PROC. R. SOC. VICT. vol. 96, no. 3, 169-172, September 1984

DESCRIPTION OF THE MALE OF *LABIDOCERA CAUDATA* NICHOLLS (COPEPODA: PONTELLIDAE) WITH REMARKS ON THE FEMALE

By A. D. McKinnon and W. J. Kimmerer

Zoology Department, Melbourne University, Parkville, Victoria 3052

Abstract: We describe the male of *Labidocera caudata* Nicholls (Copepoda: Pontellidae), known previously from only two female specimens, and expand the description of the female. *L. caudata* appears to be a late summer inshore species.

Labidocera caudata is known from only two female specimens, taken by Nicholls (1944) in Spencer Gulf, South Australia. We have found *L. caudata* in Western Port, Victoria, and here complete the description of both sexes.

All material was collected in horizontal surface plankton tows with 50 cm nets of either 150, 200 or 333 μm mesh. We measured and dissected specimens in glycerol, and mounted them on microslides in polyvinyl lactophenol. Drawings were prepared using a Wild M20 phase contrast microscope and camera lucida. Further examination was made with an Olympus Nomarski microscope. Material has been deposited in the Museum of Victoria (male J3137, female J3138 dissected on slides, bodies separate in vials J3139, J3140 3 females, 3 males in vials) and South Australian Museum (6 females, 2 males Reg. No. C3988).

SYSTEMATICS

Labidocera caudata Nicholls 1944

Figs 1, 2

Material Examined: Sixty-one females and 12 males Freeman Point (38°22.8′S, 145°27′E) 22 Dec. 82; 3 females Warneet (38°13.7′S, 145°18.3′E) 29 Mar. 84; 7 females, 5 males Rhyll (38°27.8′S, 145°19.2′E) 16 April 84; 2 females, 3 males Rhyll 17 April 84; 4 females 1 male Rhyll 18 April 84; 2 females Rhyll 9.5.84.

Description of Male: Mean body length to end of furcal rami 2.29 mm ± 0.1 S.D. (range 2.15-2.44) based on 9 specimens. Head rounded in dorsal view (Fig. 1a), with a slight prominence posterior to the origin of the antennules. In lateral view (Fig. 1b) there is an indentation at about the mid-length of the cephalosome. The dorsal eye lenses are large and close together. Underlying the lenses is a large densely pigmented block of tissue; a second, similar but smaller block is located in the protuberant medioventral eye. The rostrum (Fig. 1c) is large and postero-ventrally directed, the bifid rami separated at their base by about their own length. There are two lateral setules on the fourth thoracic segment, and four on the fifth thoracic segment. The posterior corners of the fifth thoracic segment are almost symmetrical, the right being very slightly longer. An additional, much smaller setule is borne near the apex of the thoracic corners (Fig. 1d).

The urosome (Fig. 1d) is 5 segmented, with the genital segment slightly asymmetrical, the left side slightly expanded.

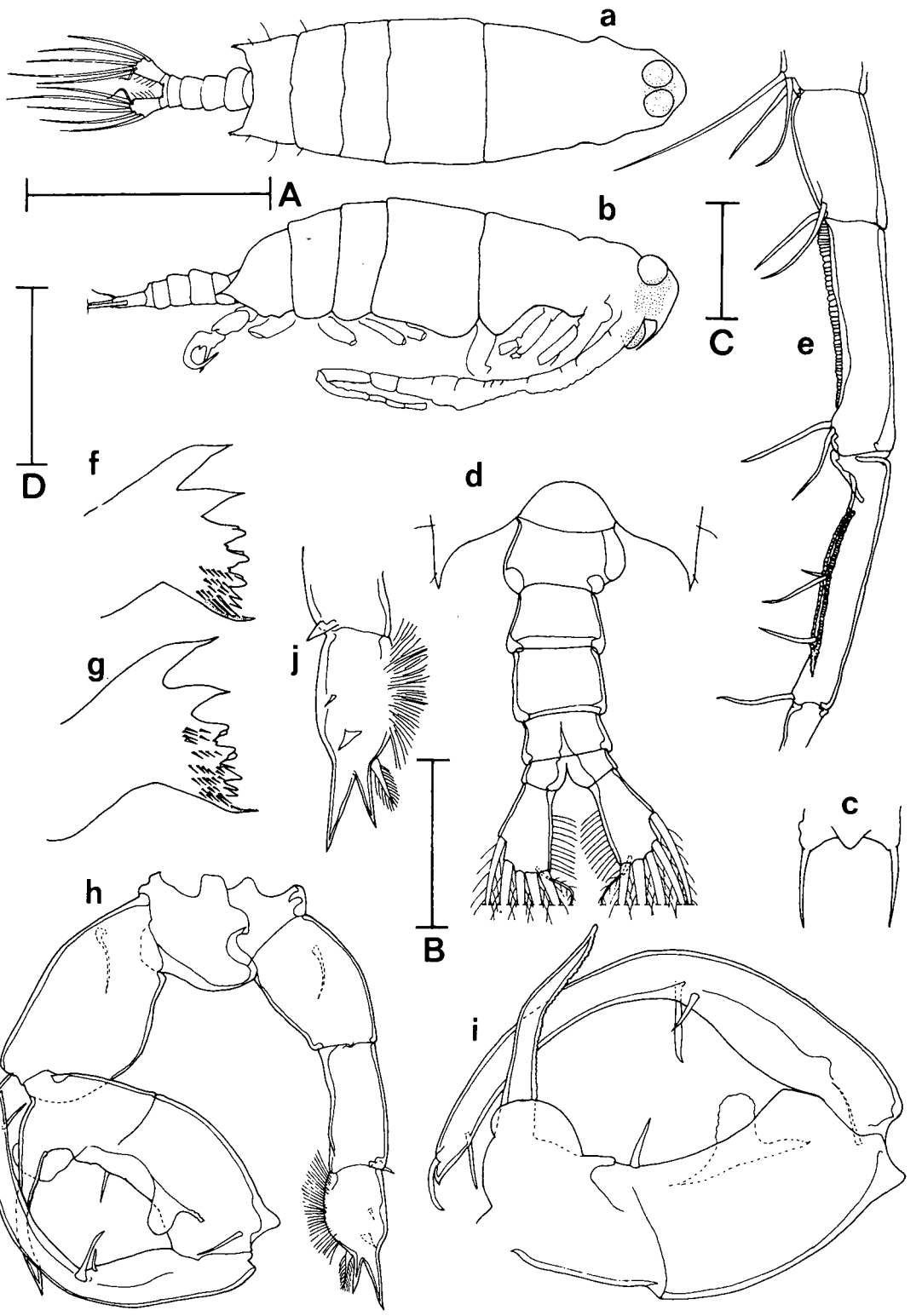
Segment 17 of the right antennule (Fig. 1e) is 1.64 times as long as wide, and bears two setae distally, and no denticles. Segment 18 is 3.67 times as long as wide, and has along the anterior margin a plate bearing about 27 denticles and two setae distally. Fused segments 19-21 are about 6 times as long as wide, and bear a double row of about 60 denticles along the anterior margin. Two setae are borne at about mid-length, one at about 75% length, and one distally.

The mandibles (Fig. 1f, g) have two well developed and broadly spaced single teeth, three median bicuspid teeth, and a pair of sharply pointed single teeth adjacent to the basal seta. Both surfaces of the mandible blade have swathes of small spinules, those in the region of the basal seta more strongly developed.

The coxa of right leg 5 (Fig. 1h) has a plumose seta on the posterior face. Chela of right leg 5 (Fig. 1h, i) with the 'thumb' about mid-length of the segment and arising near the base of exopodite 1. It is surrounded basally by a lamellate collar and the concave face has a rough surface. Exopodite 1 has a fold at a little over 30% of its length, giving the impression of a segment. A small seta arises on the inner border at about this point. At about 70% the length of the segment there is a rough blunt lamellate process on the anterior face. At the distal end of the segment there is inwardly directed seta.

The second exopod segment forms the 'finger' of the chela. The proximal 40% of the segment is lamellate on the inner side, at the distal extremity of which are two small thick setae, the distal 60% of the segment is evenly curved. On the distal end of the segment there is a seta on the inner margin, and on the outer margin a subterminal seta.

Left leg 5 basipod (Fig. 1h) has a plumose seta on the posterior face. The first exopod segment is unornamented except for a small triangular spine on the outer distal corner. The second exopod segment (Fig. 1h, j) is hirsute on the inner margin. A small triangular spine is borne at about mid-length of the segment on the posterior face; there is a second similar but stronger spine at about 75% the length of the segment on the same face. Terminally the segment is produced into two large triangular processes, adjacent to which there is a single plumose seta on the inner margin.


a
A
b
C
e
D
f
d
j
g
c
B
h
i

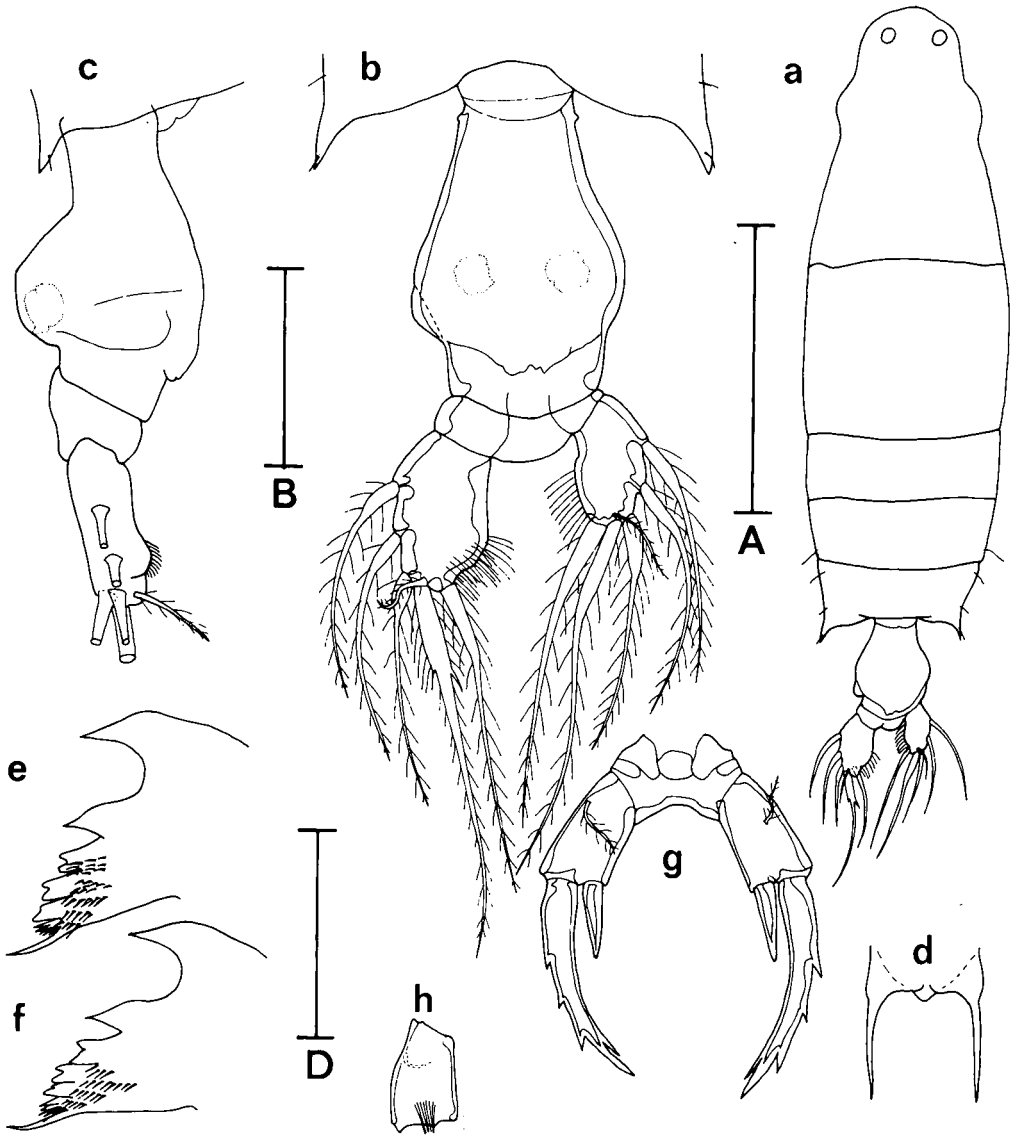


Fig. 2—*Labidocera caudata* Nicholls 1944 female: a, dorsal (scale A); b, urosome, dorsal (B); c, urosome, lateral (B); d, rostrum (B); e, right mandible blade, inner surface (D); f, left mandible blade, outer surface (D); g, leg 5, posterior (B); h, basis of left leg 5, anterior (B).
Scale bars as for Fig. 1.

DESCRIPTION OF FEMALE: Mean body length to end of furcal rami 2.65 mm ± 0.09 S.D. (range 2.48-2.81) based on 19 specimens. Form of the body (Fig. 2a) similar to that of the male, but the dorsal eye lenses are smaller and separated by more than two times their diameter. In life, the first thoracic segment of most females was densely coloured red brown. Rostrum similar to that of the male but more attenuated, the rami separated by slightly more than their own length. The fifth thoracic segments are almost symmetrical, the left being very slightly longer. The mandible blades (Fig. 2e, f) are similar in form to the male.

Fig. 1—*Labidocera caudata* Nicholls 1944 male: a, dorsal (scale A); b, lateral (A); c, rostrum (B); d, urosome, ventral (B); e, segments 17 to 21 of right antennule (C); f, right mandible blade, inner surface (D); g, left mandible blade, outer surface (D); h, leg 5, anterior (C); i, right leg 5 chela, posterior (D); j, terminal segment of left leg 5, posterior (D).
Scale bars: A 1.0 mm; B 0.25 mm; C 0.10 mm; D 0.10 mm.

The urosome (Fig. 2b, c) is two segmented. The genital segment has a large lobe produced posteriodorsally, the margin of which is irregular. The anal segment is small and asymmetrical, the left hand side being longer than the right. The left caudal ramus is 1.37 times longer than the right. The setae on this ramus all have a bulbous basal portion and a longer attenuated distal portion. The longest apical seta is produced into two spiniform processes at the distal extreme of the bulbous basal portion. The ramus is hirsute on the dorsal and medial faces. The right ramus is similar in form but smaller, the hairs are limited to the medial face of the ramus.

The fifth legs (Fig. 2g) are slightly asymmetrical, the right exopod slightly longer than the left. There is a seta on the posterior face of each basipod. The anterior face of each basipod (Fig. 2h) has a distal patch of long setules. The endopods are simple triangular segments. The exopods have three sharp lateral prominences, a sharp terminal point, and a single weak subterminal point on the medial face.

All females had spermatophores, the form of which was illustrated by Nicholls (1944).

COMPARISON WITH HOLOTYPE: The holotype (South Australian Museum, Reg. No. C3983) is a female specimen 2.24 mm in length, mounted on a single microslide, the body and urosome intact under one coverslip, and the complete set of appendages under another. The endopod of the fifth leg of the holotype has a distal portion which is more strongly tapered than in our material, at the base of which is a very small spinule. The basipod seta and patch of setules are present on the holotype, though not figured in Nicholls' (1944) description. In other respects the holotype is similar to the Western Port material, though at 2.24 mm in length it is smaller.

REMARKS: In a one-year (1982-83) study of the distribution of zooplankton in Port Phillip Bay and Western Port (Kimmerer & McKinnon in prep.) *Labidocera caudata* was abundant in Western Port from October to January 1983. In 1982-83 it was the only species of *Labidocera* in Western Port. In late March to May 1984 we found *L. caudata* to be quite common in Western Port, at Warneet and Rhyll. It co-occurred in 1984 with two other species of *Labidocera*, *L. cervi* Kramer 1895 and *L. tasmanica* Taw 1974. *L. cervi* is widely distributed in southeastern Australia and New Zealand (Greenwood 1979) and is a resident in Port Phillip Bay. *L. tasmanica* is a Bass Strait resident that occasionally penetrates into the bays. *L. caudata* did not occur in Port Phillip Bay at these times. Nicholls' type material was collected in March 1938. *L. caudata* therefore seems to be a late summer species, which is limited in Western Port to the inner bay.

L. caudata, L. cervi and *L. tasmanica* all belong to the super species *detruncata*, reviewed by Greenwood and Othman (1979). Males of *L. caudata* are characterised by the structure of the fifth leg: the lamellate collar surrounding the base of the 'thumb', and the rough lamellate process at about 70 per cent of the length of the first exopodite segment, are both distinctive.

L. caudata appears to be most closely related to *L. madurae* A. Scott 1909, based on the structure of both male and female fifth legs.

ACKNOWLEDGEMENTS

We thank the South Australian Museum for the loan of the type material. This work was supported by M. S. T. Grant #83/1325.

REFERENCES

GREENWOOD, J. G., 1979. Calanoid copepods of Moreton Bay (Queensland) IV. Family Pontellidae. *Proc. R. Soc. Qld.* 90: 93-111.

GREENWOOD, J. G. & OTHMAN, B. H. R., 1979. Description of *Labidocera farrani* sp. nov. a pontellid copepod known from eastern and northern Australian waters (Crustacea, Copepoda). *J. Plankton. Research.* 1: 231-239.

KRAMER, A., 1895. On the most frequent pelagic copepods and cladocerans of the Hauraki Gulf. *Trans. N.Z. Inst.* 27: 214-223.

NICHOLLS, A. C., 1944. Littoral copepoda from South Australia. II. Calanoida, Cyclopoida, Notodelphyoida, Monstrilloida and Caligoida. *Rec. S. Aust. Mus.* 8: 1-62.

SCOTT, A., 1909. The Copepoda of the *Siboga* Expedition, Part I. Free-swimming, littoral and semi-parasitic copepoda. *Siboga-Exped. Monogr.* 29A: 1-323.

TAW, NYAN, 1974. A new species of Labidocera (Copepoda: Calanoida) from Tasmania and its postnaupliar developmental stages. *Aust. J. mar. Freshwat. Res.* 25: 261-272.