

Five Subtidal Species of the Family Pilumnidae
(Crustacea, Decapoda, Brachyura) from the Philippines,
with Comparative Notes on *Pilumnus hirsutissimus*
Takeda and Komatsu, 2020, from Japan

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Abstract Five crab species of three genera in the family Pilumnidae, viz., *Heteropilumnus planus* Ng and Lin, 2023, *Pilumnus caerulescens* A. Milne-Edwards, 1873, an unidentified *Pilumnus* species (*P.* aff. *purpureus* A. Milne-Edwards, 1873), *P. neglectus* Balss, 1933, and *Viaderiana sentus* Ng, Dai and Yang, 1997, are recorded from subtidal waters of Luzon, the Philippines, with taxonomic notes and photographs of all the species. *Pilumnus caerulescens* is compared with its morphologically close species, *P. hirsutissimus* Takeda and Komatsu, 2020, from the Japanese mainland. Of the recorded five species, *H. planus*, *P.* aff. *purpureus*, and *V. sentus* are new to the Philippine carcinological fauna.

Key words: Crabs, taxonomy, *Pilumnus*, *Heteropilumnus*, *Viaderiana*, West Pacific, Philippine carcinological fauna.

Introduction

In most of the crabs, the shape of the male first gonopod is generally known as the most important criterion for the species identification, but not definitely available for the species of the family Pilumnidae due to the close similarity to one another. In this group distributed worldwide, it is furthermore noted that the density, length and nature of hairs or setae covering the carapace, chelipeds and ambulatory legs, and also the size, shape and sharpness of granules, spines or tubercles on the carapace anterolateral margin, chelipeds and ambulatory legs, are remarkably variable, with insufficient explanation and figures

in the old literature. The definitions of some genera are not always clear, without clear boundaries among the related genera, as partly mentioned in a column of the discussion in this paper. The known species are so many, but most of them are remained with only a few additional records and exact taxonomical and biogeographical knowledge.

The authors were confronted with the difficulties in the identification of five species of pilumnid crabs from subtidal diving sites of Luzon, the Philippines, leaving one *Pilumnus* specimen unidentified to a certain species; the remaining four species definitely identified are, as recorded in the following lines, *Heteropilumnus planus* Ng and Lin, 2023, *Pilumnus caerulescens* A. Milne-Edwards, 1873, *P. neglectus* Balss, 1933, and

Viaderiana sentus Ng, Dai and Yang, 1997. The species recorded are only five, but their records will contribute to the ready identification of the species and the biogeographical knowledge of pilumnid crabs not only from the Philippines but also from neighboring Taiwan and the Ryukyu Islands in southern Japan.

All the specimens from the Philippines are deposited in the collections of the National Museum of the Philippines (NMCR), and the specimens of *Pilumnus hirsutissimus* Takeda and Komatsu, 2020, for comparative study are in the Tsukuba Research Departments, National Museum of Nature and Science, Tokyo (NSMT). In this paper, the carapace breadth and length are abbreviated as cb and cl, respectively, and the male first gonopod as G1.

Taxonomic notes

Family PILUMNIDAE Samouelle, 1819

Genus *Heteropilumnus* De Man, 1895

Heteropilumnus planus Ng and Lin, 2023
(Figs. 1, 5A)

Heteropilumnus planus Ng & Lin, 2023, p. 102, figs. 1A–C, G, 2–4.

Material examined. Dive site “Secret Bay”, Anilao, Batangas, Luzon I., Philippines, 6 m depth, gravelly bottom; 1 ovig. ♀ (NMCR-92506; cb 10.9 mm, cl 7.3 mm); 30–IX–2018; H. Takakura leg.

Diagnosis. Carapace (Fig. 1A) quadrilateral rather than oval in contour; dorsal surface (Fig. 1A–B) flattened, densely covered with short soft hairs; frontal margin fringed with a row of long club-shaped hairs; anterolateral margin cut into four weakly convex lobes with three small, but distinct notches; external orbital angle poorly developed, confluent with anterior end of first lobe. Chelipeds (Fig. 1A) heavily covered with shaggy hairs of various lengths disguising their details. Ambulatory legs (Fig. 1A) marginally fringed with numerous hairs similar to those of chelipeds; upper surface of last pair covered with

short soft hairs similar to those of carapace dorsal surface.

Color in life (Fig. 5A). The carapace ground color is more or less pinkish, and the dense hairs of various lengths covering the carapace, chelipeds and ambulatory legs are grayish. Upper surfaces of first three pairs of the ambulatory legs are nearly naked and pinkish creamy with some reddish blurred patterns.

Remarks. This species was first identified as *Heteropilumnus hirsutior* (Lanchester, 1900) characterized by short soft hairs and long club-shaped hairs covering the carapace dorsal surface, chelipeds and ambulatory legs which are well represented by Ng and Tan (1988) and Maenosono (2019). As already pointed by them, the general appearance of this species is close to those of two congeners, *Heteropilumnus ciliatus* (Stimpson, 1858) and *H. satriai* Yeo, Rahayu and Ng, 2004. In *H. hirsutior*, the carapace is said to be proportionally wider, and the carapace anterolateral margin is divided into four lobes, the median two of which are weakly toothed and armed with some marginal spinules, differing from the more developed, but unarmed two lobes in *H. ciliatus* as seen in Maenosono (2019, fig. 2B), and also from the indistinct two lobes margined with spinules in *H. satriai*. In the ovigerous female examined, both chelipeds are heavily covered with club-shaped hairs of variable lengths.

However, very recently, Ng and Lin (2023) described a new *Heteropilumnus* species from Taiwan, *H. planus*, based on comparison with the specimens of *H. hirsutior* from Singapore including the male holotype and one of the specimens from the Ryukyu Islands identified as *H. hirsutior* by Maenosono (2019). Both species are really similar in the general formation of the carapace, chelipeds and ambulatory legs, but Ng and Lin (2023) recorded the differences in 1) the carapace (higher with the dorsal surface gently convex in frontal view in *H. hirsutior*/ lower, with the dorsal surface distinctly flatter in frontal view in *H. planus*), 2) the first anterolateral tooth of the carapace (more truncate, and the following

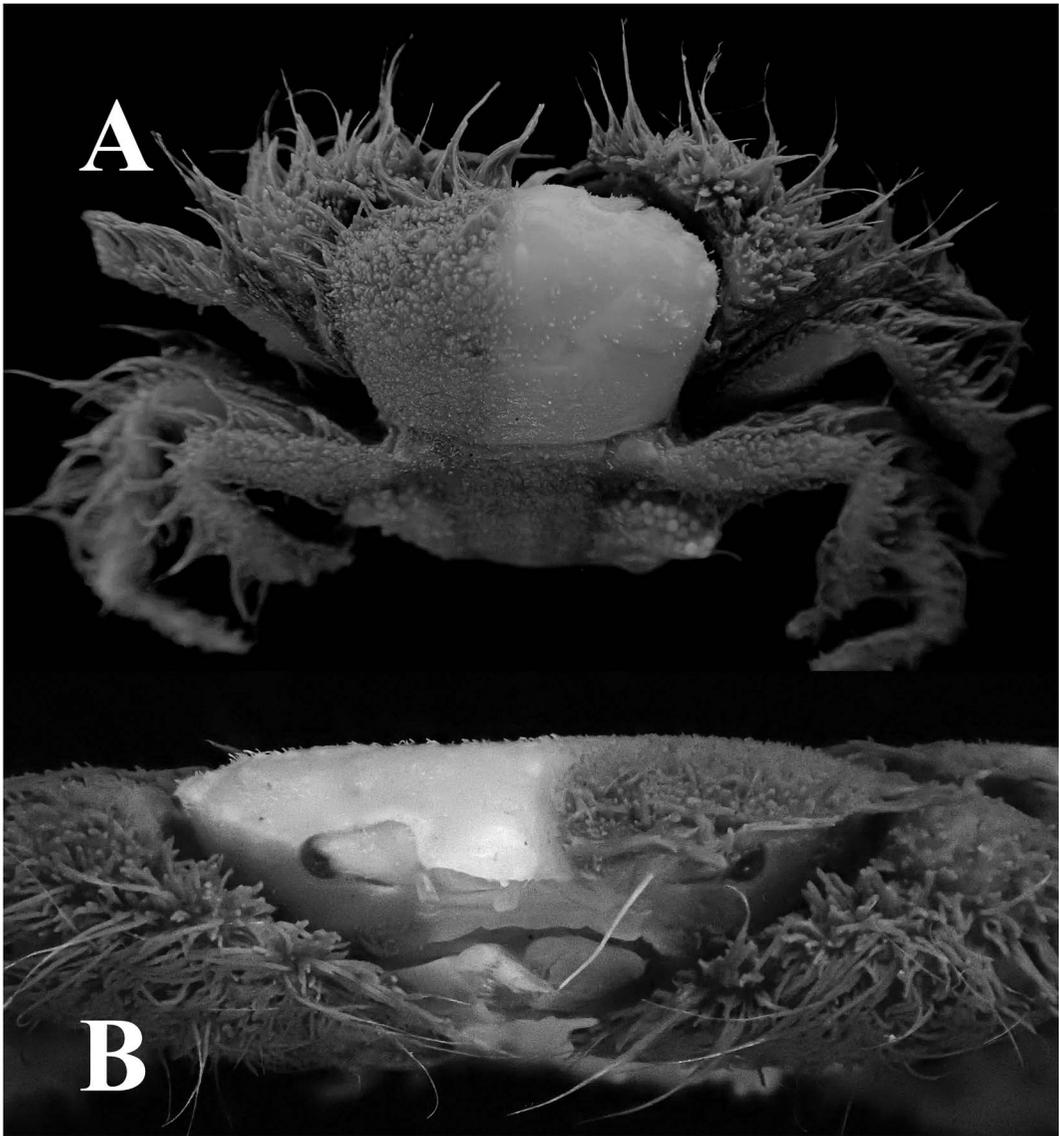


Fig. 1. *Heteropilumnus planus* Ng and Lin, ovig. ♀ (NMCR-92506; cb 10.9 × cl 7.3 mm). A: Dorsal view with the right half denuded. B: Frontal view to show the flattened carapace dorsal surface and the indented posterior margin of the epistome.

teeth separated by deeper clefts in *H. hirsutior*/ more triangular in shape, with the teeth separated by concavities in *H. planus*), 3) two median lobes of the epistome posterior margin (median lobes forming one triangular structure, joining lateral part as a concavity and separated by a narrow fissure in *H. hirsutior*/ two lobes project downwards, truncate with each margin concave and separated from the lateral part by a promi-

nent V-shaped cleft in *H. planus*), 4) the chelipeds of the adult male (more or less homochealous, with the granulated outer surface of the major palm in *H. hirsutior*/ heterochealous, with the smooth outer surface of the major palm in *H. planus*), 5) the ambulatory meri (shorter and stouter in *H. hirsutior*/ relatively longer and more slender in *H. planus*), 6) the male telson (distinctly more elongate and linguiform in *H. hirsu-*

tior/ more rounded and proportionately shorter in *H. planus*), and 7) the G1 (uniformly sinuous, with the distal part directed more laterally in *H. hirsutior*/ less sinuous, with the proximal half almost straight and only the distal half curved, with the distal part distinctly hooked downwards in *H. planus*). All of these differences may be not always clear and specific, indicating the importance of direct comparison of the specimens for definite identification. As regards the present Philippine ovigerous female, only the items 1 (Fig. 1B), 2 (Fig. 1A) and 3 (Fig. 1B) are applicable for comparison with the figures (Figs. 2B–C, E, 4B–E) in the original description of *H. planus*, and with Fig. 5B–C of *H. hirsutior* given by Ng and Lin (2023), but as a result, its first identification was changed from *H. hirsutior* to *H. planus*, with aid of the good photographs by Ng and Lin (2023).

Distribution. The type locality of *H. planus* is Taiwan, and the closest relative, *H. hirsutior* is known from Singapore and many local places of Okinawa-jima Island, the Ryukyu Islands. The present record extended the geographical range of *H. planus* from Taiwan southwards to the Philippines.

Genus *Pilumnus* Leach, 1815

Pilumnus caerulescens A. Milne-Edwards, 1873
(Figs. 2, 5B)

Pilumnus caerulescens A. Milne-Edwards, 1873, p. 242, pl. 9 fig. 3. —Rathbun, 1910, p. 355, pl. 1 fig. 15. —Takeda & Miyake, 1968, pp. 6 (in key), 30, fig. 7, pl. 2 fig. D.

Pilumnus forskalii caerulescens: Balss, 1933, p. 14.

Material examined. Dive site “Secret Bay”, Anilao, Batangas, Luzon I., Philippines, 3 m depth, gravelly bottom; 1 ♂ (NMCR-92507; cb 11.5 mm including lateral spines, cl 14.0 mm); 2-X-2018; H. Takakura leg.

Diagnosis. Carapace dorsal surface (Fig. 2A) strongly convex in both directions, distinctly separated into regions, with a tuft of stiff, long hairs together with some short setae around each granule; anterolateral margin with four teeth includ-

ing external orbital tooth tipped each with a spiniform spinule; subhepatic region with a stout tooth and some accessory granules. Both chelipeds (Fig. 2A–B) unequal; carpus with scattered conical granules of good sizes fringed and interspaced with short and long setae and hairs; larger palm with conical granules distinctly beaded to some longitudinal lines on outer upper part. Ambulatory legs (Fig. 2A–B) comparatively stout, heavily fringed with stiff hairs of variable lengths on margins.

Color in life (Fig. 5B). The carapace surface is dark brownish, making the camouflage strongly effective against the surroundings together with long stiff, grayish hairs. The morphologically close congener, *Pilumnus hirsutissimus* Takeda and Komatsu, 2020 (Fig. 3) is rather brick red with irregular, darker red speckles on the carapace and cheliped margins.

Remarks. This species has only been recorded without comments in most of the old literature. However, the present male specimen from the Philippines agrees well with the description of *Pilumnus caerulescens* by Takeda and Miyake (1968) in the distinct dorsal areolation of the carapace, the arrangements of tufts of some setae and hairs arising from the bases of granules on the areolae, the four sharp anterolateral teeth tipped each with a horny spinule, and the stout subhepatic tooth associated with some granules.

In the male from the Philippines, the hairs covering the carapace are long and dense, making the rough appearance. Takeda and Miyake (1968) mentioned that the tufts of hairs are typically rather sparse, but variable individually. The ambulatory legs are unarmed in the present male, whereas Takeda and Miyake (1968) mentioned that the first three pairs have a small terminal granule on each merus, and usually a very small terminal granule on each carpus. Considering such subtle comments on granules or spinules, the presence or absence of the “small terminal granule” of each ambulatory merus and carpus may be also referable to the individual variation.

For the comparative study with *P. caerulescens*, the authors examined three males and one

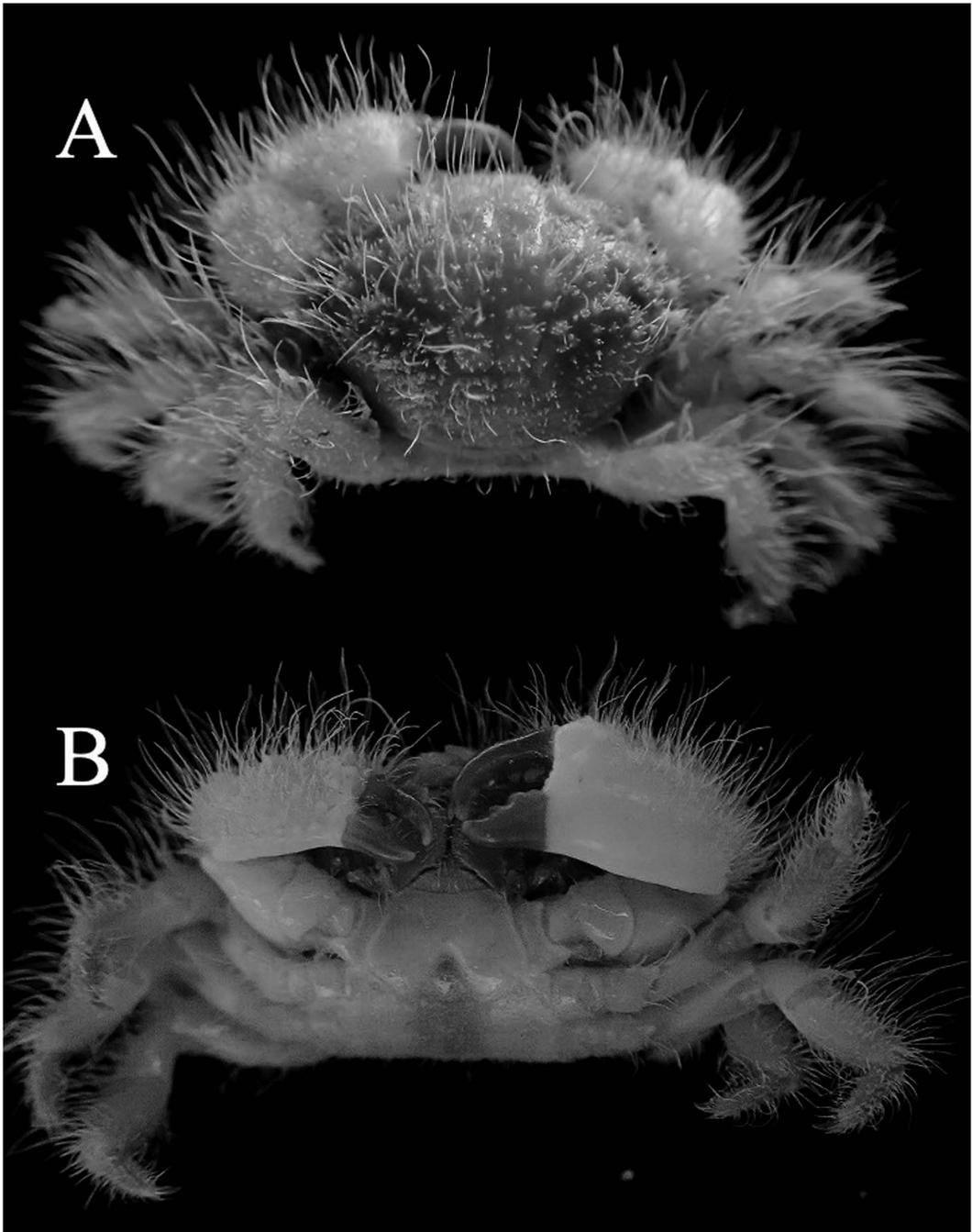


Fig. 2. *Pilumnus caeruleus* A. Milne-Edwards, ♂ (NMCR-92507; cb 11.5×cl 14.0mm). Habitus in dorsal (A) and ventral (B) views.

female identified as *P. hirsutissimus* (1 ♂, NSMT-Cr 31481, cb 7.1×cl 5.0mm; 1 ♂, NSMT-Cr 31482, 8.3×6.2mm, Fig. 4B; 1 ♂, NSMT-Cr 31483, 10.2×8.0mm, Figs. 3, 4A, C-E; 1 ♀, NSMT-Cr 31484, 13.8×cl 9.6mm) from Ose-zaki, the northwestern coast of the Izu Peninsula in



Fig. 3. *Pilumnus hirsutissimus* Takeda and Komatsu, ♂ (NSMT-Cr 31483; cb 10.2×cl 8.0mm) from Suruga Bay. Posture in field (A), and habitus in dorsal view (B).

Suruga Bay, Pacific coast of central Honshu, Japan, at 4.5–6.5 m depth. In the original description of *P. hirsutissimus* by Takeda and Komatsu (2020) based on two females and one ovigerous female from the Ryukyu Islands, southwestern

Japan, the species was compared only with *P. kempfi* Deb, 1987, and without comments on *P. caerulescens* which is also heavily covered with long hairs on the carapace, chelipeds and ambulatory legs. The specimens from Suruga Bay

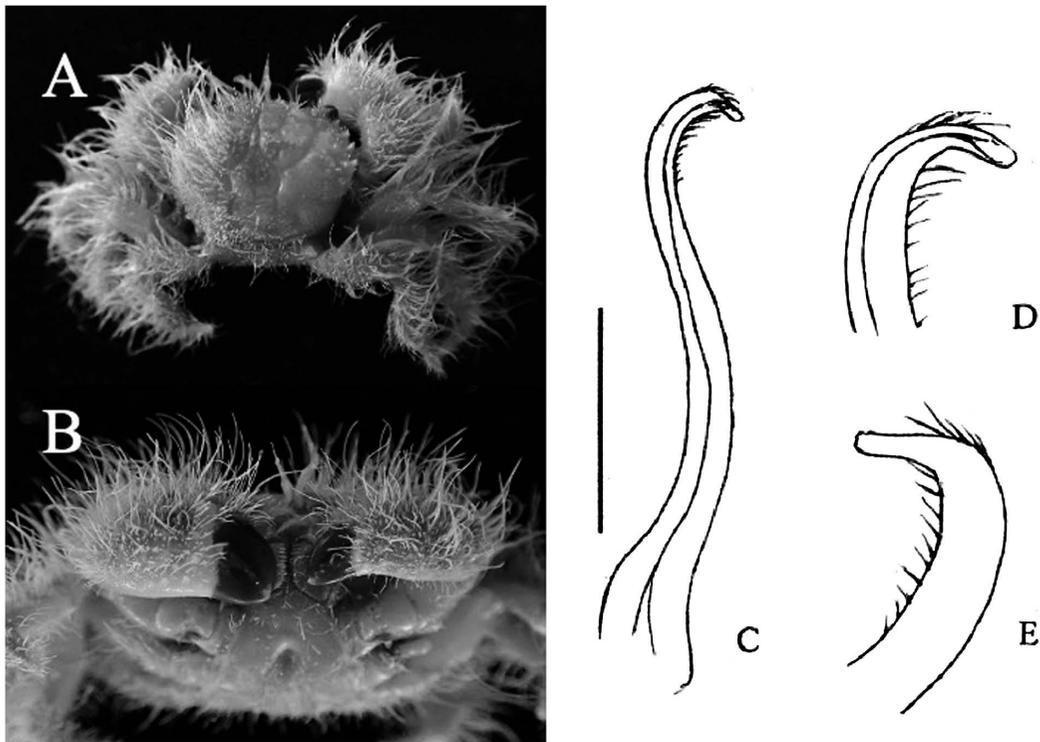


Fig. 4. *Pilumnus hirsutissimus* Takeda and Komatsu, ♂ (A, C–E: NSMT-Cr 31483; cb 10.2 × cl 8.0 mm), ♂ (B: NSMT-Cr 31482; 8.3 × 6.2 mm) from Suruga Bay. Habitus in dorsal view (A), chelae in outer view (B), Left G1 in ventral view (C), enlarged distal part of left G1 in ventral (D) and sternal (E) views. Scale for C = 2 mm.

agree well with the type specimens of *P. hirsutissimus* in the numerous, long hairs completely disguising the details of the carapace, chelipeds and ambulatory legs, and when denuded, the carapace dorsal surface is well sculptured into areolae and covered with sparse small granules (Fig. 4A). The hairs of *P. hirsutissimus* (Fig. 4A–B) are longer and denser than those of *P. caerulescence*, and arise singularly around the granules, unlike consisting of tufts which make non-rough appearance as in *P. caerulescence* (Fig. 2A).

The male first gonopod (G1) of the present *P. hirsutissimus* specimen is fully developed (Fig. 4C–E), and the median part is strongly convex along the sternal surface of the abdominal cavity; the distal beak is short and subtruncated at the tip, without special taxonomic importance. However, the tip of the distal beak of G1 is subtruncated in *P. hirsutissimus*, whereas it is narrow and sharp in *P. caerulescence* as illustrated by

Takeda and Miyake (1968: fig. 7).

Distribution. Tropical and subtropical Indo-West Pacific, from the Andaman Islands to Australia and New Caledonia, and also from the Gulf of Thailand and Micronesian islands to the Ryukyu Islands. Records from the Philippines include Miers (1886: 155, Mindanao), Balss (1933: 24, Sulu Sea), Estampador (1937: 530, Mindanao), Garth and Kim (1983: 693, south side of Marongas I., vicinity of Jolo, scattered coral, sand).

Pilumnus neglectus Balss, 1933

(Figs. 5C, 6)

Pilumnus neglectus Balss, 1933, p. 25, fig. 3.

Parapilumnus euryfrons Garth & Kim, 1983, p. 704, fig. 10.

Pilumnus guinotae Takeda & Miyake, 1968: Ng, Dai and Yang, 1997, p. 146, fig. 1.

Material examined. Dive site “Dive 7000”,

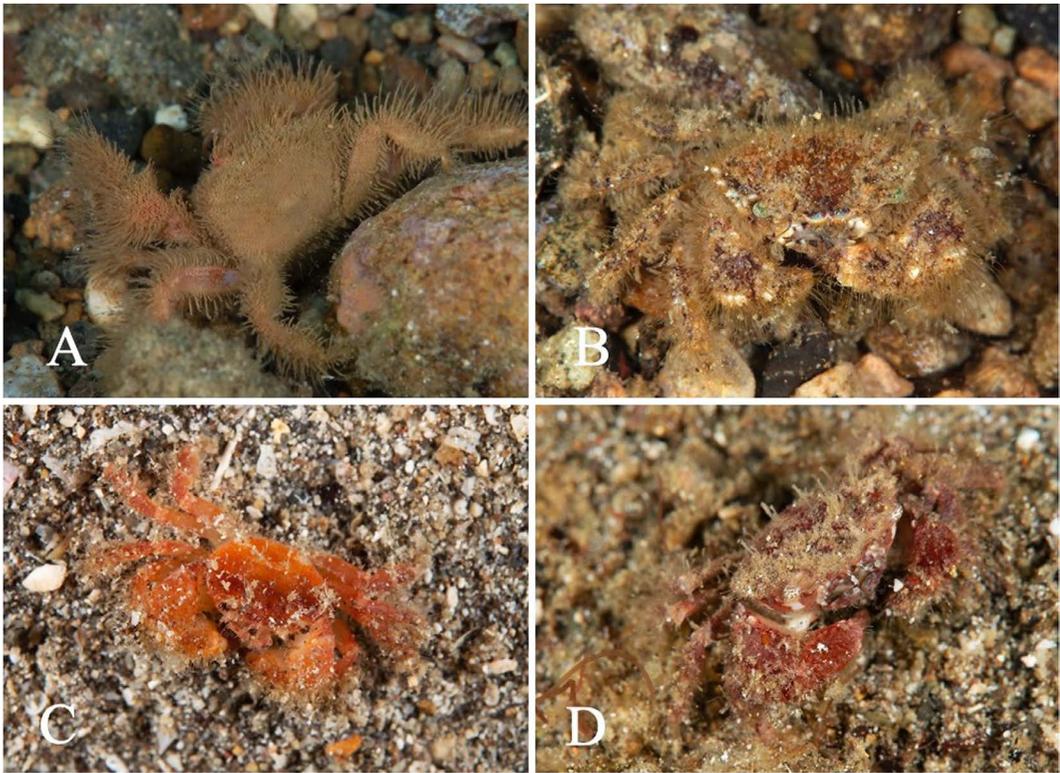


Fig. 5. Posture in field, with color in life. A: *Heteropilumnus planus* Ng and Lin, ovig. ♀ (NMCR-92506; cb 10.9 × cl 7.3 mm). B: *Pilumnus caeruleus* A. Milne-Edwards, ♂ (NMCR-92507; cb 11.5 × cl 14.0 mm). C: *Pilumnus neglectus* Balss, ♂ (NMCR-92508; cb 8.3 × cl 6.9 mm). D: *Pilumnus* aff. *purpureus* A. Milne-Edwards, ovig. ♀ (NMCR-92510; cb 11.4 × cl 7.9 mm).

Anilao, Batangas, Luzon I., Philippines, 7 m depth, coral reef; 1 ♂ (NMCR-92508; cb 8.3 mm including lateral teeth, cl 6.9 mm); 2–X–2018; H. Takakura leg.

Diagnosis. Carapace (Fig. 6A) relatively narrow, with tufts of some short and long hairs; dorsal surface ill-defined, without granules; anterolateral margin armed with three spiniform teeth behind sharp external orbital angle; subhepatic region granulated. Ambulatory legs (Fig. 6A) unarmed, fringed with long hairs.

Color in life (Fig. 5C). The carapace, chelipeds and ambulatory legs are entirely brick red, with darker anterior half of the carapace dorsal surface. The hairs are yellowish brown. In spirit, the colors faded to be entirely creamy yellow.

Remarks. In the revision of the genus *Parapilumnus* Kossmann, 1877, Ng (2002) mentioned

that *Parapilumnus euryfrons* Garth and Kim, 1983, is a junior subjective synonym of *Pilumnus neglectus* Balss, 1933, based on examination of the type specimens of both species. The specimen from the Philippines at hand agrees quite well with the line drawing of the carapace by Garth and Kim (1983: fig. 10a), in that the dorsal surface bears scant tufts of short and long hairs mainly on the protogastric and anterior branchial regions (Fig. 6A); the three anterolateral teeth are sharp, subequal or the last is slightly smaller than the first two teeth, and curved obliquely forward and directed more outward in the second and third teeth (Fig. 6A); the subhepatic region is minutely granulated, and as rightly figured by Garth and Kim (1983), the subhepatic region is visible in dorsal view between the external orbital and first anterolateral teeth. The character-

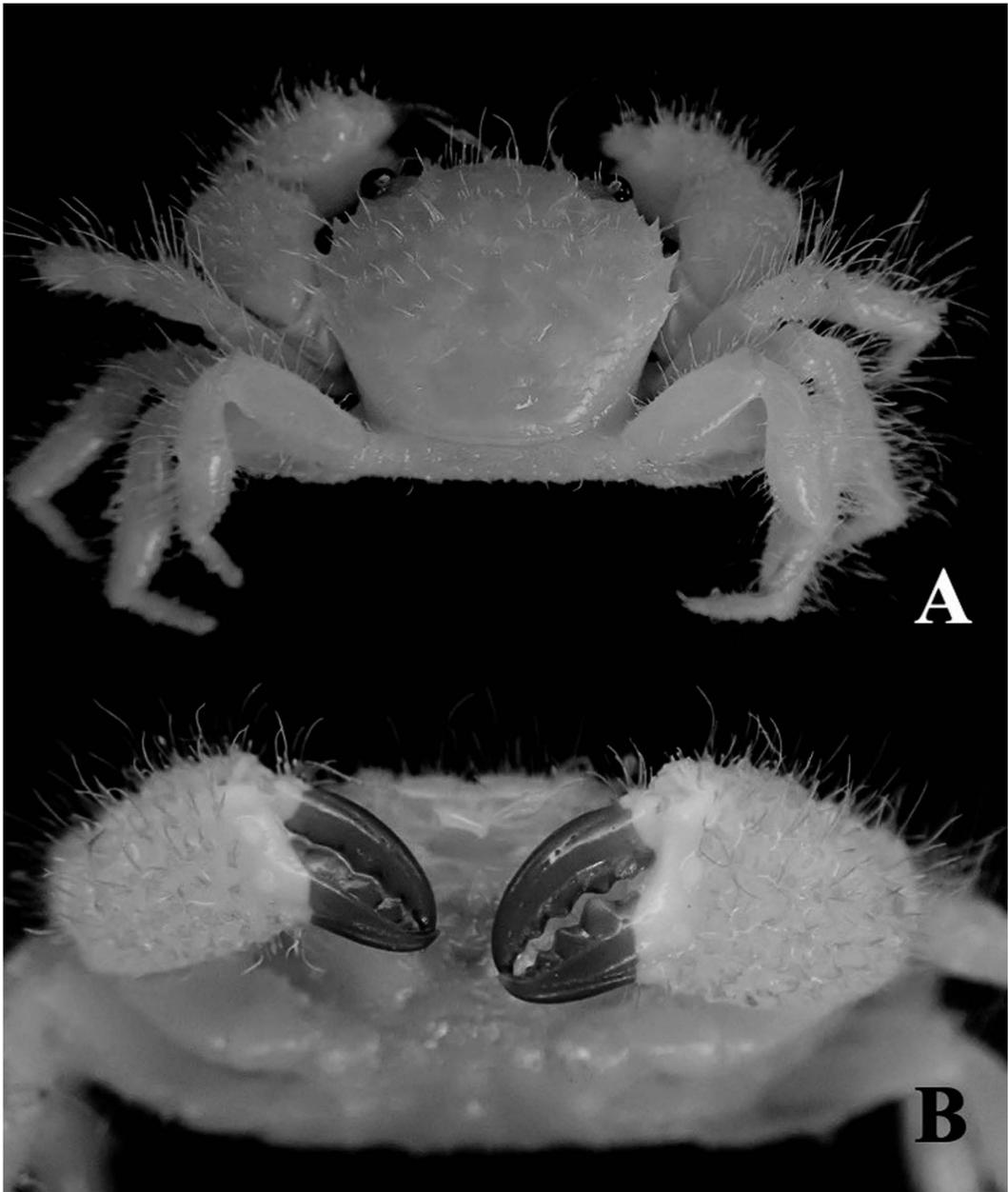


Fig. 6. *Pilumnus neglectus* Balss, ♂ (NMCR-92508; cb 8.3 × cl 6.9 mm). Habitus in dorsal view (A), and both chelae in outer view (B).

istic movable finger having a longitudinal deep groove throughout the outer surface (Fig. 6B) is figured by Balss (1933) and also by Garth and Kim (1983).

The specimens recorded as *Pilumnus guinotae* Takeda and Miyake, 1968, from the Nansha

Islands in the South China Sea by Ng *et al.* (1997), is probably misidentified and really referable to *P. neglectus*. Although the type specimen of *P. neglectus* was examined by Ng *et al.* (1997), and the differences of the Nansha specimens from the type specimen are noted as having

a more squarish carapace, the external orbital tooth being more acutely triangular and the fingers of the chelae are more strongly bent. In spite of the differences mentioned, it is difficult to evaluate the identification to *P. guinotae* based on the figures of an ovigerous female from three specimens (two ovigerous females and one juvenile). In the specimens from the Nansha Islands, the subdistal edge of the dorsal margin of each ambulatory merus is usually rounded and sometimes weakly angulated, and considered to be a small, low tooth, but in *P. guinotae*, each merus of the first three ambulatory legs is armed with a small, terminal, not subterminal, tooth, as indicated in the original description of the species by Taleda and Miyake (1968). According to the original description of *Parapilumnus euryfrons* by Garth and Kim (1983), the ambulatory legs are cited as having no granules and spines.

Distribution. Balss (1933) examined two males from Amboina recorded as *P. cursor* A. Milne Edwards, 1873, by De Man (1888), and in addition, probably considerable numbers of the specimens from tropical western Pacific islands (Bougainville Island, the Solomon Islands; New Pomerania Island, the Bismarck Archipelago; Macclesfield Bank in the South China Sea). The record by Garth and Kim (1983) as *P. euryfrons* was from off southern Luzon, the Philippines, 23 fms depth.

Pilumnus* aff. *purpureus

A. Milne-Edwards, 1873

(Figs. 5D, 7)

Pilumnus purpureus A. Milne-Edwards, 1873, p. 246, pl. 120 fig. 5. —Takeda & Miyake, 1968, pp. 6 (in key), 24, fig. 5a-c, pl. 2 fig. B.

Material examined. Dive site "Hydee's", Anilao, Batangas, Luzon I., the Philippines, 15 m depth, sandy/muddy bottom; 2-X-2018; 1 ovig. ♀ (NMCR-92510; cb 11.4 mm including lateral spines, cl 7.9 mm); H. Takakura leg.

Remarks. The ovigerous female examined (Fig. 7) is characterized by the following features: 1) The carapace is strongly convex in both

directions, and comparatively wide, with 1.43 in ratio of width to length; 2) the carapace surface is smooth, without granules, ill-defined, only with shallow furrows separating the gastric and cardiac regions, and covered with short hairs interspaced with sparse longer hairs; 3) a small tuft of some feathered hairs at the anterior part of each protogastric region; 4) the frontal region is shallowly isolated from the carapace main part with a transverse furrow behind the supraorbital margin; 5) the frontal margin is declivous, cut into two truncated lobes by a median, small but distinct V-shaped notch, and fringed with small granules along whole length; 6) the lateral end of each frontal lobe is produced to be triangular lobe separated from the main lobe by a wide depression and from the supraorbital angle by a shallow and narrow depression; 7) the supraorbital margin is narrowly and slightly raised, and cut into three parts by a median small notch and an outer distinct notch; 8) the external orbital angle is tuberculate, with a corneous spinule, similar but slightly smaller than the carapace anterolateral teeth; 9) the infraorbital margin is fringed finely with spinules throughout the length, with a weakly angulated inner angle; 10) the carapace anterolateral margin behind the external orbital angle is armed with three, more or less papillate teeth tipped each with a stout corneous tubercle, which are regarded as spines; 11) the carapace anterolateral spines are subequal, or the first is slightly smaller than the posterior two teeth, being directed obliquely forwards; 12) no subhepatic tubercles or granules; 13) both chelipeds are distinctly unequal, bearing short and long hairs, and with stout tubercles except about distal lower half of the outer surface of the larger palm; 14) the ambulatory legs are comparatively stout, provided with short and long hairs, but unarmed.

The characters mentioned above agree mostly with those of *Pilumnus purpureus* A. Milne-Edwards, 1873, except for some details concerning the carapace contour and anterolateral armature. In the original figure of the species by A. Milne-Edwards (1873), the carapace anterolat-

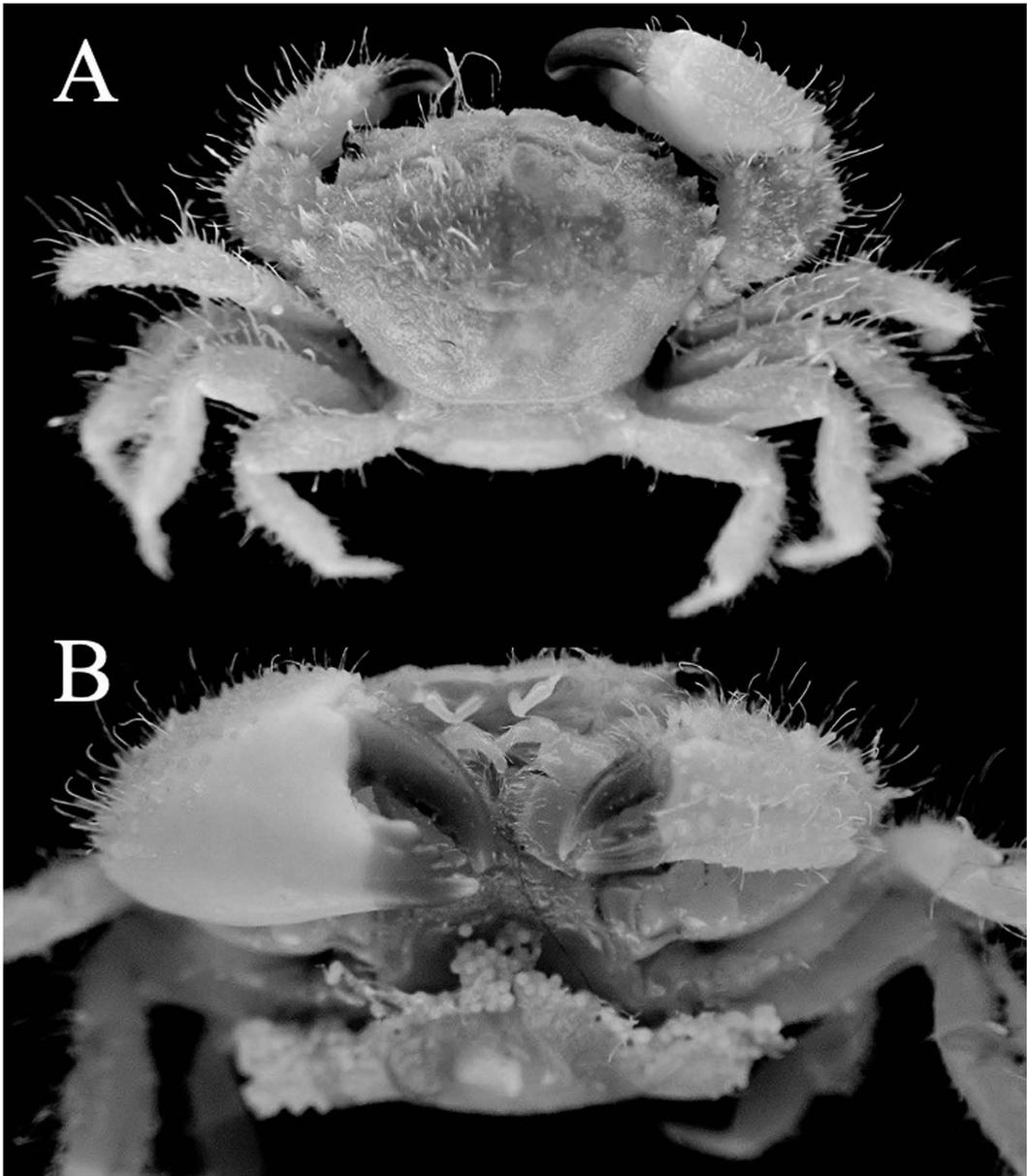


Fig. 7. *Pilumnus* aff. *purpureus* A. Milne-Edwards, ovig, ♀ (NMCR-92510; cb 11.4 × 7.9 mm). Habitus in dorsal view (A), and both chelae in outer view (B).

eral margin behind the external orbital angle is illustrated as having three sharp spines, not tubercles tipped with a small horny spinule. According to Takeda and Miyake (1968), which is the sole record of *P. purpureus* since the original description, the carapace anterolateral spines are rather stout, curved forward and increase in

size from the first to the third, and the subhepatic region is minutely granulated, one of which is prominent and visible from dorsal side but slightly smaller than the external orbital spine. Another discrepancy is the carapace proportion; it is comparatively wider in the present male from the Philippines than Takeda and Miyake's

(1968) specimens from the Ryukyu Islands (1.43 versus 1.30–1.37 in ratio of cb to cl).

Distribution. *Pilumnus purpureus* is known only from New Caledonia, and Okinawa-jima and Amami-Oshima Islands in the Ryukyu Islands.

Genus *Viaderiana* Ward, 1942

Viaderiana sentus Ng, Dai and Yang, 1997

(Figs. 8–9)

Viaderiana sentus Ng, Dai & Yang, 1997, p. 156, fig. 6.

—Ng, Lin & Ho, 2018, p. 7, figs. 10–13.

Material examined. Dive site “Secret Garden”, Anilao, Batangas, Luzon I., Philippines, 4m depth, sandy/muddy bottom; 1 ♂ (NMCR-92509; cb 8.4mm, cl 6.4mm); 30-IX-2018; H. Takakura leg.

Diagnosis. Carapace (Fig. 8A–B) rounded quadrate; dorsal surface moderately convex in both directions, smooth, without granules, shallowly divided into regions by indistinct linear furrows; hairs short, soft, regularly cover whole surface, but not disguise areolation; some tufts of longer, club-shaped hairs on frontal, protogastric, branchial regions, a similar tuft of some club-shaped hairs at each lateral end of transverse furrow in front of cardiac region; external orbital angle armed with a sharp, forward-directed spine; infraorbital margin armed with four sharp, equidistant spines along inner part, inner infraorbital angle terminating in a sharp spine; antero-lateral margin armed with three sharp spines on conical or weakly bulged bases behind external orbital spine, last spine smaller than others, subequal to external orbital spine. Both chelipeds (Fig. 9A) covered with short hairs interspaced with long hairs, some long hairs club-shaped; carpus armed with several distant, dark-colored, curved spines on outer surface, inner angle strongly produced, elongated, tipped with curved, dark-colored spine; palm also armed with sharp, curved, distant spines on outer surface, in smaller chela, spines more prominent than in larger chela. Ambulatory legs (Fig. 9B–E) moderately long; each merus armed with one to

three sharp spines on anterior margin and a terminal spine; each carpus of all pairs armed anteriorly with a terminal, strong erect spine. G1 (Fig. 9F, G) long, not strongly curved, with distal beak comparatively long and sharply pointed at tip.

Color in life. The carapace dorsal surface is dark reddish brown, with some bunds of long feathered, grayish or whitish hairs symmetrically arranged. The chelipeds and ambulatory legs are marked finely with light purplish reticulate patterns.

Remarks. This species was fully described and figured in the original description by Ng *et al.* (1997), to which the present specimen agrees well in all the respects. Ng *et al.* (2008) treated the genus *Viaderiana* to include 17 valid species; among them, *V. sentus* is characteristic especially in the arrangement of anterior marginal spines of the meri and carpi of the ambulatory legs.

Distribution. Previously recorded from the Nansha Islands in the South China Sea and southern Taiwan (Ng *et al.*, 1997, 2018). Another *Viaderiana* species from the Philippines is *V. kasei* Takeda and Manuel, 2003, from Bohol, about 150m depth, in which the ambulatory legs are remarkably long, with the third pair exceeding three times the carapace length.

Discussion

Garth and Kim (1983) reported on the crabs of the family Xanthidae s.l. from the Philippines collected by the U.S. Fish Commission steamer *Albatross* in 1908–1909. In this paper, the family Pilumnidae was ranked as one of the subfamilies then considered, with 12 species of *Pilumnus*, 1 species of *Planopilumnus*, 5 species of *Actumnus*, 1 species of *Neoactumnus*, 4 species of *Glabropilumnus*, 2 species of *Pilumnopeus*, 3 species of *Parapilumnus*, and 1 species of *Heteropanope*. Of 29 species of them, 6 new species, *Actumnus granotuberosus*, *Neoactumnus unispina*, *Glabropilumnus spinidentatus*, *Parapilumnus euryfrons*, *P. nefissurus* and *P. tubeculosus*, were fully described, with line drawings, but

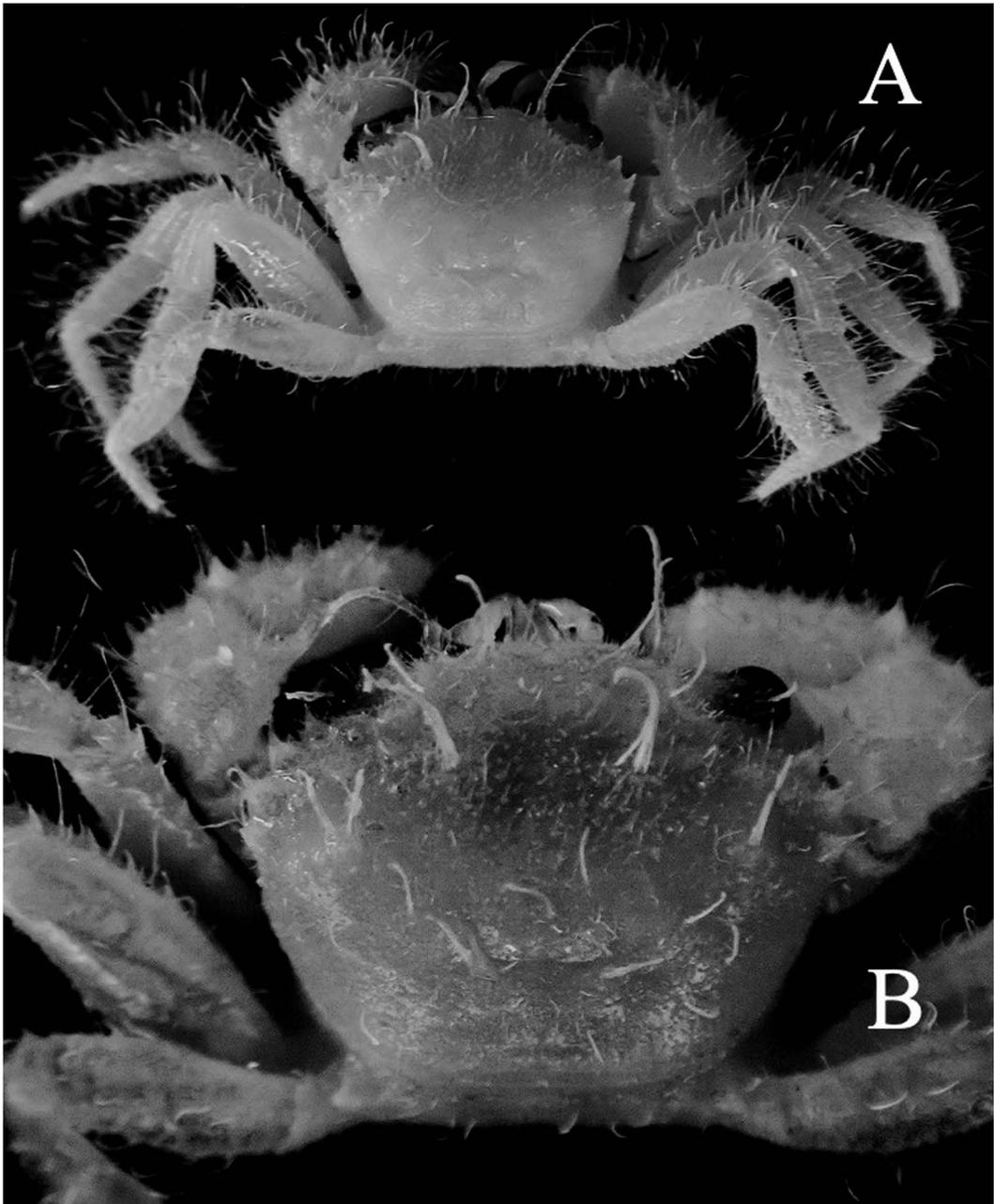


Fig. 8. *Viaderiana sentus* Ng, Dai and Yang, 1 ♂ (NMCR-92509; cb 8.4 × cl 6.4 mm). Habitus in dorsal view (A), and carapace, enlarged (B). In Fig. A, the right half of the carapace is denuded, with the horny tip of each anterolateral tooth broken off.

the other species were known only with the records of the specimens. At present, some of the recorded species were transferred to the other genera —e.g. *Pilumnus sinensis* Gordon, 1930, is

known as a species of *Bathypilumnus* by Ng and Tan (1964), *Planopilumnus minabensis* Sakai, 1969, was transferred to *Vellumnus* Ng, 2010, by Ng (2010), *Glabropilumnus kasijani* Serène,

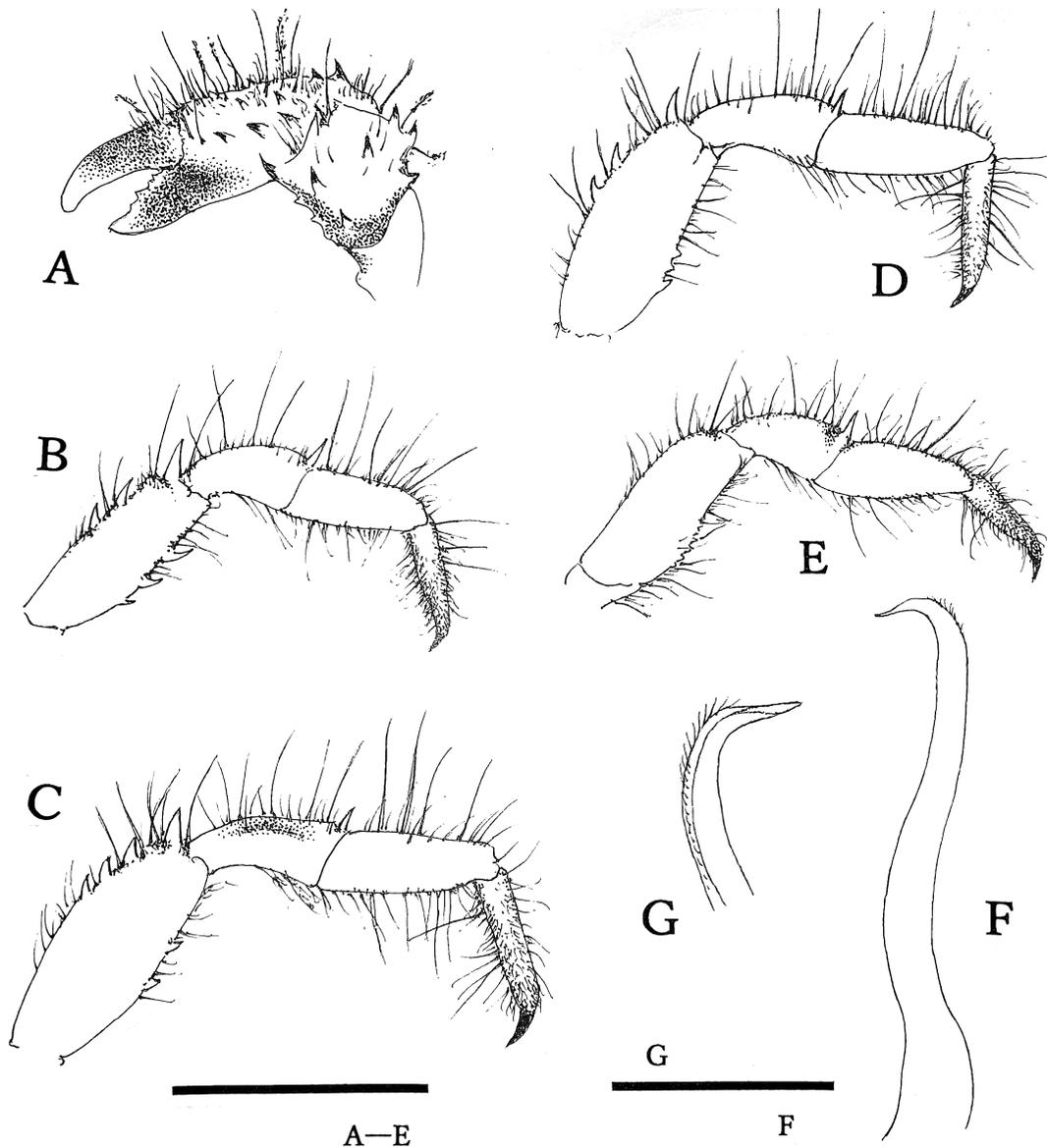


Fig. 9. *Viaderiana sentus* Ng, Dai and Yang, 1 ♂ (NMCR-92509; cb $8.4 \times$ cl 6.4 mm). Right chela in dorsal view (A), right first to fourth ambulatory legs in dorsal view (B–E); left G1 in sternal view (F) and its distal part in abdominal view (G). Scales: A–E = 5 mm; G = 4 mm; F = 2 mm.

1969, was designated as the type species of *Serenolumnus* Galil and Takeda, 1988, *Glabropilumnus sodalis* (Alcock, 1898) was transferred to *Gorgonariana* as the type species by Galil and Takeda (1988), *Glabropilumnus latimanus* Gordon, 1934, is at present known as the species of *Lentilumnus* Galil and Takeda (1988) together with *L. spinidentatus* described by Garth and

Kim (1983) as *Glabropilumnus*, and of additional three new species described by Garth and Kim (1983), *Parapilumnus euryfrons*, was reduced to a synonym of *Pilumnus neglectus* Balss, 1933, by Ng (2002), and *P. nefissurus* and *P. tuberculatus*, were transferred to *Pilumnus* and *Latopilumnus*, respectively, also by Ng (2002).

As a result, of four known species and one

unidentified species in the family Pilumnidae from subtidal zone of Luzon, three species of two genera, *Heteropilumnus planus*, *Pilumnus* aff. *purpureus* and *Viaderiana sentus*, are new additions to the Philippine carcinological fauna.

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References

- Alcock, A. 1898. Materials for a carcinological fauna of India. No. 3. The Brachyura Cyclometopa. Part I. The family Xanthidae. Journal of the Asiatic Society of Bengal (II) 67: 67–233.
- Balss, H. 1933. Beiträge zur Kenntnis der Gattung *Pilumnus* (Crustacea Dekapoda) und verwandter Gattungen. Capita Zoologica 4(3): 1–47, pls. 1–7.
- Deb, M. 1987. Description of seven new species and one new record of Pilumnidae; Xanthidae: Decapoda: Crustacea from India. Bulletin of the Zoological Survey of India 8: 299–312.
- Estampador, E. P. 1937. A check list of Philippine crustacean decapods. The Philippine Journal of Science 62: 465–559.
- Galil, B. and M. Takeda 1988. A revision of the genus *Glabropilumnus* (Crustacea, Decapoda, Brachyura). Bulletin of the National Science Museum, Tokyo, Series A 14: 67–90.
- Garth, J. S. and H. S. Kim 1983. Crabs of the family Xanthidae (Crustacea: Brachyura) from the Philippine Islands and adjacent waters based largely on collections of the U.S. Fish Commission steamer *Albatross* in 1908–1909. Journal of Natural History 17: 663–729.
- Gordon, I. 1930. Seven new species of Brachyura from the coasts of China. Annals and Magazine of Natural History, including Zoology, Botany, and Geology (10) 6: 519–525.
- Gordon, I. 1934. Crustacea Brachyura. Résultats Scientifiques du Voyage aux Indes Orientales Néerlandaises de LL. AA. RR. le Prince et la Princesse Léopold de Belgique. Mémoires du Musée Royal d'Histoire Naturelle de Belgique, (Hors série) 3(15): 1–78.
- Kossmann, R. 1877. Malacostraca (1. Theil: Brachyura). Chapter Erste Hälfte, III. In: Kossmann, R. (ed.), Zoologische Ergebnisse einer im Auftrage der Königlichen Academie der Wissenschaften zu Berlin ausgeführten Reise in die Küstengebiete des Rothen Meeres. W. Engelmann, Leipzig, pp. 1–66, pls. 1–3.
- Lanchester, W. F. 1900. On a collection of crustaceans made at Singapore and Malacca. Part I. Crustacea Brachyura. Proceedings of the General Meetings for Scientific Business of the Zoological Society of London, 1900: 719–770, pls. 44–47.
- Maenosono, T. 2019. Report on nine rare pilumnid crabs (Crustacea: Decapoda: Brachyura) collected from southern Japan, including three new records. Fauna Ryukyuna 48: 19–44 (In Japanese with English abstract).
- Man, J. G. De. 1887–1888. Report on the podophthalmous Crustacea of the Mergui Archipelago, collected for the trustees of the Indian Museum, Calcutta, by Dr. John Anderson, F.R.S., Superintendent of the Museum. The Journal of the Linnean Society, London, (Zoology) 22:1–312, pls. 1–19.
- Miers, E. J. 1886. Report on the Brachyura collected by H.M.S. Challenger the years 1873–76. In: Report on the Scientific Results of the Voyage of H.M.S. Challenger during the Years 1873–1876 under the Command of Captain George S. Nares, N.R., F.R.S. and the late Captain Frank Tourle Thomson, R.N. prepared under the Superintendence of the late Sir C. Wyville Thomson, Knt., F.R.S. &c. Regius Professor of Natural History in the University of Edinburgh of the Civilian Scientific Staff on Board and now of John Murray one of the Naturalists of the Expedition. Zoology, published by Order of Her Majesty' Government. London, Edinburgh and Dublin, HMSO 17: i–l, 1–362, pls. 1–29.
- Milne-Edwards, A. 1873. Recherches sur la faune carcinologique de la Nouvelle-Calédonie, Deuxième partie. Nouvelles Archives du Muséum d'Histoire naturelle, Paris 9: 155–332, pls. 4–18.
- Ng, P. K. L. 2002. On the identity of *Pilumnus cristimanus* A. Milne Edwards, 1873, and the status of *Parapilumnus* Kossman, 1877 (Crustacea: Decapoda: Brachyura), with description of a new species from rubble beds in Guam. Micronesica 34: 209–226.
- Ng, P. K. L. 2010. On the Planopilumnidae Serène, 1984 (Crustacea: Brachyura: Pseudozioidea), with diagnoses of two new pilumnoid genera for species previously assigned to *Planopilumnus* Balss 1933. Zootaxa 2392: 33–61.
- Ng, P. K. L., A.-Y. Dai and S.-L. Yang 1997. The Indo-West Pacific Pilumnidae X. New species and records from the South China Sea (Crustacea: Decapoda: Brachyura). The Raffles Bulletin of Zoology 45: 145–159.
- Ng, P. K. L., D. Guinot and P. J. F. Davie 2008. Systema Brachyurorum: Part I. An annotated checklist of extant brachyuran crabs of the world. The Raffles Bulletin of Zoology 17: 1–286.
- Ng, P. K. L. and P. F. Clark, 2008. A revision of *Latopi-*

- lumnus* Türkay & Schumacher, 1985, and *Aniptumnus* Ng, 2002 (Crustacea: Decapoda: Brachyura: Pilumnidae) with larval comparisons. *Journal of Natural History* 42: 885–912.
- Ng, P. K. L. and C.-W. Lin 2023. Two new species of hairy crabs (Pilumnidae) and the first record of *Crinitocinus alcocki* (Borradaile, 1900) (Acidopsidae) (Crustacea: Brachyura) from Taiwan. *Zootaxa* 5297: 101–114.
- Ng, P. K. L., C.-W. Lin and P.-H. Ho 2018. On three species of reef-dwelling pilumnid crabs from Taiwan, with notes on *Heteropilumnus* De Man, 2895 (Crustacea: Brachyura). *Zoological Studies* 57: 12 (17 pp.). doi: 10.6620/ZS.2018.57-12.
- Ng, P. K. L. and L. W. H. Tan 1964. The Indo-Pacific Pilumnidae I. Description of four new species of the genus *Pilumnus* Leach, 1815, and definition of a new genus, *Bathypilumnus*. *Journal of the Singapore National Academy of Science* 13: 13–19.
- Rathbun, M. J. 1910. The Danish Expedition to Siam 1899–1900. V. Brachyura. *Det Kongelige Danske Videnskabernes Selskabs Skrifter* (7) 5: 301–367, pls. 1–2, 1 map.
- Sakai, T. 1969. Two new genera and twenty-two new species of crabs from Japan. *Proceedings of the Biological Society of Washington* 82: 243–280, pls. 1–2.
- Serène, R. 1969. Description de deux espèces nouvelles et redécouverte d'une espèce de Brachyoure (Decapoda–Crustacea) dans les eaux d'Indonésie. *Cahiers du Pacifique*, 13 : 281–293, pls. 1–4.
- Stimpson, W. 1858. *Prodromus descriptionum animalium evertibratorum, quae in Expeditione ad Oceanum Pacificum Septentrionalem, a Republica Federata missa, Cadwaladaro Ringgold et Johanne Rodgers ducibus, observavit et descripsit. Pars 5. Crustacea Ocyropoidea*. *Proceedings of the Academy of Natural Sciences of Philadelphia* 10: 93–110.
- Takeda, M. and H. Komatsu 2020. Some records of off-shore crabs (Crustacea, Decapoda, Brachyura) from the Ryukyu Islands. II. Families Portunidae, Xanthidae, Pilumnidae and Planopilumnidae. *Bulletin of the National Museum of Nature and Science, Series A* 46: 97–121.
- Takeda, M. and M. Manuel 2003. A new crab of the family Pilumnidae (Crustacea, Decapoda), *Viaderiana kasei* from the Philippines. *Bulletin of the National Science Museum, Tokyo, Series A* 29: 205–211.
- Takeda, M. and S. Miyake 1968. Pilumnid crabs of the family Xanthidae from the West Pacific. I. Twenty-three species of the genus *Pilumnus*, with description of four species. *Ohmu, Occasional Papers of Zoological Laboratory, Faculty of Agriculture, Kyushu University* 1: 1–60, pls. 1–4.
- Türkay, M. and H. Schuhmacher 1985. *Latopilumnus tubicolus* n. gen. n. sp., eine neue korallenassoziierte Krebbe, die die Bildung einer Wohnhöhle induziert (Crustacea: Decapoda: Pilumnidae). *Senckenbergiana maritima* 17: 55–63.
- Yeo, D. C. J., D. L. Rahayu and P. K. L. Ng 2004. Brachyura (Crustacea) of the ANAMBAS Expedition 2002. *The Raffles Bulletin of Zoology, Supplement* 11: 79–88.