

A NOTE ON *GNATHOPHYLLOIDES MINERI* SCHMITT (CRUSTACEA: DECAPODA: PALAEMONIDAE), INCLUDING ITS FIRST OCCURRENCE IN AUSTRALIAN WATERS.

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ABSTRACT

Gnathophylloides mineri Schmitt (Crustacea: Decapoda: Palaemonidae) has been reported as new record from Australian waters.

KEYWORDS: Crustacea, Decapoda, Palaemonidae, *Gnathophylloides mineri*, new record, Australia.

INTRODUCTION

Recently a photograph of some small commensal shrimps on an echinoid host was made available for examination. These shrimps clearly showed the characteristic colour pattern of *Gnathophylloides mineri* Schmitt. The specimens had been photographed underwater by scuba-divers and had not been collected. A request for some specimens was subsequently successful and the specimens form the basis of the present note. A further specimen was also collected during the trans-Pacific cruise of the F.V. 'Raleigh', as part of the Operation Raleigh project in 1986, when collections of shrimps were made from numerous island localities. It is a pleasure to thank the collectors, Steve Smith and Mark Richmond, for kindly supplying the specimens.

SYSTEMATICS

Gnathophylloides mineri Schmitt (Figs 1-2)

Gnathophylloides mineri Schmitt, 1933: 7, Fig. 3.

Material. (i) 1 ♂, 1 ovig. ♀, North Solitary Island, 29° 25'S 153° 24.0'E, New South Wales, 12m, 24.iiv.1988, coll. S.D.A. Smith, NTM. Cr.006495. (ii) 1 ovig. ♀, Tongatapu, Tonga, Stn. SP.61a, Operation 'Raleigh', 5-20m, 15.viii.1986, coll. M. Richmond, NTM. Cr.004336.

Description. The three specimens agree well with the original description provided by Schmitt (1933). In the Solitary Islands specimens, the rostrum bears four acute dorsal teeth, with the tip markedly upturned in the

case of the female. The Tongan specimen has only three dorsal rostral teeth. All specimens also have a very small distal ventral rostral tooth. In the Solitary Islands female the rostrum distinctly exceeds the distal corneal margin, but in the male falls well short. The second pereopods are subequal and similar, but markedly larger in the male than in the female, about 2.0 and 0.95 times the postorbital carapace length respectively, the male chela being 1.5 times the length of the female chela, in the Solitary Islands material.

Measurements. Postorbital carapace length, (i) ♂ 1.8mm, ♀ 2.5mm, (ii) 2.2mm. Length of ovum, advanced, 0.7mm.

Host. *Tripneustes gratilla* (Linn.) (Echinodermata: Echinoidea)

Colouration. (i) Broad dorsal band of narrow white and pale brown striae, broad dorsolateral band of white, broad lateral band of chocolate brown, expanded over first three pleura, extending whole length of body, with lower band of white laterally along ventral branchiostegite and pleura; antennal peduncles, corneae and chela and carpus of second pereopods white; pereopods pale yellowish, caudal fan pinkish (from colour photographs).

(ii) Creamy white, with reddish pink band along body laterally (from collector's notes).

The colour pattern of the Zanzibar specimen previously reported by Bruce (1974) showed a broad white lateral band extending from the postorbital region to the upper pleuron of third abdominal segment, with a broad band of dark chocolate brown over lower branchiostegite and pleura, with dorsal carapace and abdomen finely striate with

Bruce, A.J., 1988

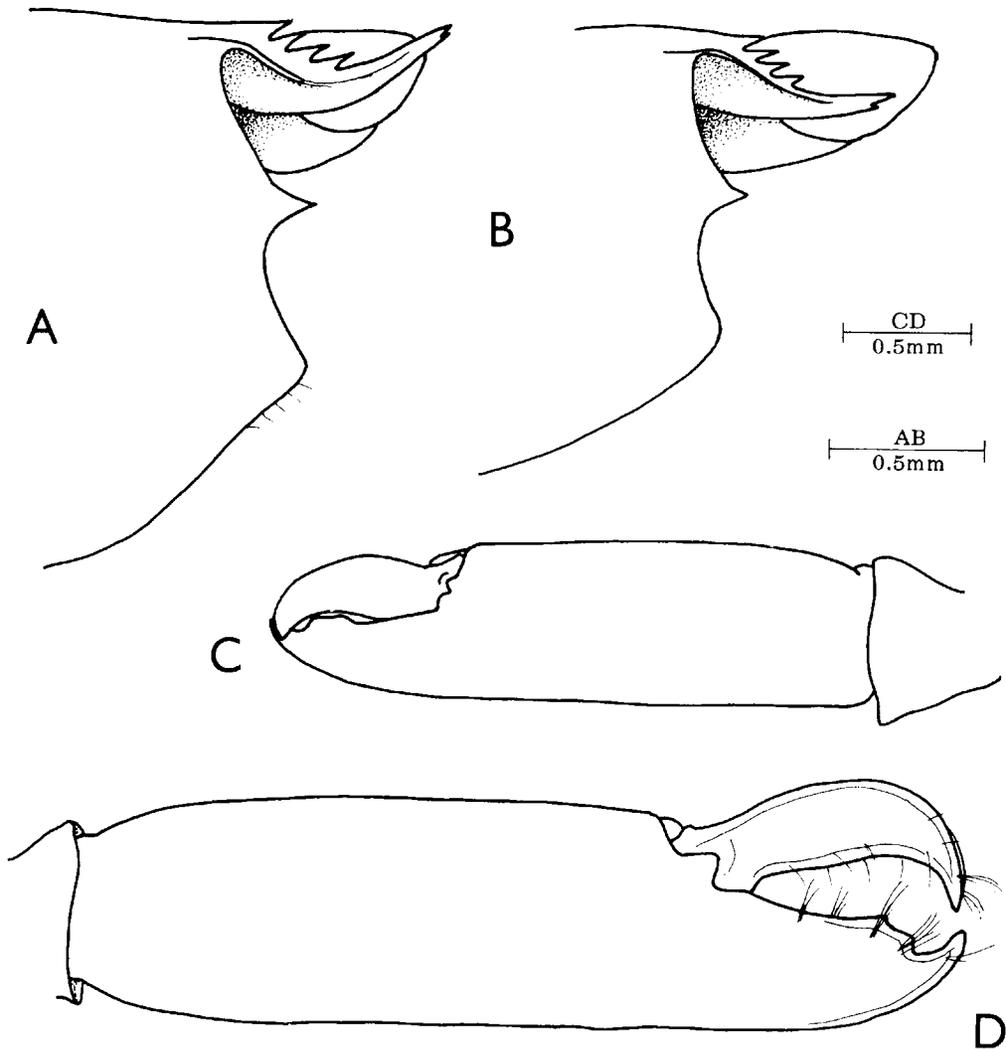


Fig. 1. *Gnathophylloides mineri* Schmitt, North Solitary Islands. AB, anterior carapace and rostrum, lateral. CD, chelae of second pereopods. AC, ovigerous female; BD male.

narrow longitudinal bands of white and pinky-blue, breaking up into white dots on a pinky-blue ground over fourth, fifth and sixth tergites; medial eyestalks and telson similar. Antennal peduncles and proximal flagella, lateral eyestalks, cornea and second pereopods white. Ambulatory pereopods pale purple, uropods transparent (from colour photograph).

Remarks. *G. mineri* was first reported from Ballena Point, Ensenada, Costa Rica, and has been subsequently reported from the Caribbean Sea, Colombia, Mexico and Florida. It is one of the relatively few circumtropical shrimps and was first reported from the Indo-West Pacific region by Castro (1971),

who recorded specimens in association with *Tripneustes gratilla* and *Pseudoboletiana indiana* in Hawaiian waters. Subsequently the species was reported from Zanzibar and the Seychelle Islands (Bruce 1974), in both cases also in association with *T. gratilla*. The species has also been recorded in the Eastern Pacific region, from Malpelo Island, Colombia (Abele 1975), probably in association with *T. depressus*. The present Australian record represents a considerable extension in the recorded distribution of this species, linking the western Indian Ocean and the central Pacific Ocean records, as well as representing a considerable southerly range extension into relatively cold waters for an apparently trop-

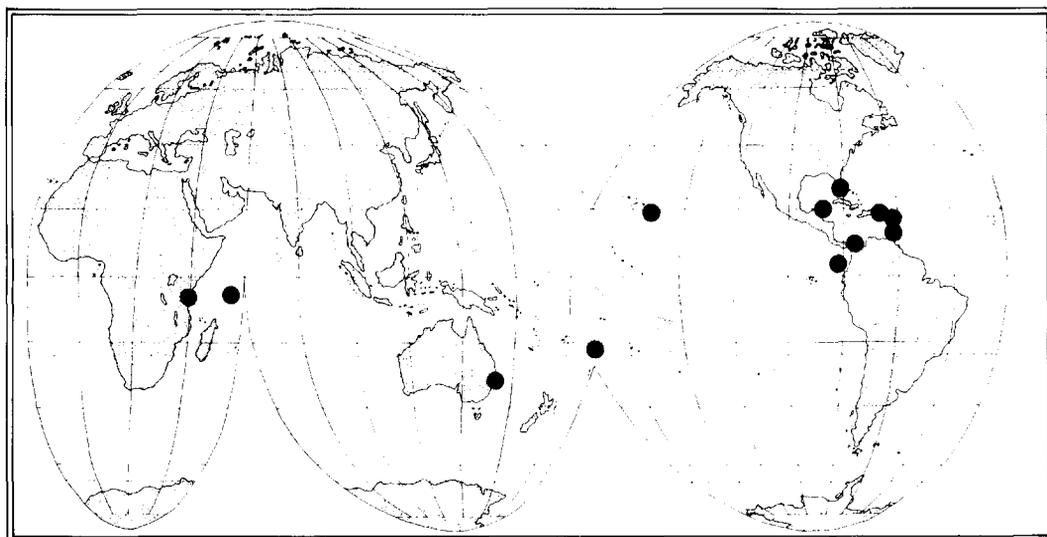


Fig. 2. Distribution of *Gnathophylloides mineri*.

ical species. It seems probable that the distribution of the shrimp is controlled primarily by that of its host animal, typically an urchin of the genus *Tripneustes*, unless a suitable alternative host is available. The shrimps can probably be found wherever the host urchins occur in numbers. The collector notes that the shrimps were uncommon and that over 50 host urchins were examined but only the single pair of shrimps was observed. The shrimps have been noted, but not collected, on the same host on previous occasions, at the North Solitary Island at 10m on 15 February 1988 and at South Solitary Island at 15m on 22 January 1988. The collector has also photographed *G. mineri* on *Pseudoboletia maculata* at the Solitary Islands, a new host record. Both *Tripneustes* and *Pseudoboletia* are members of the Toxopneustidae, but so far, no specimens of *Gnathophylloides*, or other shrimps, have been reported from *Toxopneustes*.

The biology of *G. mineri* at St. Croix, Virgin Islands, has recently been described by Patton *et. al.* (1985), who described the colour pattern in detail. The pattern in the Virgin Islands specimens shows the closest correspondence to the Indo-West Pacific specimens, although the tint of some colour zones may show some differences, i.e., the dorsal zone is of white striae on a pink-blue ground in the Zanzibar specimen but on a brownish ground in the St. Croix material. These specimens therefore provide an interesting confir-

mation of the consistency of colour pattern that can occur in some very widely distributed shrimp species, as has been previously reported for some others, such as *Thor amboinensis* De Man (Chace 1972). It may be noted that the fine striae on the median dorsal band bear a close similarity to the appearance of the longitudinally ridged spines of the host, along which the shrimps appear to be normally orientated.

The host of the Tongan specimen was not ascertained as the specimen was found adherent to the surface of a live specimen of *Tridacna maxima* purchased in the local market at Nuku'alofa, supplied by local divers.

The genus *Gnathophylloides* is also represented in Australian waters by *G. robustus* known only from the type material collected near Geraldton, Western Australia (Bruce 1973), in association with *Centrostephanus tenuispinus*. In contrast to the widely distributed *G. mineri*, *G. robustus* may prove to be indigenous to Australia only.

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