

THE GENUS *LOPHOPILUMNUS*
(CRUSTACEA:BRACHYURA:PILUMNIDAE):
THE REDISCOVERY OF *L. CRISTIPES* (CALMAN, 1900) AND THE
DESCRIPTION OF A NEW SPECIES

P.J.F. DAVIE

Queensland Museum, PO Box 300, South Brisbane, Qld 4101, Australia.

ABSTRACT

The genus *Lophopilumnus* Miers is considered to contain three species. *L. dilatipes* (Adams and White) is known from the Philippines, and *L. cristipes* (Calman), and a new species *L. globosus* are both from northern Australia. *L. globosus* is separated from the other species by its deep, swollen carapace, the form of the anterolateral teeth, the spinous chelae, and the shape of the walking legs. A lectotype and paralectotype have been nominated for *L. dilatipes*. The known distribution of *L. cristipes* has been extended from Torres Strait to Cape Bossut in northwestern Australia.

KEYWORDS: Crustacea, Brachyura, Pilumnidae, *Lophopilumnus*, new species, Australia.

INTRODUCTION

In late 1986 the author was fortunate to be funded by the Australian Biological Resources Study to visit Australian museums to assess their holdings of Australian xanthoid crabs as part of a commencing study on that group. In the Western Australian Museum and the Northern Territory Museum were two species of large pilumnids which were remarkable for the crested merus on their ambulatory legs. One of these species was later identified as *Lophopilumnus cristipes* (Calman, 1900), and the other, a new species belonging to *Lophopilumnus* Miers. Only females of the new species were available until a large intact male was discovered amongst a collection of crabs from the North West Shelf, northern Australia, donated to the Queensland Museum by the Commonwealth Scientific and Industrial Research Organisation.

The genus *Lophopilumnus* was proposed in a footnote by Miers (1886:148) to accommodate *Pilumnus dilatipes* Adams and White because 'Not only are the palatal ridges nearly obsolete, but the ambulatory legs are strongly cristated'. Calman (1900) in his description of *Pilumnus cristipes* pointed out the close relationship with *Lophopilumnus* and Balss (1933) and Takeda and Miyake (1968) have both assigned it questionably to *Lophopilumnus*. Their main reservation concerned the fact that the cristate merus of

L. dilatipes is not notched to form a subdistal lobe as it is in *P. cristipes*. This will be further discussed later. The only specimens so far reported in the literature for either species are the original types. During a visit to the British Museum (Natural History) the male and female type specimens of *L. dilatipes* were examined and additional specimens of *L. cristipes* were found.

Measurements given in this paper are of carapace breadth, and were made to the nearest 0.1mm using dial calipers. Illustrations were done using a 'camera lucida'. The institutions in which the study material is housed are abbreviated in the text as follows: Northern Territory Museum (NTM); Western Australian Museum (WAM); Queensland Museum (QM); British Museum (Natural History) (BMNH).

SYSTEMATICS

Genus *Lophopilumnus* Miers

Lophopilumnus Miers, 1886: 148; Calman 1900: 18; Balss 1933: 12; Takeda and Miyake 1968: 3-4. (type species *Pilumnus dilatipes* Adams and White, 1848: 44, by original designation).

Diagnosis. Carapace strongly convex; regions quite well defined and moderately granular, separated by smooth shallow furrows. The ridges that define the efferent branchial channel are feebly developed and mainly confined to the lower part of the

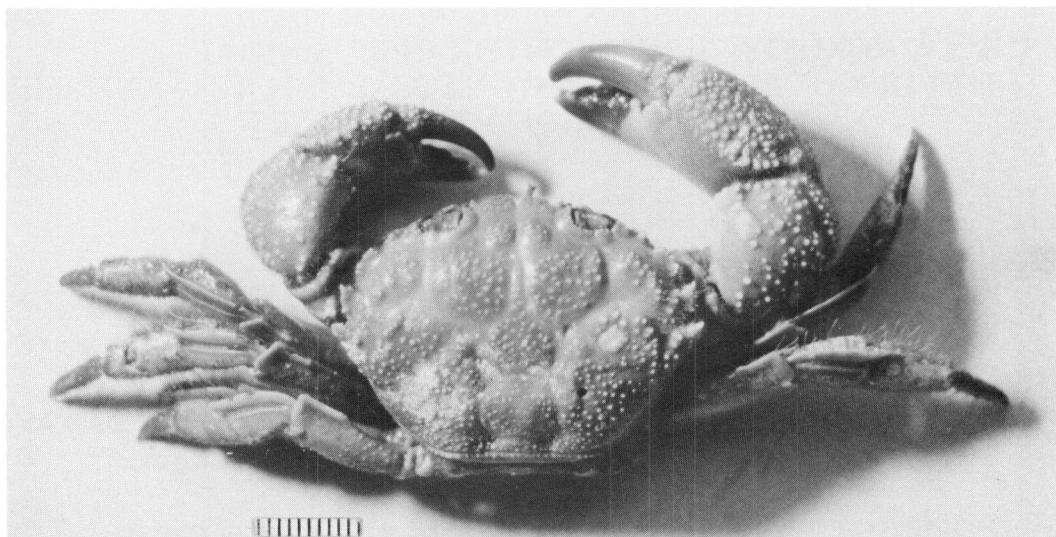


Fig. 1. *Lophopilumnus dilatipes* lectotype ♂. Scale line in mm.

endostome not reaching the upper border of the buccal frame. Antero-lateral margins behind the outer-orbital angle cut into four lobes or sharp teeth. Postero-lateral border slightly longer and relatively straight, not markedly concave. Front bilobed and prominently protruding; lateral lobules present. Chelipeds unequal but of same general form; covered with low granules or short spines. Ambulatory legs with strong crest on merus which may or may not have a subdistal notch and lobe; a similar subdistal lobe also developed to a greater or lesser extent on the merus of the cheliped.

Lophopilumnus dilatipes
(Adams and White)

(Fig. 1)

Pilumnus dilatipes Adams and White, 1848: 44, Pl. 9, Fig. 4.

Lophopilumnus dilatipes — Miers 1886: 148; Calman 1900: 18; Balss 1933: 12; Takeda and Miyake 1968: 3-4.

Type material. LECTOTYPE — BMNH 1843.6, ♂ (34mm), Philippine Isles, "Samarang", Cumming Colln. PARALECTOTYPE — BMNH 1843.6, ♀ (28mm), data as above.

Remarks. As a holotype was not designated by Adams and White one of the two syntypes can be chosen to become a lectotype. Following recommendation 74B of

the International Code, the illustrated male is chosen as lectotype and the female thus becomes a paralectotype.

The type description was short but the figures were good and there seems little need to fully redescribe the species. Unfortunately the tips of the first male pleopods are broken off and therefore this character is not available to help define the taxon — what remains is of a typical pilumnid shape and close to *L. cristipes*. The form of the legs is the remarkable feature of this species. The crest on the merus is not notched subdistally as in other species. The carpus has twin dorsal crests — a very high mid-dorsal one, and a lower one posterior to it. Anterior to the major crest is a shelf and a very swollen and convex anterior face with a fringe of long hairs.

Distribution. Philippines (the original description listed the type locality as 'Eastern Seas', however the label associated with the specimens is more specific).

***Lophopilumnus cristipes* (Calman)**

(Figs 2a-j, 3a,b)

Pilumnus cristipes Calman, 1900: 17-19, Pl. 1, Figs 1-3; Balss 1933: 11, 31; Takeda and Miyake 1968: 3-4.

?*Lophopilumnus cristipes* — Balss 1933: 12.

Type material. HOLOTYPE — BMNH 1900.11.26.1, imm. ♀ (28mm), fringing reef, Mabuiag, Torres Strait;

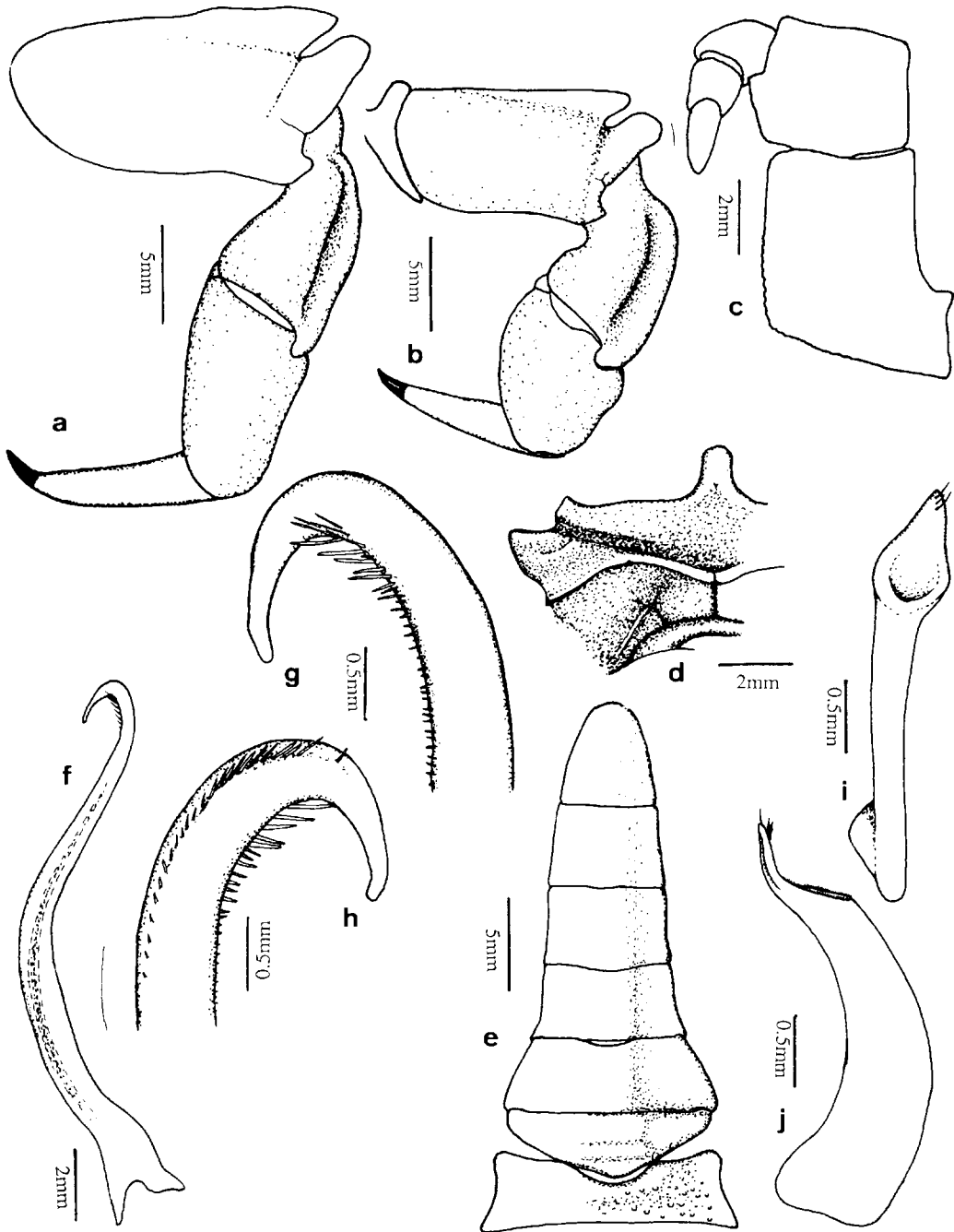


Fig. 2. *Lophopilumnus cristipes*: **a**, second walking leg (denuded); **b**, fourth walking leg (denuded); **c**, third maxilliped (denuded); **d**, epistome; **e**, ♂ abdomen; **f**, first ♂ pleopod; **g**, **h**, abdominal and sternal views of same; **i**, **j**, second ♂ pleopod.

Additional material. AUSTRALIA: BMNH 1929.8.1.6, 1 imm. ♀, Thursday Isl., Torres Strait; BMNH 1932.7.7.28, 1 ♀, Arafura Sea; WAM 2273-86, 1 ♂ (42.8mm), Cape Bossut, N.W. Australia, reef and sand flat, 13.x.1962, R.W. George on Dorothea; NTM Cr.2411, 1 ovig. ♀ (33.2mm), East Point, Darwin, N.T., shore reef, 8.ix.1975, A.J. Dartnall.

Remarks. Calman's (1900) excellent description needs little amendment. One feature he fails to mention however is the very strong, high granular crests on the hepatic, protogastric, and anterior branchial regions. The male pleopods are typical pilumnid with curved tips, and are illustrated here for the first time.

Habitat. Appears to be a shallow water, intertidal reef flat species.

Distribution. From Cape Bossut, north-west Australia to Torres Strait, north Queensland.

Lophopilumnus globosus sp. nov.

(Figs 4a-e, 5a-f, 6a,b)

Type material. HOLOTYPE — QM W14878, ♂ (45.5mm), North West Shelf, W. Australia, 19° 29.6'S, 118° 52.2'E, trawled 37-38m, 25. x. 1983, T. Ward (CSIRO). PARATYPES — AUSTRALIA: NTM Cr.2970, 1 ovig. ♀ (45.8mm), N. of Wessel Islands, Arafura Sea, Northern Territory, trawled 40m, 17.iv.1985, W. Houston; NTM Cr.3247, 1 ovig. ♀ (44.6mm), N.W. Australia, 16° 34.0'S, 121° 27.0'E, trawled 40-46m, 17.iv.1985, B.C. Russell; NTM Cr.2420, 1 ♀ (48.6mm), Tasman Point, Gulf of Carpentaria, vii.1976, J. Elder; NTM Cr.2422, 1 ♀ (57.1mm), 16km off Port Essington, ix.1976, R. Geslick.

Description. Carapace globose *ca* 1.3 times broader than long (1.29-1.38); evenly convex fore and aft and from side to side although anterolateral margin upturned; anterolateral margins subequal in length to posterolateral margins. Surface of carapace, chelipeds and posterior face of legs covered with short stiff golden bristles, almost fur-like; beneath this the carapace is moderately granulate laterally becoming smoother medially and posteriorly. Regions are evident beneath the hair and moderately strongly defined by smooth furrows, especially the gastric and the combined cardiac

and intestinal regions which are strongly indicated. Posterior margin with a broad costate rim.

Front divided by broad notch into two strongly protruding lobes, each obliquely truncate and granular; a broad U-shaped sinus separates a strong spinous preorbital tooth on each side; fronto-orbital width *ca* 0.55 times carapace width.

Antero-lateral margins divided into four strong teeth behind the spinous external orbital angle; these teeth increase in size from first to fourth; the first three are forwardly directed while the last is directed laterally; each tooth is sharply pointed and armed with small accessory granules.

Supraorbital border with pointed granules on inner angle, relatively smooth on inner half, and again becoming granular laterally; cut by two small fissures, the edges of which are in contact for most of their length, one adjacent the external orbital angle, the other nearly medial in position. Inferior border with a deep, narrow, lateral fissure below the external orbital angle; concave and granular and with a prominent spine at inner end adjacent the basal antennal segment. Basal antennal segment protrudes into orbit such that flagellum has free access; flagellum relatively fine and short, reaching laterally to about outer edge of orbit. Basal antennular segment with strong, smooth, oblique ridge, bearing a row of short hairs; and another similar crest near the outer edge of the socket.

Epistome sharply sunken medially such that the buccal margin forms a small protruding shelf. The palatal ridges defining the efferent branchial channel are obsolete, and do not extend to the buccal frame.

Subhepatic regions evenly covered with rounded granules. Pterygostome smooth to microscopically granular.

Third maxilliped with merus *ca* 0.55 times length of ischium; merus with internal margin formed into sharply acute and granulate angle beneath palp.

Chelipeds unequal, stout, spinous and covered with short golden bristles. Merus with granular borders, otherwise relatively smooth; posterior meral border of larger cheliped with a large, broad, truncate spine subdistally and a similar slightly smaller one distally, these being simply pointed and smaller on the lesser cheliped; mostly naked



Fig. 3. *Lophopilumnus cristipes* ♂: **a**, dorsal view, **b**, frontal view. Scale lines in mm.

except at distal spines and around articulation. Carpus with coarse sharp tubercles dorsally and laterally, and with a larger sharp spine at the antero-internal angle. Palm also with coarse sharp tubercles in longitudinal rows, largest on dorsal margin; spines on dorsal margin may be darkly pigmented. Palm

relatively high, height approximately three-quarters length on larger chela of male holotype. Fingers of chelae with blunt tubercles basally, otherwise smooth; darkly pigmented but not extending onto palm from fixed finger; cutting edges with broad blunt teeth, pointed terminally.

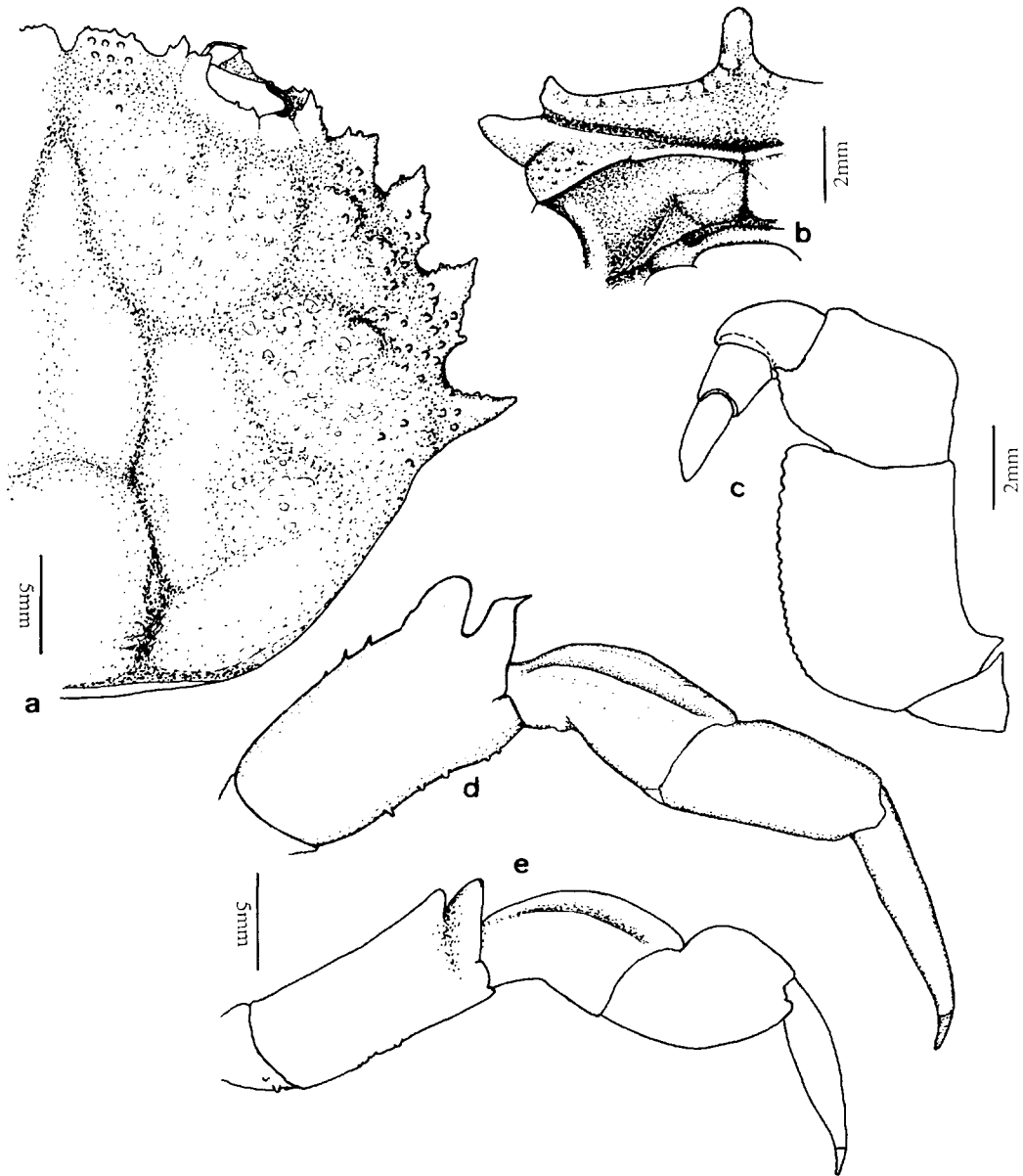


Fig. 4. *Lophopilumnus globosus*: a, carapace (denuded); b, epistome; c, third maxilliped (denuded); d, second walking leg (denuded); e, fourth walking leg (denuded).

Ambulatory legs short and stout; first and second pairs subequal and longest, being a little longer than the carapace width. Merus of second pair about twice as long as broad (length measured along mid-line of posterior face), but narrower on the fourth pair (*ca* 2.4 times). Meri with large, flattened, and apically rounded pre-distal lobe, separated from a sharp distal tooth by a broad sinus; much less marked on fourth pair than on others. Behind this lobe on upper border of merus are a few small spinules, and on lower borders are some small sharp granules. Carpus and merus subequal in length, dactyl a little

longer. Carpus with a broad shallow furrow running longitudinally on the postero-dorsal surface, which is continued to a minor degree on the propodus; anterior face of carpus flat.

Abdomen of male relatively narrow, first segment the broadest, second segment constricted basally; tapering evenly from segment four. Telson about as long as wide at base, bluntly rounded, longer than other segments. Sternite eight is visible in gap between first and second abdominal segments. Sternum covered with small granules and both sternum and abdomen with a covering of low golden setae.

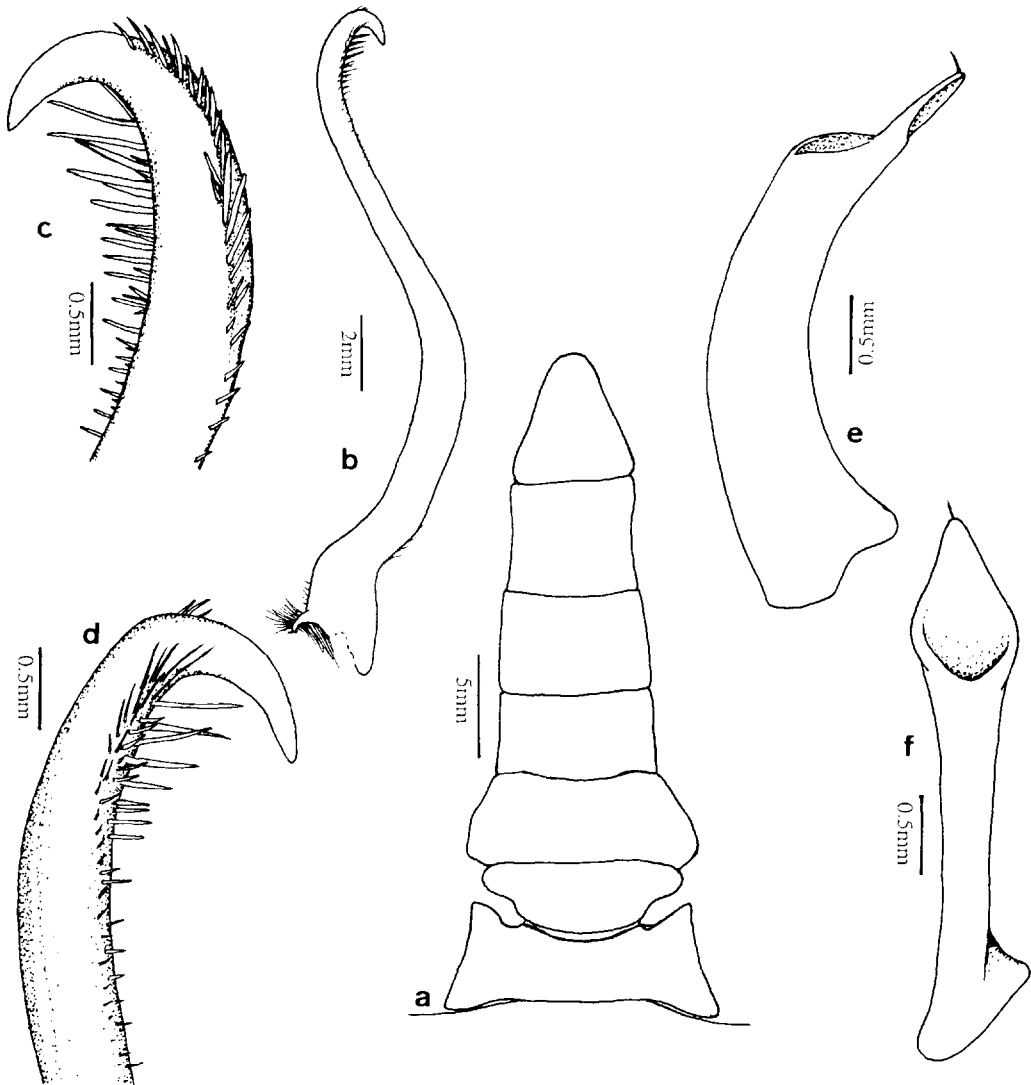


Fig. 5. *Lophopilumnus globosus*: **a**, ♂ abdomen; **b**, first ♂ pleopod; **c**, **d**, abdominal and sternal views of same; **e**, **f**, second ♂ pleopod.

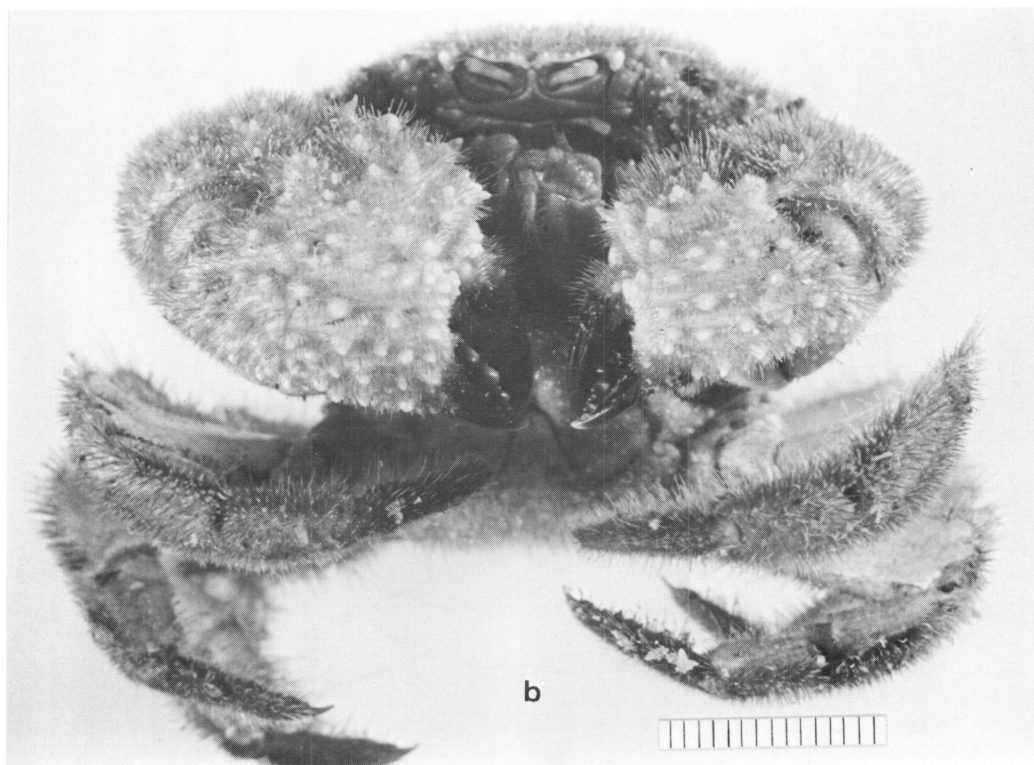
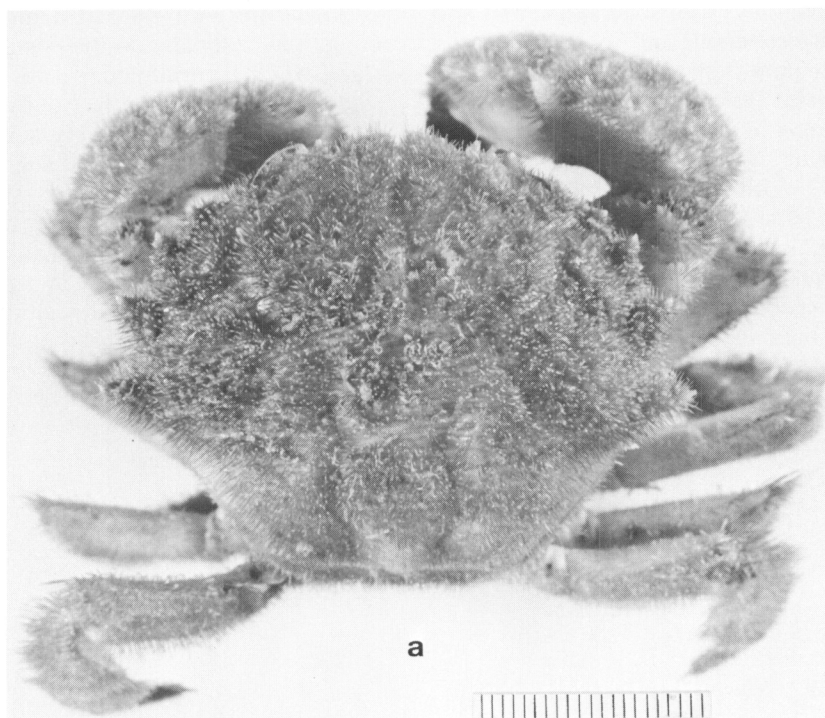


Fig. 6. *Lophopilumnus globosus*: holotype ♂: **a**, dorsal view; **b**, frontal view. Scale lines in mm.

First pelopod of male sinuous and evenly tapering; tip recurved; a row of stiff setae on the abdominal and sternal faces distally (as figured). Second pleopod of typical pilumnid form, rather narrow and tip quite long, with a single seta distally.

Remarks. *L. globosus* is readily separable from the other two described species by its deeper more globular body, the form of the anterolateral teeth, the spiny chelipeds and the shape of the crests and sub-distal lobes on the meri of the walking legs.

Habitat. No specific information is available except that all specimens have been trawled from shallow water (30-50m).

Distribution. Northern Australia from the North West Shelf off Western Australia to the Gulf of Carpentaria. Not yet recorded from off eastern Australia.

DISCUSSION

Each of the species here included in the genus *Lophopilumnus* differs quite markedly from the others in overall appearance, and this in itself causes hesitancy in suggesting they are derived from the same stock. In particular the shape of the leg segments of *L. dilatipes* is remarkably different from the other two species. The presence or absence of a subdistal notch in the meral crest is probably of minor importance, but the broad convex face of the carpal segments in *L. dilatipes* compared with the flat smooth face of the other two species seems of more significance. If *Lophopilumnus* were to be accepted as monotypic it could then easily be argued that each of the other two species are also sufficiently distinct to warrant placement in new genera. This would not be desirable given our present poor state of knowledge of pilumnid systematics. Apart from the divergence of the leg segments *L. dilatipes* does approach an intermediate state between the deep rounded carapace and spinous anterolateral borders of *L. globosus* and the more flattened carapace and bluntly lobed anterolateral borders of *L. cristipes*.

The three species have many features in common including: the form of the endostome; abdomen shape; the presence of crests on the meri of the walking legs; the overall shape of the chelipeds and the relative sizes of each cheliped; the similar definition of

regions on the carapace; the strongly bilobed and protruding front with lateral lobules; and probably similar male gonopods (the tip of the first gonopod of *L. dilatipes* is not known.).

The status of the genus should certainly be reviewed if more related species are found, or when the family as a whole is given full revisionary treatment.

ACKNOWLEDGEMENTS

I wish to thank the Bureau of Flora and Fauna for the ABRS grant to visit other Australian Museums and their support of my study of Australian xanthid crabs. Drs Gary Morgan (Western Australian Museum) and A.J. Bruce (Northern Territory Museum) kindly assisted me during my stay in their institutions and lent me specimens. Dr Ray Ingle and Mr Paul Clark kindly gave me assistance and access to type specimens during my visit to the British Museum of Natural History. Dr Trevor Ward of the CSIRO is thanked for the donation of the North West Shelf specimen of *Lophopilumnus globosus*. Carlos Picasso took the photographs of *L. cristipes* and *L. globosus*. Mr Philip Lawless assisted in making up the plates and composing the illustrations. Mrs Peta Woodgate is thanked for her typing skills.

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Accepted 26 July 1988