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Doxomysis algoaensis, a new mysid species (Crustacea: Mysidacea) from Algoa Bay (South Africa)

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Abstract

Doxomysis algoaensis sp.nov. is described from Algoa Bay, South Africa where it is common in nearshore marine waters just beyond the breaker line. *D. algoaensis* sp.nov. is morphologically similar to *D. australiensis*, but can readily be distinguished by the shape and armature of the telson and the length of the exopod of the fourth male pleopod. The apical cleft is one fifth the telson length in the former species and one third the length in *D. australiensis*. The telson apex on each side of the cleft is also armed with five and four stout spines in the two species, respectively. In *D. australiensis*, the exopod of the fourth male pleopod is almost three times the length of the endopod; in *D. algoaensis* sp.nov., the exopod is only slightly longer than the endopod. Other distinctive features of *D. algoaensis* sp.nov. include the maxillary palp, which is only slightly broader than long and the greater number of spines on the endopod of the uropod.

Introduction

Representatives of the genus *Doxomysis* Hansen, 1912 are characterized by an enlarged fan-like maxillary palp which is broader than long and by a marsupium consisting of two pairs of oostegites. The combination of these characters separates them from eight other closely related genera in the tribe Leptomysini – the maxillary palp is longer than broad and subovate in the tenagomysid sub-group (genera *Australomysis*, *Bathymysis*, *Iimysis*, *Nouvelia* and *Tenagomysis*) and crescent shaped in the genus *Afromysis*. The two other genera in the doxomysid sub-group – *Hyperimysis* and *Pseudoxomysis* – have three pairs of oostegites. All species of the genus-group have elaborated maxillary palps, modified terminal and subterminal setae on the exopod of the fourth male pleopod, and similar telson shapes (Talbot, 1997).

The present species is very similar to *D. australiensis* (W.M. Tattersall, 1940), which has been recorded

from several localities along the east coast of Australia (Bacescu & Udrescu, 1982; Talbot, 1997).

Systematics

Doxomysis algoaensis sp.nov, Figures 1–5.

Material

Holotype (SAM A43474) lodged in the South African Museum, Cape Town. Adult female from Algoa Bay (25° 50' E, 33° 50' S) collected by T. Wooldridge, 10 February 1981. Paratype material (SAM A43475) lodged in the South African Museum, Cape Town. Three adult males and three adult females from Algoa Bay collected by T. Wooldridge, 10 February 1981.

Description

The morphological characteristics described refer to both sexes, unless otherwise stated. Total length of

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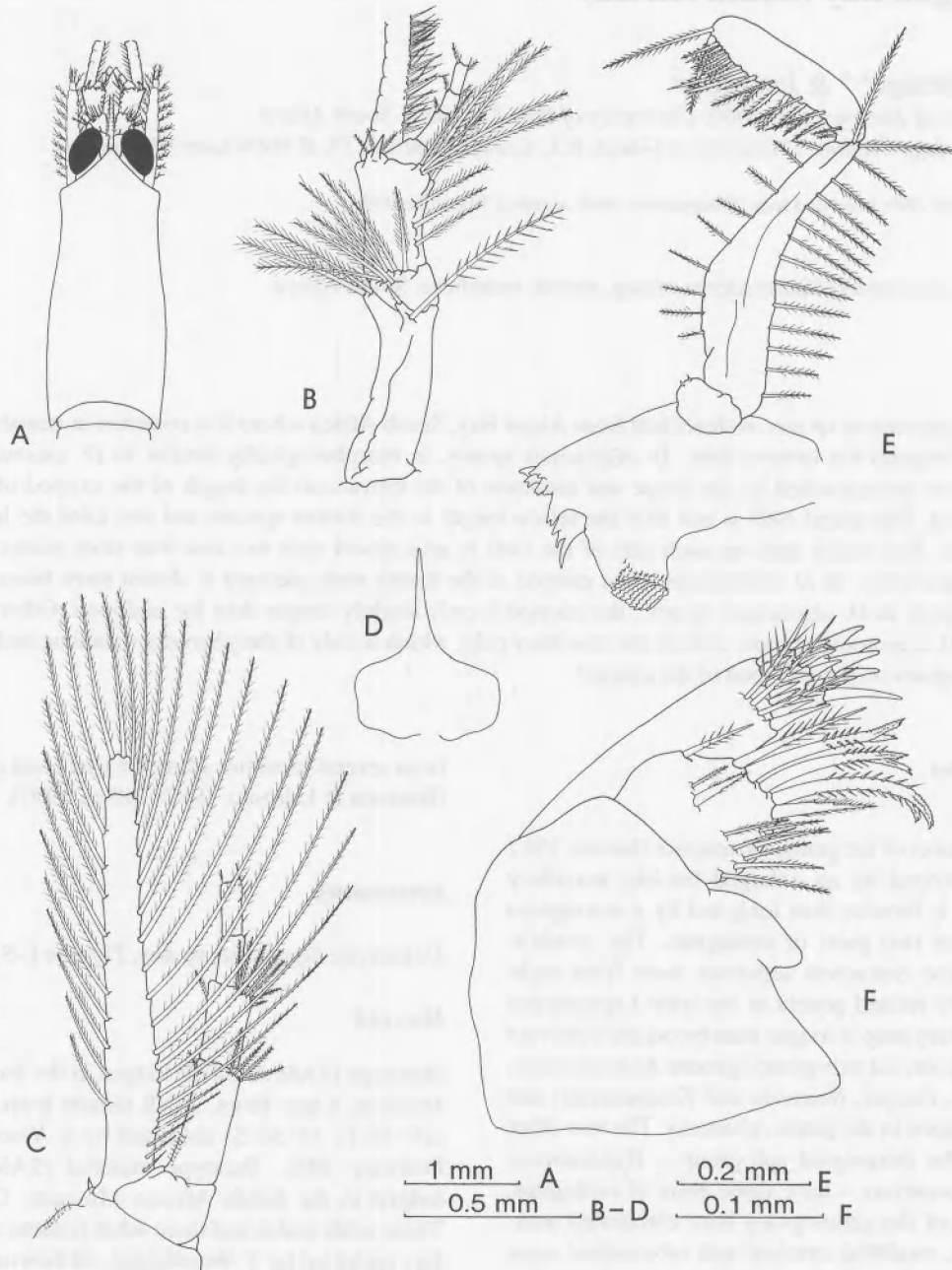


Figure 1. *Doxomysis algoaensis* sp. nov. (A.) Carapace in dorsal view, (B.) Antennule, (C.) Antennal scale, (D.) Labrum, (E.) Mandible, (F.) Maxillule.

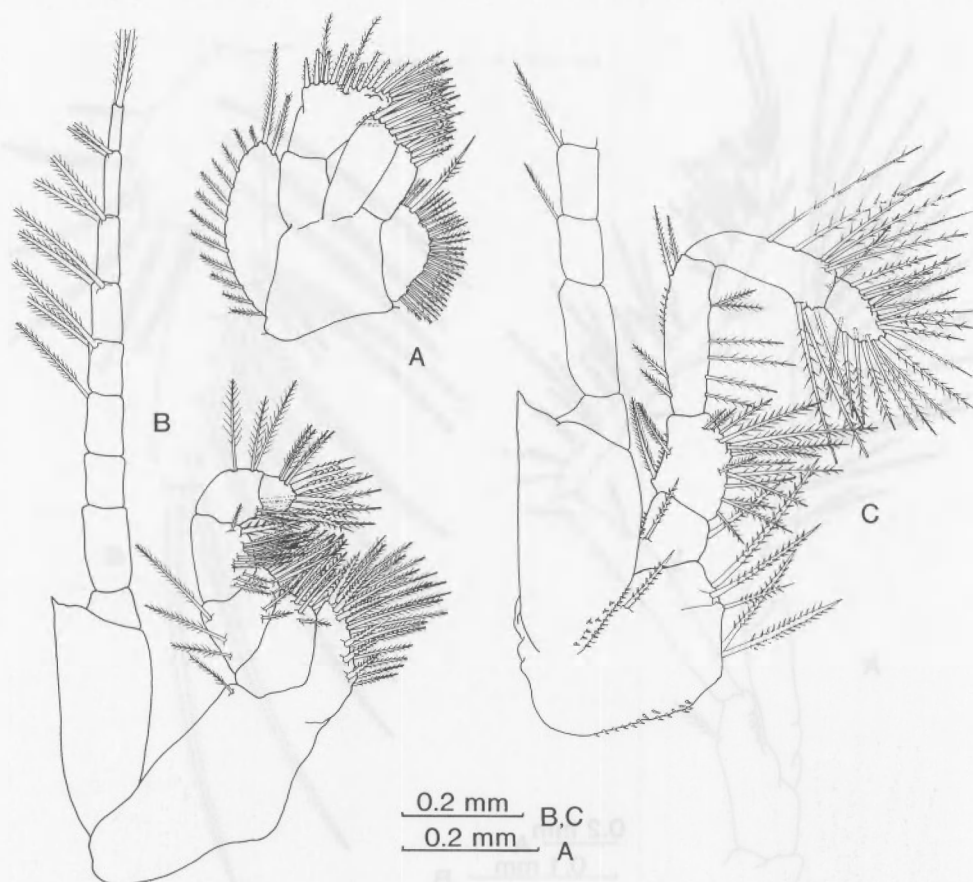


Figure 2. *Doxomysis algaensis* sp. nov. (A.) Maxilla, (B.) First thoracic appendage, (C.) Second thoracic appendage.

adult females is 8.9 mm; adult males is 8.6 mm. Carapace short, leaving last three thoracic somites exposed in dorsal view. Anterior margin produced into a short triangular rostrum, the apex bluntly rounded (Figure 1A) and covering only the base of the eyestalks. Eyes as long as broad, the cornea not wider than the eyestalk. Integument smooth.

Antennular peduncle (Figure 1B) with first article slightly longer than second and third combined, the outer distal angle produced and bearing two plumose setae. Two spinous setae present along dorsal midline on anterior border, the outer one extremely short. Second article almost as long as wide, bearing seven plumose setae on dorsal side. Third article has three short plumose setae and a small but prominent spine near base of outer flagellum on dorsal side. Inner angle near apex with six plumose setae and three shorter setae along inner margin of article. In the female, the third article is more slender than in the male which has a well developed hirsute lobe.

Antennal scale (Figure 1C) with small distal suture. Scale setose all round, seven and a half to eight times as long as wide and extending for about one sixth its length beyond the distal end of the antennular peduncle in the female and one tenth its length in the male. A small spine present on the outer distal angle of the sympod. Antennal peduncle about half the length of the scale, the second article one and a half times the length of the terminal article and bearing four short plumose setae on the inner distal angle. Terminal article with a group of about seven short plumose setae on inner distal margin.

Labrum (Figure 1D) with sharp epistomal spine.

Mandible (Figure 1E) has a well developed cutting edge and a prominent molar process. Palp with three articles, the second and third extremely setose with the two terminal setae on each of these articles more prominent than the others.

Maxillule (Figure 1F) with three articles, the second article difficult to define. Lobe from first article

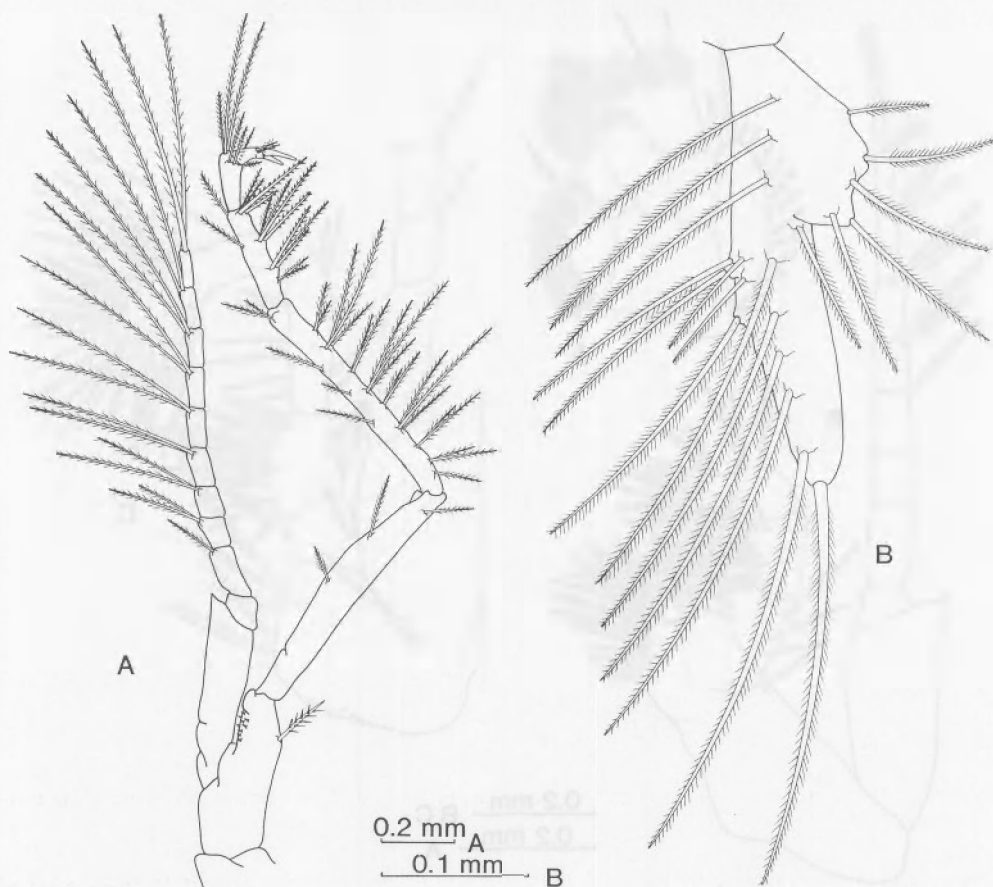


Figure 3. *Doxomysis algoensis* sp. nov. (A.) Eighth thoracic appendage. (B.) First pleopod of female.

with five stout spines on distal margin, three of these spines being longer and bi-furcate. Two short spines and nine setae present, their positions illustrated in Figure 1E. Lobe from third article drawn out in distal region armed with 16 strong teeth and three spinous setae.

Maxilla (Figure 2A) with exopodite bearing 14 plumose setae along outer border. Terminal article of endopod or palp produced on its inner margin, the apex and subterminal region bearing five setae and a row of four setae, respectively. Distal border of palp and lobe with ten or eleven strong spines armed with regularly spaced secondary spinules. Spines about half the length of the terminal article with no regular gradient in size across the border. Distal border also armed with two setae. Setation of endites from second and third articles of sympod as shown.

First thoracic appendage (Figure 2B) with well developed endite on second endopod article, densely

setose and with a row of six short spines on outer margin. Remaining endopod articles robust and densely setose. Carpopropodite and dactylus with a prominent spine on inner distal angle and six barbed spines on distal border, respectively. First article of exopod large and expanded, the outer distal angle with a short spine. Flagellum eight-segmented.

Second thoracic appendage (Figure 2C) with endopod more slender, endite on second article not prominent. Setation as shown.

Endopods of the third to eighth thoracic appendages slender, dactylus bearing at least two subequal claws, which are more prominent in the eighth appendage (Figure 3A). Outer distal angle of the first article of the exopods on female thoracic appendages produced into a short tooth, these angles rounded in the male.

Pleopods of female in the form of simple, unjointed plates, each with a distinct lobe in the proximal

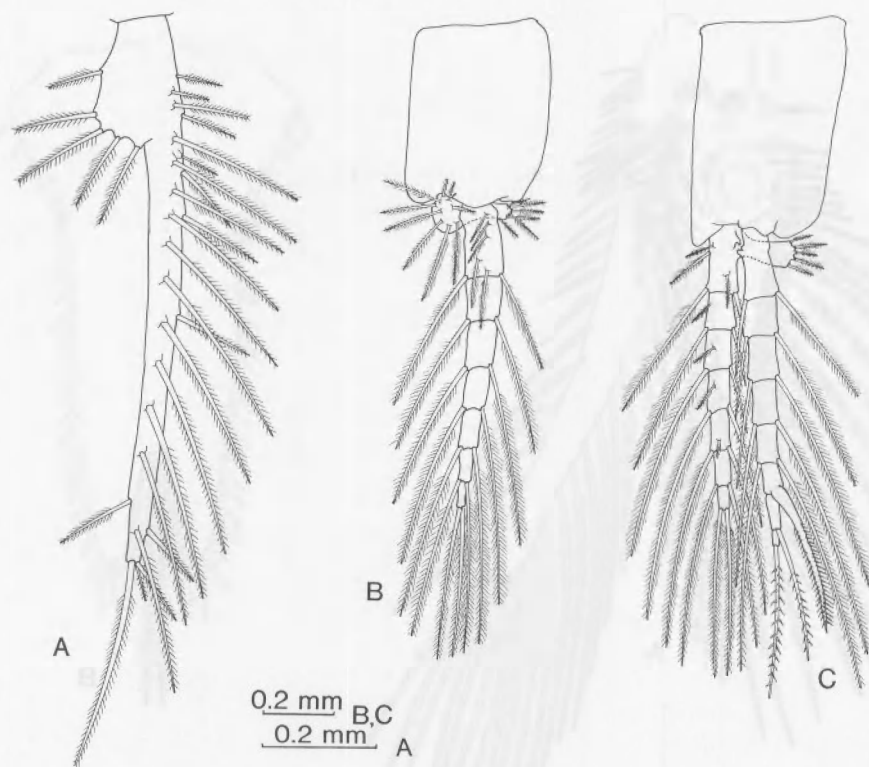


Figure 4. *Daxomysis algoensis* sp. nov. (A.) Fifth pleopod of female, (B.) First pleopod of male, (C.) Fourth pleopod of male.

region. Pleopods become longer and more slender posteriorly (Figure 3B and 4A).

Pleopods of the male biramous, the endopod of the first pair reduced to a single article with a well developed pseudo-branchial lobe (Figure 4B). Exopod seven-segmented. Fourth pleopod (Figure 4C) with endopod and exopod composed of seven and eight articles, respectively. First article of endopod with well developed pseudo-branchial lobe bearing five short plumose setae along distal margin. Inner proximal region of first article with two short plumose setae. Each endopod article armed with a long plumose seta on the inner distal angle and a smaller seta on the outer distal angle, the difference in length between these two setae decreasing progressively towards the distal article. Endopod articles one to five each with a further short plumose seta, their positions illustrated in Figure 4C. Exopod slightly longer than endopod, the first five articles each armed with two plumose setae distally. Sixth article armed with a strong barbed spine almost half as long as exopod on the outer distal angle. Terminal article half the length of the seventh, each armed

with a barbed seta. Length of these setae equal to the length of the barbed spine.

Endopod of the uropod (Figure 5A) nearly one and a half times as long as telson, its distal half markedly narrow. Inner margin of endopod armed with a dense row of about 55–60 sharp spines which increase in length towards the apex. These spines, except for the distal eight, arranged in series of larger spines with one or two smaller ones in the spaces between them, extending from the level of the statocyst to the proximal end. Setation on endopod as shown in Figure 5A. Exopod of uropod one and two-thirds the length of telson, armed on both margins with setae which increase progressively in length towards the apex.

Telson (Figure 5B) not sexually dimorphic, nearly twice as long as broad at the base and narrowing towards the apex. Lateral margins armed along their entire length with 22–25 spines which are regularly spaced. These spines do not become progressively longer towards the distal end. Apex of the telson cleft, the lobe on either side bearing five stout spines, of which the second outermost spine is the longest. Cleft measuring nearly one-fifth of the telson in length

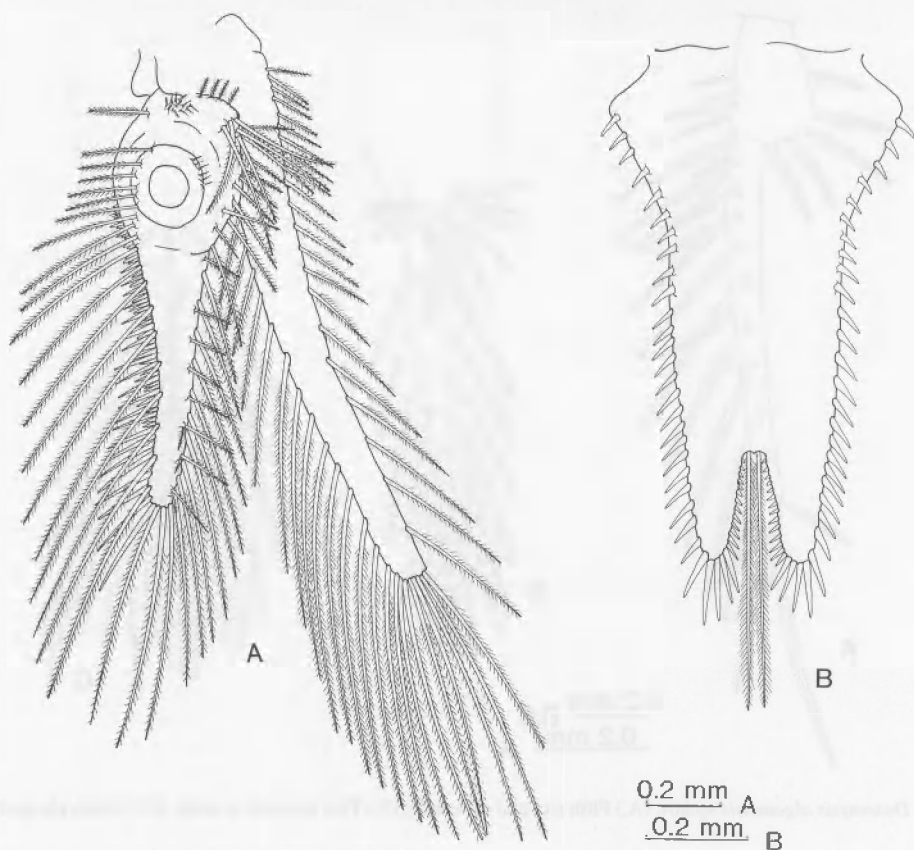


Figure 5. *Doxomysis algoensis* sp. nov. (A.) Uropod, (B.) Telson.

armed with a row of 14–15 short spines on either side and becoming progressively longer distally. Base of cleft with a pair of long plumose setae which extend for about half their length beyond the apex of the telson.

Etymology

The specific name refers to the type locality, Algoa Bay.

Remarks

A key to the species of *Doxomysis* was recently published by Talbot (1997). *D. algoensis* is the sixteenth described species of the genus *Doxomysis* (tribe Leptomysini). Most of the species have been recorded from tropical and subtropical shallow waters in the eastern Indian Ocean, the Indo-Pacific and Australia,

while one species has been described from Galapagos. Only two species are known from the western Indian Ocean: *D. longiura* Pillai, 1963 from the west coast of India and *D. quadrispinosa* (Illig, 1906) from the Seychelles and Amirante Islands, the Chagos Archipelago and Sri Lanka. The only South African record of the genus is a single damaged male specimen dredged in Mossel Bay and identified as *D. australiensis* (O.S. Tattersall, 1958). This record of *D. australiensis* from South African waters now appears to be doubtful. The present species *D. algoensis* shows close affinities to *D. australiensis*, but clear differences are apparent particularly with regard to the telson and the fourth pleopod of the male. Differences between the two species are summarized in Table 1.

Between January 1980 and January 1982, 11 series of samples were collected at night with a conical plankton net (1.5 m diameter and 200 μm mesh) at eight stations in Algoa Bay (Wooldridge, 1983). *Doxomysis algoensis* was common (densities up to 84 ind per m^3) just beyond the breaker line where the

Table 1. Summary of important differences between *Doxomysis australiensis* and *D. algoensis*

Character	<i>D. australiensis</i>	<i>D. algoensis</i>
Total length	6.5–7.0 mm	8.6–8.9 mm
Antennal scale	6 times as long as broad	7.5–8 times as long as broad
Distal article maxilla	>2 times broader than long	1.2 times broader than long
Endopod of uropod	Extending for about half its length beyond the telson 42–48 spines on inner margin	Extending for about one-third its length beyond the telson 55–60 spines on inner margin
Telson	One and three-quarter as broad 19–29 lateral spines apex 4 stout spines cleft one third of telson length 23 spines in cleft	Nearly twice as long as broad 22–25 lateral spines apex 5 stout spines cleft one fifth of telson length 14–15 spines in cleft
Pleopod IV male	Exopod almost three times longer than endopod penultimate joint of exopod almost twice the length of the antepenultimate joint	Exopod only slightly longer than endopod penultimate joint of exopod almost equal in length to antepenultimate joint

water depth varied between 5 and 7 m. Substrate at stations where most mysids were taken was sandy. The nocturnal mysid fauna collected in samples was dominated by *Mesopodopsis wooldridgei* Wittmann, 1992 and – to a lesser extent – *Mysidopsis major* (Zimmer, 1912). Other accompanying species included *Gastrosaccus brevifissura* O. Tattersall, 1952; *G. psammodytes* O. Tattersall, 1958; *G. olivae* Bacescu, 1970; *Mysidopsis hispinosa* O. Tattersall, 1969; *M. schultzei* (Zimmer, 1912), *M. similis* (Zimmer, 1912); *Nouvelia natalensis* Bacescu & Vasilescu, 1973; *Rhopalophthalmus terranatalis* O. Tattersall, 1957 and as yet unidentified species of the genera *Acanthomysis*, *Gastrosaccus* and *Siriella*. At deeper stations (18–20 m depth) *D. algoensis* was less abundant (maximum densities around 1 ind per m³). Since these samples were taken from 10 m depth to the surface and since

many mysid species are known to have a hyperbenthic lifestyle, i.e. living in the water layers close to the substratum, the reported densities may be underestimates.

Gastrosaccus sanctus (Van Beneden, 1861) has also been reported from Algoa Bay (Wooldridge, 1983). This species was previously recorded from South Africa by O. Tattersall (1957) who reported that it had been taken on several occasions off the coast. Bacescu (1970) re-examined part of Tattersall's collection and decided they belong to a new species *G. olivae*. We assume that *G. sanctus* is a northerly species that does not occur in South Africa and that all previous records refer to *G. olivae*.

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