Bull. Natl. Mus. Nat. Sci., Ser. A, 48(1), pp. 5–24, February 22, 2022
DOI: 10.50826/bnmnszool.48.1_5

Crabs (Crustacea, Decapoda) from the Sea off East and Southeast Asia Collected by the RV *Hakuhō Maru* (KH-72-1 Cruise) 2. Timor Sea

Masatsune Takeda[1], Shane T. Ahyong[2], Naoya Ohtsuchi[3] and Hironori Komatsu[1]

[1] Department of Zoology, National Museum of Nature and Science, Tokyo, 4–1–1 Amakubo, Tsukuba, Ibaraki 305–0005, Japan
E-mails: takeda@kahaku.go.jp (MT)/h-komatu@kahaku.go.jp (HK)
[2] Australian Museum Research Institute, Australian Museum, 1 William Street, Sydney, NSW 2020, Australia; School of Biological, Earth & Environmental Sciences, University of New South Wales, Kensington, NSW 2052, Australia
E-mail: shane.ahyong@austmus.gov.au
[3] International Coastal Research Center, Atmosphere and Ocean Research Institute, The University of Tokyo, 1–19–8 Akahama, Otsuchi, Iwate 028–1102, Japan
E-mail: ohtsuchi@g.ecc.u-tokyo.ac.jp

(Received 7 November 2021; accepted 22 December 2021)

Abstract The present study is the second part of a series of reports on the crabs collected by the KH-72-1 cruise of the RV *Hakuhō Maru* from the seas of East and Southeast Asia. In this report, 16 species of 14 genera in 10 families of the crabs collected in the depths of the Timor Sea, 295–690 m, are recorded. There were no species common to the Sulu Sea and Sibutu Passage in the Philippines recorded in the first part of this serial report on the crabs collected during the KH-72-1 cruise.

Key words: Deep-water crabs, Brachyura, taxonomy, northern Australia

Introduction

The present report is the second part of a series of taxonomic studies on the crabs collected by the RV *Hakuhō Maru* (KH-72-1 cruise) in the seas of East and Southeast Asia. In the first part reporting on the material collected from the Sulu Sea and the Sibutu Passage in the Philippines, 17 species of 14 genera in 9 families were recorded (Takeda *et al.*, 2021). In addition to a number of frequently recorded deep-water species, three new species, *Cymonomus suluensis* (family Cymonomidae), *Homolodromia hakuhoae* (family Homolodromiidae) and *Lysirude goeckei* (family Lyreididae), were described and figured.

In this second part, a total of 16 species of 14 genera in 10 families from stations 26–28 in the Timor Sea (295–690 m depth) and station 33 (535–547 m depth off the Sahul Shelf in the west of the Timor Sea) was recorded (Table 1). The cruise track of the RV *Hakuhō Maru* (KH-72-1 cruise) is shown in the first part (Takeda *et al.*, 2021, fig. 1).

Of 16 species recorded here, *Homolodromia kai* (family Homolodromiidae) and *Platymaia fimbriata* (family Inachidae) were recorded from two stations, viz. station 26 in the Timor Sea and station 33 in the sea off the Sahul Shelf, whereas *Krangalangia spinosa* (family Cyclodorippidae) and *Trichopeltarion alcocki* (family Trichopeltariidae) were recorded only from the sea off the Sahul Shelf (Station 33). The remaining 12 species in 8 families were recorded only from the Timor Sea (Stations 26–28).

Table 1. List of the species collected from the Timor Sea during KH-72-1 cruise of the RV *Hakuhō Maru.*

Family Cyclodorippidae Ortmann, 1892
Krangalangia spinosa (Zarenkov, 1970)—Sta. 33 (535–547 m)
Family Cymonomidae Bouvier, 1898
Cymonomus java Ahyong, Mitra and Ng, 2020 — Sta. 26 (610–690 m)
Family Homolodromiidae Alcock, 1900
Dicranodromia karubar Guinot, 1993 — Sta. 27 (465–490 m)
Homolodromia kai Guinot, 1993 — Sta. 26 (610–690 m); Sta. 33 (535–547 m)
Family Homolidae De Haan, 1839
Homolochunia valdiviae Doflein, 1904 — Sta. 27 (465–490 m)
Family Ethusidae Guinot, 1977
Ethusina chenae Ng and Ho, 2003 — Sta. 26 (610–690 m)
Family Oregoniidae Garth, 1958
Pleistacantha griffini Ahyong and Lee, 2006 — Sta. 28 (295–296 m)
Family Inachidae MacLeay, 1838
Cyrtomaia suhmi Miers, 1886 — Sta. 26 (610–690 m)
Dorhynchus rostratus (Sakai, 1932) — Sta. 26 (610–690 m)
Platymaia fimbriata Rathbun, 1916 — Sta. 26 (610–690 m); Sta. 33 (535–547 m)
Platymaia wyvillethomsoni Miers, 1886 — Sta. 28 (295–296 m)
Family Epialtidae MacLeay, 1838
Laubierinia carinata (Griffin and Tranter, 1986) — Sta. 28 (295–296 m)
Samadinia boucheti (Ng and Richer de Forges, 2013) — Sta. 27 (465–490 m)
Samadinia soela (Griffin and Tranter, 1986) — Sta. 26 (610–690 m)
Family Trichopeltariidae Tavares and Cleva, 2010
Trichopeltarion alcocki Doflein, in Chun, 1903 — Sta. 33 (535–547 m)
Family Chasmocarcinidae Serène, 1964
Tenagopelta potens (Davie and Richer de Forges, 2013) — Sta. 26 (610–690 m)

Materials and Methods

This report is based on the specimens collected in the depths of the Timor Sea during the KH-72-1 cruise of the RV *Hakuhō Maru* of the Ocean Research Institute, The University of Tokyo (now, the Atmosphere and Ocean Research Institute, The University of Tokyo). The newly built RV *Hakuhō Maru* now belongs to the Japan Agency for Marine-Earth Science and Technology (JAMSTEC).

All the specimens are registered and deposited in the Tsukuba Research Departments, National Museum of Nature and Science, Tokyo (NSMT). The measurements indicate the size of the specimens in mm; the breadth and length of the carapace, the postrostral carapace length, and the first and second male gonopods are abbreviated as CB, CL, PCL, G1 and G2, respectively.

Taxonomic Accounts

Family Cyclodorippidae Ortmann, 1892
Genus ***Krangalangia*** Tavares, 1992
[Type species: *Cyclodorippe* (*Cyclodorippe*) *rostrata* Ihle, 1916]
Krangalangia spinosa (Zarenkov, 1970)
(Fig. 1A–B)

Material examined. RV *Hakuhō Maru* KH-72-1 cruise, sa. 33 (Off Sahul Shelf; 12°42.2′S, 123°07.6′E–12°42.0′S, 123°08.5′E, 535–547 m depth), 3 m beam trawl; June 26, 1972; 1 ♂ (NSMT-Cr 29246: CB 4.4 mm, CL 4.4 mm including rostrum), 1 ♀ (NSMT-Cr 29247: CB 5.1 mm, CL 4.8 mm).

Remarks. In both specimens examined, all of the chelipeds and ambulatory legs are missing (Fig. 1A–B), and, therefore, the identification is based only on carapace morphology, particularly the spinulation of the dorsal surface and lateral margins, and the length, width and armature of the rostrum. The identification follows the key prepared by Tavares (1993) who examined the

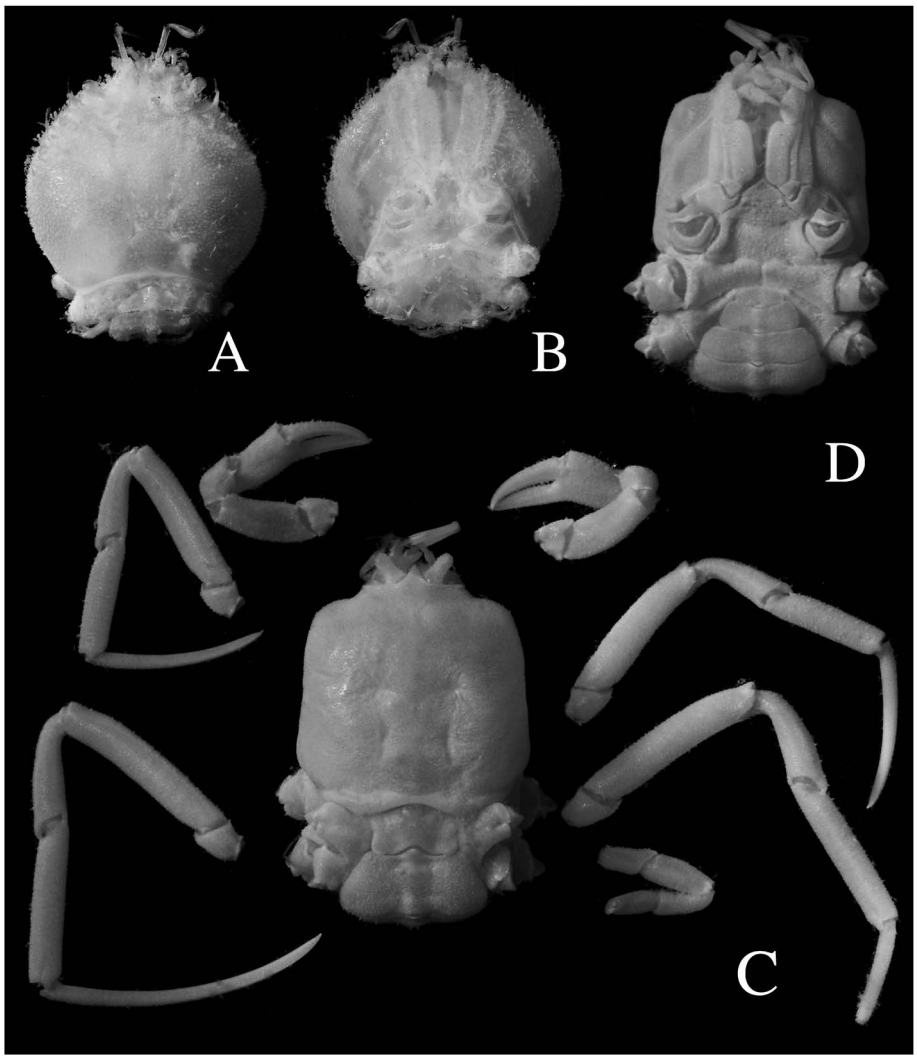

Fig. 1. A–B: *Krangalangia spinosa* (Zarenkov), female (NSMT-Cr 29247: CB 5.1 mm × CL 4.8 mm) from sta. 33 (Off Sahul Shelf, 535–547 m depth). C–D: *Cymonomus java* Ahyong, Mitra and Ng, female (NSMT-Cr 29248: CB 7.9 mm × CL 8.1 mm) from sta. 26 (Timor Sea, 610–690 m depth).

type specimens of two close species, *Krangalangia rostrata* (Ihle, 1916) and *K. spinosa* (Zarenkov, 1970), both of which were originally referred to the genus *Cyclodorippe* A. Milne-Edwards, 1880 and transferred to the new genus *Krangalangia* by Tavares (1992). According to Tavares (1993) who validated *K. spinosa* in opposition to the opinion of Takeda and Moosa (1990), *K. rostrata* differs from *K. spinosa* in having the rostrum distinctly narrower and constricted at its base, and the external orbital spine directed nearly forward, instead of obliquely outward as in *K. spinosa*. Both specimens examined agree in carapace shape with the male of *K. spinosa* from the Ryukys recorded by Takeda and Komatsu (2020).

Distribution. Australia, the Chesterfield Islands, New Caledonia, the Wallis and Futuna Islands, the Philippines and the Ryukyu Islands, 479–1223 m depth. This species was listed as an Australian species by Davie (2002) and recorded, with a photograph, from eastern Australia,

1053 m depth, by Farrelly and Ahyong (2019).

Family Cymonomidae Bouvier, 1898

Genus ***Cymonomus*** A. Milne-Edwards, 1880

[Type species: *Cymonomus quadratus* A. Milne-Edwards, 1880]

Cymonomus java Ahyong, Mitra and Ng, 2020

(Fig. 1C–D)

Material examined. RV *Hakuhō Maru* KH-72-1 cruise, sta. 26 (Timor Sea; 09°27.0′S, 127°58.6′E—09°28.5′S, 127°56.1′E, 610–690 m depth), 3 m beam trawl; June 19, 1972; 1 ♀ (NSMT-Cr 29248: CB 7.9 mm, CL 8.1 mm including rostrum).

Remarks. The genus *Cymonomus* is composed of 32 Indo-West Pacific species (including *C. suluensis* Takeda, Ohtsuchi and Komatsu, 2021), 11 West Atlantic species, and two Northeast Atlantic and Mediterranean species (Takeda *et al.*, 2021). Ahyong (2019) distinguished six species groups: 1) *C. bathamiae* group, 2) *C. curvirostris* group, 3) *C. delli* group, 4) *C. granulatus* group, 5) *C. karenae* group, and 6) *C. soela* group, and then Takeda *et al.* (2021) added the *C. suluensis* group.

The female at hand is referable to the *C. delli* group, which is represented by the following six species: *C. andamanicus* Alcock, 1905; *C. cubensis* Chace, 1940; *C. delli* Griffin and Brown, 1976; *C. diogenes* Ahyong and Ng, 2009; *C. cognatus* Ahyong and Ng, 2017; *C. java* Ahyong, Mitra and Ng, 2020. Among these congeners, the female at hand corresponds most closely to *C. java* and *C. andamanicus.* Like *C. andamanicus*, *C. java* is known only by a male, so comparisons with the present female of the proportional sizes of the chelipeds and ambulatory legs, and of the pleon require caution. The pereopod 3 merus of male *C. andamanicus* and *C. java* is about 1.0 CL (Ahyong *et al.*, 2020) compared to 0.9 CL in the female—this difference is consistent with sexual dimorphism in *Cymonomus*, with the proportional length of the pereopod 3 merus of females typically about 10% less than that of males (Ahyong *et al.*, 2020). The male telson and pleonal somite 6 of *C. andamanicus* is immovably fused, with an indistinct demarcation (Ahyong *et al.*, 2020, fig. 2C), but fully demarcated, and slightly movable in *C. java* (Ahyong *et al.*, 2020, fig. 4H). In the female at hand, somite 6 and the telson are immovably fused, but a distinct, complete suture is present as in male *C. java*. Additionally, the finely granular carapace and pereopodal granulation resembles those of *C. java*, rather than the coarser ornamentation of *C. andamanicus* (see Ahyong *et al.*, 2020). Thus, we herein refer the present female to *C. java.*

Distribution. Originally reported from the south of Java (603–686 m), and now from further east in the Timor Sea (610–690 m).

Family Homolodromiidae Alcock, 1900

Genus ***Dicranodromia*** A. Milne-Edwards, 1880

[Type species: *Dicranodromia ovata* A. Milne-Edwards, 1880]

Dicranodromia karubar Guinot, 1993

(Fig. 2)

Material examined. RV *Hakuhō Maru* KH-72-1 cruise, sta. 27 (Timor Sea; 09°30.9′S, 127°56.6′E, 465–490 m depth), 3 m beam trawl; June 20, 1972; 1 ♀ (NSMT-Cr 29249: CB 13.2 mm, CL 18.5 mm including rostrum).

Remarks. A female at hand (Fig. 2) agrees well with the original description by Guinot (1993) and also with the detailed redescription by Guinot (1995), having short stiff setae completely covering the carapace, chelipeds and ambulatory legs, but not always completely concealing the dorsal areolation and armature of the carapace. This coat of stiff setae (Fig. 2) is the most important criterion distinguishing close relatives such as *D. doederleini* Ortmann, 1892 known from Japan, 65–275 m depth, and *D. baffini* (Alcock and Anderson, 1899), definitely known from India and the Bay of Bengal, 435–830 m depth.

Distribution. The known localities are off the Kai and Tanimbar Islands in the Banda Sea, Indonesia, 356–468 m depth. Davie (2002) listed this species as one of two Australian species of

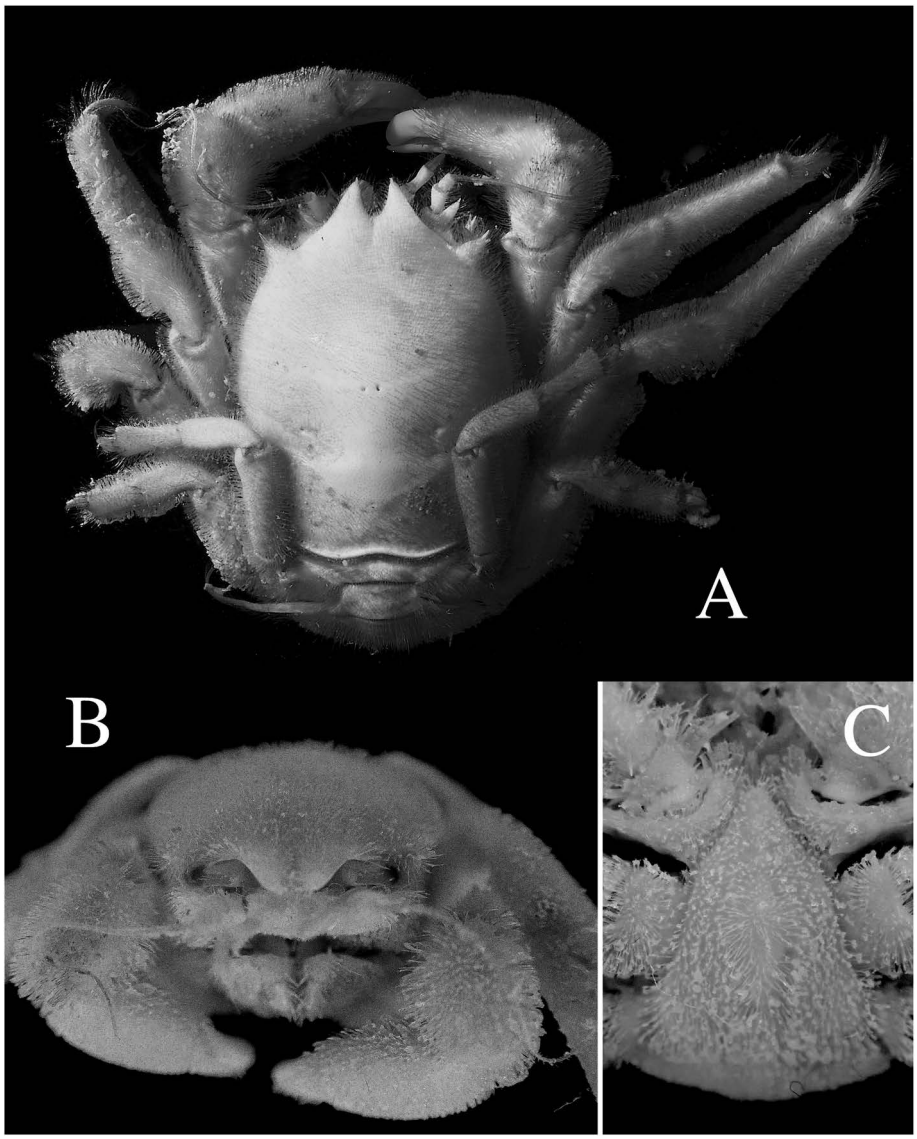

Fig. 2. *Dicranodromia karubar* Guinot, female (NSMT-Cr 29249: CB 13.2 mm × CL 18.5 mm including rostrum) from sta. 27 (Timor Sea, 465–490 m depth).

Dicranodromia based on the record of Tavares (1998) from off the Lacepede Archipelago, Western Australia, at 434 m depth.

Genus ***Homolodromia*** A. Milne-Edwards, 1880

[Type species: *Homolodromia paradoxa* A. Milne-Edwards, 1880]

Homolodromia kai Guinot, 1993

(Fig. 3B)

Material examined. RV *Hakuhō Maru* KH-72-1 cruise, sta. 26 (Timor Sea; 09°27.0′S, 127°58.6′E–09°28.5′S, 127°56.1′E, 610–690 m depth), 3 m beam trawl; June 19, 1972; 1 ♂ (NSMT-Cr

29250: CB 12.0 mm, CL15.7 mm including rostrum), 1 ♂ (NSMT-Cr 29251: CB 14.0 mm, CL 19.8 mm), 2 ovig. ♀♀ (NSMT-Cr 29252: CB 18.1 mm, CL 26.5 mm, diameter of egg, 1.7–1.8 mm; CB 20.7 mm, CL 26.0 mm, diameter of egg, 1.7–2.2 mm).

RV *Hakuhō Maru* KH-72-1 cruise, sta. 33 (Off Sahul Shelf, 12°42.2′S, 123°07.6′E–12°42.0′S, 123°08.5′E, 535–547 m depth), 3 m beam trawl; June 26, 1972; 2 young ♀♀ (NSMT-Cr 29253: CB 9.0 mm, CL 13.4 mm; CB 12.2 mm, CL 16.8 mm).

Remarks. The genus *Homolodromia* was extensively studied by Guinot (1995) based on the four species then known, and later two new species, *H. rajeevani* Padate, Cubelio and Jayachandran, 2020 and *H. hakuhoae* Takeda, Ohtsuchi and Komatsu, 2021, were described from India and the Philippines, respectively. The early known four species are quite distinctive in their biogeographical distributions, with *H. bouvieri* Doflein, 1904 from the western Indian Ocean, *H. kai* Guinot, 1993 from the southwestern Pacific Ocean, *H. robertsi* Garth, 1973 from the southeastern Pacific Ocean, and *H. paradoxa* A. Milne-Edwards, 1880 from the western Atlantic Ocean. They are all deep-sea inhabitants as mentioned by Takeda *et al.* (2021).

The specimen at hand is characteristic in having a smooth carapace and a coat of long soft setae entirely covering the carapace, chelipeds and ambulatory legs. This setation is somewhat similar to that of *H. rajeevani*, and clearly different from that of the other species. In *H. rajeevani*, each pseudorostral tooth is sharp and directed forward, and the branchial region is prominently inflated.

Distribution. The type locality is the Kai Islands, 688–694 m depth, with additional records by Guinot (1995) from New Caledonia (680–830 m depth), Vanuatu (775–850 m depth) and the Wallis and Futuna Islands (705–711 m depth). This species is otherwise known from the South China Sea, 650 m (Ho and Ng, 1999), New Zealand and eastern Australia, 350–935 m (Ahyong, 2008), and the north of Tokuno-shima Island in the East China Sea, 728–748 m (Takeda *et al.*, 2005). The present records are from the Timor Sea and off the Sahul Shelf (535–690 m depth).

Family Homolidae De Haan, 1839

Genus ***Homolochunia*** Doflein, 1904

[Type species: *Homolochunia valdiviae* Doflein, 1904]

Homolochunia valdiviae Doflein, 1904

(Fig. 3A)

Material examined. RV *Hakuhō Maru* KH-72-1 cruise, sta. 27 (Timor Sea; 09°30.9′S, 127°56.6′E, 465–490 m depth), 3 m beam trawl; June 20, 1972; 1 ♀ (NSMT-Cr 29254: CB 12.3 mm, CL 18.5 mm including rostrum).

Remarks. The genus *Homolochunia*, revised by Guinot and Richer de Forges (1981, 1995), was at the time represented by three species; *H. valdiviae* Doflein, 1904 (type species; western Indian Ocean and Indonesia), *H. kullar* Griffin and Brown, 1976 (New Caledonia, Loyalty I., and eastern Australia), and *H. gadaletae* Guinot and Richer de Forges, 1995 (Japan and Taiwan). Subsequently, *H. menezi* was described from the Solomon Islands by Richer de Forges and Ng (2008). Recently, Padate *et al.* (2020) recorded a male from the Andaman Sea, 635 m depth, with detailed photographs of the characters. All of the four species of *Homolochunia* are quite characteristic in having a pair of long pseudorostral spines with one or more accessory spines, in addition to the peculiar chela of the last leg. Of these, *H. gadaletae* and *H. menezi* are similar to each other in the longitudinally quadrate shape of the carapace, the long pseudorostral spines directed forward and armed with an accessory spine at the subdistal part, and the peculiar shape of the chela of the last leg. In the present species, the carapace dorsal surface is uneven but not tuberculate at all, and the ambulatory legs are longer and slenderer than those of *H. gadaletae*.

Distribution. Western Indian Ocean (East Africa, Madagascar, Comoro Islands, Mozambique and Seychelles, 475–977 m depth), Eastern

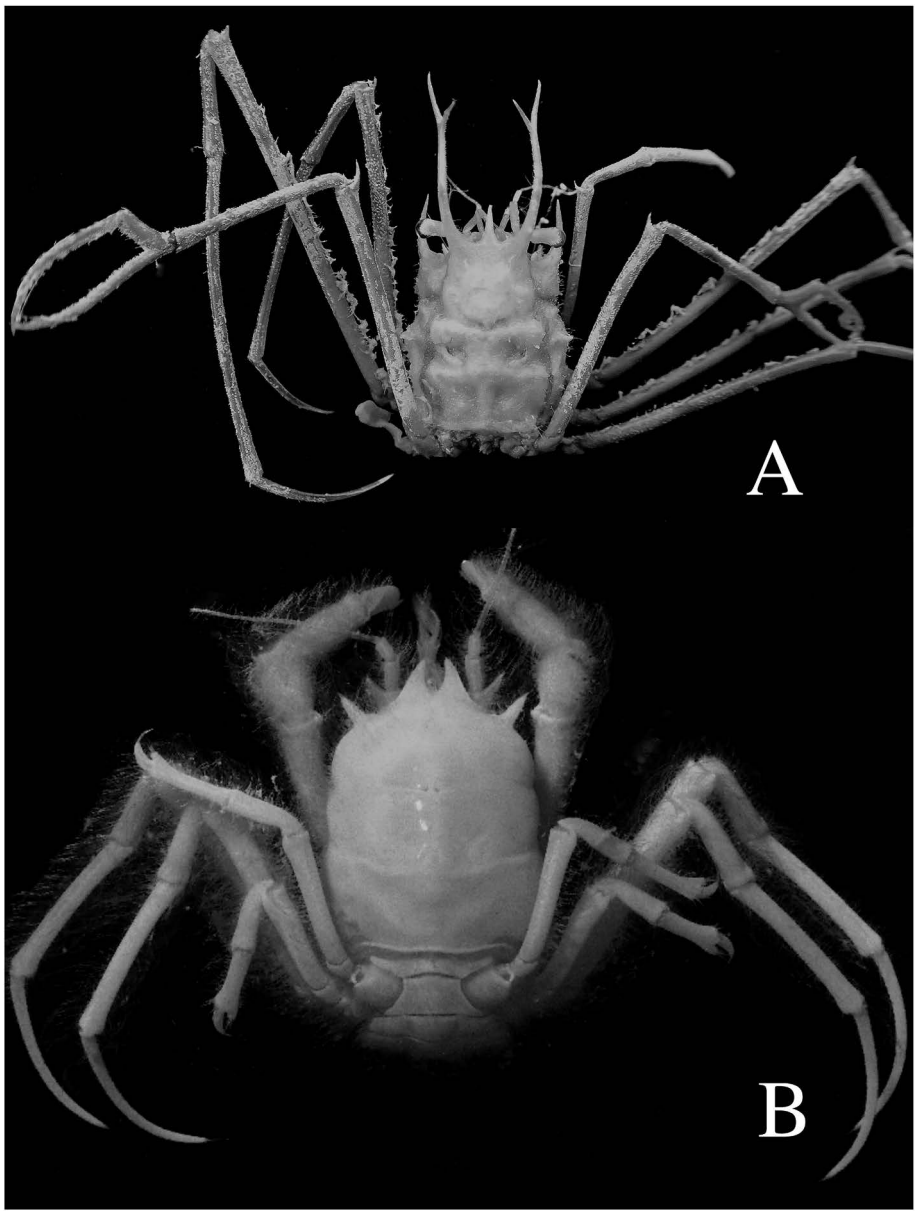

Fig. 3. A: *Homolochunia valdiviae* Doflein, female (NSMT-Cr 29254: CB 12.3 mm × CL 18.5 mm including rostrum) from sta. 27 (Timor Sea, 465–490 m depth). B: *Homolodromia kai* Guinot, female (NSMT-Cr 29253: CB 12.2 mm × CL 16.8 mm including rostrum) from sta. 33 (Off Sahul Shelf, 535–547 m depth).

Indian Ocean (Andaman Sea, 635 m), and Indonesian waters (Makassar Strait, Mollucas, and Kai Islands, 390–694 m depth).

Family Ethusidae Guinot, 1977

Genus ***Ethusina*** Smith, 1884

[Type species: *Ethusina abyssicola* Smith, 1884]

Ethusina chenae Ng and Ho, 2003

(Fig. 4)

Material examined. RV *Hakuhō Maru*

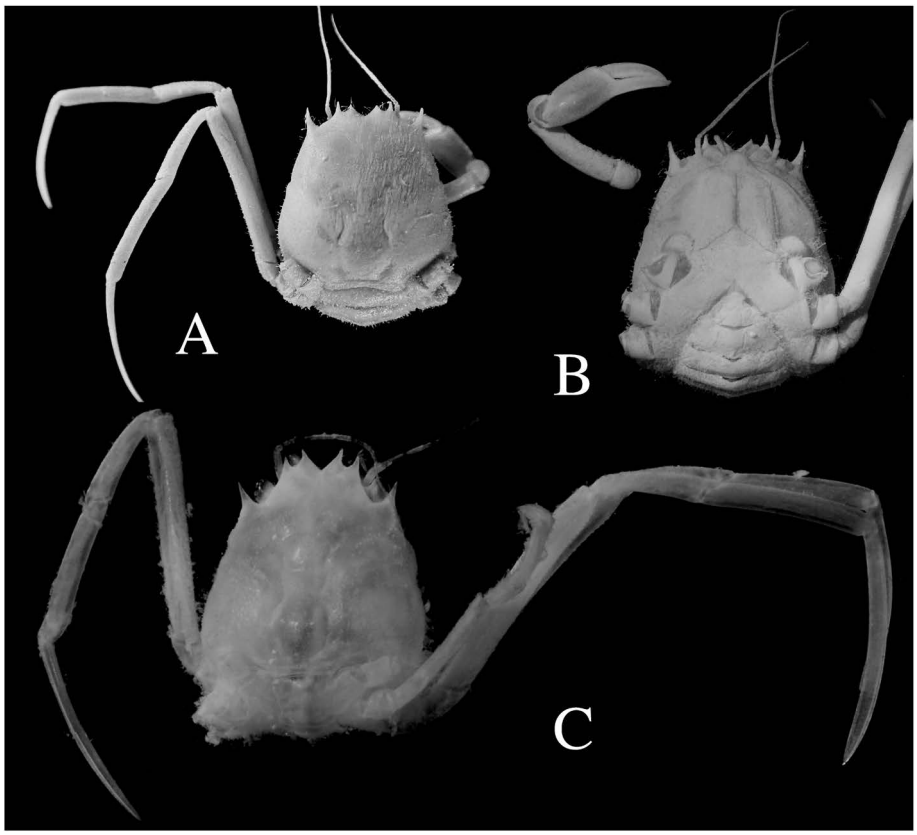

Fig. 4. *Ethusina chenae* Ng and Ho. A–B: Female (NSMT-Cr 29255: CB 9.3 mm × CL 10.9 mm) from sta. 26 (Timor Sea, 610–690 m depth). C: Juvenile (NSMT-Cr 29256: CB 4.0 mm × CL 4.2 mm) from sta. 26 (Timor Sea; 610–690 m depth).

KH-72-1 cruise, sta. 26 (Timor Sea; 09°27.0′S, 127°58.6′E–09°285.0′S, 127°56.1′E, 610–690 m deep), 3 m beam trawl; 19 June, 1972; 1 juv. (NSMT-Cr 29256: CB 4.0 mm, CL 4.2 mm), 1 juv. (NSMT-Cr 29257, dried up: CB 5.0 mm, CL 5.5 mm), 1 ♀ (NSMT-Cr 29255: CB 9.3 mm, CL 10.9 mm).

Remarks. *Ethusina robusta* (Miers, 1886), *E. investigatoris* (Alcock, 1896), *E. desciscens* (Alcock, 1896), *E. vanuatuensis* Chen, 2000, and *E. alcocki* Ng and Ho, 2003 are closely related, differing from each other mainly in details of the front-orbital tuberculation. Their complex synonymies were thoroughly clarified by Castro (2005): 1) *Ethusina investigatoris* and *E. alcocki* were synonymized with *E. robusta*; 2) *Ethusina robusta* identified by Chen (1986) was corrected to *E. chenae* Ng and Ho, 2003; 3) the identifications of *E. desciscens* identified by Chen (1986, 1998), and Chen and Sun (2002) were corrected to *E. taiwanensis* Ng and Ho, 2003; 4) *Ethusina robusta* identified by Chen (1993) was referred to *E. vanuatuensis* Chen, 1993, *E. macrospina* Ng and Ho, 2003, and *E. stenommata* Castro, 2005; 5) *Ethusina robusta* identified by Chen (2000) was reidentified as *E. ciliacirrata* Castro, 2005, and *E. coronata* Castro, 2005; and 6) the identification of *E. robusta* by Chen and Sun (2002) was similarly corrected to *E. chenae* Ng and Ho, 2003.

After detailed comparison with the literature, the female at hand (Fig. 4A–B), which is fully mature, was identified with *E. chenae*. Among the species mentioned above, *E. chenae* is characteristic in that 1) the carapace shape is not constricted behind the external orbital spine that is directed nearly forward or only slightly outward,

with the tip reaching nearly to the tip of the median frontal tooth, 2) each median frontal tooth is triangular in dorsal view, with a sharp tip, and the lateral frontal tooth is directed forward, similar in shape to the outer orbital spine, extending beyond the tip of the median frontal tooth, 3) the median frontal sinus is comparatively wide and shallow, and the orbital sinus is distinctly shallow, with the orbital margin gently retreating toward the external orbital spine. The characters observed as above in the present female seem to be minor but reliable, agreeing well with the original description and figures by Ng and Ho (2003), and with comments by Castro (2005). In the holotype female, both of the median frontal teeth seem to be blunt, probably due to damage during lifetime. The figures represented by Chen and Sun (2002) as *E. robusta* are somewhat schematic, but indicative of the specific characters of *E. chenae.*

Two small juveniles at hand belong without doubt to *Ethusina* by having the swollen basal antennular article pushing the antenna and the long ambulatory legs, but it is remarkable in having the prominent eyestalks visible from above, different from most of the congeners and somewhat similar to the *Ethusa* species. They keyed out close to *E. desciscens* in the key provided by Castro (2005). The semitransparent soft carapace, with sharp but not spiniform frontal and external orbital teeth, and the distinct eyestalks may be referable to the immaturity of the specimens.

Distribution. East China Sea (Chen, 1986, as *E. robusta*), Taiwan (Ng and Ho, 2002; Castro, 2005), the Philippines (Chen, 1985, as *E. desciscens*; Castro 2005), 509–1649 m depth. The record of *E. desciscens* from Japan by Marumura and Kosaka (2003) is not yet verified.

Family Oregoniidae Garth, 1958

Genus ***Pleistacantha*** Miers, 1879

[Type species: *Pleistacantha sanctijohannis* Miers, 1879]

Pleistacantha griffini Ahyong and Lee, 2006

(Fig. 5A)

Material examined. RV *Hakuhō Maru* KH-72-1 cruise, sta. 28 (Timor Sea; 09°34.4′S, 128°06.0′E–09°33.5′S, 128°03.4′E, 295–296 m depth); 3 m beam trawl; June 24, 1972; 1 ♂ (NSMT-Cr 29258: CL 10.2 mm excluding pseudorostral spines, CB 6.7 mm).

Remarks. The general appearance of species of *Pleistacantha* changes somewhat owing to size-related inflation of the branchial regions and to sexual dimorphism (e.g. Prema *et al.*, 2020). In addition, as briefly discussed by Ahyong and Lee (2006), the distinctness of sexual dimorphism probably varies among species. The taxonomy is, therefore, usually discussed mainly on the basis of adult specimens. The present specimen, a juvenile male with poorly developed gonopods, nevertheless possesses diagnostic features of *P. griffini*, described from the North West Shelf, Western Australia (Ahyong and Lee, 2006).

Pleistacantha griffini closely resembles *P. moseleyi* (Miers, 1886) from the Philippines (Ahyong and Lee, 2006), and of five features discussed by Ahyong and Lee (2006), the followings are available to distinguish the two species (see also Ng *et al.*, 2017, figs. 3A, 4A, 5A, 6A–B, 7A–C, 8A–B, 9A–B, 10A–D). The mesial margins of the branchial regions are more widely separated such that several rows of small spines are present along the midline between the two regions in *P. griffini* (a single row of spines in *P. moseleyi*); and the merus of the fifth ambulatory leg is relatively shorter in *P. griffini* than in *P. moseleyi* (merus length/pcl: 0.7 in *P. griffini*; 0.8–1.0 in *P. moseleyi*; 0.6 in the present male).

Distribution. North West Shelf of Australia; Timor Sea; Sumatra and off the Tanimbar Islands, Indonesia; 295–400 m depth.

Family Inachidae MacLeay, 1838

Genus ***Cyrtomaia*** Miers, 1886

[Type species: *Cyrtomaia murrayi* Miers, 1886]

Cyrtomaia suhmii Miers, 1886

(Fig. 5B)

Material examined. RV *Hakuhō Maru* KH-72-1 cruise, sta. 26 (Timor Sea; 09°27.0′S, 127°58.6′E–09°285.0′S, 127°56.1′E, 610–690 m

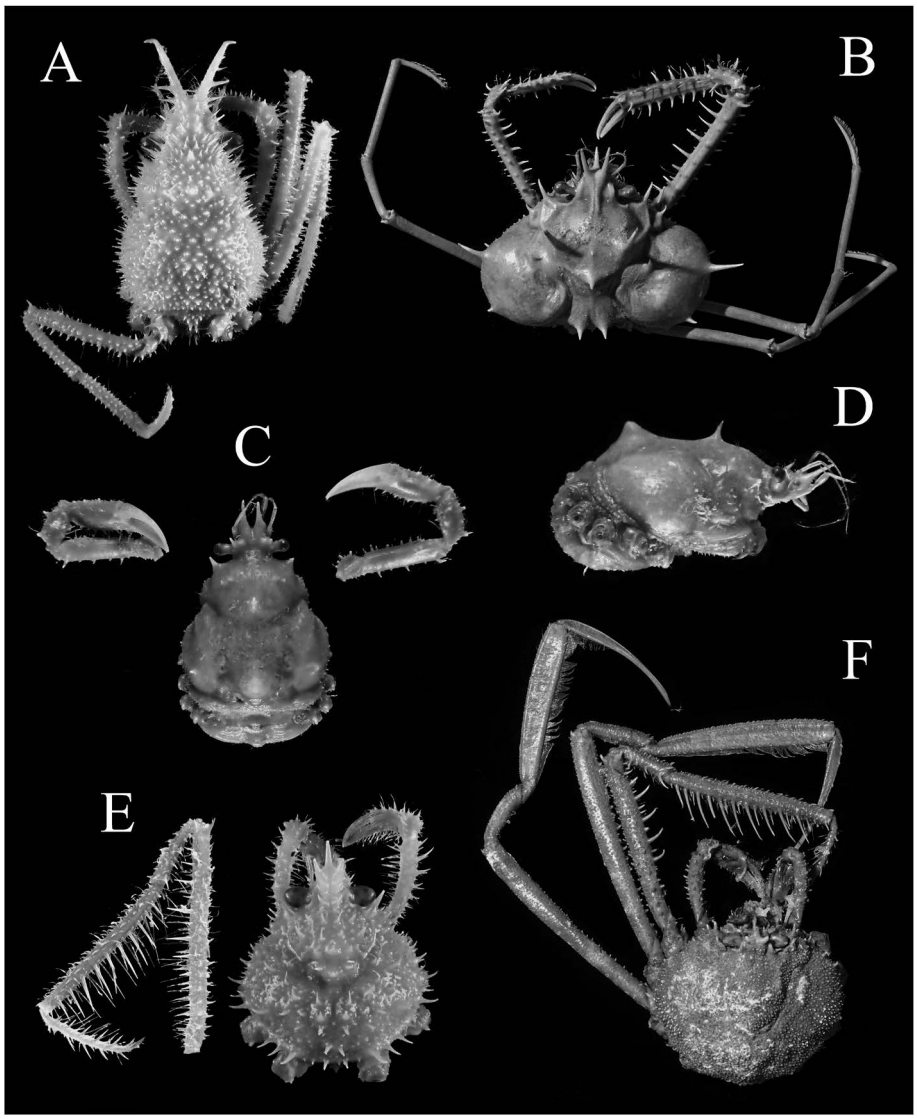

Fig. 5. A: *Pleistacantha griffini* Ahyong and Lee, male (NSMT-Cr 29258: CB 6.7 mm × CL 10.2 mm excluding pseudorostral spines) from sta. 28 (Timor Sea, 295–296 m depth). B: *Cyrtomaia suhmi* Miers, male infected by epicaridean parasites in both branchial chambers (NSMT-Cr 29259: CB 31.6 mm excluding branchial spines × CL 26.2 mm excluding pseudorostral spines) from sta. 26 (Timor Sea, 610–690 m depth). C–D: *Dorhynchus rostratus* (Sakai), female (NSMT-Cr 29261: CB 15.2 mm × CL 15.0 mm excluding pseudorostral spines) from sta. 26 (Timor Sea, 610–690 m depth). E: *Platymaia fimbriata* Rathbun, male (NSMT-Cr 29263: CB 14.0 mm × CL 12.6 mm excluding pseudorostral spines) from sta. 26 (Timor Sea, 610–690 m depth). F: *Platymaia wyvillethomsoni* Miers, ovigerous female (NSMT-Cr 29264: CB 39.5 mm excluding branchial spines × CL 36.7 mm excluding pseudorostral spines) from sta. 28 (Timor Sea, 295–296 m depth).

depth), 3 m beam trawl; June 19, 1972; 1 ♂ with epicaridean parasites in both branchial chambers (NSMT-Cr 29259: CB 31.6 mm excluding branchial spines, CL 26.2 mm excluding pseudorostral spines), 1 ♂ with epicaridean parasite in right branchial chamber (NSMT-Cr 29260: CB 32.7 mm, CL 28.0 mm).

Remarks. Both of the specimens examined are

infected by epicaridean parasites; in the smaller male (NSMT-Cr 29259: Fig. 5B), the branchial chambers of both sides are heavily deformed, and in another, slightly larger male (NSMT-Cr 29160), the right branchial chamber is also strongly bulged.

Takeda *et al.* (2021) recorded two species of *Cyrtomaia*, *C. horrida* Rathbun, 1916 from the Sulu Sea and *C. largoi* Richer de Forges and Ng, 2007 from the Sibutu Passage, with some taxonomic comments. This species is distinctly different from them in having long protogastric spines. Richer de Forges and Guinot (1988) discussed the differences between the new species, *C. coriolisi*, and *C. suhmii* Miers, 1886, and indicated that there is only a vestigial intercalated granule instead of spinule on the supraorbital border in *C. coriolisi*. The morphological features other than the deformity of the branchial chambers essentially agree with the descriptions and illustrations by Griffin and Tranter (1986a), Guinot and Richer de Forges (1985), Richer de Forges and Guinot (1990), Promdam (2011), and Padate *et al.* (2021).

Distribution. Indo-West Pacific, from Japan to Australia and India through the Philippines and Indonesia, 488–1125 m depth. Davie (2002) recorded this species in the Zoological Catalogue of Australia based on the records by Griffin and Brown (1976), Griffin and Tranter (1986a), and Davie and Short (1989).

Genus ***Dorhynchus*** Wyville Thomson, 1873

[Type species: *Dorhynchus thomsoni* Wyville Thomson, 1873]

Dorhynchus rostratus (Sakai, 1932)

(Fig. 5C–D)

Material examined. RV *Hakuhō Maru* KH-72-1 cruise, sta. 26 (Timor Sea; 09°27.0′S, 127°58.6′E–09°285.0′S, 127°56.1′E, 610–690 m depth), 3 m beam trawl; June 19, 1972; 1 ♀ (NSMT-Cr 29261: CL 15.2 mm excluding pseudorostral spines, CB 15.0 mm).

Remarks. Manning and Holthuis (1981) suggested that *Stenorhynchus ramusculus* Baker, 1906 (southern Australia and New Zealand; Ahyong, 2008, Farrelly and Ahyong, 2019) and *Achaeopsis rostrata* Sakai, 1932 (West Pacific) are congeneric with *Dorhynchus thomsoni* Wyville Thomson, 1873 from the Atlantic and Indo-Pacific. Griffin and Tranter (1986a) agreed with Manning and Holthuis (1981) in considering the congeneric identity of the three species, but referred them to the genus *Achaeopsis* Stimpson, 1857, without mention about the relationship to the type species, *A. spinulosa* Stimpson, 1857. In recent studies (Davie, 2002; Poore, 2004; Ng *et al.*, 2008; Carmona-Suárez and Poupin, 2016), the three species in question were assigned to the genus *Dorhynchus*, and thus *Achaepsis* is monotypic. As a result, *Dorhynchus* is comprised of two western Pacific and three Atlantic species: *D. rostratus* (Sakai, 1932) from Japan and the Kai Islands, *D. ramusculus* (Baker, 1906) from southern Australia and New Zealand, *D. basi* Macpherson, 1983 from Namibia, *D. furcillatus* A. Milne-Edwards, 1881 from the Sea of the Antilles, and *D. thomsoni* Wyville Thomson, 1873 from the western and eastern Atlantic and the Indo-Pacific.

A fully-grown female at hand agrees with the original description of *Achaeopsis rostrata* by Sakai (1932), though the protogastric and epibranchial spines are not remarkable as shown in the figures (Fig. 2B vs. Sakai 1932, fig. 3; 1938, fig. 17). *Dorhynchus rostratus* can be distinguished from the other two congeners from the western Pacific by the relatively short, slightly incurved pseudorostral spines not exceeding the distal end of the antennal peduncles and the lack of distal spine on the ambulatory legs meri (Griffin and Tranter, 1986a).

Distribution. Hitherto known from Japan and the Kai Islands, Indonesia; 170–366 m depth. The present bathymetric record, 650 m in the Timor Sea, is the deepest for this species.

Genus ***Platymaia*** Miers, 1886

[Type species: *Platymaia wyvillethomsoni* Miers, 1886]

Platymaia fimbriata Rathbun, 1916

(Fig. 5E)

Material examined. RV *Hakuhō Maru* KH-72-1 cruise, sta. 26 (Timor Sea; 09°27.0′S, 127°58.6′E–09°285.0′S, 127°56.1′E, 610–690 m depth), 3 m beam trawl; June 19, 1972; 1 ♂ (NSMT-Cr 29262: CL 9.3 mm excluding pseudorostral spine, CB 8.7 mm).

RV *Hakuhō Maru* KH-72-1 cruise, sta. 33 (Off Sahul Shelf, 12°42.2′S, 123°07.6′E–12°42.0′S, 123°08.5′E, 535–547 m depth), 3 m beam trawl; June 26, 1972; 1 ♂ (NSMT-Cr 29263: CL 14.0 mm excluding pseudorostral spines, CB 12.6 mm).

Remarks. Of ten *Platymaia* species enumerated by Ng *et al.* (2008), *P. fimbriata* is very unique in having numerous spines on the carapace dorsal surface. Both specimens examined are small, but agree well with the original description (Rathbun, 1916) and the illustrations and photographs by Sakai (1965: pl. 5 fig. 5; 1976: pl. 58), Griffin (1976: fig. 9), and Guinot and Richer de Forges (1985: figs. 7, 8A–B, pl. 1 fig. F–G).

Distribution. Eastern Australia, Indonesia, the Philippines and Japan; 250–1095 m depth. Davie (2002) listed this species in the Zoological Catalogue of Australia based on the records by Griffin and Tranter (1986a) and Davie and Short (1989).

Platymaia wyvillethomsoni Miers, 1886

(Fig. 5F)

Material examined. RV *Hakuhō Maru* KH-72-1 cruise, sta. 28 (Timor Sea; 09°34.4′S, 128°06.0′E–09°33.5′S, 128°03.4′E, 295–296 m depth); 3 m beam trawl; June 24, 1972; 1 ovig. ♀ (NSMT-Cr 29264: CB 39.5 mm excluding branchial spines, CL 36.7 mm excluding pseudorostral spines).

Remarks. A large ovigerous female (Fig. 5F) at hand is almost the same size as the holotype of *Platymaia wyvillethomsoni*, and agrees well with the descriptions and illustrations by Guinot and Richer de Forges (1985) and Griffin and Tranter (1986a). There is little doubt about the identification as *P. wyvillethomsoni*, which Guinot and Richer de Forges (1985) removed from the synonymy of *P. remifera* Rathbun, 1916 versus Griffin (1976).

Distribution. Japan to Australia through the Philippines, Indonesia, the Timor Sea and the Kermadec Islands; 189–549 m depth. Farrelly and Ahyong (2019) recorded this species, with photographs, from the Great Australian Bight, 189–426 m depth.

Family Epialtidae MacLeay, 1838

Genus ***Laubierinia*** Richier de Forges and Ng, 2009

[Type species: *Rochinia carinata* Griffin and Tranter, 1986]

Laubierinia carinata (Griffin and Tranter, 1986)

(Fig. 6A–B)

Material examined. RV *Hakuhō Maru* KH-72-1 cruise, sta. 28 (Timor Sea; 09°34.4′S, 128°06.0′E–09°33.5′S, 128°03.4′E, 295–296 m depth); 3 m beam trawl; June 24, 1972; 2 ♀♀ (NSMT-Cr 29265: CB 11.1 mm excluding branchial plate, CL 17.2 mm excluding pseudorostral spine; CB 9.7 mm, CL 15.2 mm).

Remarks. This species, originally described in the genus *Rochinia* A. Milne-Edwards, 1875, was transferred to the genus *Laubierinia* established by Richer de Forges and Ng (2009), as the type species. The other congeners are *L. globulifera* (Wood-Mason, in Wood-Mason and Alcock, 1891) and *L. nodosa* (Rathbun, 1916).

Laubierinia carinata is characteristic in having seven large circular islets on the hepatic, mesogastric, cardiac, epibranchial and intestinal regions; the epibranchial islets are replaced by large nodular projections in *L. nodosa*, and strong spines in *L. globulifera*.

Two females agree well with the description by Griffin and Tranter (1986a, as *Rochinia*) and the figures and photographs by Richer de Forges and Poore (2008, as *Rochinia*) and Richer de Forges and Ng (2009). However, it should be

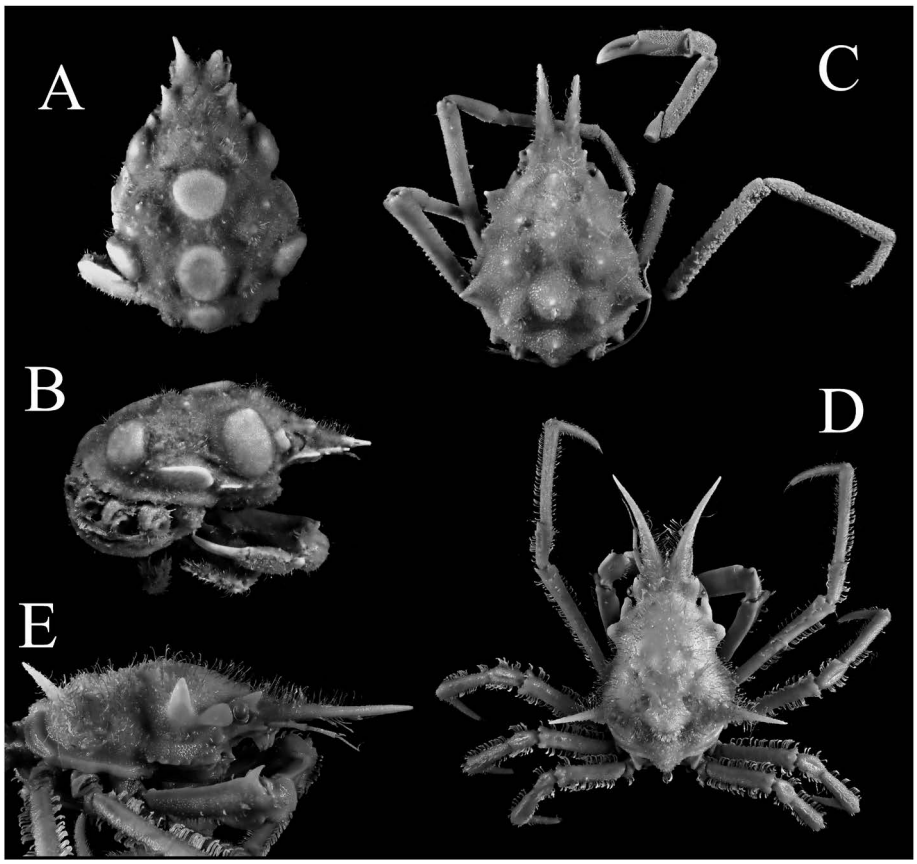

Fig. 6. A–B: *Laubierinia carinata* (Griffin and Tranter), female (NSMT-Cr 29265: CB 11.1 mm × CL 17.2 mm excluding pseudorostral spines) from sta. 28 (Timor Sea, 295–296 m depth). C: *Samadinia boucheti* (Richer de Forges and Ng), female (NSMT-Cr 29266: CB 12.4 mm × CL 18.3 mm including pseudorostral spines) from sta. 27 (Timor Sea, 465–490 m depth). D–E: *Samadinia soela* (Griffin and Tranter), female (NSMT-Cr 29267: CB 6.0 mm excluding branchial spines × CL 9.7 mm excluding pseudorostral spines) from sta. 26 (Timor Sea, 610–690 m deep).

noted that there is possibly sexual difference in the development of the intestinal islet; the intestinal region is slightly protuberant, with a distinct tubercle apically in a full-grown male from the Solomon Islands (Richer de Forges and Ng, 2009, fig. 9A–B) and probably in the holotype (Griffin and Tranter, 1986a, pl. 12), whereas it is replaced by a large circular islet in the females examined (Fig. 6A–B).

Distribution. Western Australia, Timor Sea, Kai Islands, Papua New Guinea, Solomon Islands, New Caledonia, and Norfolk Ridge seamounts, 173–411 m depth.

Genus ***Samadinia*** Ng and Richer de Forges, 2013

[Type species: *Samadinia longispina* Ng and Richer de Forges, 2013]

Samadinia boucheti

(Ng and Richer de Forges, 2013)

(Fig. 6C)

Material examined. RV *Hakuhō Maru* KH-72-1 cruise, sta. 27 (Timor Sea; 09°30.9′S, 127°56.6′E, 465–490 m depth), 3 m beam trawl; June 24, 1972; 1 ♀ (NSMT-Cr 29266: CB 12.4 mm, CL 18.3 mm excluding pseudorostral spines).

Remarks. The genus *Rochinia* A. Milne-

Edwards, 1875 was formerly a catchall genus in the family Epialtidae. Ng *et al.* (2008) restricted *Rochinia* to 34 species, and subsequent taxonomic revisions removed all species, except *R. gracilipes* A. Milne-Edwards, 1875 (type species), to other genera (see Tavares and Santana, 2018; Lee *et al.*, 2020).

Ng and Richer de Forges (2013) established the genus *Samadinia* for *S. longispina* Ng and Richer de Forges, 2013 from French Polynesia and New Caledonia. They recognized five groups in the remaining *Rochinia* (Ng *et al.*, 2008). Very recently, *Samadinia* was redefined by Lee *et al.* (2021) to include the species of the fourth and fifth groups of *Rochinia* s.l., which share distinct carapace regions, spined or granulated carapace surface, transversely narrow, anteriorly constricted male thoracic sternum, and acutely triangular or T-shaped male pleon. Thus, *Samadinia* is distinguished from *Rochinia* by the combination of the poorly defined carapace regions, numerous small, rounded granules on the carapace dorsal surface, the often long, sharp, laterally-directed hepatic and lateral branchial spines, broad triangular pleon with pleomeres 3 and 4 broadly trapezoidal and pleomeres 5 and 6 subrectangular. At present, *Samadinia* is comprised of 26 species from the Indo-West Pacific, including *R. miyakensis* Takeda and Marumura, 2014, from Japan.

A female examined (Fig. 6C) agrees well with the original description of *R. boucheti* that can be distinguished from congeners by having numerous small spines on the carapace dorsal surface and relatively short pseudorostral spines.

Distribution. The type locality is the Solomon Islands, 371–766 m depth, and then, Lee *et al.* (2019) recorded many specimens from Papua New Guinea, 382–743 m depth. The present bathymetric record from the Timor Sea, 465–490 m, is the third for this species.

Samadinia soela (Griffin and Tranter, 1986)
(Figs. 6D–E, 7)

Material examined. RV *Hakuhō Maru* KH-72-1 cruise, sta. 26 (Timor Sea; 09°27.0′S, 127°58.6′E–09°285.0′S, 127°56.1′E, 610–690 m depth), 3 m beam trawl; June 19, 1972; 1 ♂ (NSMT-Cr 29267: CB 5.8 mm excluding branchial spines, CL 9.8 mm excluding pseudorostral spines), 2 ♀♀ (NSMT-Cr 29268: CB 8.2 mm, CL 12.8 mm; CB 10.5 mm, CL 17.7 mm).

Remarks. *Samadinia soela* was originally described as a species of *Rochinia* from the North West Shelf, Australia, but was transferred to *Samadinia* by Lee *et al.* (2021). The specimens at hand agree well with the original description by Griffin and Tranter (1986b) and also with that of Takeda and Moosa (1990). *Samadinia soela* resembles *S. sibogae* from the Ceram Sea in having the long, divergent pseudorostral spines, the long, sharp branchial spines, and the laterally-flattened hepatic lobe continuous with the postorbital lobe. *Samadinia soela* is, however, distinguished from *S. sibogae* by the robust pseudorostral spines, the cardiac region armed with an obtuse tubercle instead of a spine, the sharp and robust preorbital lobe (blunt and small in *S. sibogae*), the postorbital lobe distinctly broadened anteriorly and continuous dorsally with the narrowed hepatic lobe (Fig. 6E) (weakly broadened anteriorly and continuous dorsally with rounded hepatic lobe in *S. sibogae*) (see also Griffin and Tranter, 1986b, figs. 12–13; Takeda and Moosa, 1990, fig. 4D–E, pl. 2 fig. C–D).

The G1 of *S. soela* is illustrated for the first time, though it does not appear to present any distinctive features compared to its congeners (Fig. 7).

Distribution. Flores Sea, Timor Sea, and North West Shelf of Australia; 558–650 m depth.

Family Trichopeltariidae
Tavares and Cleva, 2010
Genus ***Trichopeltarion*** A. Milne-Edwards, 1880
[Type species: *Trichopeltarion nobile* A. Milne-Edwards, 1880]
Trichopeltarion alcocki Doflein, in Chun, 1903
(Fig. 8D)

Material examined. RV *Hakuhō Maru*

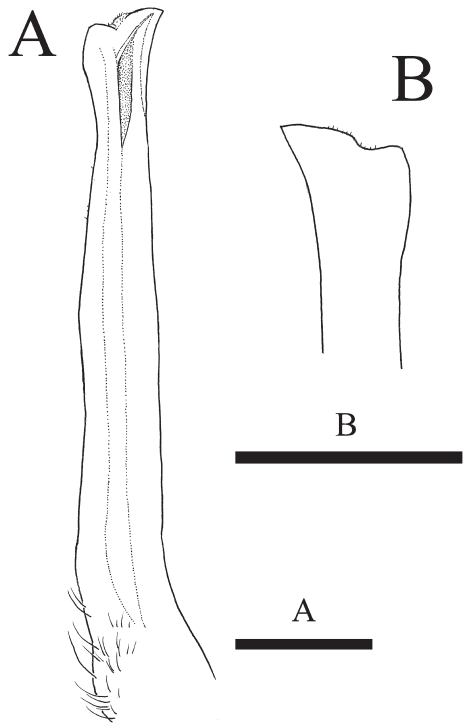

Fig. 7. *Samadinia soela* (Griffin and Tranter), male (NSMT-Cr 29267: CB 5.8 mm excluding branchial spines × CL 9.8 mm excluding pseudorostral spines) from sta. 26 (Timor Sea, 610–690 m deep). G1 in pleonal view (A) and distal part of the same in sternal view (B). Scales = 1 mm.

KH-72-1 cruise, sta. 33 (Off Sahul Shelf, 12°42.2′S, 123°07.6′E–12°42.0′S, 123°08.5′E, 535–547 m depth), 3 m beam trawl; June 26, 1972; 1 ♀ (NSMT-Cr 29269: CB 18.8 mm excluding lateral spines, CL 22.0 mm excluding rostrum).

Remarks. Among 23 *Trichopeltarion* species listed by Tavares and Cleva (2010), *T. alcocki* Doflein, in Chun, 1903 is one of the rarest species, with only few specimens known from the depths of the West Pacific. The identification, however, is not difficult owing to the extensive illustrations provided by the original author (1903, unnumbered figure; 1904, pl. 28 figs. 4–5, as *Trichopeltarium*), Guinot (1989, figs. 1, 8, pl. 1 figs. A–F, as *Trachycarcinus*), and Tavares and Cleva (2010, figs. 12–13, 14A).

This species is close to *T. ovale* Anderson, 1896, ranging from Japan to Sri Lanka through Taiwan, the Philippines and Indonesia, 100–928 m depth, but the ambulatory legs are distinctly longer and more slender. Otherwise, Tavares and Cleva (2010) reproduced the photograph of the holotype female and mentioned that the merus–carpus articulation of the last ambulatory leg almost reaches the second epibranchial tooth (lying well before the second tooth in *T. ovale*).

Distribution. The type locality is the Siberut Strait, west of Sumatra, Indonesia, at 750 m depth. The other known localities are the Philippines, 1030–1650 m depth, and Taiwan; 718–852 m depth.

Family Chasmocarcinidae Serène, 1964

Genus ***Tenagopelta*** Ng and Castro, 2016

[Type species: *Tenagopelta pacifica* Ng and Castro, 2016]

Tenagopelta potens

(Davie and Richer de Forges, 2013)

(Fig. 8A–C)

Material examined. RV *Hakuhō Maru* KH-72-1 cruise, sta. 26 (Timor Sea; 09°27.0′S, 127°58.6′E–09°285.0′S, 127°56.1′E, 610–690 m depth), 3 m beam trawl; June 19, 1972; 1 ♀ (NSMT-Cr 29417: CB 8.2 mm, CL 7.2 mm).

Remarks. In the monograph on the family Chasmocarcinidae Serène, 1964, Ng and Castro (2016) revised all the known species of the worldwide, with keys to the subfamilies, genera and species. The descriptions are elaborate, with many photographs of numerous specimens from many localities. Following this monumental work, a female specimen at hand was identified, though tentatively, as *Tenagopelta potens* (Davie and Richer de Forges, 2013) in the subfamily Chasmocarcininae Serène, 1964, in which the antennular peduncle is so swollen that the flagellum cannot be folded into the fossa. Among 11 genera distinguished, the genus *Tenagopelta* was characterized by the combination of the following characters: 1) The eyestalks are mobile within the orbits; 2) the carapace is subquadrate; 3) the "supplementary plate" is wide, stretching across exposed part of the male thoracic sternum

Fig. 8. A–C: *Tenagopelta potens* (Davie and Richer de Forges), female (NSMT-Cr 29417: CB 8.2 mm × CL 7.2 mm) from sta. 26 (Timor Sea, 610–690 m depth). D: *Trichopeltarion alcocki* Doflein, female (NSMT-Cr 29269: CB 18.8 mm excluding lateral spines × CL 22.0 mm excluding rostrum) from sta. 33 (Off Sahul Shelf, 535–547 m depth).

not covered by pleon, reaching the sterno-pleonal cavity, and the G1 is normal, not strongly twisted; 4) the region immediately below the orbital margin is smooth, without a separate ridge; 5) the pollex of the minor chela has many small, approximately equal teeth; 6) the carapace is conspicuously globose, with a convex dorsal surface; 7) the G2 is distinctly longer than the G1.

The type species of *Tenagopelta* is *T. pacifica* Ng and Castro, 2016 from the Philippines and Indonesia, and the congeneric species are *T. potens* (Davie and Richer de Forges, 2013) from Papua New Guinea, Vanuatu, New Caledonia and Queensland and *T. brachyphallus* Ng and Castro, 2016 from Western Australia. According to the original description and the key, the males of *T. pacifica* and *T. potens* may be readily distinguished from each other by the different shape of the G1 (elongated and slender distal two-thirds in *T. pacifica*, and short and stout distal half in *T. podens*). However, most of the external characters described for the two species are precisely applicable to the female at hand. The carapace is subtrapezoidal and globose in both *T. pacifica* and *T. podens*, with arcuate, unarmed anterolateral margins without distinct lobes or teeth, the proportions of the carapace (CB: CL) being 1.15–1.25 (Davie and Richer de Forges) and 1.1–1.2 (Ng and Castro) in *T. podens*, and 1.0–1.2 in *T. pacifica*. As such, the shape of the carapace and the carapace proportional difference seem to be not specific. However, Ng and Castro (2016) recorded that the carapace dorsal and ventral surfaces and the pereiopods are covered by a short tomentum in *T. potens*, and that the carapace margin is provided with short setae in *T. pacifica*. The setation may be variable individually, developmentally and sexually, but is currently considered as one of the taxonomic criteria. The carapace dorsal surface of the present female is shallowly divided into regions by the longitudinal furrows along both sides of the gastric and cardiac regions (Fig. 8B), agreeing with the images of the dorsal and antero-dorsal views of the holotype given by the original authors (Davie and Richer de Forges, 2013, figs. 1A, 3). A topotypic male should, however, be examined for def-

inite identification.

Distribution. Known from the West Pacific (Northeast Queensland; Papua New Guinea; Vanuatu; New Caledonia), 95–970 m depth.

Acknowledgements

We thank all the crew members of the RV *Hakuhō Maru* and the participated researchers, especially the late Prof. M. Horikoshi of the Ocean Research Institute (now, the Atmosphere and Ocean Research Institute), The University of Tokyo, and the late Dr. M. Imajima of the National Science Museum (now, the National Museum of Nature and Science), Tokyo, for collecting the specimens on board the KH-72-1 cruise and giving us the chance to examine the specimens for taxonomic study. Our cordial thanks are also due to Dr. D. Guinot of the Muséum national d'Histoire naturelle, Paris, for her kind and useful comments on the manuscript and some additional information of the deep-sea crabs.

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