

Pontoniine shrimps from the Zoological Museum, Copenhagen

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Three species of Indo-West Pacific pontoniine shrimp from the collection of the Zoological Museum, Copenhagen, have been examined. Two of the species were found to be new, *Periclimenaeus mortenseni* sp. nov. and *P. wolffi* sp. nov., from the Kei Islands, Indonesia, and off south west Taiwan, respectively, and are described and illustrated. Remarks, with illustrations, on little known, closely related species, *Periclimenaeus pachydentatus* Bruce 1969 and *P. tridentatus* (Miers, 1884), are also included. *Platycaris latirostris* Holthuis 1952, is recorded from Mauritius for the first time.

KEYWORDS: *Periclimenaeus mortenseni* sp. nov., *P. wolffi* sp. nov., Crustacea, Palaemonidae, Pontoniinae, Indo-West Pacific.

Introduction

Through the kindness of Dr Torben Wolff, it has been possible for me to examine some specimens of some pontoniine shrimps held for many years in the collections of the Zoological Museum, Copenhagen. Two of the species represented proved to be new and are now briefly treated in the following report.

The collector of two of the present specimens, Captain A. F. Andrea, was the master of a vessel in the Danish mercantile marine fleet who collected a wide variety of marine biological specimens for the Zoologisk Museum in the late 19th century. The other specimen was collected during the course of the Danish Expedition to the Kei Is., Indonesia, under the leadership of Dr Theodor Mortensen, which visited Ambon from 21 February to 14 March and the Kei Is. from 16 March to 16 May 1922.

Species descriptionsFamily **PALAEMONIDAE** Rafinesque 1815

Palaemonia Rafinesque 1815

Palaemonidae Samouelle 1819

Subfamily **PONTONIINAE** Kingsley 1878***Periclimenaeus mortenseni*** sp. nov.

(Figs 1, 2)

Material. 1 ♀, adult, non-ovig., Danish Expedition to the Kei Is., Toetal, Kei-Doelah Is. (now Tual, Pulau Kai Dulah), c. 2 m, 21 March 1922, coll. Th. Mortensen.

Diagnosis. A moderately large pontoniine species, postorbital carapace length 6.3 mm. Rostrum well developed, reaching to distal margin of intermediate segment of

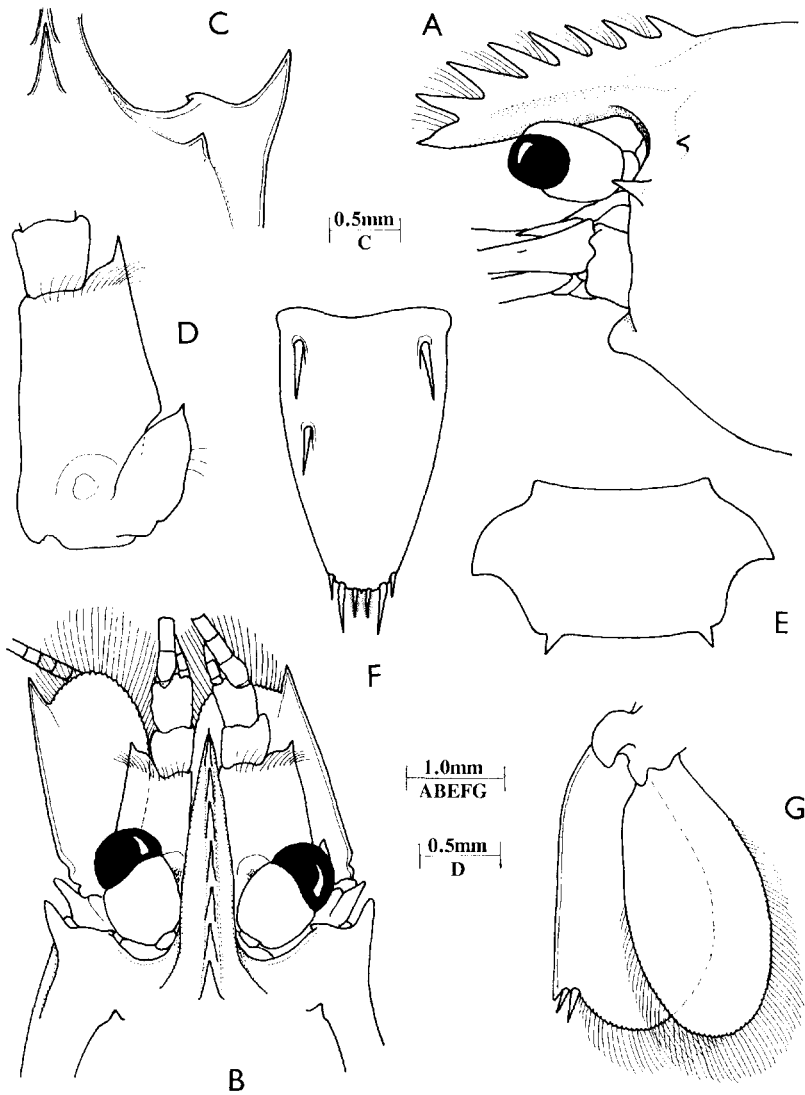


FIG. 1. *Periclimenaeus mortenseni*, sp. nov., HOLOTYPE ♀, Kei Is. (A) anterior carapace and rostrum, lateral. (B) same, with antennal peduncles, dorsal. (C) orbital region, dorsal. (D) antennular peduncle, proximal segment. (E) sixth abdominal segment, dorsal. (F) telson. (G) uropod.

antennular peduncle, dorsal carina deep with 7 large, long acute teeth, first tooth situated posterior to level of orbital margin, not anteroposteriorly compressed, teeth increasing in size distally, anterior tooth over-reaching tip, interspaces with long plumose setae, ventral margin markedly thickened, with stout lateral carinae, straight, without distinct ventral carina, unarmed, non-setose. Carapace smooth, with supra-orbital spine, small, acute, postorbital; inferior orbital angle small, acute, inflected medially, lower orbital rim thickened, antennal spine very large, acute, submarginal, not dorsoventrally flattened, anterolateral angle of branchiostegite with small poorly calcified lobe. Abdomen with first segment tergite without anterior lobe; sixth segment about 2.0 times broader than long, posteroventral angle large, broad, subacute, postero-

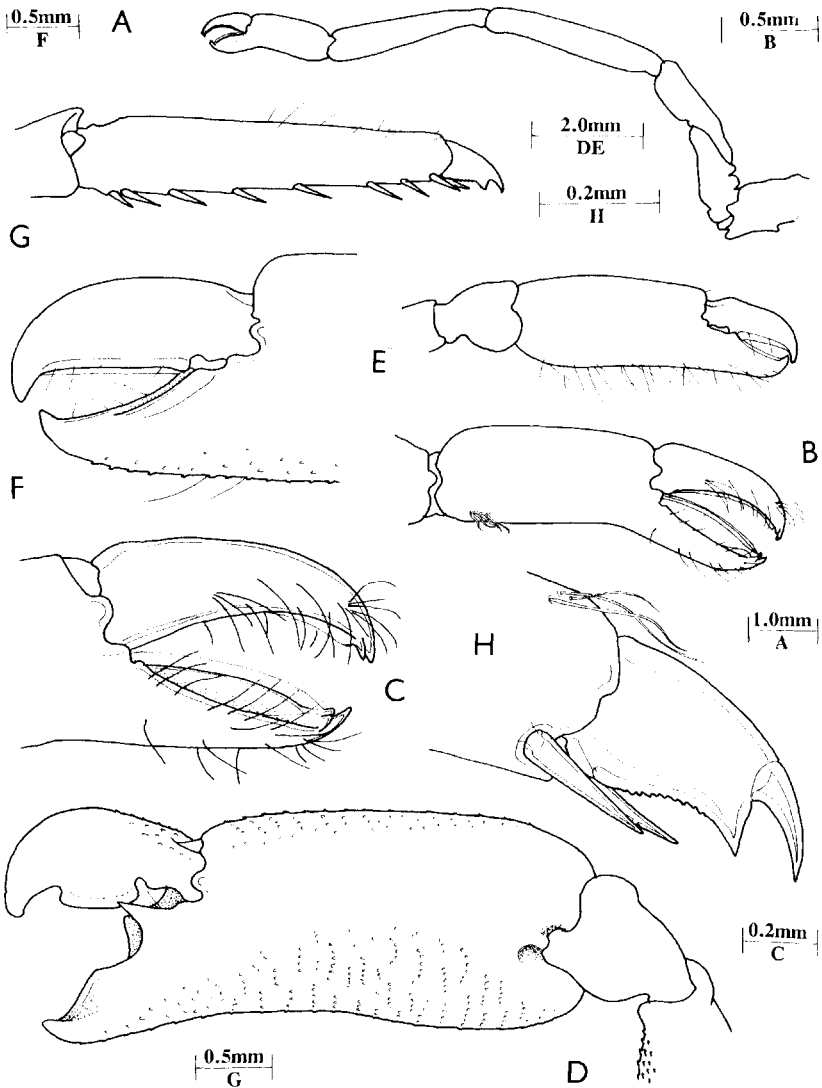


FIG. 2. *Periclimenaeus mortenseni*, sp. nov., HOLOTYPE ♀. (A) first pereiopod. (B) same, chela. (C) same, fingers. (D) major second pereiopod, chela. (E) minor second pereiopod, chela. (F) same, fingers. (G) third pereiopod, propod and dactyl. (H) same, distal propod and dactyl.

lateral angle small, acute. Telson 1.6 times longer than anterior width, lateral margins convex, convergent; dorsal spines long, slender, anterior pair about 0.2 of telson length, at 0.1 of telson length; posterior dorsal spine slightly shorter, at about 0.45 of length; posterior telson margin 0.4 of anterior width, convex with small acute median point; intermediate spines slender, subequal to dorsal spine length; lateral spines about 0.5 of intermediate spine length; submedian spines slightly longer than lateral spine length, plumose.

Proximal segment of antennular peduncle with distolateral angle strongly produced, with large acute lateral tooth, stylocerite short, broad, with small acute distal tooth. Antenna with basicerite without dorsal lobe; scaphocerite reaching to end of

antennular peduncle, broad, 2.0 times longer than central width; lamina broadly rounded distally, exceeded by large stout acute distolateral tooth. Eyes with oblique hemispherical cornea.

First pereopod moderately slender, exceeding antennular peduncle by carpus and chela, chela with palm subcylindrical, slightly compressed, 2.2 times longer than deep, with fingers about 0.6 of palm length, deeply subspatulate, with 3-dentate tips, cutting edges entire, dactylus without dorsal setal tuft; carpus about 1.7 times palm length; merus slightly longer than carpus.

Second pereopods dissimilar, markedly unequal. Major chela 2.1 times carapace length, 1.5 times minor chela length, palm oval in section, about 1.9 times longer than deep, not tapering distally, dorsal surface strongly studded with small acute tubercles, many arranged in short transverse rows. Dactylus about 0.5 of palm length, with robust molar process, tip simple, blunt, entire, cutting edge entire, dorsal margin with acute tubercles proximally; fixed finger with large fossa proximally on cutting edge with large acute tooth proximodorsally, dorsal surface with small acute tubercles; merus strongly spinulate ventrally. Minor chela about 0.4 of major chela length, with palm about 2.0 times longer than deep, compressed, feebly tapering distally, dorsal surface densely tuberculate, with numerous long simple setae, dactyl about 0.55 of palm length, about 3.0 times longer than proximal depth, with small subacute tooth proximally, distal cutting edge entire, sublinear. Fixed finger similar, cutting edge more concave, tip blunt, over-reached by acute tip of dactyl; merus ventrally densely spinulate.

Ambulatory pereopods slender. Third pereopod with propod about 5.0 times longer than proximal depth, tapering slightly distally, with 7 well developed ventral spines, 2 distoventral spines; dactyl compressed, about 2.0 times longer than proximal depth, unguis distinct, about 0.6 of dorsal corpus length, corpus with large broad acute distoventral accessory tooth, proximal ventral border with about 12 blunt denticles.

Uropod with lateral margin of exopod entire, setose, with large acute distolateral tooth, with 1–2 large mobile spines medially.

Type. The only specimen (♀) is designated as the HOLOTYPE and is deposited in the collection of the Zoological Museum, Copenhagen, unregistered.

Host. The specimen was obtained from an unidentified sponge.

Etymology. The species is named in honour of Dr Theodor Mortensen, leader of the 1922 Danish Expedition to the Kei Is., Indonesia.

Systematic Position. *Periclimenaeus mortenseni* sp. nov. is most closely related to *P. pachydentatus* Bruce, 1969. *Periclimenaeus mortenseni* sp. nov. may readily be distinguished from *P. pachydentatus* (Fig. 3) by its characteristic rostrum, which appears to distinguish it also from all other species of the genus that have been adequately described. In *P. mortenseni* sp. nov. the strongly thickened lower margin of the rostrum is apparently a unique character. In addition, the dorsal teeth are strongly compressed and acute, rather than rounded and blunt and the first tooth is not strongly transversely compressed, as in *P. pachydentatus*. The supraorbital spine is comparatively small and acute and occupies a postorbital position, rather than larger and blunt, with a normal supraorbital position. The inferior orbital angle bears a small acute medial inflection that is not present in *P. pachydentatus*, and has not been noticed in any other species of the genus. The antennal spine is also much smaller and more acute, not exceeding the distal margin of the basicerite, and is not dorsoventrally flattened. In *P. mortenseni* sp. nov. all the dorsal telson spines are on the anterior half of the telson and are distinctly more slender than in *P. pachydentatus*, in which they

are larger and more posteriorly situated. In *P. mortenseni* sp. nov. the distolateral angle of the proximal segment of the antennular peduncle is much more strongly produced than in *P. pachydentatus* and the distolateral tooth of the scaphocerite is larger, exceeding the distal margin of the lamella, in contrast to *P. pachydentatus*. In *P. mortenseni* sp. nov., in the second pereopods the palm of the chela and the ventral surface of the merus are densely acutely tuberculate, not glabrous, or pitted, as in *P. pachydentatus*, and the dactyls of the ambulatory pereopods have the ventral border of the corpus minutely bluntly denticulate, rather than unarmed, and the distoventral accessory tooth is large and acute, not curved and blunt.

Periclimenaeus wolffi, sp. nov.

(Figs 3, 4)

Material. 1 ovig. ♀, 23°20'N, 118°30'E, southern Tai-Wan Hai-Hsia, 31 m, coll. Captain A. F. Andrea, 1869.

Diagnosis. A medium sized pontonine shrimp, postorbital carapace length 3.5 mm. Rostrum well developed, not reaching distal end of proximal segment of antennular peduncle, dorsal carina with five large acute teeth, first and third teeth slightly smaller than central teeth, first tooth distal to posterior orbital margin, distal tooth slightly over-reaching rostral tip; interspaces with plumose setae; lateral carinae feebly developed; ventral carina obsolete; ventral margin concave, unarmed. Carapace smooth; supraorbital spines absent; orbit and inferior orbital angle feebly developed; antennal spine acute, slender, marginal; anterolateral angle of branchiostegite not produced. Abdomen with first segment without anterior tergal lobe; sixth segment with acute posteroventral lobe, large acute posterolateral lobe. Telson about 2.5 times longer than anterior width, lateral margins feebly convex, convergent; dorsal spines short, about 0.1 of telson length, anterior pair at about 0.3 of telson length, posterior pair at about 0.6; subequal, posterior telson margin about 0.45 of anterior width; lateral spines small, about 0.35 of intermediate spine length smaller than dorsal spines, intermediate spines about 0.2 of telson length, robust, submedian spines slender, plumose, subequal to intermediate spine length.

Antennular peduncle with distolateral angle of proximal segment feebly produced, with small acute distolateral tooth, lateral margin concave, stylocerite short, distally acute. Antenna with basicerite without dorsal lobe; carpocerite long, exceeding scaphocerite, scaphocerite small, slightly exceeding proximal segment of antennular peduncle, about 2.3 times longer than wide, with small distolateral tooth distinctly exceeded by broadly rounded distal margin of lamella. Eye with oblique hemispherical cornea, medial surface of stalk strongly flattened.

First pereopod moderately slender, exceeding antennular peduncle by carpus and chela, chela subcylindrical, slightly compressed, about 2.0 times longer than deep, with fingers 0.6 of palm length, slender, deeply subspatulate, cutting edges entire, tips bidentate, dactylus without dorsal setal tuft; carpus about 1.2 of palm length; merus 1.1 times carpus length.

Second pereopods dissimilar, markedly unequal. Major chela 1.3 times carapace length, 1.5 times minor chela length, palm oval in section, smooth, about 2.1 times longer than deep, tapering slightly distally; dactyl elongate, about 0.4 of palm length, 2.4 times longer than deep, far over-reaching tip of fixed finger, tip blunt, distal cutting edge entire; fixed finger about 0.75 of dactyl length, with acute hooked tip, cutting edge entire, with shallow fossa proximally; merus without ventral tuberculations. Minor chela with palm about 2.5 times longer than deep, smooth, tapering slightly

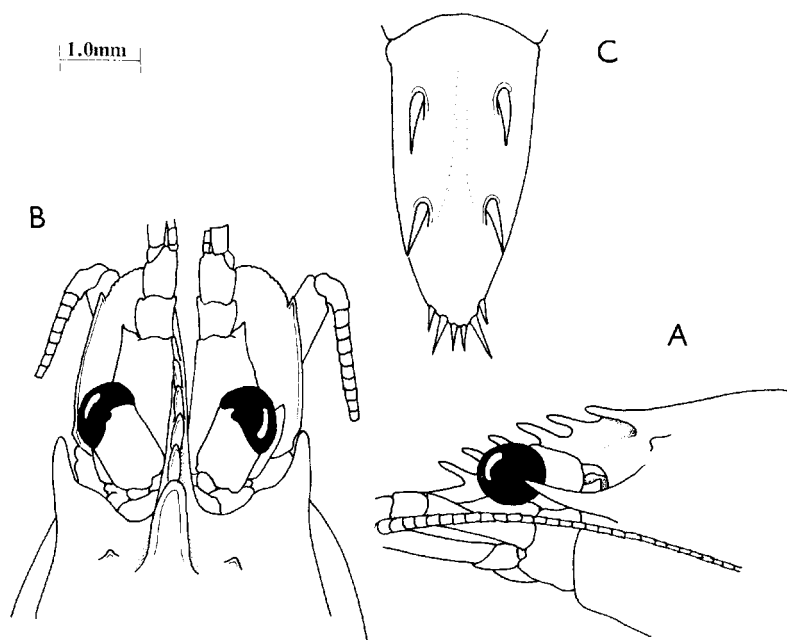


FIG. 3. *Periclimenaeus pachydentatus* Bruce, 1969, HOLOTYPE ♀. (A) anterior carapace and rostrum. (B) same, with antennal peduncles, dorsal. (C) telson.

distally; dactyl elongate, about 0.33 of palm length, 2.3 times longer than deep, far over-reaching fixed finger, tip bluntly rounded, cutting edge concave, with about 25 small acute, slightly recurved teeth; fixed finger about 0.75 of dactylus length, tip acutely hooked, distal cutting edge straight, with about 25 smaller, more rounded teeth, with small blunt tooth proximally; merus without ventral tuberculations.

Ambulatory pereopods moderately robust. Third pereopod with propod 3.5 times longer than proximal depth, tapering distally, with 3 strong distoventral spines, 3 smaller proximal ventral spines; dactyl compressed, about 0.16 of propod length, 1.5 times longer than proximal depth, unguis distinct, 0.5 of dorsal corpus length, corpus with large blunt preterminal ventral tooth, slender proximal ventral tooth with minute terminal stylus.

Uropod with lateral border of exopod entire, with small acute distolateral tooth, with single mobile spine medially.

Ova small, length about 0.75 mm.

Type. The single specimen (♀) is designated as the HOLOTYPE and is deposited in the collection of the Zoological Museum, Copenhagen, unregistered.

Etymology. The species is named in honour of Dr Torben Wolff, formerly director of the Zoology Museum, University of Copenhagen.

Systematic Position. *Periclimenaeus wolffi*, sp. nov. is most closely related to *P. tridentatus* (Miers, 1884). *Periclimenaeus wolffi*, sp. nov. may be readily differentiated from *P. tridentatus* by the presence of 5 instead of 3 dorsal rostral teeth, the elongate dactyls on the chelae of the second pereopods, with the characteristic dentition on the cutting edges of the fingers of the minor chela, and the presence of proximal ventral spines on the propod of the third ambulatory pereopod. The strongly flattened medial surface of the eye stalk is also an additional feature.

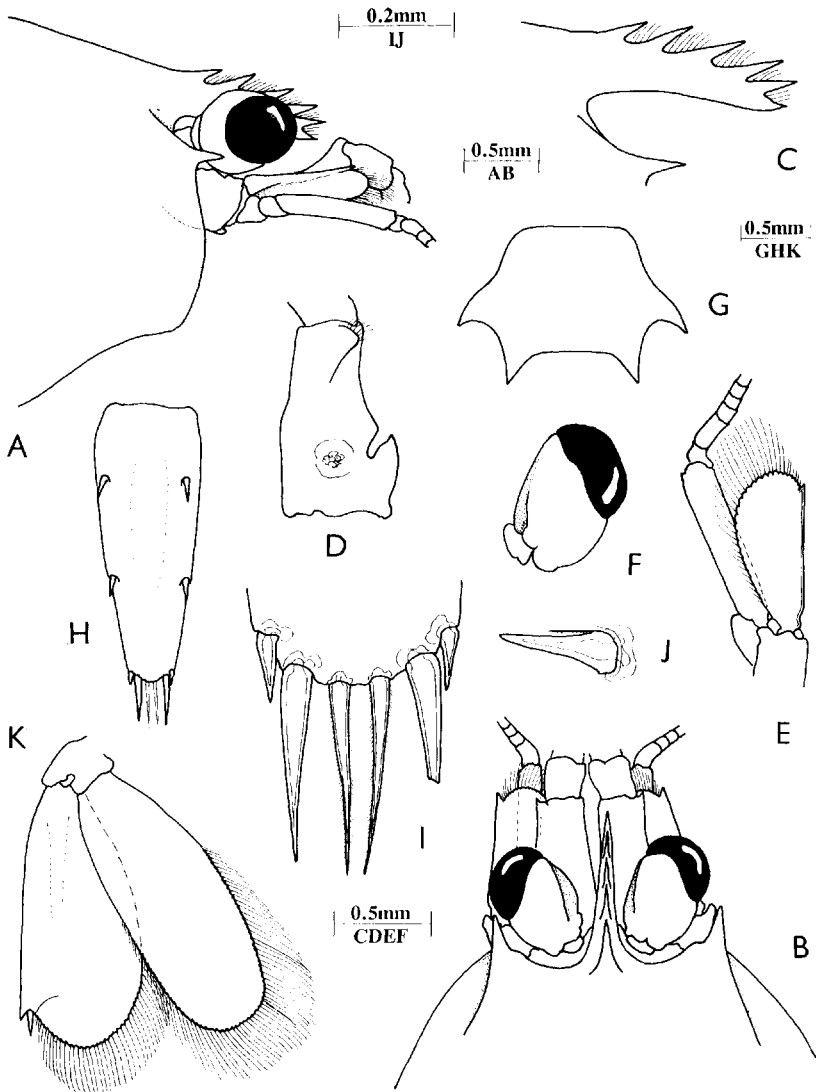


FIG. 4. *Periclimenaeus wolffi*, sp. nov., HOLOTYPE ♀, ovig. (A) anterior carapace and rostrum, with antennal peduncles, lateral. (B) same, dorsal. (C) rostrum. (D) antennular peduncle, proximal segment. (E) antennal peduncle and scaphocerite. (F) eye, dorsal. (G) sixth abdominal segment, dorsal. (H) telson. (I) posterior telson spines. (J) dorsal telson spine.

Remarks. The assessment of specimens resembling *P. tridentatus* has presented numerous problems due to the brief nature of the account provided by Miers (as *Coralliocaris? tridentata*) and the inadequate illustration of the holotype specimen, which lacked the major second pereopod. Only the anterior carapace, rostrum and antennal peduncles, and the dactyl and propod of an ambulatory pereopod were figured. This specimen is preserved in the collection of The Natural History Museum, London, Reg. No. 1881.31, but, as noted by Miers in his original report, is no longer in good condition, and now consists only of a body that has been desiccated at some stage, with the minor second pereopod, both third pereopods and the remains of the left first pereopod, without the carpus and chela.

The type locality of *P. tridentatus* is Thursday Is., Torres Strait, north Queensland, Australia, and the species has also been reported from Cape Jaubert, Western Australia (Balss, 1921), Coral Bay, Port Essington, Cobourg Peninsula, Northern Territory (Bruce, 1983), and Wistari Reef, Heron Is., Capricorn Is., Queensland, (Bruce, 1981) in Australian waters. Other records in the literature are from Moçambique (Barnard, 1958); Singapore (Johnson, 1961; Bruce, 1979); Philippines (North Ubian Is. Sulu Archipelago, 16–23 m, Siboga Sta. 99, (Holthuis, 1952); Marianas Is. (Holthuis, 1953); Palmyra Is. (Edmondson, 1921); Pearl and Hermes Reef and Johnson Is. (Edmondson, 1925).

Other material of *P. tridentatus* from the Siboga Expedition has been re-examined and found to consist of: sta. 40, *Periclimenaeus*, ?sp. nov., 1 ♀; sta. 64, *P. nobilii* Bruce, 1974, 2 spms, (1 ovig. ♀), sta. 99, 1 ♂, 1 ovig. ♀, possibly also specimens of *P. wolffi*, sp. nov. (figs 63, 65c–e, (?)i); sta. 310, 1 ♂, 1 ovig. ♀, *P. hecate* (Nobili, 1904). The other individuals referred to *P. tridentatus* should probably also be re-examined to confirm their identifications. A key to the identification of *P. tridentatus* and closely related species, in general found in association with colonial tunicate hosts, is given in Bruce (1974).

Periclimenaeus tridentatus has been reported from Coral Bay, Port Essington, Cobourg Peninsula (Bruce, 1983) and these animals can be used to illustrate the differences between *P. wolffi*, sp. nov. and *P. tridentatus* (fig. 6). They agree closely with the original description of Miers (1884), as far as it goes. In particular, the third pereopod is virtually identical with that of the holotype, the dactylus and distal propod of which were illustrated in Bruce (1974). This appendage is completely without ventral spines on the propod other than the 3 distoventral spines. In the Coral Bay material, a male and two females, (one ovigerous), the rostrum has 3 slender acute dorsal teeth and a long slender up-curved tip, that slightly exceeds the proximal segment of the antennular peduncle; the scaphocerite bears a small distolateral tooth, not exceeding the lamella; the eye lacks a flattened medial surface on the stalk; the fingers of the first pereopod are subequal to the palm length slender, compressed, tapering distally with small acute hooked tips, the fixed finger appearing to have sharp medial and lateral cutting edges, without being spatulate; the major second pereopod is very large, with the palm smooth, or finely pitted, dactylus slightly less than half palm length, with stout molar process, fixed finger with deep fossa, both with strongly hooked, very acute tips, merus without ventral spinulations; minor second pereopod much smaller, palm about 2.7 times longer than proximal depth, tapering slightly distally, smooth; dactyl about 0.38 of palm length, distinctly over-reaching tip of fixed finger, tip acute, strongly hooked, cutting edge sinuous, with about 35 small acute teeth, larger distally, becoming obsolete proximally, with low tooth proximally, fixed finger with cutting edge entire, small acute tooth proximally. Third ambulatory pereopod with propod subequal to carpal length, carpus inflated, propod stout, 3.0 times longer than proximal depth, with 3 short stout subequal distoventral spines, ventral margin unarmed; dactyl short, compressed, about 0.16 of propod length, unguis well demarcated, stout curved about 2.0 times longer than basal width, 0.6 of dorsal corpus length, unarmed; corpus dorsal length about 0.9 of basal depth, with very acute distal accessory tooth, proximal ventral margin concave with large styliiferous basal process, distodorsal lateral surface with (?) fine transverse corrugations. Sixth abdominal segment with posteroventral angle large, posterodorsal angle smaller; telson 2.0 times longer than proximal width, dorsal spines 0.125 of telson length, at 0.4, 0.75 of telson length, posterior marginal spines with lateral spines smaller than

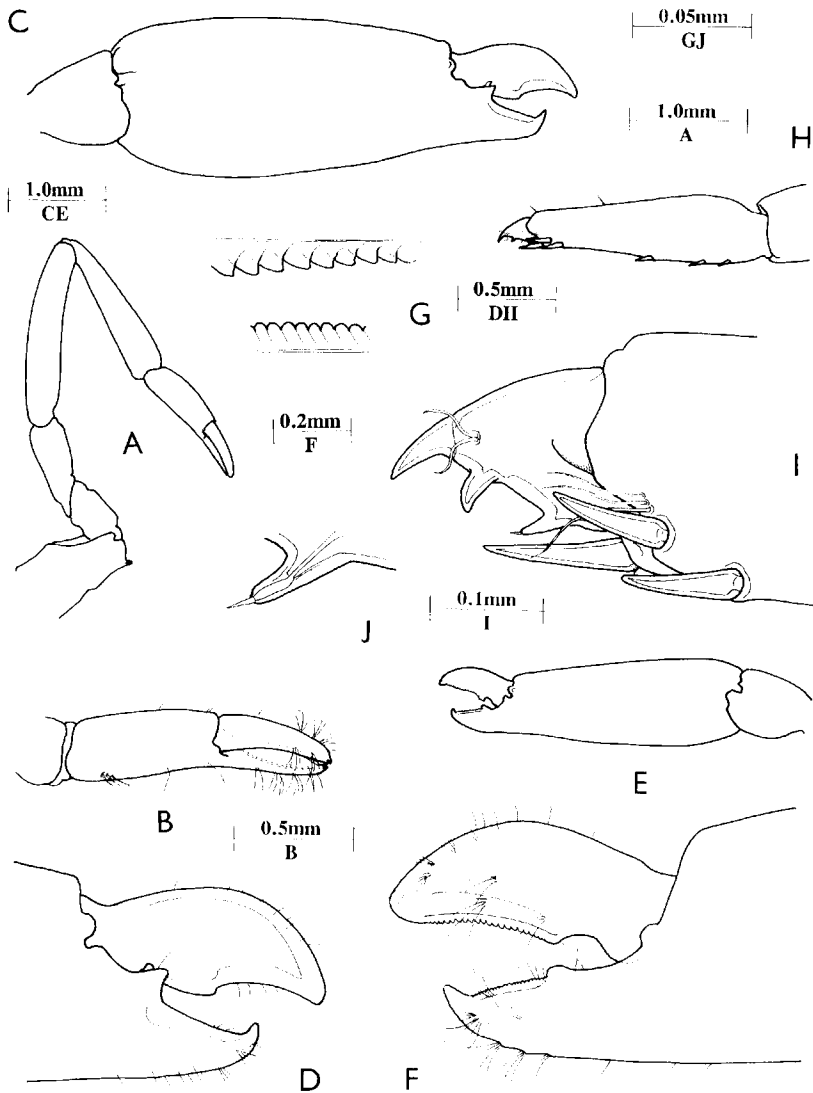


FIG. 5. *Periclimenaeus wolffi*, sp. nov., HOLOTYPE ♀. ovig. (A) first pereiopod. (B) same, chela. (C) major second pereiopod, chela. (D) same, fingers. (E) minor second pereiopod, chela. (F) same fingers. (G) third pereiopod, propod and dactyl. (H) same, distal propod and dactyl. (I) same, cutting edges of fingers, dactyl upper, fixed finger lower, distal ends to left.

dorsal spines; intermediate spines 0.18 of telson length, very attenuated distally; submedian spines 0.75 of intermediate spine length, similarly attenuated distally, without setules, margin without median point.

Periclimenaeus wolffi, sp. nov. differs from *P. tridentatus* in having 5 dorsal rostral teeth, with rostrum not exceeding proximal segment of antennular peduncle; eye with stalk medially flattened; sixth abdominal segment with larger posterolateral teeth; first pereiopod with fingers distinctly shorter than palm, narrowly spatulate, with bidentate tips. Major second pereiopod with dactyl far exceeding fixed finger; minor second pereiopod with dactyl far exceeding fixed finger, distally blunt, cutting edge concave,

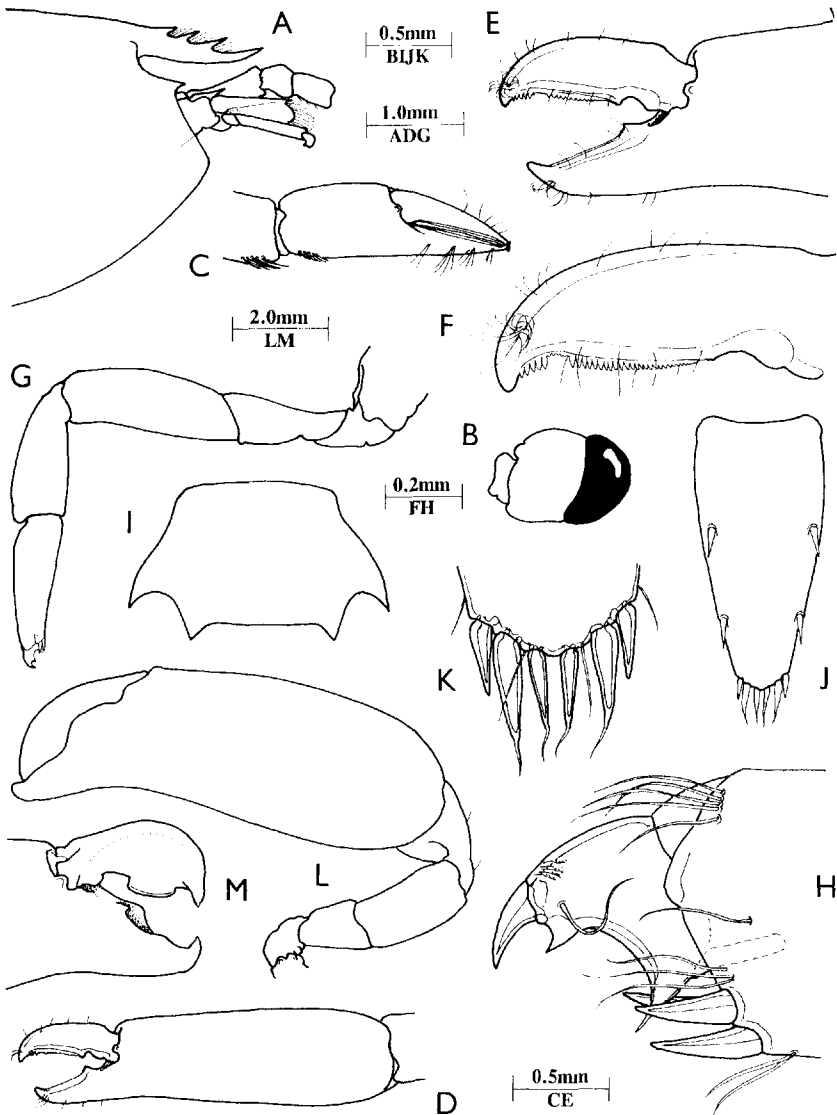


FIG. 6. *Periclimenaeus tridentatus* (Miers, 1844), Coral Bay, Port Essington, Cobourg Peninsula, Northern Territory, Australia. (A) anterior carapace, rostrum, antennal peduncles. (B) eye, right dorsal. (C) first pereopod, chela. (D) minor second pereopod, chela. (E) same, fingers. (F) same, dactyl. (G) third pereopod. (H) same, distal propod and dactyl. (I) sixth abdominal segment, dorsal. (J) telson. (K) same, posterior margin. (L) major second pereopod. (M) same, fingers. (A–K) ovig. ♀, Sta. CP/6, CL 3.2 mm, NTM Cr.008564. (L, M) ♂, Sta. Cp/6, CL 3.2 mm, NTM Cr.000097.

with acute, teeth, longest centrally, fixed finger with cutting edge minutely bluntly denticulate. Third ambulatory pereopod with longer distoventral spines, ventral border spinulate, dactyl with accessory tooth broadly acute, compressed, distal, rather than bluntly preterminal, with ventral margin concave rather than straight; telson narrower, with smaller dorsal spines, submedian posterior spines setulose.

Periclimenaeus wolffi, sp. nov. also resembles *P. spongicola* Holthuis, 1952, but can easily be distinguished from this sponge-associated species by the presence of

numerous denticles on the ventral border of the corpus of the ambulatory dactyls of the latter.

Platycaris latirostris Holthuis, 1952

Restricted synonymy

Platycaris latirostris Holthuis, 1952: 173–176, figs 85–86.

Material. 1 ♀, 1 ovig. ♀, **Mauritius**, collector Captain A. F. Andrea, 20 April 1872.

Distribution. Type locality: Flores, Lesser Sunda Is., Indonesia. Also reported from Kenya, Zanzibar, Tanganyika, Moçambique, Madagascar, Comoro Is., Réunion, Seychelle Is., Singapore, Ryukyu Is., Great Barrier Reef, Fijian Is. and Marshall Is. Not previously reported from Mauritius.

Remarks. These shrimps are unfortunately in a rather fragmentary state, but there is no doubt over their identification. The species is common in the western Indian Ocean, and probably elsewhere throughout the Indo-West Pacific region, where it is an obligatory associate of the common shallow-water oculinid coral *Galaxea fascicularis* (L.)

Acknowledgements

I am most grateful to Dr Torben Wolff for the opportunity to examine these interesting specimens from the collections of the Zoological Museum, Copenhagen. The opportunity to examine some of the *Periclimenaeus* specimens from the collections of the *Siboga* Expedition provided by Professor Jan Stock is also much appreciated.

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