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PARALOBODELPHYS SETIPODA N. GEN., N. SP. (CYCLOPOIDA,
NOTODELPHYIDAE): AN ASCIDICOLOUS COPEPOD FROM THE
GREAT BARRIER REEF, AUSTRALIA

BY

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The notodelphyid copepods — typically, though not exclusively, associated with ascidians — show a bewildering variety of habitus, ranging from relatively unmodified genera such as *Notodelphys*, through egg-shaped (*Ooneides*), worm-like (*Ophioseides*) and almost stellate types (*Achelidelphys*) to nearly globular forms. Among these latter is the genus *Lobodelphys*, so far monotypically represented by *Lobodelphys elephas* Illg & Dudley, 1961, from a Mediterranean pyurid.

A new notodelphyid, unquestionably close to *Lobodelphys*, has now come to light in Australian material from the Great Barrier Reef, and is described here. The state of preservation is unfortunately rather poor — a not infrequent occurrence in globular copepods with very thin integuments — and the description is therefore a composite derived from dissections of several specimens. I am much indebted to Dr. G. A. Boxshall of the British Museum (Natural History), London, for the opportunity of examining this copepod.

Paralobodelphys new genus

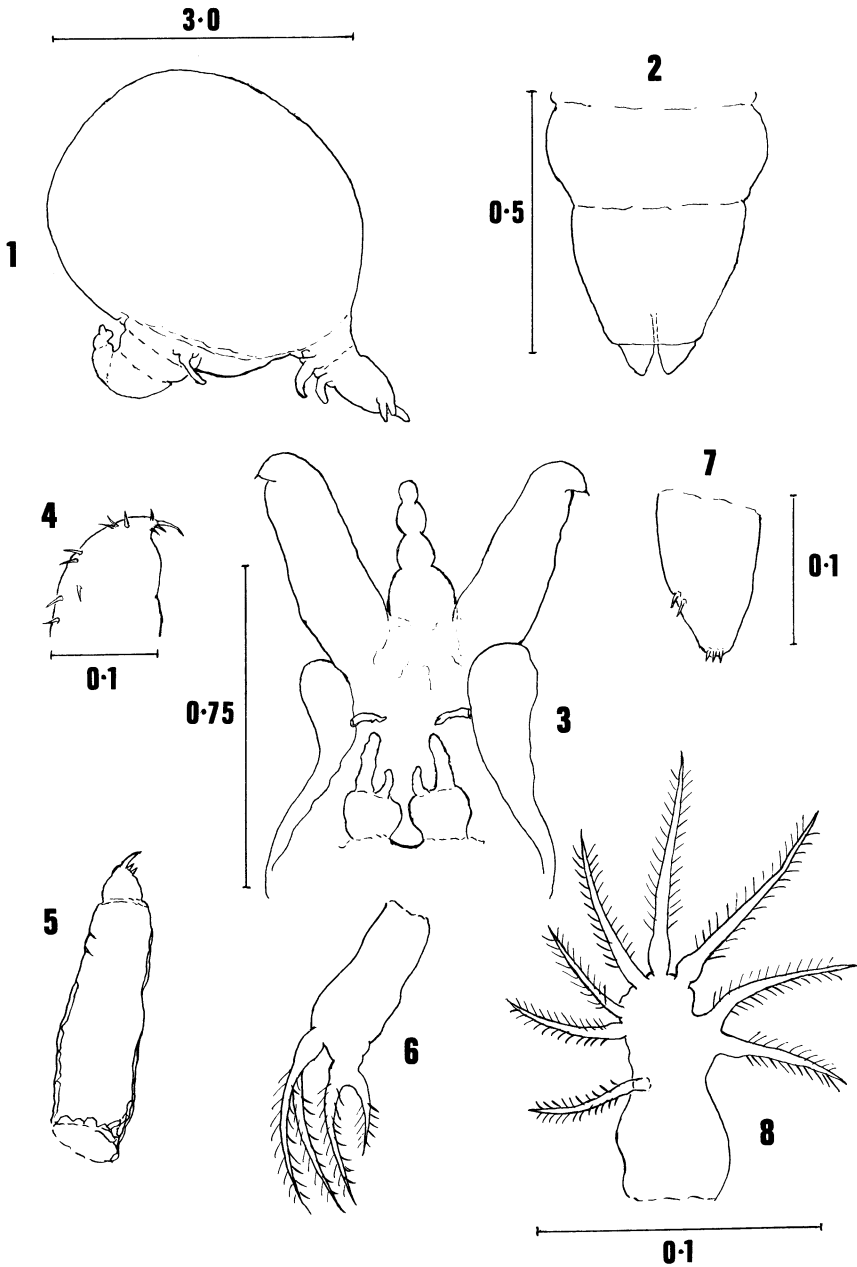
The generic definition of this so far monotypic form is provided in the description of the type species below.

Paralobodelphys setipoda n. sp.

Material. — Several female specimens, in various developmental stages, but mainly adult, from the styelid *Polycarpa cryptocarpa* Sluiter. Collected 10.iii.1929, by dredge, in 10 fathoms at Stn. 19 (about 1/2 mile N. of Eagle Is., off Lookout Point), Great Barrier Reef Expedition.

1 ♀ (holotype), cat.nr. 1967.10.23.4a, 1 ♀ (paratype), cat.nr. 1967.10.23.4b, and 1 juvenile ♀ (paratype), cat.nr. 1967.10.23.4c have been deposited in the British Museum (Natural History), London.

Description of adult female. — Body largely globular, contained in a circular area of about 3 mm diameter, divided into cephalosome, metasome and small, indistinctly segmented urosome (figs. 1, 2). Cephalosome subtriangular in dorsal view, prolonged anteriorly into a long rostrum constricted at three points,



Figs. 1-8. *Paralobodelphys setipoda* n. gen., n. sp., ♀. 1, lateral view; 2, posterior segments of urosome; 3, ventral view of head region, showing rostrum, antennules, lateral cephalosomic ridges, antennae and first legs (mouth-parts omitted); 4, tip of antennule; 5, antenna; 6, mandible; 7, caudal ramus; 8, maxillule. (Scales, in mm, refer to the adjacent figure. That for fig. 8 applies also to figs. 5 and 6.)

resulting in an almost moniliform appearance. Cephalosome bounded laterally by strongly developed ridges and bearing the anteriorly-reflected first pair of pereopods as well as the head appendages (fig. 3). The first legs largely cover and obscure the mouth-parts. First two segments of metasome discernible, though not very clearly defined, bearing the second and third pereopods respectively. The third pereopods are displaced laterally and the fourth considerably removed posteriorly. Remainder of metasome greatly inflated: the result (as in *Lobodelphys*) of an expanded body cavity, rather than an enlarged brood pouch. The latter contains a single superficial layer of embryos, but its extent and shape are difficult to determine in the material available. Urosome indistinctly articulated, but probably consisting basically of four segmental elements (fig. 2). It is largely overhung by the inflated metasome.

The antennules (fig. 3) are massively digitiform, terminating in a small, conical projection, and ornamented distally with about a dozen very small setal elements (fig. 4) of which the longest occurs apically.

The antennae (fig. 5) are small, digitiform and apparently bimerous, with the heavily sclerotized basal segment considerably longer and broader than the bluntly conical terminal segment. The latter bears two very small subapical spines and a slightly longer apical one.

The mandibles (fig. 6) are approximately rectangular lobes carrying distally three subequal ciliated setae and one shorter seta. At least two of the setae appear to be basally confluent.

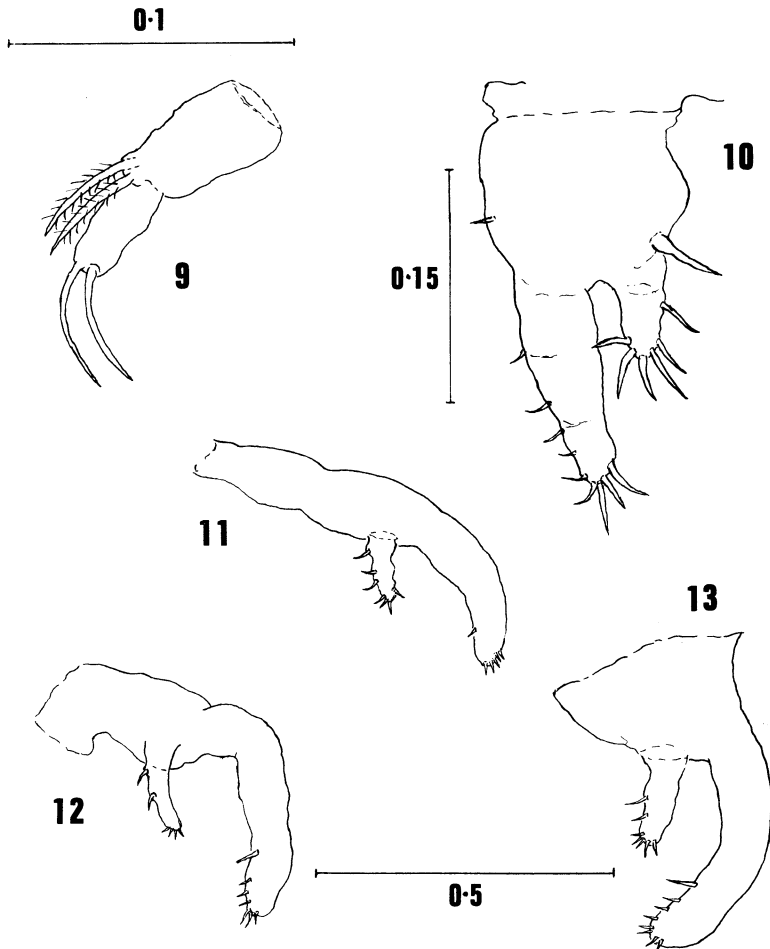
The maxillules (fig. 8) are lobate, somewhat expanded structures bearing marginally eight large ciliated setae as shown.

The maxillae (fig. 9) are bimerous, tapering, with the basal segment a little longer than the terminal. The latter bears two plain setae apically, and the former has two ciliated setae inserted near its distal extremity.

No trace of a maxilliped (reduced in *Lobodelphys* to a single seta) could be detected.

First pereopods (fig. 10) reflected in an anterior direction and linked by a sclerotized bar. The bases are inflated and the rami show only the vaguest traces of articulation. A large spine (probably the usual one associated with the basipodite) is present close to the origin of the endopod, and on the opposite margin, near the base of the exopod, another, very small seta occurs. The endopod carries a total of six setae around its margin. The much larger exopod bears four setae around its apex and a further five, smaller setiform elements along its lateral margin.

Pereopods two and three (figs. 11, 12) with bases appreciably more elongate, perhaps due to their points of insertion being subjected to lateral pressure as the posterior cephalosomal and metasomal regions become progressively inflated. Rami swollen protrusions (the endopod smaller than the exopod) but still bearing small setae as shown.



Figs. 9-13. *Parolobodelphys setipoda* n. gen., n. sp., ♀. 9, maxilla; 10, first pereiopod; 11, second pereiopod; 12, third pereiopod; 13, fourth pereiopod. (Scales, in mm, refer to the adjacent figure. That for figs. 12 and 13 applies also to fig. 11.)

Pereiopod four (fig. 13) with a subtriangular base and setal adornment of the rami as illustrated.

Caudal rami (figs. 2, 7) triangular, appended to an anal segment which is apparently contractile into the preceding urosomal element. Each ramus carries three minute setules terminally and two laterally.

Colour in life not determined.

No male has as yet been discovered.

DISCUSSION

The status of generic rank here granted might certainly be questioned, since a dilemma is frequently created by the discovery of a new form closely similar

to a genus only monotypically known. Although further examination of fresh material would be desirable in the present instance, generic status would, however, seem justified, on the grounds of accumulated small differences between the two forms. The chief points distinguishing *Paralobodelphys* from *Lobodelphys* are as follows: (1) The occurrence of setal elements, albeit small and sparse, on the second, third and fourth pereopods, and the presence of less regressed endopods in these legs. (2) The reduction of setae (from five to four) on the mandible. (3) The reduction of setae (from four to two) on each segment of the maxilla. (4) The absence of a maxilliped.

These differences serve to underline previous observations (Gotto, 1970; Ooishi & Illg, 1977) that many strongly transformed copepods are mosaics of "less highly evolved" and "more highly evolved" features, and that such features may be quite inconsistent within a clearly related lineage. Thus the greatly reduced second to fourth legs of *Lobodelphys*, with their tiny endopods and total lack of setal adornment, might suggest lengthier commitment and more profound adaptation to commensal life than the somewhat less strongly modified pereopods of *Paralobodelphys*. On the other hand, the reduced number of setae displayed by the mandible and maxilla of the latter genus, along with complete elimination of the maxilliped, might imply precisely the opposite! It seems evident that evolutionary processes impinge with unequal force on the minutiae of adaptive moulding in associated copepods.

RÉSUMÉ

Un Copépode ascidicole, *Paralobodelphys setipoda* gen. nov., sp. nov. (Cyclopoida: Notodelphyidae) est décrit. Il habite dans l'ascidie simple *Polycarpa cryptocarpa* Sluiter, dans la Grande Barrière Récifale d'Australie. Ses affinités avec le genre *Lobodelphys* sont discutées.

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