

**REDISCOVERY OF CAMPTOPLAX COPPINGERI MIERS, 1884,
AND ITS PLACEMENT IN THE PILUMNIDAE
(CRUSTACEA: BRACHYURA)**

P. J. F. Davie

ABSTRACT. - *Camptoplax coppingeri* Miers, 1884, has been known only from two specimens from Torres Strait, north Queensland, and its taxonomic affinities have been uncertain. A single new specimen has recently been dredged from the lagoon at Chesterfield Reefs, Coral Sea. It has typical pilumnid male abdomen and gonopods, and it is considered in overall facies to be rightfully placed in the Rhizopinae, most closely allied to *Pseudolitochira* Ward and *Zehntneria* Takeda. A lectotype has been designated from one of the two syntypes in the British Museum (Natural History).

INTRODUCTION

Camptoplax coppingeri Miers, 1884, was described from two males, from the Prince of Wales Channel, Torres Strait. There have been no subsequent records and the familial placement of the genus has remained uncertain. Miers (1884) did not formally designate the family to which his new genus belonged, but as he compared it most closely with *Pilumnoplax*, *Heteroplax*, and the West-Indian genus *Frevillea*, he clearly thought that it belonged to the Goneplacidae. *Heteroplax* and *Frevillea* were placed by Guinot (1971) into her *Goneplacidae euryplaciens* group, which she equates to the Euryplacinae Stimpson, 1871. *Pilumnoplax*, is no longer considered a valid genus - as Serène (p. 689, in Guinot, 1969) states 'As indicated by Tesch (1918) *Pilumnoplax* becomes synonym partly of *Eucrate*, *Heteropilumnus*, and *Lophoplax*. *Neopilumnoplax* is established to include the species described after Stimpson (1858)...' *Neopilumnoplax* is considered by Guinot to belong in her *Goneplacidae carcinoplaciens - gonéplaciens* group. Despite its apparent placement in the Goneplacidae, Guinot did not deal with *Camptoplax* as part of her series of papers on the natural groupings of the xanthids and goneplacids which culminated in her 'Synthèse et bibliographie' of 1971. Serène in his 1968 checklist included *Camptoplax* in the "Xanthoida".

The discovery of the present specimen was made possible through an invitation to participate in the French ORSTOM expedition 'Corail 2' to the Chesterfield Reefs, Coral Sea, under

the direction of Bertrand Richer de Forges. The majority of the rich and diverse material obtained still remains to be finally sorted and described, but the present specimen was recognised to be of particular interest and therefore set aside for further study. Details of the cruise with station data, depths, and sediments are given in Richer de Forges *et al.* (1988).

Abbreviations: G1, G2 refer to the male first and second gonopods, P1 - P4 to the first to fourth walking legs. Specimens are held in the Muséum National d'Histoire Naturelle, Paris (MNHN), and the British Museum (Natural History), London (BMNH).

SYSTEMATICS

FAMILY PILUMNIDAE SAMOUELLE, 1819

SUBFAMILY RHIZOPINAE STIMPSON, 1858

Camptoplax Miers, 1884

Camptoplax Miers, 1884: 239.

Diagnosis. - Carapace broader than long, anteriorly deflexed, with anterolateral margins much shorter than posterolateral margins, which are more-or-less straight and convergent posteriorly. Front about one-third carapace width. Endostome or palate without longitudinal ridges. Male abdomen with seven free segments; first segment covering entire sternum between last pair of legs. Eyes short, freely moveable, with thick peduncles. Antennules with flagellae folded transversely; basal antennal segment just touching, or almost touching the front. Third maxilliped broad, not gaping, merus smaller than ischium; exopod slender, straight and reaching to the outer distal angle of the merus. Chelipeds robust, fingers pointed. Walking legs compressed, with anterior margins of meri crested. Penis coxal. G1 long, slender, sigmoid; G2 short, sinuous. (Modified after Miers, 1884).

Camptoplax coppingeri Miers, 1884

(Figs. 1, 2)

Camptoplax coppingeri Miers, 1884: 239-240, pl. 24, A, a.

Material. - Male syntype, here designated lectotype, (BMNH 1882.7), Prince of Wales Channel, Torres Strait, N. Queensland, Australia, coll. R. Coppinger, September, 1881. - Male (7.8 by 6.2 mm) (MNHN), R.V. Coriolis, Cruise 'Corail 2', Stn DW117, Chesterfield Reefs, Coral Sea, 19°25.1'S, 158°31.7'E, 52 m.

Description of new specimen. - Carapace greatest width behind exorbital angles; 1.26 times broader than long; broad transverse depressions across urogastric and protogastric regions; convex anteriorly, flat from side to side; a third much shallower depression transversely across intestinal region. With setae removed, regions moderately defined; epigastric and protogastric regions distinct; mesogastric well defined; cardiac indistinct, separated by distinct gastro-cardiac groove; intestinal not distinct. Posterolateral margins convergent posteriorly. Anterolateral margins convex; rounded; with three teeth behind the exorbital angle. Exorbital angle effaced,

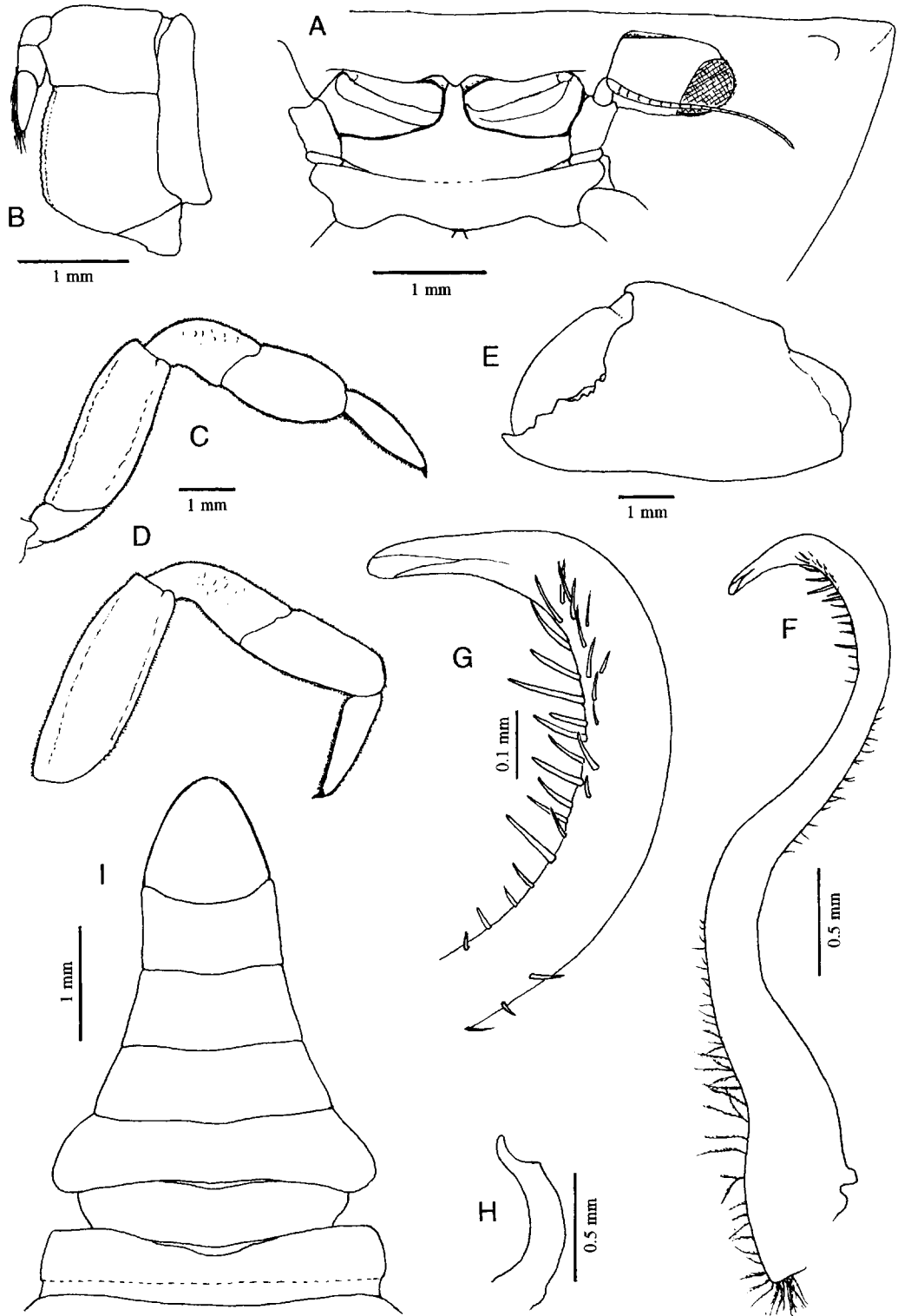


Fig. 1. *Camptoplax coppingeri* Miers, male from Chesterfield Reefs. A, frontal view; B, third maxilliped; C, fourth walking leg; D, third walking leg; E, left chela; F, G, first gonopod; H, second gonopod; I, abdomen.

followed by large granule visible when felt removed. First anterolateral tooth blunt, granular; second anterolateral tooth blunt; larger and broader than first, third similar size to first but broadly rounded, granular. Front *c.* 0.32 times carapace width; moderately deflexed; bilobed with deep median incision; lateral angles squared; pre-orbital tooth present as minutely granular shoulder. Posterior margin *c.* 0.6 times carapace width. Carapace surface coarsely and regularly granulate except on epigastric, orbital, and mesogastric regions. Setae short, felt-like, covering entire surface, granules just visible, surface detail obscured. Upper orbital border irregularly granular laterally, smooth medially; slightly concave. Lower orbital border straight; minutely granular; continuous with lower edge of outer orbital tooth; inner angle effaced. Antennal flagellum long, entering orbit. Orbital hiatus open. Basal antennal segment just touching front; unarmed. Basal antennular segment with antennules folding obliquely. Inter-antennular septum moderately wide.

Third maxilliped: merus distinctly smaller than ischium; wider than long; outer margin concave; antero-external angle bluntly angular; *c.* 0.6 times length of ischium. Suture between merus and ischium horizontal. Ischium rectangular; inner margin cristate, granular. Palp articulates at inner distal margin of merus. Exopod narrow.

Chelipeds subequal; large and robust; merus with posterior border cristate, minutely granulate; with distinct short subdistal tooth; lower border granulate, rounded proximally, cristate distally; anterior border with an uneven crest of sharp granules; outer faces with reticulated pattern of granules and short setae. Carpus with a broad tooth at inner angle; upper surface with granules and setae forming reticulation, smooth pits between. Outer surface of palm densely covered by setae as on carapace, with rounded granules just visible. Inner surface of palm mostly smooth. Immovable finger rounded on outer surface; without ventral ridge; moderately long; length cutting edge *c.* 0.3 times length of propodus. Ventral border of chela slightly concave at base of fixed finger. Dorsal surface of dactyl granular proximally. Fingers pointed; curved in-

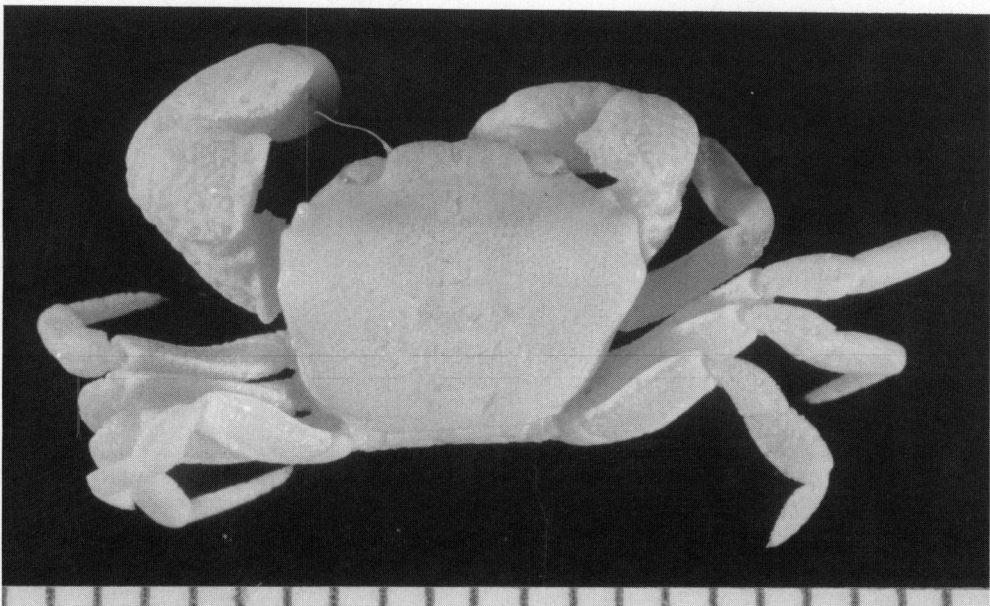


Fig. 2. *Camptoplax coppingeri* Miers, male from Chesterfield Reefs.

wards slightly; without a noticeable gape between the cutting margins.

Walking legs medium length; flattened, upper borders, and to a lesser extent lower borders, smooth, sharply crested; P1, 2 subequal, slightly longer than P3; *c.* 1.5 times maximum carapace width. Merus of P3 *c.* 3 times as long as wide; carpus *c.* 2.1 times as long as wide; propodus *c.* 1.9 times as long as wide. Dactyli slightly longer than propodi; stout; terminating in an acute chitinous tip. Merus anterior margin unarmed terminally. Leg segments sparsely granular; thickly covered with close-cropped setae, except on faces of meri which are mostly bare.

Male abdomen relatively narrow; seven free segments; first segment widest, covers entire width of sternum between P4; third segment only slightly narrower. Segments three-five tapering. Width segment three *c.* 0.2 times length. Segment six *c.* 2 times wider than long. Telson longer than preceding segments; length and width subequal; rounded apically.

G1 long; slender; sigmoid; apically elongate, and moderately recurved. Setae present, short, disposed as on figure; simple and stout apically, feathered proximally. G2 short, sinuous.

Habitat. - Dredged from a coral reef lagoon, at 52 m depth. Miers (1884) recorded his specimens from a depth of 7-9 fathoms (13 - 16.5 m) on a sand bottom.

Distribution. - Only known from the South-West Pacific, at two localities, Torres Strait, north Queensland, and Chesterfield Reefs, Coral Sea.

Remarks. - The present specimen agrees closely with the lectotype in all important details. The most obvious point of departure is that the felt of setae on the dorsal carapace surface is missing from the transverse depressions of the lectotype. This has the effect of making them appear very deep and conspicuous, whereas on the Coral Sea specimen, the setae form a continuous tomentum over the whole surface. In the original description, Miers (1884) noted that 'the basal antennal joint reaches nearly to the subfrontal process', and in his genus definition says 'Basal antennal joint short, not reaching to the subfrontal process'. In the lectotype it is true that it does not quite reach the front, but it is only just short, and in the newly collected specimen, it does make narrow contact.

The recent works of Guinot (1978), Serène (1984), and Ng (1987), have led to a far better understanding of the xanthoid and goneplacine crabs. The Pilumnidae is now considered, on very strong grounds, to be a family in its own right, and the Rhizopinae, previously in the Goneplacidae, is now recognised as a pilumnid subfamily. In the light of this work, the characteristic slender, sigmoidal shape of the male first gonopod; the short, sinuous, male G2; and the seven-segmented male abdomen, makes *Camptoplax coppingeri* easy to recognise as a pilumnid.

The precise generic affinities are more difficult to define. The only pilumnid genera to have a similar overall appearance are *Galene*, and Rhizopinae with large well developed orbits and freely movable eyestalks, *viz.* *Heteropilumnus*, *Lophoplax*, *Pronotonyx*, *Pseudolitochira*, *Rhizopa*, *Rhizopoides*, *Zehntneria*. *Galene* de Haan, has a similar conformation of the carapace with blunt poorly defined anterolateral teeth, however a variety of features preclude a close affinity. These include a relatively narrower, quadridentate front; glabrous dorsal carapace surface; longer, more slender, less flattened legs; and a much narrower male abdomen.

The short close-cropped covering of setae, and the shape of the chelae suggest closest affinities with *Pseudolithochira* Ward, 1942, and *Zehntneria* Takeda, 1972. In particular, the type of *Zehntneria*, *Z. villosa* (Zehntner, 1894) is similarly covered in a short tomentum. The strong anterolateral dentition, the transverse depressions on the dorsal surface of the carapace, the relatively narrow male abdomen, and the strongly cristate walking legs, all suggest that *Camptoplax* should be retained as a valid genus, at least until allied genera can be further evaluated.

Acknowledgements. - I am most grateful to Bertrand Richer de Forges and ORSTOM for the invitation to accompany the cruise, and to the other members of the expedition for their friendship and good humour. Peter Ng of the Zoology Department, National University of Singapore, is also thanked for his helpful comments on the manuscript.

LITERATURE CITED

- Guinot, D., 1969. Recherches préliminaires sur les groupements naturels chez les Crustacés Décapodes Brachyours. VII. Les Goneplacidae (suite et fin). *Bull. Mus. Natn. Hist. Nat., Paris*, (2)41(3): 688-724, figs 83-146, pls III-V.
- Guinot, D., 1971. Recherches préliminaires sur les groupements naturels chez les Crustacés Décapodes Brachyours. VIII. Synthèse et bibliographie. *Bull. Mus. Natn. Hist. Nat., Paris*, (2)42(5): 1063-90.
- Guinot, D., 1978. Principes d'une classification évolutive des Crustacés Décapodes Brachyours. *Bull. Biol. Fr. Belg., Paris*, 112(3): 211-92, figs 1-3, table 1.
- Miers, E.J., 1884. Crustacea, in, Report on the Zoological Collections made in the Indo-Pacific Ocean during the Voyage of H.M.S. 'Alert' 1881-2. Part I. The collections from Melanesia. Part II. Collections from the western Indian Ocean. British Museum, London. pp. 178-322, 513-75, pls 18-32, 46-51, table.
- Ng, P.K.L., 1987. The Indo-Pacific Pilumnidae II. A revision of the genus *Rhizopa* Stimpson, 1858, and the status of the Rhizopinae Stimpson, 1858 (Crustacea, Decapoda, Brachyura). *Indo-Malay. Zool.*, 4: 69-111, figs 1, 2, pl. 1, table 1.
- Richer de Forges, B., C. Chevillon, P. Laboute, G. Barbigant, J.-L. Menou & P. Tirard, 1988. La campagne CORAIL 2 sur le plateau des îles Chesterfield (N.O. "Alis", 18 juillet au août 1988). *Rapports Scientifiques et Techniques, Sciences de la Mer, Biologie Marine, Noumea*, 50: 1-68.
- Samouelle, G., 1819. *The Entomologist's useful compendium or an Introduction to the knowledge of British insects etc.* London. 496 pp.
- Serène, R., 1968. The Brachyura fauna of the Indo-West Pacific Region, in, Prodrômus for a check list of the (non-planctonic) marine fauna of South East Asia. *Singapore Natn. Acad. Sci., Sp. Publ.* 1: 33-111.
- Serène, R., 1984. Crustacés Décapodes Brachyours de l'Océan Indien Occidental et de la Mer Rouge, Xanthoidea: Xanthidae et Trapeziidae. Avec un addendum par Crosnier, A.: Carpilliidae et Menippidae. *Faune Tropicale, ORSTOM, Paris*, 24: 1-400, figs A-C, 1-243, pls 1-48.
- Stimpson, W., 1858. Prodrômus descriptionis animalium evertibratorum, quae in Expeditione ad Oceanum Pacificum Septentrionalem, a Republica Federata missa, Cadwaladaro Ringgold et Johanne Rodgers Ducibus, observavit et descripsit W. Stimpson. Pars. V. Crustacea Ocyphodoidea. *Proc. Acad. Nat. Sci. Philadelphia*, 10: 93-110 (39-56).
- Takeda, M., 1972. Systematic status of *Ceratoplax villosa* Zehntner and some related species (Crustacea, Decapoda, Brachyura). *Proc. Jap. Soc. Syst. Zool., Tokyo*, 8: 34-41, figs 1-3.

Tesch, J.J., 1918. The Decapoda Brachyura of the Siboga-Expedition. II, Goneplacidae and Pinnotheridae. *Siboga-Expeditie Monogr.*, **39c1**, livr. 84: 149-295, pls 7-18.

Ward, M., 1942. Notes on the Crustacea of the Desjardins Museum, Mauritius Institute with descriptions of new genera and species. *Bull. Mauritius Inst., Port Louis*, **2(2)**: 49-113, pls 5-6.

Zehntner, L., 1894. Crustacés de l'Archipel malais. Voyage de MM.M. Bedot and C. Pictet dans l'Archipel Malais. *Rev. Suisse Zool., Genève*, **2**: 135-214, pls 7-9.