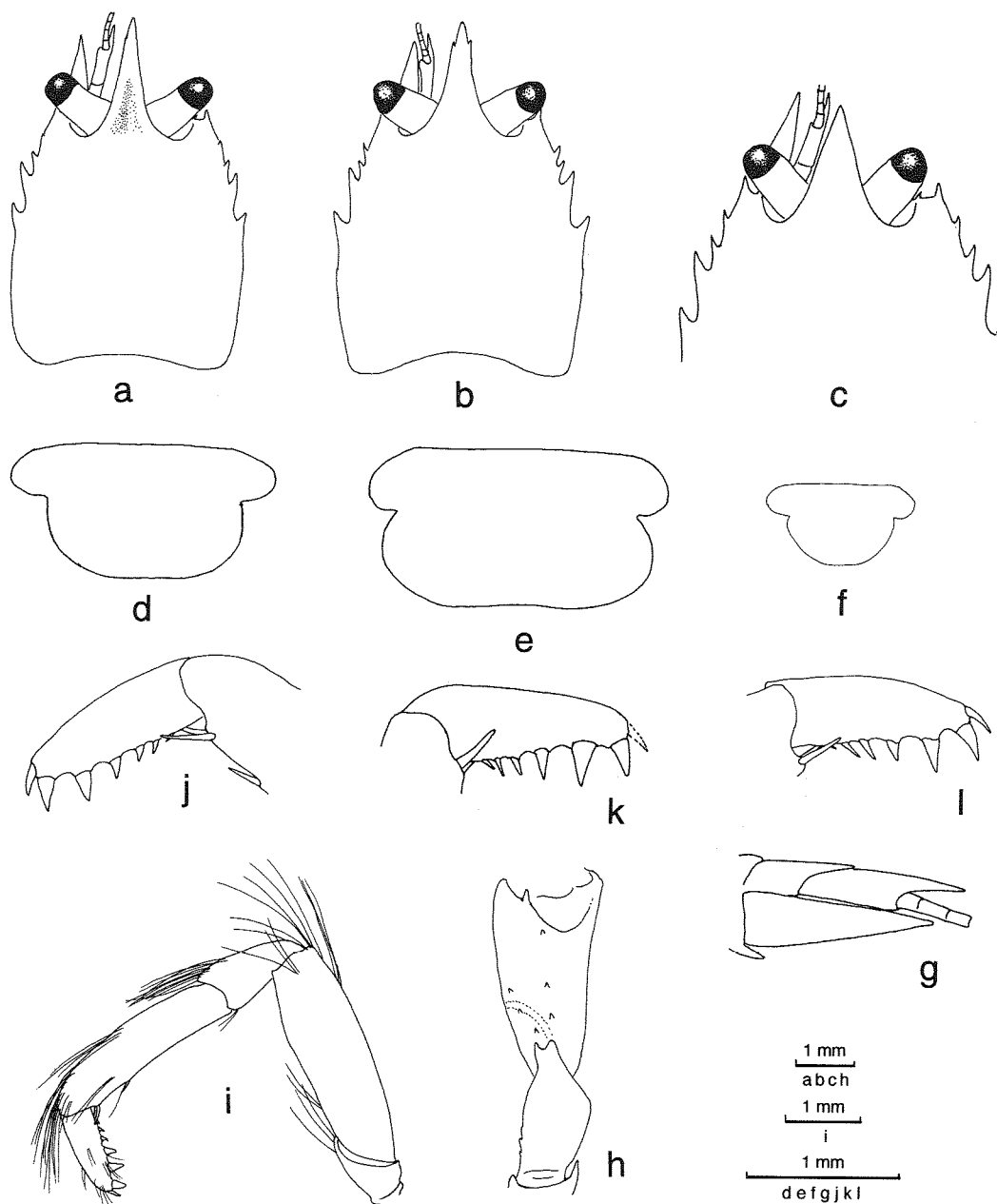


Fig. 23. *Uroptychus zeuensis* Kim, 1972; a, d, g, h, i, j, l, ♂ (5.7 mm), ZMUC CRU-11198; b, e, k, ov. ♀ (5.6 mm), ZMUC CRU-11532; c, ov. ♀ (7.0 mm), ZMUC CRU-11532; f, ♀ (3.4 mm), ZMUC CRU-11532: a, b, carapace, dorsal; c, same, anterior part; d–f, telson; g, antenna, left, ventral; h, P1, proximal part, left, ventral; i, P2, left, lateral; j, same, distal part, setae omitted, lateral; k, P3, distal part; l, P4, distal part.

311 m, 25 Dec 1900, coll. Suenson: — 1 ♂ (4.0 mm), 2 ov. ♀ (5.6, 7.0 mm), 1 ♀ (3.4 mm), ZMUC CRU-11532.

Japan, 12 miles W of Nagasaki, 32°02'N, 128°45'E, 192 m, 12 May 1898, Suenson: — 1 ♂ (5.7 mm), ZMUC CRU-11198.

“Musorstom 1” St. 27, Philippines, 13°59.8'N, 120°18.6'E, 192–188 m, 22 Mar. 1976: — 1 ♂ (5.0

mm), MNHN Ga-4614.

“Musorstom 1” St. CP63, Philippines, 14°00.8'N, 120°15.8'E, 191–195 m, 27 Mar. 1976: — 1 ♂ (4.9 mm), 1 ov. ♀ (5.2 mm), MNHN Ga-4615.

Diagnosis: Carapace sparsely setose; lateral margins convex, bearing 5 spines on anterior half, first anterolateral, moderate in size, second and third small,

third distinctly larger than second, fourth and fifth acute, subequal, both much larger than first. Rostrum narrowly triangular, deeply excavated dorsally, lateral margin with or without small subapical spine on each side. Lateral limit of orbit angular, ending in small, laterally inclined spine. Excavated sternum with distinct ridge in midline, anterior margin broadly subtriangular, with blunt tip, broadly separating Mxps 1; sternite 3 shallowly depressed, anterior margin weakly concave, with narrow or relatively broad U-shaped median notch. Pterygostomian flap with spinules on surface. Telson about twice as broad as long, posterior lobe slightly concave on posterior margin, length about 1.5 times that of anterior lobe. Ocular peduncles elongate, distally narrowed, cornea about half as long as remaining eyestalk. Distal 2 articles of antennal peduncle each with very strong ventral distomesial spine; flagellum of 10–15 segments barely reaching end of P1 merus; antennal scale overreaching end of article 5 but not tip of its distal spine. Mxp 3 ischium with small spine directly lateral to rounded distal corner of flexor margin, denticles on mesial ridge reduced to small size; merus short relative to length, with 1 distolateral spine and 1 small spine on distal third of flexor margin; carpus with distolateral spine and 1 extensor marginal spine. P1 setose; basi-ischium with strong dorsal spine often with accompanying smaller spine proximal to it; merus and carpus usually with distomesial and distolateral spines ventrally, merus with row of 3 spines arranged obliquely on proximal part of ventromesial surface and row of 3 spines on ventral surface. P2–4 moderately broad in lateral view, bearing long, distally softened setae; meri having dorsal crest smooth, without spines; P2 merus much shorter than postorbital carapace length; propodi having ventral margin with pair of terminal spines preceded by 1 spine; each dactylus slightly less than half length of propodus, flexor margin nearly straight, bearing slender terminal spine preceded by 2 strong subequal spines perpendicular to flexor margin and 4 proximally diminishing spines, proximal-most inclined.

Eggs: Number of eggs carried 18; size, 0.83 x 0.85 – 0.95 x 1.05 mm

Remarks: The telson of the smallest female specimen from Nagasaki is strongly narrowed posteriorly (see Fig. 23f). This may be an age associated variation.

Uroptychus zezuensis is characterized by the absence of strong spines on the posterior branchial lateral margin. In previous papers (Baba, 1988, 1990),

U. zezuensis was considered to be a variant of *U. tridentatus* because the last two of the carapace lateral spines as in *U. tridentatus* seemed to be subject to variation. However, such variation is not found in any of the present material as well as other material at hand from the Philippines in the MNHN collection. These two species also differ from each other in the following particulars: the anterior second and third of the carapace lateral spines in *U. zezuensis* are larger than those of *U. tridentatus*, especially the third being larger than the second; the P1 merus in *U. zezuensis* bears a row of three spines arranged obliquely on the proximal part of ventromesial surface, instead of two spines as in *U. tridentatus*.

Range: Nagasaki (Japan), Jeju Island (Korea) and the Philippines; 60–311 m.

Family GALATHEIDAE Samouelle, 1819

Galatheidae Dana, 1852: 1431. — Alcock, 1901: 236.
— Balss, 1957: 1595.

Diagnosis: Carapace dorsally with transverse striae or tubercles. Rostrum well developed, subtriangular or spiniform, supraocular spines present or absent. Sternal plate of thoracic somite 8 distinct, separated from preceding sternal plastron. Tailfan well developed, not folded beneath preceding segment, telson distinctly or indistinctly subdivided into several plates. Antennal peduncle consisting of 4 articles (second and third of 5 articles fused). Mandible having incisor edge entire. Mxp 3 with epipod.

Remarks: The family now contains 30 genera as listed below, including two new genera (*Enriquea* and *Torbenia*) proposed in this paper:

- Agononida* Baba & de Saint Laurent, 1996
- * *Alainius* Baba, 1991
- * *Allogalathea* Baba, 1969
- * *Allomunida* Baba, 1988
- * *Anomoeomunida* Baba, 1993
- * *Anoplonida* Baba & de Saint Laurent, 1996
- Bathymunida* Balss, 1914
- Cervimunida* Benedict, 1902
- * *Coralliogalathea* Baba & Javed, 1974
- * *Crosnierita* Macpherson, 1998
- Enriquea* n. gen.
- * *Fennerogalathea* Baba, 1988
- Galathea* Fabricius, 1793