

PONTONIINID SHRIMPS FROM THE NINTH CRUISE OF R/V  
ANTON BRUUN, IIOE, 1964, II. THE REMAINING GENERA

A. J. Bruce

ABSTRACT

The description of a collection of pontoniinid shrimps made in the western Indian Ocean in 1964 is completed. Twenty-four species of 14 different genera are represented. A detailed description and illustrations of the only new species, *Periclimenaeus spinimanus*, are provided and, in addition, the earlier misidentification of *Periclimenes consobrinus* is corrected. All species are considered to be "commensals" of other marine invertebrates and where possible the hosts are identified. *Periclimenaeus minutus* is recorded from the Indian Ocean for the first time. The host animals and geographical distribution of the species collected are briefly reviewed and most species are known to occur throughout the Indo-West Pacific region, although 18% are known only from the western Indian Ocean.

In November and December 1964, the R/V ANTON BRUUN, during its ninth cruise in the Indian Ocean as part of the United States' Program in Biology for the International Indian Ocean Expedition (IIOE), visited a number of coral reefs and atolls in the western Indian Ocean. A variety of shrimps from the coral reef biotope was collected during this cruise, as well as a few from deeper waters. Part of the material collected, 20 species belonging to the genera *Palaemonella* Dana and *Periclimenes* Costa of the subfamily Pontoniinae, have been described in part I of this report (Bruce, 1971b), which also provided details of the stations at which collections were made (Table 1), together with a map of the cruise track (Fig. 1). The main localities visited were Latham Island, Zanzibar; the Comoro Islands; Aldabra, Farquhar and St. Joseph Islands; Mahé Island; the Horn of Africa; and Aden.

The present report deals with the specimens collected from the 14 genera not recorded in part I, together with an additional species of the genus *Periclimenes* that was not correctly identified in the earlier part, a total of 25 species, with a full description of a *Periclimenaeus spinimanus* Bruce, 1969a, the only new species found in the material studied. A total of 45 species were obtained in the course of this cruise, many

of which are considered to be commensals of other marine invertebrate hosts. Where possible, the identities of the hosts of the commensal species have been identified to species level, but this has not been possible in all cases and the hosts of some specimens still remain to be identified. Full synonymics for most species are to be found in Holthuis (1952).

Species Collected During Cruise 9.  
(Part II)

*Paranchistus ornatus* Holthuis, 1952  
*Anchistus miersi* (De Man, 1888)  
*Anchistus demani* Kemp, 1922  
*Conchodytes tridacnae* Peters, 1852  
*Conchodytes meleagrinae* Peters, 1852  
*Thaumastocaris streptotus* Kemp, 1952  
*Periclimenaeus hecate* (Nobili, 1904)  
*Periclimenaeus rhodope* (Nobili, 1904)  
*Periclimenaeus minutus* Holthuis, 1952  
*Periclimenaeus spinimanus* Bruce, 1969  
*Philarius gerlachei* (Nobili, 1905)  
*Ichnopontonia lophos* (Barnard, 1962)  
*Platycaris latirostris* Holthuis, 1952  
*Harpiliopsis beaupresii* (Audouin, 1825)  
*Harpiliopsis depressa* (Stimpson, 1860)  
*Harpiliopsis spinigera* (Ortmann, 1890)  
*Cavicheles kempii* Holthuis, 1952  
*Jocaste lucina* (Nobili, 1901)  
*Jocaste japonica* (Ortmann, 1890)  
*Coralliocaris graminea* (Dana, 1852)  
*Coralliocaris superba* (Dana, 1852)  
*Coralliocaris venusta* Kemp, 1922  
*Metapontonia fungiacola* Bruce, 1967  
*Propontonia pellucida* Bruce, 1969

ADDENDUM

*Periclimenes consobrinus* De Man, 1902

## SYSTEMATIC ACCOUNT

Family PALAEMONIDAE Samouelle,  
1819

Subfamily PONTONIINAE Kingsley,  
1878

Genus *Paranchistus* Holthuis, 1952

*Paranchistus ornatus* Holthuis

*Paranchistus ornatus* Holthuis, 1952: pp. 13, 97–100, 103, figs. 39–40. Barnard, 1955: pp. 5, 47. Bruce, 1972b: 220, 226, figs. 1–2. Hipeau-Jacquotte, 1974: pp. 361–383.

*Material Examined*.—(1) Mounimeri Is., Mayotte, Comoro Islands, 1.0 m, 23 November 1964, 1 ♀. (2) Pamanzi Is., Mayotte, Comoro Islands, 2.0 m, 24 November 1964, 1 ovig. ♀.

*Host*.—*Atrina vexillum* (Born), (1). [Lamellibranchia: Pinnidae].

*Remarks*.—Colour in life noted as “Uniformly covered all over body and appendages with small red chromatophores, with minute yellow and white chromatophores interspersed.”

The ovigerous female specimen (2) was caught free from its host at a fish poisoning station. The biology of this species has been extensively studied in Tulear, Madagascar, reviewed in Hipeau-Jacquotte (1974).

*Distribution*.—Known only from Mocambique; Tulear and Nosi Bé, Madagascar.

Genus *Anchistus* Borradaile, 1898

*Anchistus miersi* (De Man)

Restricted synonymy: *Harpilius miersi* De Man, 1888: pp. 274–277, pl. 17, figs. 6–10.

*Anchistus miersi* Borradaile, 1898, p. 387.—Kemp, 1922, pp. 118, 249 (key), 255–256, fig. 85.—Holthuis, 1952, pp. 13, 110–111, fig. 45, (full synonymy).—Bruce, 1967b, p. 568 (key); 1972b, pp. 219, 226, fig. 5; 1973, p. 136, fig. 1 c–e; 1975b, p. 26, (in press, a, b, c, d). Miyake & Fujino, 1968, pp. 414–415, 431.

*Anchistus meirsi* Fankboner, 1972, pp. 35–41, figs. 1–3.

*Material Examined*.—Mounimeri Is., Ile Mayotte, Comoro Islands, 23 November 1964, 1 ♂, 1 ovig. ♀.

*Remarks*.—The colour pattern closely resembles that of the species *Anchistus demani*, semitransparent with blue spots, and pale green ova.

*Host*.—*Tridacna maxima* (Röding) (as *T. crocea* Lamarck), [Lamellibranchia: Tridacnidae].

*Distribution*.—From the Red Sea to the Gambier Archipelago, type locality Elphinstone Is., Mergui Archipelago. In the western Indian Ocean, previously recorded from the Maldives and Chagos Islands, the Seychelles; Zanzibar, Kenya, Tanganyika, and Madagascar. Not previously recorded from the Comoro Islands.

*Anchistus demani* Kemp

Restricted synonymy: *Anchistus demani* Kemp, 1922, pp. 249 (key), 256–259, figs. 86–88.—Holthuis, 1952, p. 13; 1953, p. 56.—Bruce, 1967b: p. 568 (key); 1972b, p. 219; 1974c, pp. 200–201; 1975b, p. 26; (in press, a, b, c, d).—Hipeau-Jacquotte, 1973, p. 104, fig. 5.

*Material Examined*.—(1) Mounimeri Is., Ile Mayotte, Comoro Islands, 23 November 1964, 1 ovig. ♀. (2) Aldabra, 4 December 1964, 1 ♂, 1 ovig. ♀; 1 ♂.

*Remarks*.—The specimens present no special features and agree well with the previously published information. The single male specimen from Aldabra was found in the same host as a pair of adult *Conchodytes tridacnae*. The pairs of specimens from Mounimeri and Aldabra were noted as having the body and appendages semitransparent, covered with circular blue spots, except over the antennal flagella and ambulatory pereopods. The ova are pale green. All specimens were obtained from host living under lagoon conditions.

*Host*.—The hosts were initially identified as *Tridacna crocea* Lamarck and *T. elongata* Lamarck, now both referred to *T. maxima* (Röding). [Lamellibranchia: Tridacnidae], as *T. crocea* does not occur in the western Indian Ocean.

*Distribution*.—Not previously recorded from the Comoro Islands or Aldabra, but known in the western Indian Ocean from Madagascar, the Seychelle Islands, Zanzibar, and Kenya. Also reported from the Andaman Islands (type locality), Thailand, the Marshall Islands, and the Australian Great Barrier Reef.

Genus *Conchodytes* Peters, 1852*Conchodytes tridacnae* Peters

Restricted synonymy: *Conchodytes tridacnae* Peters, 1852, p. 594.—Borradaile, 1917, pp. 324, 393.—Kemp, 1922, pp. 118, 280 (key), 283–285, fig. 105.—Kubo, 1940, pp. 62–64, figs. 26–27.—Holthuis, 1952, pp. 1195–99, (partim), 1953, p. 69.—Castro, 1971, p. 397.—Bruce, 1972b, p. 220; 1972c, p. 63; 1973, pp. 138–139; 1974c, p. 201; 1975c, p. 49; in press (d, e, f).

*Material Examined*.—(1) Aldabra, 4 December 1964, 1 ♂, 1 ovig. ♀; 1 ♂, 1 ovig. ♀.

*Remarks*.—This species has not been previously recorded from Aldabra. Both pairs were obtained from the central lagoon, one pair from a host that also contained a single specimen of *Anchistus demani*. In the female the ovary was a conspicuous orange colour, showing clearly through the body, which was generally covered with minute white chromatophores.

*Host*.—*Tridacna maxima* (Röding) [Lamellibranchia: Tridacnidae].

*Distribution*.—Common throughout the whole Indo-West Pacific region from Mocambique to Hawaii. In the western Indian Ocean, previously recorded from Bird Island and Farquhar, Seychelle Islands; Male and Minikoi, Maldive Islands; and Cherbaniani Reef, Laccadive Islands. Also from Kenya, Tanganyika, Zanzibar; and from Jidda, Red Sea.

*Conchodytes meleagrinae* Peters

Restricted synonymy: *Conchodytes meleagrinae* Peters, 1852, pp. 289–290.—Borradaile, 1917, pp. 292 (key), 293, pl. 57, fig. 26.—Kemp, 1922, pp. 118, 280 (key), 285–286.—Holthuis, 1953, p. 59.—Bruce, 1972b, pp. 220, 226, figs. 7–8; 1972c, p. 63; 1973, p. 139; in press, b, c, d, e).

*Conchodytes tridacnae* Holthuis, 1952, pp. 195–199, fig. 95, (partim).

*Material Examined*.—(1) Aldabra, 3 December 1964, 4 ♂, 5 ovig. ♀, coll. H. Vokes. (2) Aldabra, 4 December 1966, 1 ♂, 2 ovig. ♀. (3) Aldabra, 4 December 1964, 1 ♂, 1 ovig. ♀, coll. S. Taylor. (4) Aldabra, 4 December 1964, 2 ♂, 2 ovig. ♀, coll. H. Brattström. (5) Farquhar Is., 6 December 1964, 1 ♂, 1 ovig. ♀. (6) Resource Is., 8 December 1964, 27 spms, several ovig. ♀. (7) Anse Royale, Mahé, 10 December 1964, 1 ♀. (8) Gold Mohr Bay, Aden, 21 December 1964, 1 juv.

*Remarks*.—The specimens were found in male-female pairs in almost all cases, except for occasional juveniles. Not previously recorded from Aldabra.

*Host*.—*Pinctada margaritifera* (L.) [Lamellibranchia: Pteriidae].

*Distribution*.—This species is common throughout the whole Indo-West Pacific region from the Red Sea to Hawaii. First recorded from Mocambique, and previously recorded in the western Indian Ocean from numerous localities including the Comoro and Seychelle Islands, Madagascar, and Somalia.

Genus *Thaumastocaris* Kemp, 1922*Thaumastocaris streptotus* Kemp

*Thaumastocaris streptotus* Kemp, 1922: pp. 244–247, figs. 78–80.—Holthuis, 1952: pp. 13, 111–114, figs. 46–47.—Johnson, 1961: p. 76 table 1.—Bruce, in press (b, d).

*Material Examined*.—Stn. 9.459, 11°18.0'S, 51°08.0'E to 11°21.0'N, 51°09.0'E, Gulf of Mexico shrimp trawl, 14–16 fms, December 1964, 1 ovig. ♀.

*Host*.—Unidentified; numerous sponges present in catch.

*Remarks*.—The single specimen was found free amongst the trawl catch and was undoubtedly from one of the numerous sponges. The colour in life was noted as "Mainly transparent, with ovary olive green, covered with fine red dots. Cornea golden, eyestalk with red longitudinal lines bordered by white lines dorsally. Ova brownish." The Kenyan specimens were found in the common blue sponge *Siphonochalina*.

*Distribution*.—Previously known only from Noumea, New Caledonia (type locality); Indonesia, Kenya, and northern Madagascar.

Genus *Periclimenaeus* Borradaile 1915*Periclimenaeus hecate* (Nobili)

*Coralliocaris hecate* Nobili, 1904: p. 232; 1906: p. 58, pl. 3, fig. 2.—Borradaile, 1917: 385. ?*Periclimenaeus tridentatus* Holthuis, 1952: 140–146, figs. 63–65 (partim).

*Periclimenaeus hecate* Bruce, 1975a: 1574-1577, figs. 11-12, 13e; (in press, a).

*Material Examined.*—(1) Moroni, Grande Comore, Comoro Islands, 60 m, 22 November 1964, coll. S. Taylor, 1 ovig. ♀. (2) Idem, 2.0 m, 27 November 1964, 1 ♂, 1 ♀.

*Hosts.*—The specimens were obtained from colonies of *Pocillopora* but were almost certainly from small tunicate colonies amongst the branches of these corals, as in the Kenyan specimens (Bruce, in press, a).

*Remarks.*—This species has been previously found in the western Indian Ocean in association with the tunicate *Diplosoma* sp., probably *D. modestum* Michael, which formed a very small sac-like colony amongst the branches of a *Seriatopora* colony.

*Distribution.*—Known with certainty from Djibouti, Gulf of Aden; Malindi, Kenya, and probably Indonesia.

#### *Periclimenaeus rhodope* (Nobili)

*Coralliocaris* (*Onycocaris*) *rhodope* Nobili, 1904: 233; 1906: 49; 1906: 61, pl. 2 fig. 8.

*Onycocaris rhodope* Kemp, 1922: 278.

*Periclimenaeus rhodope* Bruce, 1975a: 1558-1561, figs. 1-2, 3a,b, 7a,b.

*Material Examined.*—Stn. 9459, 11°18.0'N, 51°08.0'E to 11°21.0'N, 51°09.0'E, 14-16 fms, Gulf of Mexico shrimp trawl, 17 December 1964, 4 specimens.

*Host.*—Unidentified sponge.

*Remarks.*—The specimens have a rostral dentition of 7-9/1, and agree closely with the recent redescription of the type material of this species (Bruce, 1975a).

*Distribution.*—Previously known only from the type locality Djibouti, Gulf of Aden.

#### *Periclimenaeus minutus* Holthuis

*Periclimenaeus minutus* Holthuis, 1952: pp. 14, 117 (key), 134-137, figs. 57-59.—Johnson, 1961: p. 76, tab. 1.—Bruce, 1970: p. 310.

*Material Examined.*—Stn. 9442, 09°33.0'N, 50°59.0'E to 09°36.0'N, 51°01.0'E, 40-44 fms, Gulf of Mexico shrimp trawl, 16 December 1964, 1 ovig. ♀.

*Host.*—Unidentified sponge.

*Remarks.*—Colour in life noted as "Almost transparent, tinged with pink, and covered with fine yellowish white dots. Second pereopods and pleopods with scattered white dots, which form a reticulate pattern over the chelae of the pereopods; other pereopods transparent. Cornea golden. Ovary and gastric mill yellow. Ova pale green."

*Distribution.*—Previously known only from Banda, Indonesia.

#### *Periclimenaeus spinimanus* Bruce

Figures 1-3

*Periclimenaeus spinimanus* Bruce, 1969, pp. 165-167.

*Material Examined.*—1 ♂, 11°37'N, 51°27'E to 11°35'N, 51°27'E, 37-40 fms, trawl. Stn. 9-465, 18 December 1964.

*Description.*—The rostrum is slender and slightly depressed, reaching to about the middle of the distal segment of the antennular peduncle. The dorsal margin bears nine acute teeth, all situated anterior to the post-orbital margin, and increasing in length slightly towards the anterior end of the lamina. The tip of the rostrum is acute and the ventral margin almost straight, with a small acute tooth distally beneath the ninth dorsal tooth. The orbit is obsolescent but a feeble inferior orbital angle is present. Rudimentary supra-orbital tubercles are present. The antennal spine is slender and acute. The anterolateral angle of the carapace is obtusely rounded. The first abdominal segment bears an antero-medial dorsal lobe. The pleura of the first five segments are broadly rounded. The sixth segment is about 1.5 times longer than deep, with the posterior lateral angle acute and the postero-ventral angle blunt. The telson is broad, twice as long as wide, tapering strongly posteriorly with convex lateral margins. The dorsal aspect bears two pairs of short spines, remote from the margin, at 1.8 and 5.5 of the length. The posterior margin is convex, one third of the greatest width, with three pairs of spines. The lateral spines are very small,

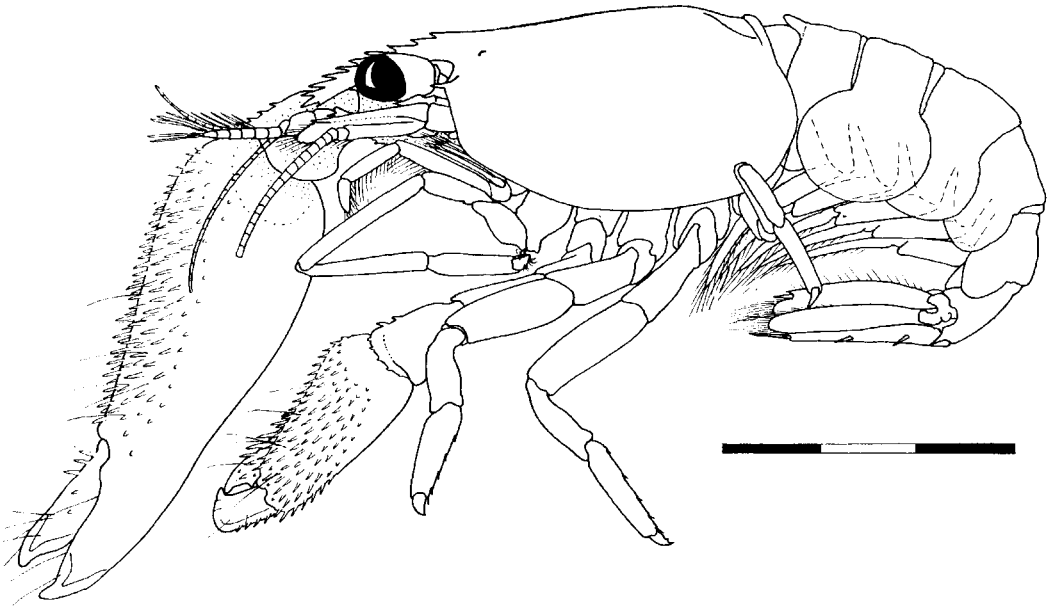


Figure 1. *Periclimenaeus spinimanus* Bruce, holotype. Scale in mm.

and inflected. The intermediate spines are robust, equal to about one sixth of the telson length; the submedian spines are plumose for the proximal three quarters and are more slender and slightly longer than the intermediate spines.

The antennule slightly exceeds the tip of the rostrum and the scaphocerite. The proximal segment is about 1.7 times longer than the base. The medial border is straight, with a ventral medial spine. The lateral margin tapers strongly distally and is markedly concave. The disto-lateral corner is distinctly produced and bears a long slender lateral spine that reaches to two thirds of the length of the intermediate segment. The stylocerite is short and broad, about 1.5 times longer than wide, and acutely pointed distally. The intermediate and distal segments are short and broad, subequal in length, together equal to about two thirds of the proximal segment and without special features. The lower flagellum is slender, filiform, with about 12 segments. The short ramus consists of a single free segment and the longer ramus

of about eight segments. Fourteen groups of aesthetascs are present. The statocyst is normally developed with a granular statolith.

The antennule is normal. The basicerite is robust, unarmed, and without a dorsal flange. The carpocerite is about 3.5 times longer than wide, 0.6 of the length of the scaphocerite, which is 2.5 times longer than broad, with the greatest width at half the length. The lateral margin is straight with a well developed disto-lateral spine, which is distinctly exceeded by the rounded anterior margin of the lamella. The flagella are damaged.

The mouthparts are typical of the genus. The mandible is moderately slender and without a palp. The incisor process is reduced, slender and tapering to a single acute distal tooth. The medial edge bears four minute denticles. The molar process is robust, obliquely truncate distally, with broad low truncated teeth. The maxillula has the palp feebly bilobed, with two small crochets on the larger lower lobe. The upper lacinia is moderately broad with eight

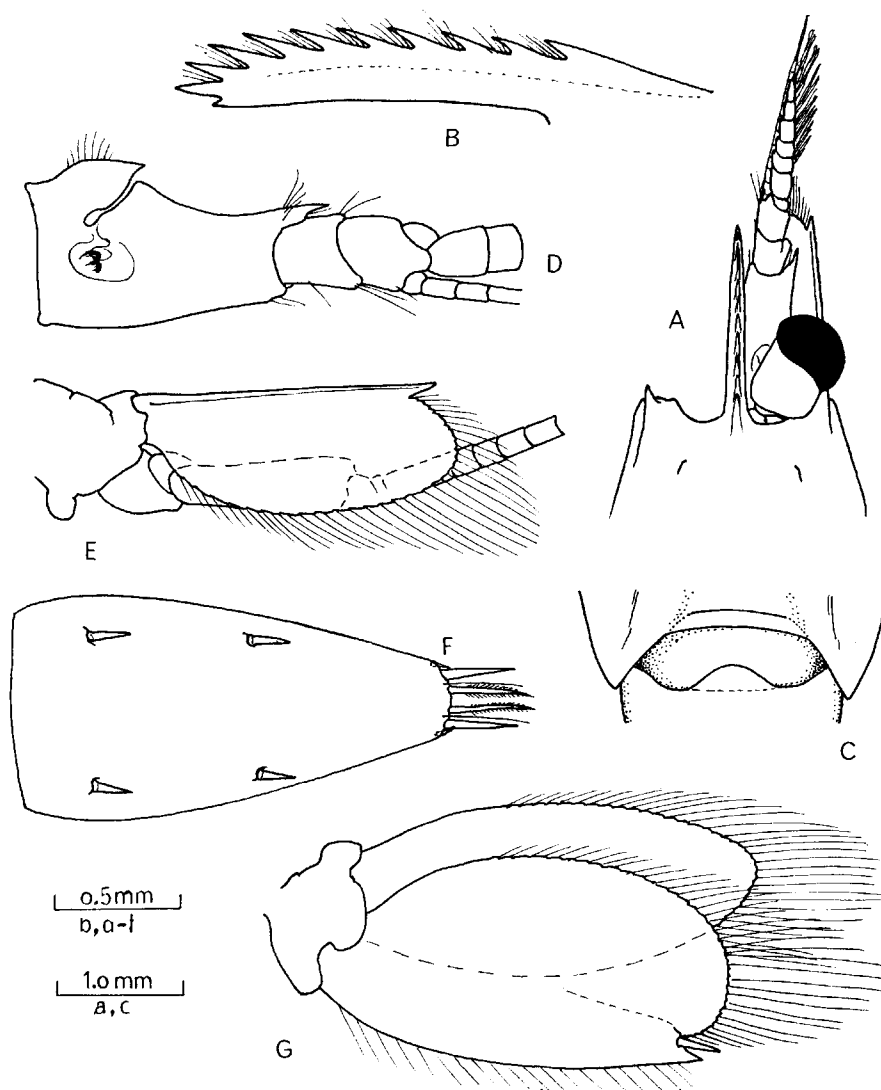


Figure 2. *Periclimenaeus spinimanus* Bruce, holotype. A, anterior carapace, rostrum and antennae. B, rostrum. C, posterior carapace and first abdominal segment, dorsal view. D, antennule. E, antenna. F, telson. G, uropod.

short stout simple spines distally, merging with spiniform setae ventrally. The lower lacinia is small, tapering strongly distally with four strong simple spines distally and with setae along the dorsal and ventral margins. The maxilla has a well developed non-setose palp, tapering over the distal half of its length. The basal endite is bilobed,

with the distal lobe larger and longer than the proximal lobe, each with six simple setae. The coxal margin is rounded medially, without an endite. The scaphocerite is about 3.3 times longer than broad, narrowed anteriorly with the anterior lobe medially concave. The first maxilliped has a slender palp, bearing a single sparsely setu-

lose subterminal seta. The basal and coxal endites are fused, the basal portion being produced and distally rounded with numerous slender, feebly setulose setae. The medial border is sinuous, slightly convex proximally with similar setae and also a single long densely setulose seta. The caridean lobe is small, normally developed. A well developed bilobed epipod is present. The second maxilliped presents no special features. The medial margin of the dactylar segment has numerous feebly armed spines. The coxal segment is produced medially and bears an elongated subrectangular epipod laterally. The third maxilliped has an endopod that exceeds the carpocerite by the length of the distal segment. The ischium and basis appear almost completely fused and the combined segment is about 3.5 times longer than broad, with the sides subparallel. The penultimate segment is four times longer than wide, parallel sided, about 0.6 of the width of the ischio-meral segment, about 0.8 of the length of the antepenultimate segment. The terminal segment is a little more than half the length of the penultimate, tapering distally to end in a strong simple terminal spine. The medial margin of the endopod is fringed with long setae, grouped on the terminal segment, where they are longest and sparsely setulose. The coxal segment is not produced medially, but is straight and without setae. A rounded epipod is present laterally and a small arthrobranch. All maxillipeds have well developed exopods with robust flagella bearing four long plumose terminal setae, with 5-6 short additional setae.

The first pereopods are slender and exceed the carpocerite by a fourth of the length of the merus. The chela is subcylindrical, slightly compressed, with the palm three times longer than deep. The fingers are short, about 0.3 of the palm length. The dactylus is very robust and extensively over-reaches the fixed finger. The lateral margin is semi-circular, ending in a stout acute tooth, the inner aspect is deeply subspatulate, with a laterally situ-

ated cutting edge bearing a series of low blunt teeth and a single acute tooth distally. The fixed finger is similar but on a much smaller scale. The fingers also bear several thick groups of short, densely plumose setae, (mainly omitted from fig. 3c). The carpus is more slender than the palm, tapering proximally, about 1.2 times the length of the chela. The merus is simple, slender, about 7.5 times longer than wide and 1.2 times the length of the carpus. The ischium is normal, half the length of the merus. The basis is of similar length and the coxa is robust. The basis and coxa are ventrally produced to form a small process that opposes the fingers of the chela on flexion.

The second pereopods are well developed, moderately unequal and also dissimilar. The major pereopod exceeds the antennal peduncles by the chela and part of the carpus. The fingers are equal to about half the palm length. The dactylus is thickened, three times longer than deep, with the greatest breadth beyond the mid-point. The tip bears a small hooked tooth and the cutting edge is straight, greatly thickened and slightly excavate posteriorly, without teeth or a molar process, smooth ventrally and with several spines and numerous setae dorsally. The fixed finger bears a strongly hooked tip and the cutting edge is broadly grooved longitudinally. The upper margin of the groove is straight, with an acute tooth proximally. The lower margin is feebly tuberculate. The palm is twice as long as wide, tapering distally. The ventral aspect is convex and smooth. The dorsal aspect is markedly flattened and covered with long acute erect spines and numerous long simple setae. The carpus is short and stout, expanded distally, equal to about one third of the palm length and with a few acute spines on its dorso-lateral aspect. The merus is robust, 1.6 times longer than wide, 0.4 times the length of the palm, with numerous short acute spines along the ventral aspect. The ischium is short and stout, tapering strongly proximally, about 0.8 of

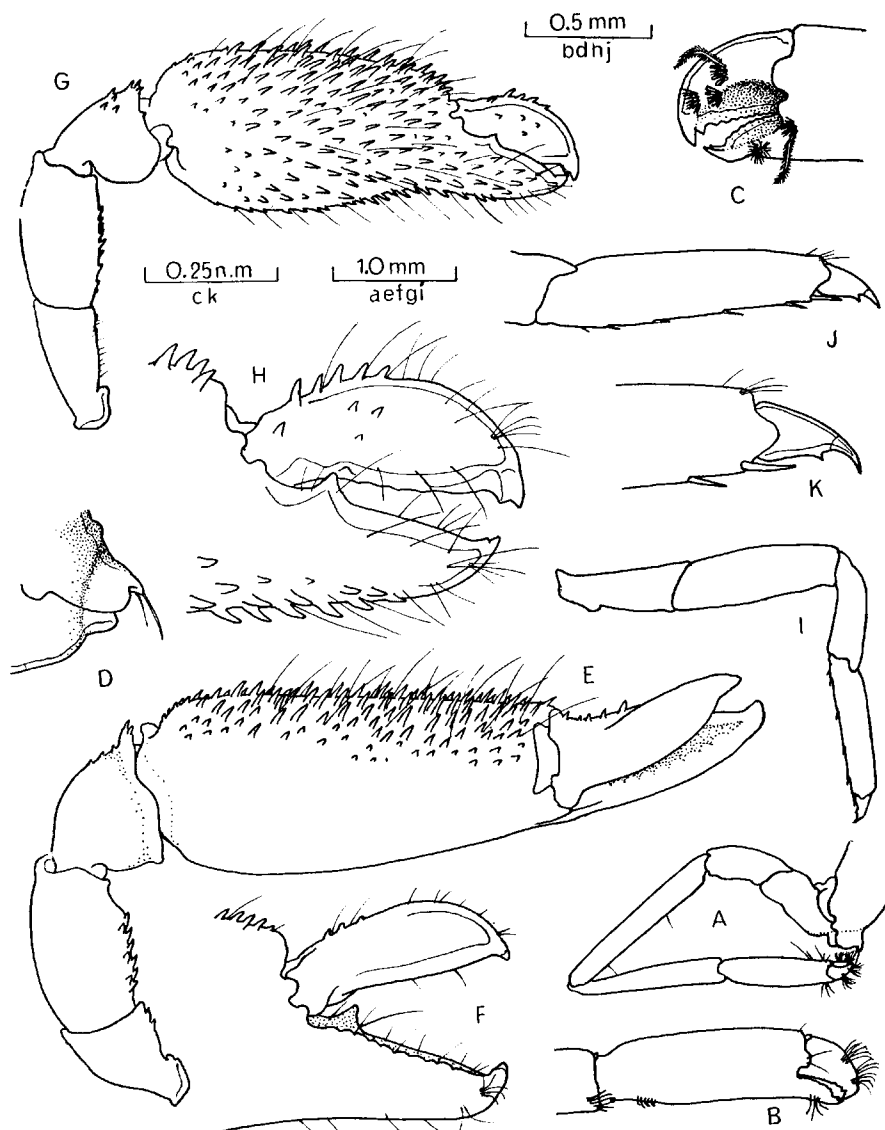


Figure 3. *Periclimenaeus spinimanus* Bruce, holotype. A, first pereopod. B, chela of first pereopod. C, fingers of chela of first pereopod, medial aspect. D, rostral basio-coxal processes of first pereopod. E, major second pereopod. F, fingers of major second pereopod. G, minor second pereopod. H, fingers of minor second pereopod. I, fourth pereopod. J, propod and dactyl of fourth pereopod. K, distal propod and dactyl of fourth pereopod.

the merus length and with a few small acute spines disto-ventrally. The minor pereopod is distinctly smaller with the chela subequal to the length of the palm of the major chela. The dactylus is almost

half the length of the palm, 2.6 times longer than deep, moderately compressed with the outer margin strongly convex, with a few acute spines proximally. The tip is strongly hooked, compressed and feebly



bidentate. The cutting edge is thickened and irregular. The fixed finger is slightly shorter, also feebly bidentate, with a smooth cutting edge bearing a single triangular tooth proximally, and with a shallow groove for the opposition of the dactylar cutting edge. The dorsal aspect of the palm, which is almost twice as long as wide and tapers moderately distally, is also strongly flattened and covered with long acute spines. The carpus, merus and ischium are similar to those of the major pereopod but are slightly smaller and less robust.

The third pereopod is robust and exceeds the carapocerite by two thirds of the carpus. The dactylus is short and stout, with a distinct unguis and a small acute accessory spine. The ventral margins are without additional accessory denticles. The propod is about four times longer than broad and tapers distally. The ventral border is armed with four stout spines and a larger, more robust ventral spine, which reaches to the dactylar accessory spine, is also present. The carpus, merus and ischium are all unarmed. The fourth pereopod is more slender. The dactylus is similar, with a stronger accessory spine. The propod is also four times longer than wide, with similar but weaker ventral spinulation, but five ventral spines are present instead of four. The carpus is 0.7 and the merus is 1.2 of the propod length. The ischium is subequal to the propod length. In the fifth pereopod, the dactylus is stouter with a longer accessory spine. The propod is 5.5 times longer than broad, with three ventral and one disto-ventral spines.

The appendix maculina is short, half the length of the appendix interna, and bears two long simple spines only.

The protopod of the uropod is unarmed laterally. The exopod is broad, twice as long as wide, with a convex unarmed lateral margin terminating in an acute tooth with a single mobile spine medially. The endopod is narrower and slightly exceeds the exopod, both passing slightly beyond the tip of the telson.

*Measurements.*—Post-orbital carapace length, 3.1 mm; major chela 5.0 mm; minor chela 3.5 mm.

*Habitat.*—No data. Depth 37–40 fm. Found free in trawl catch, presumably from a sponge host.

*Colouration.*—Transparent, with golden cornea.

*Type.*—The only specimen has been previously designated as the holotype and is now deposited in the collection of the Smithsonian Institution catalogue number USNM 168529.

*Distribution.*—Known only from the holotype specimen, collected off Ras Asir, Somalia.

*Remarks.*—A preliminary description of this species has been previously given by Bruce (1969). This report states that the lateral telson spines are lacking, but they are in fact present, although small and medially inclined. Also the absence of supra-orbital spines was recorded but not the presence of small supra-orbital tubercles.

*Periclimenaeus spinimanus* is most remarkable by the highly developed spinulation of the flattened dorsal aspect of the palms of the chelae of the second pereopods. In no other species of the genus is this feature so well marked. Other noteworthy features include the anteromedian lobe on the first abdominal tergite. This feature has also been reported in *P. ardeae* and *P. lobiferus* (Bruce, 1970; in press, b). *P. spinimanus* can be readily separated from *P. ardeae* by the first pereopods, which have the fingers subequal to the palm length, with a characteristic dense tuft of setae on the outer aspect of the dactylus in the latter species. The chelae of the second pereopods are spinulate but the spines are short in comparison with *P. spinimanus*, more in the form of acute tubercles.

*Periclimenaeus spinimanus* is most closely related to *P. lobiferus*, known only from the holotype specimen collected off Nosi Bé, Madagascar. *P. lobiferus* has

longer dorsal rostral teeth, lacks a ventral rostral tooth and supra-orbital tubercles; the first pereopod is short and stout, with the fingers of the chela equal to one half of the palm, with the fingers less subspatulate; the second pereopods have the palm only feebly spinulate and the major chela has the fingers provided with a molar process and fossa. The dactyl of the minor chela has a sharper cutting edge with an acute tooth proximally. The third pereopod has a more heavily spinose propod and the dactyl has the ventral border of the corpus feebly tuberculate, in addition to the accessory spine. The mouth parts are generally similar in the two species.

#### Genus *Philarius* Holthuis 1952

##### *Philarius gerlachei* (Nobili)

Restricted synonymy: *Harpilius gerlachei* Nobili, 1905: p. 160; 1906: p. 45, pl. 4, fig. 10. *Harpilius gerlachei* Kemp, 1922: pp. 229 (key), 238–239, figs. 74–75. Armstrong, 1941: 12. *Philarius gerlachei* Holthuis, 1952: 15; 1953: 57.—Patton, 1966: 276, 288, tab. 1, 290, tab. 2.—Bruce, 1972a: 406, 407, 413 (key); in press, e. nec *Philarius gerlachei* Holthuis, 1952: 152–153, fig. 69.

*Material Examined*.—Pamanzi Is., Mayotte, Comoro Islands, 1.0 m, 24 November 1964, 1 ♂, 1 ♀.

*Host*.—*Acropora* sp. [Scleractinia: Acroporidae].

*Remarks*.—Both specimens had eight dorsal and a single ventral rostral tooth. The carpus of the second pereopods was also unarmed. Colour noted in life as "Almost colourless, with a few white markings only and with a yellow dorsal line down carapace and along cyestalks. Scattered yellow dots around bases of antennal peduncles."

The specimens were found in association with several *Jocaste japonica*.

Kemp (1922) gives the rostral dentition of this species as 3–5/1, generally 4/1, so that the number of dorsal rostral teeth in the present specimens is high. The identification is based primarily on the presence

of an unarmed carpus on the second pereopods.

*Distribution*.—Known from the Red Sea; Persian Gulf; Gulf of Manaar; Seychelle Islands; Mocambique Channel; Tanzania; Kenya; Indonesia; Marshall, Gilbert and Samoan Islands; and the Great Barrier Reef.

#### Genus *Ischnopontonia* Bruce, 1966

##### *Ischnopontonia lophos* (Barnard)

Restricted synonymy: *Philarius lophos* Barnard, 1962: pp. 242–243, fig. 2.—Bruce, 1966b: pp. 585, 587, 598.

*Ischnopontonia lophos* Bruce, 1966b: pp. 585–597, figs. 1–5; 1971a: pp. 19–20, 22; 1972a: pp. 401, 402, 409, 413 (key).—Hipeau-Jacquotte, 1973: p. 114, fig. 5.—Kensley, 1974: p. 75.—Bruce, in press (a, b, d).

*Material examined*.—(1) Mounimeri Is., Mayotte, Comoro Islands, lagoon reef, 1.0 m, 23 November 1964, 5 spms. (3 ovig. ♀). (2) Pamanzi Is., Mayotte, Comoro Islands, lagoon, 2.0 m, 24 November 1964, 3 ♂, 8 ♀ (2 ovig. ♀). (3) Mounimeri Is., Mayotte, Comoro Islands, lagoon, 1.0 m, 25 November 1964, 1 ovig. ♀. (4) Aldabra Island, edge of main lagoon outflow, 0.5 m, 3 December 1964, 7 spms. (1 ovig. ♀). (5) idem, central lagoon, 1.0 m, 4 December 1964, 1 ♂, 2 ovig. ♀. (6) Cerf Is., Mahé, Seychelle Islands, sheltered reef, 1.0 m, 11 December 1964, 2 ♂, 2 ovig. ♀.

*Hosts*.—All specimens collected from the coral *Galaxea fascicularis* (L.) [Scleractinia: Oculinidae].

*Remarks*.—The localities have been previously cited in Bruce (1966). Many of the specimens were collected in association with the alpheid shrimp *Racilius compressus* Paulson.

*Distribution*.—Common and widespread in the western Indian Ocean, extending to the South China Sea and the Australian Great Barrier Reef.

#### Genus *Platycaris* Holthuis, 1952

##### *Platycaris latirostris* Holthuis

Restricted synonymy: *Platycaris latirostris* Holthuis, 1952: pp. 16, 173–176, figs. 85–86.—Barnard, 1962: pp. 243.—Bruce, 1966a, pp. 1–8, figs. 1–5; 1972a: pp. 401, 402, 409, 413 (key).—Hipeau-Jacquotte, 1973: pp. 114.—Bruce, in press (a, e).

*Material Examined*.—(1) Moroni, Grande Comore, Comoro Islands, 3.0 m, 2 November 1964,

coll. R. U. Gooding, 1 ♂, 1 ovig. ♀. (2) Pamanzi Is., Mayotte, Comoro Islands, 2.0 m, 24 November 1964, coll. R. U. Gooding, 2 ♂, 2 ovig. ♀. (3) Aldabra Is., edge of main channel, 0.5 m, 3 December 1964, 1 ♂, 1 ovig. ♀. (4) Victoria Harbour, Mahé, Seychelle Islands, 1.0 m, 9 December 1964, 1 spm. (5) Cerf Island, Mahé, Seychelle Islands, 1.0 m, 11 December 1964, 1 ♂, 1 ♀.

*Hosts*.—All specimens were obtained from the coral *Galaxea fascicularis* (L.) [Scleractinia: Oculinidae].

*Remarks*.—Specimens were frequently found in host colonies in association with the alpheid shrimp *Racilius compressus* Paulson and also *Ischnopontonia lophos* (Barnard).

*Distribution*.—Previously recorded only from Flores, Indonesia (type locality), Zanzibar, Tanganyika and Kenya, Madagascar and the Seychelle Islands.

#### Genus *Harpiliopsis* Borradaile, 1917

##### *Harpiliopsis beaupresii* (Audouin)

Restricted synonymy: *Palaemon beaupresi* Audouin, 1825: p. 91.

*Harpiliopsis beaupresi* Borradaile, 1917: pp. 324, 379, pl. 55 fig. 21.—Holthuis, 1952: pp. 16, 181–182, fig. 89 (full synonymy).—Bruce, 1972a: pp. 401, 403, 404, 405, 408, 413 (key).—Hipeau-Jacquotte, 1973, p. 104, fig. 5.

*Harpiliopsis beaupresi* Kemp, 1922: pp. 226, 228 (key), 229–231, figs. 67–68.

*Harpiliopsis beaupresii* Patton, 1966: pp. 276, 288 tab. 1, 290 tab. 2, 291 tab. 3.—Bruce, 1974c: p. 194, fig. 3.

*Harpiliopsis beaupresii* Patton, 1974: pp. 221, 223–226 tab. 1, 233, 239, 241, figs. 1–2.

*Material Examined*.—(1) Aldabra Is., inner lagoon, 4 December 1964, 2 ovig. ♀. (2) Farquhar Is., lagoon, 6 December 1964, 1 ovig. ♀. (3) Resource Is., St. Joseph Atoll, Amirante Islands, reef edge, 8 December 1964, 1 ♂, 1 ovig. ♀. (4) Anse Royale, Mahé, Seychelle Islands, edge of reef flat, 10 December 1964, 1 ♂. (5) idem, 1 ovig. ♀. (6) Gold Mohur Bay, Aden, 1 m. 21 December 1964, 3 spms.

*Hosts*.—*Stylophora pistillata* (Esper) (1) (3) (4) (6); *Pocillopora damicornis* (L.) (2); *Seriatopora ?acuta* (5). [Scleractinia: Pocilloporidae].

*Remarks*.—The Gold Mohur Bay specimens were found in association with *H. depressa* specimens.

The Farquhar Island specimens were noted in life as “Body finely speckled all over with fine dark red dots, which tend to form a longitudinal pattern over the abdomen, with the addition of small white dots over the pleura. Fine longitudinal rows of black dots along the chelae, with a few white dots interspersed. Caudal fan with small red dots only.”

*Distribution*.—Common in the western Indian Ocean in pocilloporine coral hosts. Recorded from the Red Sea to Hawaii and also from Pitcairn. Previously recorded from Mahé and Coetivy in the Seychelle Islands by Kemp (1922) and Borradaile (1917), and from Farquhar Island by Bruce (1974a).

##### *Harpiliopsis depressa* Stimpson

Restricted synonymy: *Harpiliopsis depressus* Stimpson, 1860: p. 38.—Kemp, 1922: pp. 226, 228 (key), 229–231, 232, 233, 240, figs. 67–68.—Barnard, 1950: p. 79b, fig. 151 a–e. *Harpiliopsis depressus* Borradaile, 1917: pp. 324, 380, pl. 56 fig. 22.—Holthuis, 1951: pp. 69, 70–75, pl. 21, pl. 22 a–f; 1952: pp. 16, 182–184, fig. 90.—Patton, 1966: pp. 277, 288 tab. 1, 290 tab. 2, 291 tab. 3, 292.—Bruce, 1972a: pp. 400, 401, 404, 405, 409, 414 (key); in press, c.

*Material Examined*.—(1) Latham Island, Zanzibar, 2 m, 20 November 1964, 1 ovig. ♀. (2) Pamanzi Island, Mayotte, Comoro Islands, 0.5 m, 24 November 1964, 3 spms. (1 ovig. ♀). (3) Bandeli Is., Mayotte, Comoro Islands, 0.5 m, 26 November 1964, 1 ♀. (4) Moroni, Grande Comore, Comoro Islands, 2.0 m, 27 November 1964, 5 spms. (1 ovig. ♀). (5) Aldabra Is., central lagoon, 2 m, 4 December 1964, 1 ♂, 4 ♀ (2 ovig. ♀). (6) Gold Mohur Bay, Aden, 1.5 m, 21 December 1964, 1 spm.

*Hosts*.—*Pocillopora damicornis* (L.) (6); *P. ligulata* (Dana) (4); *P. verrucosa* (Ellis & Solander) (1); *Stylophora pistillata* (Esper) (7); *Seriatopora angulata* Klunzinger (5), *Seriatopora* sp. (3). [Scleractinia: Pocilloporidae].

*Remarks*.—The colour pattern of the live Latham Island specimen was noted as “Carapace generally a pale olive green, longitudinally streaked with numerous fine lines of

small dark brown dots. Rostrum bright yellow, also the distal and medial borders of the scaphocerite. Antennal peduncles as carapace, but a conspicuous line of dark brown runs along the middle of proximal segment of antennular peduncle. Abdomen as carapace, but darker green, similarly streaked, but with a darker streak along the upper margin of the pleura and median streak on the third segment. The abdominal segments become increasingly yellow posteriorly and are brightest at the base of the caudal fan. The dorsum of the third segment bears an anchor-shaped yellow mark. The pleura also bear a distinct ventral submarginal band of yellow on the first four segments. The basal third of the caudal fan is bright yellow, the intermediate third dark red and the distal third white, slightly bluish on the endopod. The chelae of the second pereiopods are yellow-green, minutely dotted with yellow and black; the fingers are yellow. Ambulatory pereiopods banded with yellow, dactyls orange."

The specimen from the island of Farquhar was similarly coloured. The rostrum has a dentition of 7/4, the two posterior spines are situated on the carapace and appear mobile.

*Distribution*.—Common and widespread throughout the whole Indo-West Pacific region extending to the Galapagos Islands and western shores of America from Lower California to Colombia. Previously recorded from the Seychelle Islands (Borradaile, 1917; Bruce, in press, c).

#### *Harpiliopsis spinigera* (Ortmann)

*Anchistia spinigera* Ortmann, 1899: p. 511, pl. 36 fig. 23.—Kemp, 1922: pp. 228, 231.

*Harpilius depressa* var. *gracilis* Kemp, 1922: pp. 228 (key), 234–235, fig. 71.

*Harpiliopsis depressa* var. *spinigerus* Holthuis, 1952: pp. 16, 182, 184–185.

*Harpiliopsis* sp. Bruce, 1974c: pp. 194.

*Harpiliopsis spinigera* Bruce, 1975b, p. 27; in press, c.

*Material Examined*.—(1) Pamanzi Is., Mayotte, Comoro Islands, 1.0 m, 24 November 1964, 1

ovig. ♀, 2 juv. (2) Aldabra Is., central lagoon, 4 December 1964, 1 ♂, 2 ovig. ♀.

*Hosts*.—*Seriatopora* sp. (1); *Stylophora pistillata* (Esper) (2). [Scleractinia: Pocilloporidae].

*Remarks*.—Colour noted as "Mainly transparent, with fine dark red striae all over the body. Antennal peduncles with red central and lateral longitudinal bands. Chelae finely dotted with dark red. Rostrum distal scaphocerite, distal margin of eye-stalk and fingers of chelae bright orange-red. Numerous small white chromatophores over body and caudal fan.

The Aldabra specimens were found in association with *H. depressa*.

*Distribution*.—Originally described from Samoa and known with certainty, due to confusion with *H. depressa*, only from Dar es Salaam, Tanzania; Malindi, Kenya; Remire Is., Seychelle Islands; the Maldives and Andaman Islands, and Mamudju, Celebes.

#### Genus *Cavicheles* Holthuis, 1952

##### *Cavicheles kemp* Holthuis

*Cavicheles kemp* Holthuis, 1952, pp. 171, 205–208, figs. 99–101; 1955, p. 70, fig. 43a.—Bruce, 1966c, pp. 266–269, figs. 1–2; 1972a, pp. 405, 414 (key); (in press, e).

*Material Examined*.—(1) Pamanzi Is. reef, Zaoudzi, Ile Mayotte, Comoro Islands, 24 November 1964, 1 ♀, coll. R. U. Gooding (coral washings). (2) Mounimeri Is. reef, Zaoudzi, Ile Mayotte, Comoro Islands, 25 November 1964, 1 ♀, coll. R. U. Gooding (coral washings).

*Remarks*.—The two specimens have been previously reported upon and illustrated in Bruce (1966). The specimens were found in association with examples of *Jocaste japonica* (Ortmann).

*Host*.—*Acropora* sp. [Scleractinea: Acroporidae].

*Distribution*.—Initially reported from Halmahera Island, in the Moluccan Archipelago and subsequently from the Comoro Islands. Otherwise only recorded from Kenya, Tanganyika, and Zanzibar.

Genus *Jocaste* Holthuis, 1952*Jocaste lucina* (Nobili)

Restricted synonymy: *Coralliocaris lamellos-tris* Stimpson, 1860: 38.

*Coralliocaris lucina* Nobili, 1901: p. 5; 1906: p. 57.—Borradaile, 1971: p. 384.—Tattersall, 1921: p. 390.—Kemp, 1922: pp. 276–278, fig. 102; 1925: p. 322.

*Jocaste lucina* Holthuis, 1952: pp. 17, 193–195, fig. 94 (partim).—Patton, 1966: pp. 278–279, tab. 1–2, fig. 3a.—Bruce, 1969b: pp. 299–301, fig. 2; 1972a: pp. 405, 406, 407, 408, 414 (key); 1974c: pp. 199–200, fig. 8; in press (a, b).

**Material Examined.**—(1) Pamanzi Is., Mayotte, Comoro Islands, lagoon, 24 November 1964, 16 spms. (10 ovig. ♀). (2) Idem, 6 spms. (2 ovig. ♀). (3) Mounimeri Is., Mayotte, Comoro Islands, lagoon, 2 m, 25 November 1964, 27 spms, many ovig. ♀. (4) Aldabra Island, main outflow edge, 2 m, 3 December 1964, 1 ♂, 2 ovig. ♀. (5) Idem, main lagoon, 2 m, 2 ♂. (6) Idem, main lagoon, 1.0 m, 4 December 1964, 1 ♂, 1 ♀. (7) Gold Mohur Bay, 4 m, 21 December 1964, 6 spms. (2 ovig. ♀).

**Hosts.**—All specimens were obtained from corals of the genus *Acropora* including *A. palifera* (Lam.) (6), *A. variabilis* (Klunzinger) (7). [Scleractinia: Acroporidae].

**Remarks.**—The Comoro Islands and Aden localities have been previously cited in Bruce (1969b). This species is frequently found in the same host colonies as the only other species of the genus, *J. japonica*.

**Distribution.**—Common and widespread throughout most of the Indo-West Pacific region from the Red Sea to Tahiti, excluding Hawaii and Japan.

*Jocaste japonica* (Ortmann)

Restricted synonymy: *Coralliocaris superba* var. *japonica* Ortmann, 1890: p. 509.

*Coralliocaris japonica* Borradaile, 1917: pp. 324, 384, pl. 56 fig. 23.

*Jocaste lucina* Holthuis, 1952: pp. 17, 193–195, fig. 94 (partim).

*Jocaste japonica* Patton, 1966: pp. 279–280, tabs. 1–2, fig. 3b.—Miyake & Fujino, 1968: pp. 425–426, 431.—Bruce, 1969b: pp. 299, 300, fig. 1; 1972a: pp. 403, 405, 408, 414 (key); 1974c: pp. 198–199, fig. 7.

**Material Examined.**—(1) Latham Is., Zanzibar, reef edge, LWS tide level, 20 November 1964, 1 ♂, 3 ovig. ♀. (2) Moroni, Grande Comore, Comoro Islands, fringing reef, 2.0 m, 22 November

1964, coll. R. U. Gooding, 2 ♂, 1 ovig. ♀. (3) Pamanzi Is., Mayotte, Comoro Islands, lagoon, 24 November 1964, coll. R. U. Gooding, 34 spms. (14 ovig. ♀), several host colonies. (4) Idem, 6 spms. (2 ovig. ♀). (5) Idem, 1.0 m, 1 ♂, 1 ovig. ♀. (6) Mounimeri Is., Mayotte, Comoro Islands, lagoon, 2.0 m, 25 November 1964, 1 spm. (7) Aldabra Is., main lagoon channel edge, 1.0 m, 3 December 1964, 1 ♂, 2 ovig. ♀. (8) Idem, main lagoon, 1 ovig. ♀. (9) Idem, inner lagoon, 1 ♂, 1 ovig. ♀. (10) Idem, 2 ♀.

**Hosts.**—All specimens were obtained from coral colonies of the genus *Acropora*, including *Acropora humilis* (Dana) (1), *A. eurystoma* (Klunzinger) (4) and *A. squarrosa* (Ehrenberg) (9). [Scleractinia: Acroporidae].

**Remarks.**—The Latham Is., Aldabra and Comoro Islands localities have been previously cited in Bruce (1969b). As mentioned above, this species and *J. lucina* are frequently found in association on the same coral hosts. The association of this species with *Acropora eurystoma* and *A. squarrosa* has not been previously recorded.

**Distribution.**—Common in the western Indian Ocean but not recorded from the Red Sea or Persian Gulf, as far east as the Marshall Islands and New Caledonia.

Genus *Coralliocaris* Stimpson, 1860*Coralliocaris graminea* (Dana)

Restricted synonymy: *Oedipus gramineus* Dana, 1852, p. 25; 1855, pl. 37 fig. 3.

*Coralliocaris graminea* Stimpson, 1860, p. 38.—Ortmann, 1894, p. 16. Miers, 1884, p. 563.

—Lenz, 1905, p. 381.—Borradaile, 1917, p. Kemp, 1922; pp. 269–272, figs. 96–97.—

Balss, 1924, p. 48; 1925: p. 294; Barnard, 1950: pp. 800–801.—Holthuis, 1952: pp. 186–189, fig. 91; 1953: p. 58.—Patton,

1966, pp. 277, 288, 290, 292.—Miyake & Fujino, 1968, pp. 400, 423, 431, fig. 7 a.c.

—Bruce, 1972a, pp. 400, 401, 402, 403, 404, 405, 406, 407, 408, 414.—Hipeau-Jacquotte,

1973, p. 103, fig. 5.—Bruce, 1974a, pp. 222–224, fig. 1 c–d; 1974 (b), pp. 262, 263, fig. 6.

**Material Examined.**—(1) Aldabra, 3 December 1964, 1 ovig. ♀; 1 ♂, 2 ovig. ♀.

**Remarks.**—Previously recorded in the western Indian Ocean from Kenya, the Seychelle Islands, Zanzibar, Dar es Salaam, Juan de Nova and Tulear, but some of these records may refer to specimens of *C. viridis* Bruce.

*Host*.—The specimens were obtained from *Acropora* colonies from the edge of the main lagoon channel [Scleractinia: Acroporidae].

*Distribution*.—Probably common and widespread throughout the Indo-West Pacific region, but many of the recorded occurrences probably refer to *C. viridis* Bruce. Absent from the Hawaiian Islands.

#### *Coralliocaris superba* (Dana)

Restricted synonymy: *Oedipus superbus* Dana, 1852, p. 25; 1855, pl. 37 fig. 2.

*Coralliocaris superba* Stimpson, 1860, p. 38.—Borradaile, 1917, p. 383.—Kemp, 1922, pp. 269 (key), 272–274, figs. 98–99.—Kubo, 1940, pp. 67–70, figs. 30–32.—Holthuis, 1952, pp. 189–191, fig. 92; 1953, pp. 58–59.—Patton, 1966, pp. 277, 288, 290, 292.—Miyake & Fujino, 1968, pp. 400, 424–425, 431, fig. 7 b.d.—Bruce, 1972a, pp. 400, 402, 403, 405, 406, 407, 414.—Hipeau-Jacquotte, 1973, p. 104, fig. 5.—Bruce, 1974b, p. 262, fig. 3.

*Material Examined*.—(1) Pamanzi Island, Ile Mayotte, Comoro Islands, 24 November 1964, coll. R. U. Gooding, 3 (2 ovig. ♀). (2) Mounimeri, Zaoudzi, Ile Mayotte, Comoro Islands, 25 November 1964, 1 ♂.

*Host*.—*Acropora* spp. [Scleractinia: Acroporidae].

*Remarks*.—The rostral dentition varied from 2/2 to 5/2. The colouration was noted as “Rostrum, eyestalk, carapace and first four abdominal segments white. Fifth and sixth abdominal segments greenish, finely dotted with blue-black. Caudal fan tipped with white, with a subterminal band of dark blue, preceded by area of isolated blue-black dots. Scaphocerite rusty red, with the black dots along medial edge. Chelae of second pereopods yellowish white with pale purple fingers and large blue black spots along the medial aspects. Ambulatory pereopods reddish but with the blue black dots along the dorsal margins.

*Distribution*.—Common and widespread throughout the whole Indo-West Pacific region, from the Red Sea to the Society Islands.

#### *Coralliocaris venusta* Kemp

Restricted synonymy: *Coralliocaris venusta* Kemp, 1922, pp. 274–276, figs. 100–101.—Holthuis, 1952, pp. 191–192, fig. 93.—Patton, 1966, pp. 277–278, 288.—Bruce, 1972a, pp. 405, 416, 444; 1974b, p. 262, fig. 5; in press (a, b, c, d, e).

*Host*.—*Acropora* sp. [Scleractinia: Acroporidae].

*Remarks*.—The rostral dentition varied 1/1, 1/0, 0/1 and 1/0. When present the ventral tooth is very small.

The colouration in life was noted “Mainly transparent, but with an opaque white band across the posterior margin of the third abdominal segment, another across the base of the caudal fan and similarly across the distal third of the telson and uropods, except at the outer margin of the exopod. Otherwise generally speckled with dark red, almost black, especially on the posterior abdominal segments.

*Distribution*.—Type locality, Cheval Paar, Gulf of Manaar. Also recorded from the Red Sea, Kenya; the Maldive and Amirante Islands; the Ile Europa and Geyser Reef, Mocambique Channel; Indonesia, the Great Barrier Reef, and Samoa.

#### Genus *Metapontonia* Bruce, 1967

##### *Metapontonia fungiacola* Bruce

Restricted synonymy: *Metapontonia fungiacola* Bruce, 1967a: pp. 24–30, figs. 9–12; 1972a: p. 408; 1972c: pp. 1–5, fig. 1, pls. 1–2; 1974c: pp. 196–197, fig. 5.

*Material Examined*.—(1) Pamanzi Is., Mayotte, Comoro Islands, 4 m, coll. R. U. Gooding, 25 November 1964, 1 ♂, holotype, USNM 112941.

*Host*.—*Fungia* sp. [Scleractinia: Fungiidae].

*Remarks*.—This shrimp has subsequently been found in association with several non-fungiid coral hosts, including *Hydnophora* and *Goniastrea* spp. and also the fungiid *Halomitra* sp.

*Distribution*.—Not recorded from outside the western Indian Ocean. At present

known from the Comoro Islands, Maziwi Is., Tanganyika; Jadini, Kenya and Farquhar Is., Seychelles Islands.

Genus *Propontonia* Bruce, 1969

*Propontonia pellucida* Bruce

*Propontonia pellucida* Bruce, 1969a: pp. 142–149, figs. 1–5.—Bruce, 1975b: p. 24; in press, a.

*Material Examined*.—(1) Moroni, Grande Comore, Comoro Islands, 2.0 m, 22 November 1964, coll. R. U. Gooding, 2 spms. (2) Mounimeri Is., Comoro Islands, 2.0 m, 23 November 1964, coll. R. U. Gooding, 5 spms. (3) Pamanzi Is., Mayotte, Comoro Islands, 2.0 m, 25 November 1964, coll. R. U. Gooding, 3 spms.

*Hosts*.—All specimens were obtained from large fleshy alcyonarians (#RU-268, #RU-280, #RU-280), probably *Sarcophyton* or *Lobophyton* spp. [Alcyonacea].

*Remarks*.—The colour in the field was noted as “Completely transparent.” All specimens are rather macerated, but agree closely with the previously available information. The type specimens were found in association with *Sarcophyton crassicaule* Moser and the Kenyan specimens with *S. elegans* Moser.

*Distribution*.—Previously known only from Remire Is., Amirante Islands (type locality), and Malindi, Kenya.

Genus *Periclimenes* Costa 1844

*Periclimenes consobrinus* (De Man)

Restricted synonymy: *Periclimenes lutescens* Bruce, 1971b: pp. 2, 5 (partim); 1972a: p. 404.

*Periclimenes consobrinus* Bruce, 1972b: pp. 403, 409, 412 (key), fig. 1b; 1975b: p. 27, fig. 16.

*Material Examined*.—Moroni, Grande Comore, Comoro Islands, 27 November 1964, 1 ♀.

*Host*.—*Pocillopora hemprichi* (Ehrenberg), [Scleractinia: Pocilloporidae].

*Remarks*.—Prior to 1972 *P. consobrinus* was considered a synonym of *P. lutescens* auct. (Holthuis, 1952). Subsequent reexamination of this specimen, referred to in part 1 of this report (p. 5) indicated that it

should be referred to De Man's species and not *P. lutescens*. The two species may be readily separated in the field by their characteristic colour patterns (Bruce, 1975b) and their host preferences, as well as by morphological features (Bruce, 1972b). *Pocillopora* spp. are the normal hosts.

*Distribution*.—Uncertain, due to confusion with *P. lutescens*, but probably widespread throughout the Indo-West Pacific. Recorded so far from the Comoro Islands, Kenya, and Indonesia.

DISCUSSION

The Ninth Cruise of the R/V ANTON BRUUN in the western Indian Ocean, from Mombasa to Aden, via the Comoro Islands and the Seychelle Islands, obtained material representing 45 species of the palaemonid subfamily Pontoninae, one of which, *Periclimenaeus spinimanus*, represented an undescribed species. Most shrimps of this subfamily live in permanent obligatory associations with other marine invertebrates after the end of their planktonic larval life. The species of *Palaemonella* collected and many of the species of *Periclimenes*, two of the unspecialized genera of the subfamily, are free-living species, probably mainly micropredators. All the genera dealt with in the present report are considered to be “commensal” species, although the hosts of some species are still poorly known and much further information is desirable. The associations of the various species are summarized below:

FREE-LIVING SPECIES	<i>Palaemonella tenuipes</i> , <i>P. rotumana</i> (Borr.) (≡ <i>P. vestigialis</i> Kemp), <i>Periclimenes petithouarsi</i> , <i>P. grandis</i> , <i>P. elegans</i> , <i>P. spiniferus</i> , <i>P. seychellensis</i> , <i>P. antonbrunii</i> [20%]
PORIFERA	<i>Periclimenes incertus</i> , <i>Thaumastocaris streptotus</i> , <i>Periclimenaeus rhodope</i> , <i>P. minutus</i> , <i>P. spinimanus</i> [11.1%]
GORGONACEA	<i>Periclimenes latipollex</i> [2.2%]
ALCYONACEA	<i>Propontonia pellucida</i> [2.2%]
ACTINIARIA	<i>Periclimenes brevicarpalis</i> , <i>P. inornatus</i> [4.4%]

SCLERACTINIA	<i>Periclimenes lutescens</i> , <i>P. consobrinus</i> , <i>P. diversipes</i> , <i>P. mahei</i> , <i>Philarius gerlachei</i> , <i>Ischnopontonia lophos</i> , <i>Platycaris latirostris</i> , <i>Harpiliopsis beaupresii</i> , <i>H. depressa</i> , <i>H. spinigera</i> , <i>Cavicheles kempfi</i> , <i>Jocaste japonica</i> , <i>J. lucina</i> , <i>Coralliocaris graminea</i> , <i>C. superba</i> , <i>C. venusta</i> , <i>Metapontonia fungiacola</i> [37.7%]	4. Not extending further east than the Marshall, Gilbert and Ellice, and Samoan Islands: <i>Palaemonella tenuipes</i> , <i>Periclimenes brevicarpalis</i> , <i>P. inornatus</i> , <i>Anchistus demani</i> , <i>Thaumastocaris streptotus</i> , <i>Philarius gerlachei</i> , <i>Harpiliopsis spinigera</i> , <i>Jocaste japonica</i> , <i>Coralliocaris venusta</i> .
LAMELLI-BRANCHIA	<i>Paranchistus ornatus</i> , <i>Anchistus demani</i> , <i>A. miersi</i> , <i>Conchodytes meleagrinae</i> , <i>C. tridacnae</i> [11.1%]	5. Extending as far as the Hawaiian and Tuamotu Islands: <i>Palaemonella rotumana</i> , <i>Periclimenes ensifrons</i> , <i>P. spiniferus</i> , <i>P. soror</i> , <i>P. imperator</i> , <i>Anchistus miersi</i> , <i>Conchodytes meleagrinae</i> , <i>C. tridacnae</i> , <i>Harpiliopsis beaupresii</i> , <i>H. depressa</i> , <i>Jocaste lucina</i> , <i>Coralliocaris graminea</i> (?), <i>C. superba</i> . [28.8%]
HOLOTHUROIDEA	<i>Periclimenes imperator</i> [2.2%]	
ECHINOIDEA	<i>Periclimenes zanzibaricus</i> [2.2%]	
ASTEROIDEA	<i>Periclimenes soror</i> [2.2%]	
OPHIUROIDEA	<i>Periclimenes lanipes</i> [2.2%]	
ASCIDIACEA	<i>Periclimenaeus hecate</i> [2.2%]	

The Siboga Expedition, collecting in Indonesian waters for several years, collected a total of 54 species (Holthuis, 1952), many of which were also collected by the R/V ANTON BRUUN from the western Indian Ocean. Thus 24 species obtained from the R/V ANTON BRUUN material were represented in the Siboga catches, and many have ranges of distribution that extend well beyond Indonesia. The distribution records of most pontoniinid shrimps are too sparse to enable their zoogeographical ranges to be accurately delineated but the rough outlines are discernable and it is clear that many species are of wide distribution, some extending throughout the whole of the vast Indo-West Pacific region, and even beyond. On the information at present available, the species collected by the R/V ANTON BRUUN may be grouped as follows:

1. Not known outside the western Indian Ocean: *Periclimenes petithouarsi*, *P. mahei*; *Paranchistus ornatus*; *Periclimenaeus hecate* (?), *P. rhodope*, *P. spinimanus*; *Metapontonia fungiacola*; *Propontonia pellucida* [17.7%]
2. Not known beyond the eastern Indian Ocean: *Periclimenes zanzibaricus*.
3. Not extending further east than Japan-Philippines-Indonesia-Great-Barrier Reef: *Periclimenes grandis*, *P. elegans*, *P. brevicarpalis*, *P. incertus*, *P. seychellensis*, *P. latipollex*, *P. lanipes*, *P. diversipes*, *P. consobrinus*, *Periclimenaeus hecate* (?).

Three species have ranges that also extend beyond the generally recognized limits of the Indo-West Pacific region. *Harpiliopsis beaupresii* has been found at Easter Island (Holthuis, 1971), *H. depressa* occurs extensively from Lower California to Colombia (Holthuis, 1951) and *Periclimenes soror* has been found in the Gulf of Panama (Bruce, in press, f). None have been found in the Atlantic region, but *Palaemonella rotumana* has spread through the Suez Canal into the eastern Mediterranean Sea (Holthuis and Gottlieb, 1958).

#### ACKNOWLEDGMENTS

I would again like to express my gratitude to the National Science Foundation, which enabled me to participate on the Ninth Cruise of the R/V ANTON BRUUN, and also to Dr. J. W. Wells for the identification of many of the coral host specimens.

#### LITERATURE CITED

- Armstrong, J. C. 1941. The Caridea and Stomatopoda of the second Templeton Crocker-American Museum Expedition to the Pacific Ocean. Amer. Mus. Novit. 1137: 1-14.
- Audouin, V. 1825. Explication sommaire des planches de Crustacés de l'Égypte et de la Syrie, publiées par Jules-César Savigny, membre de l'Institut: offrent un exposé des caractères naturels des genres avec la distinction des espèces. Description de l'Égypte ou recueil des observations et des recherches qui ont été faites en Égypte pendant l'expédition de l'armée française. Hist. Nat. 1: 77-98.
- Balss, H. 1924. Die Oxyrhynchen und Schlussteil. (Geographische Uebersicht der Decapoden Japans.) Ostasiatischen Decapoden,



- V. Arch. Naturg., 90 (A5): 20-84, figs. 1-2, pl. 1.
- . 1925. *Macrura* der Deutschen Tiefsee-Expedition, 2. Natantia. Teil A. Wiss. Ergebn. Valdivia Exped. 20: pp. 217-315, figs. 1-75, pls. 20-28.
- Barnard, K. H. 1950. Descriptive Catalogue of South African Decapod Crustacea. Ann. S. Afr. Mus. 38: 1-837, figs. 1-154.
- . 1955. Additions to the Fauna-List of South African Crustacea and Pycnogonida. Ann. S. Afr. Mus. 43: 1-107, figs. 1-53.
- . 1962. New records of marine crustacea from the East African region. Crustaceana 3: 239-245, figs. 1-2.
- Borradaile, L. A. 1898. A revision of the Pontoniidae. Ann. Mag. Nat. Hist. ser. 7, 2: 376-391.
- . 1917. On the Pontoniinae. The Percy Sladen Trust Expedition to the Indian Ocean in 1905, under the leadership of Mr. J. Stanley Gardiner. Trans. Linn. Soc. Lond., Zool., ser. 2, 17: 323-396, pls. 52-57.
- Bruce, A. J. 1966a. Notes on some Indo-Pacific Pontoniinae, II. *Platycaris latirostris* Holthuis. Crustaceana 11: 1-9, figs. 1-5.
- . 1966b. Notes on some Indo-Pacific Pontoniinae, XI. A re-examination of *Philarius lophos* Barnard, with the designation of a new genus *Ischnopontonia*. Bull. Mar. Sci. 16: 584-598, figs. 1-5.
- . 1966c. The rediscovery of *Cavicheles kempfi* Holthuis (Decapoda Natantia) in the Comores. Bull. Mus. Nat. Hist. Nat., Paris, ser. 2, 38: 266-269, fig. 1.
- . 1967a. Notes on some Indo-Pacific Pontoniinae, III-IX. Descriptions of some new genera and species from the western Indian Ocean and South China Sea. Zool. Verhand., Leiden 87: 1-73, figs. 1-29.
- . 1967b. The results of the re-examination of the type specimens of some pontoniid shrimps in the collection of the Museum National d'Histoire Naturelle, Paris. Bull. Mus. Nat. Hist. Nat., Paris, ser. 2, 39: 564-572.
- . 1969a. Notes on some Indo-Pacific Pontoniinae, XIII. *Propontonia pellucida* g.n. nov., sp. nov., a new shrimp from the Amirante Islands. Crustaceana 17: 141-150, figs. 1-5.
- . 1969b. Observations upon the host specificity and distribution of *Jocaste japonica* (Ortmann) and *Jocaste lucina* (Nobili) (Decapoda Natantia, Pontoniinae). Crustaceana 17: 298-302, figs. 1-2.
- . 1969c. Preliminary descriptions of ten new species of the genus *Periclimenaeus* Borradaile, 1915, (Crustacea, Decapoda Natantia, Pontoniinae). Zool. Meded., Leiden 44: 159-175.
- . 1970. Further preliminary descriptions of new species of the genus *Periclimenaeus* Borradaile, 1915 (Crustacea, Decapoda Natantia, Pontoniinae). Zool. Meded., Leiden 44: 305-306.
- . 1971a. Records of some rare pontoniid shrimps from Australian waters, with remarks upon the mouthparts of some species of the genus *Periclimenaeus* Costa, 1844. Zool. Verhand., Leiden 114: 1-32, figs. 1-9.
- . 1971b. Pontoniid Shrimps from the Ninth Cruise of the R/V Anton Bruun, I.I.O.E., 1964: I. *Palaemonella* Dana and *Periclimenaeus* Costa. Smithsonian Contrib. Zool. 82: 1-13, fig. 1.
- . 1972a. A review of information on the coral hosts of commensal shrimps of the sub-family Pontoniinae, Kingsley, 1874 (Crustacea, Decapoda, Palaemonidae). Proc. Symp. Corals and Coral Reefs, 1969. Mar. Biol. Ass. India, 399-418, figs. 1-2.
- . 1972b. Shrimps that live on molluscs. Sea Frontiers 18: 218-227, figs. 1-9.
- . 1972c. A report on a small collection of pontoniid shrimps from Fiji, with the description of a new species of *Coralliocaris* Stimpson. Pacific Sci. 26: 63-86, figs. 1-11.
- . 1972d. Notes on some Indo-Pacific Pontoniinae, XVIII. A redescription of *Pontonia minuta* Baker, 1907, and the occurrence of abbreviated development in the Pontoniinae (Decapoda Natantia, Palaemonidae). Crustaceana 23: 65-75, figs. 1-5.
- . 1972e. The occurrence of the shrimp *Metapontonia fungiacola* Bruce (Crustacea, Decapoda, Pontoniinae) in Kenyan waters. J. East Afr. Nat. Hist. Soc. and Nat. Mus. 134: 1-5, fig. 1, pls. 1-2.
- . 1973. The pontoniid shrimps collected by the Yale-Seychelles Expedition, 1957-58, (Decapoda, Palaemonidae). Crustaceana 24: 132-142, figs. 1-2.
- . 1974a. *Coralliocaris viridis* sp. nov., a preliminary note (Decapoda Natantia, Pontoniinae). Crustaceana 22: 222-224, fig. 1.
- . 1974b. Hidden Shrimps of the Coral Reefs. Wildlife 16: 260-263, figs. 1-6.
- . 1974c. A report on a small collection of pontoniid shrimps from the Island of Farquhar. Crustaceana 27: 189-203, figs. 1-8.
- . 1975a. Observation on some specimens of the genus *Periclimenaeus* Borradaile (Decapoda Natantia, Pontoniinae) originally described by G. Nobili. Bull. Mus. Natn. Hist. Nat., Paris, ser. 3, 258, Zoologie 180: 1557-1583, figs. 1-15.
- . 1975b. Coral reef shrimps and their

- colour patterns. *Endeavour* 34: 23-27, figs. 1-16.
- . 1975c. Shrimps that live on echinoderms. *Sea Frontiers* 21: 44-53, figs. 1-10.
- . In press, a. A report on a small collection of shrimps from the Kenya National Marine Parks at Malindi, with notes on selected species. *Zool., Verhand., Leiden*.
- . In press, b. A report on a collection of pontoniinid shrimps from Madagascar and adjacent waters. *J. Linn. Soc. (Zool.)*.
- . In press, c. A report on some pontoniinid shrimps collected from the Seychelle Islands by the F.R.V. Manihine, 1972, with a review of the Seychelles pontoniinid shrimp fauna. *J. Linn. Soc. (Zool.)*.
- . In press, d. Pontoniine shrimps in the collections of the Australian Museum. *Rec. Aust. Mus.*
- . In press, e. A synopsis of the pontoniinid shrimp fauna of Central East Africa. *J. Mar. Biol. Ass. India*.
- . In press, f. *Periclimenes soror* Nobili, a pontoniinid shrimp new to the American fauna, with observations on its Indo-West Pacific distribution. *Tethys*.
- CASTRO, P. 1971. The natantian shrimps (Crustacea, Decapoda) associated with invertebrates in Hawaii. *Pacific Sci.* 25: 395-403.
- Dana, J. D. 1852. *Conspectus Crustaceorum quae in Orbis Terrarum circumnavigatione, Carolo Wilkes e Classe Reipublicae Foederatae Duce, lexit et descripsit.* *Proc. Acad. Nat. Sci. Philad.* 13: 1-62.
- De Man, J. G. 1888. Bericht über die von Herrn Dr. J. Brock im indischen Archipel gesammelten Decapoden und Stomatopoden. *Arch. Naturgesch.* 53: 215-600, pls. 7-22a.
- Fankboner, P. V. 1972. On the association between the Pontonid shrimp *Anchistus meirsi* De Man (Decapoda, Palaemonidae) and giant clams. *Wassman J. Biol.* 30: 35-42, figs. 1-3.
- Hipeau-Jacquotte, R. 1973. Etude des crevettes Pontoniinae (Palaemonidae) associées aux mollusques Pinnidae à Tulear (Madagascar). 3. Morphologie externe et morphologie des pieces buccales. *Tethys, supp.* 5, pp. 95-116, figs. 1-6.
- . 1974. Etude des crevettes Pontoniinae (Palaemonidae) associées aux mollusques Pinnidae à Tulear (Madagascar). *Arch. Zool. Gen. Exper.* 115: 359-386.
- Holthuis, L. B. 1951. The Subfamilies Euryrhynchinae and Pontoniinae. A general revision of the Palaemonidae (Crustacea Decapoda Natantia) of the Americas. II. Allan Hancock Found. Publ., Occ. Pap. 11: 1-332, figs. 1-63.
- . 1952. The Decapoda of the Siboga Expedition. Part IX. The Palaemonidae collected by the Siboga and Snellius Expeditions, with remarks on other species. II. Subfamily Pontoniinae. *Siboga Exped. Mon.* 39a<sup>10</sup>: 1-252, figs. 1-110, tab. 1.
- . 1953. Enumeration of the Decapod and Stomatopod Crustacea from Pacific Coral Islands. *Atoll Res. Bull.* 24: 1-66.
- . 1965. The recent genera of Caridean and Stenopodidean shrimps (Class Crustacea, Order Decapoda, Supersection Natantia) with keys for their determination. *Zool. Verhand., Leiden* 26: 1-157, figs. 1-105.
- . 1972. The Crustacea Decapoda Macrura (the Alpheidae excepted) of Easter Island. *Zool. Meded., Leiden* 46: 29-54, pls. 1-2.
- Holthuis, L. B. and E. Gottlieb. 1958. An annotated list of the Decapod Crustacea of the Mediterranean Coast of Israel, with an appendix listing the Decapoda of the Eastern Mediterranean. *Bull. Res. Council. Israel* 7B: 1-126, figs. 1-15, pls. 1-3.
- Johnson, D. S. 1961. A synopsis of the Decapod Caridea and Stenopodidea of Singapore, with notes on their distribution and a key to the genera of Caridea occurring in Malayan waters. *Bull. Nat. Mus. Singapore*, 30: 44-79, pl. 1.
- Kemp, S. 1922. Notes on the Crustacea Decapoda in the Indian Museum. XV. Pontoniinae. *Rec. Indian Mus.* 24: 113-288, figs. 1-105, pls. 3-9.
- Kensley, B. 1974. Type specimens of Decapoda (Crustacea) in the collections of the South African Museum. *Ann. S. Afr. Mus.* 66: 55-80.
- Kubo, I. 1940. Studies on the Japanese Palaemonoid shrimps. II. Pontoniinae. *Journ. Imp. Fish. Inst., Tokyo* 34: 31-75, figs. 1-36.
- Lenz, H. 1905. Ostafrikanische Dekapoden und Stomatopoden gesammelt von Herrn Prof. Dr. A. Voeltzkow. In: A. Voeltzkow, *Wissenschaftliche Ergebnisse der Reisen in Madagascar und Ostafrika in den Jahren 1889-95*, vol. III. *Abh. Senckenb. naturf. Ges.* 27: 341-392, pls. 47-48.
- Miers, E. J. 1884. Crustacea. Report of the Zoological Collections made in the Indo-Pacific Ocean during the voyage of H.M.S. "Alert," 1881-2: 178-322, 513-575, pls. 18-35, 46-52.
- Miyake, S., and T. Fujino. 1968. Pontoniinid shrimps from the Palau Islands (Crustacea, Decapoda, Palaemonidae). *J. Fac. Agric., Kyushu Imp. Univ.* 10: 339-431, figs. 1-8.

- Nobili, G. 1901. Decapodi e Stomatopodi del Museo Zoologico dell'Università di Napoli. *Annu. Mus. Zool. Univ. Napoli* 1: 1-20.
- . 1904. Diagnoses préliminaires de vingt-huit espèces nouvelles de Stomatopodes et Décapodes Macroures de la mer Rouge. *Bull. Mus. Hist. Nat., Paris* 10: 228-238.
- . 1905. Décapodes nouveaux des côtes d'Arabie et du Golfe Persique. (Diagnoses préliminaires.) *Bull. Mus. Hist. Nat. Paris* 11: 158-164, fig. 1.
- . 1906a. Crustacea Décapodes et Stomatopodes. *Mission J. Bonnier et Ch. Perez Golfe Persique, 1901*. *Bull. Sci. France Belg.* 40: 13-159, pls. 1-11.
- . 1906b. Faune carcinologique de la Mer Rouge. Decapodes et Stomatopodes. *Ann. Sci. Nat. Zool., ser. 9, 4*: 1-347, figs. 1-12, pls. 1-11.
- Ortmann, A. 1890. Die Unterordnung Natantia Boas. Die Decapoden-Kresbe des Strassburger Museums, mit besonderer Berücksichtigung der von Herrn Dr. Döderlein bei Japan und bei den Liu-Kiu-Inseln gesammelten und z.Z. in Strassburger Museum aufbewahrten Formen. II. Theil. *Zool. Jb. Syst.* 5: 693-750, pl. 47.
- . 1894. Crustaceen. In: R. Semon, *Zoologische Forschungsreisen in Australien und dem Malayischen Archipel*. Mit Unterstützung des Herrn Dr. Paul von Ritter ausgeführt in den Jahren 1891-1893. V. *Denkschr. Naturw. Ges. Jena* 8: 3-80, pls. 1-3.
- Patton, W. K. 1966. Decapod Crustacea commensal with Queensland branching corals. *Crustaceana* 10: 271-295, figs. 1-3.
- . 1974. Community structure among the animals inhabiting the coral *Pocillopora damicornis* at Heron Island, Australia. In: Vernberg, W. G., *Symbiosis in the Sea*. Belle W. Baruch Lib. Mar. Sci. 2: 219-243, figs. 1-2, tabs. 1-4.
- Peters, W. 1852. Über Conchodytes, eine neue in Muscheln lebende Gattung von Garneelen. *Arch. Naturgesch.* 18: 283-290.
- Stimpson, W. 1860. *Prodromus descriptionis animalium evertibratorum, quae in Expeditione ad Oceanum Pacificum Septentrionalem, a Republica Federata missa, C. Ringgold et J. Rodgers Ducibus, Observavit et descripsit*. *Proc. Acad. Nat. Sci. Philad.* 1860: 22-48.
- Tattersall, W. M. 1921. Report on the Stomatopoda and Macrurous Decapoda collected by Mr. Cyril Crossland in the Sudanese Red Sea. *J. Linn. Soc. (Zool.)* 34: 345-398, pls. 27-28.

DATE ACCEPTED: November 15, 1976.

ADDRESS: Heron Island Research Station, Gladstone, Queensland 4680, Australia.