

Pontoniine Shrimps from Viti Levu, Fijian Islands

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Abstract—The present report records fourteen species of pontoniine shrimps from Viti Levu, Fiji, of which six are recorded for the first time and one species, *Onycocaris seychellensis* Bruce, is newly reported from the Pacific Ocean. These additions raise the Fijian pontoniine fauna to 30 species, belonging to 17 genera, 5 of which are monotypic.

The first pontoniine shrimps to be collected from the Fijian Islands were *Coralliocaris gramina* (recorded by Dana [1852a] as *Oedipus graminea*) and *Anchistus custos* from specimens collected during the U.S. Exploring Expedition, 1838-42. Miers (1884) reported a *Conchodytes* from the collections of H.M.S. ALERT, but its exact identity is still uncertain. Professor J. Stanly Gardiner later made a small collection of pontoniine shrimps (four species) which were reported upon by Borradaile (1898a) from Fiji and the nearby Rotuma Island.

There have been few reports in the twentieth century to add to previous knowledge of the Fijian pontoniine fauna. Boone (1935) recorded *Conchodytes meleagrinae* Peters from pearl oysters. Bruce (1971) described *Periclimenes hirsutus* from Sigatoka, a species which has since been found from some Indian Ocean localities, and later *Coralliocaris pavonae* (Bruce, 1972), which has since been reported from Taiwan, together with seven other species. More recently, a small collection of twelve species from Ndravuni, Great Astrolabe Reef, has also been described (Bruce, 1980).

The present collection provides information upon material of fourteen species which were collected from two localities on the southern shore of Viti Levu, during the course of the International Symposium on Biogeography and Evolution in the Southern Hemisphere in 1978. Specimens were collected from shore reef flats at Naviti, 18°12'S., 177°42'E., on 29 July 1978, and from Mana Island, one of the Manamua Islands, 17°40'25''S., 177°06'40''E., on 31 July 1978. The water temperature was 25 C.

Full synonymies for most species are to be found in Holthuis (1952). Measurements given refer to the postorbital carapace length in mm (C.L.).

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SYSTEMATIC ACCOUNT

Palaemonella tenuipes Dana, 1852a

Fig. 1

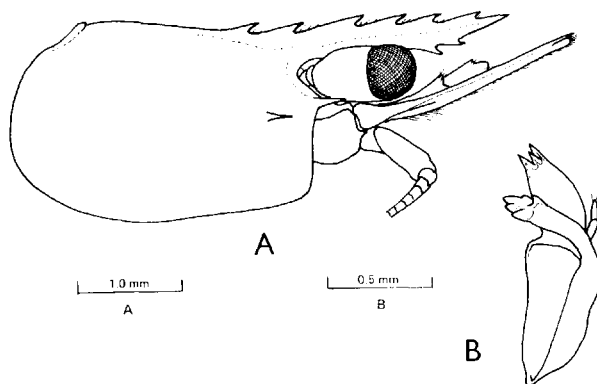


Fig. 1. *Palaemonella tenuipes* Dana, male. A, carapace rostrum and antennae. B, mandible.

RESTRICTED SYNONYMY:

Palaemonella tenuipes Dana, 1852a: 25; 1852b: 582; 1855: 12, pl. 38 fig. 3. Kemp, 1922: 129–131, figs. 7–8.—Holthuis, 1952: 27–28.—Bruce, 1970: 274 (key)-276, fig. 1; 1972: 64.

MATERIAL EXAMINED—1♂, C.L. 2.1 mm, Naviti, reef flat pool, 1.0 m, 29 July 1978.

REMARKS—This species has been previously recorded from the Fijian Island at Sigatoka (Bruce, 1972). The species is considered to be free-living and not a commensal. The present specimen was found in material collected from a head of the hydroid *Millepora tenera*. The rostral dentition is 6/2 and the mandible is provided with a 2-jointed palp. There is no discernable supraorbital ridge present.

DISTRIBUTION—Sparsely recorded from the Red Sea to Wake and Palmyra Islands. Several of the earlier records referred to this species need to be confirmed.

Palaemonella rotumana (Borradaile, 1898b)

RESTRICTED SYNONYMY:

Periclimenes rotumanus Borradaile, 1898b: 383.

Palaemonella vestigialis Kemp, 1922: 123 (key)-126, figs. 1–2, pl. 3 figs. 2.

Palaemonella rotumana Bruce, 1970: 274 (key), 276–279, fig. 2, pl. 1, e–f; 1972: 64, 65.

MATERIAL EXAMINED—1♂, C.L. 1.1 mm, Naviti, inner lagoon pools, 1.0 m, 29 July 1978.

REMARKS—The rostral dentition was 6/2, and the supraorbital ridges were distinct. This species has been previously recorded from the Fijian Islands at Sigatoka (Bruce, 1972). The specimen was collected from a colony of *Porites*, but it is considered to be free-living and not a coral associate.

DISTRIBUTION—Common and widespread throughout the whole Indo-West Pacific region (also occurring in the western Mediterranean Sea), from the Red Sea to the Hawaiian Islands.

Vir orientalis (Dana, 1852a)

RESTRICTED SYNONYMY:

Palaemonella orientalis Dana, 1852a: 26; 1852b: 583; 1855, pl. 38, fig. 4.—Kemp, 1922: 131–134, figs. 9–11.

Vir orientalis Holthuis, 1952: 8, 30.—Bruce, 1972: 65–66, fig. 1.

MATERIAL EXAMINED—1♂, C.L. 1.7 mm, Naviti, reef-flat pool, 1.0 m, 29 July 1978.

HOST—*Pocillopora damicornis* (L.) [Scleractinia]

REMARKS—This species has been previously recorded from Fiji at Sigatoka (Bruce, 1972). The single example agrees with previous descriptions. The rostral dentition is 6/1, with the first tooth situated on the carapace. The fourth thoracic sternite is armed with a slender finger-like median process. The chelae of the second pereopods are subequal and similar, with two small acute teeth on the cutting edges of each finger and the distoventral angle of the merus is without an acute tooth.

DISTRIBUTION—Sparsely recorded from Kenya, Zanzibar, the Seychelle Islands, Andaman Islands, Indonesia, South China Sea, Fijian and Marianne Islands, and from the Hawaiian Islands.

Periclimenes spiniferus De Man, 1902

RESTRICTED SYNONYMY:

Periclimenes petitthouarsi var. *spinifera* De Man, 1902: 824–826.

Periclimenes (Falciger) spiniferus Borradaile, 1917: 369, pl. 52, figs. 1.

Periclimenes (Ancylocaris) spiniferus Kemp, 1922: 195–196.

Periclimenes (Harpilius) spiniferus Holthuis, 1952: 76–77, fig. 30.

Periclimenes spiniferus Bruce, 1972: 67–68.

MATERIAL EXAMINED—(i) 1♂, 2 ovigerous ♀, C.L. 2.5; 2.5–2.6 mm, Naviti, reef flat pools, 1.0 m, 29 July 1978. (ii) 1♂, 1 ovigerous ♀, 1 juvenile, C. L. 3.5; 3.4; 3.6; 2.2 mm. *idem*. (iii) 1♂, 2 ovigerous ♀, 1 juvenile, C.L. 2.0; 2.5–2.6; 1.6 mm, lagoon reef, 0.5 m, 31 July 1978.

REMARKS—The specimens present no special features and are typical of this well

known species which has been previously recorded from the Fijian Islands at Sigatoka (Bruce, 1972).

All specimens were found in association with living coelenterate colonies, but the species is also frequently found in dead coral colonies and is not considered to be an obligatory commensal. The present specimens were found in association with Scleractinia, *Montipora* and *Seriatopora* spp. (i), (iii), and the hydroid *Millepora tenera* (ii).

DISTRIBUTION—Common and widespread throughout the Indo-West Pacific region with the exception of the north west Indian Ocean, Red Sea and Persian Gulf.

Periclimenes kemp Bruce, 1969b

Fig. 2

RESTRICTED SYNONYMY:

Periclimenes (Ancylocaris) diversipes Kemp, 1922: 179–184, figs. 36–39 (partim).

Periclimenes kemp Bruce, 1969b: Zool. Meded., Leiden: 260–262.

MATERIAL EXAMINED—(i) 1 ovigerous ♀, C.L. 1.5 mm, Naviti, reef flat pool, 1.0 m, 29 July 1978. (ii) 1 ♂, 1 ♀, 1 juvenile, C.L. 1.5; 1.5; 0.7 mm, Mana Island, lagoon reef, 0.5 m, 31 July 1978.

HOSTS—(i) *Rumphella aggregata* (Nutting) [Gorgonacea]. (ii) *Simularia*, sp., [Alcyonacea].

REMARKS—There have been no previous records of this species from the Fijian Islands, and the association of the specimen with the gorgonian, *Rumphella aggregata*, represents a new host record as the species has only been found previously in association with alcyonacean hosts. Although found on hosts belonging to different coelenterate orders, no significant morphological differences can be detected between the specimens.

The rostral dentition is 6/2 in the ovigerous female, 5/1 in the others, except the juvenile which is 5/0. The holotype female has a rather deeper lamina with a dentition of 6/0 and the paratypes range from (6 8)/(0–2). The first pereopod has the fingers slightly shorter than the palm, strongly subspatulate and with pectinate cutting edges. The holotype has been reexamined and similar pectinate cutting edges on these fingers are also present. The tines are distinctly rectangular as has also been described for *P. diversipes* s. str. (Kemp, 1922). It may be noted that the coxa has a well developed spinose ventral process which comes into apposition with the fingers when the carpomer joint is fully flexed and suggests that its function may be to clean food material from the fingers. The second pereopods are essentially as in the type material. In the ovigerous female the major chela is about 0.75 of the postorbital carapace length and the minor chela about 0.6, also 0.8 of the length of the major chela. The ambulatory pereopods bear only a single distoventral spine on the propods and the dactyls are simple, slender, about 0.28 of the propod length.

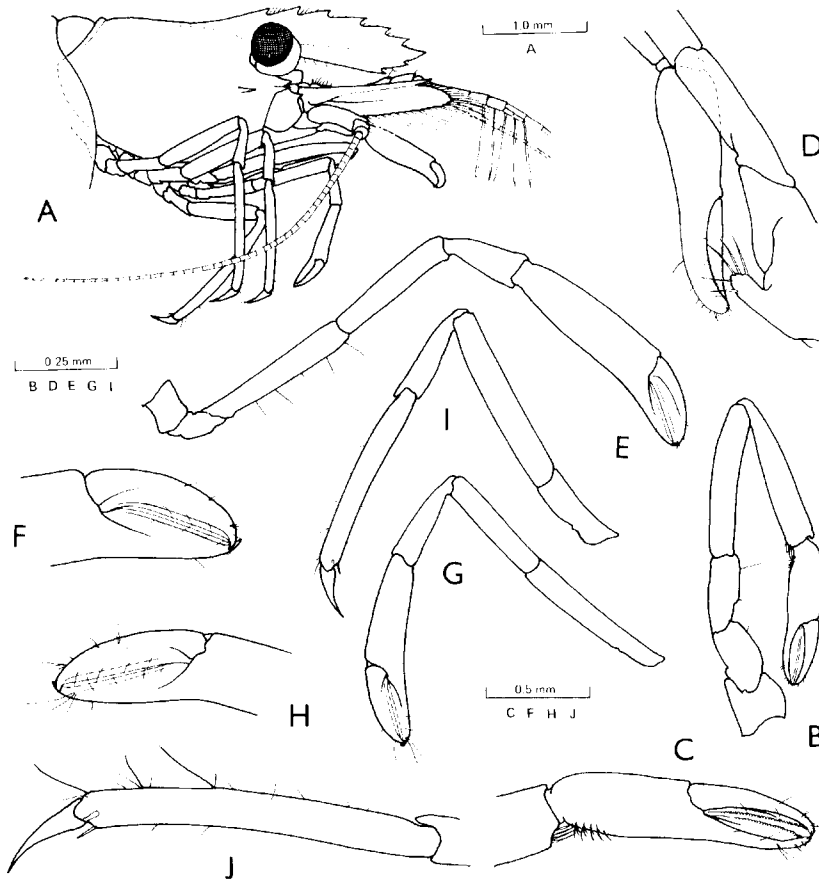


Fig. 2. *Periclimenes kempfi* Bruce, ovigerous female. A, carapace and thoracic appendages. B, first pereiopod. C, *idem*, chela. D, *idem*, chela and ichium and basis, in apposition. E, major second pereiopod. F, *idem* fingers of chela. G, minor second pereiopod. H, *idem*, fingers of chela. I, third pereiopod. J, *idem*, propod and dactyl.

DISTRIBUTION --Type locality, Hurghada, Egypt. Also known from Zanzibar, Kenya, Andaman Islands, Singapore and the Great Barrier Reef.

Periclimenaeus arabicus (Calman, 1939)

Fig. 3

RESTRICTED SYNONYMY:

Periclimenes (*Periclimenaeus*) *arabicus* Calman, 1939: 210-211, fig. 4.

Periclimenes arabicus Bruce, 1975: 1563-1568, fig. 3 g-f, 4-6, 7 c-h; 1980: 25-27, fig. 11.

MATERIAL EXAMINED --1 juvenile, C.L. 1.5 mm, Mana Island, lagoon patch reef, 0.5 m, 31 July 1978.

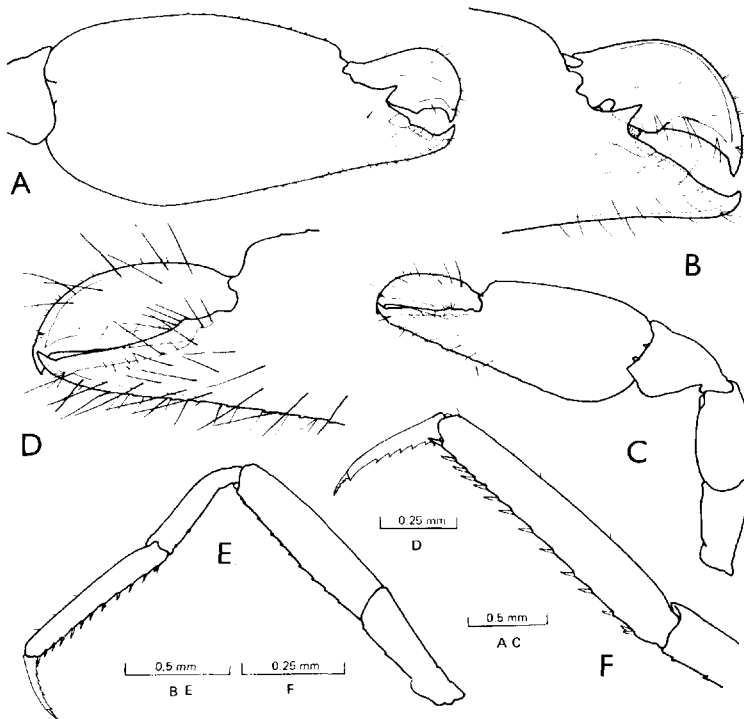


Fig. 3. *Perichlimesnaeus arabicus* (Calman), juvenile. A, chela of major second pereiopod. B, *idem*, fingers. C, minor second pereiopod. D, *idem*, fingers of chela. E, third pereiopod. F, *idem*, propod and dactyl.

HOST—*Callyspongia* sp. [Porifera]

REMARKS—This species has not been previously recorded from the Fijian Islands.

The single example closely resembles previous descriptions. The rostral dentition is 7/1 and supraorbital tubercles are distinct. The first pereiopods are normal. The second pereiopods have the upper surfaces of the palms of the chelae finely tuberculate. The major chela is 2.0 and the minor chela 1.3 of the postorbital carapace length, and the length of the major chela is 1.5 of the minor. The fingers of the minor chela are particularly setose dorsally, less slender than in the previous reports, with the dactylus about 0.6 of the palm length, about 2.5 times longer than deep. The third pereiopod has the unguis provided with six small denticles, and six small acute teeth are present distally on the corpus in addition to the distal accessory spine. The propod is armed ventrally with a pair of short spines proximally and a longer pair distally, with ten evenly spaced spines between. The carpus has only a pair of minute ventral denticles and about ten small tubercles are present ventrally on the merus, with two on the ischium. The small differences noted may be attributed to the juvenile state of the specimen.

DISTRIBUTION—Type locality, South Arabia. Also known from Jibuti, Zanzibar, Tanganyika, Kenya, Japan, New Caledonia and the Great Barrier Reef.

Onycocaris seychellensis Bruce, 1971

Figs. 4-5

RESTRICTED SYNONYMY:

Onycocaris seychellensis Bruce, 1971: 208–218, figs. 2–6; 1974a: 470; 1978: 277, 278 (key).

MATERIAL EXAMINED—(i) 1 ♂, 1 ovigerous ♀, C.L. 2.0, 2.3 mm, Naviti, lagoon reef flats, 1.0 m, 29 July 1978. (ii) 1 ♂ 1 ♀, C.L. 2.6, 2.7 mm. Mana Island, lagoon reef, 0.5 m, 31 July 1978.

HOSTS—*Haliclona* sp. [Porifera].

REMARKS—This species has not been previously recorded from the Fijian Islands, and is known only from the Indian Ocean.

The specimens are provisionally referred to *O. seychellensis* as a few minor morphological differences are apparent. These are possibly only a result of geographical variation or the immaturity of the type material.

In the present specimens the rostrum is well developed and dentate in all

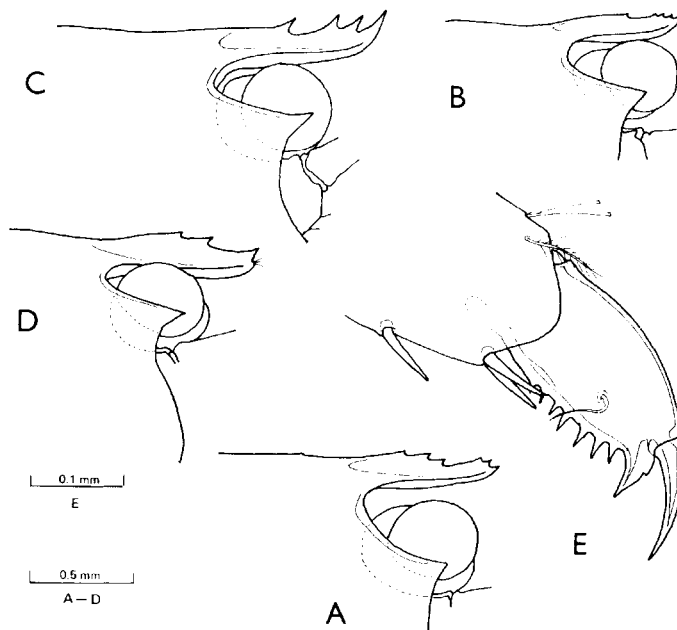


Fig. 4. *Onycocaris seychellensis* Bruce. Rostrum and orbital region, A, C, female; B, D, males. E, dactyl of third pereopod.

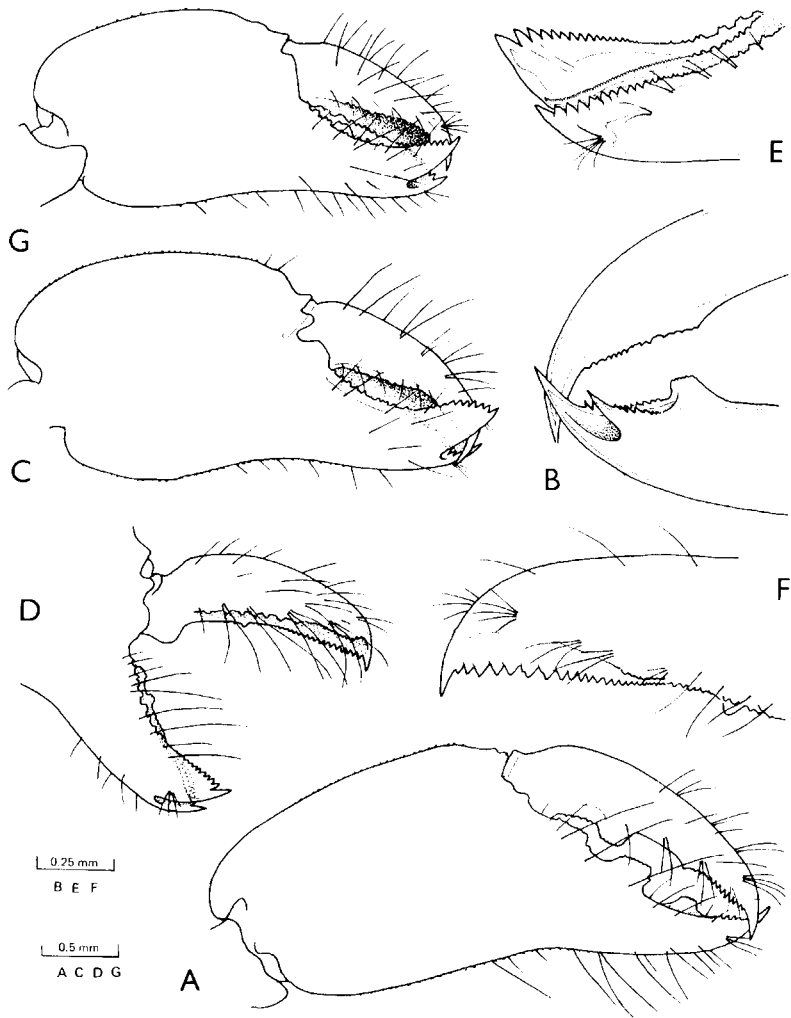


Fig. 5. *Onyccaris seychellensis* Bruce, second pereiopods. A, major chela, male, medial. B, *idem*, finger tip, medial. C, minor chela, male, lateral. D, *idem*, dactyl finger tip, medial. E, major chela, female, lateral. F, *idem*, dactyl finger tip, medial. G, minor chela, female, lateral.

specimens, but the detail of the dentition varies considerably in each specimen, being (3–5)/0 in the females and (2–4)/0 in the males. The dorsal teeth are more strongly developed than in the type material, and in the nonovigerous female shows a close resemblance to *O. zanzibarica* Bruce.

The second pereiopods in the male are unequal and dissimilar. The larger chela is about 1.5 of the postorbital carapace length and the minor chela is 1.3. In both, the palm is strongly compressed and minutely tuberculate dorsally. The fingers are simple on the major chela but deeply spatulate on the minor chela. The tips of the fixed

fingers are deeply notched and a well developed lateral flange is present on the minor chela, the upper edge of which is strongly dentate. The lateral cutting edge of the fixed finger of the minor pereiopod is minutely and regularly serrated, but other distal cutting edges are coarsely dentate. The proximal regions of the cutting edges of the fingers are also provided with numerous small tubercles covered with small acute processes. The chelae in the females are unequal and dissimilar but similar to those of the males, and relatively smaller, about 1.05, 1.45 of the postorbital carapace length respectively, with the palm more feebly tuberculate and the fingers less strongly dentate.

The third ambulatory pereiopod has the propod about 4.6 times longer than deep, with a pair of distoventral spines and seven ventral spines. The dactyl has the unguis distinctly demarkated from the corpus. The distoventral accessory spine is rather slender, with a small denticle on the distal margin and the ventral border bears seven well developed slender teeth.

DISTRIBUTION—Type locality, Anse Étoile, Mahé, Seychelle Islands. Otherwise recorded only from Kisiti Island, Kenya.

Harpiliopsis depressa (Stimpson, 1860)

Fig. 6

RESTRICTED SYNONYMY:

Harpilius depressus Stimpson, 1860: 38.—Kemp, 1922: 231–234, figs. 69–70.

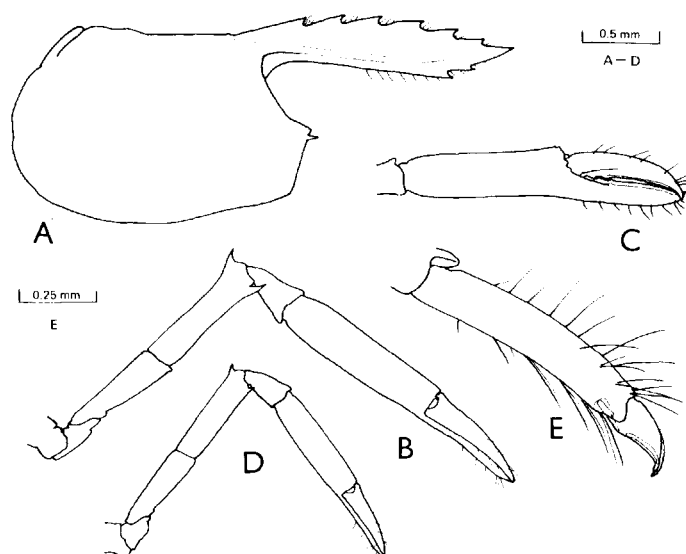


Fig. 6. *Harpiliopsis depressa* (Stimpson), juveniles. A, carapace and rostrum. B, second pereiopod. C, *idem*, chela. D, second pereiopod. E, third pereiopod, propod and dactyl. Juvenile, C.L., 1.5 mm ABCE; CL. 1.2 mm D.

Harpiliopsis depressus Borradaile, 1917: 324, 380, pl. 56, fig. 22.—Holthuis, 1951: 70–75, pl. 21, 22 e–f; 1952: 182–184, figs. 90.

Harpiliopsis depressa Bruce, 1976: 36; 1977: 65–67, fig. 12 a–c.

MATERIAL EXAMINED—3♂, 2 ovigerous ♀, 2♀, 2 juveniles, C.L. 1.9–3.0; 2.7–3.0; 2.5–2.7; 1.2–1.5 mm, Naviti, reef flat pools, 1.0 m, 29 July 1978.

HOST—*Seriatopora hystrix* (Dana) [Scleractinia].

REMARKS—This species has been previously recorded from the Fijian Islands by Borradaile (1898b).

The specimens agree with the descriptions provided by Kemp (1922) and Holthuis (1951). The rostral dentition in the males is 7/3, one female also 7/3, in ovigerous females 7/4 and (5–6)/2 in the juveniles. In the adults, the second pereiopods are robust, with the palm about 3.3 times longer than wide. In the juveniles these chelae are relatively smaller and more slender, with feebly armed fingers and the acute teeth present on the carpus and ischium of the adults are absent. The meral teeth are present. The hepatic spine, also present in the adults, is absent in the juveniles. The juveniles therefore correspond exactly to the specimens described as *Periclimenes pusillus* by Rathbun, 1906, and subsequently referred to *Harpiliopsis depressa* (Bruce, 1970). The colour pattern of these juvenile specimens was in agreement with that of the adults.

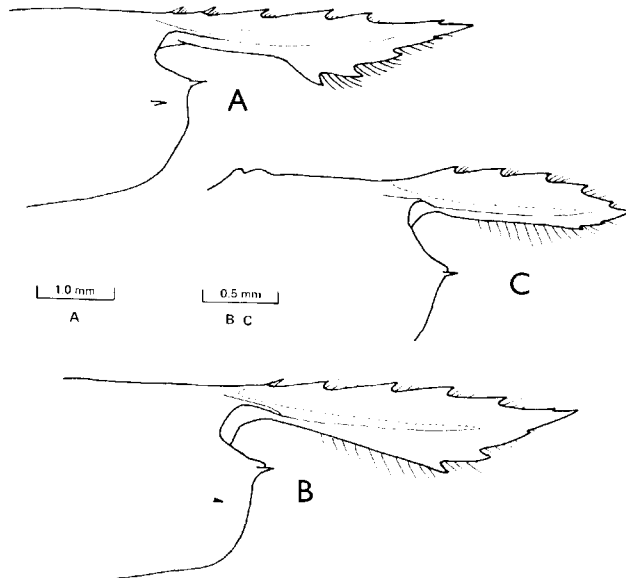


Fig. 7. *Harpiliopsis spinigera* (Ortmann), anterior carapace and rostrum. A, ovigerous female. B, female. C, juvenile.

CORRIGENDUM

Part of the descriptions of *Harpiliopsis beaupressii* and *H. spinigera* were left out of the article by A. J. Bruce on pontonine shrimps from Viti Levu, Fijian Islands in MICRONESICA 17(1-2): 77-95. The entire descriptions of these species are printed below. Refer to the original paper for the figure.

Harpiliopsis beaupressii (Audouin, 1825)

RESTRICTED SYNONYMY:

Palaemon beaupressii Audouin, 1825: 91; 1827: pl. 10, fig. 4.

Harpiliopsis beaupressii Borradaile, 1917: 324, 379, pl. 55, fig. 21.—Holthuis, 1952: 182-184, fig. 90.

MATERIAL EXAMINED—1 ♀, C.L. 2.0 mm. Naviti, reef flat pools, 1.0 m, 29 July 1978.

HOST—*Seriatopora hystrix* (Dana) [Scleractinia].

REMARKS—This species has not been previously recorded from the Fijian Islands and only sparsely from the Pacific Ocean.

The specimen shows no differences from previous descriptions. The rostrum has a dentition of 6/3. The second pereopods are exactly as figured by Kemp (1922).

DISTRIBUTION—Type locality, Egypt. Common throughout the Indian Ocean and also known from Singapore, Indonesia, South China Sea, Marshall Islands, the Great Barrier Reef, Hawaii and Easter Island.

Harpiliopsis spinigera (Ortmann, 1890)

Fig. 7

RESTRICTED SYNONYMY:

Anchistia spinigera Ortmann, 1890: 511, pl. 36, fig. 23.

Harpilius depressus var. *gracilis* Kemp, 1922: 234, fig. 71.

Harpiliopsis depressus var. *spinigerus*—Holthuis, 1952: 184-185.

Harpiliopsis spinigera Bruce, 1976: 35, 36, 63, tabl 3.

MATERIAL EXAMINED—1 ♂, 6 ♀, 3 ovig ♀, 2 juv., C.L. 3.6; 1.9-2.8; 3.3-3.9; 1.2-1.4 m, Naviti, reef flat pool, 1.0 m, 29 July 1978.

HOST—*Seriatopora hystrix* (Dana) [Scleractinia], with above species.

REMARKS—This species has not been previously reported from the Fijian Islands. The specimens were all collected from the same host sample.

The rostral dentition from (5-6)/(3-4) in the adults and (4-5)/2 in the juveniles. The rostral lamina is relatively deeper and longer in the adult than in the juveniles and the first tooth appears as a mobile slender spine that is lacking in the juveniles. The spine is normally situated over the bases of the eyestalks and is very similar to the condition found in *H. depressa*.

DISTRIBUTION—Type locality, Samoa. Also known from Zanzibar, Tanganyika, Kenya, Comoro Islands, Seychelle Islands, Maldives, Andaman Islands, Indonesia and the Great Barrier Reef. Recently reported from the East Pacific region at Panama.

DISTRIBUTION—Type locality, Hawaiian Islands. Recorded extensively throughout the Indo-West Pacific region from the Red Sea to the Hawaiian Islands, including Mocambique, the Great Barrier Reef and the South China Sea. Also recorded from the Galapagos Islands, Panama, Mexico, California, Costa Rica and Colombia.

Harpiliopsis beaupresii (Audouin, 1825)

RESTRICTED SYNONYMY:

Palaemon Beaupresii Audouin, 1825: 91; 1827: pl. 10 fig. 4.

Harpiliopsis beaupresi Borradaile, 1917: 324, 379, pl. 55, fig. 21.—Holthuis, 1952: 182–184 fig. 90.

MATERIAL EXAMINED—1♀, C.L. 2.0 mm. Naviti, reef flat pools, 1.0 m, 29 July 1978.

HOST—*Seriatopora hystrix* (Dana) [Scleractinia], with above species.

REMARKS—This species has not been previously reported from the Fijian Islands. The specimens were all collected from the same host sample.

The rostral dentition from (5–6)/(3–4) in the adults and (4–5)/2 in the juveniles. The rostral lamina is relatively deeper and longer in the adult than in the juveniles and the first tooth appears as a mobile slender spine that is lacking in the juveniles. The spine is normally situated over the bases of the eyestalks and is very similar to the condition found in *H. depressa*.

DISTRIBUTION—Type locality, Samoa. Also known from Zanzibar, Tanganyika, Kenya, Comoro Islands, Seychelle Islands, Maldive Islands, Andaman Islands, Indonesia and the Great Barrier Reef. Recently reported from the East Pacific region at Panama.

Jocaste japonica (Ortmann, 1890)

Fig. 8

RESTRICTED SYNONYMY:

Coralliocaris superba var. *Japonia* Ortmann, 1890: 509.

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

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

Jocaste japonica Patton, 1966: 279–280, fig. 3b.—Bruce, 1969a: 299, 300, fig. 1; 1974b: 198–199, fig. 7; In press, Austrolabe Island.

MATERIAL EXAMINED—(i) 5♂, 3♀, 6 ovigerous ♀, 1 juvenile, C.L. 2.4–3.6; 2.6–3.5; 3.0–3.8; 1.6 mm, Naviti, reef flat pools, 1.0 m, 29 July 1978. (ii) 2♂, 2 ovigerous ♀, C.L. 2.6–3.0; 3.0–3.2 mm, idem.

HOST—(i) *Acropora divaricata* (Dana), (ii) *Acropora nasuta* (Dana) [Scleractinia]. Each lot of specimens were obtained from a single host colony. This association with

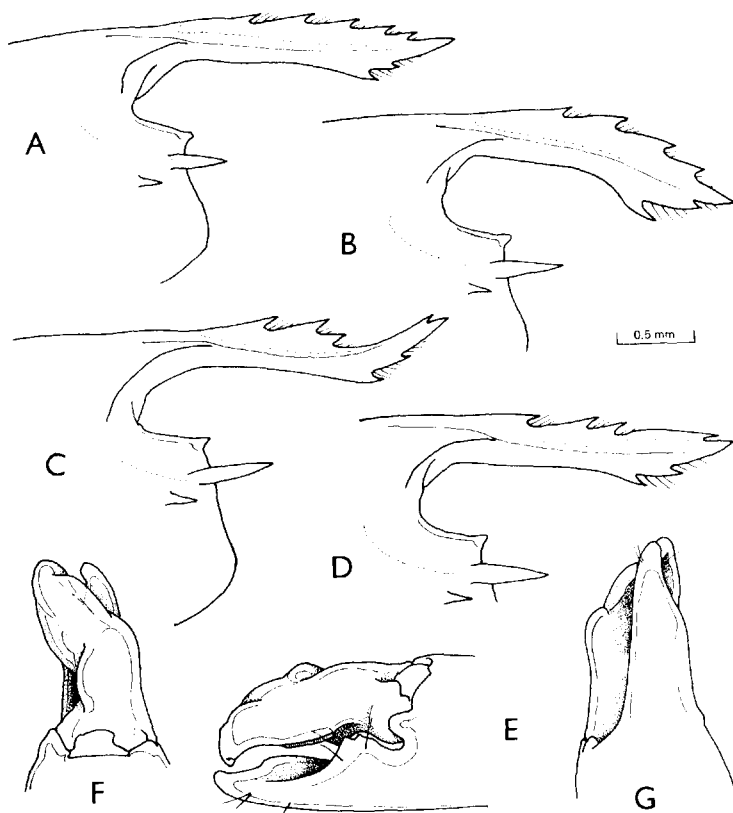


Fig. 8. *Jocaste japonica* (Ortmann). A D, variations in rostral morphology. E, fingers of major second pereopod, medial. F, *idem*, dorsal. G, *idem*, ventral.

Acropora divaricata represents a new host record.

REMARKS—The specimens agree in general with previously published data. The rostrum shows considerable variation in form and dentition. The variations are not obviously caused by injury. The dentition is (3–5)/(1–2) for the males, but (4–5)/2 for the females. The rostral dentition for *J. japonica* is typically 4/1 and the high incidence of specimens with two ventral teeth (10), is unusual in this species (Patton, 1966; Bruce, 1974b). One male example, C.L. 2.6 mm, has a dentition of 3/1. In the other features used to separate *J. japonica* from *J. lucina*, i.e., the rounded supraorbital margins and the single acute dactylar tooth on the major second pereopod, the specimens are normal. The dorsal aspect of the fixed finger is carinate and bears a pair of small acute teeth on its cutting edge.

The fingers of the major second pereopod are complex in comparison with those of most other pontniiine shrimps. The dactyl is distinctly bent at about its midpoint, so that it lies obliquely across the central portion of the fixed finger, which forms a

deep trough at this point. The part of the cutting edge of the dactyl that lies in this trough is markedly thickened. The morphological arrangement suggests the incipient formation of a "pit and hammer" sound producing mechanisms such as is found in *Coralliocaris graminea* and *C. superba* and in life, specimens of *J. japonica* are capable of producing a snapping sound with the major second pereopod, although of much less strength than in the *Coralliocaris* species.

DISTRIBUTION—Type locality, Kagoshima, Japan. Common and widespread in the Indian Ocean, also Indonesia and New Caledonia. Previously reported from the Great Austrolabe Reef, Fiji.

Jocaste lucina (Nobili, 1901)

RESTRICTED SYNONYMY:

Coralliocaris lucina Nobili, 1901: 5; 1906: 57.

Jocaste lucina Holthuis, 1952: 193–195, fig. 94 (partim).—Patton, 1966: 278–279, tabs. 1–2, fig. 3a.—Bruce, 1974b: 199–200, fig. 8; In press.

MATERIAL EXAMINED—(i) 4 juveniles, C.L. 1.6–2.0 mm, Naviti, reef flat pools, 1.0 m, 29 July 1978. (ii) 2 juveniles C.L. 2.2, 1.7 mm, idem.

HOSTS—(i) *Porites* sp. [Scleractinia]. (ii) *Millepora* sp. [Hydroida].

REMARKS—*Jocaste lucina* has been previously recorded from the Fijian Islands, from the Great Austrolabe Reef. This species is normally an associate of corals of the genus *Acropora* and the present associations with *Porites* and *Millepora* are considered atypical paratenic associations of juveniles. The specimens agree well with the morphological characteristics established by Patton (1966).

DISTRIBUTION—Type locality, Eritrea. Known throughout most of the Indo-West Pacific region from the Red SEa to Tahiti, but absent from the Hawaiian Islands.

Coralliocaris superba (Dana, 1852a)

Fig. 9

RESTRICTED SYNONYMY:

Oedipus superbus Dana, 1852a: 25; 1852b: 573; 1855, pl. 37 fig. 2.

Coralliocaris superba Stimpson, 1860: 38.—Bruce, In press, Austrolabe.

MATERIAL EXAMINED—1♂, 1 ovigerous ♀, 1 juvenile, C.L. 3.8 m 5.4, 1.7 mm, Naviti, reef flat pools, 1.0 m, 29 July 1978.

HOST—*Acropora divaricata* (Dana) [Scleractinia]. The association represents a new host record.

REMARKS Previously recorded from Fijian waters, from the Great Austrolabe Reef

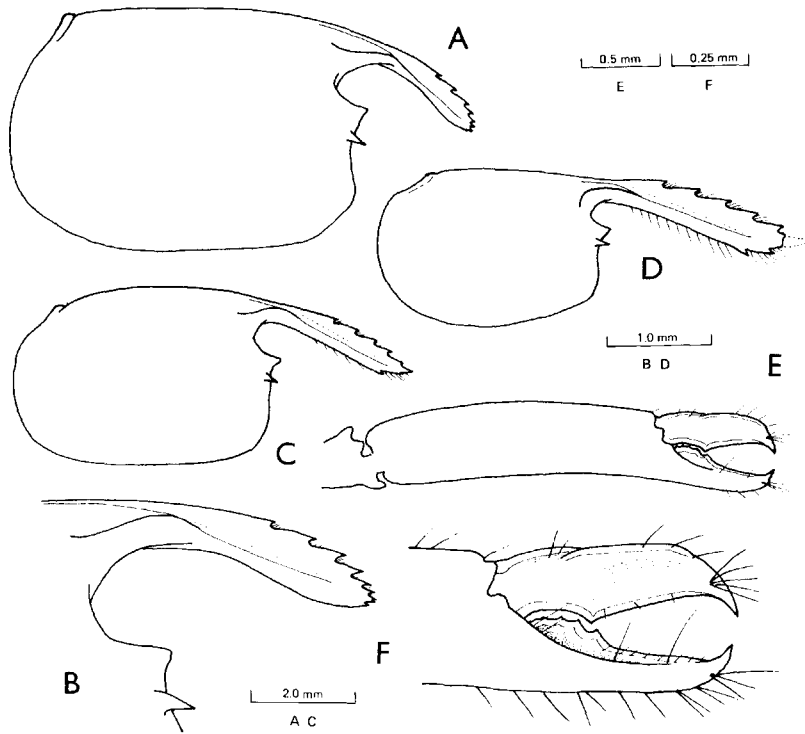


Fig. 9. *Coralliocaris superba* (Dana). A, oviparous female, carapace and rostrum. B, *idem*, rostrum and orbit. C, carapace and rostrum, male. D, *idem*, juvenile, C.L. 1.7 mm. E, chela of second pereiopod of juvenile. F, *idem*, fingers.

(Bruce, 1980b). The present specimens show no special features. The rostral dentition is (5-6)/1 in the adults but 5/2 in the juvenile. The tip of the rostrum in the female is minutely bifid. The rostrum of the juvenile exceeds the postorbital carapace length, whereas in the adults it is relatively much shorter. The chela of the second pereiopod is less swollen than in the adults with the palm about 4.0 times longer than deep, as opposed to 2.8 and is about 1.65 times longer than the postorbital carapace length, as opposed to 2.2 for the male and 1.58 for the female. The carination of the dactylus is much less strongly marked than in the adults, but still quite distinctive.

DISTRIBUTION—Type locality, Tongatabu, Cook Islands. This well known species has been extensively recorded from the Red Sea to the Society Islands, from the Kazan Islands to the Great Barrier Reef.

***Hamodactyloides incompletus* (Holthuis, 1958)**

Figs. 10-11

RESTRICTED SYNONYMY:

Hamodactylus incompletus Holthuis, 1958: 11-13, fig. 4.

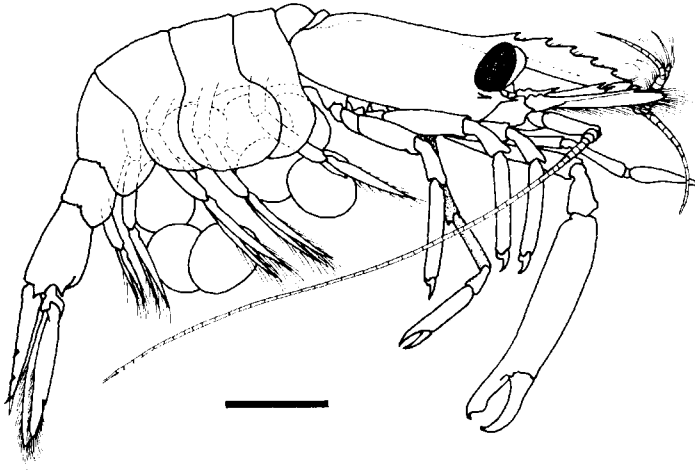


Fig. 10. *Hamodactyloides incompletus* (Holthuis), ovigerous female. Scale bar equals one millimeter.

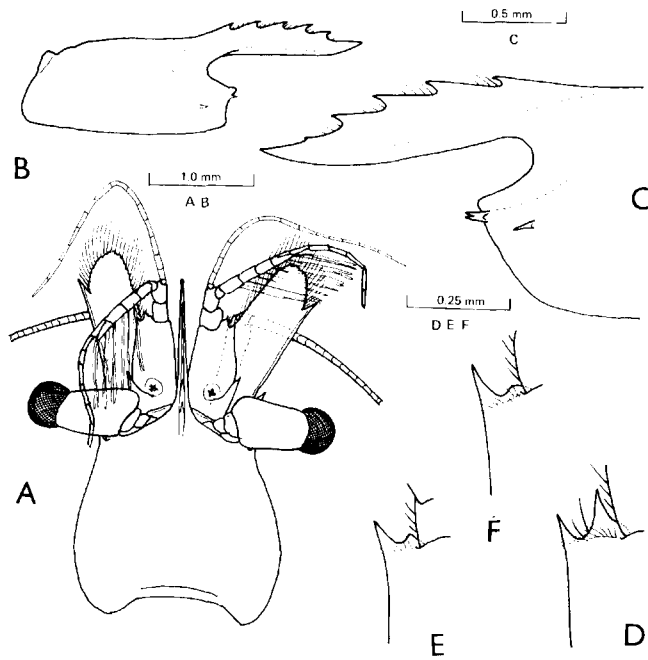


Fig. 11. *Hamodactyloides incompletus* (Holthuis). A, carapace and antennae, ovigerous female, dorsal. B, carapace and rostrum, *idem*, lateral. C, anterior carapace and rostrum, ovigerous female. D, distolateral angle of proximal segment of antennular peduncle, ovigerous female. E-F, *idem*, nonovigerous females.

Hamodactyloides ishigakiensis Fujino, 1973: 174–180, figs. 1–3.

Hamodactyloides incompletus Bruce, 1976: 37–42, figs. 13–15.

MATERIAL EXAMINED—3♂, 4♀, 6 ovigerous ♀, 1 juvenile, C.L. 1.3–1.4; 1.3–1.6; 1.4–1.6; 1.0 mm, Naviti, reef flat pools, 1.0 m, 29 July 1978.

HOST—*Millepora tenera* Boschma [Hydrozoa].

REMARKS—The specimens agree well with previous information. The rostral dentition is (4–5)/0 in the ovigerous female specimens and (3–5)/0 in the males. One nonovigerous female has a dentition of 6/0 and the juvenile has 4/0. The rostral dentition therefore shows an overlap with *H. ishigakiensis*, which is reported by Fujino (1973) to have a rostral dentition of (3–4)/0. Of the fourteen specimens examined, four of the ovigerous females were provided with two acute teeth on the anterolateral margin of the proximal segments of the antennal peduncle. In two specimens the anterolateral teeth are acute and the adjacent lobe medially is feebly pointed. In the remaining eight specimens the anterolateral border is provided with an acute lateral tooth only and the medial margin is smoothly convex, as is reported also for *H. ishigakiensis*. In two dissected specimens, the second maxillipeds were found to lack epipods, as has been reported in *H. ishigakiensis*, in contradistinction to the specimens described from Kenya (Bruce, 1976) and the Red Sea holotype (Holthuis, 1958). The first and second pereopods are as previously described. In view of the range of variation in the morphological features it is concluded that there are no significant differences between *H. incompletus* and *H. ishigakiensis* Fujino, and that the latter is a junior synonym of the former.

One feature that is particularly noteworthy in the present material is that the general body form is very strongly depressed with broad thoracic sternites, so that the coxae of the thoracic appendages are widely separated, presumably as an adaptation to clinging to the surface of the hydroid host. Fujino (1973) mentions that the carapace is slightly depressed, but in the Fijian examples this feature is conspicuous, particularly in the ovigerous females. The broad thoracic sternites are unarmed. The ova are variable in size, as reported also by Holthuis (1958), with a maximum length of about 0.65 mm. It may be noted also that in one ovigerous female the antennal spine on the left side is bifid.

DISTRIBUTION—Type locality, Sherm Sheik, Sinai Peninsula. Also known from Kenya and the Ryukyu Islands only.

Discussion

All but four species are commensally associated with other marine invertebrates. The associations of the Fijian pontonine shrimps are as follows:

PORIFERA: *Periclimenaeus arabicus* (Calman), *P. stylirostris* Bruce; *Onyccaris seychellensis* Bruce; *Onyccaridella stenolepis* (Holthuis).

- HYDROIDEA: *Hamodactyloides incompletus* (Holthuis).
 ACTINIARIA: *Periclimenes inornatus* Kemp.
 GORGONACEA: *Periclimenes kemp* Bruce.
 ALCYONACEA: *Periclimenes kemp* Bruce.
 SCLERACTINIA: *Vir orientalis* (De Man); *Philarius gerlachei* (Nobili);
Ischnopontonia lophos (Barnard); *Platycaris latirostris* Holthuis;
Harpiliopsis beaupresii (Audouin); *H. depressa* (Dana), *H. spinigera*
 (Ortmann); *Jocaste lucina* (Nobili), *J. japonica* (Ortmann); *Coralliocaris*
graminea (Dana), *C. superba* (Dana), *C. pavonae* Bruce; *Paratypton sieben-*
rocki Balss.
 BIVALVIA: *Anchistus custos* (Forskål), *A. australis* Bruce; *Conchodytes meleag-*
rinae Peters.
 CRINOIDEA: *Periclimenes commensalis* Borradaile; *Pontoniopsis comanthi*
 Borradaile.
 ECHINOIDEA: *Periclimenes hirsutus* Bruce.
 ASTEROIDEA: *Periclimenes soror* Nobili.

The four free-living species found in Fiji are *Palaemonella tenuipes*, *P. rotumana* and *Periclimenes spiniferus* and *P. grandis* (Stimpson). There are no endemic species known from these islands and most species are widely distributed throughout the Indo-West Pacific region. Without doubt, many more species remain to be reported from Fijian waters.

ACKNOWLEDGMENTS

I am indebted to Dr. D. Montgomery and to Dr. Henry and Mrs. Lee, of Lee Pharmaceuticals Inc., for financial support for this study. I would also like to thank Dr. C. Wallace, Mr. P. Alderslade and Dr. J. Vacelet for the identification of some of the host animals.

References Cited

- 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: offrant 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(4): 77-98.
 Boone, L. 1935. Crustacea and Echinodermata. Scientific Results of the World Cruise of the yacht "Alva", 1931, William M. Vanderbilt, Commanding. Bull. Vanderbilt mar. Mus. 6: 1-263, figs. 1-13, pls. 1-96.
 Borradaile, L. A. 1898a. On some crustaceans from the South Pacific. Part III. Macrura. Proc. zool. Soc. Lond. 1898: 1000-1015, pls. 63-65.
 ———. 1898b. A revision of the Pontoniidae. Ann. Mag. nat. Hist. (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. (2)17: 323-396, pls. 52-57.
 Bruce, A. J. 1969a. Observations upon the host-specificity and distribution of *Jocaste japonica*

- (Ortmann) and *Jocaste lucina* (Nobili) (Decapoda Natantia, Pontoniinae). *Crustaceana* 17(3): 298-302, figs. 1-2.
- . 1969b. Preliminary descriptions of sixteen new species of the genus *Periclimenes* Costa, 1844 (Crustacea, Decapoda Natantia, Pontoniinae). *Zool. Meded., Leiden* 43(20): 253-278.
- . 1970. Observations on the Indo-West Pacific species of the genus *Palaemonella* Dana, 1852 (Decapoda, Pontoniinae). *Crustaceana* 19(3): 273-287, figs. 1-7, pl. 1.
- . 1971. On a new commensal shrimp *Periclimenes hirsutus* sp. nov., (Crustacea, Decapoda, Natantia Pontoniinae) from Fiji. *Pac. Sci.* 25(1): 91-99, figs. 1-6.
- . 1972. A report on a small collection of pontoniinid shrimps from Fiji, with the description of a new species of *Coralliocaris* Stimpson. *Pac. Sci.* 26(1): 63-86, figs. 1-11.
- . 1974a. A synopsis of the pontoniinid shrimp fauna of central East Africa. *J. mar. biol. Ass. India* 16(2): 462-490.
- . 1974b. A report on a small collection of pontoniinid shrimps from the Island of Farquhar. *Crustaceana* 27(2): 189-203, figs. 1-8.
- . 1975. Observations upon some specimens of the genus *Periclimenaeus* Borradaile (Decapoda Natantia, Pontoniinae) originally described by G. Nobili. *Bull. Mus. natn. Hist. nat., Paris* 3 (258), *Zool.* 180: 1557-1583, figs. 1-15.
- . 1976. A report on a small collection of shrimps from the Kenya National Marine Parks at Malindi, with notes on selected species. *Zool. Verhand., Leiden* 145: 1-72, figs. 1-23, tabs. 1-5.
- . 1977. Pontoniine shrimps in the collections of the Australian Museum. *Rec. Aust. Mus.* 31(2): 39-81, figs. 1-16.
- . 1978. A report on a collection of pontoniine shrimps from Madagascar and adjacent waters. *Zool. Journ. Linn. Soc.* 62: 205-290, figs. 1-44.
- . 1980a. One some pontoniine shrimps from Noumea, New Caledonia. *Cah. Indo-Pac.* 2(1): 1-39, figs. 1-14.
- . 1980b. Pontoniine shrimps from the Great Austrolabe Reef, Fiji. *Pac. Sci.* 34(4): 389-400, figs. 1-5.
- Calman, W. T. 1939. Crustacea: Caridea. *Sci. Rep. John Murray Exped.* 6: 183-224, figs. 1-8.
- Dana, J. D. 1852a. *Conspectus Crustaceorum quae in Orbis Terrarum circumnavigatione, Carole Wilkes e Classe Reipublicae Foederatae c Duce, lexit et descripsit. Proc. Acad. nat. Sci. Philad.* 1852: 10-28.
- . 1852b. Crustacea. United States Exploring Expedition during the years 1838, 1839, 1840, 1841, 1842 under the command of Charles Wilkes. *U.S.N.* 13: 1-1620.
- . 1855. Crustacea. United States Exploring Expedition during the years 1838, 1839, 1840, 1841, 1842 under the Command of Charles Wilkes, *U.S.N.* 13: atlas, 1-27, pls. 1-96.
- de Man, J. G. 1902. Die von Herrn Professor Kükenthal in Indischen Archipel gesammelten Dekapoden und Stomatopoden. p. 467-929. *In* W. Kükenthal, *Ergebnisse einer zoologischen Forschungsreise in den Molukken und Borneo. Abh. Senckenb. Naturf. Ges.* 25.
- Fujino, T. A. new genus of pontoniinid shrimp *Hamodactyloides* with a description of *H. ishigakiensis* sp. nov. (Decapoda Natantia, Pontoniinae), from the Ryukyu Islands. *Crustaceana* 25(2): 171-180, figs. 1-3.
- Holthuis, L. B. 195. general revision of the Palaemonidae (Crustacea Decapoda Natantia) of the Americans. I. The Subfamilies Euryrhynchinae and Pontoniinae. *Allan Hancock Found. Publ., Occ. Pap.* 11: 1-332, pl. 1-63.
- . 1952. The Decapoda of the Siboga Expedition. Part XI. The Palaemonidae collected by the Siboga and Snellius Expeditions with remarks on other species. II. Subfamily Pontoniinae. *Siboga Exped. Mon.* 39a¹⁰: 1-252, figs. 1-110, tab. 1.
- . 1958. Contributions to the knowledge of the Red Sea. 8. Crustacea Decapoda from the northern Red Sea (Gulf of Aqaba and Sinai Peninsula). I. *Macrura*. *Bull. Sea Fish. Res. Stn. Israee* 17(8-9): 1-40, figs. 1-15.
- Kemp, S. 1922. Notes on Crustacea Decapoda in the Indian Museum. XV. Pontoniinae. *Rec. Indian Mus.* 24: 113-288, figs. 1-105, pls. 3-9.
- 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.

- Nobili, G. 1901. Decapodi e Stomatopodi Eritrei del Museo Zoologico dell'Universita di Napoli. *Annu. Mus. zool. Univ. Napoli* 1(3): 1-20.
- . 1906. Faune carcinologique de la Mer Rouge. Decapodes et Stomatopodes. *Ann. Sci. nat. Zool.* 9(4): 1-347, figs. 1-12, pls. 1-11.
- Ortmann, A. 1890. Die Unterordnung Natantia Boas. Die Decapoden & Krebse des Strassburger Museums, mit besonderer Berücksichtigung der von Herrn Dr. Doderlein bei Japan und bei der Lin-Kiu-Inseln gesammelten und z.Z. in Strassburger Museum aufbewahrten Formen. I. Theil. *Zool. Jb. Syst.* 5: 437-542, pls. 36-37.
- Patton, W. K. 1966. Decapod crustacea commensal with Queensland branching corals. *Crustaceana* 10(3): 271-295, figs. 1-3.
- Rathbun, M. J. 1906. The Brachyura and Macrura of the Hawaiian Islands. *Bull. U.S. Fish. Comm.* 23: 827-930, figs. 1-79, pls. 3-24.
- Stimpson, W. 1860. Prodomus descriptionis animalium evertibratorum quae in Expeditione ad Oceanum Pacificum Septemtrionalem a Republica Federto missa, C. Ringgold et J. Rodgers Ducibus, Observavit et descripsit. *Proc. Acad. nat. Sci. Philad.* 1860: 22-48.

