

A new genus of tantulocaridan (Crustacea: Tantulocarida) parasitic on a harpacticoid copepod from Tasmania

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Introduction

There are now eleven described species of Tantulocarida placed in five genera (Boxshall & Lincoln, 1987). One of these, *Basipodella* Becker, contains two species both of which are parasitic on copepods. The other four genera parasitise tanaid, isopod, cumacean and ostracod hosts. *B. harpacticola* Becker was described from unidentified harpacticoid hosts caught at depths of 2000 to 5000 m in the Peru Trench in the eastern Pacific (Becker, 1975). *B. atlantica* Boxshall & Lincoln was found at a depth of about 3000 m in the North Atlantic to the southwest of the Azores, on a copepod belonging to the harpacticoid family Tisbidae (Boxshall & Lincoln, 1983). Whilst examining a collection of harpacticoids from the Bass Strait, off Tasmania, a single specimen of a *Stenhelia* species was found bearing a tantulocaridan on the side of its urosome (Fig. 1). This specimen, a tantulus larva containing a developing male, is described below as a new genus.

Description

AUSTROTANTULUS gen. n.

DIAGNOSIS. Class Tantulocarida. Tantulus larva with first thoracic tergite partly concealed beneath posterior margin of dorsal cephalic shield; cephalic shield ornamentation comprising longitudinal lamellae and pores; thoracopods 1–5 of tantulus larva biramous, with well developed endites, uniramous leg 6 with coupling spines on protopod; abdomen of tantulus 2-segmented; adult male formed within trunk sac originating posterior to sixth thoracic tergite of preceding stage.

TYPE SPECIES. *Austrotantulus lincolni* gen. et sp. n.

ETYMOLOGY. The generic name is derived from the Latin *australis* meaning South, and *tantulus* which forms part of the name of the class Tantulocarida.

Austrotantulus lincolni gen. et sp. n.

TANTULUS LARVA. The body (Fig. 2A) comprises the cephalic shield, 6 free thoracic somites and a 2-segmented abdomen. The body length is 125 μm , measured from the tip of the cephalic shield to the posterior margin of the abdomen, excluding the caudal setae. This may be an overestimate because expansion of the trunk sac may have caused separation of the thoracic tergites. The cephalic shield (Fig. 2B) is longer than wide ($47 \times 32 \mu\text{m}$) and tapers anteriorly. The rostrum is absent. The oral disc has a diameter of about 15 μm and is positioned anteriorly so that it is visible in dorsal view. The surface ornamentation of the head, as seen by light microscopy, consists of longitudinal lamellae dorsally and oblique lamella on the downturned ventrolateral margins. Associated with these lamellae are at least 5 pairs of pores, as marked on Figure 2B. Internally a pair of chitinous bars leads towards the central pore of the oral disc. The cephalic stylet is very slightly curved and is about 22 μm long.

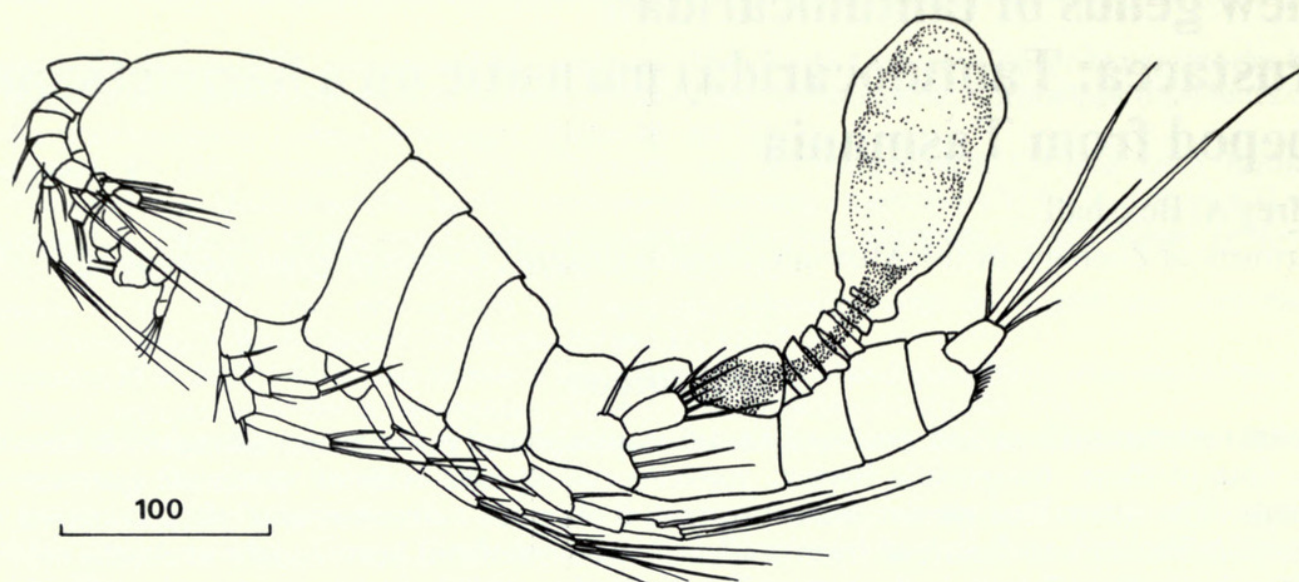


Fig. 1 *Austrotantulus lincolni* gen. et. sp. n. Holotype tantulus male undergoing metamorphosis attached to its harpacticoid host. Scale bar in μm .

The 6 free thoracic tergites are not conspicuously ornamented. The first tergite is partly concealed beneath the rear margin of the cephalic shield. Each thoracic somite bears a pair of well developed legs.

The 2-segmented abdomen is $27\mu\text{m}$ in length (Fig. 2C) and is deflected ventrally by the expansion of the trunk sac posterior to the sixth tergite. The first abdominal somite is wider than long ($5 \times 13\mu\text{m}$), the second longer than wide ($21 \times 13\mu\text{m}$). The caudal rami are each represented by 1 short and 2 long setae arising from a common base.

There are no cephalic appendages. Thoracopods 1 to 5 have a large unsegmented protopod bearing a single endite which originates at the proximal rim of the limb. The armature of the endites cannot be discerned by light microscopy, but probably resembles that of *Deoterthron harrisoni* (see Boxshall & Lincoln, 1987). Thoracopods 1 to 5 are biramous. The exopod is 2-segmented and carries 2 apical setae in leg 1 (Fig. 2D). It bears 4 setae apically in legs 2 (Fig. 2E) to 5. The endopod is more than twice as long as the exopod and is indistinctly 2-segmented. The endopod of leg 1 is armed with 2 apical spines only. The endopods of legs 2 to 5 each have the 2 apical spines and, in addition, the proximal segment bears 2 long setae distally on its lateral margin. Leg 6 (Fig. 2F) is uniramous and has a large protopod armed with 2 complex coupling spines on the medial margin. There is no endite. The ramus is 1-segmented and armed with 2 long, curved setae.

MALE. The trunk sac of the holotype contained a male at an intermediate stage of development. This developing male was still attached via the umbilical cord. The tagmosis of the adult male could be discerned only in part, through the wall of the trunk sac. The first 2 pedigerous thoracic somites were fused to the head to produce a cephalothorax of 7 somites and there were 4 free thoracopod-bearing somites. However, the segmentation of the folded abdomen was not visible. A cluster of aesthetascs was present anteriorly on the cephalothorax, as described for the adult male of *D. harrisoni*. The male was not in a sufficiently advanced state of development for it to be dissected out of the enclosing trunk sac.

ETYMOLOGY. The species is named after Roger Lincoln in recognition of his work on the Tantulocarida.

MATERIAL EXAMINED. Holotype: ♂ tantulus, parasitic on the harpacticoid *Stenhelis* sp. from fine calcareous mud collected at about 22 m depth in the Bass Strait (at approximately $41^{\circ}00'S$ $146^{\circ}00'E$), off Round Hill Point, near Burnie on the north coast of Tasmania. BM(NH) Registration No. 1987.418.

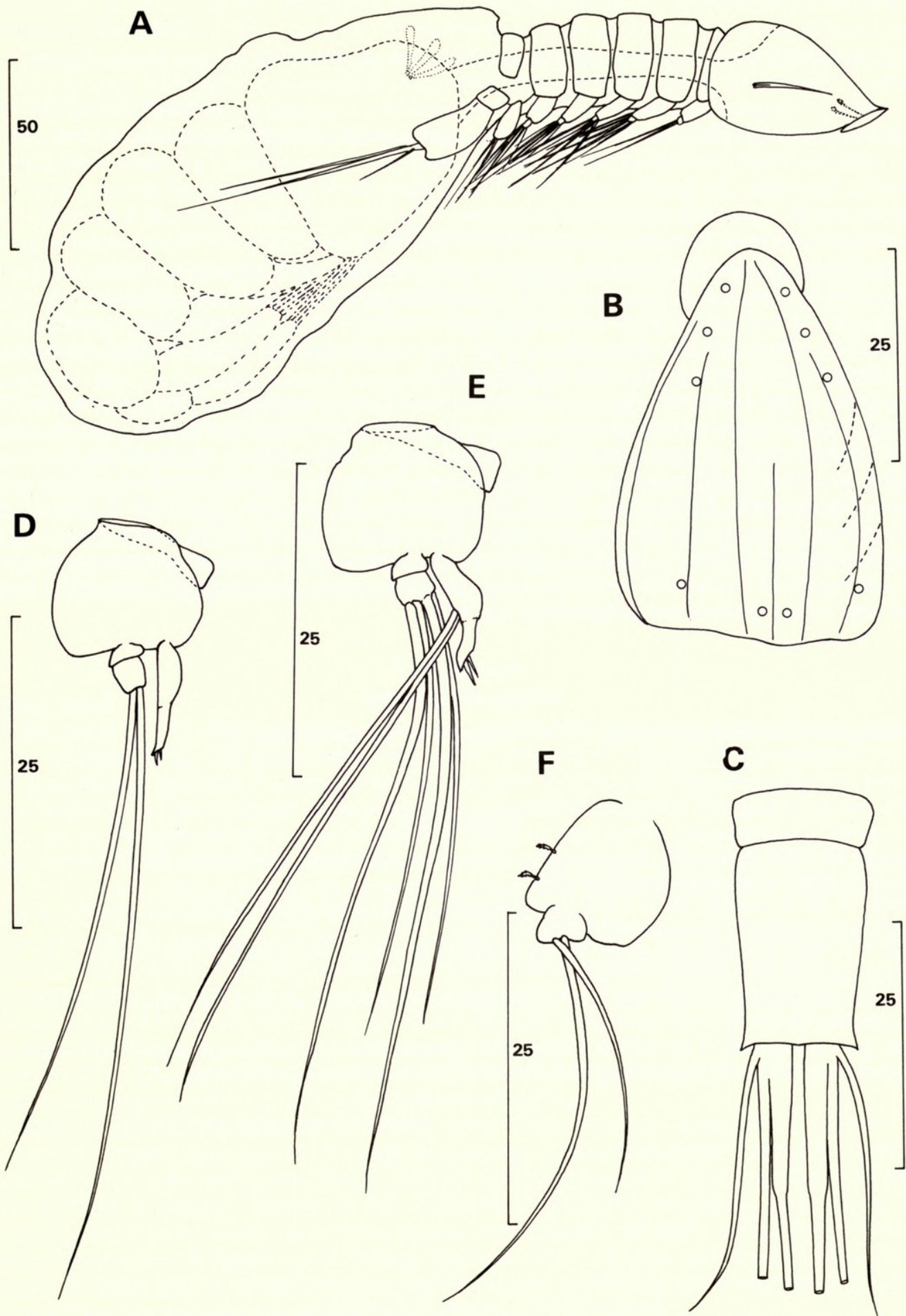


Fig. 2 *Austrotantulus lincolni* gen. et sp. n. A, Holotype, lateral view; B, cephalic shield, dorsal; C, abdomen, dorsal; D, leg 1, posterior; E, leg 2, posterior; F, leg 6, posterior. All scale bars in μm .

REMARKS. The new genus can be readily distinguished from *Basipodella* species, which are known to parasitise harpacticoids, by the segmentation of the abdomen. The abdomen is 2-segmented in the tantulus larva of the former and 6-segmented in the latter. Other differences include the general pattern of the surface ornamentation of the cephalic shield. In the new genus this basically consists of a system of longitudinal lamellae whereas in *Basipodella* species there are conspicuous transverse and longitudinal lamellae. The combination of 2-segmented abdomen in the tantulus, well developed endites and lamini on the tantulus thoracopods, and of longitudinal ornamentation on the cephalic shield is found only in the family Deoterthridae, in species of *Deoterthron* Bradford & Hewitt. However, the familial position of *Austrotantulus* is problematical because, whilst the larval characters agree with the familial diagnosis of the Deoterthridae (Boxshall & Lincoln, 1987) the position of the male trunk sac (posterior to the sixth tergite) is typical for the families Basipodellidae and Microdajidae. The families Deoterthridae and Microdajidae may have been established prematurely by Boxshall & Lincoln (1987), formalising morphological gaps between taxa which represented a lack of data more than a phylogenetic reality. The new genus is provisionally placed in the family Deoterthridae, although as more taxa are discovered it may become necessary to revise the familial arrangement of the tantulocaridans.

The area around Tasmania and New Zealand is rich in tantulocaridans. *Deoterthron aselloticola* Boxshall & Lincoln was described from an isopod host, *Hydroniscus lobocephalus* Lincoln, caught at 3250–3340 m in the Tasman Sea (Boxshall & Lincoln, 1983) and *D. megacephala* Lincoln & Boxshall was also found on an isopod, *Haploniscus tangaroae* Lincoln, taken at 1386 m in the Tasman Sea (Lincoln & Boxshall, 1983). The genotype, *D. dentatum* Bradford & Hewitt, was reported from the ostracod *Metavargula mazeri* Kornicker collected in 384 m to the east of New Zealand (Bradford & Hewitt, 1980). It is probable that this apparent species richness compared to other geographical regions can be attributed to sampling effort in this recently discovered taxon, rather than to any distinct zoogeographical pattern.

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