
SHORT COMMUNICATION

A new species of *Gastrosaccus* (Crustacea:Mysidacea) from the South West Coast of Australia

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Abstract. A description of a new mysid, *Gastrosaccus robusta*, is given. This species is distinguished from related species by possessing lobes on the carapace, a strong chitinous projection on the fifth abdominal segment, characters of the male pleopods and the shape and armature of the telson.

Introduction

In their monograph on the plankton of the Australian Coastal Waters off New South Wales, Dakin and Colefax (1940) recorded three species of *Gastrosaccus*, *G.indicus* Hansen (1910) *G.dakni* Tattersall (1940) and *Gastrosaccus* sp. nov. Except for a few figures, a description of this new species was never made. A footnote stated that 'this new species is being fully described in a separate publication by Dr Tattersall and owing to abnormal conditions prevailing on account of the war publication has been delayed'. This publication has not come out. However, figures of the fifth abdominal segment, third pleopod of male, and telson and uropods published by Dakin and Colefax (1940) agree closely with the present specimens and it seems to me probable that these two forms should be referred to a single species. I therefore create a new species *Gastrosaccus robusta* for *Gastrosaccus* sp. Dakin and Colefax.

Results

Subfamily Gastrosaccinae: Gastrosaccus robusta sp. nov.

Material examined

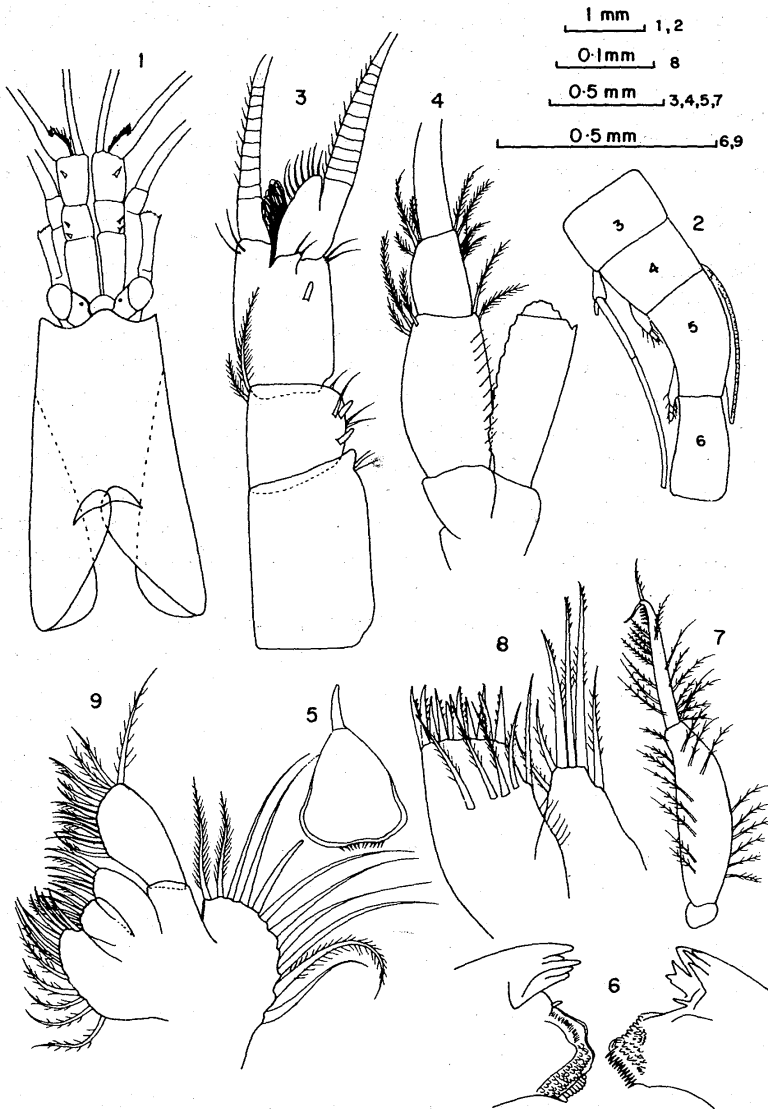
Enormous numbers of both sexes. Holotype male (11.8 mm) IOBC—0397—10-50—1988. Allotype female (11.6 mm) IOBC—0397 B-10-50—1988. Paratypes five males and five females IOBC—0397 A-10-50—1988. Type specimens were deposited in the reference collections of Indian Ocean Biological Centre (R.C., N.I.O.) Cochin, India. The largest male and female are 11.8 and 12.2 mm respectively.

Description

Body stout and robust, curving between third and fourth abdominal segments. Carapace (Figure 1) anteriorly produced into truncate apex between eyes; posterior margin emarginate, exposing last two thoracic somites dorsally and produced into a pair of anteriorly directed lobes that overlap each other.

Abdominal somites 1-3 cylindrical, fourth somite laterally compressed with distinct ridge running along mid-dorsal line. In fifth somite lateral compression more marked, dorsal ridge forming prominent chitinous projection posteriorly, tapering to a point (Figure 2).

Eyes moderate size, cylindrical and thick, cornea occupying distal half of whole eye and wider than stalk; a single conspicuous chromatophore present on inner proximal region of eyestalk.



Figs 1-9. *Gastrosaccus robusta* sp. nov. (male). (1) Carapace and anterior part of body; (2) abdominal somites, lateral view; (3) antennule; (4) antenna; (5) labrum; (6) cutting edge of mandibles; (7) mandibular palp, (8) maxillule; (9) maxilla.

Antennules (Figure 3) long and robust in both sexes. First segment longest with few small setae on outer distal angle, segment 2 short and on outer margin with two blunt spines; segment 3 with one dorsal spine and distal lobe. Outer flagellum swollen at base; male with usual hirsute lobe.

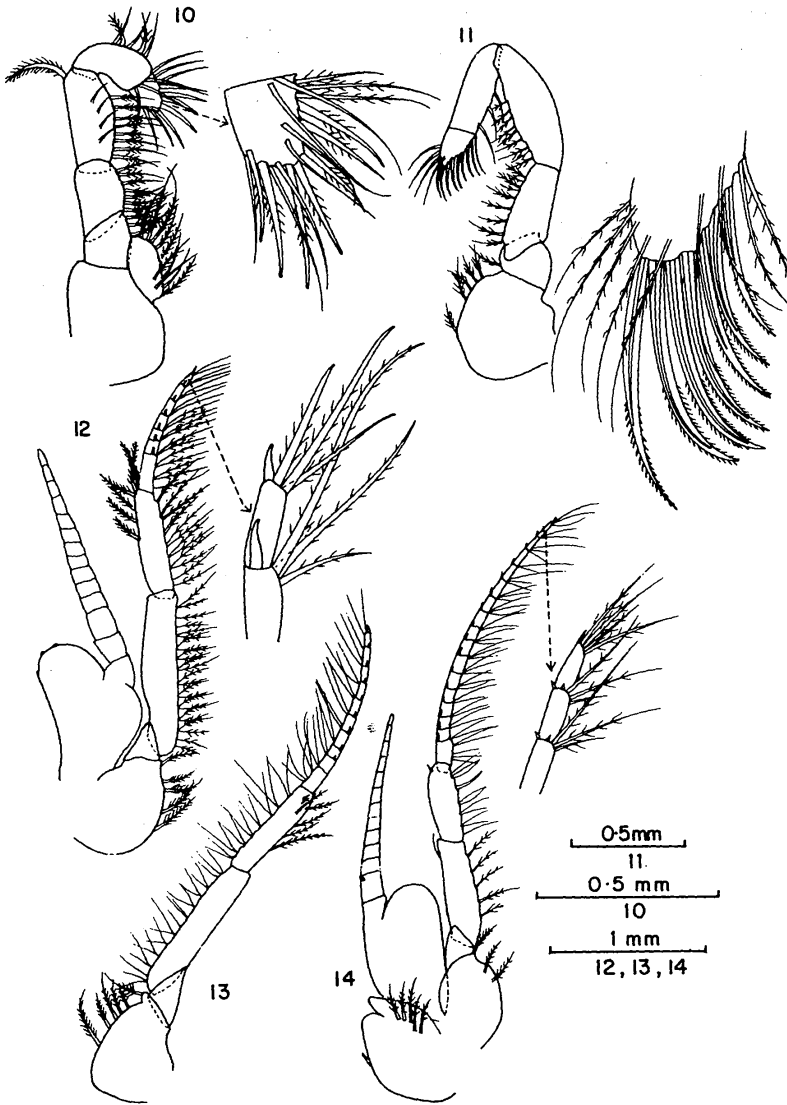
Antennal scale (Figure 4) three times as long as broad, just over-reaching first antennular segment, apex of scale longer than spine terminating outer margin; suture marking off small distal joint present; peduncle longer than scale reaching distal end of second segment of antennular peduncle, segment 2 swollen, about twice as long as segment 3.

Upper lip (Figure 5) with median frontal spiniform process. Mandibles (Figure 6) well developed without spine row. Palp (Figure 7) long and slender. Inner lobe of maxillule (Figure 8) with three stout barbed spines and four plumose setae; outer lobe stout with eleven strong spines along distal border. Maxilla (Figure 9) with prominent basal lobe and deeply cleft distal lobe.

First thoracic limb (Figure 10) with slender endopod, setose along inner margin, dactylus armed with strong pectinate spines; basis with well-developed inner lobe, epipod large. Exopod 10-segmented. Second thoracic endopod (Figure 11) similar in form to first but stouter and longer; claw absent, dactylus with pectinate spine like setae. Thoracic endopods 3-8 (Figures 12 and 13) similar in form, becoming stronger and longer posteriorly. Number of subsegments into which fused carpopropodus divided increasing posteriorly as follows: in third limb seven, in fourth nine, in fifth 10, in sixth 12, in seventh 15 and in eighth 16; each subsegment bearing small brush of setae on inner angle and small spine on outer angle; claw absent. Basis of second exopod with two denticles, third and fourth with three denticles, fifth and seventh with four denticles, eighth without any denticles. Male eighth thoracic limb with well-developed penial lobe (Figure 14).

Pleural plates on first abdominal somite in male rather well developed, rounded, covering protopod of first pleopod and anterior half of succeeding somite. Pleural plates in second to fifth somites gradually becoming smaller and not at all developed in sixth somite. Pleural plates of first abdominal somite of female produced into large elliptical plates extending backward to distal end of second somite and forward to cover half of brood pouch; succeeding abdominal somites lack pleural plates.

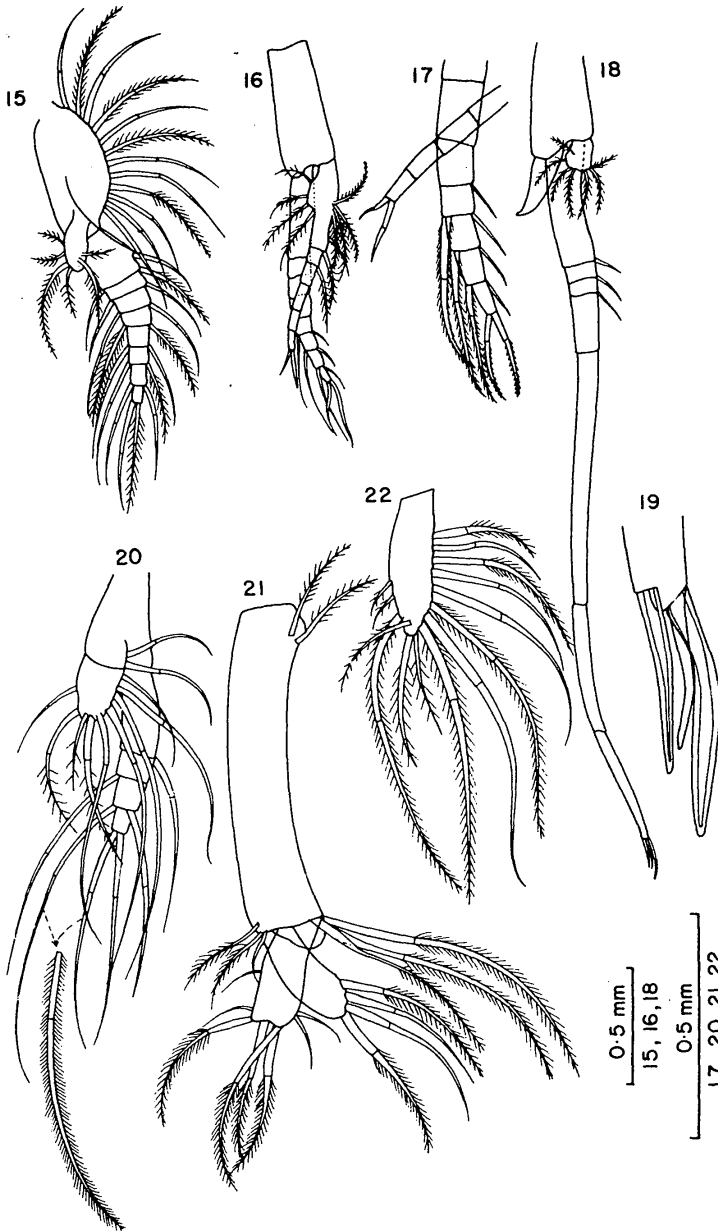
Sympod of first male pleopod (Figure 15) swollen with longitudinal row of 12 long plumose setae, endopod small and unsegmented with few setae; exopod long and eight segmented. Second pleopod (Figures 16 and 17) distinctly biramous, endopod six-segmented, first segment furnished with fine plumose setae, second to fifth segments unarmed, sixth segment terminating in two unequal spiniform setae; exopod eight segmented, longer than endopod, segments five to seven with long spiniform setae at outer distal corner and short simple setae on inner corner, eighth segment terminating in two spiniform setae. Third pleopod (Figures 18 and 19) with exopod long, reaching base of telson, four-segmented first segment with three articulations and three spiniform setae, second segment longest, third and fourth subequal, tip of exopod armed with three unequal blunt spines, two on apex and third slightly away from tip;



Figs 10–14. *Gastrosaccus robusta* sp. nov. (male). (10) First thoracic endopod; (11) second thoracic endopod; (12) third thoracic limb; (13) fifth thoracic endopod; (14) eighth thoracic limb.

endopod rudimentary, unsegmented, armed with several plumose setae; prominent conical process present on outer distal margin of sympod. Fourth and fifth pleopods (Figure 20) similar, endopod of one segment and exopod of four segments, both with long plumose setae.

First female pleopod biramous (Figure 21) with long basis, distally armed with a row of long and short setae, endopod and exopod unsegmented, subequal with long plumose setae. Second to fifth pleopods (Figure 22) rudimentary, unsegmented and armed with several plumose setae; protopod very small.

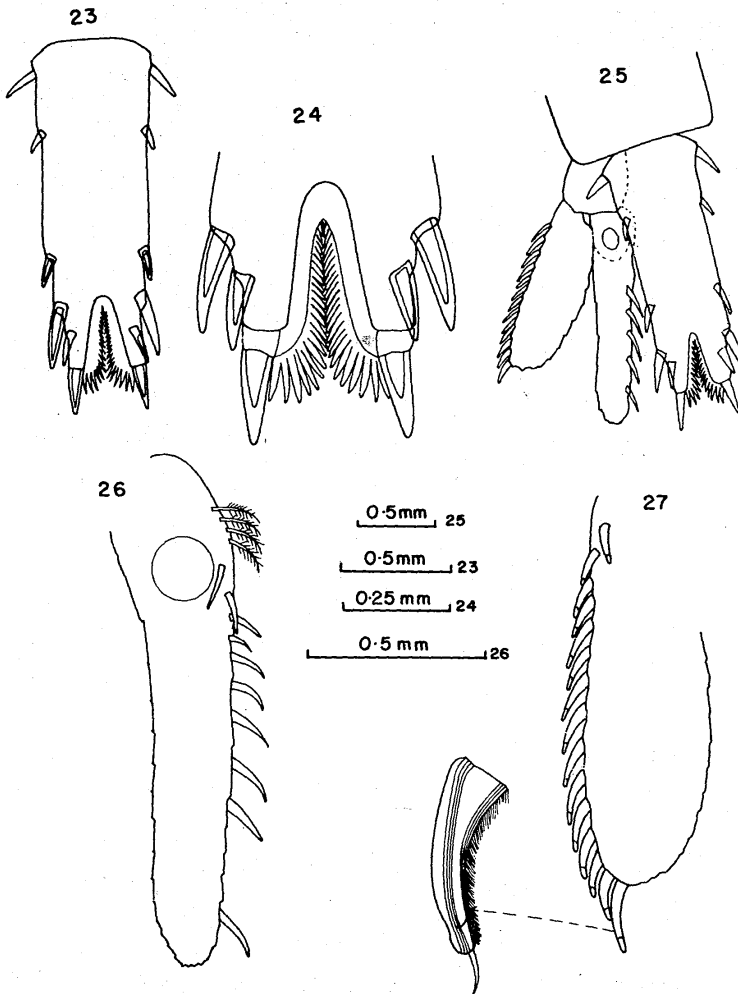


Figs 15–22. *Gastrosaccus robusta* sp. nov. (male). (15) First pleopod; (16) second pleopod; (17) same, tip enlarged; (18) third pleopod; (19) same, tip of exopod; (20) fourth pleopod; (21) first pleopod of female; (22) fourth pleopod of female.

Telson longer than last abdominal segment (Figures 23 and 24), 2.7 times as long as broad at base, cleft for $\sim\frac{1}{5}$ of total length of telson and armed with 20–22 closely packed spines on each margin. Lateral margins almost parallel and armed with six strong spines (including terminal spine on apical lobe), spines

rather widely spaced, distance between second and third pairs much greater than between any other pairs, terminal and antepenultimate spines longer and stouter than others, terminal spine little shorter than antepenultimate one.

Endopod of uropod (Figures 25 and 26) not reaching tip of apical spine of telson, with single spine on inner ventral surface in region of statocyst and 8–9 irregularly spaced spines along ventral inner margin. Exopod (Figure 27) shorter than endopod and armed with 12–15 spines along outer margin increasing in length posteriorly, spines with close row of very fine setae along inner margin, apex of each spine thickened with short terminal flagellum.



Figs 23–27. *Gastrosaccus robusta* sp. nov. (male). (23) Telson; (24) tip of telson; (25) posterior part of body; (26) endopod of uropod; (27) exopod of uropod.

Remarks

The telson of this species is nearer in its structure to that of the species of genus *Archaeomysis* than that of genus *Gastrosaccus*, and consequently it can be easily mistaken as members of the former genus. The resemblance between these two genera is very strong. Distinction between the males of the two genera is quite difficult and the possible distinguishing points are dealt with by Ii (1964). The only clear distinguishing point between the two genera lies in the structure of the pleopods of the female. In *Archaeomysis* all pleopods in the female are distinctly biramous while only the first pair in *Gastrosaccus* are biramous. The character of the female pleopods assign the present species to genus *Gastrosaccus*. Within the genus, *G. robusta* sp. nov. belongs to the *Normani* group of species in which the endopod of the third pleopod of male is reduced to a single segment or is lacking. To this group belong *G. indicus* Hansen (1910), *G. parvus* Hansen (1910), *G. bengalensis* Hansen (1910), *G. pacificus* Hansen (1912), *G. pusillus*, Coifmann (1937), *G. dakni* Tattersall (1940), *G. normani* Tattersall and Tattersall (1951) and *G. queenslandensis* Bacescu (1982). Table I shows the characters that distinguish the species in this group. The species are separated from each other mainly by the details of the male pleopods. Besides the difference in the

Table I. Distinguishing characters of the species of *Gastrosaccus* (*Normani* group)

Species	Male pleopods							
	1		2		3		4	
	Segments in exopod	Segments in endopod	Segments in exopod	Segments in endopod	Segments in exopod	Segments in endopod	Segments in exopod	Segments in endopod
<i>G. indicus</i>	5	1	6	1	4	R ^a	1	1
<i>G. parvus</i>	4	1	5	6	5	R	1	1
<i>G. bengalensis</i>	4	1	9	6	5	1	2	1
<i>G. pacificus</i>	5	1	6	1	3	R	1	1
<i>G. pusillus</i>	5	1	10	8	4	1	1	1
<i>G. dakni</i>	9	1	9	6	3	1	4	1
<i>G. normani</i>	8	1	9	6	4	1	3	1
<i>G. queenslandensis</i>	5	1	7	7	4	1	6	1
<i>G. robusta</i>	8	1	8	6	4	1	4	1

^aR = rudimentary.

5		Spines on telson	Spines on inner uropod	Spines on outer uropod	Carapace-posterior lobes reflected	Process on fifth abdominal segment
Segments in exopod	Segments in endopod					
1	1	10	5	13	-	-
1	1	8	4	10	-	-
3	1	14	5	13	-	-
1	1	12	4	12	-	-
1	1	8	4	10	-	-
5	1	7	6	14	-	-
3	1	9	7	13	+	-
6	1	8	5	12	+	-
4	1	6	10	15	+	+

character of the male pleopods, the male and female specimens of *G.robusta* can readily be distinguished from the other species by the following characters: presence of forwardly directed lobes on the carapace, marked lateral compression of the fourth and fifth abdominal somites, sharp chitinous projection on the fifth abdominal somite, robust telson with a small number of strong spines arming lateral margins, very short subterminal spine between the last two long lateral spines and number of spines on the uropods. The lobes on the carapace and the chitinous projection on the fifth abdominal somite of *G.robusta* indicates a similarity to *G.brisbanensis* Bacescu (1982). However, the structure of the male pleopods and the shape and armature of the telson separate the two species.

Ecological note

Dakin and Colefax (1940) mentioned that *G.robusta* sp. nov. is the most common species of this genus in the coastal plankton off Broken Bay. The present specimens are collected from the South West coast of Australia between 33 and 35°S and 114 and 119°E. These specimens were present in many of the plankton samples, and in one sample caught from 33°18'S 115°61'E they occurred in such large numbers that the net appeared to have fished through a swarm. The specimens were taken in vertical and oblique hauls that sampled various parts of the water column between 0–50 m.

Etymology

The specific name alludes to the robust nature of the body.

Acknowledgements

I am thankful to the Director, National Institute of Oceanography, Goa and the Scientist-in-Charge, Regional Centre, N.I.O., Cochin for providing facilities for this work.

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Received on November 21, 1988; accepted on June 27, 1989