

**SHRIMPS FROM FLAT-TOP BANK, TIMOR SEA  
(CRUSTACEA: DECAPODA: CARIDEA)**

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**ABSTRACT.** - A collection of 23 species of caridean shrimp from Flat Top Bank, Timor Sea, 12°35'S, 129°35'E, from a depth of about 30 m, is recorded. One new species, *Philocheras planoculminis* (Crangonidae), is described, and three species are newly reported from Australian waters: *Urocaridella urocaridella* (Palaemonidae), *Alpheus leptochirus* (Alpheidae) and *Philocheras lowisi* (Crangonidae). Five species are reported for the first time from the southeast Indian Ocean.

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**INTRODUCTION**

A survey of the marine fauna of Cartier and Hibernia Reefs in the western Timor Sea was recently carried out by some of the staff of the Division of Natural Sciences of the Northern Territory Museum for the Australian National Parks and Wildlife Service. On the return passage from this expedition the opportunity was taken to collect a sample of the benthic fauna of an isolated bank by means of a fine meshed mini-trawl, of about 0.6m span. Five samples were collected by short hauls at a depth of about 30 m on 17 May 1992, principally by my colleagues Dr B.C. Russell, Dr J.R. Hanley, and John Short, of the Queensland Museum. The catches included large quantities of sponges and numerous gorgonians and crinoids, and other potential hosts for commensal shrimps, but any associations were lost in the general catch. The position of Flat Top Bank is approximately 12°35'S; 129°35'E, about 130 km due west of Darwin. Over 20 species of caridean shrimp were collected, including specimens of a new species of *Philocheras* and three species new to the Australian fauna.

Restricted synonymies only are provided. Full synonymies are available for most species in Holthuis (1947, 1952) and Banner & Banner (1975, 1981). The specimens are deposited in the collections of the Northern Territory Museum (NTM), Darwin, and the Queensland Museum (QM), Brisbane.

SYSTEMATIC ACCOUNT

FAMILY PASIPHAEIDAE

*Leptochela irrobusta* Chace

*Leptochela robusta* Balss, 1921: 7.

*Leptochela (Leptochela) irrobusta* Chace, 1976: 19-23, figs 14-18.

**Material examined.** - 1 male, 1 female, 1 juv. (NTM Cr. 010918)

**Remarks.** - The species was first reported from Cape Jaubert, Western Australia, under the name of *L. robusta* by Balss (1921). There have been no subsequent Australian records. The specimens agree well with Chace's description of *L. irrobusta*. The juvenile specimen has the two minute submedian spinules on the posterior margin of the telson, that are lacking in the adults. The fourth and fifth pleura are armed with one and two well developed ventral marginal teeth.

**Distribution.** - Type locality: Bikini Atoll, Marshall Islands. Also known from the Red Sea, Persian Gulf, Maldives, Laccadive, Andaman and Nicobar Islands, Indonesia, Philippines, Western Australia, Marshall and Samoan Islands.

*Leptochela sydniensis* Dakin & Colefax

*Leptochela sydniensis* Dakin & Colefax, 1940: 153, figs 245-246. - Chace, 1976: 40-44, figs 32-34.  
- Bruce, 1988: 277.

**Material examined.** - 2 females (NTM Cr. 010919)

**Remarks.** - This species has been extensively recorded from southern Australia, but the present specimens appear to be only the second record from tropical Australian waters. These specimens agree well with the data provided by Chace (1976). The larger female shows distinct longitudinal carinae on the carapace that are lacking in the smaller specimen. Previously reported from Darwin Harbour (Bruce, 1988).

**Distribution.** - Type locality: off Sydney, New South Wales. Also recorded from New South Wales, Victoria, Tasmania, South Australia and the Great Australian Bight, and the Northern Territory. Also known from the Arabian Sea, Bay of Bengal, South China Sea, Yellow Sea and Japan.

FAMILY PALAEMONIDAE

*Urocaridella urocaridella* (Holthuis)

*Urocaridella gracilis* Borradaile, 1915: 210; 1917: 352, pl. 53 fig. 2.

*Leander urocaridella* Holthuis, 1950: 28-31.

*Urocaridella urocaridella* - Chace & Bruce, 1993: 42-43, fig. 16

**Material examined.** - 3 specimens (NTM Cr.009253).

**Remarks.** - The specimens agree well with previous descriptions. This species has not been previously recorded from Australian seas. Previously reported from depths down to 130 m.

**Distribution.** - Type locality: Maldive Islands. Also known from Orissa, India; Andaman Islands; Mergui Islands; Malaysia; Singapore; Sumbawa, east Java and Sulawesi, Indonesia; New Caledonia.

*Palaemonella pottsi* (Borradaile)

*Palaemonella tenuipes* Zehntner, 1894: 208.

*Periclimenes (Falciger) pottsi* Borradaile, 1915: 212.

*Palaemonella pottsi* - Kemp, 1922: 126-127.

**Material examined.** - 1 specimen (NTM Cr.009249).

**Remarks.** - The specimen was dissociated from its host, but numerous crinoids were present in the catch. The specimen presents no special features. The colouration of the recently preserved specimen was a deep orange-red.

Specimens of *P. pottsi* are commonly of a deep blue-black colouration in life, depending upon the colour of their host crinoid. The specimen of *Palaemonella tenuipes* reported from Ambon by Zehntner (1894) is therefore probably a specimen of *P. pottsi*. Zehntner noted that his specimen from Ambon was entirely black (Kemp, 1922). *Palaemonella tenuipes* has not had its colouration described in detail, but specimens collected by the author have been semitransparent, without conspicuous colouration. The specimen described by Zehntner cannot at the moment be located in the collections of the Zoological Museum, Geneva (B. Hauser, *in litt.*)

**Distribution.** - Type locality: Mabuaig and Murray Island, Torres Strait. Also recorded widely from Zanzibar to the Marshall Islands, including Singapore, Indonesia, New Caledonia, Philippines, Ryukyu Islands and Japan. Previously reported in Australia from Darwin, Northern Territory, and from Heron and One Tree Islands, Capricorn Islands, Queensland.

*Palaemonella rotumana* (Borradaile)

*Periclimenes rotumanus* Borradaile, 1898: 383.

*Palaemonella vestigialis* Kemp, 1922: 123-126, figs 1-2, pl. 3 fig. 2.

*Palaemonella rotumana* - Bruce, 1970a: 276-279, pl. 1 e-f.

**Material examined.** - 3 specimens (NTM Cr.009247)

**Remarks.** - One of the commonest palaemonid shrimps in the Indo-West Pacific region, the present specimens present no special features. This species has been reported from depths of over 100 m.

**Distribution.** - Type locality: Rotuma Island, Fijian Islands. Common throughout the Indo-West Pacific region from the Red Sea and East Africa to Japan and the Marshall Islands. Also now known from the eastern Mediterranean Sea, after migration through the Suez Canal.

Reported in Australian waters from Darwin Harbour, Northern Territory, and the Low Isles, Herald Islands, One Tree Island, Heron Island, and Moreton Bay, Queensland.

***Periclimenes incertus* Borradaile**

*Periclimenes* (*Cristiger*) *incertus* Borradaile, 1915: 210; 1917: 364, pl. 53 fig. 7.

*Periclimenes* (*Periclimenes*) *impar* Kemp, 1922: 147-149, figs 16-17, pl. 3 fig. 1. - Holthuis, 1959: 193-194.

**Material examined.** - 2 specimens (NTM Cr.009255).

**Remarks.** - Previously recorded as *Palaemonella biunguiculatus* from Western Australia, at North West Cape, by Balss (1921).

**Distribution.** - Type locality: South Nilandu Atoll, Maldive Islands. Also known in Australia from Darwin, Northern Territory, and Heron Island, Queensland. Otherwise known from Aden, Kenya, Tanganika, Zanzibar, Madagascar, Maldive Islands, Andaman Islands, Sri Lanka, Singapore, Indonesia, Philippines and New Caledonia.

***Periclimenes obscurus* Kemp**

*Periclimenes* (*Periclimenes*) *obscurus* Kemp, 1922: 144-146, figs 14-15.

**Material examined.** - 3 specimens (2 ovig. females) (NTM Cr.009256).

**Remarks.** - A relatively uncommon species, sparsely recorded outside the western Indian Ocean, usually found in association with sponges.

**Distribution.** - Type localities: Madras Harbour and Ennur Backwaters, India. Also known from Kuwait, Kenya, Zanzibar, Tanganyika and Madagascar. In Australia, reported from East Point, Darwin, Northern Territory, and Moreton Bay, Queensland.

***Periclimenes psamathe* (De Man)**

*Urocaris psamathe* De Man, 1902: 816-822, pl. 25 fig. 51.

*Periclimenes* (*Ancylocaris*) *psamathe* - Kemp, 1922: 173.

*Periclimenes* (*Harpilius*) *psamathe* - Holthuis, 1952: 61, fig. 23.

**Material examined.** - 10 specimens (NTM Cr.009248).

**Remarks.** - An associate of gorgonians, of which many were collected, the specimens were not found in association with their hosts.

**Distribution.** - Type locality: Ternate, Halmahera, Indonesia. Reported also from Zanzibar, Kenya, Tanganyika, Madagascar, Maldive Islands, Chagos Islands, Singapore, Indonesia, Japan, Philippines, New Caledonia, Caroline Islands and Marshall Islands. Known in Australia only from Heron Island and Wistari Reef, Queensland.

*Hamodactylus boschmai* Holthuis

*Hamodactylus boschmai* Holthuis, 1952: 209-212, figs 102-104.

**Material examined.** - 2 specimens (NTM Cr.009251).

**Remarks.** - Also normally commensal with gorgonian hosts, but association not observed.

**Distribution.** - Type localities: Aru Islands and Ternate, Indonesia. Also known from Zanzibar, Kenya, Madagascar, Singapore, Hong Kong and New Caledonia. In Australia, known only from East Point, Darwin, Northern Territory, and Heron Island, Queensland.

*Hamodactylus noumeae* Bruce

*Hamodactylus noumeae* Bruce, 1970b: 539-561, fig. 2.

**Material examined.** - 1 female, (NTM Cr. 009252).

**Remarks.** - A commensal of gorgonians, but association not observed.

**Distribution.** - Type locality: Nouméa, New Caledonia. Also known from Zanzibar, Kenya, Tanganyika, Indonesia and the Ryukyu Islands. In Australia, reported only from Lizard Island and Heron Island, Queensland.

*Pontoniopsis comanthi* Borradaile

*Pontoniopsis comanthi* Borradaile, 1915: 213; 1917: 377, pl. 57 fig. 27. - Holthuis, 1952: 153-156, figs 70-71.

**Material examined.** - 1 specimen (NTM Cr.009243)

**Remarks.** - Normally associated with crinoid hosts, but association not observed.

**Distribution.** - Type locality: Mabuag, Torres Straits. Also known from the Red Sea, Zanzibar, Kenya, Indonesia, Philippines, Japan, Marshall Islands, Marianas Islands, Kiribati and Fiji. In Australia, also known only from Heron Island, Queensland.

FAMILY ALPHEIDAE

*Alpheus leptochirus* Coutière

*Alpheus leptochirus* Coutière, 1905: 914, fig. 54. - Chace, 1988: 33-34.

**Material examined.** - 1 ovig. female (NTM Cr.009254).

**Remarks.** - Not previously recorded from Australian waters. Using the key provided by Banner & Banner (1981), this species is closest to *A. leviusculus* Dana, from which it may

be separated, through the key of Chace (1988), by the major first pereopod chela being three or more times longer than wide, rather than 2.5 or less times, as in *A. leviusculus*.

**Distribution.** - Type localities: Maldive Islands. Also known from the Seychelles Islands, Réunion and possibly the Philippines. Records from the Marianas and Hawaii are considered by Chace (1988) to be in need of confirmation.

#### *Alpheus polyxo* De Man

*Alpheus polyxo* De Man, 1909: 108. - Banner & Banner, 1981: 274-276, fig. 84. - Chace, 1988: 48-49.

**Material examined.** - 1 male (NTM Cr.009242).

**Remarks.** - The single example presents no special features.

**Distribution.** - Type locality, Banda, Moluccas, Indonesia. Also known from Madagascar and the Philippines. In Australian waters known from Shark Bay to Bedout Island, Thursday Island, and from Cairns to Stradbroke Island.

#### *Synalpheus neomeris* (De Man)

*Alpheus neomeris* De Man, 1897: 734.

*Synalpheus neomeris* - Banner & Banner, 1975: 357, fig. 22. - Chace, 1988: 81-82.

**Material examined.** - 1 specimen (NTM Cr.009260).

**Remarks.** - Normally associated with alcyonarian hosts, the host of the present specimen was not noted.

**Distribution.** - Type locality: Mergui Islands, Myanmar. Also known extensively from the Red Sea, east Africa, Persian Gulf, Sri Lanka, Maldive and Laccadive Islands, Japan, Philippines, Singapore, Thailand and Indonesia. Known in Australia from Geraldton to Cape Caernavon, the Abrolhos Islands, Gulf of Carpentaria, Torres Straits, Princess Charlotte Bay to the Great Sandy Bay, and the Herald Islands. Also noted as abundant in alcyonarians in Darwin Harbour, Northern Territory (Bruce, 1988).

#### *Synalpheus quadriarticulatus* Banner & Banner

*Synalpheus quadriarticulatus* Banner & Banner, 1975: 297-300, fig 5. - Chace, 1988: 84.

**Material examined.** - 1 male, 1 ovig. female (NTM Cr.009258).

**Remarks.** - This species is one of the two known species of the genus *Synalpheus* to have the carpus of the second pereopods consisting of four, instead of five segments. The other species is *S. redactocarpus* Banner (1953), known only from Hawaii, and the condition in the type material of this species may have been due only to immaturity (Miya, 1972). The present specimens are clearly adult, and have carapace lengths of 3.2, 3.6 ms.

**Distribution.** - Type locality: between Hammond and Waiwea Islands, Torres Strait, Queensland, Australia. Also known from Thursday Island and from the Philippines. Not previously recorded from the Indian Ocean.

*Synalpheus stimpsonii* (De Man)

*Alpheus stimpsonii* De Man, 1888: 513, pl. 22 fig. 3.

*Synalpheus stimpsoni* - Banner & Banner, 1966: 46-48, fig. 12; 1975: 292-296, fig. 2m, 4.

*Synalpheus stimpsonii* - Chace, 1988:86.

**Material examined.** - 1 male (NTM Cr.009257).

**Remarks.** - Association with host animal not preserved. Although occasional associations with alcyonarians and dead coral heads have been reported (Banner & Banner, 1975), the author's experience confirms that this common species is an obligate crinoid associate and that other associations must have been due to the accidents of collection.

The single specimen collected shows the presence of an acute projection from the posterolateral lobe of the sixth abdominal segment, a feature suggested by Chace (1988) as having possible specific significance, in association with particularly long rostrum and orbital teeth.

**Distribution.** - Type locality: Ambon, Indonesia. Also known from east Africa and Madagascar to Japan, Marshall, Gilbert and Loyalty Islands. In Australia, found commonly round northern shores south to Sydney in the East and 37°S in the West.

FAMILY HIPPOLYTIDAE

*Gelastocaris paronae* (Nobili)

(Fig. 1)

*Latreutes Paronae* Nobili, 1905a: 2-3, fig. (p.2).

*Gelastocaris paronae* - Kemp, 1914: 107-114, pl. 5. - Monod, 1969: 212-216, figs 52-68.

**Material examined.** - 1 ovig. female, 2 juv. specimens (NTM Cr.009261).

**Remarks.** - A known associate of sponge hosts, the associations in the case of the present specimens were not recorded. In all specimens the rostrum has a well developed acute fixed preterminal tooth, as described by Barnard (1950) and Monod (1969), and not articulated, as indicated by Kemp (1914). The dorsal profile of the carapace is marked by a distinct blunt protuberance and notch, present in all specimens, but not noted in any previous report. The median apical process of the telson is also distinctly curved ventrally in all specimens, most markedly in the juveniles, and appears to function as a holdfast mechanism. The ambulatory dactyls have the lateral accessory spines poorly developed or absent, particularly in the juveniles; all teeth are unguiculate. The amount of morphological variation represented by the few available descriptions of this shrimp may indicate merely a very plastic species, as appears to be the case in some species of *Latreutes*, or that a complex of related species, possibly with different sponge host associations, may be represented.

**Distribution.** - Type locality: Zanzibar. Also known from Moçambique; Sri Lanka; Andaman Islands; Aru Islands and Roti Island, Indonesia, and New Caledonia. Recorded in Australia from Cape Jaubert, Western Australia; Darwin, Northern Territory; Heron Island, Queensland.

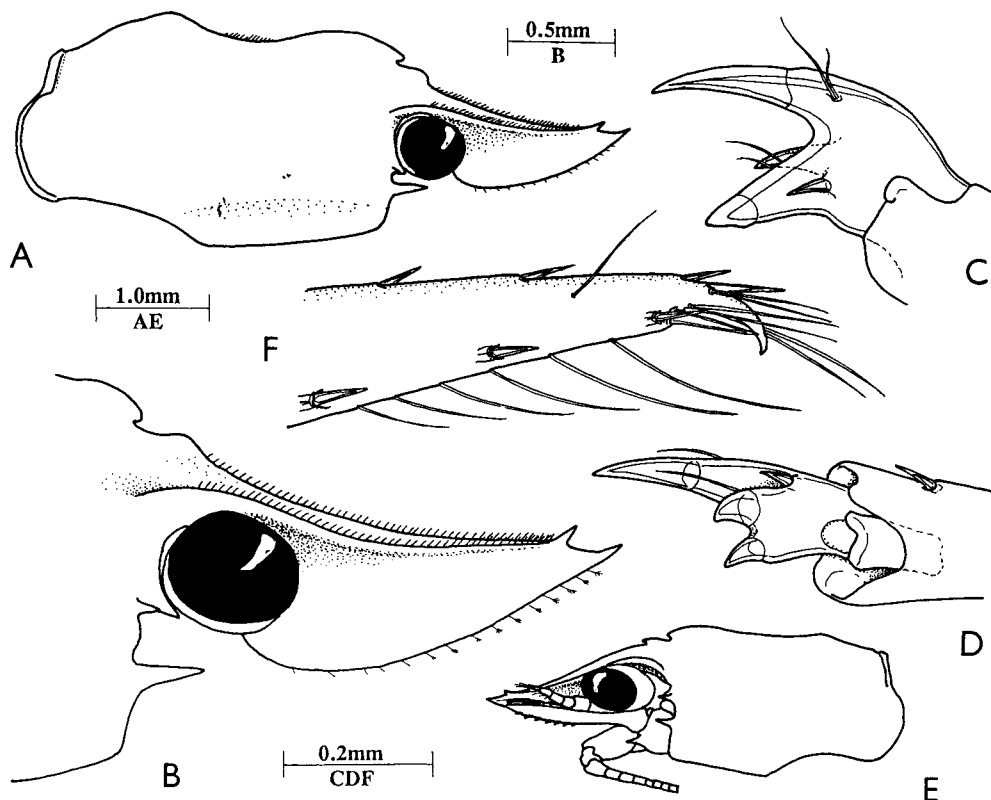


Fig. 1. *Gelastocaris paronae* (Nobili). A, carapace and rostrum. B, anterior carapace and rostrum. C, third pereiopod, lateral. D, same, ventral. E, carapace, rostrum, antennae. F, distal, telson, distolateral. A-D, ovigerous female. E, F, juvenile.

***Latreutes mucronatus* (Stimpson)**

*Rhynchocyclus mucronatus* Stimpson, 1860: 28.

*Latreutes mucronatus multidens* Nobili, 1905b: 395.

*Latreutes mucronatus* - Kemp, 1914: 101-104, pl. 3 figs B-15, pl. 4 figs 1-2.

**Material examined.** - 3 specimens (NTM Cr.009245).

**Remarks.** - *Latreutes mucronatus* is predominantly found in association with marine algae or sea grasses and is not known to be associated commensally with other marine invertebrates.

**Distribution.** - Type locality: Hong Kong. Recorded extensively from the Red Sea to Moçambique, to Japan, east to the Great Barrier Reef. In Australia, reported from Cape Jaubert, Western Australia, and from the Low Isles, Queensland.



FAMILY PANDALIDAE

*Chlorotocella gracilis* Balss

*Chlorotocella gracilis* Balss, 1914: 33, figs 16-22. - Chace, 1985: 11. - Hanamura & Takeda, 1987: 105-106, fig. 1a.

**Material examined.** - 6 specimens (NTM Cr.009246).

**Remarks.** - Numerous additional specimens were also present in the catch. The ecology of this species is uncertain. It appears to be nocturnally planktonic at times, but is commonly found on gorgonians at Heron Island, Queensland, often in association with *Periclimenes psamathe*. It has also been reported as an associate of scyphozoa (Hayashi & Miyake, 1968), but this association may have been accidental.

**Distribution.** - Type locality: Sagami Bay, Japan. Also known from the Andaman and Nicobar Islands, Singapore, Indonesia and the Philippines. In Australia, reported from the North West Shelf by Hanamura & Takeda (1987), at depths of 40-80 m.

*Plesionika pumila* Chace

*Plesionika pumila* Chace, 1985: 100-103, figs 45-46. - Hanamura & Takeda, 1987: 114-115, fig. 5.

**Material examined.** - 3 specimens (NTM Cr.009244).

**Remarks.** - The present specimens agree well with the previously published data and constitute only the third recorded occurrence of this species.

**Distribution.** - Type locality: western end of Basilan Strait, Sulu Archipelago, Philippines, at 46m. Only other recorded occurrence at 80 m, at 19°05'S 118°53'E, off Port Hedland, Western Australia.

FAMILY PROCESSIDAE

*Nikoides danae* Paulson

*Nikoides Danae* Paulson, 1875: 98, pl. 14 figs 5-5d.

*Nikoides danae* - MacNeill, 1968: 23. - Hayashi, 1975: 53-58, figs 1,2 a-t.

**Material examined.** - 2 specimens (NTM Cr.009259).

**Remarks.** - Hayashi (1975) reports that this species is a littoral form usually associated with coral reefs, but occurs to depths of 36m.

**Distribution.** - Type locality: Red Sea. Also known from Kenya, Zanzibar, north to Japan and east to Hawaii. Previously recorded in Australia only from the Low Isles, Queensland.

FAMILY CRANGONIDAE

*Philocheras lowisi* (Kemp)

(Fig. 2)

*Pontophilus lowisi* Kemp, 1916: 361-364, fig. 2, pl. 7 fig. 2.

**Material examined.** - 1 male (NTM Cr.009241).

**Remarks.** - The single example is slightly damaged with the carapace rather crushed, but the diagnostic features can be satisfactorily discerned and there is close agreement with Kemp's description. The specimen has a carapace length of 3.1 mm. The rostrum is broad, dorsally concave, with the anterolateral angles acute, the anterior margin convex, the lateral margins sparsely setose. The mid-dorsal carina described by Kemp is distinct, but shows a small subacute tubercle on the gastric region, almost invisible in dorsal view and not reported by that author. The scaphocerite shows the characteristic lateral denticulation, with the acute distal process diagnostic of male specimens. It may also be noted that much of the cuticle, particularly on the body and scaphocerite, is minutely reticulate, a feature that shows up quite well under high magnification, but was not noted by Kemp. This is only the second report of this very small shrimp and the first record of its occurrence in Australian waters.

**Distribution.** - Type locality: Port Blair, Andaman Islands. Elsewhere: now Australia.

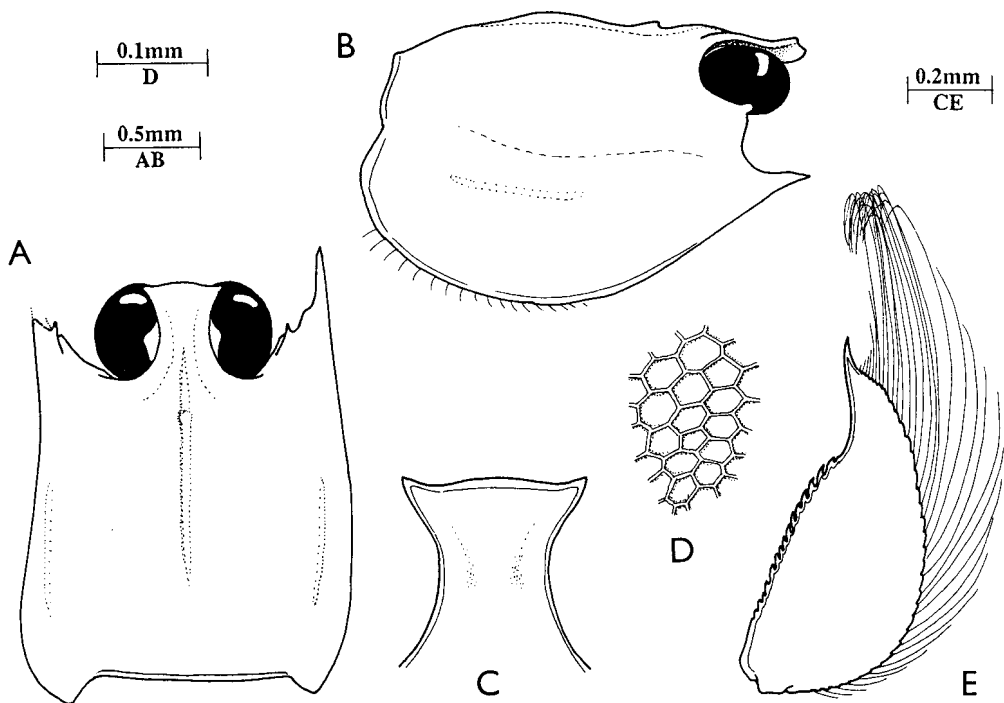


Fig. 2. *Philocheras lowisi* (Kemp). A, carapace and eyes, dorsal. B, same, lateral. C, rostrum. D, branchiostegal cuticle. E, scaphocerite.

*Philocheras planoculminis*, new species

(Fig. 3)

**Material examined.** - Holotype: male, carapace length 2.6 mm (NTM Cr.009240).

Paratypes - Male, carapace length 2.35 mm, female, carapace length 2.75 mm (NTM Cr.009240). The holotype is undamaged, the paratypes each lack one first pereopod

**Diagnosis.** - Rostrum broad, anteriorly truncate, feebly convex, antero-lateral angles subacute, not over reaching eyes; carapace as broad as postorbital length, smooth, feebly pubescent, without median or lateral carinae, with 1 small median gastric tooth, 1 anterior dorsolateral tooth, 1 anterior tooth; abdomen smooth, without dorsal carinae, scaphocerite with lateral margin entire, lateral spine not exceeding lamella; first pereopod with distoventral propodal tooth mobile; carapace length to 2.75 mm.

**Systematic Position.** - *Philocheras planoculminis*, in the form of its rostrum and placement of carapace teeth, appears most closely related to *P. japonicus* (Doflein, 1902), with the median gastric and two anterior lateral teeth. It may be distinguished from that species by the lack of four lateral carinae and a median dorsal carina, the key features utilized by De Man (1920). In addition, the lateral margin of the scaphocerite is non-dentate, whereas in *P. japonicus* it bears numerous small acute teeth.

*Philocheras planoculminis* may be more closely related to *P. plebs* Kemp (1916), which shows a very similar arrangement of carapace spines and lacks distinct carinae, with non-

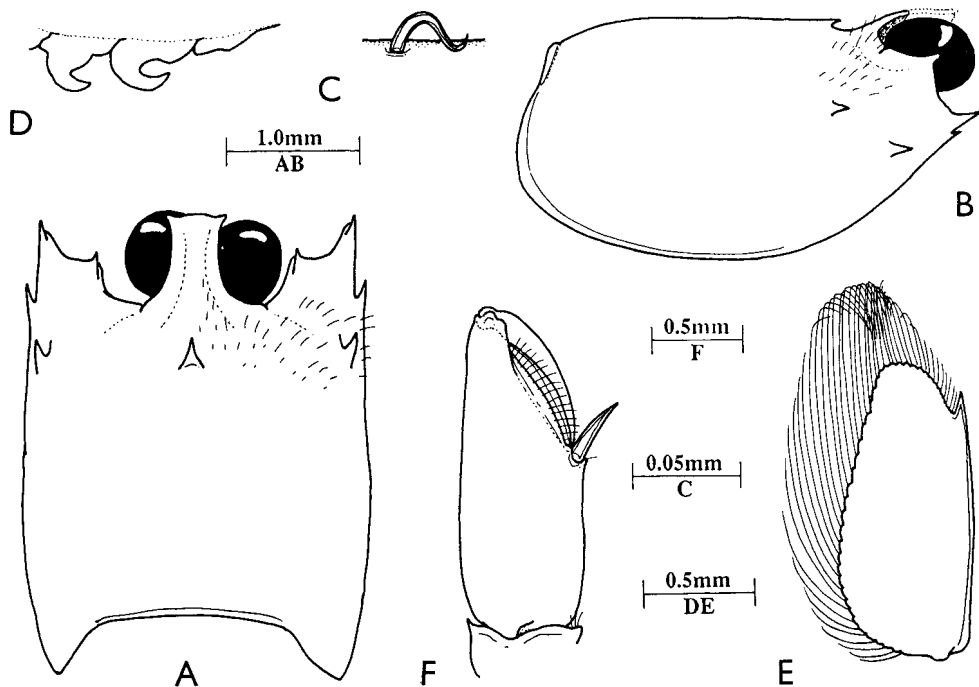


Fig. 3. *Philocheras planoculminis*, new species. A, carapace and eyes, dorsal. B, same, lateral. C, dorsal carapace seta, from right. D, posterior thoracic sternites, from right. E, scaphocerite. F, first pereopod chela. ACDF, allotype. B, holotype. E, male, paratype.

serrate lateral margin to the scaphocerite, but has a small short narrow distally rounded rostrum, quite unlike that of *P. planoculminus* or *P. japonicus*.

**Remarks.**- The anterolateral region of the carapace, dorsal to the level of the antennal spine bears a scattering of slender simple setae, the rest of the carapace is covered by numerous very short setae, all strongly curved anteriorly, when first noticed they appeared to give the carapace a finely tuberculate appearance. Similar setae are distributed over the antennae and other appendages. The cuticle of the carapace and abdomen also appears devoid of any ornamentation and is quite without the reticulation reported above in *P. lowisi*.

The male thoracic sternites are strongly armed. The third, fourth and fifth sternites bear a well developed, irregular median carina, the third and fourth segment having the carina armed with a stout, acute, strongly recurved hook. These sternites are unarmed in the female.

**Etymology.** - From *planus* (Latin) flat; *culmen* (Latin) top, summit, with reference to the locality of capture.

## DISCUSSION

The caridean fauna of Australia's tropical north western seas has been little studied. The most recent study appears to be that of Balss (1921), who reported on 19 species from the region of Cape Jaubert, collected by Dr. Mjöberg's 1910-1913 expedition. The present small collection, taking about 1½ hours, has provided examples of 23 species of shrimp. These include one new species of the crangonid genus *Philocheras*, (*P. planoculminus*), and three species new to the Australia fauna: *Urocaridella urocaridella*, *Alpheus leptochirus* and *Philocheras lowisi*, the latter species recorded for the second time only, with five species that have not been previously recorded from north western Australia or the southeast Indian Ocean, *Periclimenes psamathe*, *Pontoniopsis comanthi*, *Hamodactylus noumeae*, *Synalpheus quadriarticulatus* and *Nikoides danae*. Undoubtedly, further sampling can be expected to produce much further material of interest.

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