Bull. Natl. Mus. Nat. Sci., Ser. A, 49(1), pp. 7–42, February 22, 2023
DOI: 10.50826/bnmnszool.49.1_7

A Small Collection of Subtidal Crabs (Crustacea: Decapoda: Brachyura) from the Palau Islands Collected by Dredging

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(Received 9 September 2022; accepted 28 September 2022)

http://zoobank.org/urn:lsid:zoobank.org:pub:500BCDC2-0A1F-4AAC-85EA-0EC2224661CA

Abstract A small collection of subtidal crabs dredged in 1980 around the Palau Islands was examined. The specimens were referred to 31 species of 27 genera in 13 families, with a new species of the family Parthenopidae, *Pseudolambrus palauensis* sp. nov. Some of the species are common in coral reef waters, but some others are rare and new to not only the Palau Islands, but also Micronesian waters.
Key words: Coral reef crabs, subtidal crabs, taxonomy, biogeography, new species, West Pacific, Micronesian waters.

Introduction

In 1980–1983, the scientific researches on Micronesian marine invertebrates were conducted by the party from the National Science Museum, Tokyo (now, the National Museum of Nature and Science, Tokyo) under the leadership of the late Dr. Minoru Imajima, then the Senior Curator of the Department of Zoology. This research was planned primarily to contribute to a better understanding of the marine invertebrate fauna of Japan, in view of the northerly dispersal of tropical elements by the Kuroshio Current. Prof. Keiji Baba of Kumamoto University joined the first research in the Palau Islands, and published the records of 11 galatheid and 26 pagurid species then collected, with taxonomic and biogeographic notes (Baba, 1982).

In this paper dealing with the crabs collected by dredging at the subtidal zone around the Palau Islands, all the specimens were examined and recorded, with brief notes on the taxonomic comments; they were referred to 31 species of 27 genera in 13 families including a new species *Pseudolambrus palauensis* of the Parthenopidae, and a species of the Goneplacidae, *Notonyx* aff. *sagittifer* Ng and Clark, 2010 was not identified to the species. It is generally remarked that 26 of 31 species are new to the carcinological fauna of the Palau Islands.

All the specimens were registered and deposited in the Tsukuba Research Departments, National Museum of Nature and Science, Tokyo (NSMT). The measurements of the carapace breadth (cb) and length (cl) are given in millimeters, and the rostral length and postrostral carapace length, and the male first and second gonopods are abbreviated as rl, pcl, G1 and G2, respectively.

Synonymy lists of the species dealt herewith are only given for the rare species with few records or for the taxonomically problematic species with some different names of the genera and species.

Table 1. List of the subtidal species recorded in this paper. The species marked with an asterisk are new to the Palau Islands.

Dromiidae: *Cryptodromia hilgendorfi* De Man, 1888
Calappidae: *Calappa gallus* (Herbst, 1803)
Inachidae: **Achaeus curvirostris* (A. Milne-Edwards, 1873)/ **Oncinopus neptunus* Adams and White, 1848
Epialtidae: *Hyastenus sebae* White, 1847/ **Naxioides hirta* A. Millne-Edwards, 1865/ **Thusaenys calvarius* (Alcock, 1895)
Majidae: *Micippa philyra* (Herbst, 1803)
Parthenopidae: **Lambrachaeus ramifer* Alcock, 1895/****Pseudolambrus palauensis*** sp. nov./ **Rhinolambrus turriger* (White, 1847)
Portunidae: **Cycloachelous granulatus* (H. Milne Edwards, 1834)/ **Thalamita admete* (Herbst, 1803)/**T. chaptalii* (Audouin, 1826)/ *Thalamita quadrilobata* Miers, 1884/ **T. sexlobata* Miers, 1886/ **Thalamonyx gracilipes* A. Milne-Edwards, 1873/ **Trierarchus squamosus* (Stephenson and Hudson, 1957)/ **Xiphonectes longispinosus* (Dana, 1852) sensu Sakai (1939)
Xanthidae: *Chlorodiella corallicola* Miyake and Takeda, 1968/ **C. xishaensis* Chen and Lan, 1978/ **Gaillardiellus rueppellii* (Krauss, 1843) / **Metaxanthops acutus* Serène, 1984
Tetraliidae: **Tetralia nigrolineata* Serène and Pham, 1957
Goneplacidae: **Notonyx* aff. *sagittifer* Ng and Clark, 2010
Pilumnidae: **Lophoplax sextuberculata* Takeda and Kurata, 1984/ **Typhlocarcinops decrescens* Rathbun, 1914/ **Vellumnus pygmaeus* (Takeda, 1977)
Chasmocarcinidae: **Microtopsis teschi* Ng and Castro, 2016
Palicidae: **Neopalicus jukesii* (White, 1847) / **Palicoides whitei* (Miers, 1884)

Taxonomic Notes

Family Dromiidae De Haan, 1833
Genus ***Cryptodromia*** Stimpson, 1858
Cryptodromia hilgendorfi De Man, 1888

Material examined. Inside of Gesodokkuru Reef, off Arumonogui, Babelthuap I., Palau Is., ca. 20 m in depth, dredged, dead coral and sand; 1 ♂ (cb 4.5 × cl 4.4 mm), NSMT-Cr 30952; July 14, 1980; K. Baba leg.

Remarks. This specimen is small, but agrees with the line drawings by De Man (1888: pl. 18 fig. 3), Alcock (1901: pl. 3 fig. 11), Campbell and Stephenson (1970: fig. 3A) and Lewinsohn (1977: fig. 2a), with the photographs by Takeda (1973: pl. 1 fig. A) and McLay (1993: fig. 18d), and also with the taxonomic notes by Ihle (1913). Especially, the recent description and taxonomic discussion by McLay (1993) are elaborate.

The most remarkable character of this species is the armature of the carapace margin; the anterolateral margin is armed with a large right-angled tooth rather close to the external orbital angle, which makes a distinct gap at the tooth, and the main anterolateral margin behind the tooth is almost straight, only weakly convergent, and followed by a blunt epibranchial tooth behind the shallow but distinct depression.

Distribution. Widely distributed in the Indo-West Pacific from the Red Sea eastwards to the Marquesas Islands and northwards to the Philippines, 1–105 m in depth. Mclay (2001) recorded many specimens from the Marquesas Islands in the Polynesia, and Balss (1938) and Takeda (1973) recorded this species from the Gilbert and Palau Islands in the Micronesia, respectively.

Family Calappidae De Haan, 1833
Genus ***Calappa*** Weber, 1795
Calappa gallus (Herbst, 1803)

Material examined. Off Kwannon, Koror I., Palau Is., dredged, with coralline algae; 1 juv. (cb 10.0 × cl 8.6 mm), NSMT-Cr 30953; June 17, 1980; K. Baba leg.—Kayangel Atoll., north of Babelthuap I., Palau Is., lagoon, dredged, 4 m in depth; 4 juv. (9.5 × 6.6 mm—16.5 × 11.6 mm), NSMT-Cr 30954; July 6, 1980; K. Baba leg.

Remarks. All of the five specimens examined are juvenile, but the carapace dorsal ornamentation and the shape of both chelipeds are close to those of the adult specimens, only with slightly narrower carapace contour. Buitendijk (1939: pl. 8 fig. 5) recorded and figured a young specimen of cb 8 mm as *Calappa lophos* (Herbst, 1782) dredged from 6–10 m in depth near Koepang, Timor, but the specimen should be referred to *C. gallus* instead, as the author herself considered its identification with some doubts.

This species is commonly found at the tidal and subtidal sandy bottom. Galil (1997) recorded many specimens from various localities in the Indo-West Pacific.

Distribution. Geographically known from the whole Indo-West Pacific, and bathymetrically from coral reefs and rocky shores down to 140 m. The records of *C. gallus* from the Atlantic were amended to those of *C. galloides* Stimpson, 1859, by Manning and Chace (1990). Takeda (1973) recorded this species from the Palau Islands.

Family Inachidae MacLeay, 1838
Genus ***Achaeus*** Leach, 1817
Achaeus curvirostris (A. Milne-Edwards, 1873)

Material examined. Inside of Gesodokkuru Reef, off Arumonogui, Babelthuap I., Palau Is., dredged, ca. 20 m in depth; 1 ovig. ♀ (cb 6.5 × cl 9.1 mm), NSMT-Cr 30955; July 13, 1980; K. Baba leg.

Remarks. *Stenorhynchus fissifrons* Haswell, 1879, *Achaeus tenuicollis* Miers, 1886, and *A. elongatus* Sakai, 1938, were synonymized with *A. curvirostris* by Griffin and Tranter (1986). This long-neck species is characteristic in having the carapace with the tuberculate mesogastric and cardiac regions, the preorbital and supraorbital spines, and the sickle-shaped dactyli of the last two ambulatory legs.

Distribution. Widely distributed in the Indo-West Pacific from Japan to Australia and New Zealand, and further to the western Indian Ocean, with bathymetric records from 3 to 165 m. New to the Palau Islands.

Genus ***Oncinopus*** De Haan, 1839
Oncinopus neptunus Adams and White, 1848

Material examined. Off Kwannon, Koror I., Palau Is., dredged; 1 ♀ (cb 8.6 × cl 12.0 mm), NSMT-Cr 30956; June 17, 1980; K. Baba leg.

Remarks. It is well known that the G1 is the most important criterion for the definite identification of the *Oncinopus* species (Takeda and Miyake, 1969; Davie, 2011). The identification of females should be based mainly on the shape of the front, and the present female was identified as *O. neptunus* among the five congeneric species, because of the front divided into two lobes by a median small notch. Griffin and Tranter (1986) examined many specimens and fully discussed the taxonomic status of four species then known.

Distribution. Widely distributed in the whole Indo-West Pacific from Hawaii and Japan through some localities in the Philippines and Indonesia southwards to New Caledonia and the east coast of Australia, and to the east Africa and the Red Sea. The recorded bathymetric range is from 16 to 72 m. New to the Palau Islands.

Family Epialtidae MacLeay, 1838
Genus ***Hyastenus*** White, 1847
Hyastenus sebae White, 1847
(Fig. 1E)

Material examined. Off Kwannon, Koror I., Palau Is., dredged; 1 ♀ (cb 10.5 × pcl 13.8 mm; rl 5.8 mm), NSMT-Cr 30957; June 17, 1980; K. Baba leg.

Remarks. Griffin (1966) selected the lectotype specimen from the five specimens in the type series of *Hyastenus sebae*, with the photographs of the carapace in dorsal and ventral views, and later, Griffin (1976) showed that one specimen in the four paralectotypes of *H. sebae* belongs to *H. convexus* Miers, 1884, and the other three specimens belong to a new species, *H. whitei*. At present, as shown in Fig. 1E, *H. sebae* is characteristic in having the strongly tuberculated carapace, with the short rostral spines, and readily distinguished from *H. whitei* in which the rostral spines are remarkably long, nearly as long as the pcl.

Hyastenus oryx A. Milne-Edwards, 1872, is known as synonymous with *H. sebae*, and the

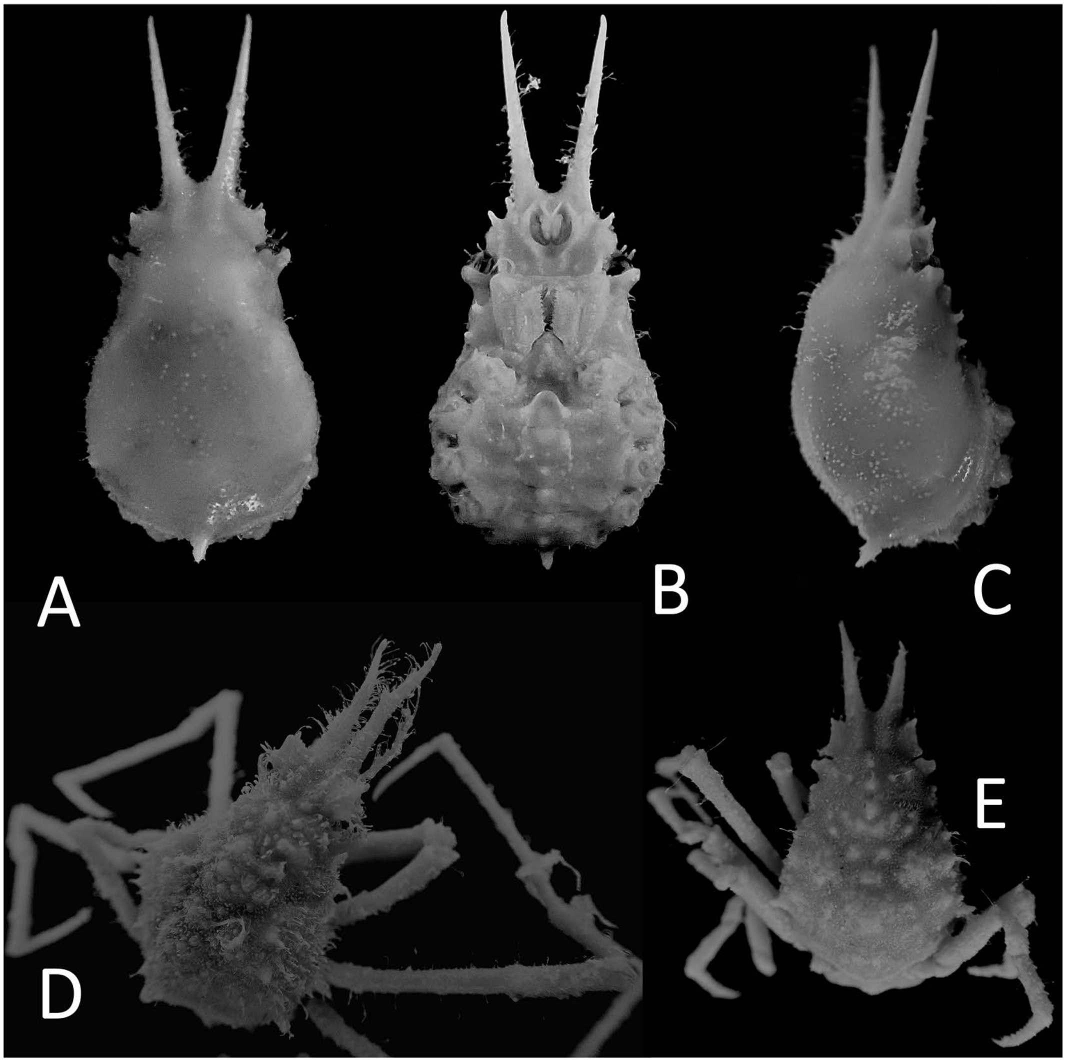

Fig. 1. A–C: *Thusaenys calvarius* (Alcock), ♂ (NSMT-Cr 30959; cb 6.7 × pcl 10.5 mm excluding posterior tubercle). D: *Naxioides hirta* A. Milne-Edwards, ♂ (NSMT-Cr 30958; cb 17.0 mm excluding branchial spines × pcl 25.2 mm including posterior tubercle). E: *Hyastenus sebae* White, ♀ (NSMT-Cr 30957; cb 10.5 × pcl 13.8 mm).

validity of *H. cornigerus* Sakai, 1938, is not decided, but is probably identical with *H. sebae*. In the original description of *H. cornigerus*, the relationships to the other species were not mentioned at all. Griffin and Tranter (1986) examined many specimens referable to *H. sebae*, and mentioned that *H. cornigerus* is not distinguished from *H. sabae* at least as far as the description concerned, with the supporting evidences that Takeda (1973) recorded *H. oryx* from the Palau Islands, and a specimen from the Palau Islands identified as *H. cornigerus* by Dr. T. Sakai is preserved in the National Museum of Natural History, Smithsonian Institution, U.S.A.

Distribution. Japan (as *H. cornigerus*), many localities in the Philippines and Indonesian waters, Singapore, the Palau Islands, New Caledonia, and Western Australia. The bathymetric records are mostly in shallow waters from intertidal zone to at most ca. 50 m, but there are some unusual deep-water records from the Java Sea (538 m) and the Kai Islands (304 and 385 m) by Griffin and Tranter (1986).

Genus ***Naxioides*** A. Milne-Edwards, 1865
Naxioides hirta A. Milne-Edwards, 1865

(Fig. 1D)

Material examined. Off Kwannon, Koror I., Palau Is., dredged; 1 ♂ (cb 17.0 mm excluding branchial spines × pcl 25.2 mm including posterior tubercle; rl 10.5 mm), NSMT-Cr 30958; June 17, 1980; K. Baba leg.

Remarks. The records of this species are not so many, but there is no doubt for its identification as *Naxioides hirta* due to the good representations by the original author (A. Milne-Edwards, 1865) and some later authors such as Hilgendorf (1879, as *Podopisa petersii*), Sakai (1938), and Takeda *et al.* (2019). The pear-shaped carapace (Fig. 1D) with many granules of various sizes and a sharp epibranchial spine at each side suggests some *Hyastenus* species, but the anterior part of the carapace is fairly strongly deflexed and each rostral spine is armed with a subsidiary spine at its dorsal median surface, which is not a character diagnostic to *Hyastenus*. The inwardly curved tip of the rostral spine also characterizes this species.

Distribution. Indo-West Pacific from Japan to the western Indian Ocean through Asian waters, with 15–35 m in depth. New to the Palau Islands.

Genus ***Thusaenys*** Griffin and Tranter, 1986
Thusaenys calvarius (Alcock, 1895)

(Figs. 1A–C, 2)

Hyastenus calvarius Alcock, 1895, p. 213.—Alcock and Anderson, 1895, pl. 21 fig. 2.—Balss, 1938, p. 23.

Thusaenys calvarius (Alcock): Griffin and Tranter, 1986, p. 193, figs. 65d, 66a–b.

Material examined. Off Kwannon, Koror I., Palau Is., dredged; 1 ♂ (cb 6.7 × pcl 10.5 mm excluding posterior tubercle; rl 5.9 mm), NSMT-Cr 30959; June 17, 1980; K. Baba leg.—Entrance to Toagel Mid in Arangel Channel, Babelthuap I., Palau Is., dredged, 40–50 m in depth; 1 ♂ (5.4 × 8.8 mm; 4.5 mm), NSMT-Cr 30960; June 19, 1980; K. Baba leg.—Same locality, ca. 40 m in depth, coralline algae; 1 ♂ (5.4 × 8.2 mm; 4.7 mm), NSMT-Cr 30961; June 22, 1980; K. Baba leg.

Remarks. The shape and armature of the carapace and rostrum agree in the two males examined without remarkable differences, being most characterized by the oblong, narrow and smooth carapace only with a vestigial epibranchial tubercle and a dorsally curved intestinal tubercle. This species was well explained as the type species of the new genus *Thusaenys* by Griffin and Tranter (1986), with the figures of the orbital region in ventral view and the G1.

The brief diagnostic notes on the present specimens are given in the following lines. The carapace surface is dorsally convex (Fig. 1A, C) and shallowly separated into the gastric, cardiac and branchial regions. The rostral spines (Fig. 1A–C) are only slightly longer than half the length of pcl, straight, horizontally directed forwards, and moderately divergent from the base. The supraorbital eave (Fig. 2A) is thick, weakly curved dorsally and shallowly concave along the margin, with the anterior and posterior ends obtusely angulated. There are a deep U-shaped sinus and a prominent convexity behind the supraorbital eave (Figs. 1A, 2A); the postocular tooth is large and deeply cupped in dorsal, lateral and ventral views (Fig. 2A–C). The antennal basal segment (Fig. 2B) is thick and armed with an anterolateral tubercle, with the strongly convex outer margin. The third maxilliped (Fig. 2D) has several strong teeth along the ischium inner margin and the strongly developed antero-external angle of the merus. The pterygostomial region is armed with two large teeth (Fig. 1C).

The G1 (Fig. 2E) is slender, with a row of long hairs, especially at the subterminal part. The terminal part (Fig. 2F) is elongated, without hairs, agreeing well with the figures given by Griffin and Tranter (1986: fig. 66a–b).

Distribution. Known from some localities in Indonesian waters, Fiji, and the Andaman Islands; 36–120 m in depth. New to the Palau Islands.

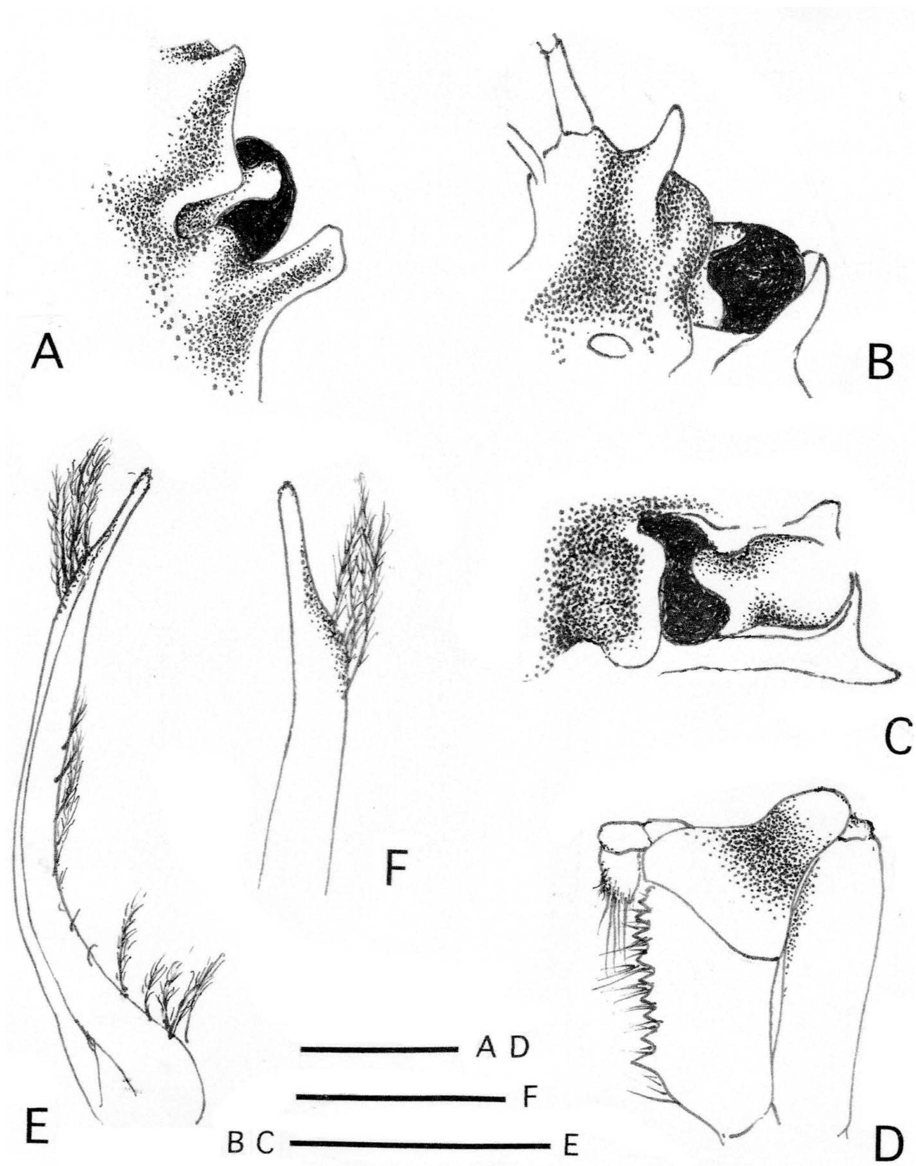

Fig. 2. *Thusaenys calvarius* (Alcock), ♂ (NSMT-Cr 30959; cb 6.7 × pcl 10.5 mm excluding posterior tubercle), Right orbital region in dorsal view (A), left orbital region in ventral view, showing the basal antennal segment (B), right orbital region in lateral view (C), left third maxilliped (D), and left G1 in ventral (E) and sternal (F) views. Scales for AD = 1 mm, BC = 2 mm, E = 1 mm, F = 0.5 mm.

Family Majidae Samouelle, 1819
Genus ***Micippa*** Leach, 1817
Micippa philyra (Herbst, 1803)

Material examined. Inside of Gesodokkuru Reef, off Arumonogui, Babelthuap I., Palau Is., dredged, ca. 20 m in depth, dead coral and sand; 1 ovig. ♀ (cb 7.5 × cl 9.9 mm), NSMT-Cr 30962; July 14, 1980; K. Baba leg.

Remarks. The shape of the rostrum is characteristic in each of the known *Micippa* species. The frontal view of the rostrum of *M. philyra* was finely represented by Sakai (1938, fig. 45; 1976, fig. 138a′) and Takeda *et al.* (2019, pl. 8

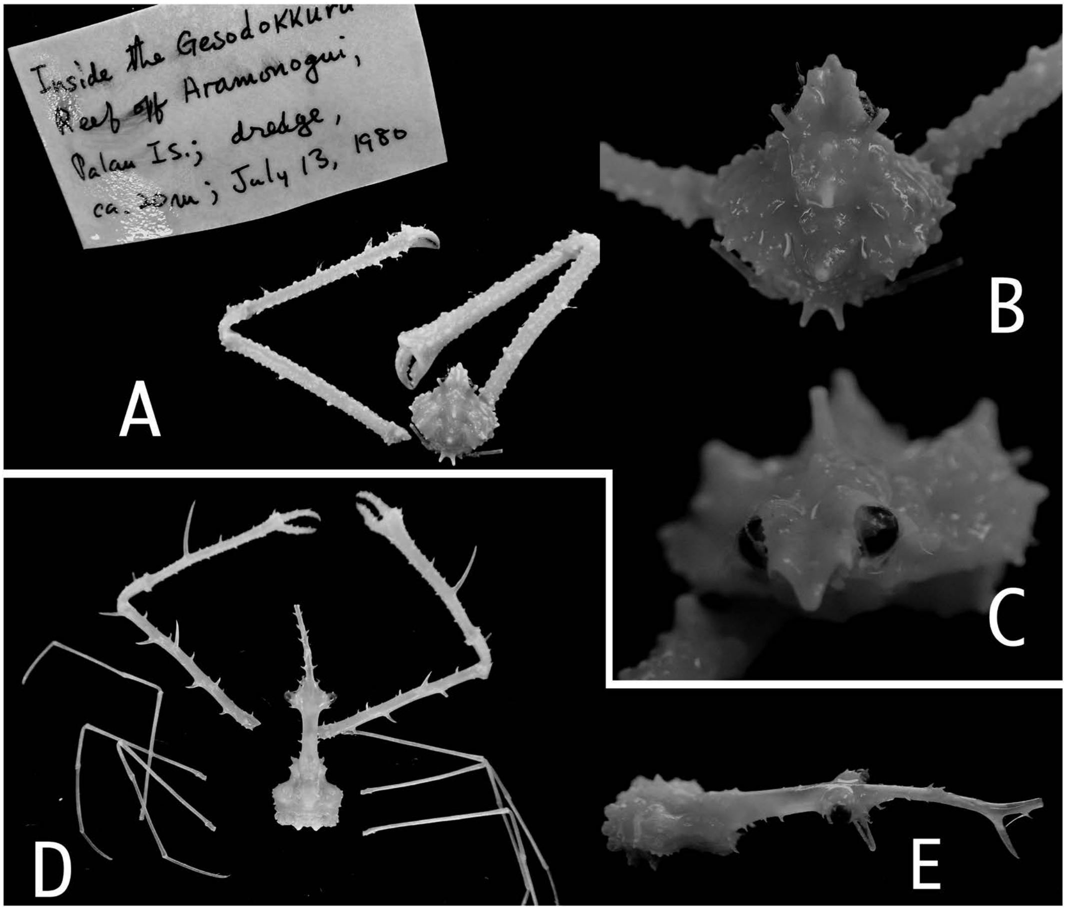

Fig. 3. A–C: *Rhinolambrus turriger* (White), ♂ (NSMT-Cr 30964; cb 11.4 × cl 11.3 mm including front and excluding posterior tubercles). Overall appearance, with original label (A) and carapace in doral (B) and frontal (C) views. D–E: *Lambrachaeus ramifer* Alcock, ♂ (NSMT-Cr 30963; cb 4.8 × pcl 8.0 mm). Dorsal view, with detached chelipeds and ambulatory legs (D) and carapace in lateral view (E).

fig. E). Buitendijk (1939) well distinguished this species from the close congeners, *M. thalia* (Herbst, 1803) and *M. platipes* Rüppell, 1830. Synonyms of these three species, four for *M. philyra*, seven for *M. thalia* and five for *M. platipes*, are referred to Ng *et al.* (2008). Griffin and Tranter (1986) recorded many specimens from Indonesian waters, the Philippines, the Gulf of Thailand and the Iranian Gulf.

Distribution. Indo-West Pacific from Japan southwards to Australia and then westwards to South Africa, from intertidal zone to the depth of about 50 m. Takeda (1973) recorded this species from the Palau Islands.

Family Parthenopidae MacLeay, 1838

Genu ***Lambrachaeus*** Alcock, 1895

Lambrachaeus ramifer Alcock, 1895

(Fig. 3D–E)

Material examined. Inside of Gesodokkuru Reef, off Arumonogui, Babelthuap I., Palau Is., dredged, ca. 20 m in depth, dead coral and sand; 1 ♂ (cb 4.8 × pcl 8.0 mm), NSMT-Cr 30963; July 14, 1980; K. Baba leg.

Remarks. This unusual crab having dead twig appearance is not the majid, but definitely indicated as a monotypic species in the family Parthenopidae by the excellent study of Ng and

McLay (2003) (cf. Remarks on *Rhinolambrus turriger* in this paper). In the specimen examined (Fig. 3D–E), all the chelipeds and ambulatory legs are detached, and the distal part of the rostrum is broken off in front of the strong spine at the lower margin. However, there is no problem in the identification, with fine figures given by the original author (Alcock, 1895: pl. 3 fig. 1), Edmondson (1952: fig. 9), Griffin and Tranter (1974: fig. 2), Kensley (1977: figs. 1–2), Takeda and Marumura (1994: fig. 1), and Ng and McLay (2003). The G1 and G2 were illustrated by Griffin and Tranter (1974: fig. 2), and Ng and McLay (2003: fig. 6).

Distribution. Japan, Hawaii and Taiwan in the West Pacific, the Andaman Islands, the Maldive Islands, and South Africa in the Indian Ocean, and the Red Sea, with bathymetric range from 16 to 90 m. New to the Palau Islands.

Genus ***Rhinolambrus*** A. Milne-Edwards, 1878
Rhinolambrus turriger (White, 1847)

(Fig. 3A–C)

Material examined. Inside of Gesodokkuru Reef, off Arumonogui, Babelthuap I., Palau Is., dredged, ca. 20 m in depth; 1 ♂ (cb 11.4 × cl 11.3 mm including front and excluding posterior tubercles), NSMT-Cr 30964; July 13, 1980; K. Baba leg.—Entrance of Toagel Mid in Arangel Channel, Babelthuap I., Palau Is., dredged, 40 m in depth, mud; 1 ♂ (11.7 × 11. 8 mm), NSMT-Cr 30965; June 22, 1980; K. Baba leg.

Remarks. As seen in Fig. 3A–C, the chelipeds are remarkably long and slender, and there are two intestinal spines differing from only one spine in most of the congeners. These two characters are finely figured by Adams and White (1848: pl. 5 fig. 2), and shared only with *Rhinolambrus sisimanensis* which was originally described by Sèrene and Umali (1972) and later recorded by Davie and Turner (1994) as *Parthenope (Rhinolambrus)*. These two species are generally close to each other, but readily distinguished by having one spine each at the gastric and branchial regions in *R. turriger* instead of two spines in *R. sisimanensis.*

Borradaile (1903b) made a simple but fine drawing to show adequately the specific characters. Flipse (1930) examined several specimens from Indonesian waters and deeply noted on the armatures of the carapace and chelipeds. In the paper dealing with *Lambrachaeus ramifer* Alcock, 1905, Ng and McLay (2003) showed the basic similarity between *R. turriger* and *L. ramifer* as the parthenopid crabs in having the long chelipeds and slender ambulatory legs of the parthenopid type, and decidedly transferred *L. ramifer* to the family Parthenopidae from the family Majidae *s.l.*

Distribution. West Pacific from the Philippines to the Sunda Strait in the Java Sea, Darnley Island in the Torres Strait, and the Andaman Islands and Seychelles in the Indian Ocean (Miers, 1884; Flipse, 1930). The recorded bathymetric range is from 25 to 90 m. New to the Palau Islands.

Genus ***Pseudolambrus*** Paulson, 1875
Pseudolambrus palauensis sp. nov.

(Figs. 4–6)

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Material examined. Kayangel Atoll, north of Babelthuap I., Palau Is., lagoon, dredged, 4 m in depth; 1 ♂ (cb 9.7 × cl 9.5 mm), holotype, NSMT-Cr 30966; July 6, 1980; K. Baba leg.

Description of holotype. Carapace equilateral triangle in general outline; dorsal surface not strongly convex (Figs. 4B, 5A, 6A); frontal region (Figs. 4B, 5A, C) deflexed, its dorsal surface concave between weakly convex supraorbital surface of both sides, rather longitudinally grooved, reaching posteriorly to transverse depression connecting posterior parts of both orbits; gastric region weakly convex, armed with pair of obtuse tubercles side by side at anterior part, obtuse tubercle of similar size at posterior median part, some smaller granules dispersed on entire surface. Submedian surface behind each gastric region distinctly depressed in front of cardiac region (Figs. 4B, 5A,

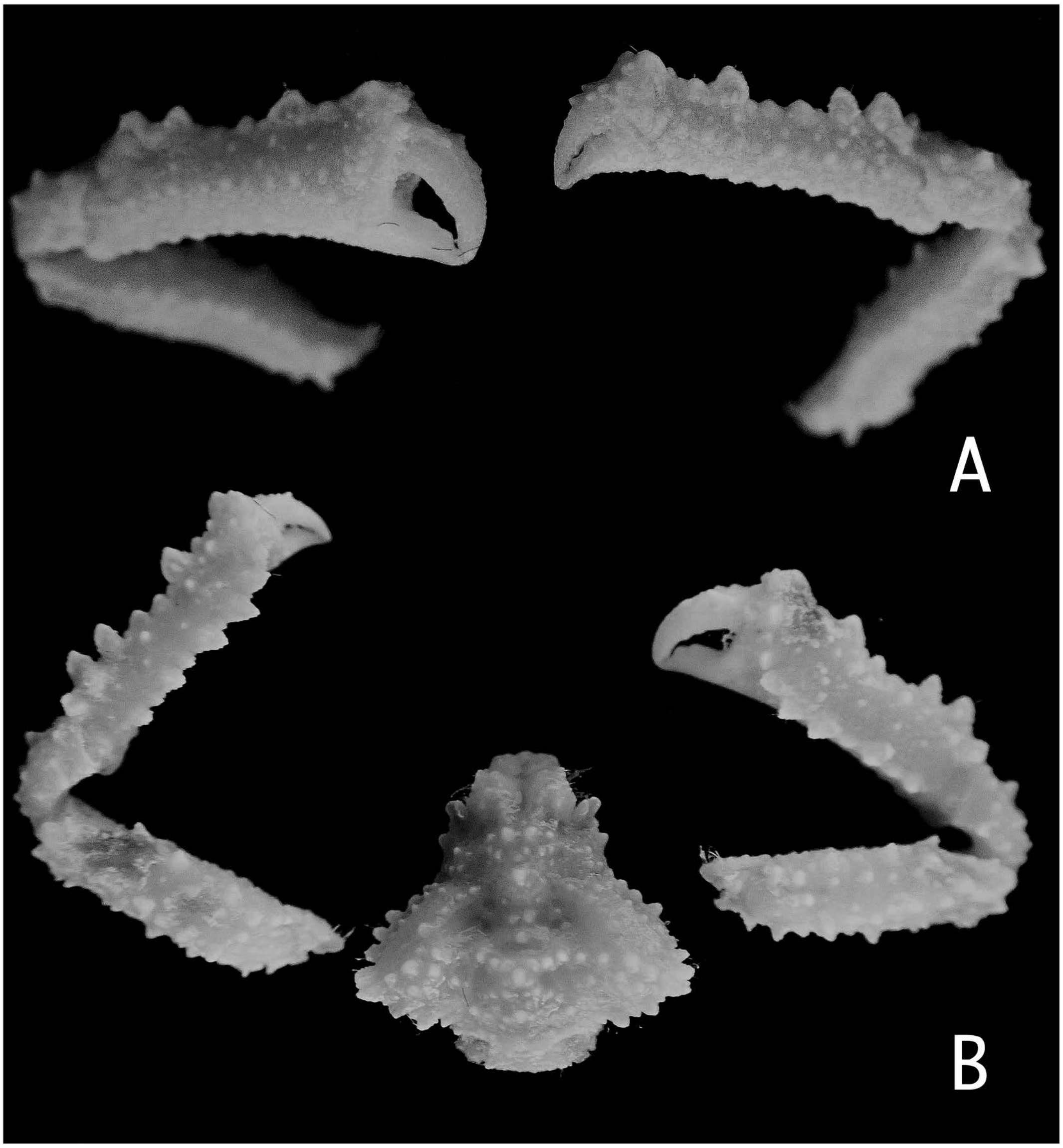

Fig. 4. *Pseudolambrus palauensis* sp. nov., ♂ (NSMT-Cr 30966; cb 9.7 × cl 9.5 mm), holotype. Both chelipeds in ventral view (A) and carapace and both chelipeds in dorsal view (B).

6A). Anterior part of cardiac region raised, with small obtuse granules symmetrically arranged; posterior part more or less ridged transversely, with row of several obtuse granules. Intestinal region transverse in front of carapace posterior margin. Branchial region (Figs. 4B, 5A, 6A, 5D) prominent, curved, rather raised along carapace lateral margin.

Front (Fig. 6A–B) about one-third as wide as carapace between posterior ends of supraorbital margins of both sides, more or less lobular, slightly narrowing distally; distal half about equal to supraorbital eave in length; distal margin roundly truncated, with median one-third obtusely angulated as triangular tooth. Supraorbital eave (Fig. 6A–B) with margin only weakly concave in dorsal view, weakly retreating posteriorly; dorsal surface convex dorsally; both of

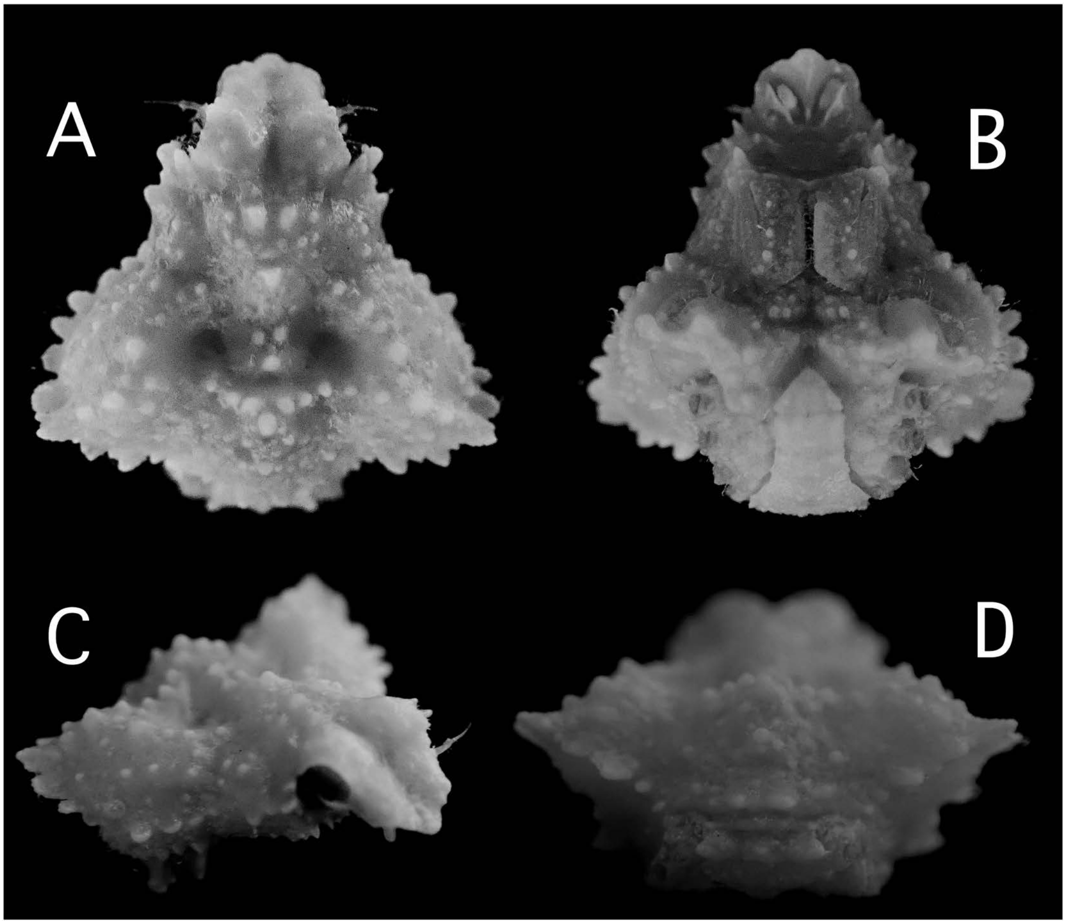

Fig. 5. *Pseudolambrus palauensis* sp. nov., ♂ (NSMT-Cr 30966; cb 9.7 × cl 9.5 mm), holotype. Carapace in different views (A–D).

intercalated and external orbital teeth distinctly lobate, thin, each with rounded tip. Small tubercle just behind external orbital tooth. Carapace anterolateral margin short, longitudinal, unarmed. Branchial margin (Figs. 4B, 5A–B, 6A) convex, slightly longer than carapace anterolateral margin, armed with several isolated, thin teeth; posterolateral margin with 2 or 3 tubercles. Third maxilliped (Figs. 5B, 6C) roughened, uneven, with obtuse tubercles of variable sizes; outer margin of merus nearly straight, with obtuse antero-external angle.

Both chelipeds (Fig. 4) comparatively slender, about 2.2 times longer than carapace width, slightly different in shape. Merus subequal to palm in length, marginally armed with small tubercles of different sizes. Carpus short, with small tubercles. Left palm rather slender, with same thickness throughout length, but right palm stout as a whole, slightly thickened distally; tuberculation similar to both palms; 2 thin tubercles and 1 much stronger tubercle at basal and distal parts of upper margin, respectively; outer surface roughened with small conical granules and longitudinal row of granules in midline. Fingers of left chela small, but those of right chela thick, leaving wide gap between both fingers. All ambulatory legs missing.

Pleon (Fig. 5B) wholly roughened with granules; third to fifth pleonites fused; fifth and sixth pleonites with subparallel lateral margins; telson nearly triangular in general outline, with sharp

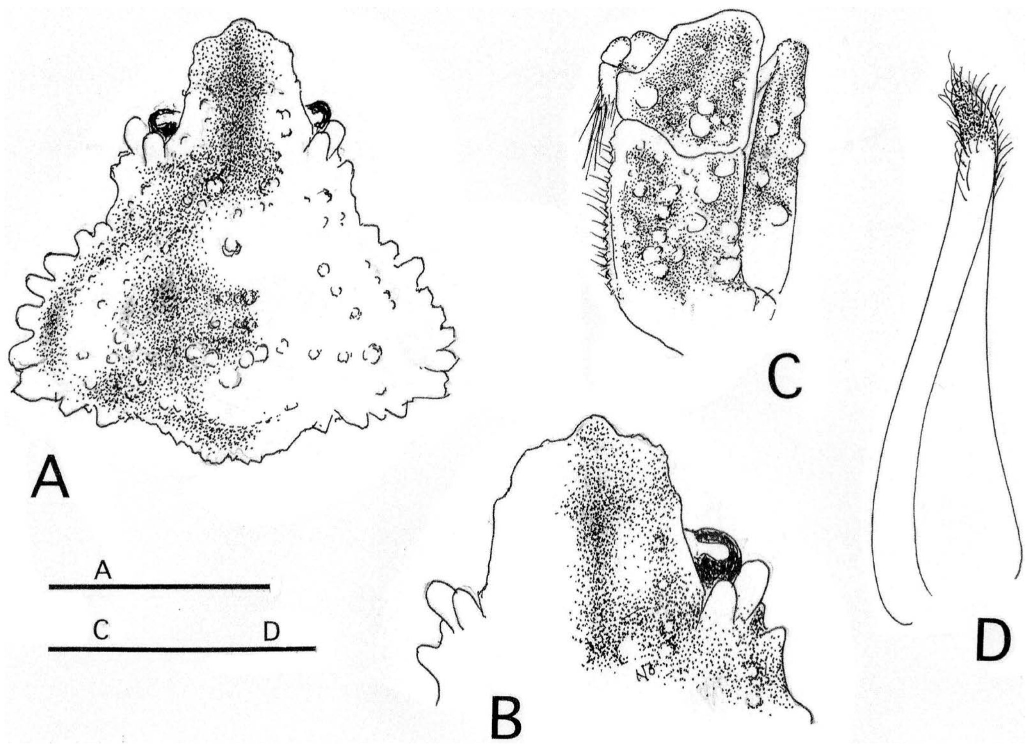

Fig. 6. *Pseudolambrus palauensis* sp. nov., ♂ (NSMT-Cr 30966; cb 9.7 × cl 9.5 mm), holotype. Carapace in dorsal view (A), right orbital region enlarged in dorsal view (B), left third maxilliped (C) and left G1 in ventral view (D). Scales for A = 1 mm, C = 2 mm, D = 1 mm.

tip. G1 (Fig. 6D) stout, tapering distally, with terminal part flattened, weakly curved, semitransparent, hairy.

Remarks. The wide and weakly deflexed front with a dorsal longitudinal depression is somewhat similar to those of the *Rhinolambrus* species such as *R. lamelliger* (White, 1847) [White, 1847a–b, as *Lambrus lamelliger* sp. nov.; Adams and White, 1848, as *Lambrus lamellifrons*; Rathbun, 1906, as *Parthenope (Rhinolambrus) lamelligera*; Dai *et al.*, 1986, Dai and Yang, 1991, as *P. (R.) lamellifrons*; Takeda and Marumura, 2019, as *R. lamelliger*], and *R. pelagicus* (Rüppell, 1830) [Rüppell, 1830, as *Lambrus pelagicus* sp. nov.; A. Milne-Edwards, 1872, as *L. affinis* sp. nov.; Rathbun, 1907, as *Parthenope (Parthenope) melana* sp. nov.; Flipse, 1930, as *L. (R.) latifrons* sp. nov.]. However, in the species of the genus *Rhinolambrus* A. Milne-Edwards, 1878, the gastric, cardiac, intestinal and branchial regions are strongly bulged and armed with some strong and sharp tubercles, and the hepatic region has a distinctly produced conical tooth on the carapace anterolateral margin between the external orbital angle and the branchial margin; these characters are not possessed by the present specimen.

As frequently remarked in some precedent papers, the genus *Pseudolambrus*, to which the present new species is referred, is heterogenous, with the various external appearance of the known species. The present new species is without doubt most close to *P. sundaicus* Ng and Rahayu, 2000, which was originally described from Jakarta Bay, Java, Indonesia, and additionally recorded from Okinawa-jima Island in the Ryukyu Islands by Maenosono (2016). In both papers, the fine photographs of the specimens were given for the adequate comparison with the present new species.

Pseudolambrus palauensis sp. nov. has the sloping shoulders of the carapace branchial margins, with the laterally angulated branchial margin (Figs. 4B, 5A–B, 6A), whereas in *P. sundaicus*, the brachial margin is regularly convex and nearly longitudinal behind the shoulder. In the new species, the external orbital and intercalated teeth are distinctly flattened and directed outward, and thus the orbit seems to be somewhat opened and imperfect, but in *P. sundaicus*, both the teeth are directed forward and tightly close to make complete orbit. There is a small tubercle just behind the external orbital tooth in the new species, but in *P. sundaicus*, such a small tooth is absent at the place with the long-necked appearance. In the new species, the antero-external angle of the third maxilliped merus is produced and weakly angulated, instead in *P sundaicus*, it is distinctly rounded. The G1 of the new species is weakly flattened at the distal part, but that of *P. sundaicus* is subtruncated at the tip.

Etymology. The new species named after the type locality, the Palau Islands.

Distribution. Known only by the holotype male from the Kayangel Atoll, north of Babelthuap Island in the Palau Islands, 4 m in depth.

Family Portunidae Rafinesque, 1815
Genus ***Cycloachelous*** Ward, 1942
Cycloachelous granulatus
(H. Milne Edwards, 1834)

Material examined. Kayangel Atoll., north of Babelthuap I., Palau Is., lagoon, dredged, 4 m in depth; 1 ♂ (cb 4.8 × cl 3.9 mm), NSMT-Cr 30967; July 6, 1980; K. Baba leg.—Entrance of Toagel Mid in Arangel Channel, Babelthuap I., Palau Is., dredged, 40 m in depth, mud; 1 ♀ (10.1 × 7.9 mm), NSMT-Cr 30968; June 22, 1980; K. Baba leg.

Remarks. There are many records of this species from the whole Indo-West Pacific, with some generic and subgeneric names such as *Lupea* by H. Milne Edwards (1834), *Achelous* by A. Milne-Edwards (1861), *Portunus (Achelous)* by Rathbun (1911), *Neptunus (Achelous)* by Alcock (1899), Gordon (1938), and Sakai (1939), *Cycloachelous* by Ward (1942), *Portunus* by Stephenson and Campbell (1959), Crosnier (1962), Sakai (1965), Dai and Yang (1991), and Apel and Spiridonov (1998), and *Portunus (Cycloachelous)* by Sakai (1976). These records are, however, not always reliable, with certain anxiety about the confusion with two closely related species, *Cycloachlous orbitosinus* (Rathbun, 1911) and *C. levigatus* Koch, 2021, and also with another species, *C. octodentatus* (Gordon, 1918).

Koch (2021) made the detailed comparison of the new species, *C. levigatus*, with *C. orbitosinus* and *C. octodentatus*. Then, Koch *et al.* (2022) further discussed the systematic status of the genus based on the morphological and molecular analyses and showed the presence of nine congeneric species. These three species are also similar to *C. granulatus* (H. Milne Edwards, 1834) in the shape, dorsal areolation and anterolateral armature of the carapace.

Apel and Spiridonov (1998) used the characters to distinguish *C. granulatus* from *C. orbitosinus* in the key that "Last anterolateral tooth not larger than other teeth; carapace granules are not grouped in patches but almost cover entire surface; under side of manus without longitudinal furrow along most of its length; lateral borders of second abdominal segment in both sexes without dorsally directed spiniform process; Go/1 short and stout with flared tip."

The pleons of both sexes of *C. orbitosinus* and *C. levigatus*, and the male pleon of *C. octodentatus* were clearly shown by Koch (2021), and the male pleon of *C. granulatus* by Koch *et al.* (2022). The lateral margins of the sixth pleonite are straight or weakly curved in *C. granulatus*, whereas strongly convex in *C. orbitosinus* and *C. levigatus*, and rather angulated in *C. octodentatus*. Furthermore, the additional definitive difference is that the pleonal surfaces of both sexes are characteristically sculptured in *C. oribitosinus* and smooth in the other three species. Considering these distinguishing characters, the male and female specimens examined, though young, are safely referred to *C. granulatus*.

Distribution. The type locality of *C. levigatus* is Nhatrang Bay, Vietnam, and the other localities in the literature confirmed by the original author are the Philippines (Stephenson and Rees, 1967, as *Portunus orbitosinus*) and Japan (Sakai, 1939, as *Neptunus (Achelous) orbitospinis*; 1965, as *P. orbitospinus*; 1976, as *P. (Cycloachelous) orbitosinus*). The following conclusive comments on the distribution were recorded by the original author; *C. levigatus* localities are in East or Southeast Asian waters, in comparison with *C. orbitosinus* from the western Indian Ocean.

The type locality of *C. octodentatus* is Singapore, while the present species is widely distributed in the whole Indo-West Pacific at the depth of 30 to 120 m.

Genus ***Thalamita*** Latreille, 1829

Thalamita admete (Herbst, 1803)

Material examined. Off Kuwannon, Koror Is., Palau Is., dredged, with coralline algae; 1 ♂ (cb 15.8 × cl 10.0 mm), 1 ♀ (11.6 × 7.6 mm), NSMT-Cr 30969; June 17, 1980; K. Baba leg.

Remarks. This species is the commonest among the *Thalamita* species having two lobed-front, being characterized by the basal antennal segment armed with a crest fringed with sharp granules as figured by Wee and Ng (1995). Many synonyms of this species including *Thalamita dispar* Rathbun, 1914, were discussed in detail by Stephenson and Rees (1967).

Distribution. Many records of occurrence in the whole Indo-West Pacific, from tidal flats to shallow waters.

Thalamita chaptalii (Audouin, 1826)

(Fig. 7E–F)

Material examined. Off Kuwannon, Koror Is., Palau Is., dredged, with coralline algae; 1 ♂ (cb 12.6 × cl 8.2 mm), NSMT-Cr 30970; June 17, 1980, K. Baba leg.—Entrance of Toagle Mid in Arangel Channel, Babelthuap I., Palau Is., 40 m in depth, mud; 1 ♂ (8.6 × 6.0 mm), NSMT-Cr 30971, 1 ♂ (12.4 × 8.4 mm), 1 ovig. ♀ (11.7 × 8.1 mm), NSMT-Cr 30972; June 22, 1980; K. Baba leg.—Inside of Gesodokkuru Reef off Arumonogui, Babelthuap I., Palau Is, dredged, ca. 20 m in depth; 1 ovig. ♀ (11.1 × 7.2 mm), NSMT-Cr 30973; July 13, 1980; K. Baba leg.

Remarks. This species was briefly characterized by Wee and Ng (1995), with figures, being most characterized by the weakly arched front divided into two by a small median notch (Fig. 7E–F). The carapace dorsal ridges are also simply but clearly shown by Crosnier (1962), with a pair of the frontal, mesogastric, metagastric, epibranchial and mesobranchial ridges, but no cardiac ridge (Fig. 7E–F).

Distribution. Indo-West Pacific from the Red Sea and Madagascar to Australia, Tahiti, and the Ryukyu Islands. The occurrence in the Ryukyu Islands is referred to Nagai and Nomura (1988); the definite locality was not recorded, but the identification is acceptable for the photograph in the filed. New to the Palau Islands.

Thalamita quadrilobata Miers, 1884

(Fig. 7A–B)

Thalamita quadrilobata Miers, 1884, p. 539, pl. 48 fig. B.—Alcock, 1899, p. 84.—Stephenson and Hudson, 1957, p. 349, figs. 2G, 3G, pl. 4 fig. 4, pl. 8 fig. M, pl. 9 fig. F.—Stephenson, 1972a, p. 151; 1972b, pp. 18 (in key), 51; 1976, p. 24.—Apel and Spiridonov, 1998, p. 260, figs. 77, 86.

Thalamita admeta var. *intermedia* Borradaile, 1903a, p. 203 (in key).

Thalamita Admete var. *intermedia* Borradaile: De Man, 1926, p. 203 (in discussion), fig. 2.

Thalamita borradailei Wee and Ng, 1995, p. 62 (in discussion).

Material examined. Inside of Gesodokkuru Reef off Arumonogui, Babelthuap I., Palau Is., dredged at ca. 20 m in depth; 1 ♀ (cb 10.8 × cl 7.4 mm), NSMT-Cr 30974; July 13, 1980, K. Baba leg.

Remarks. De Man (1926) examined one of the syntypes of *Thalamita admeta* var. *intermedia* Borradaile, 1903, to ascertain the taxonomic validity of his new species, *Thalamita bilobata*,

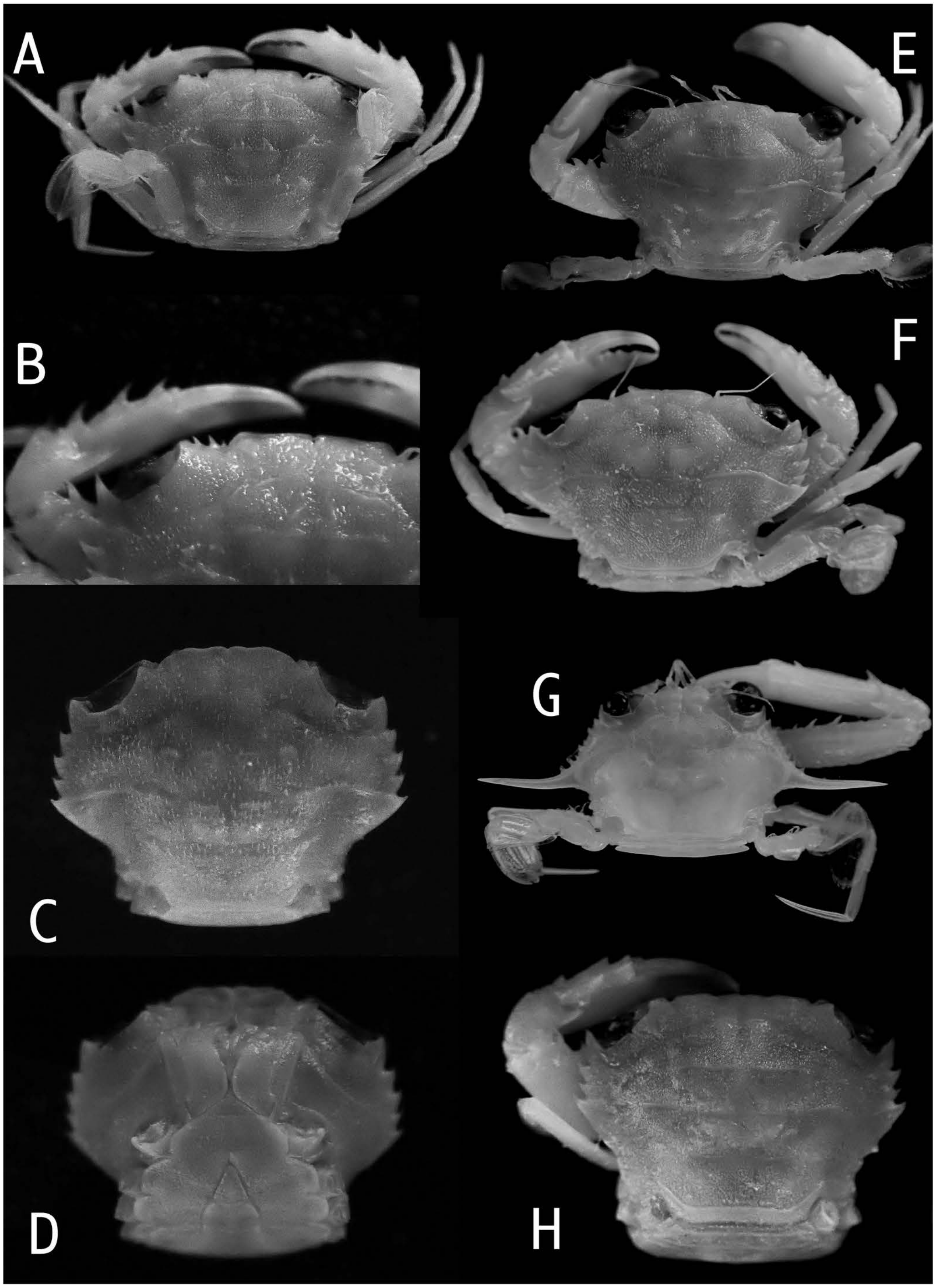

Fig. 7. A–B: *Thalamita quadrilobata* Miers, ♀ (NSMT-Cr 30974; cb 10.8 × cl 7.4 mm). C–D: *Thalamonyx gracilipes* A. Milne-Edwards, ♂ (NSMT-Cr 30976; cb 7.6 × cl 5.9 mm). E–F: *Thalamita chaptalii* (Audouin), ♂ (NSMT-Cr 30970; cb 12.6 × cl 8.2 mm) (E); ♂ (NSMT-Cr 30971; cb 8.6 × cl 6.0 mm) (F). G: *Xiphonectes longispinosus* (Dana) sensu Sakai (1939), ♂ (NSMT-Cr 30978; cb 17.6 mm including epibranchial tubercles × cl 7.1 mm). H: *Thalamita sexlobata* Miers, ovig. ♀ (NSMT-Cr 30975; cb 9.0 × cl 6.3 mm).

and mentioned that both are different from each other most remarkably in the number of the teeth on the antennal basal segment. Wee and Ng (1995) discussed the taxonomic identity of some varieties of *T. admete* (Herbst, 1803) defined by Borradaile (1903a), and concluded that one of them, var. *intermedia*, is specifically distinct from *T. admete*. However, the corrected specific name, *T. intermedia*, was preoccupied by *T. intermedia* Miers, 1886, and thus the new name, *T. borradailei* was proposed by Wee and Ng (1995). Later, Apel and Spiridonov (1998), who examined the syntypes of *T. admeta* var. *intermedia* and many specimens from the Indian Ocean and the West Pacific, concluded that *T. borradailei* falls into the size/age-related variation, accepting the tentative synonymisation of *T. admete* var. *intermedia* as proposed by Stephenson and Hudson (1957).

Thalamita quadrilobata is, otherwise, close to *T. bilobata* De Man, 1926, with which *T. miyakei* Takeda, 1972 known by Takeda (1972) and Takeda and Hayashi (1973) was synonymized as shortly mentioned by Takeda (1989b). In *T. quadrilobata*, the front is two-lobed, each lobe is shallowly concave near the obtusely angulated lateral end, and the carapace anterolateral margin is armed with the remarkably sharp teeth, with a small fourth teeth (Fig. 7A). As clearly shown by De Man (1926: figs. 1a–b, 2), the antennal basal segment is armed with three spiniform teeth in *T. quadrilobata*, but only one in *T. bilobata*. Three sharp spines of the antennal basal segment are shown in the present paper (fig. 7B), and also seen in the line drawing given by Apel and Spiridonov (1998: fig. 77a–c).

Distribution. Widely distributed in the Indian Ocean, and also known from Indonesia, the Philippines, the Palau Islands, Australia, and French Polynesia in the Pacific, 5–25 m in depth.

Thalamita sexlobata Miers, 1886

(Fig. 7H)

Material examined. Off Kuwannon, Koror Is., Palau Is., dredged, with coralline algae; 1 ovig. ♀ (cb 9.0 × cl 6.3 mm), 1 ♀ (11.0 × 7.8 mm), NSMT-Cr 30975; June 17, 1980, K. Baba leg.

Remarks. This species is characteristic in having the weakly convex four-lobed front, and the outer lobe being about twice the length of the inner lobe (Fig. 7H). Of the five anterolateral teeth of the carapace, the first or the external orbital tooth is much larger than the following teeth, and the fourth tooth is smallest and almost obsolete (Fig. 7H). The details of the carapace dorsal ridges are finely shown by Crosnier (1962), Takeda (1989a), and Wee and Ng (1995).

Distribution. The Pacific Ocean from Hawaii and Japan to Australia, and the Indian Ocean from the Andaman Sea to Madagascar, with 15–80 m in depth. New to the Palau Islands.

Genus ***Thalamonyx*** A. Milne-Edwards, 1873

Thalamonyx gracilipes A. Milne-Edwards, 1873

(Fig. 7C–D)

Thalamonyx gracilipes A. Milne Edwards, 1873a, p. 169, pl. 4 fig. 3.—Alcock, 1899, p. 71.—Rathbun, 1906, p. 873.—Edmondson, 1954, p. 251, fig. 26.—Crosnier, 1962, p. 91, fig. 153.

Thalamonyx danae var. *gracilipes* A. Milne Edwards: Miers, 1886, p. 192.

Thalamita gracilipes (A. Milne Edwards): Stephenson and Rees, 1967, p. 20, fig. 2d, h.

Material examined. Inside of Gesodokkuru Reef off Arumonogui, Babelthuap I., Palau Is, dredged, ca. 20 m in depth; 1 ♂ (cb 7.6 × cl 5.9 mm), NSMT-Cr 30976; July 13, 1980; K. Baba leg.

Remarks. Evans (2018) showed with the molecular analysis that the genus *Thalamonyx* is valid and generically distinct from the genus *Thalamita*. The genus *Thalamonyx* is represented by *Goniosoma danae* A. Milne-Edwards, 1869 (type species) and *Thalamonyx gracilipes* A. Milne-Edwards, 1873 (present species), both of which are close to each other in the general formation of the carapace, chelipeds and ambulatory legs. According to Stephenson and Rees (1967), the most conspicuous difference between the two species is the presence of four ridges in an arc on the mesobranchial and cardiac regions in *Thalamonyx gracilipes*, instead of no ridges on the cardiac region in *T. danae*.

The frontal region (Fig. 7C) is strongly developed forwards as a plate, with the weakly sinuate margin divided into two lobes by a median minute notch, followed laterally with a large and oblique orbit at each side. The external orbital or first anterolateral tooth is much larger than the following four subequal teeth (Fig. 7C). The telson of the male pleon strongly tapers and has a sharp tip (Fig. 7D). The G1 is represented by Stephenson and Rees (1967), with which the G1 of the present male agrees well in having the curled setae at the distal part.

Distribution. The records of occurrence are not many, only with several localities in the wide area of the Indo-West Pacific, without intervening localities (Hawaii, New Caledonia, Tonga, Cocos Keeling Island, the Andaman Islands, and Madagascar), 12–77 m in depth. New to the Palau Islands.

Genus ***Trierarchus*** Evans, 2018
Trierarchus squamosus (Stephenson and Hudson, 1957)
(Figs. 8, 10A, 15F–G)

Thalamita squamosa Stephenson and Hudson, 1957, pp. 320 (in key), 355, figs. 2K, 3K, pl. 5 fig. 4, pl. 8 fig. Q, pl. 10 fig. J. — Stephenson, 1976, p. 24.
Trierarchus squamosus (Stephenson and Hudson): Evans, 2018, p. 14 (in table), fig. 3J.

Material examined. Entrance to Toagel Mid in Arangel Channel, Babelthuap I., Palau Is., dredged, 30–40 m in depth, with coralline algae; 1 ♂ (cb 12.6 × cl 8.7 mm), NSMT-Cr 30977; June 19 1980; K. Baba leg.

Remarks. This species is most characteristic in having only four strong and sharp anterolateral teeth of the carapace including the external orbital tooth (Figs. 8A, 10A); posterior three teeth are only slightly smaller than the first or the external orbital tooth. All the ridges of the carapace areolae are distinct (Figs. 8A, 10A). The frontal margin is cut into four lobes (Figs. 8A, 10A); each median lobe about two-thirds as wide as the lateral lobe, its outer end being shortly overlapped by the lateral lobe; the lateral lobe is slightly behind the frontal level of the median lobe, weakly concave in the middle, making the appearance of the six-lobed front. The frontal and supraorbital margins are narrowly crested along the whole lengths (Fig. 10A). The antennal basal segment is armed with a distinct ridge tipped with small granules along the distal half. The third maxilliped is as figured, with the anterodistal angle of the merus is narrowly extended forward (Fig. 15F). The male pleon is comparatively wide, with the bulged sixth pleonite (Fig. 8B). Both chelipeds are somewhat different in size and shape (Fig. 8C–D); the surfaces of the carpus and palm are of somewhat squamous appearance with depressed granules of variable sizes; the fingers are strongly and irregularly toothed throughout the lengths of both cutting edges. The G1 was roughly figured by Stephenson and Hudson (1957: fig. 2K) and in the present paper (Fig. 15G); the shaft is stout, parallel-sided throughout the length, strongly curved at the middle.

Distribution. The Great Barrier Reef; Rongelap and Bikini Atolls in the Marshall Islands, 45–55 m in depth. New to the Palau Islands.

Genus ***Xiphonectes*** A. Milne-Edwards, 1873
Xiphonectes longispinosus (Dana, 1852) sensu Sakai (1939)
(Fig. 7G)

Material examined. Kayangel Atoll, north of Babelthuap I., Palau Is., lagoon, dredged, 4 m in depth; 1 ♂ (cb 17.6 mm including epibranchial tubercles × cl 7.1 mm), NSMT-Cr 30978; 3 ♂♂ (10.2 × 4.9 mm — 19.5 × 8.5 mm), 1 juv., NSMT-Cr 30979; July 6, 1980; K. Baba leg.

Remarks. The taxonomical and nomenclatural problems of the *Portunus*/*Xiphonectes longispinosus* complex were resolved by Spiridonov (2016) who checked many synonymous species, examined the syntypes of *Amphitrite longi-spinosa* Dana, 1852, and established *X. tuerkayi* sp. nov. distinct from *X. longispinosus* s. str. As a

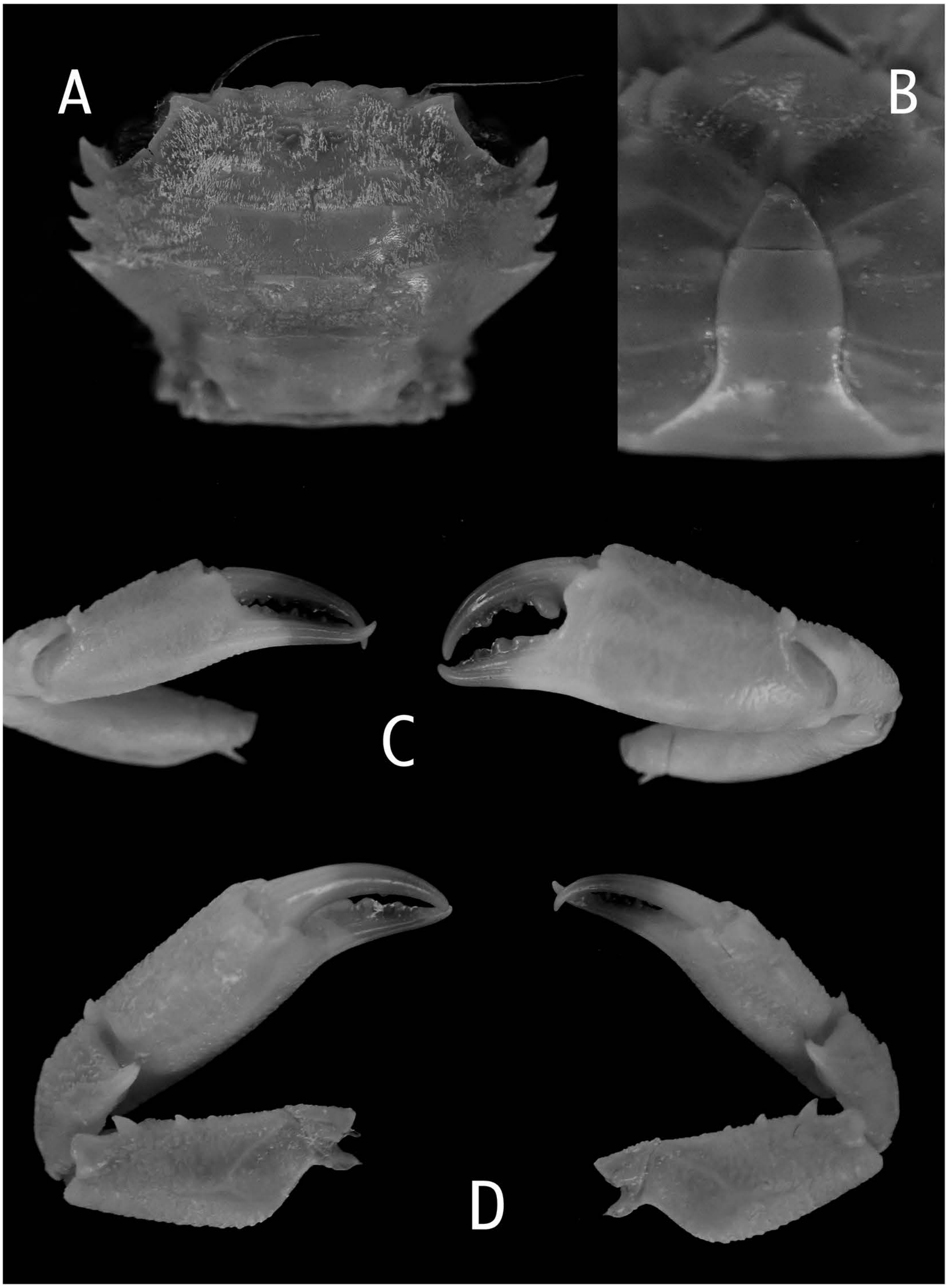

Fig. 8. *Trierarchus squamosus* (Stehenson and Hudson 1957), ♂ (NSMT-Cr 30977; cb 12.6 × cl 8.7 mm). Carapace in dorsal view (A), abdomen (B), both chelipeds in outer (C) and upper (D) views.

male (NSMT-Cr 30978) among four males and one juvenile in the present specimens was shown in Fig. 7G, the epibranchial spine is remarkably long, nearly half of the cb; the lateral end of the carapace posterior margin is strongly angulated; the frontal margin is four-lobed, with two small median lobes; and the merus and palm of the cheliped are slender and elongated. These characters agree with the figure given by Crosnier and Thomassin (1974) and also with a photograph given by Sakai (1939), and seem to be somewhat different from the photographs given by Rathbun (1906) and Edmondson (1954) in the armature of the carapace anterolateral teeth and the length of the epibranchial tooth, and the length and stoutness of the chelipeds. Nagai (1981) recorded a male from Wakayama Prefecture in the Pacific coast of central Japan; that illustration is similar to the photograph given by Sakai (1939) except for the slightly stouter chelipeds. The present specimen having the extremely slender chelipeds is referred just to *X. longispinosus* sensu Sakai (1939).

Distribution. The *X. longispinosus* complex is known from the wide area of the Indo-West Pacific, but the species referred to *X. longispinosus* sensu Sakai (1939) is reliably known only from Japan and Madagascar. New to the Palau Islands.

Family Xanthidae MacLeay, 1838

Genus *Chlorodiella* Rathbun, 1897

Chlorodiella corallicola Miyake and Takeda, 1968

(Figs. 9E, 10D–E)

Chlorodiella corallicola Miyake and Takeda, 1968, pp. 389, 393 (in key), figs. 1–2.—Garth and Kim, 1983, p. 687.—Serène, 1984, pp. 255 (in key), 257 (in key).—Garth, 1989, pp. 482 (in table 2), 483 (in table 3), 485 (in list).—Hoc and Du, 2007, pp. 89 (in table 2), 90 (in tables 3, 4), 94 (in appendix).—Lai *et al.*, 2011, pp. 411 (in table), 440.—Maenosono, 2022, p. 6, fig. 1D–F.

Material examined. Off Kwannon, Koror I., Palau Is. dredged; 1 ovig. ♀ (cb 4.8 × cl 3.2 mm), NSMT-Cr 30980, 1 juv., 1 ovig. ♀ (10.3 × 7.0 mm), 1 ♀ (8.9 × 6.1 mm), NSMT-Cr 30981; June 17, 1980; K. Baba leg.

Remarks. This species is generally close to *Chlorodiella laevissima* (Dana, 1852), but as mentioned in the original description and by Maenosono (2022), it is readily distinguished from *C. laevissima* by having only four anterolateral teeth of the carapace including the external orbital tooth. The external orbital tooth may be united with the real first tooth that is seemingly the second tooth in the other species except for *C. barbata* (Borradaile, 1900) and *C. quadrilobata* Dai, Cai and Yang, 1996. These two species are characterized each by a tuft of soft hairs at the bases of the fingers and the lobate anterolateral carapace teeth, respectively. The G1 of this species was represented in the original description by Miyake and Takeda (1968), being truncated at the tip surrounded by some short setaceous tubercles as cited in this paper (Fig. 10E).

Distribution. This species was originally described on the specimens from Ngarsmau, Babldáob Island, Palau Islands, 26 m in depth, and then recorded from the Ryukyu Islands, the Philippines, Viet Nam, the Caroline Islands, the Marshall Islands, and the Great Barrier Reef, Australia.

Chlorodiella xishaensis Chen and Lan, 1978

(Figs. 9F, 10B–C)

Chlorodiella xishaensis Chen and Lan, 1978, p. 268 (in key), 271, 285, figs. 6, 7 (10–11), pl. 2 fig. 6.—Serène, 1984, pp. 255 (in keys), 258, fig. 173, pl. 43 fig. E–F.—Dai *et al.*, 1986, pp. 314 (in key), 319, fig. 169 (3), pl. 45 fig. 8.—Dai and Yang, 1991, p. 338 (in key), 342, fig. 169 (3), pl. 45 fig.8.—Davie, 2002, p. 519.—Maenosono, 2022, p. 12, fig. 6.

Material examined. Off Kwannon, Koror I., Palau Is., dredged, with coralline algae; 1 ♂ (cb 4.6 × cl 3.3 mm), 1 ♀ (9.1 × 6.0 mm), NSMT-Cr 30982; June 17, 1980; K. Baba leg.—Entrance to Toagel Mid in Arangel Channel, Babelthuap I., Palau Is., dredged, 30–40 m in depth, with coralline algae; 1 ♂ (8.0 × 5.7 mm), NSMT-Cr 30983, 1 ovig. ♀ (10.3 × 6.9 mm), NSMT-Cr 30984; June 19 1980; K. Baba leg.

Remarks. Recently, Maenosono (2022)

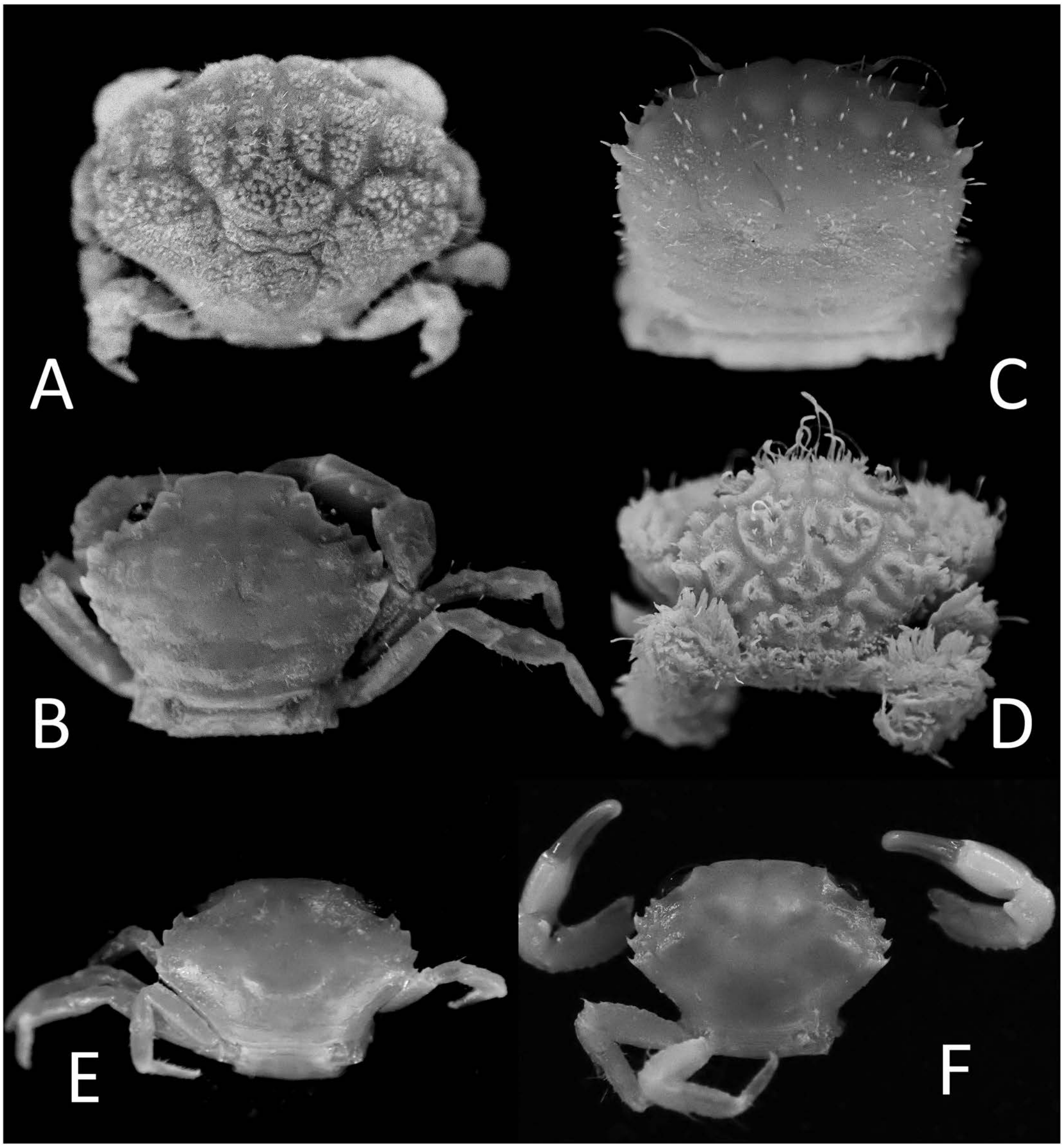

Fig. 9. A: *Gaillardiellus rueppellii* (Krauss), ♂ (NSMT-Cr 30985; cb 8.8 × cl 6.6 mm). B: *Metaxanthops acutus* Serène, ♂ (NSMT-Cr 30987; cb 6.8 × cl 5.5 mm). C: *Lophoplax sextuberculata* Takeda and Kurata, ovig. ♀ (NSMT-Cr 30992; cb 5.2 × cl 4.0 mm). D: *Vellumnus pygmaeus* (Takeda), ♂ (NSMT-Cr 30994; cb 5.7 × cl 4.5 mm). E: *Chlorodiella corallicola* Miyake and Takeda, ovig. ♀ (NSMT-Cr 30980; cb 4.8 × cl 3.2 mm). F: *Chlorodiella xishaensis* Chen and Lan, ♂ (NSMT-Cr 30983; cb 8.0 × cl 5.7 mm).

recorded seven *Chlorodiella* species from the Ryukyu Islands, with fine photographs, and discussed the precise identifications of the records in the literature. *Chlododiella crispipleopa* Dai, Yang, Song and Chen, 1986, *C. cytherea* (Dana, 1852), *C. laevissima* (Dana, 1852), and *C. xishaensis* Chen and Lan, 1978 are generally close to each other, but the present knowledge shows the distinct differences are in the Gl morphology. As far as the present species, *C. xishaensis* concerned, the G1 is straight and directed forwards at the tip (Fig. 10B), differing apparently from the strongly curled tip in *C. crispipleopa* and *C. cytherea*, and the subtruncated tip armed with long recurved tubercles in *C. laevissima*. In the carapace of *C. xishaensis*, otherwise, the last anterolateral tooth (fifth including the external orbital tooth) is sharp, weakly curved forwards and similar, but slightly smaller than the preceding (fourth) tooth, while in the other species in question, the last tooth is small, obtuse and sometimes even vestigial, at the base of the preceding (fourth) tooth. The ambulatory legs (Fig. 10C) are stout and armed with a row of curved tubercles along the anterior margin of each merus, a terminal spine of the anterior margin of each carpus, and several teeth along the posterior margin of each dactylus.

Distribution. The reliable records are from Madagascar, Australia, the Xisha Islands, the Philippines, and the Ryukyu Islands, without intervening localities. New to the Palau Islands.

Genus ***Gaillardiellus*** Guinot, 1976

Gaillardiellus rueppellii (Krauss, 1843)

(Fig. 9A)

Material examined. Off Kwannon, Koror, Palau Is., dredged, with coralline algae; 1 ♂ (cb 8.8 × cl 6.6 mm), NSMT-Cr 30985; June 17, 1980; K. Baba leg.—Inside of Gesodokkuru Reef, off Arumonogui, Babelthuap I., Palau Is., dredged, ca. 20 m in depth, dead coral and sand; 1 ovig. ♀ (9.0 × 7.0 mm), NSMT-Cr 30986; July 13, 1980; K. Baba leg.

Remarks. The specimens examined agree with the photographs given by Guinot (1976) who established the genus *Gaillardiellus* for *Cancer (Aegle) rüppellii* Krauss, 1843 [= *Actaea rueppellii*] and allied three species, *Actaea Alphonsi* Nobili, 1905, *A. ruppelli* var. *orientalis* Odhner, 1925 [= *A. orientalis*] and *A. superciliaris* Odhner, 1925. Then, Davie (1997) described a new species, *G. bathus* from New Caledonia, 270–312 m in depth, which was later recorded by Takeda and Webber (2006) from the Kermadec Islands, 80–162 m in depth. Otherwise, Takeda (1997) and Takeda and Komatsu (2018) insisted that *Actaea bocki* Odhndr, 1925 should be transferred to *Guillardiellus*.

The colored photographs of *G. rueppellii* were given by Mendoza *et al.* (2014) and Takeda and Komatsu (2018) based on the specimens from the Cocos Keeling Islands and the Ogasawara Islands, respectively. In the present specimen long preserved in the spirit, the blackish color of the bristles is entirely faded out.

Distribution. Not uncommon in the whole Indo-West Pacific, 50–105 m in depth.

Genus ***Metaxanthops*** Serène, 1984

Metaxanthops acutus Serène, 1984

(Fig. 9B)

Metaxanthops acutus Serène, 1984, p. 214, fig. 129, pl. 30 figs. D–E. — Ng and Clark, 2002, p. 535, fig. 3b.

Material examined. Off Kwannon, Koror I., Palau Is., dredged, with coralline algae; 2 ♂♂ (cb 6.8 × cl 5.5 mm; 5.2 × 4.1 mm), NSMT-Cr 30987; June 17, 1980; K. Baba leg.

Remarks. Both specimens examined agree well with the photographs of the type specimens from Madagascar and the Comoro Islands (Serène, 1984: pl. 30 figs. D–E) and also with the photograph of a male from New Caledonia (Ng and Clark, 2002: fig. 3b). Although Ng and Clark (2002) doubted its identity due to the occurrence at the locality far from the type locality, there seems to be no doubt for the identification as far as the comparison of the photographs concerned.

Distribution. So far known from the literature, the known localities are, as recorded above, in the western Indian Ocean and southern Pacific, and now from the Palau Islands. Serène (1984) recorded that both of the type specimens were collected at the intertidal zone, but the New Caledonian specimen was collected at the depth of 51 m in the lagoon. As for the present specimens, there is no depth record on the label, but the dredging was made in the sea shallower than 40 m in depth similar to the other sampling stations. New to the Palau Islands.

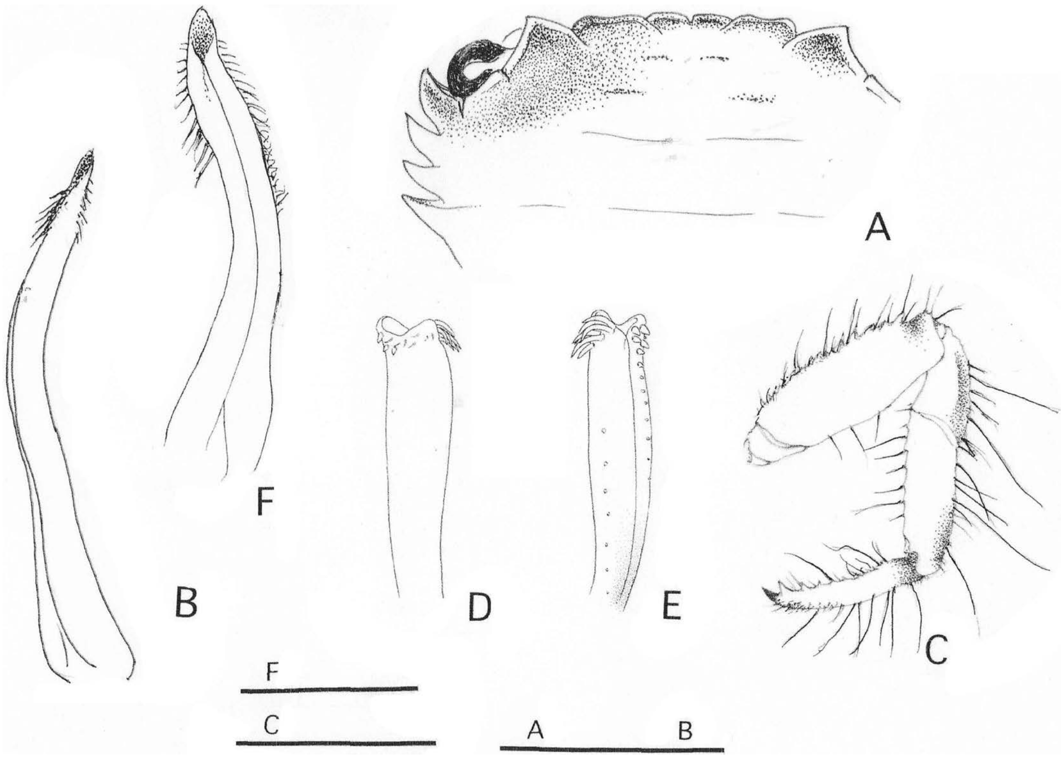

Fig. 10. A: *Trierarchus squamosus* (Stephenson and Hudson, 1957), ♂ (NSMT-Cr 30977; cb 12.6 × cl 8.7 mm). Front-orbital region in dorsal view. B–C: *Chlorodiella xishaensis* Chen and Lan, ♂ (NSMT-Cr 30983; cb 8.0 × cl 5.7 mm). Left G1 in ventral view (B) and right third ambulatory leg in dorsal view (C). D–F: *Chlorodiella corallicola* Miyake and Takeda, ♂ (holotype, ZLKU 1724; cb 6.6 × cl 4.4 mm). Distal part of right G1 in ventral (D) and sternal (E) views (original figures by Miyake and Takeda, 1968). Scales for A = 5 mm, B = 0.5 mm, C = 3 mm, F = 0.5 mm.

Family Tetraliidae Castro, Ng and Ahyong, 2004

Genus ***Tetralia*** Dana, 1851

Tetralia nigrolineata Serène and Pham, 1957

(Figs. 10F, 11A–B)

Material examined. Off Kwannon, Koror I., Palau Is., dredged, with coralline algae; 1 ♂ (cb 5.1 × cl 4.1 mm), NSMT-Cr 30988, 1 ovig. ♀ (5.8 × 4.9 mm), NSMT-Cr 30989, 1 ♂ (5.2 × 4.4 mm), 1 ovig. ♀ (5.1 × 4.1 mm), NSMT-Cr 30990; June 17, 1980; K. Baba leg.

Remarks. In these specimens (Fig. 11A–B) long preserved in spirit, the color pattern is still traceable; the frontal margin and the anterior halves of both lateral margins of the carapace are dark brown bordered with a whitish line along the inside margins. The transverse whitish line behind the frontal dark brown is extended laterally onto the eyestalk. The carapace shape and color pattern agree with the photographs by Serène (1984, pl. 40 fig. E., as *T. glaberrima obscura*), Galil (1988, fig. 1c) and Castro (1997, pl. 1 fig. D), and also with the vivid color photographs given by Maenosono (2017, fig. 8C–D) who checked the accuracy of records in various publications and research papers on the basis of the color pattern. Castro (1997) examined many specimens from many localities and designated the neotype for the subsequent taxonomic studies. The G1 is fringed with setose hairs along both sides as seen in Fig. 10F and agrees generally with rough sketch given by Galil (1988, fig. 2f), but is not strictly comparable with it.

Distribution. This species is generally associated with pocilloporid corals widely distributed in the Indo-West Pacific from Japan to Australia, New Caledonia, and Madagascar. New to the Palau Islands.

Family Goneplacidae MacLeay, 1838
Genus *Notonyx* A. Milne-Edwards, 1873
Notonyx aff. ***sagittifer*** Ng and Clark, 2010

(Fig. 11C–E)

Notonyx nitidus A. Milne Edwards: Serène and Umali, 1972, p. 82, figs. 90–95, pl. 8 figs. 9–10.—Serène and Soh, 1976, fig. 16E.
Notonyx sagittifer Ng and Clark, 2010, p. 31, figs. 1–3.

Material examined. Entrance to Toagel Mid in Arangel Channel, Babelthuap I., Palau Is., dredged, 40–50 m depth, mud; 1 ♂ (cb 5.0 × cl 3.3 mm), NSMT-Cr. 30991; June 19, 1980; K. Baba leg.

Remarks. The smooth, transversely quadrangular carapace of the male shows without doubt its suitable taxonomic position in the genus *Notonyx.* All of the known 12 species are small in size, less than cb 10 mm, and closely resemble to each other in the carapace, chelipeds and ambulatory legs. Their general morphological differences are sometimes subtle, but based on close observation, there may be constant differences in the shape of the carapaces, and the G1 shape is the most important character to distinguish each species. Ten species described intensively during recent some years by Clark and Ng (2006, 2011), Ng and Clark (2008, 2010), Naruse and Maenosono (2009), Naruse and Takeda (2010), Rahayu and Ng (2010a, b), and Rahayu (2011) are mostly well described with the figures and photographs, but the status of the type species, *N. nitidus* A. Milne-Edwards, 1873, from New Caledonia still remains unclear.

Quite unfortunately, the male specimen examined lacks the pleon together with the G1, and also all the ambulatory legs are absent in a specimen vial. The general shape of the carapace seems to be close to *N. sagittifer* Ng and Clark (2010) from Mindanao, the Philippines, which was compared with *N. latus* Ng and Clark, 2008, from the Lesser Sunda Islands. The holotype specimen of *N. sagittifer* is a male previously identified as *N. nitidus* by Serène and Umali (1972). The general shape of the carapace (Fig. 11C) seems to be closer to *N. sagittifer* rather than the other congeneric species, but the identification of the specimen at hand is not always definitive because of lacking the male G1. The ratio of the carapace breadth to length is 1.28, and the carapace anterolateral margin is only weakly convex outwards. Both chelipeds are compressed in dorsal view (Fig. 11E) and each palm is wholly glabrous, with the keeled lower margin (Fig. 11D). The male G1 is needed for the definite identification.

Distribution. The *Notonyx* species are reported from the limited localities, probably due to the special habitat in shallow water grass bed with sand and gravel substrates. As mentioned by Rahayu (2011), four species are exclusively known from Indonesian waters; two species from the Philippines; each one species from the Andamans, Thailand, Fiji, New Caledonia and Japan; only *N. kumi* Naruse and Maenosono, 2009, has been reported from the distant localities, the Ryukyu Islands in Japan and the Lesser Sunda Islands in Indonesia. The present record of the genus is new to Micronesian waters.

Family Pilumnidae Samouelle, 1819
Genus *Lophoplax* Tesch, 1918
Lophoplax sextuberculata Takeda and Kurata, 1984

(Fig. 9C)

Lophoplax sextuberculata Takeda and Kurata, 1984, p. 200, figs. 14–16.—Takeda and Marumura, 1995b, p. 87, fig. 1.—Marumura and Kosaka, 2003, p. 47, pl. 7 fig. 41.—Takeda and Komasu, 2018, 176, fig. 6H.
Lophoplax aff. *sextuberulata* Takeda and Kurata: Takeda and Marumura, 1995a, p. 4, pl. 1 figs. 7–8.

Material examined. Entrance to Toagel Mid in Arangel Channel, Babelthuap I., Palau Is., dredged, 30–40 m in depth, with coralline algae; 1 ovig. ♀ (cb 5.2 × cl 4.0 mm), NSMT-Cr 30992; June 19, 1980; K. Baba leg.

Remarks. This small ovigerous female agrees well with the female holotype and two male

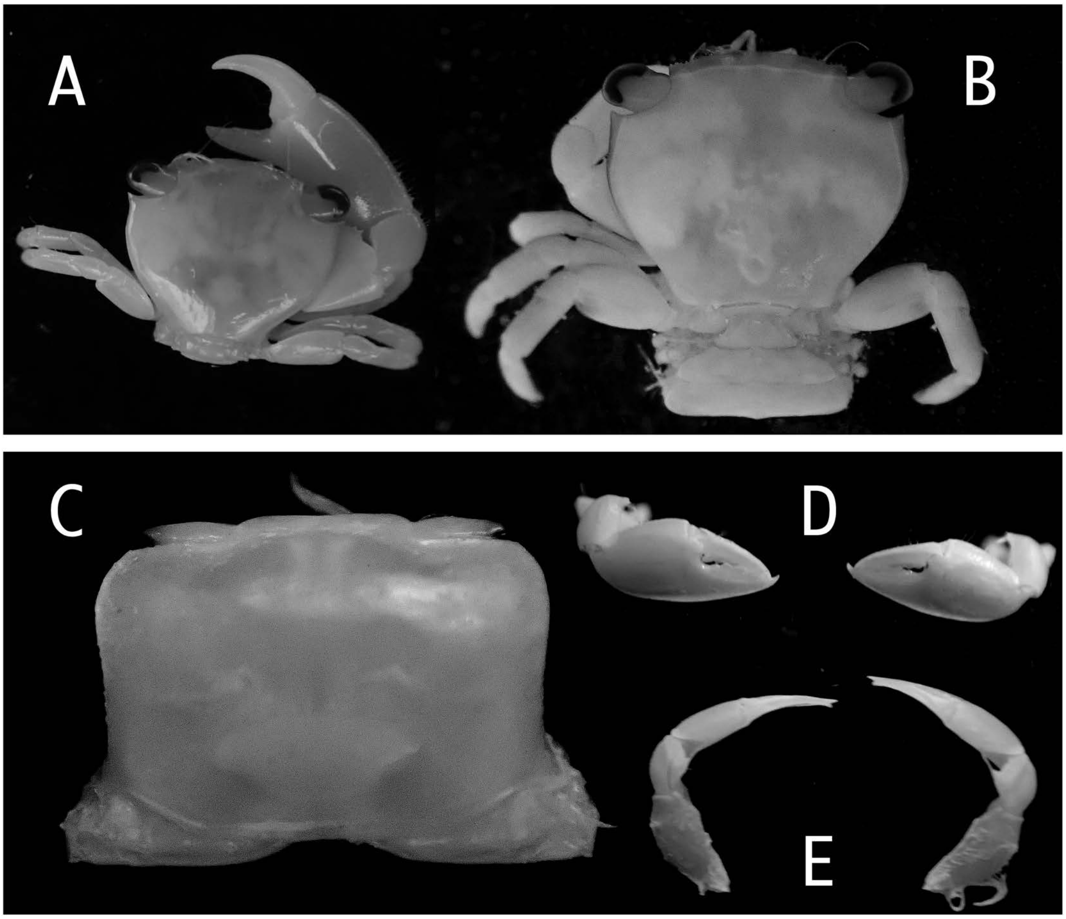

Fig. 11. A–B: *Tetralia nigrolineata* Serène and Pham, 1957, ♂ (NSMT-Cr 30988; cb 5.1 × cl 4.1 mm) (A) and ovig. ♀ (NSMT-Cr 30988; 5.8 × 4.9 mm) (B). C–E: *Notonyx* aff. *sagittifer* Ng and Clark, 2010, ♂ (NSMT-Cr 30991; cb 5.0 × cl 3.3 mm), carapace in dorsal view (C), both chela in outer view (D) and both chelipeds in dorsal view (E).

paratypes found in stomach contents of round-spot goatfish/sidespot goatfish, *Parupeneus pleurostigma* (Bennett) from the Ogasawara Islands. In the original description, otherwise, a male from Tanega-shima Island in the south of Kyushu was also recorded as the paratype. In the specimens from the Ogasawara Islands as well as the present ovigerous female, the carapace dorsal surface is ornamented only with a transverse row of six, weakly raised, bare areolets behind the front-orbital margin. Takeda and Marumura (1995b), however, mentioned on the variations of the areolets on the carapace dorsal surface in three Japanese localities. In the specimens from the Kii Peninsula and Tanega-shima Island, the carapace dorsal surface is ornamented, in addition to six areolets behind the front-orbital margin, with two transverse rows of four and three areolets at level of the gastric and cardiac regions, respectively; in a female from Ie-jima Island in the Ryukyu Islands, it is almost impossible to locate the posterior seven areolets.

The carapace anterolateral margin is armed with three tubercular teeth tipped each with a short stiff seta; the third tooth is similar to, but much smaller than the first and second teeth.

The genus *Lophoplax* is composed of *L. bicristata* Tesch, 1918, *L. sculpta* (Stimpson, 1858), *L. takakurai* Sakai, 1935, and *L. sextuberculata* Takeda and Kurata, 1984, because *L. teschi* Serène, 1971 was transferred to *Serratocoxa* Ng, 1987 and then to *Cryptolutea* Ward, 1936 (Ng *et al.*, 2008). Takeda and Kurata (1984) and Takeda and Marumura (1995b) considered that *Pseudocryptocoeloma symmetrinudus* Edmondson, 1951, is to be transferred to *Lophoplax*, but at present, *Pseudocryptocoeloma* is considered to be generically distinct from *Lophoplax*, with two species, *P. parvus* Ward, 1936 (type species) from Queensland, Australia, and *P. symmetrinudus* from Samoa and the Ryukyu Islands (Edmondson, 1951; Marumura and Takeda, 2012; Maenosono, 2019).

Distribution. Previously known only from Japanese waters (Kii Peninsula, Wakayama Prefecture, 80–100 m in depth; Tanega-shima Island, ca. 70 m in depth; Ie-jima Island in the Ryukyu Islands, 70 m in depth; Ogasawara Islands), and now the Palau Islands, 30–40 m in depth.

Genus ***Typhlocarinops*** Rathbun, 1909

Typhlocarcinops decrescens Rathbun, 1914

(Fig. 12A–C)

Typhlocarcinops decrescens Rathbun, 1914, p. 151.—Ng and Rahayu, 2020, p. 21, figs. 16–24, 40D–F.

Not *Typhlocarcinops decrescens* Rathbun: Sakai, 1965, p. 171, fig. 22, pl. 84 fig. 5; 1976, p. 546, fig. 293, pl. 195 fig. 2. (= *T. kanashi* Ng and Rahayu, 2020)

Typhlocarcinops genkaiae Takeda and Miyake, 1972, p. 262, fig. 5.

Typhlocarcinops canaliculata Rathbun: Dai *et al.*, 1986, p. 383, fig. 202 (2), pl. 55 fig. 6.—Dai and Yang, 1991, p. 413, fig. 202 (2), pl. 55 fig. 6.

Material examined. Entrance to Toagel Mid in Arangel Channel, Babelthuap I., Palau Is., dredged, 40 m depth, mud; 1♀ (cb 8.6 × cl 5.8 mm), NSMT-Cr 30993; June 22, 1980; K. Baba leg.

Remarks. The genus *Typhlocarcinops* was thoroughly revised by Ng and Rahayu (2020) who revalued the synonymity and described nine new species in addition to 13 species known at that time. The authors illustrated and described all the species based on many additional specimens and the type specimens of the known species. The real images of the species described by Rathbun (1909, 1914) were made clear, but the identification of some species is not always easy due to the variability with sexes, developmental stages and individuals. Especially, the proportion and convexity of the carapace, and the lobulation of the carapace anterolateral margin still come into question.

The female examined agrees mostly with the diagnoses of *T. decrescens* given by Ng and Rahayu (2020) who examined the type specimens (holotype male and paratype three males and two females from the Philippines) and two males and two females from the South China Sea, and a male from the Arafura Sea, and made clear the variations about the carapace proportion and anterolateral armature. In the present female (Fig. 12A), the carapace is 1.48 times broader than long and seems to be proportionally wider than seven males and three females among the specimens recorded by Ng and Rahayu (2020), in which the proportion falls mostly in 1.21–1.38; the exceptional proportion exceeding this numerical value is only in a female from Shandung in China, with 1.43. The carapace of the female examined is wider than the recorded specimens, but the proportion of the carapace is variable and not always definitive character in this genus to distinguish the congeneric species as well as the front-orbital region and carapace posterior part (Fig. 12B–C).

Distribution. Japan, the Philippines, the South China Sea, and Indonesia, 22–29 m in depth. New to the Palau Islands.

Genus ***Vellumnus*** Ng, 2010

Vellumnus pygmaeus (Takeda, 1977)

(Fig. 9D)

Planopilumnus pygmaeus Takeda, 1977, p. 131, fig. 5A–C, pl. 6 figs. C–D.

Vellumnus pygmaeus (Takeda): Takeda and Komatsu, 2018, p.181, fig. 6G.

Material examined. Inside of Gesodokkuru Reef, off Arumonogui, Babelthuap I., Palau Is.,

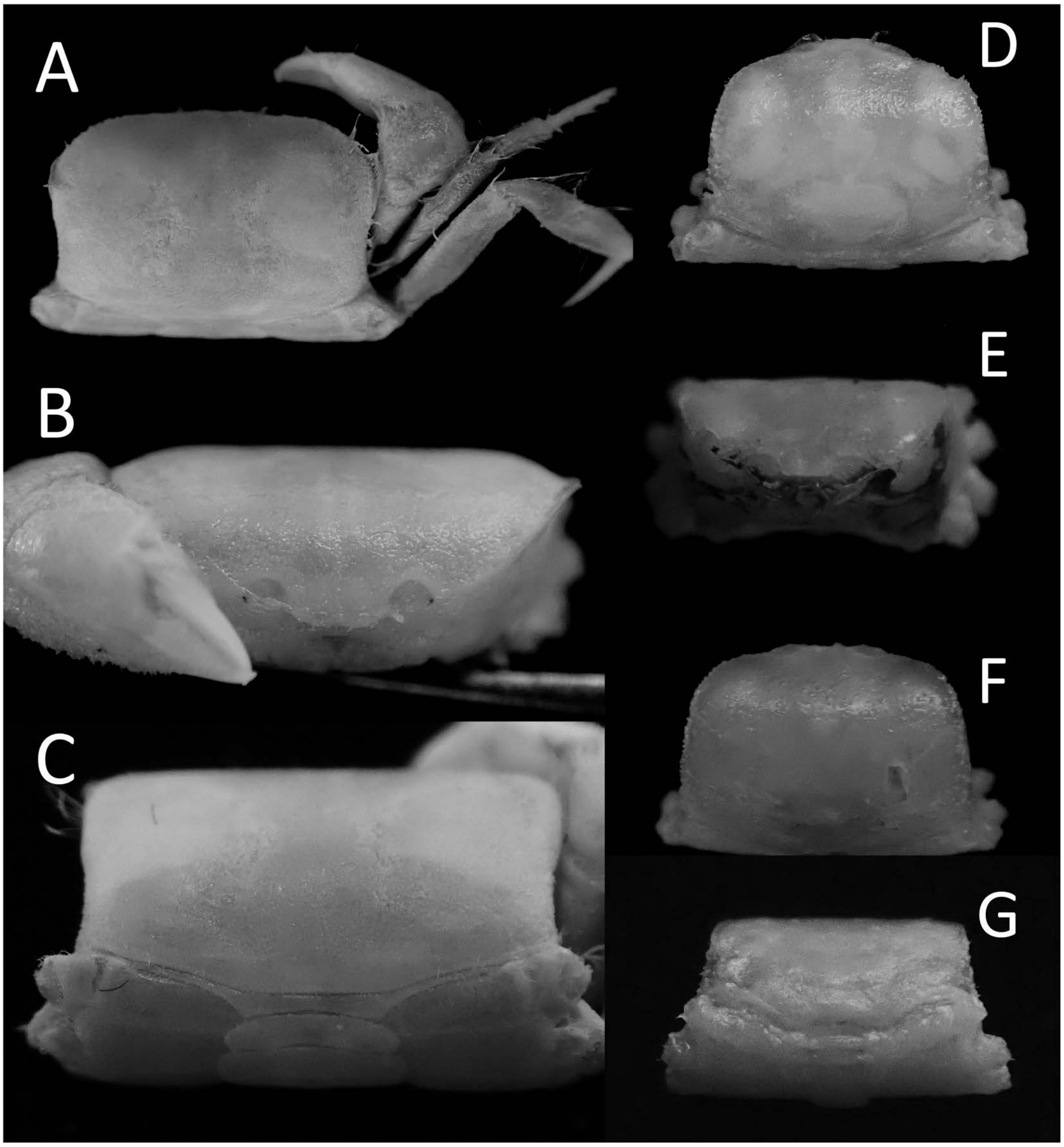

Fig. 12. A–C: *Typhlocarcinops decrescens* Rathbun, ♀ (NSMT-Cr 30993; cb 8.6 × cl 5.8 mm) in different views. D–G: *Microtopsis teschi* Ng and Castro, ♂ (NSMT-Cr 30995; cb 3.5 × cl 2.9 mm) (D–E), and ♀ (NSMT-Cr 30996; 4.0 × 3.1 mm) (F–G).

dredged, ca. 20 m in depth; 1 ♂ (cb 5.7 × cl 4.5 mm), NSMT-Cr 30994; July 13, 1980; K. Baba leg.

Remarks. Ng (2010) referred three *Pilumnus* species (*P. vermiculatus* A. Milne-Edwards, 1873, *P. labyrinthicus* Miers, 1884 and *P. penicillatus* Gordon, 1930) and two *Planopilumnus* species (*P. minabensis* Sakai, 1969 and *P. pygmaeus* Takeda, 1977) to his new genus *Vellumnus*. All the species have typical *Pilumnus*-type characters, but are distinctive in having the clearly-patterned symmetrical areolets or labyrinth-like pattern of setae on the carapace. Of five known species, *V. labyrinthicus*, *V. penicillatus* and *V. pygmaeus* are generally close to each other in

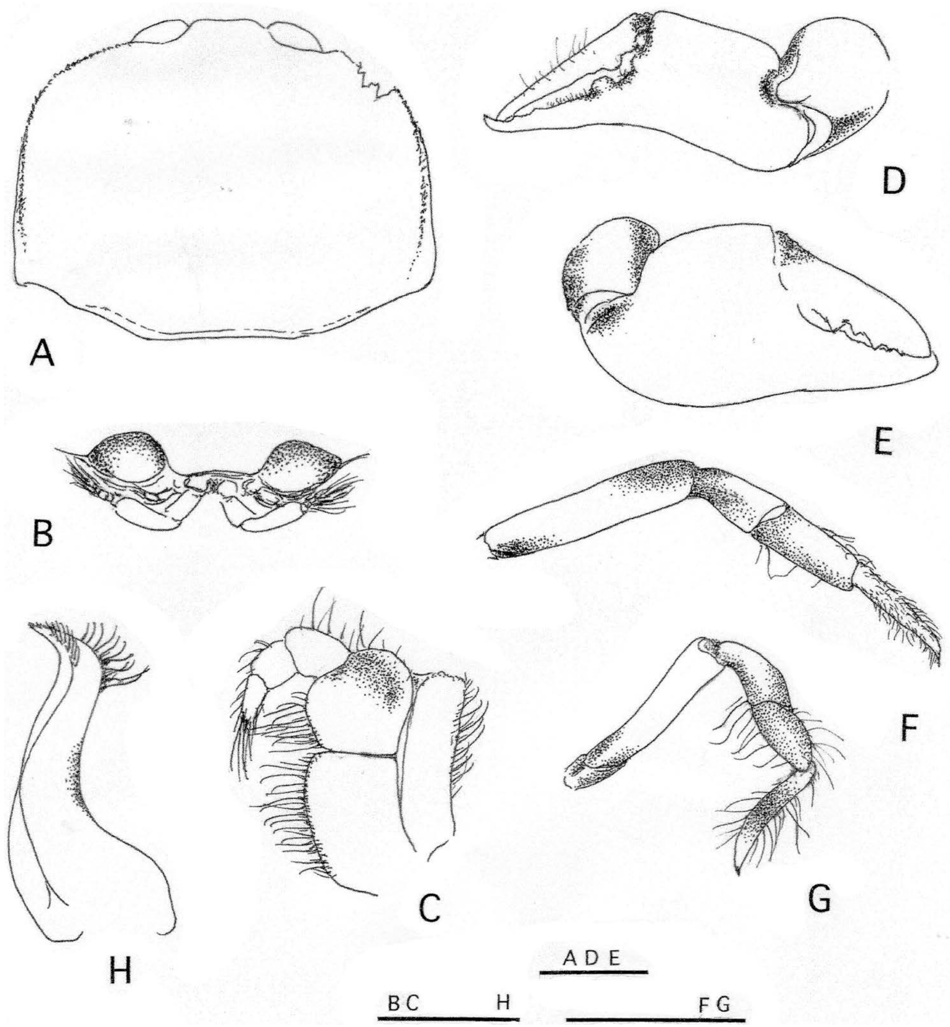

Fig. 13. *Microtopsis teschi* Ng and Castro, ♂ (NSMT-Cr 30995; cb 3.5 × cl 2.9 mm). Carapace (A), front-orbital region (B), left third maxilliped (C), left chela (D), right chela (E), right P4 (F), right P5 (G) and left G1 (H). Scales for ADE, BC, FG = 1 mm, H = 0.5 mm.

having the labyrinth-like pattern of setae, but their patterns are distinctly different from each other: Miers (1884) and Ng (2010) for *V. labyrinthicus*; Gordon (1931) for *V. penicillatus*; Takeda (1977) and Takeda and Komatsu (2018) for *V. pygmaeus*. The specimen at hand agrees well with *V. pygmaeus*, especially in having the heart-shaped protogastric region, although the epigastric regions of both sides are distinctly isolated by a median longitudinal groove from the median incision of the front.

Distribution. *Vellumnus pygmaeus* is known from the Ogasawara Islands, 41–105.6 m in depth, and now from the Palau Islands, ca. 20 m in depth, as new to Micronesian waters.

Family Chasmocarcinidae Serène, 1964
Genus ***Microtopsis*** Komai, Ng and Yamada, 2012
Microtopsis teschi Ng and Castro, 2016
(Figs. 12D–G, 13)

Microtopsis teschi Ng and Castro, 2016, pp. 85 (in key), 86, figs. 18B–C, 80C–F, 81G–N.

Material examined. Entrance to Toagel Mid in Arangel Channel, Babelthuap I., Palau Is., dredged, 40–50 m in depth, mud; 1 ♂ (cb 3.5 × cl 2.9 mm), NSMT-Cr 30995, 1 ♀ (4.0 × 3.1 mm), NSMT-Cr 30996; June 19, 1980; K. Baba leg.

Remarks. The genus *Microtopsis* is composed of two species, the type species, *M. takedai* Komai, Ng and Yamada, 2012, described on one male and two females from Okinawa Island in the Ryukyu Islands, 12–30 m in depth, and another species, *M. teschi* Ng and Castro, 2016, from the northwest of the Kei Islands, Indonesia, 90 m in depth. They are remarkably small, with the carapace breadth 3.1–3.6 mm in *M. takedai* and 1.9–2.1 mm in *M. teschi*, but well described and figured by the original authors of both species.

According to Ng and Castro (2016), *M. teschi* is distinguished from *M. takedai* by the features that the carapace dorsal surface is covered with small granules (rather smooth in *M. takedai*), the anterior part of the carapace lateral margin is fringed with spiniform granules (small blunt granules in *M. takedai*), the male telson is triangular in shape (rather semicircular in *M. takedai*), the male sixth pleonite is proportionally broader than in *M. takedai*), and the G1 is proportionally longer, with the median twist more substrantial and the tip more hook-shaped than in *M. takedai.* The figures of the present specimen (Figs. 12D–G, 13) agree well with the characters of *M. teschi* given by Ng and Castro (2016).

Distribution. As mentioned above, this species was originally reported from the northwest of the Kei Islands, Indonesia, 90 m in depth. This is the second report of this small species, and new to the Palau Islands.

Family Palicidae Bouvier, 1898
Genus ***Neopalicus*** Moosa and Serène, 1981
Neopalicus jukesii (White, 1847)

(Figs. 14C–F, 15C–E)

Cymopolia jukessii White, 1847b, p. 338, pl. 2 fig. 1.—Miers, 1874, p. 3, pl. 3 fig. 4.

Cymopolia carinipes Paulson, 1961 [1875], p. 79, pl. 9 fig. 4.

Palicus jukesii (White): Alcock, 1900, p. 451.—Calman, 1900, p. 29, pl. 1 figs. 9–13.—Rathbun, 1911, p. 240, pl. 19 fig. 9.

Neopalicus jukesi (White): Moosa and Serène, 1981, p. 42, fig. 7, pl. 2 fig. C.—Castro, 2000, pp. 550 (in key), 554, figs. 39b, 40b–c, 41c, 61c.

Material examined. Inside of Gesodokkuru Reef, off Arumonogui, Babelthuap I., Palau Is., ca. 20 m in depth, dead coral and sand; 1 ♂ (cb 8.2 × cl 7.3 mm), NSMT-Cr 30997, 1 ovig. ♀ (8.7 × 7.6 mm), NSMT-Cr 30998; July 13, 1980; K. Baba leg.—Same locality, 1 ovig. ♀ (6.7 × 5.5 mm), NSMT-Cr 30999; July 14, 1980; K. Baba leg.

Remarks. In the specimens examined, most of the chelipeds and ambulatory legs are detached, but the carapaces are good in condition. The carapace (Fig. 14C, F) is depressed as a whole, with rounded quadrilateral outline; the carapace posterolateral corner, about one-third the carapace lateral margin, is concave; the carapace dorsal regions are divided by shallow and smooth depressions and covered with scaly granules of various sizes. The front is prominent, with two smoothly convex lobes. The merus of the third maxilliped (Fig. 15C) is developed as a narrow lobe, with rounded distal margin, and concave along the inner margin to receive the base of the carpus. The G1 is illustrated by Moosa and Serène (1981) and Castro (2000) and enough to know the basic formation with the subterminal bulb and small branch about half as long as the acute terminal process. As the figures are somewhat variable according to the observation angles, the G1 is again illustrated in this paper (Fig. 15D–E). The G1s of this species and closely allied species, *N. contractus* (Rathbun, 1902) were shown by Castro (2000) who arranged the morphological differences between the two species in the table.

Distribution. As mapped and tabulated by Castro (2000) who examined numerous specimens from many localities, the geographical range is wide in the Indo-West Pacific from Madagascar and the Red Sea to Australia and New Caledonia, and northwards to Japan through Indonesian waters, the South China Sea, and the Philippines, 10–146 m in depth. New to the Palau Islands.

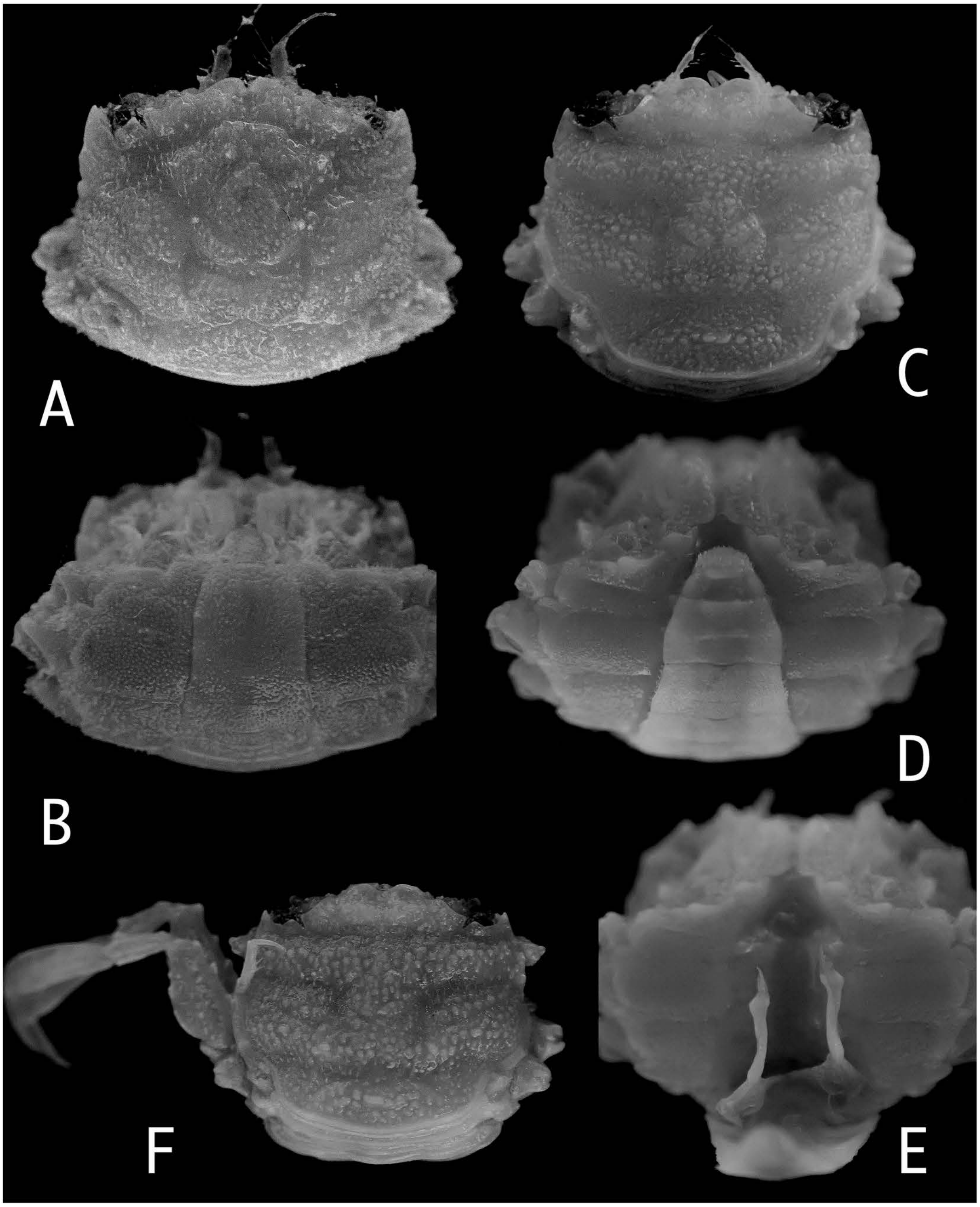

Fig. 14. A–B: *Palicoides whitei* (Miers), ♂ (NSMT-Cr 31000; cb 7.0 × cl 4.7 mm) in dorsal (A) and ventral (B) views. C–F: *Neopalicus jukesii* (White), ♂ (NSMT-Cr 30997; cb 8.2 × cl 7.3 mm) (C–E), and ovig. ♀ (NSMT-Cr 30998; 8.7 × 7.6 mm). Carapaces in dorsal view (C, F), abdomen (D) and G1 in situ (E).

Genus ***Palicoides*** Moosa and Serène, 1981

Palicoides whitei (Miers, 1884)

(Figs. 14A–B, 15A–B)

Cymopolia whitei Miers, 1884, p. 551, pl. 49 fig. C.

Palicus whitei (Miers): Alcock, 1900, p. 453.—Calman, 1900, p. 31, figs. 14–19.—Rathbun, 1911, p. 240, pl. 19 fig. 10.—McNeill, 1968, p. 82.

Palicoides whitei (Miers): Moosa and Serène, 1981, p. 46, figs. 9–10.—Castro, 2000, pp. 561 (in key), 565 (lit.),

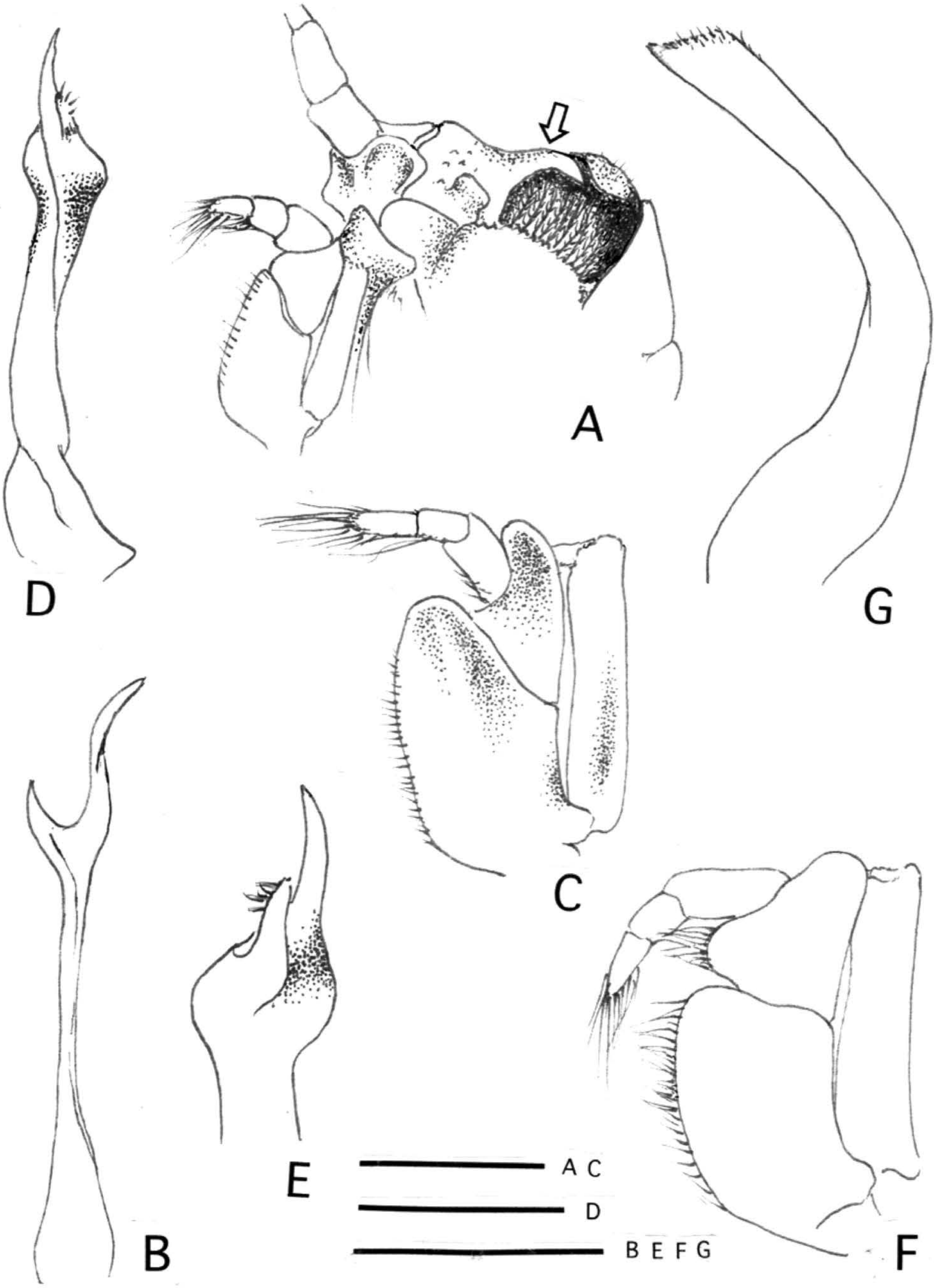

Fig. 15. A–B: *Palicoides whitei* (Miers), ♂ (NSMT-Cr 31000; cb 7.0 × cl 4.7 mm). Left orbital region, with third maxilliped, in ventral view (A) and right G1 in sternal view (B). Arrow in Fig. A shows a curved tubercle extending from the eyestalk to guard the cornea. C–E: *Neopalicus jukesii* (White), ♂ (NSMT-Cr 30997; cb 8.2 × cl 7.3 mm). Left third maxilliped (C), G1 in ventral view (D) and distal part of the same in sternal view (E). F–G: *Trierarchus squamosus* (Stephenson and Hudson, 1957), ♂ (NSMT-Cr 30977; cb 12.6 × cl 8.7 mm). Left third maxilliped (F) and left G1 in sternal view. (G). Scales for AC = 1 mm, BEFG = 2 mm, D = 0.5 mm.

figs. 42b, 43b–d, 61d.
Palicoides ternatensis Moosa and Serène, 1981, p. 50, fig. 11, pl. 3 fig. B.

Material examined. Off Kwannon, Koror I., Palau Is., dredged, with coralline algae; 1 ♂ (cb 7.0 × cl 4.7 mm), NSMT-Cr 31000; June 17, 1980; K. Baba leg.

Remarks. Both chelipeds, three pairs of the right ambulatory legs and the left third or fourth leg, and both of the reduced last pereopods are missing in the male at hand. However, it is safely identified as *Palicoides whitei* due to the detailed morphological differentiation from another representative of the genus, *P. longimana* (Miyake, 1936), based on numerous specimens by Castro (2000). The sculpture of the carapace dorsal surface is characteristic as shown in Fig. 14A. The distal part of the eyestalk is strongly developed as a curved tubercle to protect the cornea, indicated with arrow in Fig. 15A. The G1 of the present male agrees with the figures given by Calman (1900), Moosa and Serène (1981) and Castro (2000), in having the bifurcated distal part with the long and short flattened processes. In the present specimen, the G1 is typical in having the distal long process directed forward (Fig. 15B). Castro (2000) showed that the marginal armature of the processes becomes more complex in the specimens of larger sizes.

Distribution. The known localities are shown on the map by Castro (2000), from the Ryukyu Islands to Indonesian waters, Australia, and New Caledonia in the Pacific, and from the Andaman Islands to Madagascar and the Red Sea in the Indian Ocean. The recorded bathymetric depth is from 7 to 70 m. McNeill (1968) recorded the specimens dredged at the depth of 34–36 m, with thick *Halimeda* weed, off North Direction Island in the Great Barrier Reef. Castro (2000) wrote as "It is an inhabitant of coarse-sand sediments (particularly those rich in the coralline alga, *Halimeda*) that is associated with coral reefs." The specimen from the Palau Islands was also obtained together with coralline algae. New to the Palau Islands.

Acknowledgements

The present collection with dredging around the Palau Islands was conducted by Dr. Keiji Baba of Kumamoto University, now Professor Emeritus, who joined the research team from the National Science Museum, Tokyo, under the financial support of the Ministry of Education (now, the Ministry of Education, Culture, Sports, Science and Technology). The leader of the research team was the late Dr. Minoru Imajima of the Department of Zoology, National Science Museum, Tokyo (now, the National Museum of Nature and Science, Tokyo). My cordial thanks are tendered to Drs. K. Baba and M. Imajima, and also the important comments on the draft and the recent information about some species offered by Dr. Masayuki Osawa of the Estuary Research Center, Shimane University were greatly helpful for me to improve this paper.

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