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STUDIES ON JAPANESE PALAEMONOID SHRIMPS

- I. PALAEMON
- II. PONTONINAE

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Studies on Japanese Palaemonoid Shrimps II. Pontoniinae⁽¹⁾

Ituo KUBO

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Various authors have studied Japanese shrimps since DE HAAN (1850), but the knowledge concerning the fauna of Japanese Pontoniidae is very meagre. The scrutiny of the material from Pacific coasts of Honsyû, Riû-Kiû Islands, Bonin Islands and Oceania, with special reference to the features of mouth-parts, however, enabled the writer to make some emendations and additions to the taxonomy of this subfamily.

The material at my disposal are referable to six genera, *Anchistus*, *Conchodytes*, *Coralliocaris*, *Harpilius*, *Periclimenes* and *Pontonia* and to fourteen species, four of which, viz., *Periclimenes*(*Periclimenes*) *curvirostris*, *Periclimenes*(*Ancylocaris*) *gracilirostris*, *Periclimenes*(*Ancylocaris*) *amamiensis* and *Pontonia* *Katoi* are erected as new to science.

Before proceeding any further, hearty thanks are extended to Dr. Arata TERAO, under whose kind supervision the present study was carried out. Acknowledgment is also made to Messrs. S. SAITÔ, R. WADA, K. KATÔ, S. MIYAKE and G. ABE for their assistance rendered in obtaining the material.

Subfamily PONTONIINAE KINGSLEY

Key to the genera of Pontoniinae

- A. Dactylus of last three legs simple or biunguiculate, but without basal protuberance nor serration
- B. Carapace not depressed *Periclimenes*.
- B'. Carapace slightly depressed

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In the present work, the length of body is indicated by a measurement from the posterior margin of orbital notch to the distal margin of telson; the length of carapace is represented by the distance between post-orbital and posterior margins.

- c. Rostrum not acute at apex, toothless or toothed at apex only *Anchistus*.
 c'. Rostrum acute at apex, toothed dorsally and ventrally *Harpilius*.
 A'. Dactylus of last three legs with basal protuberance or serration
 D. Rostrum depressed, toothless
 E. Inner lacinia of maxillule narrow, dactylus of last three legs without basal protuberance *Pontonia*.
 F'. Inner lacinia of maxillule very broad, dactylus of last three legs with basal protuberance *Conchodytes*.
 D'. Rostrum thin, laterally compressed, toothed dorsally and ventrally; inner lacinia of maxillule slender *Coralliocaris*.

Genus *Periclimenes* COSTA

- Periclimenes*, BORRADAILE, 1917, p. 357; PESTA, 1918, p. 123; KEMP, 1922, p. 134; RATHBUN, 1902, p. 121.
Anchistia, DANA, 1852, p. 577.
Urocaris, STIMPSON, 1860, p. 39; BORRADAILE, 1917, p. 353.

Body somewhat laterally compressed. Carapace usually provided with lanceolate and toothed rostrum as well as antennal spine. Hepatic spine present or absent. Sixth abdominal segment moderate in length. Telson shorter than uropods. Abdominal pleura from first to fifth rounded on inferior margin. Eyes moderate and well-pigmented. Mandible without palp. Maxillule with narrow inner lacinia and usually provided with rather developed apical lobe on distal border of endopodite. Inner distal endite of maxilla usually consists of two slender lobes provided with long setae on its distal border. All maxillipeds with exopodite and mastigobranchia. First maxilliped provided with lamella on basal outer margin of exopodite.

Third maxilliped stout, usually pediform. First and second pairs of pereopods with chela, the latter pair much larger than the former. Last three pairs of legs somewhat stouter and longer than first one, and dactylo-podite of these legs simple or biunguiculate but without basal protuberance.

Note: The present genus exhibits much resemblance to two genera, viz., *Harpilius* DANA and *Anchistus* BORRADAILE in general aspects, but it is easily separated from the former by having the following remarkable characters:—(1) body is laterally compressed, (2) maxilla is provided with inner distal lacinia, (3) inner endite of the maxillule is more or less narrow, and from the latter by having such characters as: (1) body laterally compressed; (2) rostrum acute at apex.

According to KEMP (1922, p. 137), the present genus should be divided into three subgenera, namely, *Periclimenes*, *Periclimenaeus* and *Ancylocaris*, and they are characterized as in the following key:—

- A. Dactylus of last three pereopods biunguiculate
 B. Hepatic spine present *Periclimenes*.
 B'. Hepatic spine absent *Periclimenaeus*.
 A'. Dactylus of last three pereopods simple, hepatic spine usually present. . . . *Ancylocaris*.

Subgenus *Periclimenes* sensu stricto

Periclimenes, KEMP, 1922, p. 139.

No species of this subgenus has been known from Japan. But for the first time two species, viz., *P. (Periclimenes) alcocki* KEMP and *P. (Periclimenes) curvirostris* sp. nov. are recorded here. The specimens representing this subgenus were secured by trawl net off Mie Prefecture at a depth of about 170 fathoms.

Key to the species of the subgenus *Periclimenes*

- A. Rostrum subhorizontal; eye comparatively small; dorso-lateral margins of telson armed with four pairs of bristles *P. alcocki*.
 A'. Rostrum directed evidently downwards; eye large; dorso-lateral margins of telson armed with two pairs of bristles *P. curvirostris* sp. nov.

Periclimenes (Periclimenes) alcocki KEMP

(Figs. 1~2)

Periclimenes (Periclimenes) alcocki, KEMP, 1922, p. 154, text-figs. 21-24.
Palaemon (Brachycarpus) laccadivensis, ALCOCK, p. 138.

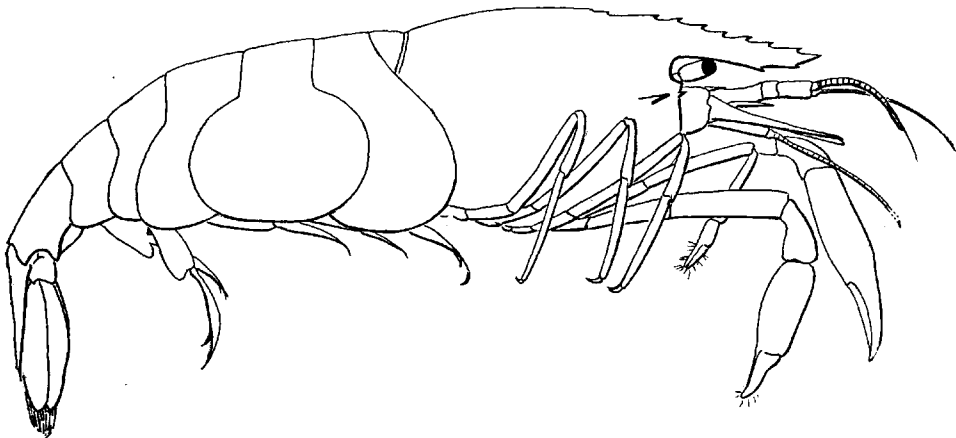


Fig. 1. *Periclimenes (Periclimenes) alcocki* KEMP, ♀, ×3.

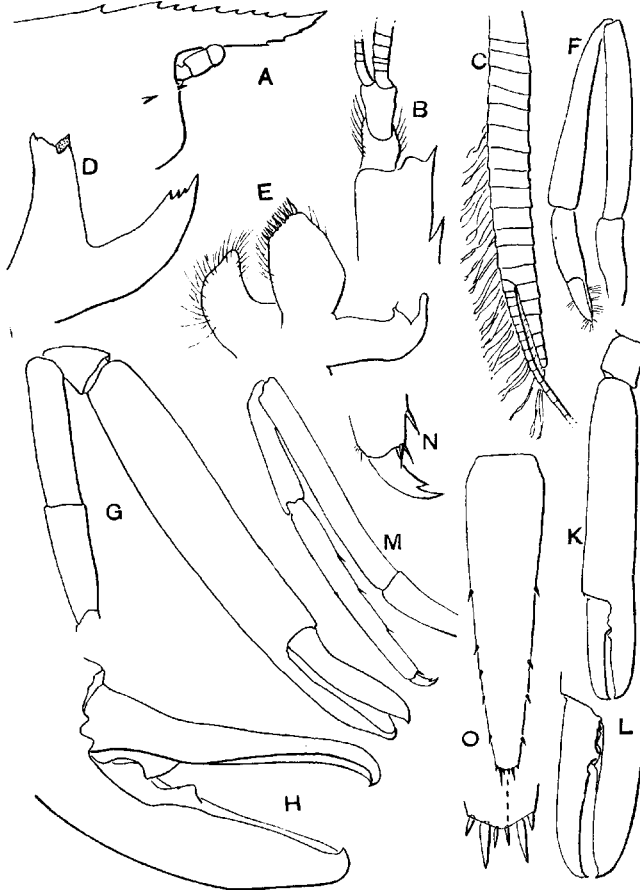


Fig. 2. Body parts of *Periclimenes (Periclimenes) alcocki* KEMP, ♀. *A*, rostrum; *B*, antennular peduncle, $\times 6$; *C*, outer flagellum of antennule, \times ca. 10; *D*, mandible, $\times 20$; *E*, maxillule, $\times 20$; *F*, first pereopod, $\times 6$; *G*, larger leg of second pair of pereopod, $\times 2.5$; *H*, fingers of the same leg as in *G* (outer view), $\times 6$; *K*, smaller leg of the same pair as in *G*, $\times 2.5$; *L*, fingers of the same leg as in *K*, $\times 6$; *M*, third pereopod, $\times 6$; *N*, dactylus of third leg, $\times 20$; *O*, telson, $\times 6$.

Mandible Y-shaped, without palp, incisor process compressed, armed with four teeth along distal margin (Fig. 2, *D*). Inner lacinia of maxillule rather broad; endopodite with well-developed thumb-like apical lobe (Fig. 2, *E*). Distal inner endite of maxilla consists of two slender lobes. All three maxillipeds provided with long exopodite.

Branchial arrangement runs as follows:—

	I	II	III	IV	V	VI	VII	VIII
Pleurobranchiae	—	—	—	1	1	1	1	1
Arthrobranchiae	—	—	—	—	—	—	—	—
Podobranchiae	—	—	r	—	—	—	—	—
Mastigobranchiae	2	1	1	—	—	—	—	—

Four ovigerous female specimens measuring from 33.5 to 44.0 mm in body length were obtained from Kumano-nada of Owase, Mie Prefecture at a depth of about 170 fathoms by Mr. G. ABE on April 5th, 1937.

Distribution: Laccadive Sea, 406 fathoms (KEMP).

Note: The spines on the upper border of rostrum ranges from 8 to 10 in number, while those on the lower border 2 to 4 in my specimens. The mouth-parts closely resemble those of other species belonging to this genus. But the two characters, that (1) the second thoracic leg is closely covered throughout with setae, and (2) that the dorso-lateral margins of telson are provided with four pairs of bristles separate the present species from any other of this genus, and they are unique in the whole subfamily Pontoniinae.

***Periclimenes (Periclimenes) curvirostris* sp. nov.**

(Figs. 3~5)

Body smooth. Rostrum lanciform, deep, remarkably curved downwards, dorsal carina extending backwards to middle of carapace; upper border bears 8 spines, the hindmost one situated a little behind the level of orbit; lower border with 2 subterminal teeth (Fig. 3). Infra-orbital angle pointed. Antennal spine placed close to infra-orbital angle. Hepatic spine situated

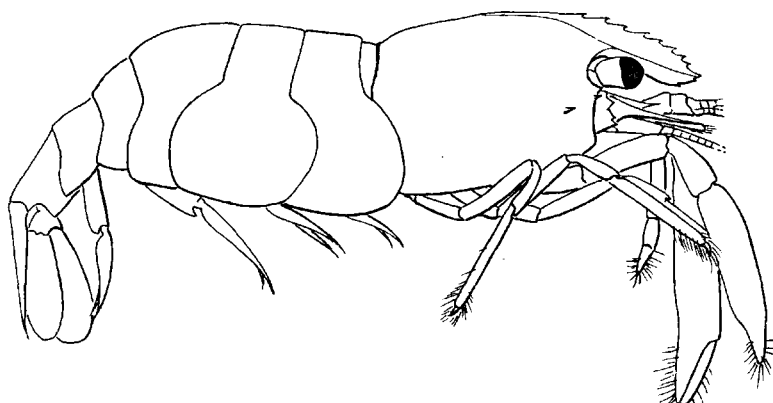


Fig. 3. *Periclimenes (Periclimenes) curvirostris* sp. nov., ♀, ×3.

a little postero-laterally to antennal one. Antero-lateral angle of carapace rounded. Abdomen with all terga rounded, first to fifth pleura rounded on their inferior margin, second pleuron overlapping first and third pleura. Telson shorter than uropods, distally gradually decreasing its width, breadth at the proximal widest region a little more than twice and half that between postero-lateral angles; each dorso-lateral margin armed with two bristles: one near its middle and the other at five-sixths; terminal margin convex, fringed with three bristles outermost one shortest, middle one longest about 3 times as long as outermost one and innermost one somewhat shorter than middle one (Fig. 5, G). Eye large well-pigmented. Antennular peduncle does not reach to tip of rostrum; basal segment depressed, broad, with a large lanciform lateral spine nearly reaching to its middle, distal outer angle ends in a prominent spine; ultimate segment longer than penultimate one (about one and half times as long as penultimate segment), provided with outer thicker and inner thinner rami, the outer one proximally uniramous and five-jointed but distally bifid with inner shorter (four-jointed) and outer longer branches (Fig. 5, A). Mandible without palp (Fig. 4, A). Endopodite of maxillule with thumb-like apical lobe (Fig. 4, B). Maxilla carries ear-shaped scaphognathite; inner proximal endite rudimentary, distal one consists of two slender lobes bearing long setae on apical margin;

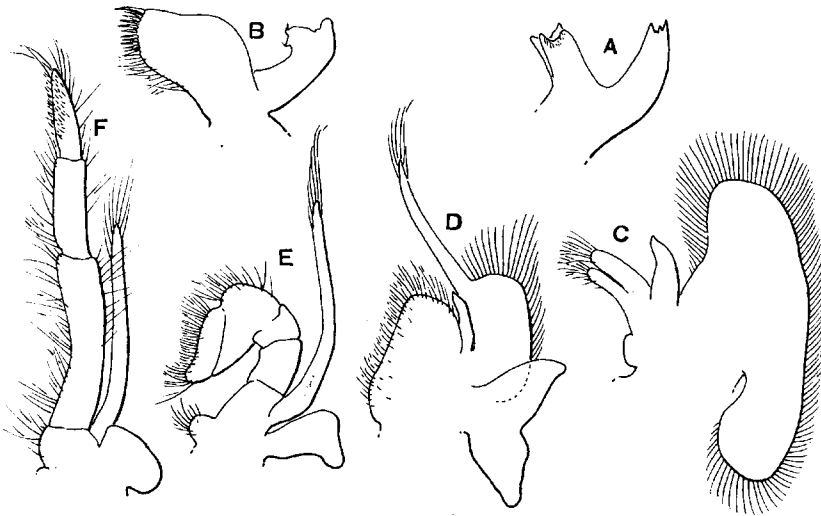


Fig. 4. Mouth-parts of *Periclimenes* (*Periclimenes*) *curvirostris* sp. nov. A, mandible, $\times 25$; B, maxillule without inner lacinia, $\times 35$; C, maxilla, $\times 25$; D, first maxilliped, $\times 20$; E, second maxilliped, $\times 20$; F, third maxilliped, $\times 20$.

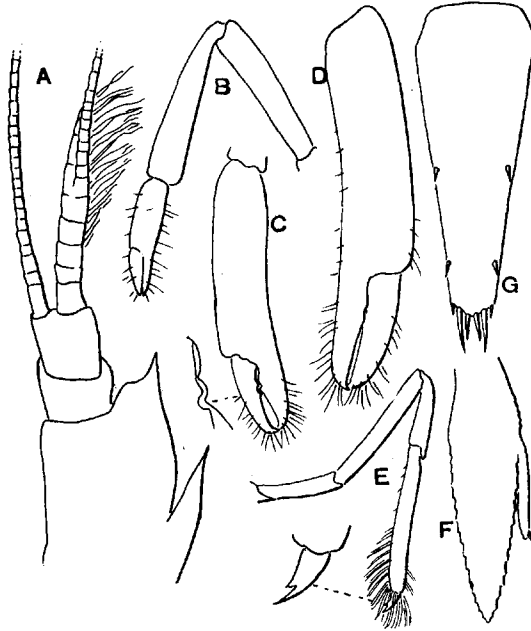


Fig. 5. *Periclimenes (Periclimenes) curvirostris* sp. nov., ♀. *A*, first antenna, $\times 20$; *B*, first pereopod (left), \times ca. 10; *C*, second pereopod (larger chela); *D*, same as *C* (smaller chela), \times ca. 10; *E*, third leg \times ca. 7; *F*, endopodite of second pleopod, $\times 20$; *G*, telson, $\times 15$.

endopodite papilla-like (Fig. 4, *C*). All maxillipeds with exopodite. Third maxilliped pediform, stout; ultimate and penultimate joints subequal in length; antepenult one a little more than twice as long as ultimate one, breadth at middle about one-fifth of its length (Fig. 4, *F'*). First cheliped slender, ratios against movable finger: palm 1.5; carpus 3.5; merus 3.2, cutting edges of chela straight, unarmed, breadth at middle of palm about half times of its length (Fig. 5, *B*). Second chelipeds unequal in size; larger leg 2.2 times as long as carapace, proportions to movable finger: palm 2.4, carpus 0.75, merus 1.2, ischium 0.8; tips of fingers recurved inwards; both fingers armed with two small teeth a little behind the middle of their prehensile edges; palm heavy, width at its middle about two-sevenths times of length (Fig. 5, *C*); merus without strong spine on distal lower margin; smaller leg about twice as long as carapace, very similar to larger one in general aspects, proportions against movable finger: palm 2.4, carpus 0.9, merus 1.4, ischium 1.0 (Fig. 5, *D*). Posterior three pairs of thoracic legs similar. Third leg slender, about 1.6 times as long as carapace; dactylus

biunguiculate, length and 2.5 times of width; propodus more or less longer than merus and approximately 5.5 times as long as ductylus, width at middle about one-eighth of length, distal half of posterior and distal margins fringed with rather thickly set long hairs (Fig. 5, *E*). Endopodite of second abdominal appendage bears slender, bar-shaped stylamblys on proximal inner margin (Fig. 5, *F*).

The above mentioned description is based on an ovigerous female specimen measuring 16.7 mm in body length. Other three ovigerous female specimens ranging from 15.0 to 17.4 mm were also examined. All specimens were obtained by Mr. G. ABE with trawl-net in February of 1937.

Type locality: Kumano-nada off Mie Prefecture at a depth of about 170 fathoms.

Note: The present species bears considerable resemblance to *P. (Periclimes) lanipes* KEMP, but differs from it in the following characters:—(1), the hindmost rostral spine is situated a little behind the posterior margin of orbital notch; (2), each finger of second cheliped is armed somewhat behind the middle with two small teeth; (3), each meropodite from second to fifth pairs of thoracic legs is not provided with a strong spine on its terminal lower margin; (4), last three pairs of legs have thickly set long hairs in almost distal half of posterior and distal margins.

Subgenus *Periclimesaenus* BORRADAILE

Periclimesaenus, BORRADAILE, 1915, p. 207; 1917, p. 337; KEMP, 1922, p. 166.

Only one species, *P. (Periclimesaenus) gorgonidarum* BALSS has been known from Japan.

Periclimes (Periclimesaenus) gorgonidarum BALSS

Periclimes gorgonidarum, BALSS, 1913, p. 236; 1914, pp. 51~53, figs. 31 and 32.

Mandible without palp, consists of molar and incisor processes (Fig. 6, *A*). Maxillule cross-shaped, inner lacinia narrow, outer lacinia as large as inner one, endopodite carries no apical lobe (Fig. 6, *B*). Maxilla without proximal endite; second lobe distally bifid, proximal lobe smaller than distal one; endopodite papilla-like; exopodite lamellar, anteriorly and posteriorly rounded (Fig. 6, *C*). Endopodite of first maxilliped bare and thumb-like, basal lobe of exopodite comparatively narrow (Fig. 6, *D*). Second maxilliped provided with exopodite (Fig. 6, *E*). Third maxilliped

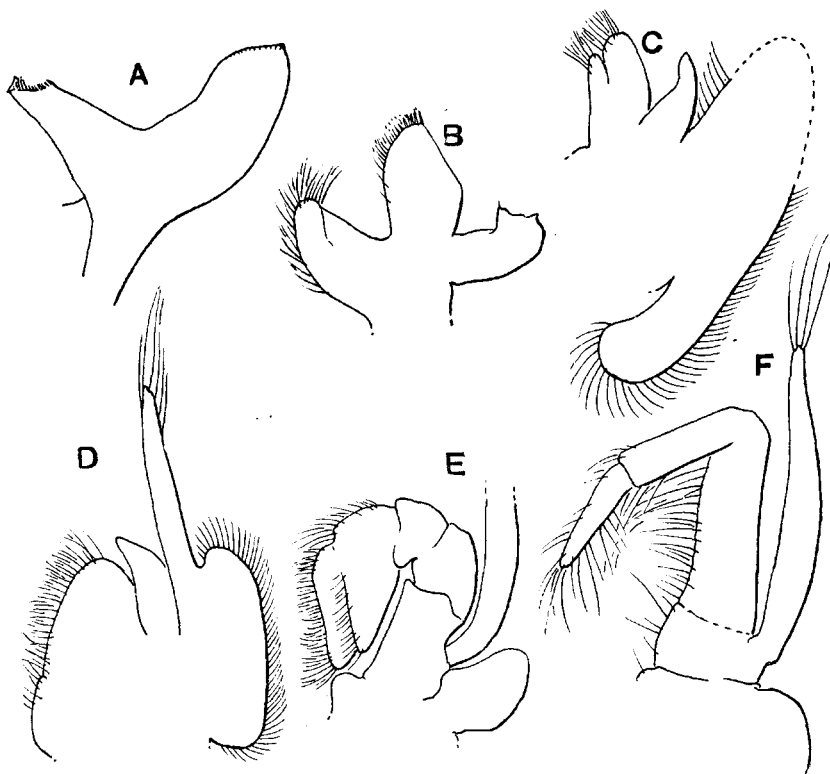


Fig. 6. Mouth-parts of *Periclimenes (Periclimenaeus) gorgonidarum* BALSS. *A*, mandible, $\times 35$; *B*, maxillula, $\times 15$; *C*, maxilla, $\times 20$; *D*, first maxilliped, $\times 20$; *E*, second maxilliped, $\times 20$; *F*, third maxilliped, $\times 20$.

pediform, antepenult segment not depressed, about twice as broad as ultimate one and about 1.8 times as long as ultimate one, penultimate joint somewhat longer than ultimate one (Fig. 6, *F*). First pereiopod very slender, movable finger short, both cutting edges without tooth, palm about 2.6 times as long as movable finger, carpus and merus twice as long as chela (Fig. 7, *A*). Second chelipeds asymmetrical, both chelae heavy and slightly depressed, palm more than twice as long as broad, about two times as long as movable finger, fingers with inturned tips, movable finger provided with a massive but not so much long tooth near its middle; larger hand with a notch at middle of fixed finger, but smaller hand with palm about 2.7 times as long as movable finger, prehensile edge of which armed with a large tooth directed obliquely backwards near its middle, and with fixed finger remarkably convex along cutting edge (Fig. 7, *B~D*). Third pereiopod provided with a large

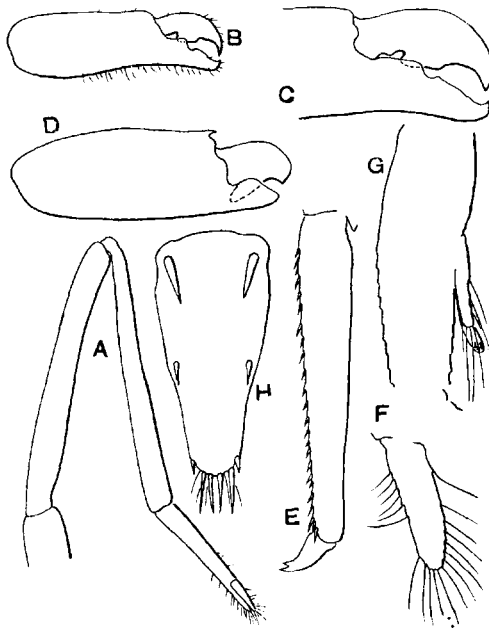


Fig. 7. Body parts of *Periclimenes* (*Periclimenaeus*) *gorgonidarum* BALSS, ♂. *A*, first pereopod, $\times 15$; *B*, larger chela of second pereopod, \times ca. 3; *C*, fingers of larger chela of second one, $\times 6$; *D*, smaller chela of second pereopod, $\times 6$; *E*, propodus and dactylus of third pereopod, $\times 15$; *F*, endopodite of first pleopod, $\times 25$; *G*, endopodite of second pleopod, $\times 35$; *H*, telson, \times ca. 10.

number of spinules along posterior border of propodus, dactylus biunguiculate (Fig. 7, *E*). Fourth and fifth legs entirely similar to third one. Endopodite of first abdominal appendage lamellar (Fig. 7, *F*). Endopodite of second pleopod carries shorter stylamblys and longer appendix musculina on proximal inner margin (Fig. 7, *G*). Telson gradually decreasing its width, each dorso-lateral margin armed with a long spine directed slightly inwards near its proximal margin and with similarly long one at half way between the proximal spine and postero-lateral angle, distal margin convex and armed with three pairs of spinules (Fig. 7, *H*).

Each of anterior three thoracic somites carries mastigobranchia only and last five somites (from fourth to eighth) with a pleurobranchia on each side as shown in the following lines:—

	I	II	III	IV	V	VI	VII	VIII
Pleurobranchiae	—	—	—	1	1	1	1	1
Arthrobranchiae	—	—	—	—	—	—	—	—
Podobranchiae	—	—	—	—	—	—	—	—
Mastigobranchiae	1?	1	1	—	—	—	—	—

The foregoing description is based on an ovigerous female specimen measuring 20.0 mm in body length and a male, 16.5 mm. These specimens

were fished by Mr. Takio YOKOTA from Hurue, Kitaura-mura, Higasiusukigun, Miyazaki Prefecture, at a depth of about 8 fathoms together with *Gelidium*, on August 11th, 1938.

Distribution: Misaki, Sagami Bay (BALSS).

Note: The specimens at my dispersal mostly agree with BALSS's description and figures. But the only point of difference is that the dactylus of pereopods from third to fourth is serrated in his. I venture to think that the bifid tip of the fifth leg was overlooked by BALSS.

KEMP (1922, p. 138) has remarked that the present species probably does not belong to the Pontoniinae, but so far as my observations go there leaves no room for doubt that it is truly a member of Pontoniinae.

Subgenus *Ancylocaris* SHENKEL

Ancylocaris, KEMP, 1922, p. 167.

To the already recorded two species of this subgenus from Japan, *P. (Ancylocaris) hertwigi* BALSS (1914, p. 49) and *P. (Ancylocaris) akiensis* KUBO (1936, p. 47), two more are here added as given in the following key.

Key to the species of the subgenus *Ancylocaris*

- A. Rostrum very thin
 - B. Tip of telson armed with three pairs of bristles *P. gracilirostris* sp. nov.
 - B'. Tip of telson fringed with 13 bristles *P. hertwigi*.
- A'. Rostrum moderate
 - C. Dactylus of last three pairs of walking legs long; distal spine of antennal scale well beyond end of lamella *P. amamiensis* sp. nov.
 - C'. Dactylus of last three pairs of walking legs comparatively short; distal spine of antennal scale does not extend beyond end of lamella *P. akiensis*.

Periclimenes (Ancylocaris) gracilirostris sp. nov.

(Figs. 8~10)

Body smooth, somewhat compressed. Carapace dorsally convex in profile, antennal spine present, hepatic and supraorbital spines absent, infraorbital angle spiniform, antero-lateral angle rounded. Rostrum very shallow, upper border slightly concave, dorsal carina arising from about midpoint of carapace, armed with almost equally spaced six spines, the hindmost of which is placed a little behind posterior border of orbital notch; lower border with two subterminal teeth (Fig. 8). Abdominal segments dorsally rounded. All pleura not pointed on inferior margin, first and third pleura overlapped by second one. Telson slightly shorter than uropods; distally

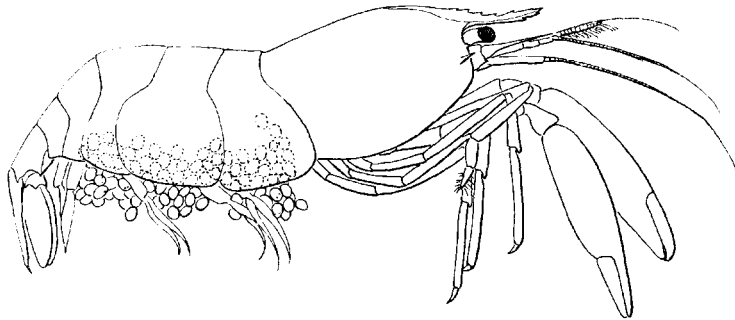


Fig. 8. *Periclimenes (Ancylocaris) gracilirostris* sp. nov., \times ca. 3.

gradually decreasing its breadth almost by half, dorso-lateral margin provided with two bristles, one at middle and the other at midway between middle and distal end; terminal margin furnished with three pairs of bristles, outer and innermost small ones and middle one about thrice the length of outer one (Fig. 10, *F*). Mandible consists of molar and incisor processes, without palp (Fig. 9, *A*). Maxillule provided with rather narrow inner lacinia, recurved forwards at right angles, endopodite with well-developed apical lobe (Fig. 9, *B*). Maxilla with ear-shaped scaphognathite, endopodite bare and thumb-like, inner distal endite forked in the form of

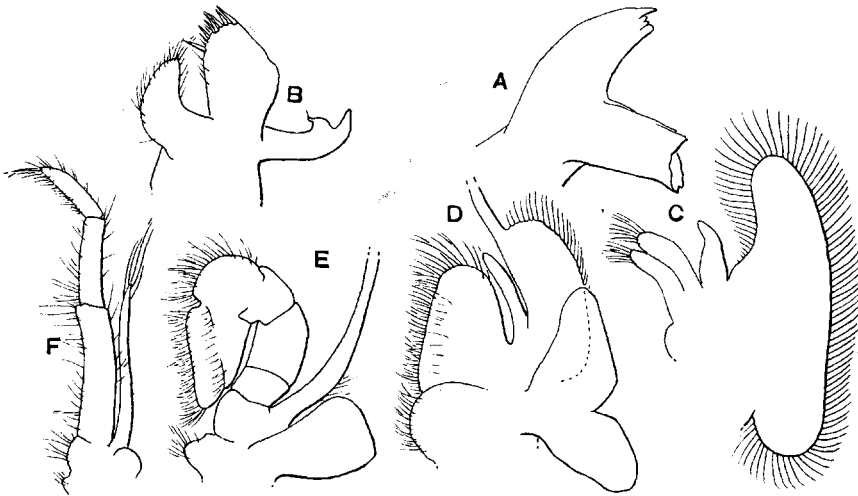


Fig. 9. Mouth-parts of *Periclimenes (Ancylocaris) gracilirostris* sp. nov. *A*, mandible, \times 25; *B*, maxillule, \times 25; *C*, maxilla, \times 20; *D*, first maxilliped, \times 20; *E*, second maxilliped, \times 20; *F*, third maxilliped, \times ca. 10.

two slender lobes but proximal lacinia rudimentary (Fig. 9, *C*). All three maxillipeds provided with exopodite and mastigobranchiae (Fig. 9, *D-F*). Third maxilliped pediform, stout; penultimate segment a little longer and antepenult one somewhat less than twice as long as ultimate one; antepenult joint about four times as long as wide (Fig. 9, *E*). Antennular peduncle reaches to tip of rostrum; basal segment depressed, distal outer angle ends in a large lanciform process reaching about distal margin of second segment; third segment somewhat longer than second one, carries inner thinner and outer thicker flagella, the latter proximally uniramous consisting of 9 joints and distally biramous with longer and shorter rami, the latter one comprising 4 joints (Fig. 10, *A*). Second chelipeds similar with each other but slightly different in size, about two times as long as carapace; fingers with inturned tips, and toothed proximally, one tooth on movable finger fitting with two teeth on fixed finger; palm two and half times as long as finger, carpus remarkably short, about one-fifth of palm; merus without spine at tip of lower border (Figs. 10, *B* and *C*). Last three pairs of thoracic legs much similar. Third leg slender, about 1.6 times as long as carapace; dactylus ends in a single claw; 11 times as long as wide, about 6 times as long as dactylus, posterior margin armed with 7 bristles; carpus and ischium subequal and about half times of propodus and merus in length, merus without spine on distal lower border (Fig. 10, *D* and *E*).

Type specimen: ovigerous female, measuring 23 mm long, obtained in February, 1937 by Mr. Genkiti ABE.

Type locality: Kumano-nada off Mie Prefecture at a depth of about 170 fathoms.

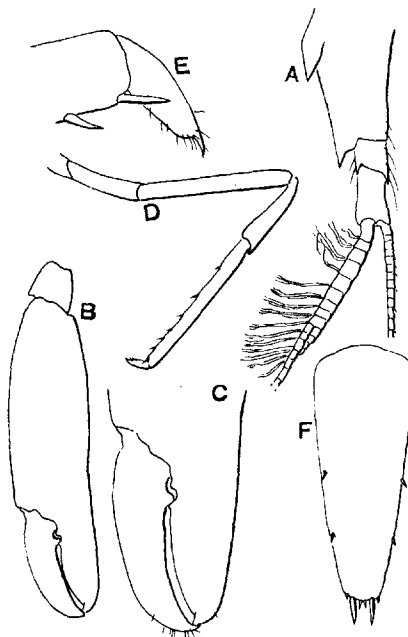


Fig. 10. Body parts of *Periclimenes* (*Ancylocaris*) *gracilirostris* sp. nov., ♀. *A*, antennule, \times ca. 10; *B*, carpus and chela of first pereopod, \times 6; *C*, fingers of pereopod, \times ca. 7; *D*, third pereopod, \times ca. 7; *E*, tip of third pereopod, \times 35; *F*, telson, \times ca. 10.

The present species is closely allied to *Periclimenes hertwigi* BALSS from Bôsyû (120 m deep) and Kagoshima (120 m), but it is easily distinguished from the latter by having two small outer and inner pairs and one middle larger and longer pair of bristles (instead of 13 bristles) on the distal border of telson.

***Periclimenes (Ancylocaris) amamiensis* sp. nov.**

(Figs. 11~12)

Rostrum subhorizontal, deep, a little shorter than carapace; dorsal carina extends backwards almost to middle of carapace, bearing seven subequidistant teeth, the hindmost one of which is located on carapace; lower margin convex, armed with two teeth, posterior one of which is inserted under the hindmost tooth but three on upper border (Fig. 11, B). Carapace

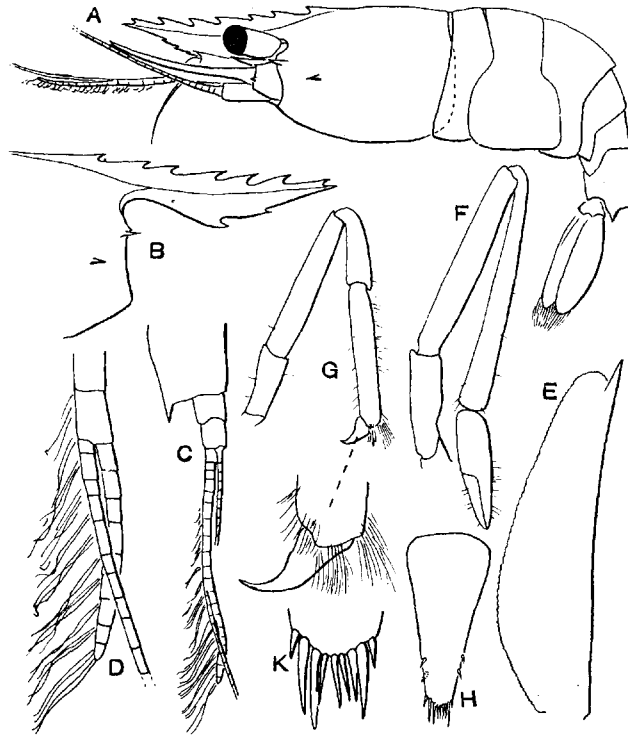


Fig. 11. *Periclimenes (Ancylocaris) amamiensis* sp. nov., ♀. A, lateral view, $\times 6$; B, rostrum, \times ca. 7; C, antennule, \times ca. 10; D, inner ramus of antennule, $\times 35$; E, antennal scale, $\times 15$; F, second pereiopod, $\times 15$; G, third pereiopod, \times ca. 10; H, telson, \times ca. 10; K, tip of telson, $\times 35$.

with antennal and hepatic spines, but without supraorbital one (Fig. 11, *A*). Antennular peduncle not extending to tip of rostrum; basal segment flattened, outer margin produced in the form of a prominent spine which reaches distal margin of second segment (Fig. 11, *C*); third segment nearly as long as second one, provided with inner thinner and outer thicker flagella; eleventh joint of outer ramus with 9-jointed shorter and many jointed longer branches (Fig. 11, *D*). Antennal scale a little beyond tip of rostrum, outer margin ends in a stout spine extending far beyond distal margin of lamella (Fig. 11, *E*). Mandible without palp, incisor process with three teeth along distal margin (Fig. 12, *A*). Maxillule cross-shaped, inner endite rather narrow, apical lobe of endopodite very small (Fig. 12, *B*). Maxilla carries ear-shaped exopodite, inner distal lacinia bifid at about middle, proximal one absent (Fig. 12, *C*). First maxilliped provided with exopodite bearing rather small basal outer lobe (Fig. 12, *D*). Third maxilliped pedi-form; antepenult segment about twice as long as wide and 1.5 times as long as penultimate one which is a little less than twice as long as ultimate one (Fig. 12, *F*). First cheliped slender, proportion against movable finger: palm 1.1, carpus 4.0, merus 3.5, ischium 1.9; cutting edges straight, unarmed (Fig. 12, *F*). Third leg as long as, and somewhat stouter than first one; dactylus simply pointed, a little recurved backwards, about one-fifth of

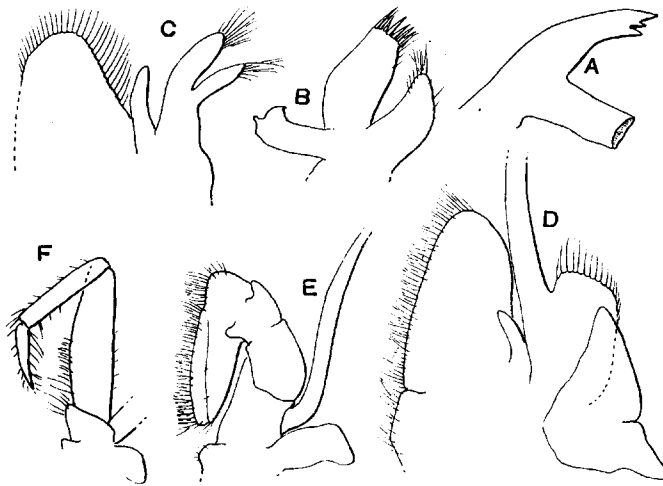


Fig. 12. Mouth-parts of *Periclimenes (Ancylocaris) amamiensis* sp. nov. *A*, mandible, $\times 35$; *B*, first maxilla, $\times 35$; *C*, second maxilla, $\times 35$; *D*, first maxilliped, $\times 35$; *E*, second maxilliped, $\times 25$; *F*, third maxilliped, $\times 15$.

propodus in length; propodus a little longer than merus, width at its middle about one-sixth of length; carpus somewhat longer than ischium; merus carries no spine or seta on distal lower margin (Fig. 11, *G*). Fourth and fifth pairs of legs entirely the same as third one in size and shape. Telson wedge-shaped in profile; distally gradually decreasing its breadth: proximal width in the widest region about three times as much as distal breadth between postero-lateral angles; each dorso-lateral margin armed with two bristles, one at three-fourths and the other at five-sixths; distal margin convex, fringed with 9 bristles (Fig. 11, *H* and *K*).

The above mentioned description is based on a single mutilated specimen of ovigerous female (second cheliped wanting), 12.0 mm in body length, obtained on August 7th, 1927 from Ôsima, Riu-Kiu Islands.

The present species bears very close resemblance to *P.* (*Ancylocaris*) *seychellensis* (BORRADAILE) (BORRADAILE, 1917, p. 375 and KEMP, 1922, p. 176) but differs from it by many important characters as shown in the following table:—

Items	<i>P. seychellensis</i>	<i>P. amamiensis</i>
(1) Rostrum	a little beyond distal end of antennal scale.	not reaching to distal end of antennal scale.
(2) Eye stalk	with a small conical papilla on upper border.	without papilla.
(3) Outer antennular flagellum	basal fused part 5~7-segmented, distal shorter ramus comprising 4 segments.	basal fused part 11-jointed, distal shorter ramus composed of 9 segments.
(4) Antennal scale	distal spine reaching to or beyond end of lamella.	distal spine projecting far beyond distal margin of lamella.
(6) Last three pairs of thoracic legs	slender, length of propodus about 13 times as much as width at its middle.	stout, length of propodus about 7 times of breadth at its middle.
(5) First cheliped	merus and carpus subequal in length, palm somewhat shorter than finger.	merus shorter than carpus, palm a little longer than finger.

***Periclimenes (Ancylocaris) brevicarpalis* (SCHENKEL)**

(Figs. 13~14)

Periclimenes (Ancylocaris) brevicarpalis, KEMP, 1922, pp. 185~191, Pl. 6, fig. 8.

Periclimenes hermitensis RATHBUN, 1914, p. 655, pl. 1, fig. 1~3.

Ancylocaris aberrans, BORRADAILE, 1917, p. 355 and 356.

Mandible Y-shaped, without palp, consists of molar and incisor pro-

cesses, the latter one armed with three teeth on distal margin (Fig. 13, *A*). Maxillule cross-shaped, palp with rudimentary apical lobe (Fig. 13, *B*). Maxilla carries an ear-shaped scaphognatite rounded on posterior margin, and papilla-like endopodite, inner distal endite slender but distally bifid, inner proximal one entirely absent (Fig. 13, *C*). First to third maxillipeds provided with exopodite. First maxilliped bears mastigobranchia or epipodite and unsegmented endopodite, basal outer lobe on exopodite broad (Fig. 13, *D*). Second maxilliped with mastigobranchia but without podobranchia (Fig. 13, *E*). Third one pediform, provided with mastigobranchia and podobranchia, penultimate segment one and half, and antepenultimate one about twice, as long as ultimate joint (Fig. 13, *F*). Endopodite of second abdominal appendage of male carries a stylamblys and equally long appendix musculina near proximal inner margin, appendix masculina being fringed with long setae (Fig. 13, *G*).

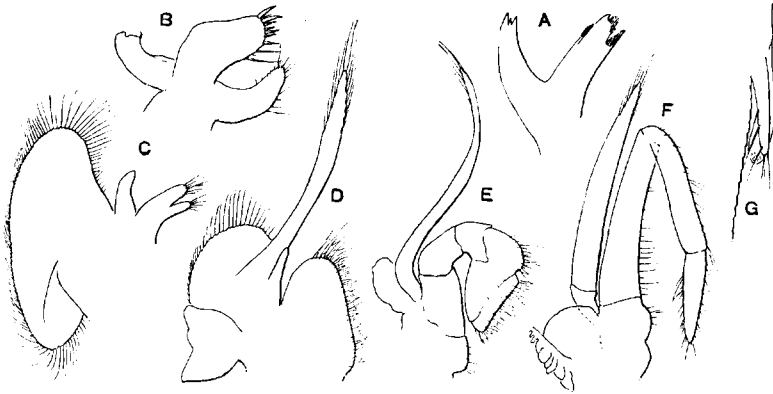


Fig. 13. *Periclimenes (Ancylocaris) brevicarpalis* (SCHENKEL), ♂. *A*, mandible, $\times 28$; *B*, maxillule, $\times 28$; *C*, maxilla, $\times 20$; *D*, first maxilliped, $\times 20$; *E*, second maxilliped, $\times 20$; *F*, third maxilliped, $\times 20$; *G*, basal inner border of endopodite of second pleopod with stylamblys and appendix musculina, $\times 28$.

The description mentioned above is based on a male measuring 14.5 mm in body length, and a female 12.0 mm long, obtained in February, 1937 from Isigaki-zima, Riu-Kiu (Okinawa group) by Mr. Sadayoshi MIYAKE. According to his information, this shrimp was found living in association with giant sea-anemone (*Stoichactis kenti*) measuring about 35 cm in diameter.

Distribution: Zanzibar, Kokotoni, Bawi in E. Africa (LENZ); Djibouti,

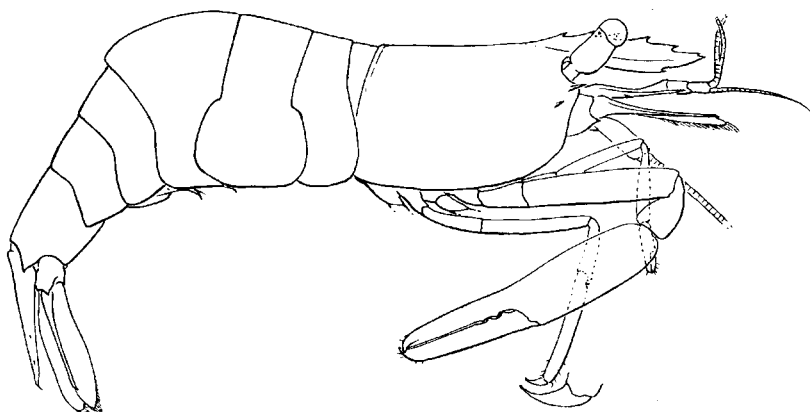


Fig. 14. *Periclimenes (Ancylocaris) brevicarpalis* (SCHENKEL), ♂, × ca. 5.

Red Sea; Bahrein Is., Persian Gulf (NOBILI); Hermite Is., N. W. Australia (RATHBUN); Andamaus (KEMP).

Notes: The specimens at my disposal tally completely with KEMP's description of the present species and RATHBUN's one of *Periclimenes hermitensis* (1914).

Genus *Anchistus* BORRADAILE

Anchistus, BORRADAILE, 1898, p. 387; 1917, p. 387.

A single species, *A. misakiensis* has hitherto been known from Japan (YOKOYA, 1936, p. 36, fig. 5), but the present author is now in a position to add two more to the Japanese fauna.

Key to the species of *Anchistus*

- A. Rostrum without tooth or with rudimentary teeth *A. miersi*.
- B. Apex of rostrum minutely notched *A. misakiensis*.
- C. Rostrum armed with small teeth near apex *A. inermis*.

Anchistus inermis (MIERS)

(Figs. 15~17)

Harpilius inermis, MIERS, 1884, p. 291, pl. 32, fig. B.

Anchistus inermis, BORRADAILE, 1917, p. 388; TATTERSALL, 1921, p. 391, pl. 27, fig. 4; KEMP, 1922, p. 249, text-fig. 81 (a~d).

Rostrum directed a little downwards, about two-fifths times as long as carapace, apex broadly rounded in profile, distal one-third of upper border

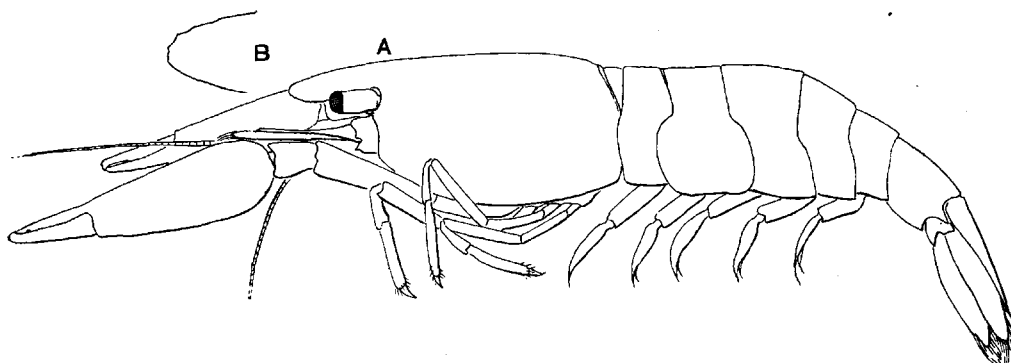


Fig. 15. *Anchistus incermis* (MIERS), ♂. A, lateral view, $\times 6$;
B, tip of rostrum, \times ca. 22.

with 5 or 6 rudimentary, microscopical teeth (Figs. 15 and 16). Antennular peduncle a little beyond distal end of rostrum; basal segment broad, about twice as broad as penultimate joint of this peduncle, depressed, armed with an acutely pointed process on basal outer margin, distal outer margin ends in a small spine; distal two segments equal in length; ultimate segment carries inner thinner and outer thicker flagella, the thicker one proximally uniramous with 5 or 6 joints and bifid with outer longer and inner shorter branches, the shorter one consists of 5 or 6 segments and fringed with thickly set hairs on outer margin (Fig. 17, A). Maxilla provided with lamellar, cuneiform exopodite; endopodite papilla-like, inner distal endite forming a large process (Fig. 17, C). Third maxilliped slender, antepenult segment depressed, broad (about twice as broad as penultimate one), slightly longer than distal two segments. Second pereopod asymmetrical; larger leg somewhat more than twice as long as carapace, ratios of each segment consisting of the leg against movable finger: palm 2, carpus 0.5, merus 1.4, ishium 1.0; fingers with inturned tips and almost straight cutting edges; movable finger armed with two teeth, one at one-fourth and the other at one-third; fixed finger serrated with six teeth on about proximal half of prehensile edge (Fig. 17, E and F); smaller leg about 1.8 times as long as carapace; proportions to movable finger: palm 1.8, carpus 0.5, merus 1.0 and ishium 0.9; proximal one-fourth and nearly distal half of cutting edge entire but with notches between these straight edges; immovable one has a notch near proximal two-fifths (Fig. 17, G and H). Third, fourth and fifth legs alike. Third leg about 1.3 times as long as carapace, propodus about 1.8 times as long as carpus, merus a little longer than propodus,

ischium somewhat longer than carapace, dactylus pointed, remarkably curved backwards (Fig. 17, *K*). Endopodite of second abdominal appendage provided with stylamblys and appendix musculina of almost equal length (Fig. 17, *L*).

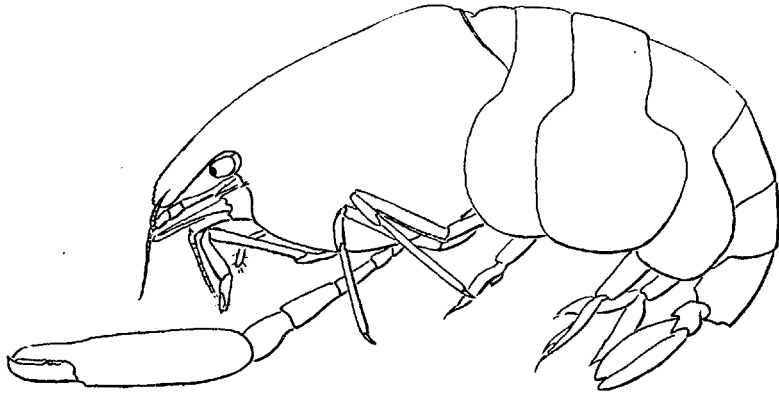


Fig. 16. *Anchistus incermis* (MIERS), ♀, 28.5 mm long, \times ca. 3, (telson removed)

Female closely resembles male in general aspects but shows such differences as follows:—(1) body larger, (2) second cheliped smaller and shorter, about 1.6 times as long as carapace, (3) teeth on the prehensile edges of second cheliped less prominent than male and (4) endopodite of second pleopod carries a stylamblys only on its proximal inner margin (Fig. 16, *M*).

The above description is based on a male specimen measuring 16.5 mm in body length, and an ovigerous female, 28.5 mm in body length. An immature male specimen, 13.0 mm in body length, was also examined.

Locality: Palau.

Distribution: Porte Molle, Queensland: Shark Bay, W. Australia (in *Pinna*) (MIERS); Bello Is., N. W. Australia (in *Pinna*) (RATHBUN); Suakin Harbour, Red Sea (in *Pinna*) (TATTERSALL); Arzana Is., Persian Gulf (in *Pinna*): Vanikoro (Sante Cruz group), Polynesia (KEMP).

Note: The branchial arrangement entirely agrees with that of *Anchistus miersi* (DE MAN), to which the present species shows resemblance in having the mouth-parts except maxilla and third maxilliped similarly constructed.

The three specimens under my examination agree well with the descriptions of MIERS and TATTERSALL, but differs from KEMP's description in having two teeth on cutting edge of movable finger of second cheliped.

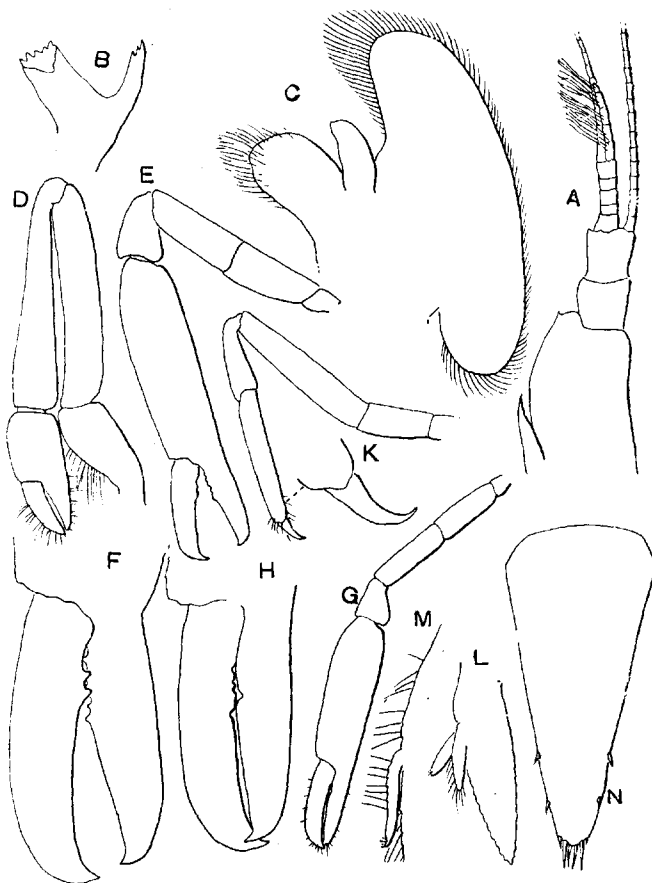


Fig. 17. Body parts of *Anchistus inermis* (MIERS), *A*~*D*, *F*~*L* and *N*, male; *E* and *M*, female. *A*, antennule, $\times 15$; *B*, mandible, $\times 25$; *C*, maxillule, $\times 15$; *D*, first pereopod, $\times 15$; *E*, larger leg of second pair of pereopods, ♀ , $\times 6$; *F*, tip of larger leg of second pereopods, ♂ , $\times 50$; *G*, smaller leg of second pair of pereopods, ♂ , $\times 6$; *H*, same as *G* (tip), $\times 20$; *K*, third pereopod, $\times \text{ca. } 10$; *L*, endopodite of second pleopod, $\times 20$; *M*, same as *L* (ovigerous female), $\times 15$.

Anchistus miersi (DE MAN)

(Figs. 18~20)

Anchistus miersi, BORRADAILE, 1917, p. 388, pl. 56, fig. 25; TATTERSALL, 1921, p. 391; KEMP, 1922, p. 255, Text-fig. 85.

Harpilus miersi, DE MAN, 1888, p. 274, pl. 17, fig. 6~10.

Rostrum about 0.4 times as long as carapace, provided with 4~5 sharp teeth on upper border and subterminal one or two teeth on lower one

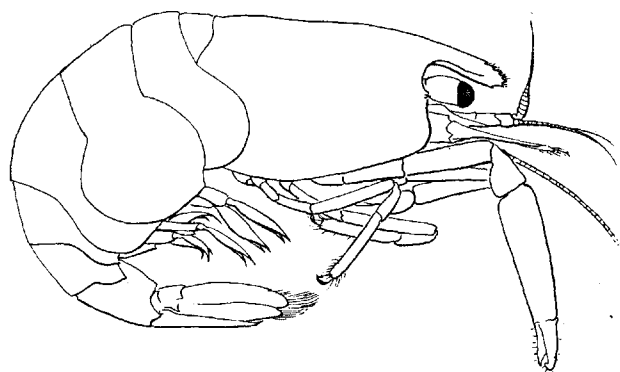


Fig. 18. *Anchistus miersi* (DE MAN), ♀, × ca. 6.

(Fig. 18). Antennular peduncle slightly beyond tip of rostrum; basal segment broad, and depressed, outer distal angle ends in a small spine, proximally carries a large outer process, second and third joints equal in length, ultimate segment with inner thinner and outer thicker flagella, outer one proximally uniramous and consisting of 4 or 5 joints but distally bifid with shorter and longer branches, shorter branch 4-segmented and fringed with long hairs (Fig. 20, *A*). Antennal scale somewhat narrowed distally (Fig. 20, *B*). Mandible Y-shaped and without palp, incisor process 4-toothed (Fig. 19, *A*). Maxillule cross-shaped, inner and outer lacinia broad and fringed with thickly set setae on distal margin, exopodite without apical lobe (Fig. 19, *B*). Exopodite of maxilla kidney-shaped, endopodite thumb-like in outline and hairless, inner distal lacinia bifid with two lobes, and anterior one broader than posterior one (Fig. 19, *C*). All three maxillipeds provided with exopodite and mastigobranchia. Endopodite of first maxilliped unsegmented and lobe of exopodite comparatively narrow (Fig. 19, *D*). Third one pediform, ratios of distal three segments to ultimate segment: penultimate one 1.6, antepenult 2.4 (Fig. 19, *F*). Second pereopod large, about two times as long as carapace; chela heavy, movable finger a little shorter than half of palm, armed with a blunt tooth at one-third of cutting edge; fixed finger serrated with 5 denticles in proximal half (Fig. 20, *C* and *D*). Third leg about 1.3 times as long as carapace; propodus and merus about twice as long as carpus, ishium somewhat longer than carpus; dactylus bifid, outer surface densely ornamented with setae (Fig. 20, *E* and *F*). Fourth and fifth legs similar to third one in general characters. Endopodite of second abdominal appendage carries a longer stylamblys and shorter

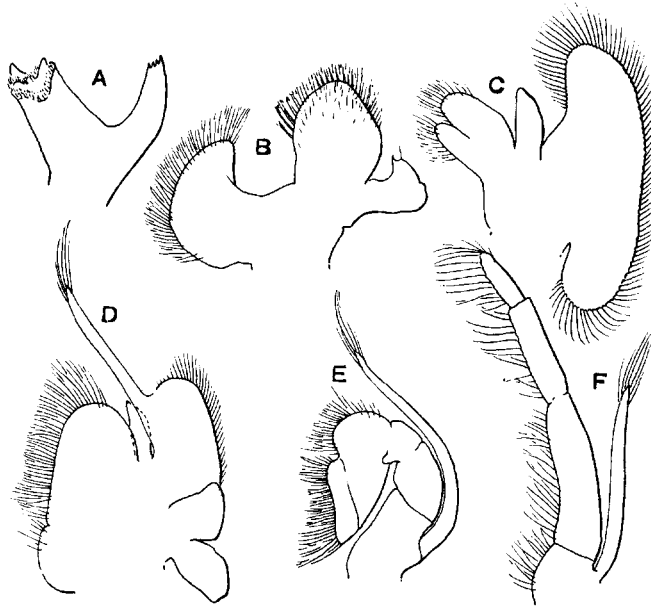


Fig. 19. Mouth-parts of *Anchistus miersi* (DE MAN). *A*, mandible; $\times 65$; *B*, maxillula, $\times 35$; *C*, maxilla, $\times 25$; *D*, first maxilliped, $\times 25$; *E*, second maxilliped, $\times 25$; *F*, third maxilliped, $\times 20$.

appendix masculina on inner proximal margin in male, but the latter absent in female (Fig. 20, *H*).

Fourth to eighth thoracic segments bear one pleurobranchia respectively as shown in the following Table.

	I	II	III	IV	V	VI	VII	VIII
Pleurobranchiae	—	—	—	1	1	1	1	1
Arthrobranchiae	—	—	—	—	—	—	—	—
Podobranchiae	—	—	—	—	—	—	—	—
Mastigobranchiae	2	1	1	—	—	—	—	—

The above mentioned description is based on 4 male specimens ranging from 10.0 to 18.0 mm and 2 ovigerous female specimens, 13.0 and 17.0 mm in body length.

Locality: Palau (in *Pteria macroptera*, *Tridacna squamosa* and *Pinctada maxima*) (R. WADA).

Distribution: Elphinstone Is., Mergui Archipelago (DE MAN); Port Blair (in *Tridacna*); Batavia, Reynaud coll.: Pulo Condore, Germain coll. (in *Tridacna*) (KEMP); Mangareva in the Gambier Is. in pearl oyster

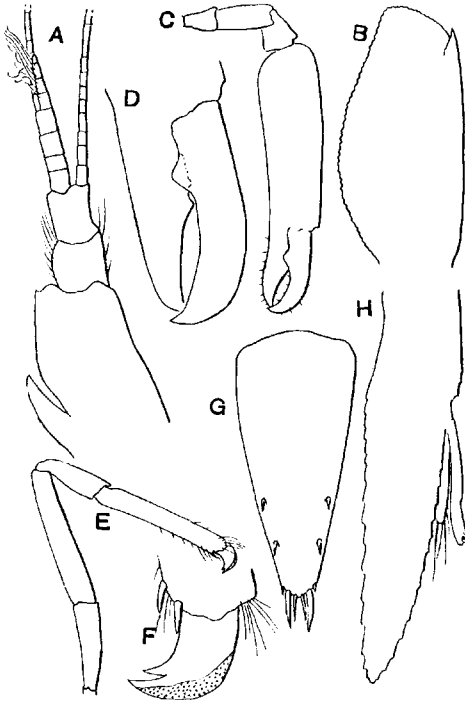


Fig. 20. Body parts of *Anchistus miersi* (DE MAN), ♂. *A*, antennule, $\times 20$; *B*, antennal scale, $\times 20$; *C*, second thoracic leg, $\times 6$; *D*, fingers of the same leg as in *C*, \times ca. 10; *E*, third thoracic leg, \times ca. 10; *F*, dactylus of the same leg as in *E*, $\times 50$; *G*, telson, $\times 15$; *H*, endopodite of second pleopod, $\times 50$.

(NOBILI); Funafuti in the Ellice Is. (WHITELEGGE); D'Entrecasteaux Is., British New Guinea (in *Tridacna squamosa*): Maldives: Seychelles (BORRADAILE); Arzana I., Persian Gulf (in *Spondylus*): Red Sea (in *Pinna*) (NOBILI).

My specimens perfectly agree with DE MAN's original description of *Harpilius miersi* (= *Anchistus miersi*), but differ from KEMP's description of Batavian specimens in having (1) one large tooth instead of two rather small teeth at one-third of cutting edge of movable finger of second cheliped and (2) 4 or 5 denticles (instead of 8 or 9 denticles) in proximal half of the fixed finger.

Genus *Harpilius* DANA

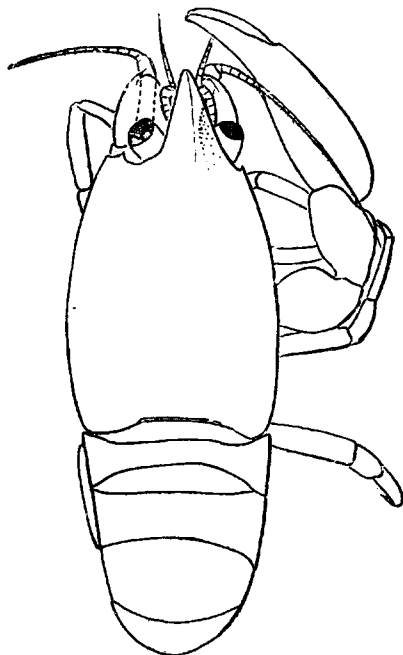
Harpilius, DANA, 1852, p. 575; TATTERSALL, 1921, p. 338; KEMP, 1922, p. 226; BORRADAILE, 1917, p. 379.

Of this genus, only one representative, *H. imperialis* KUBO, has been known from Bonin Islands as previously recorded.

Genus *Pontonia* LATREILLE*Pontonia*, BORRADAILE, 1917, p. 389; KEMP, 1922, p. 259.*Pontonia katoi* sp. nov.

(Figs. 21~23)

Body smooth, depressed and swollen. Rostrum depressed, toothless, carinated dorsally and ventrally with very low ridges, slightly curved downwards, bluntly pointed with apical angle about 45° , 0.4 times as long as carapace, reaches to distal tip of outer margin of antennal scale (Fig. 21). Infra-orbital angle produced, but neither antennal nor hepatic spine occur on carapace. Telson, excluding terminal spines, proximal breadth less than twice the breadth measured at antero-lateral angles, armed along each dorso-lateral margin with two bristles dividing it into three intervals with proportions 1:2:1.5; distal margin fringed with two pairs of median and intermediate longer and a pair of outer shorter bristles (Fig. 23, *L*). Eyes well pigmented. Antennular peduncle not reaching to tip of rostrum; basal segment broad and its outer margin ends in a stout tooth reaching distal margin of second segment; second and third segments equal in length and broader than long; third segment provided with inner thinner 9-jointed and outer thicker flagella. Outer one proximally uniramous comprising 4-joints, but distally divided into stouter inner 2-segmented and slenderer outer about 5-segmented branches (Fig. 23, *A* and *B*). Antennal scale oval in outline, outer margin ends in a prominent spine which reaches well beyond the distal margin of lamella and curved inwards (Fig. 23, *C*). Mandible consisting of molar and 5-toothed incisor processes; without palp (Fig. 22, *A*). Maxillule small; inner lacinia narrow, distal margin furnished with setae; outer lacinia curved inwards, its apical margin fringed with stout setae; endopodite bar-shaped, apical lobe absent (Fig. 22, *B*). Maxilla

Fig. 21. *Pontonia katoi* sp. nov., ♂, × 6.

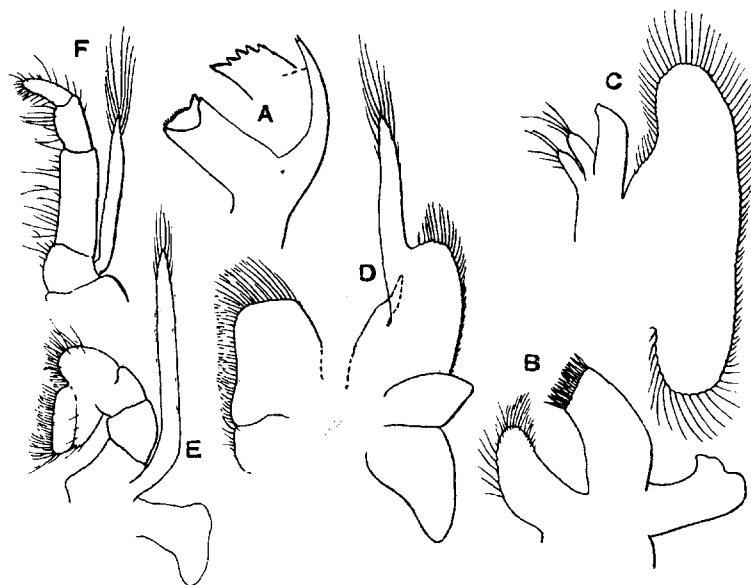


Fig. 22. Mouth-parts of *Pontonia katoi*, sp. nov. *A*, mandible, $\times 35$; *B*, maxillule, $\times 35$; *C*, maxilla, $\times 35$; *D*, first maxilliped, $\times 25$; *E*, second maxilliped, $\times 25$; *F*, third one, $\times 20$.

with large ear-shaped exopodite, thumb-like endopodite and inner distal endite which is bifid with two papilla-like processes (Fig. 22, *C*). First maxilliped carries small endopodite, exopodite and paired mastigobranchiae; inner lacinia broad, furnished with thickly set setae on inner margin (Fig. 22, *D*). Second maxilliped bears exopodite and mastigobranchia (Fig. 22, *E*). Third one five-segmented and provided with exopodite; ultimate and penultimate segments equal in length; antepenult one twice as long as ultimate one (Fig. 22, *F*). First cheliped slender, about 1.3 times as long as carapace; both fingers toothless and leaving no space between them when closed; ratios of each segment to movable finger: palm 1.0, carpus and merus 2.8 (Fig. 23, *E*). Second cheliped massive, asymmetrical, about two times as long as carapace; left one larger than the other, movable finger with inturned tip and a broad tooth at about middle of cutting edge, fixed finger shorter than movable one, armed with two teeth on proximal half of prehensile edge and its tip not recurved inwards, palm about twice as long as wide at middle and about 2.5 times as long as movable finger (Fig. 23, *F*); smaller chela almost similar to larger one in aspect, about 0.7 times as long as larger one, both cutting edges toothless but rugged, movable finger curved inwards,

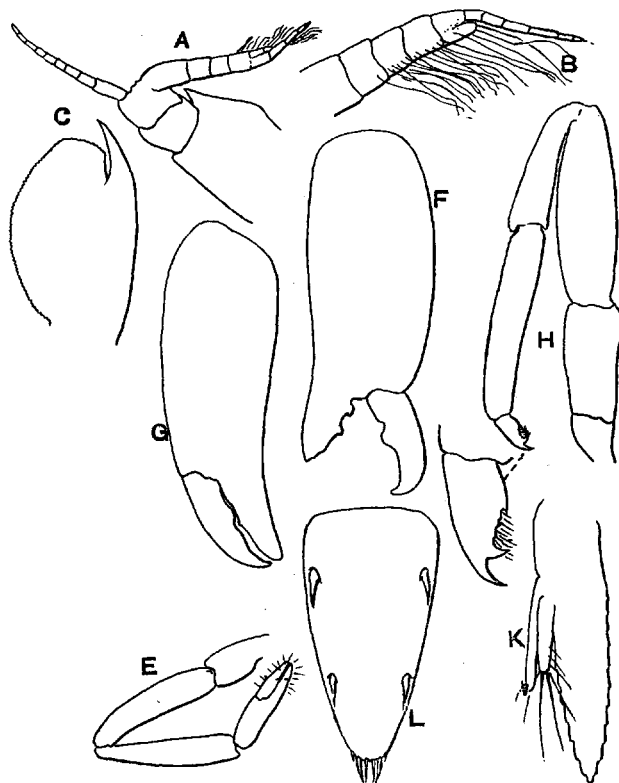


Fig. 23. Body parts of *Pontonia katoi*, sp. nov., ♂. *A*, antennule, $\times 20$; *B*, outer ramus of antennule, $\times 35$; *C*, antennal scale, $\times 25$; *D*, first pereopod, \times ca. 10; *E*, larger chela of second leg, \times ca. 7; *G*, smaller one of the same leg as in *F*, \times ca. 10; *H*, third leg, $\times 15$; *K*, endopodite of second abdominal appendage, $\times 35$; *L*, telson, $\times 15$.

palm 2 in proportion against finger (Fig. 23, *G*). Third leg somewhat longer than first one, about 1.4 times as long as carapace; dactylus biunguiculate and armed with 4 equidistant small spines in about distal half of posterior margin; propodus 4, carpus 2.5, merus 4, ischium 2 in proportion to dactylus (Fig. 23, *H*). Fourth and fifth legs nearly similar to third one. Endopodite of second pleopod bears longer stylamblys which is a little shorter than endopodite, and shorter appendix masculina distally fringed with long setae (Fig. 23, *K*).

Holotype: Male, 12.0 mm in body length from posterior margin of orbital notch to distal margin of telson.

Paratype: Two males measuring 13.0 mm and 13.5 mm in body length.

Type locality: Off Simoda, Siduoka Prefecture.

Note: The specimens were obtained by Mr. K. KATÔ off Simoda, Siduoka Prefecture. According to his information, a male and female are always found as a pair in branchial chamber of *Cynthia ritteri* OKA.

Judging from the photograph sent by Mr. KATÔ, female closely resembles male in many respects but it is much larger than male. It seems that the left hand of the second cheliped is usually larger in female than in male.

The present species bears much resemblance to *Pontonia anchoreta* KEMP, but it may be distinguished from the latter by the following characters:—(1) penultimate segment of third maxilliped is longer than ultimate one, (2) rostrum reaches well beyond the eye and antennular peduncle, (3) carpus of the first cheliped is much longer than its chela, (4) terminal spine of antennal scale is very large and greatly curved inwards, and (5) dactylus of third leg is provided with a series of distal three small and one large proximal spines behind the two distal claws.

Genus *Conchodytes* PETERS

Conchodytes, BORRADAILE, 1917, p. 392; KEMP, 1922, p. 279.

Key to the species of the genus *Conchodytes*

- A. Basal protuberance of dactylus of third leg without tooth
- B. Distal outer angle of first segment of antennular peduncle pointed. *C. meleagrinae*.
- B'. Distal outer angle of basal segment of first antenna rounded *C. tridacnae*.
- A'. Basal process of dactylus of third leg carries a small tooth on proximal margin
C. nipponensis.

Conchodytes meleagrinae PETERS

(Figs. 24~25)

Conchodytes meleagrinae, BORRADAILE, 1898, p. 390; 1917, p. 393, pl. 57, fig. 26; KEMP, 1922, p. 285.

Male: Carapace 3.8 times (on average) as long as rostrum. Rostrum depressed, ratio of length against width measured in its basal region about 0.7 (Table 1). First segment of antennular peduncle broad, bears a large lanceolate lateral process, which reaches to about middle of second segment, as well as a spinule at outer distal angle (Fig. 25, B and C). Mandible without palp; incisor process widely separated from molar one and tipped with five teeth (Fig. 24, A). Maxillule provided with inner broad lacinia bearing rather thickly set setae on apical region; outer lacinia fig-shaped,

apical margin armed with many stout setae; endopodite has a small process near inner distal margin (Fig. 24, *B*). Maxilla consists of broad inner endite which is finely fringed with long hairs along inner margin, papilla-like endopodite, and ear-shaped scaphognathite (Fig. 24, *C*). All maxillipeds with exopodite. First maxilliped provided with two mastigobranchia, unsegmented small endopodite and large lamellar endite on basal lateral margin of exopodite (Fig. 24, *D*). Second maxilliped with mastigobranchia

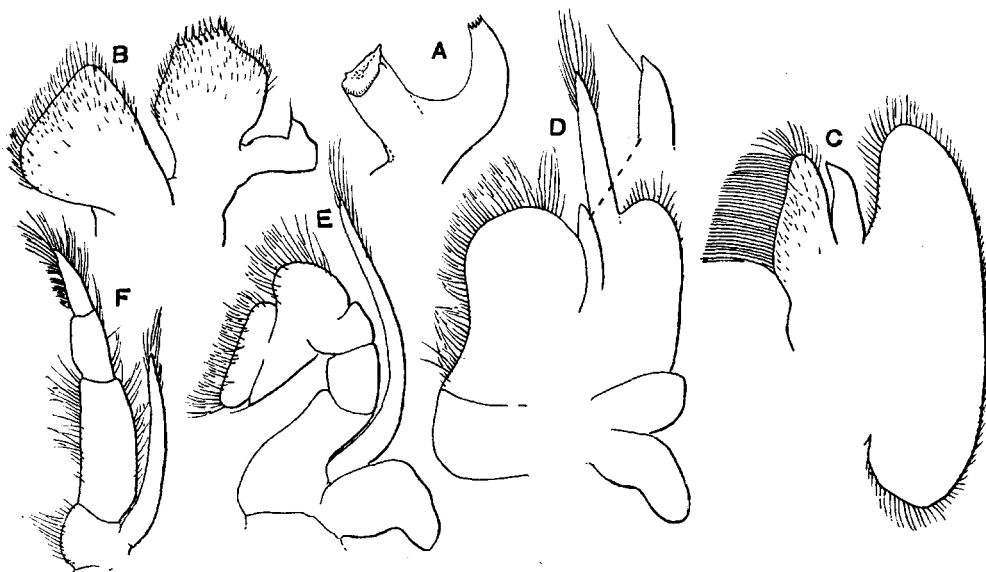


Fig. 24. Mouth-parts of *Conchodytes meleagrinae* PETERS. *A*, mandible, $\times 20$; *B*, maxillule, $\times 20$; *C*, maxilla, $\times 15$; *D*, first maxilliped, $\times 15$; *E*, second maxilliped, $\times 15$; *F*, third maxilliped, \times ca. 10.

(Fig. 24, *E*). Third maxilliped pediform; penultimate and antepenultimate joints broad; penultimate one more or less shorter than ultimate one and just half times as long as antepenultimate one (Fig. 24, *F*). First cheliped slender, both prehensile edges toothless, movable finger and palm equal in length, carpus about three times as long as movable finger and somewhat shorter than merus, ischium a little longer than finger (Fig. 25, *E*). Second cheliped very large, asymmetrical; chela heavy and swollen; palm somewhat less than twice as long as movable finger in either hand (Fig. 25, *A* and Table 1).

Table 1.

Measurements of *Conchodytes meleagrinae* (mm)

Male										Female										Locality
No.	A	A/B	B	C/B	C	D	E	D'	E'	No.	A	A/B	B	C/B	C	D	E	D'	E'	
1	7.2	4.2	1.7	0.64	1.1	—	—	—	—	1	11.0	5.5	2.0	0.75	1.5	—	—	7.5	3.6	Palau.
2	6.5	3.2	2.0	0.75	1.5	9.0	5.0	7.5	3.5	2	9.3	5.1	1.8	0.72	1.3	—	—	—	—	
3	7.8	3.9	2.0	0.65	1.3	—	—	—	—	3	8.6	4.0	2.1	0.71	1.5	—	—	—	—	Riu Kiu
4	7.0	3.5	2.0	0.75	1.5	—	—	—	—	4	9.2	4.6	2.0	0.75	1.5	—	—	—	—	
5	6.8	3.5	1.9	0.68	1.3	—	—	—	—	5	9.0	4.7	1.9	0.84	1.6	6.8	3.9	—	—	Isigaki-
6	8.4	5.2	1.6	0.75	1.2	8.4	4.5	6.6	3.8	6	9.5	5.0	1.9	0.68	1.3	—	—	5.6	3.0	zima
7	7.2	3.7	1.9	0.73	1.4	6.0	3.2	8.4	4.0	7	9.9	4.9	2.0	0.80	1.6	4.8	3.0	—	—	Riu Kiu
8	6.7	3.3	2.0	0.65	1.3	—	—	6.6	3.0	8	8.9	6.3	1.4	0.71	1.0	4.0	2.6	—	—	
9	7.5	3.7	2.0	0.75	1.5	7.6	4.9	6.3	3.9	9	9.0	5.0	1.8	0.83	1.5	—	—	—	—	
										10	8.4	4.4	1.9	0.73	1.4	—	—	—	—	
										11	10.7	4.2	2.5	0.76	1.9	5.6	3.2	6.2	3.5	
										12	9.0	4.2	2.1	0.66	1.4	5.5	3.0	5.4	3.2	
										13	9.3	4.4	2.1	0.71	1.5	5.1	3.0	5.0	2.6	
										14	10.1	5.3	1.9	0.78	1.5	5.2	3.1	5.0	3.0	
										15	9.0	4.7	1.9	0.78	1.5	4.0	2.5	4.3	2.4	
										16	7.9	4.0	2.0	0.65	1.3	—	—	4.2	2.5	

A, length of carapace; B, length of rostrum; C, width of rostrum; D, length of palm of right hand of second leg; E, length of movable finger of right of second leg; D', length of palm of left hand of second leg; E', length of movable finger of left hand of second leg.

Branchial arrangement runs as follows:—

	I	II	III	IV	V	VI	VII	VIII
Pleurobranchiae	—	—	—	1	1	1	1	1
Arthrobranchiae	—	—	—	—	—	—	—	—
Podobranchiae	—	—	—	—	—	—	—	—
Mastigobranchiae	2	1	1	—	—	—	—	—

Female: Carapace 4.7 times (on average) as long as rostrum (Table 1). Second cheliped large, symmetrical; movable finger more or less longer than the half of palm (Table 1).

Described from 16 ovigerous females measuring 7.9 to 10.7 mm and 9 males ranging from 6.5 to 8.5 mm in carapace length.

Locality: Isigaki-zima, Riu-Kiu, in *Tridacna gigas* (LINNÉ) (Y. OKADA and H. IKEDA); Palau, Caroline Is., in *Pinctada margaritifera* (LINNÉ) (SAITÔ).

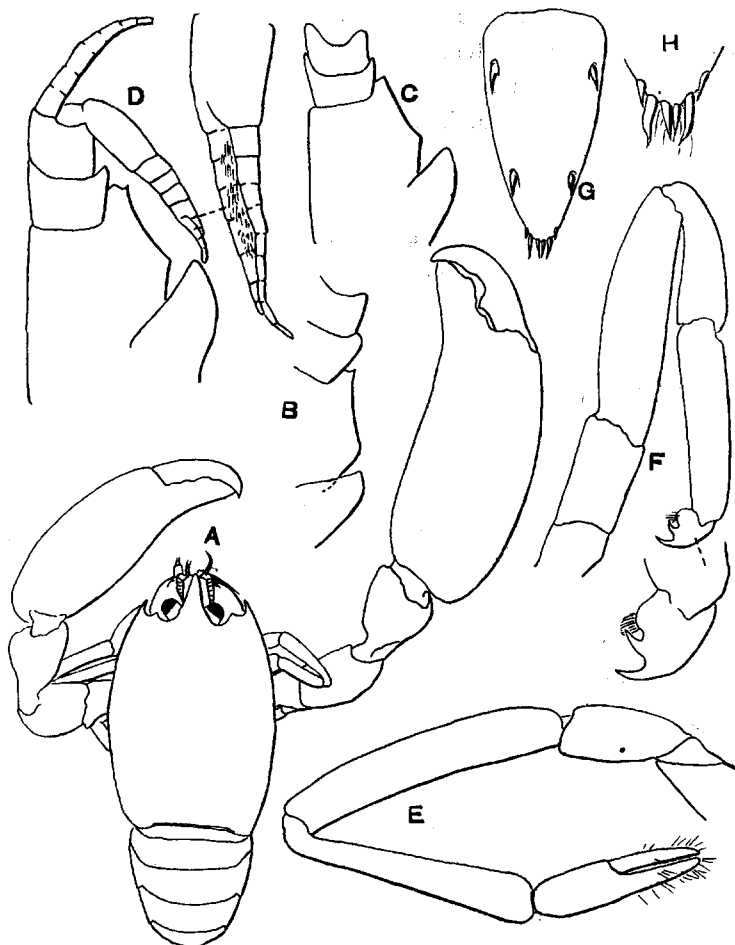


Fig. 25. *Conchodytes meleagrinae* PETERS, ♂ and its body parts. *A*, upper aspect of the animal; *B*, inner margin of antennular peduncle (obtained from Riu Kiu), $\times 20$; *C*, antennular peduncle, $\times 20$; *D*, antennule, $\times 20$; *E*, first pereopod, \times ca. 10; *F*, third pereopod, \times ca. 10; *G*, telson, \times ca. 10; *H*, tip of telson, $\times 25$.

Distribution: Andamans in *Meleagrina* (KEMP); Solomon, Farquhar, N. W. Cheval (BORRADAILE).

Note: Male differs from female in having (1) rather long rostrum, (2) larger second cheliped and (3) appendix musculina on inner border of endopodite of second abdominal appendage.

The present species is closely allied to *C. tridacnae* PETERS but may be

distinguished from it by the feature of basal segment of antennular peduncle as already pointed out by KEMP (1922). My specimens generally agree well with KEMP's description, but differs from it in having the carpus and merus of first pereiopod equal in length.

***Conchodytes tridacnae* PETERS**

(Figs. 26~27)

Conchodytes tridacnae, BORRADAILE, 1898, p. 390; 1899, p. 1007; 1917, p. 393; KEMP, 1922, p. 283, text-fig. 105.

Pontonia (Conchodytes) tridacnae, BATE, 1888, p. 707, pl. 124, figs. 1~2.

Pontonia tridacnae, MIERS, 1884, p. 290.

?*Pontonia maculata*, STIMPSON, 1860, p. 38; BALES, 1914, p. 53 (in list).

Carapace about 3.5 times as long as rostrum (Table 1). Rostrum about 1.4 times as long as wide. Distal outer margin of basal segment of antennular peduncle rounded (Fig. 27, *B*). Inner-antennular flagellum consists of 5~9 joints; outer one 4~6 segments in basal uniramous portion, and distally bifid with shorter and longer branches, the former branch comprising 2 or 3 segments, and the latter consisting of 3~5 segments (Fig. 27, *C*). Mouth-parts and branchial arrangement entirely resembles those of *C. meleagrinae*.

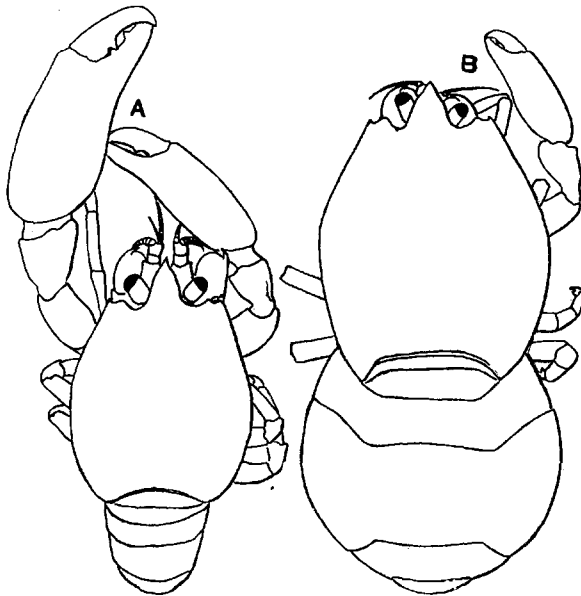
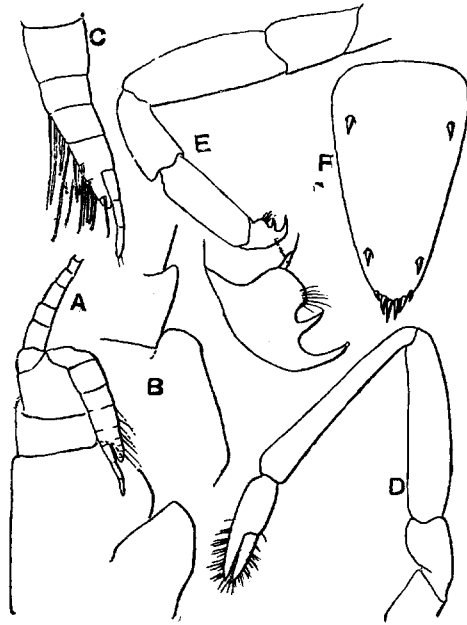


Fig. 26. Upper aspect of *Conchodytes tridacnae* PETERS. *A*, male, $\times 3.5$; *B*, ovigerous female, $\times 3$.

Fig. 27. Body parts of *Conchodytes tridacnae* PETERS, ♀. *A*, antennule, $\times 20$; *B*, outer margin of antennular peduncle; *C*, outer flagellum of antennule, $\times 35$; *D*, first pereiopod, \times ca. 7; *E*, third pereiopod, \times ca. 10; *F*, telson $\times 15$.



Six males measuring from 5.5 to 6.9 mm and 6 ovigerous females 9.3~10.5 mm in carapace length were examined.

Locality: Haha-zima, Bonin Is. (in *Tridacna* sp.) (YAMASITA); Titi-zima, Bonin Is. (T. SUZUKI); Palau Is. (in *Pictada maxima*) (R. WADA).

Distribution: Warrior Reef, north-eastern coasts of Australia (in pearl-shell) (MIERS); Torres Straits (BATE); Hulule, Malé Atoll, Minikoi (in *Tridacna*) (BORRADAILE); Port Blair (in *Tridacna*) (KEMP).

Note: The specimens obtained from Bonin Islands quite agree with the description of KEMP's *Conchodytes tridacnae*. But the specimens obtained from Palau differ in having much larger second cheliped (Table 2), somewhat longer antennular flagella and a larger number of segments (9~11 segments instead of 5~9 segments as in specimens from Bonin Island) constituting inner antennular flagellum.

Since the size of second cheliped and antennular flagella considerably differ from those of Bonin specimens, I am not quite sure whether Palau specimens should be referred to this species or not.

According to BATE's description and figure of *Pontonia (Conchodytes) meleagrinae*, the eighth thoracic segment has (1) no pleurobranchia and (2) the basal segment of the antennular peduncle provided with rounded

Table 2.

Measurements of *Conchodytes tridacnae* (mm)

Male										Female										Locality
No.	A	A/B	B	C/B	C	D	E	D'	E'	No.	A	A/B	B	C/B	C	D	E	D'	E'	
1	6.4	3.0	2.1	0.71	1.5	4.3	2.3	5.4	2.8	1	9.3	3.6	2.6	0.73	1.9	4.5	2.1	—	—	Haha- zima, Bonin Islands. Titi- zima, Bonin Islands. Palau Islands.
2	5.9	3.5	1.7	0.64	1.1	5.0	2.4	3.8	2.0	2	10.5	3.6	2.9	0.69	2.0	—	—	—	—	
3	5.5	3.7	1.5	0.66	1.0	3.5	1.9	4.5	2.2	3	10.0	3.7	2.7	0.74	2.0	3.9	2.0	—	—	
4	6.5	3.4	1.9	0.73	1.4	3.5	2.0	—	—	4	9.4	3.2	2.9	0.69	2.0	—	—	5.0	2.1	
5	6.5	3.4	1.9	0.73	1.4	4.4	2.5	6.2	3.2	5	9.5	3.7	2.6	0.77	2.0	4.2	2.1	3.6	2.0	
6	6.9	3.1	2.2	0.68	1.5	4.9	2.4	5.4	2.9	6	9.2	3.8	2.4	0.79	1.9	3.0	2.0	—	—	
7	9.9	3.8	2.6	0.73	1.9	11.5	6.0	7.8	3.2	7	9.4	3.4	2.7	0.70	1.9	7.5	3.2	—	—	
8	10.0	3.4	2.9	0.68	2.0	8.8	3.3	13.2	6.5											
9	9.2	3.0	3.0	0.66	2.0	—	—	—	—											

distal outer margin. Apart from presence or absence of pleurobranchia, the second character puts the material of BATE nearer to *C. tridacnae* than to *C. meleagrinae*.

The present species is intimately allied to *Conchodytes meleagrinae* in general characters, but easily separated from the latter as shown in the already given key.

Conchodytes nipponensis (DE HAAN)

(Figs. 28~29)

Conchodytes nipponensis, PARISI, 1919, p. 75, text-figs. 5 and 6; KEMP, 1922, p. 282, text-fig. 104 (a~d); KUBO, 1937, p. 629, figs. 1~5.

Pontonia nipponensis, DE HAAN, 1850, p. 180, pl. 66, fig. 8; BALSS, 1914, p. 53, fig. 33 BORRADAILE, 1917, p. 391.

Rostrum does not reach to distal margin of second segment of antennular peduncle, about 1.3 times as long as wide (Table 3). Carapace 4.3 times in female, 3.8 times in male, as long as rostrum on average (Table 3). Outer antennular flagellum thicker than inner one, proximally uniramous consisting of 5 or 6 segments, but distally divided into shorter and longer branches; longer one 5~6-jointed whereas the other is provided with 3~4 segments and fringed with long hairs along its outer margin. Endopodite of first pleopod lamellar in both sexes (Fig. 29, *C* and *D*). Endopodite of second abdominal appendage carries longer stylamblys and shorter appendix masculina distally furnished with long hairs in male, while stylamblys only on proximal inner margin in female (Fig. 29, *E* and *F*).

Table 3.
Measurement of *Conchodytes nipponensis* (mm)

Male									Female									Locality	
No.	A	A/B	B	C/B	C	D	E	D' E'	No.	A	A/B	B	C/B	C	D	E	D' E'		E'
1	9.2	4.1	2.2	0.81	1.8	—	—	5.5 3.9	1	10.1	4.2	2.4	0.75	1.8	—	—	—	—	Miya, Aiti Pref.
2	0.8	3.4	2.3	0.69	1.6	7.8	4.5	7.5 3.9	2	11.7	4.6	2.5	0.80	2.0	8.2	4.3	8.6	4.6	
3	5.4	2.8	1.9	0.57	1.1	4.9	3.2	4.6 2.9	3	11.1	4.4	2.5	0.80	2.0	7.9	4.7	—	—	
									4	10.5	5.0	2.1	0.95	2.0	8.7	5.0	—	—	
									5	7.0	3.3	2.1	0.66	1.4	5.0	3.2	4.4	2.9	
4	11.7	4.8	2.4	0.83	2.0	—	—	10.4 5.0	6	13.5	4.5	3.0	0.83	2.5	10.6	6.0	9.2	5.5	Tokyo fish-market.
5	9.7	4.2	2.3	0.86	2.0	8.1	5.0	11.0 5.2	7	14.0	4.6	3.0	0.76	2.3	10.5	5.0	8.2	5.0	
									8	14.3	4.7	3.0	0.86	2.6	—	—	7.4	5.0	
									9	11.0	4.2	2.6	0.73	1.9	6.0	4.0	6.0	3.0	Okino-sima, Tateyama, Tiba Pref.
									10	9.6	3.8	2.5	0.80	2.0	6.0	3.0	5.8	2.8	

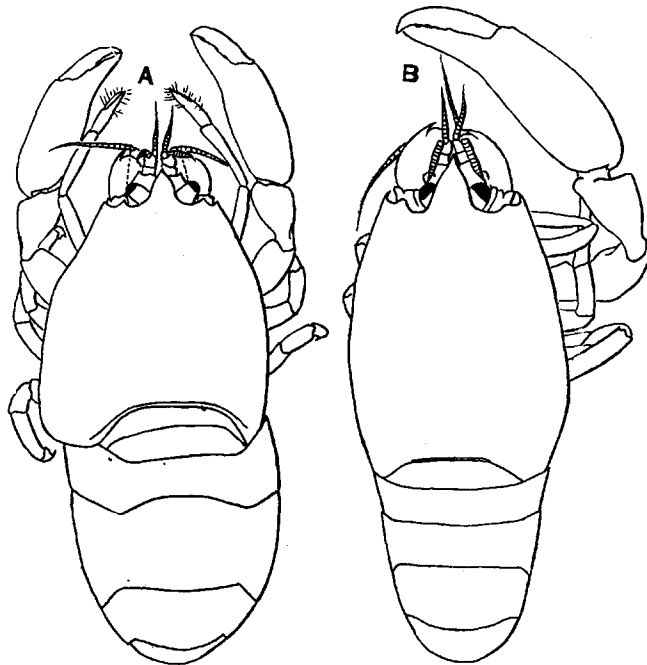


Fig. 28. Upper aspect of *Conchodytes nipponensis* (DE HAAN). A, female, obtained from Tateyama Bay, Tiba Prefecture, \times ca. 2.3; B, male, secured from Miya, Aiti Prefecture, \times 3.

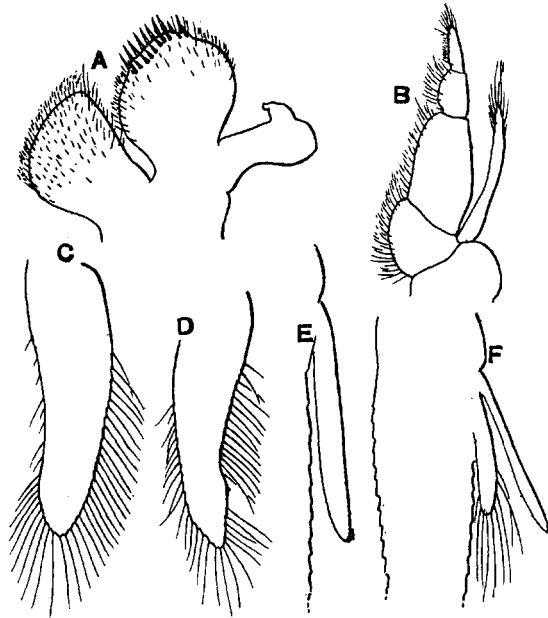


Fig. 29. Body parts of *Conchodytes nipponensis* (DE HAAN). A, maxillule, $\times 20$; B, third maxilliped, $\times 6$; C, endopodite of first pleopod, ♀, $\times 25$; D, same as C, ♂, $\times 25$; E, showing stylumbly of second pleopod of female, $\times 25$; F, endopodite of second pleopod of male, $\times 25$.

The above description is based upon 5 male specimens measuring 5.4 to 11.7 mm and 10 females ranging 7.0~14.3 mm in carapace length.

Locality: Off Okino-sima, Tateyama, Tiba Prefecture at a depth of about 7 fathoms, in mantle cavity of *Pecten laquetus* SOWERBY (T. INO); Tokyo fish-market in *Atrina japonica* (REEVE) (K. EBINA); Miya fish-market, Aiti Prefecture in *Atrina japonica* (REEVE) (I. KUBO).

Distribution: Japan (DE HAAN); Hukuura, Sagami Bay (BALSS, PARISI).

Note: Branchial arrangement and mouth-parts excepting maxillule and third maxilliped entirely resemble those of *Conchodytes meleagrinae*. The inner lacinia of maxillule is somewhat smaller than the outer lacinia in the present species instead of the inner endite being slightly larger than the outer one as in *C. meleagrinae* (Fig. 29, A). The antepenult segment of the third maxilliped of the present species is broader than that of *C. meleagrinae* (Fig. 29, B).

So far as I am aware the host of the present species has never been

known, but it was found by me to be commensal with *Aterina japonica* and *Pecten laquetus*. Usually two which are as a rule a male and a female but sometimes several individuals are found in the mantle cavity of the bivalve.

The present specimens are quite in accord with the descriptions and figures of BALSS (1914), PARISI (1919) and KEMP (1922), but differ from DE HAAN's figure in having greatly shorter antennular and antennal flagella. But it seems to me that DE HAAN's figure was probably drawn erroneously.

Genus *Coralliocaris* STIMPSON, emend.

Coralliocaris, STIMPSON, 1860, p. 38; BORRADAILE, 1917, p. 381; KEMP, 1922, p. 268; RATHBUN, 1902, p. 122.
Oedipus, DANA, 1852, p. 572. (Preoccupied).

Rostrum compressed, commonly bears teeth on both upper and lower borders. Carapace always provided with antennal spine, but hepatic spine present or absent. Mandible without palp. Maxillule with narrow inner lacinia. Maxilla provided with ear-shaped exopodite, inner distal endite slender. All maxillipeds carry exopodite. Basal outer lobe on exopodite of first maxilliped small. Dactylus of the last three pairs of pereopod tipped with a single claw bearing basal protuberance.

This genus closely resembles *Harpilius* DANA, but it is easily separated from the latter by having the following characters:—(1) body more strongly depressed; (2) second cheliped with very heavy, swollen palm; (3) dactylus of last three walking legs provided with remarkably developed basal protuberance.

Key to the species of *Coralliocaris*

- A. Inner lacinia of maxilla slender, not bifid at apex; movable finger of second cheliped bar-shaped *C. superba*.
B. Inner lacinia of maxilla bifid at apex; movable finger of second cheliped semicircular in outline *C. graminea*,

Coralliocaris superba (DANA)

(Figs. 30~32)

Coralliocaris superba, BORRADAILE, 1917, p. 383; BALSS, 1914, p. 53 (in list); TATTELSAL, 1921, p. 390; KEMP, 1922, p. 272, text-figs. 98 and 99; ORTMANN, 1890, p. 509, taf. 36, fig. 22.
Oedipus superbus, DANA, 1852, p. 575, pl. 37, figs. 2 (a~f).

Rostrum horizontal, acutely pointed, bears from 3 to 6 equidistant

teeth above (hindmost tooth never placed on carapace), 2 teeth on sub-terminal lower border; proportions against length of carapace: length 0.8, breadth 0.2 (Fig. 32, *A*). Carapace with antennal spine, but without hepatic one; antero-lateral angle rounded. Telson oblong, armed along each dorso-lateral margin with two bristles dividing its length into three intervals with ratios: proximal 2.5: intermediate 1: distal 2, the widest region near proximal margin about three times as broad as distance between postero-lateral angles, distal margin convex with a pair of outer shorter and two pairs of subequal, equidistant, inner bristles (Fig. 32, *H*). Eye large, well-pigmented. Mandible Y-shaped, without palp; incisor process compressed, serrated with a pair of outer larger and three smaller, subequal, inner teeth along distal border; molar process fringed with rather longer hairs at its apex (Fig. 31, *A*). Inner lacinia of maxillule narrow, endopodite with a small apical process (Fig. 31, *B*). Maxilla with a slender inner distal endite bearing several setae at apex, papilla-like endopodite and ear-shaped exopodite (Fig. 31, *C*). Each maxilliped provided with exopodite and mastigobranchia (Fig. 31, *D~F*). Third maxilliped stout, shorter than its exopodite; ultimate joint bears a protuberance on inner subbasal border; penultimate segment somewhat shorter than ultimate one; antepenult joint a little less than twice as long as ultimate one, width about one-third of its length (Fig. 31, *F*). First pereopod very slender, ratios against movable finger: palm 1.5, carpus and merus 5, ischium ca. 1,

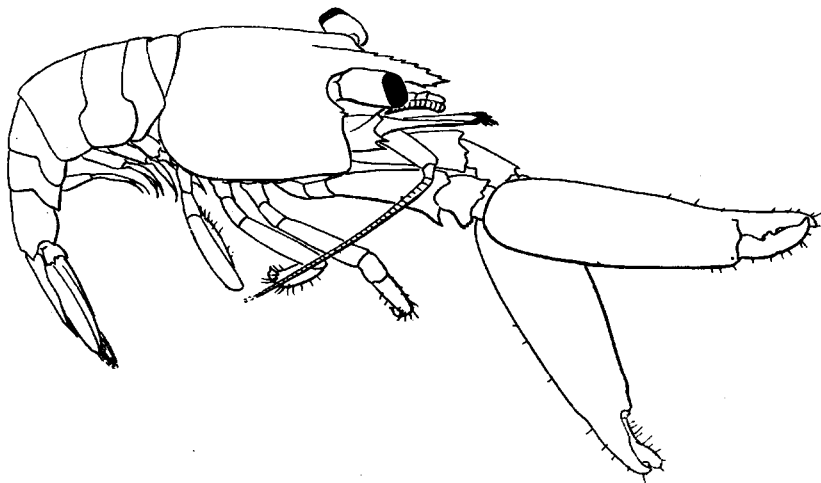


Fig. 30. *Coralliocaris superba* (DANA), ♂, × ca. 6.

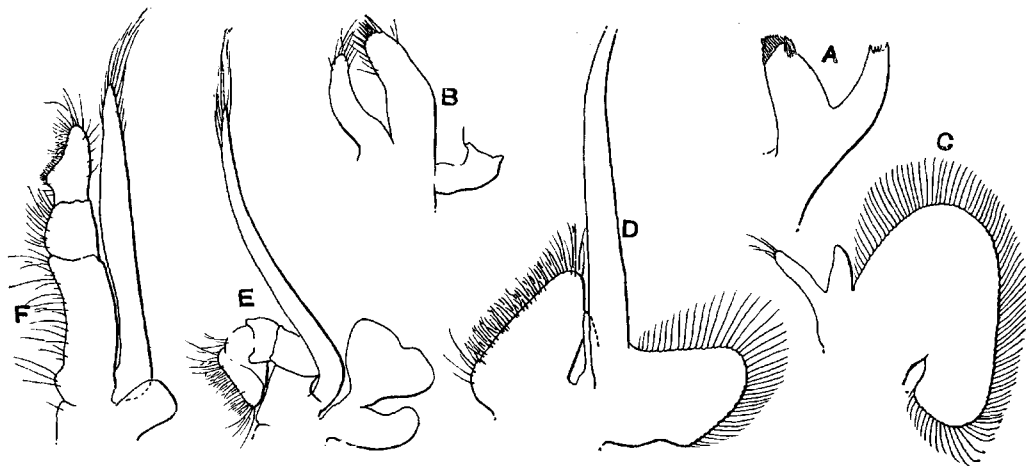


Fig. 31. Mouth-parts of *Coralliocaris superba* (DANA). A, mandible, $\times 35$; B, maxillula, $\times 50$; C, maxilla, $\times 25$; D, first maxilliped, $\times 35$; E, second maxilliped, $\times 20$; F, third maxilliped, $\times 20$.

both cutting edges of chela straight and without tooth (Fig. 32, C). Endopodite of second pleopod leaf-shaped, provided with two appendices of unequal lengths on inner proximal border in male (Fig. 32, F), but in female with an appendix interna only (Fig. 32, G).

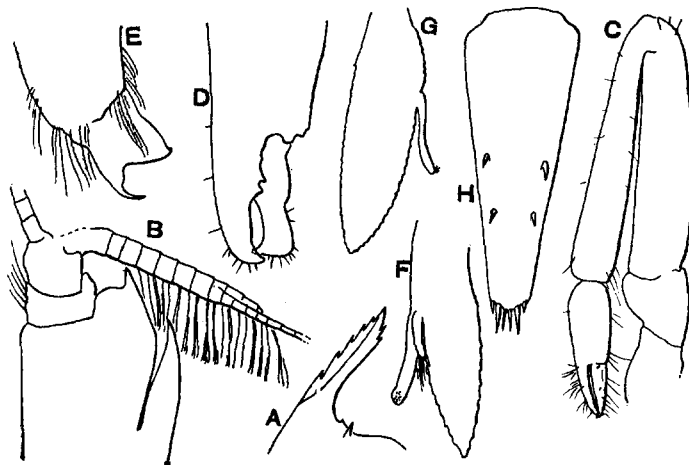


Fig. 32. Body parts of male (F) and ovigerous female (A~E, G and H) of *Coralliocaris superba* (DANA). A, rostrum, $\times 25$; B, first antenna, $\times 20$; C, first thoracic leg, $\times 20$; D, tip of second thoracic leg, \times ca. 10; E, dactylus of third pereiopod (outer view), $\times 35$; F, second pleopod, $\times 35$; G, second pleopod of female, $\times 25$; H, telson, $\times 20$.

The description mentioned above is based on two males ranging from 11.0 mm to 11.5 mm and a female specimen 13.0 mm in body length.

Locality: Nankin-Hama, Haha-zima, Bonin Is. (31th July of 1927).

Distribution: Tongatabu (DANA); Tahiti (STIMPSON); Bonin Is. (BALSS); Noordwacher Is. and Bay of Batavia (DE MAN); South coast of Arabia (BALSS); Red Sea (NOBILI, BALSS and TATTERSALL); Port Blair, Andamans (KEMP).

Coralliocaris graminea (DANA)

(Figs. 33~35)

Oedipus gramineus, DANA, 1852, p. 573, Pl. 37, figs. 3 a~c.

Coralliocaris graminea, CALMAN, 1907, p. 706; BORRADAILE, 1917, pp. 324, 383; KEMP, 1922, p. 269, Text-figs. 96 and 97.

Rostrum rather shallow, about 0.8 times as long as carapace. Sixth abdominal somite not elongated, hardly 0.4 times as long as telson (Fig. 33 and 35, *A*). Telson in its proximal widest region about 3.5 times as broad as distal margin; each dorso-lateral border with two bristles which are so arranged as to divide its about distal half into two subequal intervals; terminal margin fringed with three pairs of equidistant bristles, the outermost of which is placed close to postero-lateral angle (Fig. 35, *K*). Antennular peduncle does not reach to tip of rostrum; basal joint depressed, broad, with large lanciform lateral process, outer margin ends in a spiniform process; second and third segments subequal in length; ultimate segment provided with inner thinner and outer thicker flagella, the latter proximally uniramous bearing five joints, distally giving off two longer and shorter (about 5~6 segmented) rami (Fig. 35, *B* & *C*). Mandible without palp, incisor process with 7 teeth on cutting edge (Fig. 34, *A*). Maxillule with slender, recurved inner lacinia, outer lacinia furnished with rather thickly set setae on distal margin; apical lobe of endopodite rudimentary (Fig. 34, *B*). Maxilla with thumb-like endopodite, and slender inner distal endite bifid in its distal one-fifth (Fig. 34, *C*). All maxillipeds carry whip-like exopodite. First maxilliped bears rather small lobe on basal outer margin of exopodite (Fig. 34, *D*). Third maxilliped stout, pediform; ratios against ultimate segment: penultimate 0.9, antepenult 1.2; penultimate joint fringed with thickly set setae on inner border (Fig. 34, *F*). First thoracic leg feeble; palm about one and half times, carpus five times, as long as movable finger; merus somewhat shorter than carpus; chela furnished with many transversally arranged stout setae in proximal half of inner border (Fig. 35,

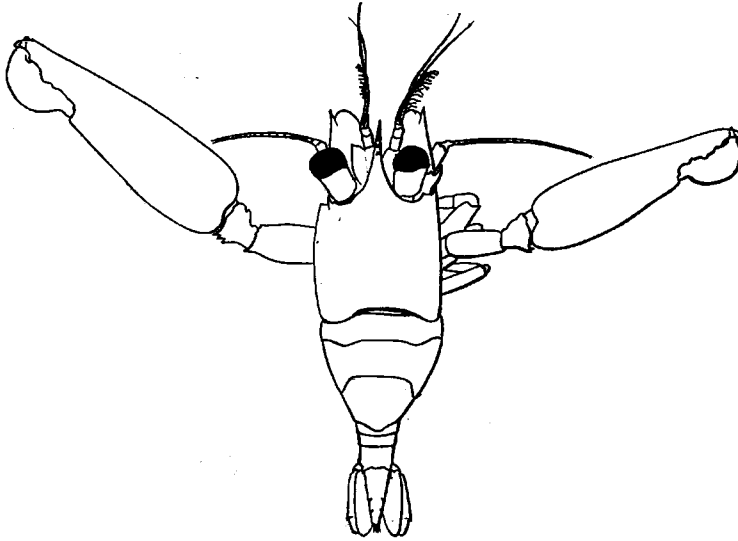


Fig. 33. *Coralliocaris graminea* (DANA), ♀, × ca. 3.

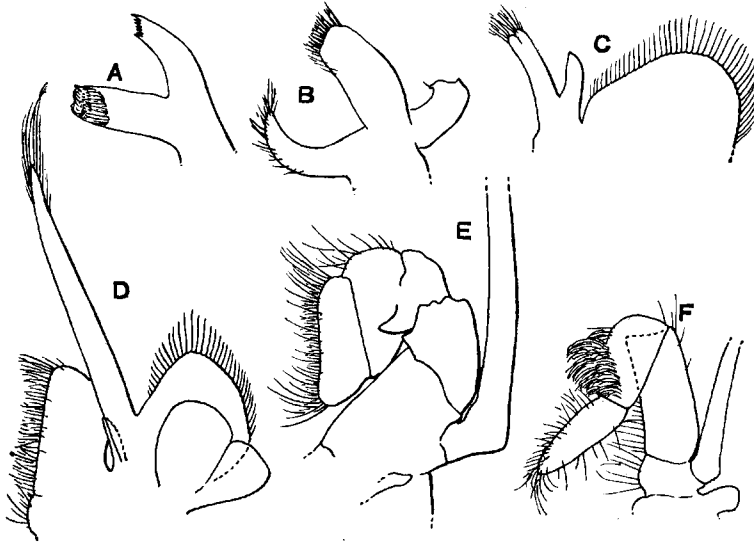


Fig. 34. Mouth-parts of *Coralliocaris graminea* (DANA). *A*, mandible, × 35; *B*, maxillule, × 35; *C*, maxilla, × 25; *D*, first maxilliped, × 25; *E*, second maxilliped, × 35; *F*, third maxilliped, × 20.

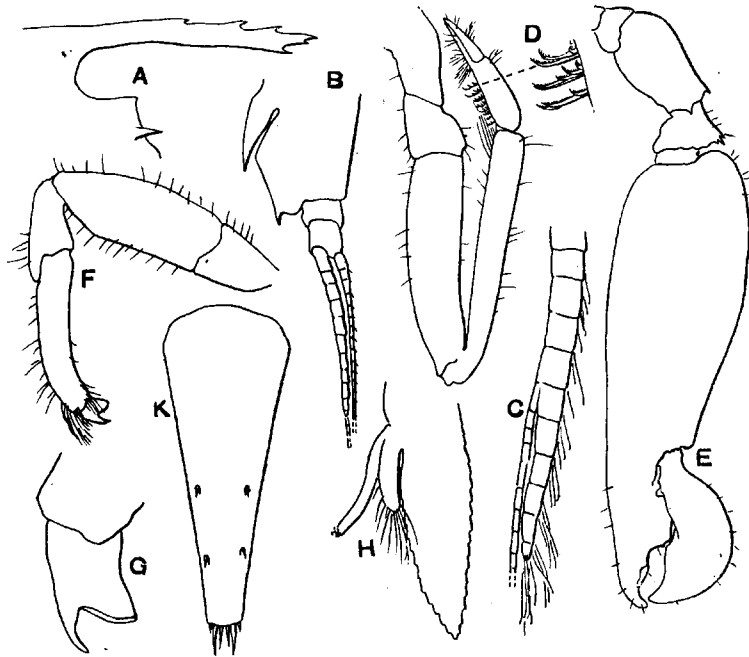


Fig. 35. Body parts of male (*H*) and female (*A*~*G* and *K*) of *Coralliocaris graminea* (DANA). *A*, rostrum, $\times 35$; *B*, antennule, \times ca. 10; *C*, outer flagellum of antennule, $\times 25$; *D*, first pereiopod, $\times 15$; *E*, second pereiopod (outer view), $\times 6$; *F*, third pereiopod, \times ca. 10; *G*, dactylus of third pereiopod, $\times 35$; *H*, second pleopod, $\times 35$; *K*, telson, $\times 20$.

D). Second cheliped unequal in size palm about two times as long as movable finger. Endopodite of second pleopod of male carries longer stylamblys and shorter appendix masculina on inner basal border (Fig. 35, *H*), but stylamblys only in female.

Three ovigerous female specimens ranging from 13.0 to 13.6 mm and one male specimen measuring 12.0 mm in body length were used for the above mentioned description.

Locality: Ôsima, Riu-Kiu.

Distribution: Fiji Is. (DANA); Samoa (ORTMANN); Loyalty Is.; Coetivy (BORRADAILE); Hong Kong (STIMPSON); Ternate; Pulo Edam, Bay of Batavia (DE MAN); Christmas Is. (CALMAN); Seychelles (MIERS); Andamans (KEMP).

Note: My specimens agree closely with the description of KEMP, but differ from that of DANA in the proportion of the chela of the second thoracic

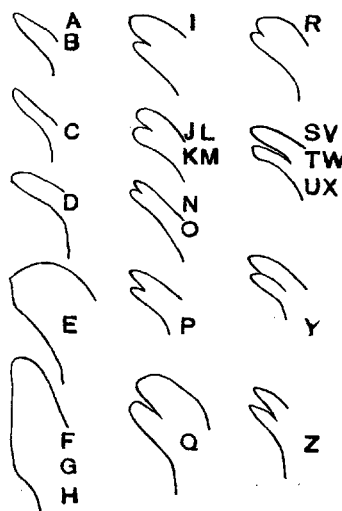
leg, viz., "the finger hardly one-fourth the hand in length." Again the present specimens agree almost completely with ORTMANN'S *Coralliocaris inaequalis*, the only point of difference being the proportionate length of the palm and fingers of the second peraeopod. In ORTMANN'S work, the said leg is simply described as follows:—"Finger viel kürzer als die Palma, der beweglicher mit stark convexem, ganzrandigen Aussenrande." His figure of the species in question shows, however, that the palm of the second leg is about five times as long as the movable finger.

Whatever either his text or figure is correct such variations in length of joints do not warrant one to recognize the specimens distinct from a species with which they are otherwise in complete agreement.

Remarks on Mouth-Parts

Though many valuable works have been done on the shrimps belonging to Pontoninae, little is known of their mouth-parts. Three types have been found by the present author in the inner distal endite of maxilla, viz., (I) single lobed group (Fig. 36, A~H); (II) distally bifid group (Fig. 36, I~R) and (III) two lobed group (Fig. 39, S~Z) as shown in the figure 36. Type I is observable in such species, as *Periclimenes (Ancylocaris) lucanii*⁽¹⁰⁾, *Periclimenes (Periclimenaeus) robustus*⁽⁸⁾, *Coralliocaris superba*, *Harpilius imperialis*, *Anchistus inermis*, *Conchodytes nipponensis*, *Conchodytes meleagrinae*, and *Conchodytes tridacnae*. Type II is typified by the following

Fig. 36. Inner distal endite of maxilla. A, *Periclimenes (Ancylocaris) lucasi*⁽¹⁰⁾; B, *Periclimenes (Periclimenaeus) robustus*⁽⁸⁾; C, *Coralliocaris superba*; D, *Harpilius imperialis*; E, *Anchistus inermis*; F, *Conchodytes nipponensis*; G, *Conchodytes meleagrinae*; H, *Conchodytes tridacnae*; I, *Periclimenes (Periclimenaeus) gorgonidarum*; J, *Periclimenes seychellensis*⁽⁸⁾; K, *Periclimenes spiniferus*⁽⁸⁾; L, *Periclimenes brocki*⁽⁸⁾; M, *Periclimenes maxillulidens*⁽³⁰⁾; N, *Coralliocaris pearsei*⁽²⁷⁾; O, *Coralliocaris graminea*; P, *Harpilopsis depressus*⁽⁸⁾; Q, *Anchistus miersi*; R, *Urocaris psamathe*⁽⁸⁾; S, *Periclimenes (Periclimenes) curvirostris*; T, *Periclimenes (Periclimenes) alcocki*; U, *Periclimenes (Ancylocaris) gracilirostris*; V, *Periclimenes (Ancylocaris) amamiensis*; W, *Periclimenes (Ancylocaris) akiensis*⁽¹⁸⁾; X, *Periclimenes portoricensis*⁽²⁸⁾; Y, *Urocaridella gracilis*⁽⁸⁾; Z, *Pontonia katoi*.



species, *Perichimenes* (*Periclimentaenus*) *gorgonidarum*, *Periclimentes seychellensis*⁽⁸⁾, *Periclimentes spiniferus*⁽⁸⁾, *Periclimentes brocki*⁽⁸⁾, *Periclimentes maxillulidens*⁽³⁰⁾, *Coralliocaris pearsei*⁽²⁷⁾, *Coralliocaris graminea*, *Harpilopsis depressus*⁽⁸⁾, *Anchistus miersi* and *Urocaris psamathe*⁽⁸⁾. On the other hand, *Perichimenes* (*Periclimentes*) *cruvirostris*, *Periclimentes* (*Periclimentes*) *alcocki*, *Periclimentes* (*Ancylocaris*) *gracilirostris*, *Periclimentes* (*Ancylocaris*) *amamiensis*, *Periclimentes* (*Ancylocaris*) *akiensis*⁽¹⁶⁾, *Periclimentes portoricensis*⁽²⁸⁾, *Urocaridella gracilis*⁽⁸⁾ and *Pontonia Kato* are characterized by having type III.

Whether it has any phylogenetic meaning or not, the author is not in a position to answer now. But the fact seems to be worthy of record.

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