

REPORT ON GNATHOPHYLLIDAE AND PONTONIINAE (DECAPODA,
PALAEMONOIDEA) SHRIMPS FROM THE XISHA ISLANDS AND
ADJACENT WATERS, SOUTH CHINA SEA*

Li Xinzheng

(Institute of Oceanology, Chinese Academy of Sciences)

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INTRODUCTION

The shrimp fauna of palaemonid subfamily Pontoniinae and family Gnathophyllidae, Palaemonoidea, of the Xisha Islands, South China Sea are little known. Pontoniinid shrimps are well-known to be commensals of corals, sponges, bivalve mollusks, echinoderms, even some sea algae or fishes. Among caridean shrimp collected from the Xisha Islands and adjacent waters by the Institute of Oceanology, Chinese Academy of Sciences (IOCAS) in 1957, 1958, 1975, 1980 and 1981, many specimens belonging to Pontoniinae and several to Gnathophyllidae were checked out. It was found that the pontoniinid shrimp fauna of these coral islands is very rich in species and is one of the dominant animal groups of the coral reef communities. The present paper is the results of systematic study with these materials; 3 species, belonging to 3 genera of family Gnathophyllidae, and 29 species, belonging to 13 genera of subfamily Pontoniinae, family Palaemonidae, are reported here. All the 3 gnathophyllid species, i. e., *Gnathophyllodes mineri* Schmitt, *Gnathophyllum americanum* Guerin-Meneville, *Levicaris mammillata* (Edmondson), and 10 of the pontoniinid species, i. e., *Conchodytes meleagrinae* Peters, *Dasy-caris symbiotes* Kemp, *Eupontonia noctalbata* Bruce, *Harpiliopsis depressa* (Stimpson), *Onyca-caridites anomodactylus* Bruce, *Periclimenaeus rhodope* (Nobili), *Periclimenaeus tridentatus* (Miers), *Periclimenes ensifrons* (Dana), *Periclimenes inornatus* Kemp, *Stegopontonia commensalis* Nobili, are new records to Chinese waters. And, except for *Anchistus custos* (Forsk.) collected from the coral reefs of Hainan Island, *Dasy-caris symbiotes* Kemp and *Periclimenes toloensis* Bruce from Beibu Bay in 1959 with Agassiz Trawl, the other 26 pontoniinid species are new to the Xisha Islands.

The synonymies for most species included in this report are restricted, full synonymies of these species can be found in the works of Kemp (1922), Holthuis (1952) and Chace and Bruce (1993). The arrangement of the systematic account is in alphabetical order by families, genera

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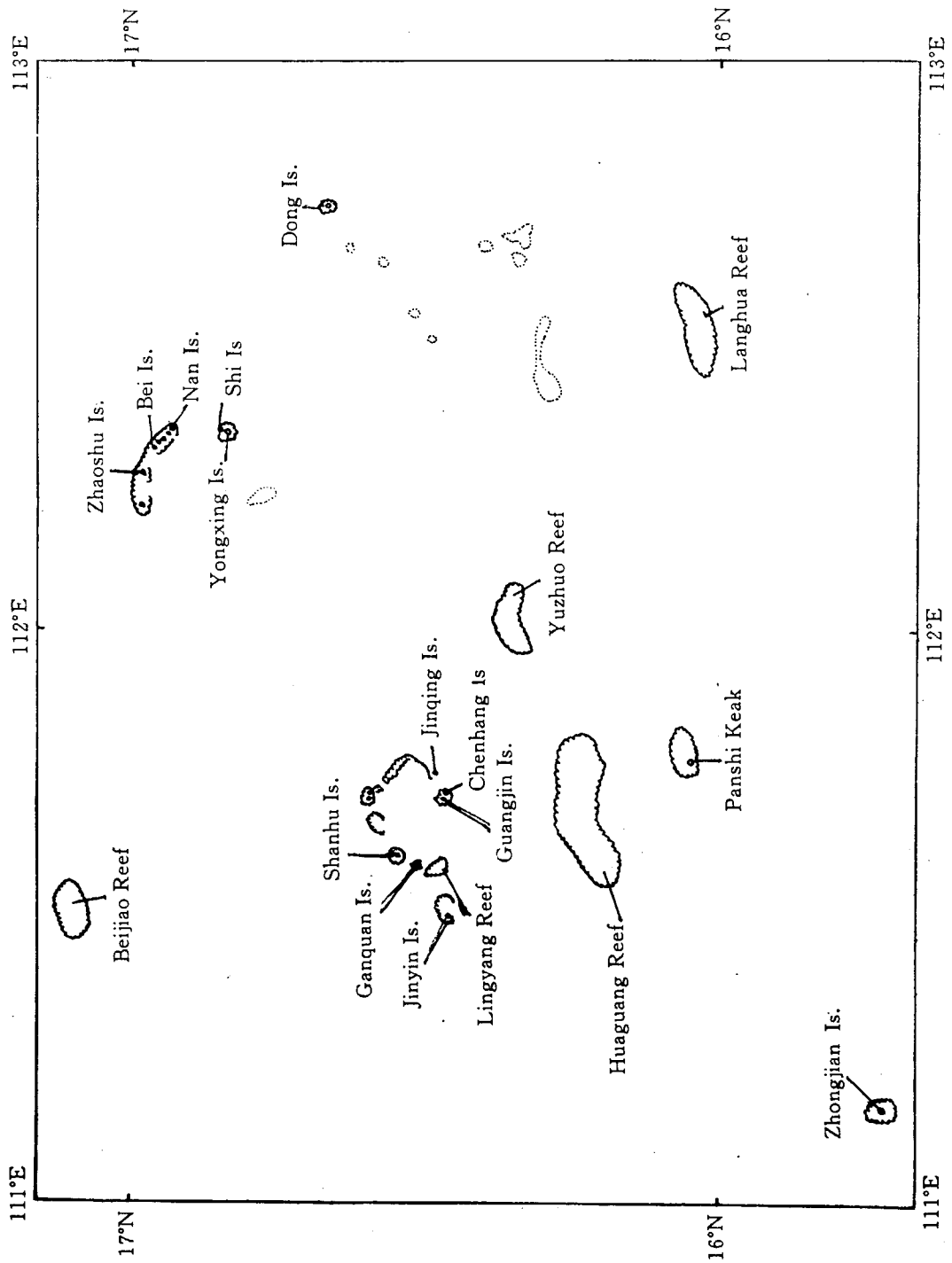


Fig. 1 The collection locales in the Xisha Islands

and species. In 'Material examined', every collection is preceded by a registry number. Except for Hainan Island and Beibu Bay, with particular indication, the collection locales, i. e., the islands or reefs, are in the Xisha Islands. Their locations are shown in Fig. 1. The collector(s) is (are): Wang Yongliang in 1957, Fan Zhengang and Xu Jieshan in 1958, Fan Zhengang in 1959, Ren Xianqiu in 1975, Crustacean Group (IOCAS) in 1980, Meng Zhaohong and Chen Huilian in 1981. The materials studied here are all preserved in the Institute of Oceanology, Chinese Academy of Sciences, Qingdao, China.

List of Species Identified

[Those newly recorded from China waters are indicated by an asterisk (*)]

* Gnathophyllidae Dana, 1852

* *Gnathophylloides mineri* Schmitt, 1933

* *Gnathophyllum americanum* Guerin-Meneville, 1855

* *Levicaris mammillata* (Edmondson, 1931)

Palaemonidae Rafinesque, 1815

Pontoniinae Kingsley, 1878

Anchistus custos (Forsk., 1775)

A. miersi (De Man, 1888)

* *Conchodytes melcagrinae* Peters, 1852

C. tridacnae Peters, 1852

Coralliocaris graminea (Dana, 1852)

C. superba (Dana, 1852)

* *Dasycaris symbiotes* Kemp, 1922

* *Eupontonia noctalbata* Bruce, 1971

Harpiliopsis beaupresii (Audouin, 1826)

* *H. depressa* (Stimpson, 1860)

Jocaste japonica (Ortmann, 1890)

J. lucina (Nobili, 1901)

* *Onycocaridites anomodactylus* Bruce, 1987

Onycocaris oligodentata Fujino and Miyake, 1969

Palaemonella rotumana (Borradaile, 1898)

P. tenuipes Dana, 1852

* *Periclimenaeus rhodope* (Nobili, 1904)

* *P. ? tridentatus* (Miers, 1884)

Periclimenes andamanensis Kemp, 1922

P. brevicarpalis (Schenkel, 1902)

P. elegans (Paulson, 1875)

* *P. ensifrons* (Dana, 1852)

P. grandis (Stimpson, 1860)

* *P. inornatus* Kemp, 1922

P. lutescens (Dana, 1852)

P. soror Nobili, 1904

P. spiniiferus De Man, 1902

P. toloensis Bruce, 1969

* *Stegopontonia commensalis* Nobili, 1906

SYSTEMATIC ACCOUNT

1. **Gnathophylloides mineri* Schmitt

Gnathophylloides mineri Schmitt, 1933: 7, Fig. 3. Lewis, 1956: 288, figs. 1, 2. Bruce, 1974c: 313, Fig. 1. Chace and Bruce, 1993: 134.

Material examined 5 ovig. ♀ (58C-346), Yongxing Is., 20V 1958.

Association With echinoids *Tripneustes*.

General distribution Zanzibar, Seychelles, New South Wales, Australia, Tonga Islands, Hawaii, and Western Atlantic from Florida to Yucatan and Grenadines.

Remarks The specimens agree closely with the previously published descriptions. This small shrimp can be readily separated from all other gnathophyllid species by its third pereopod with dactyl base broad, subtriangular, armed with single extensodistal spine; the second maxilliped conventional, not elongate, and the particular single, wide dark brown or black longitudinal stripe on the side of the body. This is the first record from Chinese waters.

2. **Gnathophyllum americanum* Guerin-Meneville (Fig. 2)

Gnathophyllum americanum Guerin-Meneville, 1855: viii, pl. 2: Fig. 14. Holthuis, 1949: 244, figs. 5, 6. Manning, 1963: 58, figs. 5, 6. Bruce, 1975: 25, Fig. 12. Manning and Chace, 1990: 12, 13, Fig. 7. Chace and Bruce, 1993: 136.

Material examined (1) 1 ovig. ♀ (58C-049), Beijiao Reef, 23 III 1958. (2) 1 ♂ (58C-137), Shi Is., 6IV 1958. (3) 1 ♂ 1 ovig. ♀ (58C-575), Jinqing Is., 26 IV 1958. (4) 1 ovig. ♀ (80X-230), Yongxing Is., 11 VI 1980.

Association Occasionally with echinoderms.

General distribution Red Sea to South Africa and eastward through Indo-Pacific region to Tuamotu Archipelago, Western Atlantic from Bermuda and southern Florida, throughout the Gulf of Mexico and Caribbean Sea, Eastern Atlantic from Canary Islands; to a depth of 50 meters.

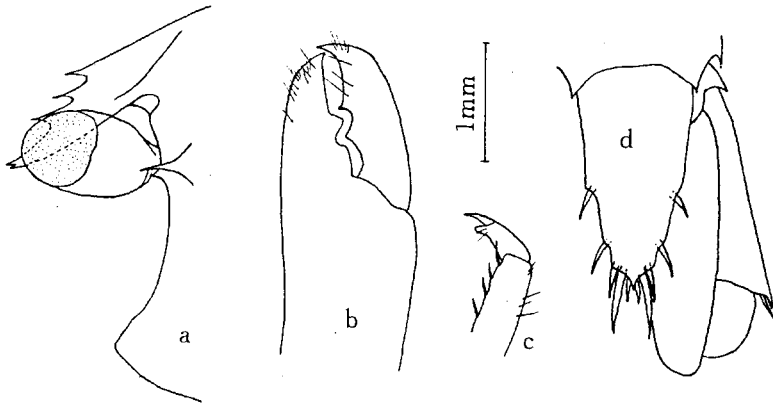


Fig. 2 *Gnathophyllum americanum*, 58C-575 (a, b, d, ♂; c, ovig. ♀)

a. rostrum and anterior portion of carapace in lateral view;

b. chela of second pereopod; c. dactylus of third pereopod;

d. telson and uropod in dorsal view. Scale = 1mm

Remarks The specimens agree with previously published descriptions, but no data record about their colour pattern. This species can be separated from other gnathophyllid species by the rostrum being dentate dorsally and all the teeth being situated on the rostrum (Fig. 2a), cornea of eye distinctly ogival, third pereiopod relatively slender, with biunguiculate dactylus (Fig. 2c); telson bearing 3 pairs of spines on posterior margin (Fig. 2d), and characteristic dark brown and whitish transverse stripes on the carapace and abdominal somites of living specimens. This is the first record from Chinese waters.

3. *Levicaris mammillata* (Edmondson) (Fig. 3)

Coralliocaris mammillatus Edmondson, 1931: 1-18. *Levicaris mammillata* Bruce, 1973: 28, figs. 8, 9.

Material examined (1) 1 ♂ 1 ovig. ♀ (58C-315), Zhao shu Is., 4 V 1958. (2) 1 ♂ 1 ovig. ♀ (58C-584), Jinqing Is., ass. with *Heterocentrotus mammillatus* (L.), 30 IV 1958.

Association With echinoids *Heterocentrotus*.

General distribution Ryukyu and Marshall islands, Hawaii.

Remarks The specimens agree with Bruce's (1973) description. This species can be separated from other gnathophyllid species by its remarkably elongate second maxilliped (Fig. 3b) overreaching the first pereiopod, the third maxilliped much less developed than the second one and broadened at the base, tapering markedly throughout its length (Fig. 3c), the third pereiopod with dactylus base broadened; armed with single extensodistal spine (Fig. 3e). This is the first record from Chinese waters.

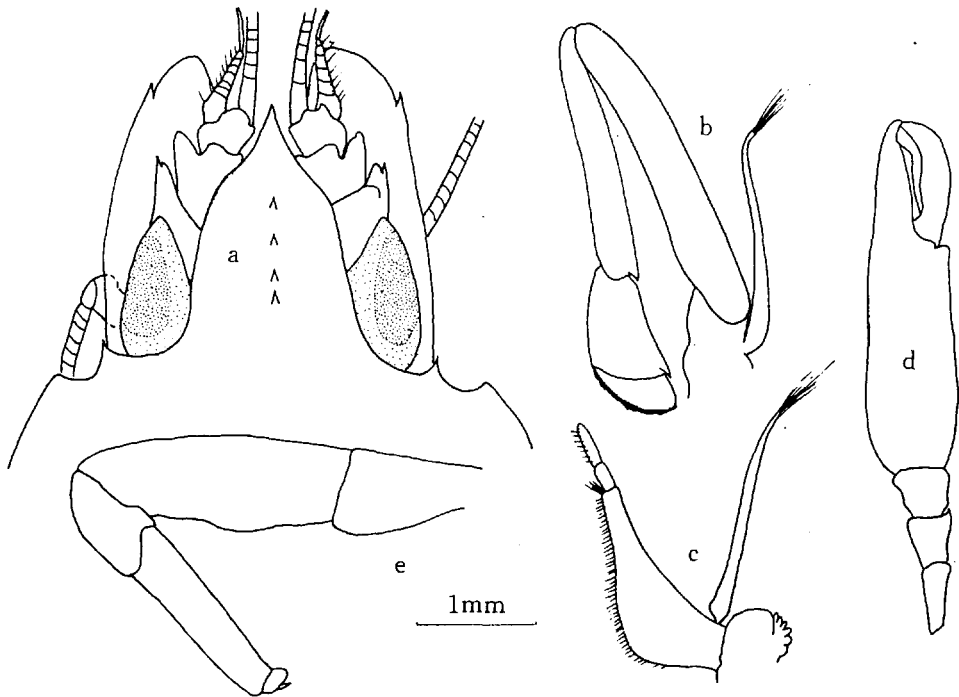


Fig. 3 *Levicaris mammillata*, 58C-315 (ovig. ♀)
a. rostrum and anterior portion of carapace in dorsal view; b. second maxilliped; c. third maxilliped; d. second pereiopod; e. third pereiopod. Scale = 1mm (a-c, e); 2mm (d)

4. *Anchistus custos* (Forsk.)

Cancer custos Forkal, 1775: xxi, 94. *Harpilius inermis* Miers, 1884: 291, pl. 32: Fig. B. *Pontonia pinnae* Ortmann, 1894: 16, pl. 1: Fig. 3. *Anchistus custos* Holthuis, 1952a: 105.

Material examined 1 ovig ♀ (75-K043), Luhuitou, Sanya, Hainan Island, within *Pinna* sp., 13IV 1975.

Association Living in bivalve mollusks, *Tridacna*, *Pinna*.

Distribution in China South China Sea, Hong Kong, Hainan Island.

General distribution Red Sea and Eastern Africa to Philippines, southward to South Australia, eastward to Caroline and Fiji islands.

Remarks This species was recorded previously from Hong Kong (Bruce, 1982) and Hainan Island (Li and Liu, in press), but have not been reported from Xisha and Nansha Islands.

5. *Anchistus miersi* (De Man)

Harpilius Miersi De Man, 1888: 274, pl. 17; figs. 6-10. *Anchistus miersi* Holthuis, 1952b: 110, Fig. 45.

Material examined (1) 2 ♂ 1 ovig. ♀ (58C-231), Zhaoshu Is., within *Hippopus hippopus* at intertidal zone, 30 IV 1958. (2) 2 ovig. ♀ (58C-318), Zhongjian Is., 4 V 1958. (3) 1 ovig ♀ (58C-543), Jinqing Is., within *Tridacna* sp., 25 V 1958.

Association In bivalve mollusks of genera *Hippopus*, *Tridacna*, possibly also *Pinna* and *Meleagrina*.

Distribution in China Nansha Islands.

General distribution Red Sea and Eastern Africa to the Philippines and eastward to the Gambier Islands, Tuamotu Archipelago.

Remarks The specimens agree with the descriptions of previous authors. The rostrum has 3 to 5 dorsal distal teeth and one small, or none, ventrally. A distinct antennal spine is present, and the lateral pair of spines on the posterior margin of the telson is situated preterminally and submarginally.

6. *Conchodytes meleagrinae* Peters (Fig. 4, 5a-e)

Conchodytes meleagrinae Peters, 1852: 594. Borradaile, 1917: 393, pl. 57 Fig. 26. Bruce, 1977a: 73, Fig. 14c, d; 1991: 262, Fig. 25a-d. Fransen, 1994: 96, Fig. 21, pl. 1E.

Material examined 1 ♂ 1 ovig. ♀ (58C-259), Zhaoshu Is., within *Pinctada margaritifera* (L.), 1V 1958.

Association Generally living in mantle cavity of pearl oyster, *Pinctada*.

General distribution Throughout the Indo-West Pacific.

Remarks The specimens fit the previous descriptions of the species. Carapace with the orbital angle very developed, producing forward into a acute lobe (Fig. 4a). The basal process of the ambulatory dactylus is without accessory tooth (Fig. 4b, c); the carpus of the first pereopod is distinctly shorter than the merus (Fig. 5a); telson with 2 pair dorsal spines at about 0.2 and 0.7 of the length, anterior spines distinctly larger than posterior, posterior telson spines with lateral pair well developed, small, intermediate pair swollen, submedian pair slender (Fig. 5d, e). The third maxilliped of the ovigerous female specimen with a distinct distal segment (Fig. 4c). According to the collection record, the specimens "all the body covered with chromatophore spots". It is now recorded for the first time from Chinese waters.

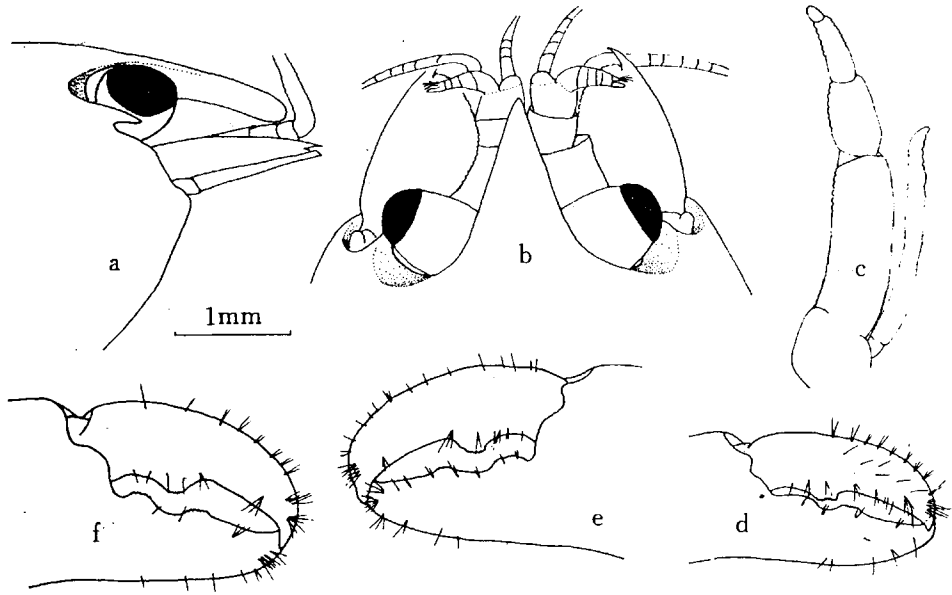


Fig. 4 *Conchodytes meleagrinae* Peters, 58C-259 (a-c, e, f, ovig. ♀; d, ♂)
 a. anterior part of the animal, lateral view; b. same, dorsal view; c. 3rd maxilliped (left);
 d, f. chela of the 2nd pereopod (left); e. same, right. Scale = 1mm

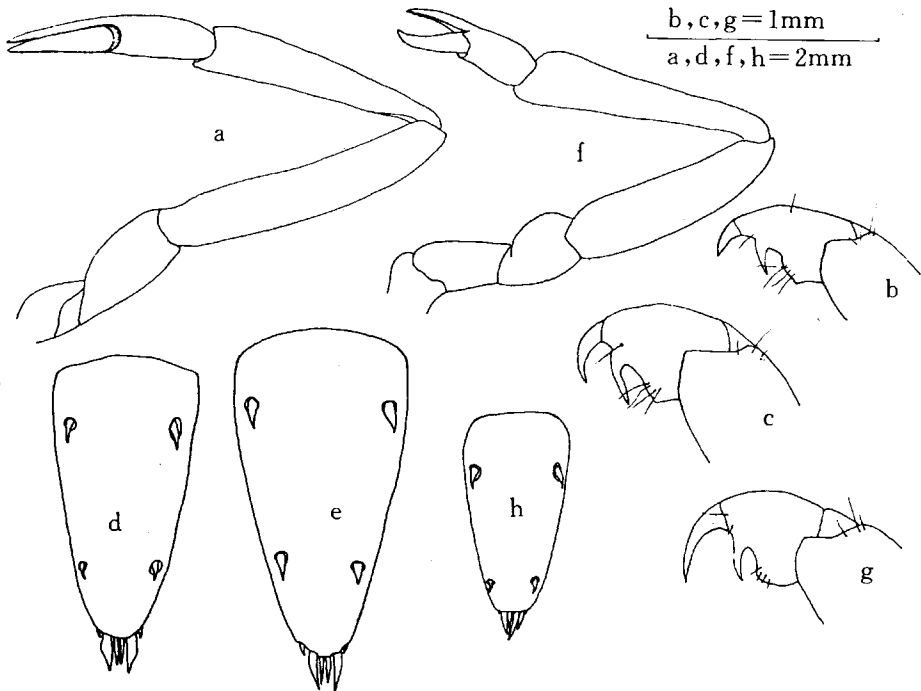


Fig. 5 a-e, *Conchodytes meleagrinae* Peters, 58C-259;
 f-h, *Conchodytes tridacnae* Peters, 81X-C-115 (a-c, e-h, ovig. ♀; d, ♂)
 a, f. 1st pereopod (left); b, g. 3rd pereopod (left); c. 5th pereopod (left);
 d, e, h. telson, dorsal view. Scale = 2mm (a, d-f, h); 1mm (b, c, g)

7. *Conchodytes tridacnae* Peters (Fig. 5f—h)

Conchodytes tridacnae Peters, 1852: 594. Bruce, 1977a: 71, Fig. 14a, b; 1977b: 176, Fig. 7. Chace and Bruce, 1993, 76.

Material examined 1 ovig. ♀ (81X-C-115), NE coast, Yongxing Is., within *Tridacna* sp., 31 V 1981.

Association Living in mantle cavity of giant clams of the genus *Tridacna*.

Distribution in China Nansha Islands.

General distribution Widespread throughout the Indo-Pacific region, from the Red Sea to Hawaii.

Remarks The specimens fit the description of previously authors. The basal process of the ambulatory dactyli is without an accessory tooth (Fig. 5g). The carpus of the first pereopod slightly longer than the merus (Fig. 5f). The lateral pair of posterior spines on the telson is minute, not subterminal (Fig. 5h). The species was recorded previously from Nansha Islands (Li, 1995). Recorded here for the first time from the Xisha Islands.

8. *Coralliocaris graminea* (Dana)

Oedipus gramineus Dana, 1852a: 25; 1855: 12, pl. 37; Fig. 3. *Coralliocaris graminea* Stimpson, 1860: 38. Holthuis, 1952b: 186, Fig. 91. Bruce, 1974a: 222, Fig. 1C, D; 1977c: 72.

Material examined (1) 2 ♂ 1 ovig. ♀ (80X-127), Jinqing Is., 19 V 1980. (2) 1 ♂ (80X-146D), Shanhu Is., 20 V 1980. (3) 2 ovig. ♀ (80X-184B), Dong Is., 28 V 1980. (4) 15 ♂ 10 ovig. ♀ 10 ♀ (75-K041), Luhuitou, Sanya, Hainan Island, among branch corals, 13 N 1975.

Association With scleractinian corals of the genus *Acropora*.

Distribution in China Hong Kong, Hainan Island. Now recorded for the first time from the Xisha Islands.

General distribution Generally common and widespread throughout most of the Indo-West Pacific region, from the Red Sea to Mozambique, to Polynesia, excluding the Hawaiian Islands.

9. *Coralliocaris superba* (Dana)

Oedipus superbus Dana, 1852a: 25; 1855: 12, pl. 37; fig. 2. *Coralliocaris superba* Kemp, 1922: 272, figs. 98, 99. Holthuis, 1952b: 189, Fig. 92. Chace and Bruce, 1993: 77.

Material examined 1 ovig. ♀ (75-X063), Zhongjian Is., in corals, 12 V 1975.

Association With scleractinian corals, common on the species of the genus *Acropora*.

Distribution in China Nansha Islands, Hainan Island. Recorded for the first time from the Xisha Islands by Li and Liu (in press).

General distribution Widespread in the tropical Indo-West Pacific.

10. *Dasycaris symbiotes* Kemp (Fig. 6)

Dasycaris symbiotes Kemp, 1922: 240, text-figs. 76, 77, pl. 9.

Material examined 3 ovig. ♀ (R45B-28), St. 6210 (18.25°N, 108.75°E), Beibu Bay (Gulf of Tonkin), 39m, sandy mud, by Agassise Trawl, 16 VI 1959.

Association With sea pen *Pteroeides*.

General distribution Madras coast of India, Mergui Archipelago, New Caledonia.

Remarks The three ovigerous female specimens fit Kemp's (1922) description, but rostral process with 3 slender teeth and the anterior one is situated in the distal third of the process, two similar teeth on the frontal region (Fig. 6a); pleuron 2 with small rounded process

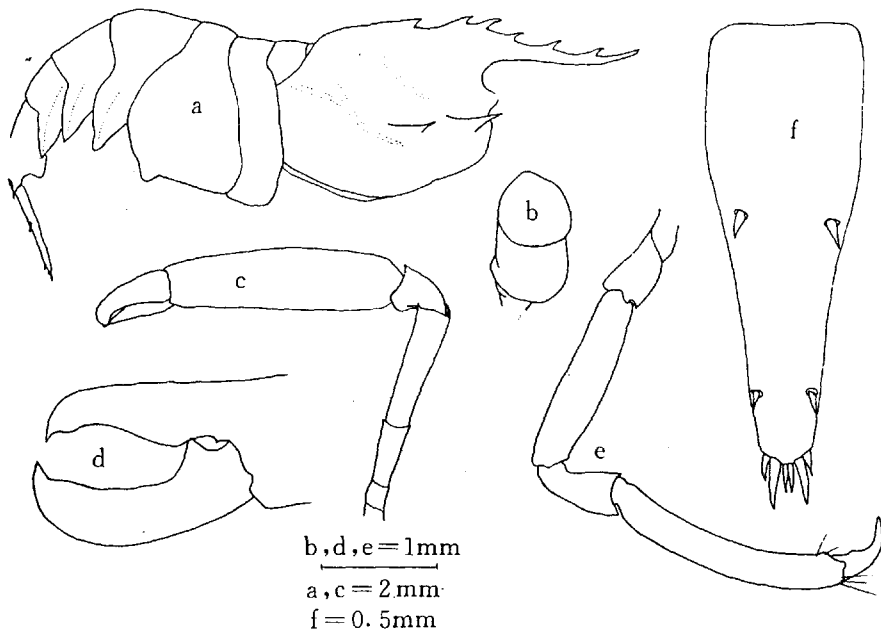


Fig. 6 *Dasycaris symbiotes* Kemp, R45B-28 (ovig. ♀)

a. carapace and abdomen, lateral view; b. right eye; c. larger (left) second pereiopod;
 d. same, chela; e. third pereiopod (right); f. telson. Scale = 2mm (a, c); 1mm (b, d, e); 0.5mm (f)

postero-ventrally and pleuron 3 with rounded, not acutely pointed postero-ventrally (Fig. 6a); the dactyli of third pereiopod with rounded process at the proximal 1/3 (Fig. 6e). The species is close to *Dasycaris ceratops* Holthuis, but the frontal teeth not so large as that species, cornea slightly, not conoidally produced (Fig. 6b); pleura 2 and 3 and the shape of telson, the arrangement of dorsal spines, the size of the three pairs of posterior marginal spines (Fig. 6a, f) are also different. The postorbital carapace length of the largest specimen is 3.8mm.

11. *Eupontonia noctalbata* Bruce (Fig. 7)

Eupontonia noctalbata Bruce, 1971a: 227, figs. 1-5.

Material examined 1 ovig. ♀ (75-X174D), lagoon of Jinyin Is., in corals, 24 V 1975.

General distribution Seychelles.

Remarks The lone ovigerous female specimen agrees closely with the description by Bruce (1971a). The rostrum short and straight, with developed midrib and small dorsal and ventral margin acute teeth, the carapace with a large broadly triangular marginal supra-orbital spine and well developed antennal spine, but no hepatic spine (Fig. 7a); the telson broad, with straight tapering sides, about 0.7 times longer than its greatest width; the posterior margin acute, with a small median process (Fig. 7g); the mandible robust, with a small two-segmented palp; the incisor process robust, with three acute teeth distally; the molar process stout, with stout marginal teeth (fig. 7b); the pereiopods long and slender, the second pereiopods similar and subequal; the dactylus bears a very small tooth proximally, cutting edges entire, the carpus

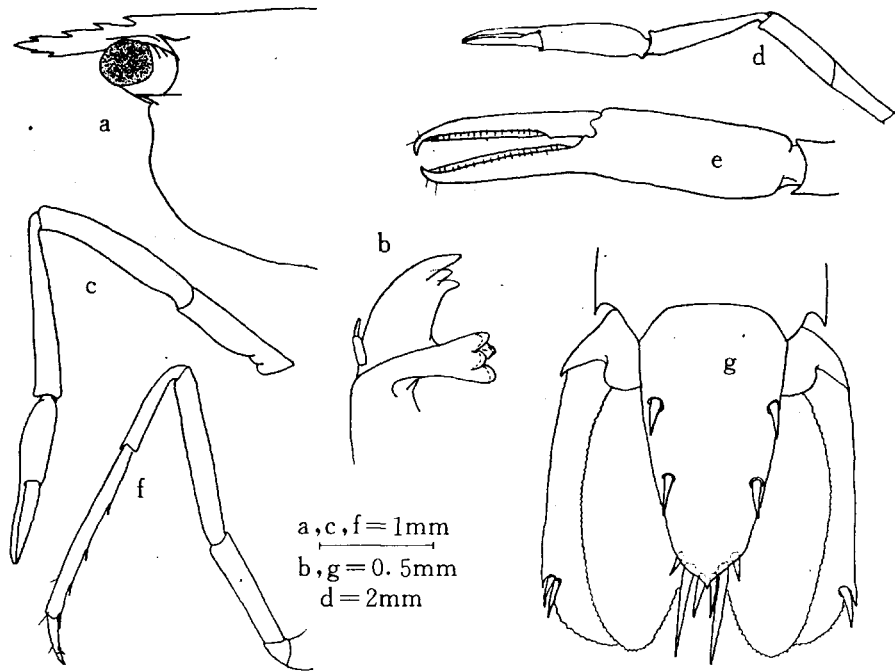


Fig. 7 *Eupontonia noctalbata* Bruce, 75-X174D (ovig. ♀)

a. anterior carapace and rostrum and eye; b. mandible; c. first pereiopod;
d. left second pereiopod; e. same, chela; f. third pereiopod; g. telson and uropods,
dorsal view. Scale = 1mm (a, c, f); 0.5mm (b, g); 2mm (d)

about three quarters of the length of the chela; the dactylus of the third pereiopod long and slender, gently curved, with a distinct unguis distally; the propodus slender, with a pair of spines at the disto-ventral extremity and three single spines along the posterior border, and the segment ratio of the pereiopods also fit Bruce's description (Fig. 7c—f); the uropods typical, with the lateral border of the exopod ending in a triangular tooth; with a large mobile spine medullae on the right one (Fig. 7g). The specimen has some differences from Bruce's (1971a) description, i. e., the dorsal margin of the rostrum with four, not five, teeth but the ventral margin with two, not one, tooth (Fig. 7a); the telson with typical two pairs dorsal spines and symmetrically (Fig. 7g), not three pairs and asymmetrically (Bruce considered this "abnormal"; the exopod of left uropod with two mobile spines, not one, and smaller than that of right (Fig. 7g), maybe this is also abnormal. These differences are not important. This is the first record from Chinese waters. The postorbital carapace length of the specimen is 3.3mm.

12. *Harpiliopsis beaupresii* (Audouin)

Palaemon Beaupresii Audouin, 1826: 91 *Harpilius beaupresii* Kemp, 1922: 229, figs. 67, 68. *Harpiliopsis beaupresii* Holthuis, 1952b: 181, Fig. 89. Chace and Bruce, 1993: 82.

Material examined (1) 1 ♂ 1 ovig. ♀ (57-P091B), Shi Is., 13 V 1957. (2) 1 ♂ 1 ovig. ♀ (58C-345), Yongxing Is., 15 V 1958. (3) 2 ♂ (80X-002A), Zhaoshu Is., 7 V 1980. (4) 1 ovig. ♀ (80X-097A), edge of the coral reef, Jinyin Is., 15 V 1980.

Association With scleractinian corals, mainly of the family Pocilloporidae.

Distribution in China Hainan Island. This is the first record from the Xisha Islands.

General distribution Red Sea to the Philippines and Indonesia and eastward to Hawaii and Easter Island.

13. * *Harpiliopsis depressa* (Stimpson)

Harpilius depressus Stimpson, 1860: 38. Kemp, 1922: 231, figs. 69, 70. *Harpiliopsis depressus* Holthuis, 1951: 70, pls. 21, 22; figs. a—f; 1952b: 182, Fig. 90. Bruce, 1976a: 127. *Harpiliopsis depressa* Wicksten, 1983: 15.

Material examined (1) 1 ♂ 1 ovig. ♀ (57-P034C), Yongxing Is., 13 W 1957. (2) 1 ♂ (57-P091A), Shi Is., 13 V 1957. (3) 1 ♂ 1 ovig. ♀ (58C-530D), Jinqing Is., among coral reef stones, 24 W 1958. (4) 1 ovig. ♀ (75-X069C), Zhongjian Is., among corals, 12 V 1975. (5) 1 ♂ 2 ovig. ♀ (80X-073B), Jinyin Is., 14 V 1980.

Association With scleractinian corals, mainly of the family Pocilloporidae.

General distribution Red Sea to the Philippines and Indonesia and eastward to Pacific coast of America from Gulf of California to Colombia.

Remarks The specimens agree closely with the previous descriptions. Carapace with the hepatic spine on much lower level than antennal spine, ischium of larger second pereopod with 1 distal spine on flexor margin, without an extensor margin, 2 teeth on movable and 3 on fixed finger, telson with posterior pair of dorsolateral spines arising much nearer to anterior pair than to posterior end can separate this species easily from the other two known species of the genus. Recorded here for the first time from Chinese waters.

14. *Jocaste japonica* (Ortmann)

Coralliocaris superba var. *japonica* Ortmann, 1890: 509, pl. 22. *Jocaste lucina* Holthuis, 1952b: 17, 193, Fig. 94 (part). *Jocaste japonica* Patton, 1966: 279, Fig. 3b. Fransén, 1989: 146. Chace and Bruce, 1993: 84.

Material examined (1) 5 ♂ 8 ovig. ♀ (57-P066), Zhaoshu Is., among corals, 27 W 1957. (2) 1 ♂ (81X-C-210), Yongxing Is., in a hole of coral reef, 5 W 1981.

Association Possibly with corals and also comatulids.

Distribution in China Nansha Islands, Hainan Island. Recorded here for the first time from the Xisha Islands.

General distribution Western Indian Ocean to Japan and Indonesia and eastward to the Marshall Islands.

15. *Jocaste lucina* (Nobili)

Coralliocaris lucina Nobili, 1901: 5. *Jocaste lucina* Holthuis, 1952b: 17, 193, Fig. 94 (part). Patton, 1966: 278, Fig. 3a. Chace and Bruce, 1993: 84.

Material examined (1) 1 ovig. ♀ (58C-195), ?, 5 W 1958. (2) 3 ♂ 1 ovig. ♀ (58C-249), Zhaoshu Is., in coral reef stones, 1 V 1958. (3) 1 ♂ (80X-097B), edge of the reef, Jinyin Is., 15 V 1980. (4) 3 ♂ 4 ovig. ♀ (80X-184A), Dong Is., 28 V 1980. (5) 42 ♂ 33 ovig. ♀ 32 juv. (80X-225A). Yongxing Is., 11 W 1980.

Association Possibly with corals and also comatulids.

Distribution in China Hainan Island. Recorded here for the first time from the Xisha Islands.

General distribution Widespread throughout the Indo-Pacific region from the Red Sea to the Society Islands, but not Hawaii.

16. * *Onycocaridites anomodactylus* Bruce (Fig. 8)

Onycocaridites anomodactylus Bruce, 1987: 772, figs. 1—4.

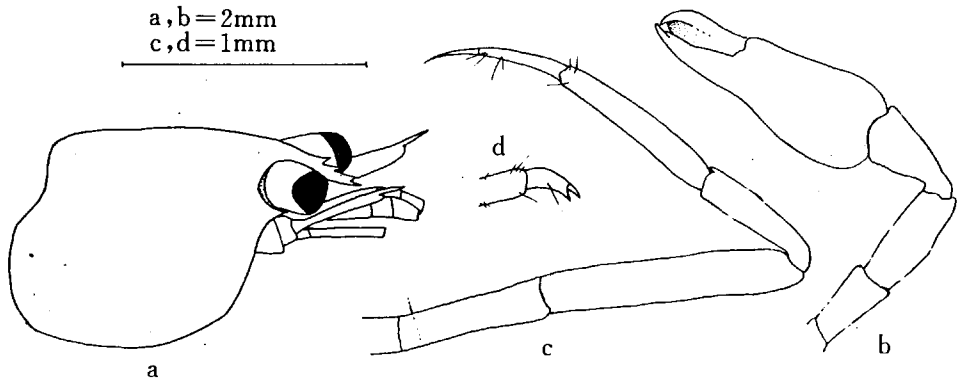


Fig. 8 *Onyccaridites anomodactylus* Bruce, 58C-650 (♂)

a. anterior carapace with eyes and appendages; b. larger second pereopod; c. third pereopod; d. dactylus and distal propodus of the fourth pereopod. Scale = 2mm (a, b); 1mm (c, d)

Material examined 1 ♂ (58C-650), Celiang Bank, 28°N 1958.

Association With sponge.

General distribution Only the type locality Arafura Sea.

Remarks The sole male specimen agrees closely with Bruce's (1987) description and illustration. Recorded here for the first time from Chinese waters. This small shrimp looks closely like the members of two other genera of sponge-inhabiting commensal shrimp, *Onyccaris* and *Onyccaridella*, but it is readily distinguished from both these genera and all others, by the unique differences between the dactyls of the third pereopods and those of the fourth and fifth pairs (Fig. 8c, d). The dactyls of the third pereopods are extremely long, slender, and simple, completely contrasting with the short, stout, compressed, and strongly biunguiculate dactyls of the fourth and fifth pairs of pereopods. The subspatulate dactylus of the second pereopods (Fig. 8b) also differs it from most species of *Onyccaris*, which have strongly compressed chelae on the second pereopods. The second pereopods are subsimilar and subequal. A distinct antennal spine is present in *Onyccaridites* (Fig. 8a) also separates it from those two genera, which absent this spine on the carapace. Postorbital carapace length is about 1.8mm.

17. *Onyccaris oligodentata* Fujino and Miyake

Onyccaris oligodentata Fujino and Miyake, 1969: 415, figs. 7.8d—f, 9d—f.

Material examined 1 ♂ 1 ovig. ♀ (58C-421), in coral reef stones, Zhongjian Is., 11°N 1958.

Association With sponges of genera *Haliclona*, *Siphonochalina*, *Pachychalina*, *Callispongia*, *Spongionella*.

Distribution in China Hong Kong. Recorded here for the first time from the Xisha Islands.

General distribution Japan, Australia, 17—35m.

18. *Palaemonella rotumana* (Borradaile)

Periclimenes rotumana Borradaile, 1898: 383. *Palaemonella vestigialis* Kemp, 1922: 123, figs. 1, 2; pl. 3; Fig. 2. Holthuis, 1952b: 24, figs. 2a, b, 3. *Palaemonella rotumana* Bruce, 1970: 276, Fig. 2; Chace and Bruce, 1993: 89.

Material examined (1) 1 ♂ (58C-316), Shi Is., 19 V 1958. (2) 1 ♂ 1 ovig. ♀ (58C-344), Yongxing Is., 15 V 1958. (3) 1 ♂ (58C-530E), Jinqing Is., in coral reef stones, 24 IV 1958. (4) 1 ♂ (75-X174B), Jinyin Is., corals, 24 V 1975. (5) 1 ♂ 1 ovig. ♀ (75-X225D), Yongxing Is., with dead corals, 5 VI 1975. (6) 2 ovig. ♀ (80X-124F), Jinqing Is., 19 V 1980. (7) 1 ♂ (80X-146C), Shanhu Is., 20 V 1980.

Association With dead corals on muddy bottom.

Distribution in China Nansha Islands, Hainan Island. Recorded here for the first time from the Xisha Islands.

General distribution Eastern Mediterranean; Red Sea; Eastern Africa to the Philippines and Indonesia; and eastward to Hawaii, to depth of 126—128 m.

19. *Palaemonella tenuipes* Dana

Palaemonella tenuipes Dana, 1852a: 25. Holthuis, 1952b: 27, Bruce, 1970: 274, Fig. 1.

Material examined (1) 2 ♂ 2 ovig. ♀ (57-P034B), Yongxing Is., 13 IV 1957. (2) 2 ♂ 1 ovig. ♀ (57-P099C), Shi Is., corals, 13 V 1957. (3) 3 ♂ (58C-088B), Yongxing Is., in coral reef stones, 31 III 1958. (4) 2 ♂ 1 ovig. ♀ (58C-242), Zhaoshu Is., in coral reef stones, 1 V 1958. (5) 1 ♂ (58C-317), Huanguang Reef, 13 V 1958. (6) 2 ♂ (58C-416A), Zhongjian Is., 11 IV 1958. (7) 2 ovig. ♀ (58C-498), Zhongjian Is., in coral reef stones, 18 IV 1958. (8) 10 ♂ 5 ovig. ♀ (58C-530A), Jinqing Is., in coral reef stones, 24 IV 1958. (9) 1 ♂ 1 ovig. ♀ (75-X022C), Shi Is., corals, 8 V 1975. (10) 1 ovig. ♀ (75-X139), Guangjin Is., corals, 18 V 1975. (11) 1 ♂ 1 ovig. ♀ (75-X146), Chenhang Is., corals, 19 V 1975. (12) 2 ♂ (75-X155B), Chenhang Is., dead corals, 22 V 1975. (13) 1 ♂ 1 ovig. ♀ (75-X174A), Jinyin Is., corals, 24 V 1975. (14) 1 ♂ (75-X216), Lingyang Reef, corals, 28 V 1975. (15) 1 ♂ 1 juv. (75-X255B), Yongxing Is., dead corals, 5 VI 1975. (16) 5 ♂ 1 ovig. ♀ (75-272B), Yongxing Is., in algae, 7 VI 1975. (17) 3 ♂ 1 ovig. ♀ (75-X308B), Dong Is., in algae, 8 VI 1975. (18) 1 ♂ 2 ovig. ♀ (80X-040C), Yongxing Is., 9 V 1980. (19) 15 ♂ 14 ovig. ♀ (80X-146B), Shanhu Is., 20 V 1980. (20) 4 ♂ 1 ovig. ♀ 9 juv. (80X-182B), Dong Is., 28 V 1980. (21) 4 ♂ 1 ovig. ♀ (80X-197D), Dong Is., 3 VI 1980. (22) 4 ♂ 3 ovig. ♀ 36 juv. (80X-224B), Yongxing Is., 11 VI 1980. (23) 1 ♂ (81X-C-111), NE coast of Yongxing Is., 31 V 1981. (24) 1 ♂ (81X-C-187), Shi Is., 2 VI 1981.

Distribution in China Nansha Islands.

General distribution Red Sea and Western Indian Ocean to the Philippines and eastward to the International Date Line.

Remarks This species was collected from eleven islands (or reef) of the seventeen investigated islands or reefs or banks in the five expeditions from 1957 to 1981, made by IO-CAS. It is very interesting that in 15 out of 24 times, this species was collected with *Periclimenes spiniferus* De Man simultaneously. In 15 out of 29 times the latter species was collected with this species simultaneously. That is to say, there is a trend that these two species live in a same habitat, i. e., among living or dead corals, or in holes of coral reef stones. Their body size and from look very alike, but their much different first and second pereopods make it easy to separate them. The question is why these two species often appear in same habitat? This species recorded here for the first time from the Xisha Islands.

20. **Periclimenaeus rhodope* (Nobili, 1904) (Fig. 9)

Coralliocaris (*Onycocaris*) *rhodope* Nobili, 1904: 233. *Onycocaris rhodope* Kemp, 1922: 278. *Periclimenaeus rhodope* Holthuis, 1952: 125—129, figs. 54—55bis; Bruce, 1974b (1975): 1558—1562, figs. 1, 2, 3A—B, 7A—B.

Material examined 1 ♂ 2 ovig. ♀ (80X-110A), Jinyin Is., in *Siphonochalina* sp., 16 V 1980.

Association Within sponges, *Siphonochalina*.

General distribution Djibouti, Persian, Gulf, Malay Archipelago. **Remarks** The specimens agree with

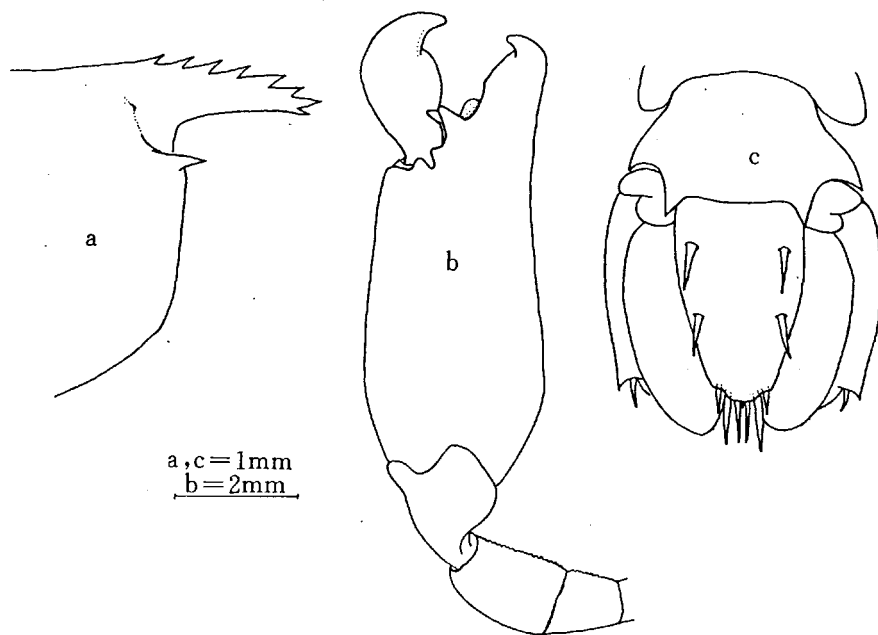


Fig. 9 *Periclimenaeus rhodope* Nobili, 80X-110A(♂)

a. anterior carapace with rostrum, lateral view; b. larger second pereopod; c. sixth abdominal segment and telson, dorsal view. Scale = 1mm (a, c); 2mm (b)

the descriptions by Holthuis (1952) and Bruce (1974b). Recorded here for the first time from Chinese waters. The rostrum (Fig. 9a) is slightly downward, reaches beyond the end of the basal segment of the antennular peduncle. The upper margin bears seven teeth, 1 of them on the carapace behind the posterior orbital margin, 1 tooth is present at the subdistal lower margin. The carapace (Fig. 9a) is smooth, bears an obscure supraorbital tubercle and a strong antennal spine. The telson (Fig. 9c) is about 1.5 times as long as broad, bears two pairs of spines on the upper surface, the anterior pair in the anterior part of the telson and the posterior pair slightly closer to the anterior one than the posterior margin of the telson. The posterior margin bears three pairs of spines, the outer pair is shortest, the intermediate longest and the submedian slightly shorter than the intermediate. The first pereopod is slender, the fingers are shorter than half the length of the palm. The second pereopods (Fig. 9b) are very strong and unequal, in the male specimen, the left is larger, but in the two ovigerous female, the right is larger. The fingers of the larger one are about half as long as the palm, slightly curved inward, the cutting edge of the dactylus bears a large bluntly truncate tooth, which fits in a socket of the fixed finger. This socket is flanked at the outer margin with a low blunt tooth, at the inner margin with a strong sharp one. The palm is greatly swollen, the surface is covered with many scattered tubercles. The merus and ischium are provided with minute scattered tubercles in the lower surface. The dactylus of the ambulatory pereopods are distinctly biunguiculate with

minute denticles along the ventral margin, the posterior margin of the propodus is provided with spines over the entire length. The uropods (Fig. 9c) are broad with entire unarmed lateral borders to the exopods, the distolateral angle is acute, with a distinct movable spine at the inner side. The maximum postorbital carapace length is about 3.6 mm.

21. *Periclimenaeus? tridentatus* (Miers) (Fig. 10)

Coralliocaris? tridentata Miers, 1884, 294, pl. 32. Fig. C. *Periclimenaeus tridentatus* Holthuis, 1952b: 140, figs. 63-65; Chace and Bruce, 1993: 93.

Material examined 1 ♂ 2 ovig. ♀ (80X-158-3), Shanhu Is., 23 V 1980.

Association With the ascidian *Diplosoma*.

General distribution Singapore, Sulu Archipelago, Philippines, Torres Strait, northern and eastern Australia.

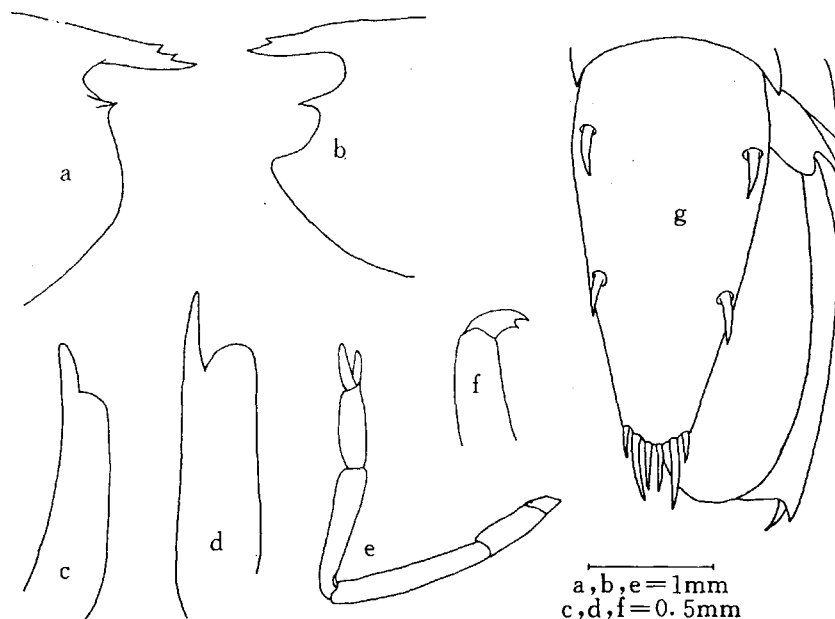


Fig. 10 *Periclimenaeus? tridentatus* (Miers), 80X-158-3 (a, c, e, ovig. ♀, b, d, f, g, ♂)
 a, b. anterior carapace with rostrum, lateral view; c, d. scaphocerite; e. first pereiopod;
 f. distal part of propodus and dactylus of the fifth pereiopod; g. telson with right uropod.
 Scale = 1mm (a, b, e); 0.5mm (c, d, f, g)

Remarks The specimens are unfortunately incompletely preserved. One female has a pair of first pereiopods, the male has a fifth pereiopod. The other pereiopods of the three specimens are lacking. The rostrum (figs. 10a, b) slender, more or less directed downwards, the extreme tip curved upwards. The upper margin with 2 teeth in ovigerous female, 1 tooth in male. The carapace (figs. 10a, b) swollen with a strong antennal spine, the anterolateral angle rounded, and, in the male, produced forwards. The telson (Fig. 10g) twice as long as broad, the anterior pair of dorsal spines placed in about proximal 1/4 of the telson length, the posterior one in

about 0.6 of the length. Three pairs of spines on the posterior margin typically pontoniine pattern. The scaphocerite (figs. 10c, d) short and narrow, the outer margin is slightly concave in female, straight in male, ends in a large distal tooth, which locates far beyond the lamella. The first pereopods (Fig. 10e) slender, the finger provided with tufts of setae, about 0.6 times as long as the palm. The dactylus of the fifth pereopod (Fig. 11f) distinctly biunguiculate, without basal tubercle. The uropods (Fig. 10g) longer than the telson, the out margin of the exopod slightly convex, with a movable spine beside the distolateral end. The postorbital carapace length is 3.2mm (ovig. ♀) or 3mm (♂). This is the first record from Chinese waters.

22. *Periclimenes andamanensis* Kemp

Periclimenes andamanensis Kemp, 1922: 204, figs. 54—57. Chace and Bruce, 1993: 103.

Material examined 1 ♂ (75-X272C), Yongxing Is., in algae, 7 VI 1975.

Distribution in China Hainan Island, Nansha Islands, South China Sea.

General distribution Madagascar, Andaman Islands, Ryukyu Islands and Queensland, Australia, Indonesia.

23. *Periclimenes brevicarpalis* (Schenkel)

Ancylocaris brevicarpalis Schenkel, 1902: 563, pl. 13: Fig. 21. *Periclimenes (Ancylocaris) brevicarpalis* Kemp, 1922: 185, Figs. 40—42, pl. 6; Fig. 8. *Periclimenes (Harpilius) brevicarpalis* Holthuis, 1952b: 69, Fig. 27. *Periclimenes brevicarpalis* Bruce, 1983: 879, Fig. 7D, E. Chace and Bruce, 1993: 104.

Material examined (1) 1 ♂ (57-P099E), Shi Is., with sea anemones, 13—15 V 1957. (2) 3 ovig. ♀ (58C-092), Yongxing Is., within sea anemones, 31 III 1958. (3) 1 ♂ 1 ovig. ♀ (58C-159), Shi Is., in sea anemones, 6 IV 1958. (4) 2 ♂ 1 ovig. ♀ 1 juv. (58C-58C-212), Bei Is., in sea anemones, 27 IV 1958. (5) 1 ♂ 1 ovig. ♀ (58C-233), Zhaoshu Is., in sea anemones, 1 V 1958. (6) 4 ♂ 1 ovig. ♀ (58C-309), Zhaoshu Is., in sea anemones, 5 V 1958. (7) 2 ovig. ♀ (58C-405), Zhongjian Is., in sea anemones, 11 IV 1958. (8) 2 ovig. ♀ (58C-546), Jinqing Is., in sea anemones, 25 IV 1958. (9) 2 ♂ 4 ovig. ♀ (80X-197A), Dong Is., 29 V 1980. (10) 1 ovig. ♀ (80X-227), Yongxing Is., 11 VI 1980.

Association With sea anemones.

Distribution in China Hong Kong, Hainan Island, South China Sea. Recorded here for the first time from the Xisha Islands.

General distribution Red Sea, Eastern and South Africa, Ryukyu Islands and Honshu, Japan, south to Capricorn Islands, Great Barrier Reef, Australia, and east to Line Islands.

24. *Periclimenes elegans* (Paulson)

Anchistia elegans Paulson, 1875: 113, pl. 17: Fig. 1. *Periclimenes (Ancylocaris) elegans* Kemp, 1922: 215, figs. 60—62. *Periclimenes (Harpilius) elegans* Holthuis, 1952b: 81, Fig. 31. *Periclimenes elegans* Bruce, 1983: 884. Chace and Bruce, 1993: 110.

Material examined (1) 5 ♂ 2 ovig. ♀ (57-K210B), Dazhou Is., Hainan Is., in coral reef stones, 12 VI 1957. (2) 7 ♂ 10 ovig. ♀ 2 juv. (75-K008C), Dadonghai Bay, Yulin, Hainan Is., in algae, 12 IV 1975. (3) 2 ♂ 18 juv. (75-K069), Dadonghai Bay, Yulin, Hainan Is., in corals, 15 IV 1975. (4) 1 ♂ (75-X022D), Shi Is., in corals, 8 V 1975. (5) 6 ♂ 7 ovig. ♀ (80x-021) Yongxing Is., 5 V 1980. (6) 1 ovig. ♀ (80x-040B), Yongxing Is., 9 V 1980. (7) 1 ovig. ♀ (80X-131A), Jinqing Is., 19 V 1980.

Distribution in China Hong Kong. Recorded here for the first time from the Xisha Islands.

General distribution Red Sea and Western Indian Ocean to Hong Kong, Philippines, Great Barrier Reef of Australia, and Marshall Islands.

25. *Periclimenes ensifrons* (Dana)

Anchistia ensifrons Dana, 1852a: 25; 1855, pl. 38: Fig. 1a-g. *Periclimenes ensifrons* Bruce, 1971b: 5; 1984: 145.

Material examined 2 ♂ 1 ovig. ♀ (58C-530F), Jinqing Is., in coral reef stones, 24 IV 1958.

General distribution Red Sea, Comoro Islands and Aldabra, Western Indian Ocean; off northern Burma; Marshall Islands.

26. *Periclimenes grandis* (Stimpson)

Anchistia grandis Stimpson, 1860: 39. *Periclimenes (Ancylocaris) grandis* Kemp, 1922: 210, figs. 58, 59, pl. 7; Fig. 10. *Periclimenes grandis* Bruce, 1975: 23, Fig. 1; 1976b: 6, Fig. 2.

Material examined (1) 22 ♂ 11 ovig. ♀ (57-K210A), in coral reef stones, Dazhou Is., 12 VI 1957. (2) 5 ♂ 4 ovig. ♀ 2 juv. (57-P099A), in corals, Shi Is., 13-15 V 1957. (3) 1 ♂ (58C-416B), Dengqing Is., 11-12 IV 1958. (4) 1 ovig. ♀ (75-K054), in branch corals, Luhuitou, Sanya, Hainan Is., 13 VI 1975. (5) 50 ♂ 50 ovig. ♀ 100 juv. (75-K072C), in algae, Dadonghai, Yulin, Hainan Is., 17 IV 1975. (6) 10 ♂ 5 ovig. ♀ 22 juv. (75-K125A), in algae, Dadonghai, Yulin, Hainan Is., 21 IV 1975. (7) 4 specimens (75-X255C), in coral stone hole, Yongxing Is., 5 IV 1975. (8) 1 specimen (80X-182C), Dong Is., 28-31 V 1980. (9) 3 ovig. ♀ (80X-224C), Yongxing Is., 11-13 VI 1980. (10) 1 ovig. ♀ (81X-C-118A), Yongxing Is., 31 V-1 VI 1981.

Distribution in China Hainan Island. Recorded here for the first time from the Xisha Islands.

General distribution Red Sea to Mozambique, eastward to Ryukyu Islands, Kyushu, Indonesia, Great Barrier Reef of Australia, Marshall Islands, Tuvalu.

27. *Periclimenes inornatus* Kemp (Fig. 11)

Periclimenes (Ancylocaris) inornatus Kemp, 1922: 191, figs. 43-46. *Periclimenes* aff. *inornatus* Fransen, 1989: 136, Fig. 2. *Periclimenes inornatus* Chace and Bruce, 1993: 543.

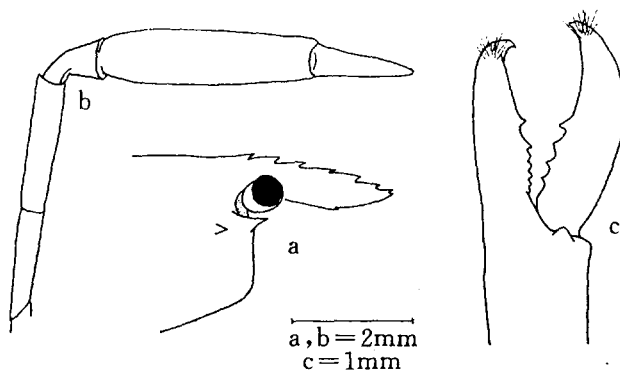


Fig. 11 *Periclimenes inornatus* Kemp (ovig. ♀)

a. anterior carapace with eye, lateral view; b. second pereopod; c. same, chela.

Scale = 2mm (a, b); 1mm (c)

Material examined (1) 1 ♂ (57-P072), Bei Is., with starfish *Calcita novaeguineae*, 26 IV 1957. (2) 1 ♂ 2 ovig. ♂ 2 juv. (57-P099D), Shi Is., with sea anemones, 13 V 1957. (3) 2 ovig. ♀ (58C-113), Yongxing Is., with sea anemones, 4 IV 1958. (4) 1 ♂ 1 ovig. ♂ (58C-211), Bei Is., with sea anemones, 27 IV 1958. (5) 9 juv. (58C-266), Zhaoshu Is., with sea urchin *Tripneustes gratilla*, 2 V 1958. (6) 2 ♂ 4 ovig. ♀ (58C-404), Zhongjian Is., with sea anemones, 11 IV 1958.

Association With echinoderms *Calcita*, *Tripneustes* and sea anemones.

General distribution Kenya, Zanzibar, Seychelles, Comoro, Maldive and Andaman islands, Pyukyu Islands, Indonesia, South China Sea, Great Barrier Reef, Fiji and Caroline islands.

Remarks The specimens agree closely with the previous descriptions. Rostrum with 7 dorsal teeth, the foremost placed close to apex and often giving it a bifid appearance, carapace not swollen dorsally and hepatic spine situated nearly on a level with antennal spine (Fig. 11a); dactylus of second pereopod not more than half as long as palm, fingers with many small teeth on proximal half of the opposite margin (Fig. 11b, c); dorsal spines of telson large, anterior pair situated in proximal half of its length, can separate this species from most allied species in the genus. Maximum postorbital carapace length is 4.5mm. Recorded here for the first time from Chinese waters.

28. *Periclimenes lutescens* (Dana)

Harpilius lutescens Dana, 1852a:25; 1852b:576; 1855:12. pl. 37:Fig. 4. Kemp, 1922: 235, figs. 72,73. *Periclimenes (Ancyllocaris) amamiensis* Kubo, 1940b: 44, figs. 11, 12. *Periclimenes (Harpilius) lutescens* Holthuis, 1952b:88, Fig. 35. *Periclimenes lutescens* Bruce, 1972: 411, Fig. 1A; 1975:27, Fig. 15. Chace and Bruce, 1993: 117.

Material examined (1) 1 ovig. ♀ (58C-090), Yongxing Is., 31 III 1958. (2) 1 ovig. ♂ (58C-110), Yongxing Is., within corals, 2 N 1958. (3) 1 ovig. ♀ (58C-190), Yongxing Is., within corals, 19 N 1958. (4) 1 ♂ 1 ovig. ♀ (80X-124E), Jinqing Is., 19 V 1980.

Association With branching corals of genera *Acropora* and, less commonly, *Seriatopora*.

Distribution in China Nansha Islands. Recorded here for the first time from the Xisha Islands.

General distribution Red Sea and Eastern Africa eastward to Japan, Indonesia, and Great Barrier Reef of Australia, at least to Solomon and Samoa islands, and perhaps eastward to limits of range of *Acropora*.

29. *Periclimenes soror* Nobili

Periclimenes soror Nobili, 1904:232. Gordon, 1939:395, figs. 1--3. Bruce, 1978:299, figs. 1--6. *Periclimenes (Periclimenes) soror* Holthuis, 1952b:51, Fig. 17.

Material examined 1 ♂ (58C-343), Shi Is., 19 V 1958.

Association With asteroids.

Distribution in China Hong Kong, Hainan Island. Recorded here for the first time from the Xisha Islands.

General distribution Red Sea to Japan, Philippines, Indonesia, Australia, eastward to Hawaii, Society and Tuamotu islands, and to Golfo de Panama on the American coast.

30. *Periclimenes spiniferus* De Man

Periclimenes petithoursii var. *spiniferus* De Man, 1902:824. *Periclimenes (Falciger) spiniferus* Borradaile, 1917: 324, 369, pl. 52. *Periclimenes (Harpilius) spiniferus* Holthuis, 1952b: 76, Fig. 30. *Periclimenes spiniferus* Bruce, 1976a: 95, figs. 5, 6.

Material examined (1) 6 ovig. ♀ (57-P034A), Yongxing Is., 13 N 1957. (2) 2 ♂ (57-P099B), Shi Is., within corals, 13 V 1957. (3) 2 ♂ (58C-003), Yongxing Is., 20 III 1958. (4) 1 ♂ 1 ovig. ♀ (58C-088A), Yongxing Is., within coral reef stones, 31 III 1958. (5) 1 ♂ 1 ovig. ♀ (58C-194), Zhongjian Is., 7 N 1958. (6) 1 ♂ 2 ovig. ♀ (58C-223), Bei Is., within coral reef stones, 27 N 1958. (7) 1 ♂ 1 juv. (58C-530C), Jinqing Is., within coral reef stones, 24 N 1958. (8) 2 ♂ (58C-542), Jinqing Is., on sea algae, 25 V 1958. (9) 4 ♂ 3 ovig. ♀ (75-X022A), Shi Is., within coral reef stones, 8 V 1975. (10) 2 ♂ 1 ovig. ♀ (75-X063A), Zhongjian Is., within coral reef stones, 12 V 1975. (11) 1 ovig. ♀ (75-X083A), Zhongjian Is., within coral reef stones, 13 V 1975. (12) 6 ♂ (75-X155A), Chenhang Is., within coral reef stones, 22 V 1975. (13) 5 ♂ 8 ovig. ♀ 1 juv. (75-X174C), Jinyin Is., within coral reef stones, 24 V 1975. (14) 3 ♂ 1 ovig. ♀ (75-X255E), Yongxing Is., within coral reef stones, 5 N 1975. (15) 5 ♂ (75-X272A), Yongxing

Is., within algae, 7 W 1975. (16) 4 ♂ 1 ovig. ♀ (75-X308A), Dong Is., within coral reef stones, 8 W 1975. (17) 1 ♂ (80X-002B), Zhaoshu Is., 7 V 1980. (18) 4 ♂ 5 ovig. ♀ 2 juv. (80X-040A), Yongxing Is., 9 V 1980. (19) 11 ♂ 2 ovig. ♀ (80X-073A), Jinyin Is., 14 V 1980. (20) 10 ♂ 11 ovig. ♀ (80X-124), Jinyin Is., 19 V 1980. (21) 35 ♂ 32 ovig. ♀ 15 juv. (80X-146A), Shanhu Is., 20 V 1980. (22) 5 ♂ 3 ovig. ♀ 7 juv. (80X-182A), Dong Is., 28 V 1980. (23) 1 ♂ 3 ovig. ♀ (80X-197C), Dong Is., 3 W 1980. (24) 61 juv. (80X-224A), Yongxing Is., 11 W 1980. (25) 1 ovig. ♀ (81X-C-3), Chenhang Is., 10 V 1981. (26) 1 ♂ (81X-C-6), southern part of Chenhang Is., 16 V 1981. (27) 7 ♂ 7 ovig. ♀ (81X-C-52), Jinqing Is., 19 V 1981. (28) 3 ovig. ♀ (81X-C-88), Guangjin Is., 23 V 1981. (29) 5 ♂ 8 ovig. ♀ (75-K054A), Luhuitou, Sanya, Hainan Island, among branching corals, 13 IV 1975.

Association Free-living, frequently sheltering in coral colonies.

Distribution in China Hainan Island, Nansha Islands.

General distribution Probably the commonest and most widely distributed pontoninid shrimp in the Indo-West Pacific region, absent only from the north Western part of the Indian Ocean and the Red Sea.

Remarks See remarks on *Palaemonella tenuipes* Dana. This is the most abundant pontoninid species in Xisha Island; it was found from 12 of 17 investigated islands or reefs or banks. The chela of first pereopods scoop-like. The carpus of second pereopods is very short, about half length of the palm; according to Bruce (1971a), this species must be a distinct commensal.

31. *Periclimenes toloensis* Bruce

Periclimenes toloensis Bruce, 1969: 275; 1982: 258, figs. 15—18. Chace and Bruce, 1993: 124, Fig. 23.

Material examined 1 ♂ (10-24), St. 6222, Beibu Bay (Gulf of Tonkin), by Agassize Trawl, 23m, muddy sand, 26 I 1959.

Association With hydroids.

Distribution in China Hong Kong, Hainan Island. Recorded here for the first time from the Xisha Islands.

General distribution Tanzania, Philippines, Northern Territory and Great Barrier Reef of Australia.

32. * *Stegopontonia commensalis* Nobili (Fig. 12) *Stegopontonia commensalis* Nobili, 1906: 258. Kemp

Material examined (1) 5 ♂ 3 ovig. ♀ (58C-001), Yongxing Is., with echinoid *Echinothrix calamaris*, 20 I 1958. (2) 2 ♂ (58C-544), Jinqing Is., with sea urchin, 25 IV 1958.

Association With echinoid *Echinothrix*.

General distribution Kenya and Zanzibar to Tuamotu Archipelago.

Remarks The specimens agree closely with the previous descriptions. This is the sole species of the genus, known as a commensal of echinoid *Echinothrix*, found on the long spines of the host. Recorded here for the first time from Chinese waters. The body of the species is greatly elongated, the rostrum depressed, toothless, concave above, formed a cover at the base for the eye, the only spine on the carapace is the antennal spine (Fig. 12a, b); the telson greatly elongated, with two very small pairs of dorsal spines, posterior margin armed with three pairs of spines, the lateral pair very small, as the dorsal spines in size, the submedian pair robust and longest (Fig. 12c); the first pereopod with the fingers robust and depressed (Fig. 12d); the second pereopods very unequal, the movable and fixed fingers of the larger one with 3 teeth on their opposite margin respectively, palm 2 times as long as fingers, carpus shorter than 1/4 length of the palm (Fig. 12e); the dactylus of the third pereopod compressed with protuberance, the unguis distinct and hook-like, the apical part of the propodus with long hairs (Fig.

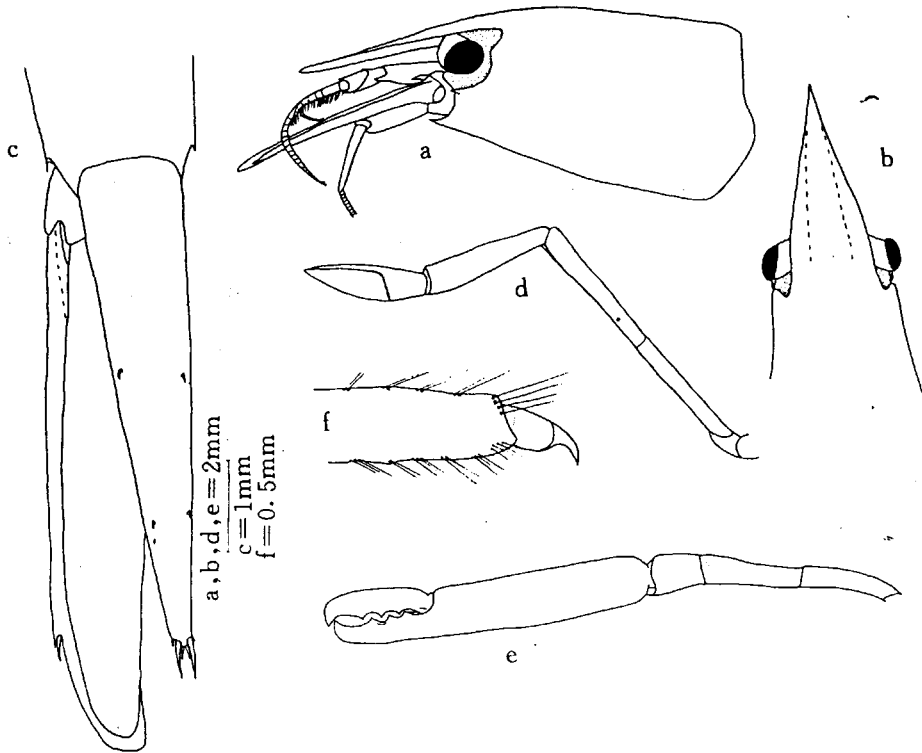


Fig. 12 *Stegopontonia commensalis* Nobili, 58C-001 (ovig. ♀)

a. carapace with eye and anterior appendages, lateral view; b. rostrum with eye, dorsal view; c. telson and left uropod; d. first pereopod; e. larger second pereopod; f. dactylus and apical part of third pereopod. Scale = 2mm (a, b, d, e); 1mm (c); 0.5mm (f)

12f); uropod overreaching extended telson, with lateral branch bearing a fixed and a long movable lateral teeth (Fig. 12c). The female is much larger than the male. Maximum postorbital carapace length about 6mm in female and 3.6mm in male.

SUMMARY

Three species of Gnathophyllidae and twenty-nine species of Pontoniinae are reported in the present paper. All the gnathophyllid species are new records from Chinese waters. Then of pontoniinid species, i. e., *Conchodytes meleagrinae* Peters, *Dasycaris symbiotes* Kemp, *Eupontonia noctalbata* Bruce, *Harpiliopsis depressa* (Stimpson), *Onycocaridites anomodactylus* Bruce, *Periclimenaeus rhodope* (Nobili), *Periclimenaeus tridentatus* (Miers), *Periclimenes ensifrons* (Dana), *Periclimenes inornatus* Kemp, *Stegopontonia commensalis* Nobili, are new records from Chinese waters, and, except for *Anchistus custos* (Forskal) from Hainan Island, *Dasycaris symbiotes* Kemp and *Periclimenes toloensis* Bruce from Beibu Bay (Gulf of Tokin), the other 26 pontoniinid species are new to the Xisha Islands.

According to Yu (1936), Bruce (1982, 1986), Li (1995), Li and Liu (in press), and the results of this paper, 63 species of pontoniinid shrimps exist in Chinese waters; all in the South China Sea (Table 1). As shown in Table 1, there are 23 pontoniinid species in Hong Kong wa-

ters, 30 in Hainan Island, 15 in the Nansha Islands and 28 in the Xisha Islands (including Beibu Bay). We can find there are 12, 6, and 8 common species in the Xisha Islands and Hainan, Hong Kong and Nansha Island respectively. Seven of the 30 Hainan Island species are similar to those in Hong Kong, the other 7 similar to that in the Nansha Islands, it is interesting that no common species have been found from Hong Kong waters and the Nansha Islands. Among these four areas, the Xisha Islands and Hainan Island have the most number of common species. *Coralliocaris graminea*, *Periclimenes brevicarpalis*, *P. elegans*, *P. soror* are common for the Xisha Islands, Hainan Island and Hong Kong; *Coralliocaris superba*, *Jocaste japonica*, *Palaemonella rotumana*, *Periclimenes spiniferus* are common for the Xisha Islands, Hainan Island and Nansha Islands. There is no species common to the Xisha Islands, Nansha Islands, Hainan Islands and Hong Kong all together. The differences of the pontoniid fauna among these four areas are distinct, although the areas are not far apart.

As shown in Table 1, most of the pontoniid shrimp species found in the South China Sea are widely distributed in the Indo-West Pacific Region, only 2 are known only from Chinese waters (*Epi pontonia hainanensis* Li et Liu, in press, from Hainan Island; and *Periclimenes hongkongensis* Bruce, 1982, from Hong Kong). Forty-six species of the 63 Chinese pontoniid species occur also in the Philippine-Indonesian region; 46 species occur also in the Indian Ocean, 1 even in the Eastern Mediterranean; 46 species are also found in Australian waters and 42 in the Southern Pacific islands, 4 extending to Central Pacific Ocean (Hawaii) or Central American coast (Panama). There is no species common to the Atlantic Ocean. This means the pontoniid shrimps of the South China Sea belong to the Indo-Pacific pontoniid fauna.

The pontoniid shrimp fauna of Singapore, although a restricted spectrum, described by Johnson (1961, 1967) and with additions by Bruce (1979), comprises 28 species, 23 species are found in Hong Kong, also a small area. There are also distinct differences among the pontoniid fauna of Hong Kong, Hainan Island, Xisha Islands and Nansha Islands, where only 15 species were found. Many common Indo-West Pacific shrimp species, such as *Periclimenes psamathe*, are not found in Chinese waters. The above mentioned findings indicated that the Chinese pontoniid fauna is still very inadequately known. There is no doubt that not only the depth of diving (Hainan 0—11 meters, Nansha 0—3 meters), but also the operating range or the number of collecting stations were very limited. The collection and study of Pontoniinae from the South China Sea, even the caridean shrimps, is only starting in China. The materials obtained were mainly by breaking the living or dead scleractinian corals and sometimes the bivalves, there have been poorly mentioning the associates of sponges, echinoderms and tunicates, also the gorgonians and antipatharians can be expected to provided more species, as can the actinians. Further collections and studies in the South China Sea and other areas of Chinese waters can be expected to add many more species.

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Table 1 Geographical distribution of Pontoninae shrimps
in the South China Sea

	Xisha Is.	Hainan Is.	Hong Kong	Nansha Is.	Singapore	Philippine -Indonesia	Indian O.	Australia waters	S. Pacific	C. Pacific
<i>Anchistus custos</i>		+	+		+	+	+	+	+	
<i>A. demani</i>				+	+	+	+	+	+	
<i>A. miersi</i>	+			+	+	+	+	+	+	
<i>Conchodytes kempi</i>		+				+	+		+	
<i>C. meleagrinae</i>	+				+	+	+	+	+	+
<i>C. monodactylus</i>			+		+	+		+		
<i>C. nipponensis</i>		+				+		+		
<i>C. tridacnae</i>	+			+	+	+	+	+	+	+
<i>Coralliocaris brevirostris</i>		+							+	
<i>C. graminea</i>	+	+	+		+	+	+	+	+	
<i>C. superba</i>	+	+		+		+	+	+	+	
<i>C. venusta</i>		+				+	+	+	+	
<i>Dasycaris symbiotes</i>	+						+		+	
<i>Epipontonia hainanensis</i>		+								
<i>Eupontonia noctalbata</i>	+						+			
<i>Hamodactylus boschmai</i>			+			+	+		+	
<i>Hamopontonia corallicola</i>			+			+		+		
<i>Harpiliopsis beaupresii</i>	+	+			+	+	+	+	+	
<i>H. depressa</i>	+					+	+	+	+	
<i>Ischnopontonia lophos</i>		+			+	+	+	+	+	

(Continued Table)

	Xisha Is.	Hainan Is.	Hong Kong	Nansha Is.	Singapore	Philippine -Indonesia	Indian O.	Australia waters	S. Pacific	C. Pacific
<i>Jocaste japonica</i>	+	+		+		+	+		+	
<i>J. lucina</i>	+	+				+	+	+	+	
<i>Onycocaridites</i>										
<i>amonodactylus</i>	+							+		
<i>Onycocaris</i>										
<i> aualitica</i>			+				+			
<i>O. oligodentata</i>	+		+					+		
<i>Palaemonella</i>										
<i> pottsii</i>		+			+	+	+	+	+	
<i>P. rotumana</i>	+	+		+	+	+	+	+	+	+
<i>P. tenuipes</i>	+			+		+	+	+	+	
<i>Periclimenaeus</i>										
<i> arabicus</i>		+	+				+	+	+	
<i>P. hecate</i>		+		+		+	+	+		
<i>P. rastrifer</i>			+					+	+	
<i>P. rhodope</i>	+					+	+			
<i>P. tridentatus</i>	+				+	+		+		
<i>Periclimenes</i>										
<i> affinis</i>		+				+		+	+	
<i>P. anymone</i>		+		+	+	+		+	+	
<i>P. andamanensis</i>	+	+		+		+	+	+		
<i>P. brevicarpalis</i>	+	+	+		+		+	+	+	
<i>P. commensalis</i>			+			+	+	+	+	
<i>P. consobrinus</i>		+				+	+	+	+	
<i>P. cristimanus</i>			+		+	+		+	+	
<i>P. demani</i>			+			+	+			
<i>P. digitalis</i>			+		+	+				
<i>P. diversipes</i>		+			+	+	+	+	+	

(Continued Table)

	Xisha Is.	Hainan Is.	Hong Kong	Nansha Is.	Singapore	Philippine -Indonesia	Indian O.	Australia waters	S. Pacific	C. Pacific
<i>P. elegans</i>	+	+	+		+	+	+	+	+	
<i>P. ensifrons</i>	+						+		+	
<i>P. grandis</i>	+	+			+	+	+	+	+	
<i>P. holthuisi</i>		+	+			+	+	+	+	
<i>P. hongkongensis</i>			+							
<i>P. imperator</i>		+					+			
<i>P. inornatus</i>	+						+	+	+	
<i>P. lutescens</i>	+			+	+	+	+	+	+	
<i>P. ornatus</i>			+			+	+	+	+	
<i>P. perturbans</i>			+				+			
<i>P. sinensis</i>			+			+				
<i>P. soror</i>	+	+	+			+	+	+	+	+
<i>P. spiniferus</i>	+	+		+	+	+	+	+	+	
<i>P. tenuipes</i>		+				+	+	+	+	
<i>P. toloensis</i>	+	+	+			+	+	+		
<i>Periclimenoides</i>										
<i>odontodactylus</i>			+			+		+		
<i>Philarius</i>										
<i>gerlachei</i>				+		+	+	+	+	
<i>P. imperialis</i>				+	+	+	+	+	+	
<i>Pontonides</i> sp.			+				+	+	+	
<i>Stegopontonia</i>										
<i>commensalis</i>	+								+	
Total	28	30	23	15	22	46	46	46	42	4

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西沙群岛及邻近海域叶颚虾科和长臂虾科隐虾亚科

(十足目,长臂虾总科)种类记述*

李新正

(中国科学院海洋研究所)

摘 要

中国科学院海洋研究所从1957年至1981年先后数次对西沙群岛部分岛礁及邻近海域进行了科学考察,采集到了大量真虾类标本。本文报道了从其中5次考察所获标本中分离鉴定出的长臂虾总科计32种,其中叶颚虾科3种、长臂虾科隐虾亚科29种。叶颚虾科3种均为中国新记录,即小拟叶颚虾(*Gnathophylloides mineri* Schmitt)、美洲叶颚虾(*Gnathophyllum americanum* Guerin-Meneville)、海胆光滑虾[*Levicaris mammillata* (Edmondson)]; 隐虾亚科中的10种也为中国新记录,即斑点江瑶虾(*Conchodytes meleagri-nae* Peters)、共生尖腹虾(*Dasycaris symbiotes* Kemp)、夜真隐虾(*Eupontonia noctalbata* Bruce)、平扁拟滨虾[*Harpiliopsis depressa* (Stimpson)]、异指近双爪虾(*Onycocaridites anomodactylus* Bruce)、壮螯小岩虾[*Periclimenaeus rhodope* (Nobili)]、三齿小岩虾[*Periclimenaeus tridentatus* (Miers)]、刀额岩虾[*Periclimenes ensifrons* (Dana)]、无刺岩虾(*Periclimenes inornatus* Kemp)、共栖盖隐虾(*Stegopontonia commensalis* Nobili)。除葫芦贝隐虾[*Anchistus custos* (Forsk.)]采于海南岛、共生尖腹虾和托罗岩虾(*Periclimenes toloensis* Bruce)采于北部湾外,其余的26种隐虾均为西沙群岛的首次报道。

据喻兆琦、Bruce、Li and Liu 以及本文的报道,中国海域共已发现63种隐虾亚科和3种叶颚虾科虾类,并均在南海发现,中国其它海域尚无隐虾亚科和叶颚虾科的报道。隐虾类在香港发现23种,海南岛30种,南沙群岛15种,西沙群岛28种(包括北部湾2种)。比较发现,西沙群岛与海南岛、香港、南沙群岛分别有12、6、8个共有种;海南岛与香港、南沙群岛各有7个共有种,而香港与南沙群岛尚未发现共有种。新加坡如此小的水域即已发现28种隐虾类,相比之下,对南海的隐虾类采集和研究还远远不够,特别是采集。还相当肤浅,目前在西沙群岛和南沙群岛发现的隐虾类基本采于珊瑚礁1—3米的浅水,而且未涉及许多共栖宿主。通过加强采集的深度和广度,相信在南海会有更多的隐虾类发现,特别是南沙群岛,预计至少有30种。东海和黄海南部也将会发现较多的隐虾类,对中国的隐虾类还需要做进一步的调查采集(特别是潜水和拖网采集)和研究。

西沙群岛、海南岛、香港、南沙群岛的63种隐虾类中,大部分是印度-太平洋水域广布种,只发现2种为中国海域特有分布,即香港岩虾(*Periclimenes hongkongensis* Bruce)和海南外隐虾(*Epipontonia hainanensis* Li et Liu),与菲律宾-印度尼西亚、澳大利亚水域、印

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度洋各有 46 个共有种, 42 种在南太平洋也有记录, 其中 4 种可分布到夏威夷或太平洋东岸; 而与大西洋则无共有种。可认为中国的隐虾类属于典型的印度-太平洋区系。