

## CENTROPAGES ACUTUS, A NEW CALANOID COPEPOD FROM THE FLY RIVER ESTUARY, PAPUA NEW GUINEA.

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### ABSTRACT

A new species of calanoid copepod, *Centropages acutus*, from the Fly River delta, Papua New Guinea, is described. The new species is unique in having the head produced antero-dorsally into a strong point, in having a large process bearing two spines on the third urosome segment of the female, and in having a large process on the first segment of the antennule in both sexes.

KEYWORDS: Crustacea, Copepoda, Centropagidae, *Centropages acutus*, new species, Papua New Guinea.

### INTRODUCTION

McKinnon and Kimmerer (1988) summarised the current status of the genus *Centropages* Krøyer, and listed ten species occurring in waters adjacent to Australia. During sampling of the zooplankton of the Fly River delta, Papua New Guinea (Robertson *et al.* 1993), we found a new species of the genus which we describe below.

We took plankton samples using a plankton pump with 105µm mesh, with the inlet 2.0m below the surface; station numbers are those of Robertson *et al.* (1993). Samples were preserved in dilute formalin and animals subsequently placed in lactic acid and drawn using an Olympus BH-2 microscope fitted with Nomarski optics, and camera lucida. We dissected the animals in lactic acid and mounted them in polyvinyl lactophenol on microslides. Armament formulae are presented from basis to most distal segment, and for swimming legs as outer margin first; roman numerals indicate spines, arabic numerals setae. Type material is deposited in the Northern Territory Museum, Darwin (NTM).

### SYSTEMATICS

#### Family Centropagidae Krøyer, 1849

#### *Centropages acutus* sp. nov.

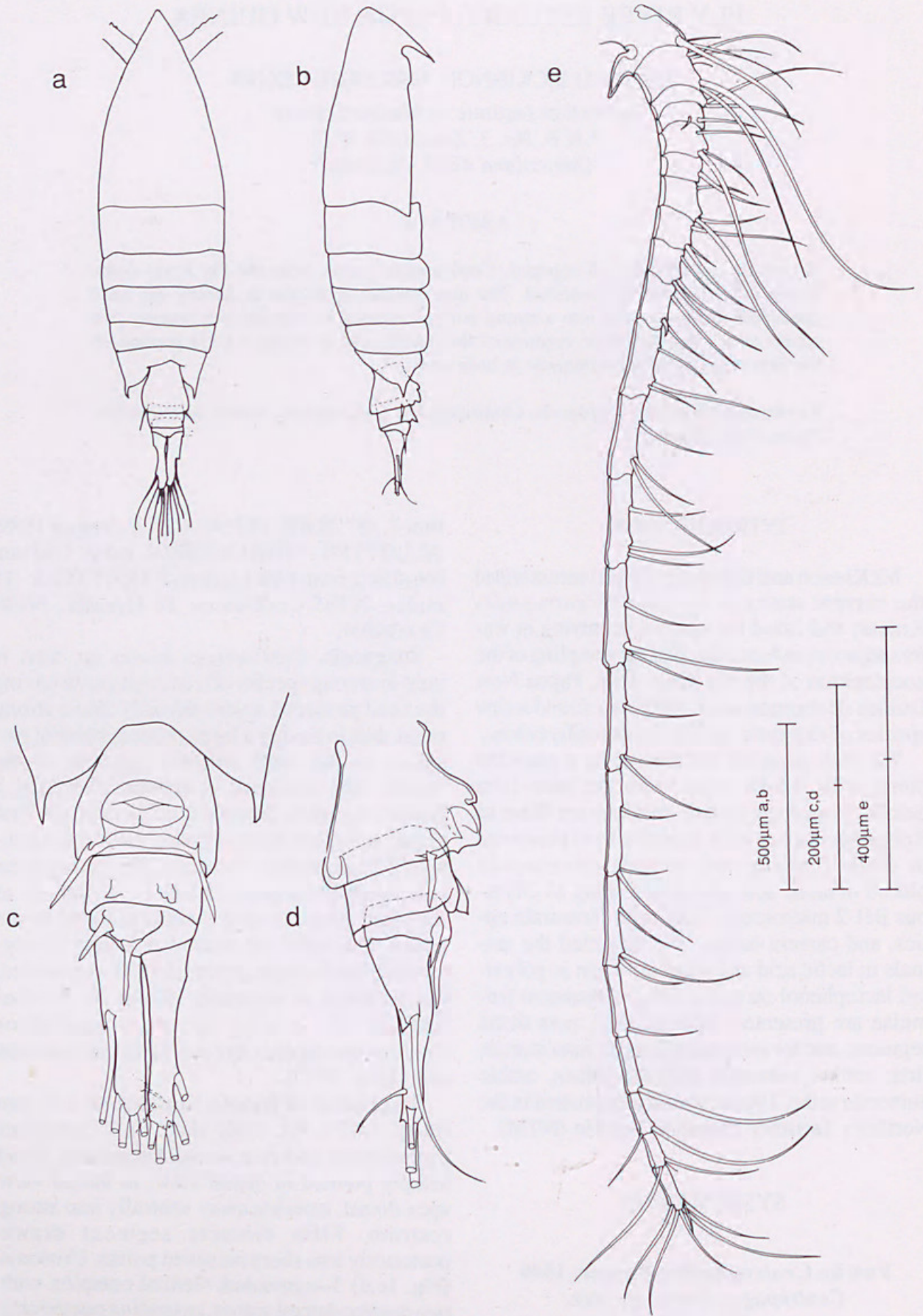
(Figs 1-3)

**Type material.** HOLOTYPE-NTM Cr.008801, female, 1.47 mm (on slide), Fly River delta Sta-

tion 7, (8° 28.8'S, 143° 42.6'E), 2 August 1989; ALLOTYPE - NTM Cr.008802, male, 1.40 mm (on slide), from type locality; PARATYPES - 14 males, NTM Cr.008803; 14 females, NTM Cr.008804.

**Diagnosis.** *Centropages acutus* sp. nov. is unique among species of *Centropages* in having the head produced antero-dorsally into a strong point, and in having a large process bearing two spines on the third urosome segment of the female. The antennule is unusual in having a postero-ventrally directed process from the first segment in both sexes. Female antennules consist of 22 segments, two segments having been lost between segments 11 and 17, in contrast to the usual 24-segmented condition found in the genus. The male left antennule is also 22-segmented, but the right antennule is 21-segmented, due to fusion of segments 19 and 20. In other respects *C. acutus* sp. nov. resembles *C. typicus* Krøyer, 1849 (see Lawson and Grice, 1970).

**Description of female.** Total length 1.47 mm (range 1.42-1.56). Body (Fig. 1a,b) comprises cephalosome and five thoracic segments. Head sharply pointed in dorsal view, in lateral view apex dorsal, tapering away ventrally into strong rostrum. Fifth thoracic segment drawn posteriorly into sharp recurved points. Urosome (Fig. 1c,d) 3-segmented. Genital complex with two postero-lateral spines, extending posteriorly as far as anterior margin of urosome segment 3. Urosome segment 2 with two small lappet-like processes on ventral surface, one on either side



**Fig. 1.** *Centropages acutus* sp.nov., female holotype: a, habitus, dorsal; b, lateral; c, urosome, ventral; d, urosome, lateral; e, right antennule.

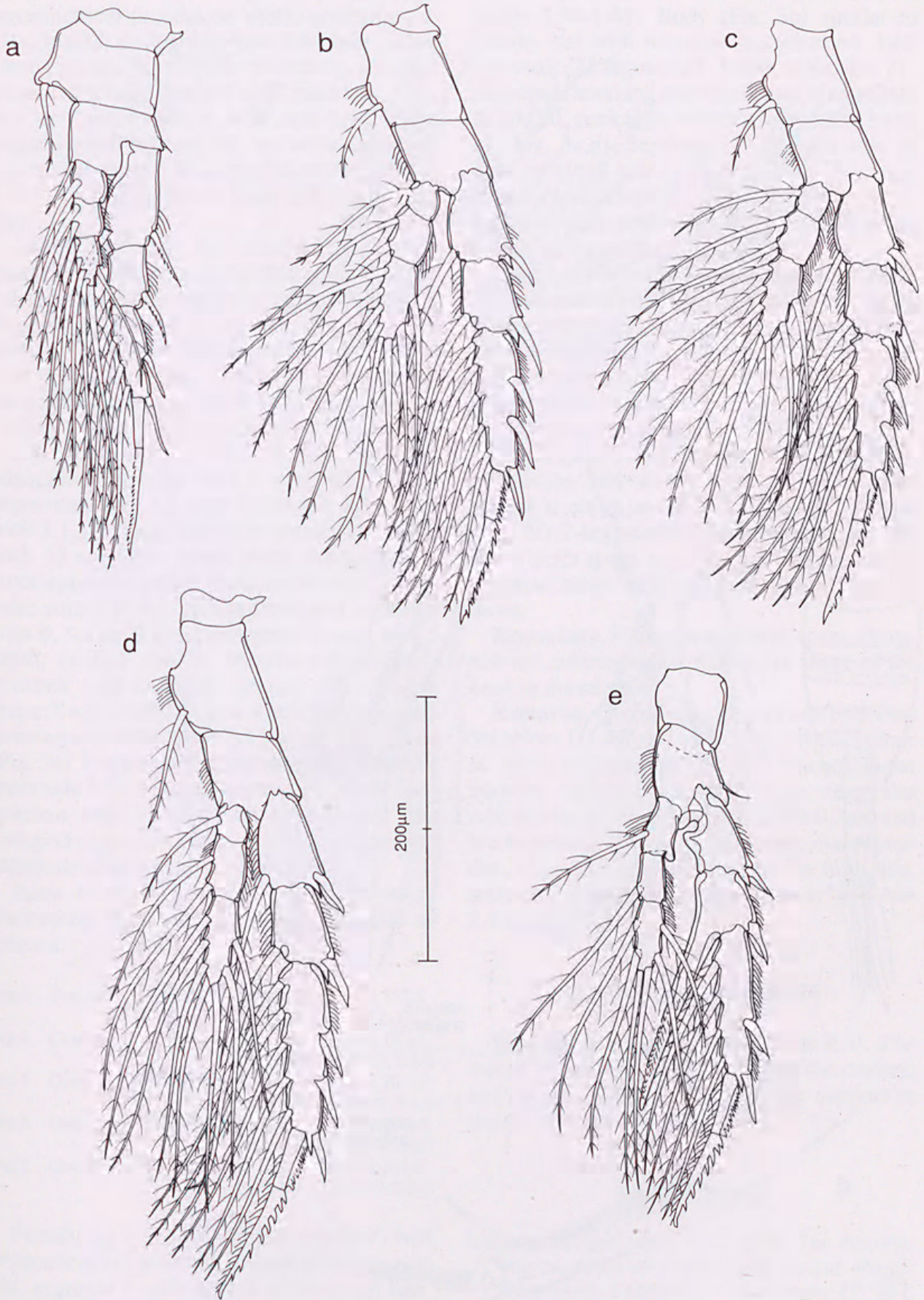


Fig. 2. *Centropages acutus* sp. nov., female holotype: a, leg 1, anterior; b, leg 2, anterior; c, leg 3, anterior; d, leg 4, anterior; e, leg 5, anterior.

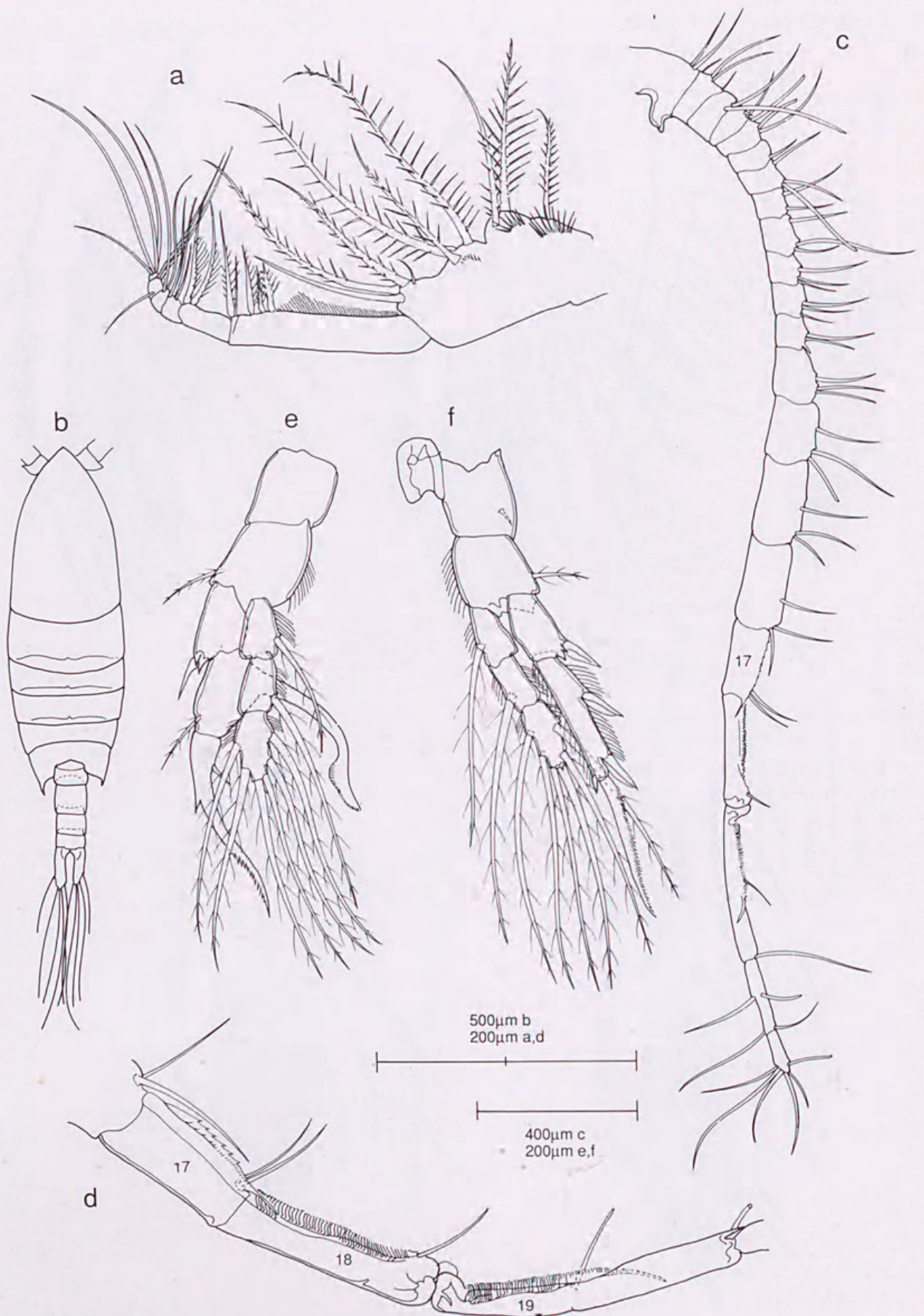


Fig. 3. *Centropages acutus* sp. nov., b-f, female holotype: a, maxilliped; male allotype: b, habitus, dorsal; c, right antennule; d, right antennule, segments 17-20; e, left leg 5, anterior; f, right leg 5, anterior.

of mid-line. Urosome segment 3 with large asymmetrical process on ventro-posterior surface, biased toward right-hand side, bearing two strong spines, one directed posteriorly, the other postero-laterally, toward right hand side. Caudal rami asymmetrical, with right-hand ramus slightly wider than the left, and with lateral seta inserted at about mid-length; lateral seta of left-hand ramus inserted at about 0.8 length from base.

Antennules (Fig. 1e) symmetrical, 22-segmented, with large pointed posteriorly directed process on postero-lateral margin of segment 1. Segment 10 has robust thorn on the outer distal margin. Antennae and mouthparts similar in form to those of other species of *Centropages*. Antenna comprises coxa with 1 seta, basis with 2 setae, 2-segmented endopod with 2,4 setae and 7-segmented exopod with 1,3,1,1,1,4 setae. Mandible palp coxa with 4 setae, endopod 2-segmented with 4,9 setae, exopod 4-segmented with 1,1,1,3 setae. Maxillule praecoxal arthrite with 15 spiniform setae, coxal endite with 3, coxal epipodite with 9. Basal endite with 4 setae, exite with 1, fused basis and endopod segments with 9. Single distinct endopod segment with 5 setae, exopod with 9. Maxilla 2-segmented, syncoxa with 4 endites bearing 5,3,3,3 setae respectively. Fused basis and endopod segments forming two lobes bearing 3,8 setae. Maxilliped (Fig. 3a) 7-segmented, basis elongate, length of outer side 5.6 times maximum width. Maxilliped syncoxa with 10 setae, fused basis and first endopod segment with 5, second - sixth endopod segments with 2,3,2,3,4 respectively.

Rami of all legs 3-segmented (Fig. 2a-e). Swimming legs with armament formulae as follows:

Leg 1	Coxa 0-1	Basis 0-1	Exopod	I-1, I-1, II-I-4
			Endopod	0-1, 0-2, 1-2-3
Leg 2	Coxa 0-1	Basis 0-0	Exopod	I-1, I-1, III-I-5
			Endopod	0-1, 0-2, 2-2-4
Leg 3	Coxa 0-1	Basis 0-0	Exopod	I-1, I-1, III-I-5
			Endopod	0-1, 0-2, 2-2-4
Leg 4	Coxa 0-1	Basis 0-0	Exopod	I-1, I-1, III-I-5
			Endopod	0-1, 0-2, 2-2-3
Leg 5	Coxa 0-0	Basis 1-0	Exopod	I-0, I-0, II-I-4
			Endopod	0-1, 0-1, 2-2-2

Female leg 5 (Fig. 2e) exopod segment 1 with pronounced excavation on inner proximal margin, segment 2 with typical centropagid ensiform process produced from inner margin. Process denticulate along distal half.

**Description of male.** Total length 1.40 mm (range 1.34-1.40). Body (Fig. 3b) similar to female, but with urosome 4-segmented. Left antennule 22-segmented. Right antennule 21-segmented resulting from the fusion of segments 19 and 20, geniculate between segments 18 and 19 (Fig. 3c,d). Segments 17,18 with row of spinules along anterior margin (Fig. 3d), segment 19 with complex row of spinules on proximal two-thirds, terminating in spine lying along margin of segment.

Legs 1-4 similar to those of female. Legs 5 much modified, but with similar endopods to those of female. Right exopod 3-segmented (Fig. 3e), first segment carrying strong spine on outer distal margin, second segment with long thick curved process on inner proximal margin. Terminal segment modified into single curved process, with spine a short distance along inner face of process, and strong short spine on outer margin at about one third length. Left exopod (Fig. 3f) 2-segmented, first segment carrying single outer spine, second two outer spines and terminal spine with adjacent inner terminal thorn.

**Etymology.** From *acutus*, Latin, acute, sharp-pointed, referring to the distinctive shape of the head in dorsal view.

**Remarks.** *Centropages acutus* was collected at stations D1, D6, D7 and D9 (see Robertson *et al.* 1993, for details of station locations), in the northern section of the delta. The water was typically highly turbid (Secchi depth 0.2 m) and low in salinity (15.2 ppt). With only one exception, *C. acutus* was captured on the high tide, and reached a peak in density of 376 m<sup>-3</sup> at D7 on 2 August, 1989.

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