

Dolichiscus spinosetosus n. sp., a new arcturid isopod from the Weddell Sea, Antarctica

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Abstract: Two specimens of *Dolichiscus spinosetosus* were collected by means of an Agassiz trawl and a small dredge in the Weddell Sea, Antarctica. This species is characterized by a large number of strong spines on the dorsal side, some of these possessing tubercular tips. The dorsum is characterized by many smaller and shorter blunt spines and numerous long simple setae all over the body (on spines, pereonites and pleotelson). *Dolichiscus acanthaspidus* Schultz, 1981 is the taxon most closely related to this new species, but the new species has more setae and tubercular spines on all parts of the body and two caudolateral spines instead of one behind the supraocular ones.

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Introduction

At present 17 species of *Dolichiscus* Richardson, 1913, are known. Most of these are distributed in the Subantarctic or Antarctic, but *Dolichiscus anna* (Beddard, 1886) was found off Argentina in depths between 400–1100 m and *D. cornutus* (Beddard, 1886) is known from the Philippines from 920 m (HMS *Challenger* expedition). Recently Poore (1998) described two new species of *Dolichiscus* and synonymized *Paradolichiscus* (Schultz, 1981) with this genus. A diagnosis of *Dolichiscus* is presented in Poore (1998, 387–388). *Dolichiscus kai* Poore, 1998 (576–809 m), and *D. tanimbar* Poore, 1998 (356–410 m) were from the Tanimbar Islands, Indonesia.

The most recent new Antarctic species, *D. ferrazi* and *D. brandtae* were described by Pires & Sumida (1997) from Joinville Island and King George Island. Most of the species of this genus have a smooth dorsal body surface, but a few are characterized by small blunt spines, e.g. *D. mirabilis* Brandt, 1990, *D. ferrazi* Pires & Sumida, 1997, *D. brandtae* Pires & Sumida, 1997. *Dolichiscus diana* Schultz, 1981, bears blunt spines of medial size, but these are much less pronounced and fewer than those of the species described here. Only *D. acanthaspidus* Schultz, 1981 is characterized by a very similar spine armature and chaetotaxy to the new species. Because of the strong similarity to the latter species *Dolichiscus spinosetosus* has to be described in detail in order to avoid probable future confusion.

Material and methods

The description of *Dolichiscus spinosetosus* is based on material collected by means of an Agassiz trawl and a small Rauschert dredge in the Weddell Sea in the summers of 1989 and 1998 during the expeditions ANT VIII/5 and ANT XV-3

with RV *Polarstern*. On the vessel, the animals were fixed in formalin (4%), and later transferred into ethanol (70%). The drawings were prepared with the help of a camera lucida. The specimens are deposited in the Zoological Museum of Hamburg.

The following abbreviations are used in the text and figures: A1 = antennula, A2 = antenna, lMd = left mandible, Mx1 = maxillula, Mx2 = maxilla, Mxp = maxilliped, P1–7 = pereopod 1–7, Plp 1–5 = pleopod 1–5, rMd = right mandible, Urp = uropod, USNM = United States National Museum, ZMH = Zoological Museum of Hamburg.

Systematics

Arcturidae White, 1857

Dolichiscus Richardson, 1913

Dolichiscus spinosetosus n. sp. (Figs 1–8)

Type material

Holotype: ovigerous female of 37 mm length, *Polarstern* ANT VIII/5, 1989, station 396 (29.12.89), 71°04.2'S 11°47.4'W, 389 m – 71°05.3'S 11°46.8'W, 282 m, off Kapp Norvegia; ZMH K-39211.

Paratype: non preparatory female of 30 mm length, st. 48/50 (31.1.98), 70°52.1'S 10°29.4'W, 247 m – 70°52.3'S 10°29.0'W, 246 m, Weddell Sea, Kapp Norvegia, Rauschert dredge, ZMH 39212.

Type locality: Weddell Sea, Kapp Norvegia.

Diagnosis: large number of strong spines on dorsum, some with tubercular tips; many smaller, shorter blunt spines and numerous long simple setae all over the body (on spines, pereonites and pleotelson). Two caudolateral spines behind supraocular ones.

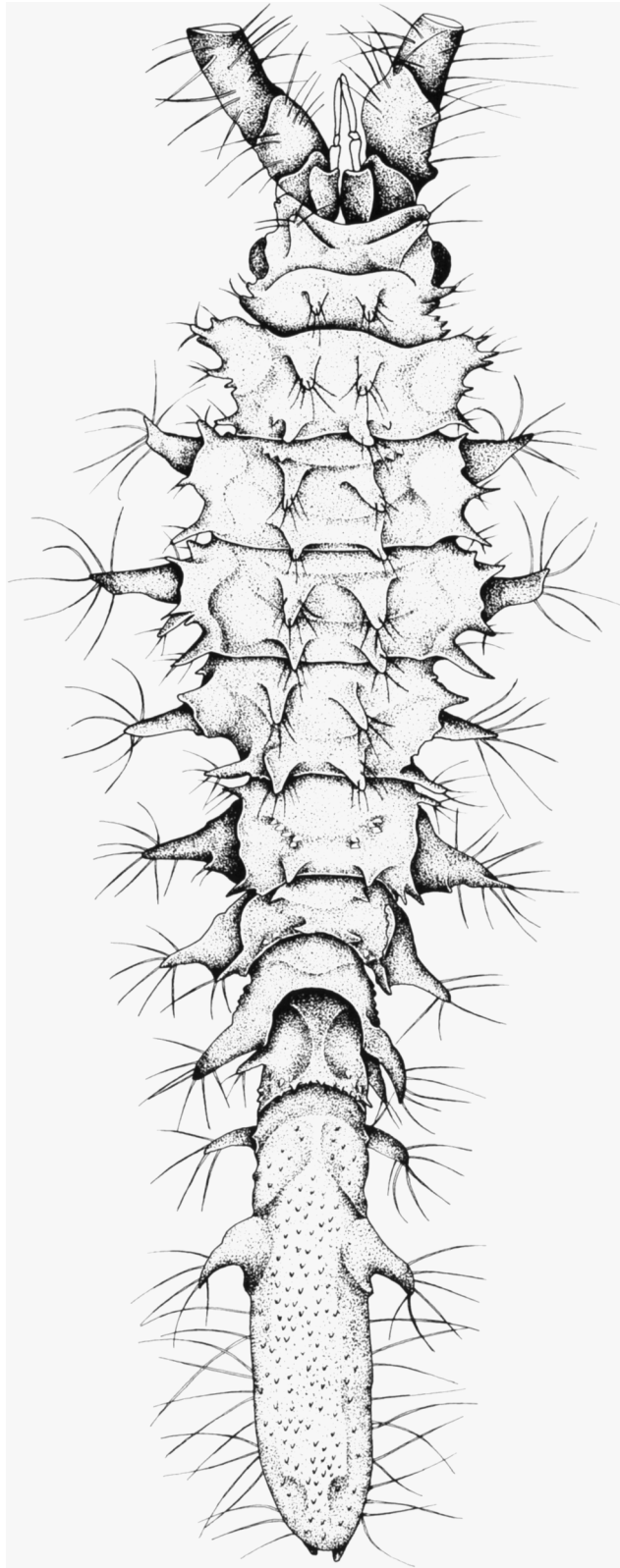


Fig. 1. *Dolichiscus spinosetosus* n. sp., female of 37 mm length in dorsal view.

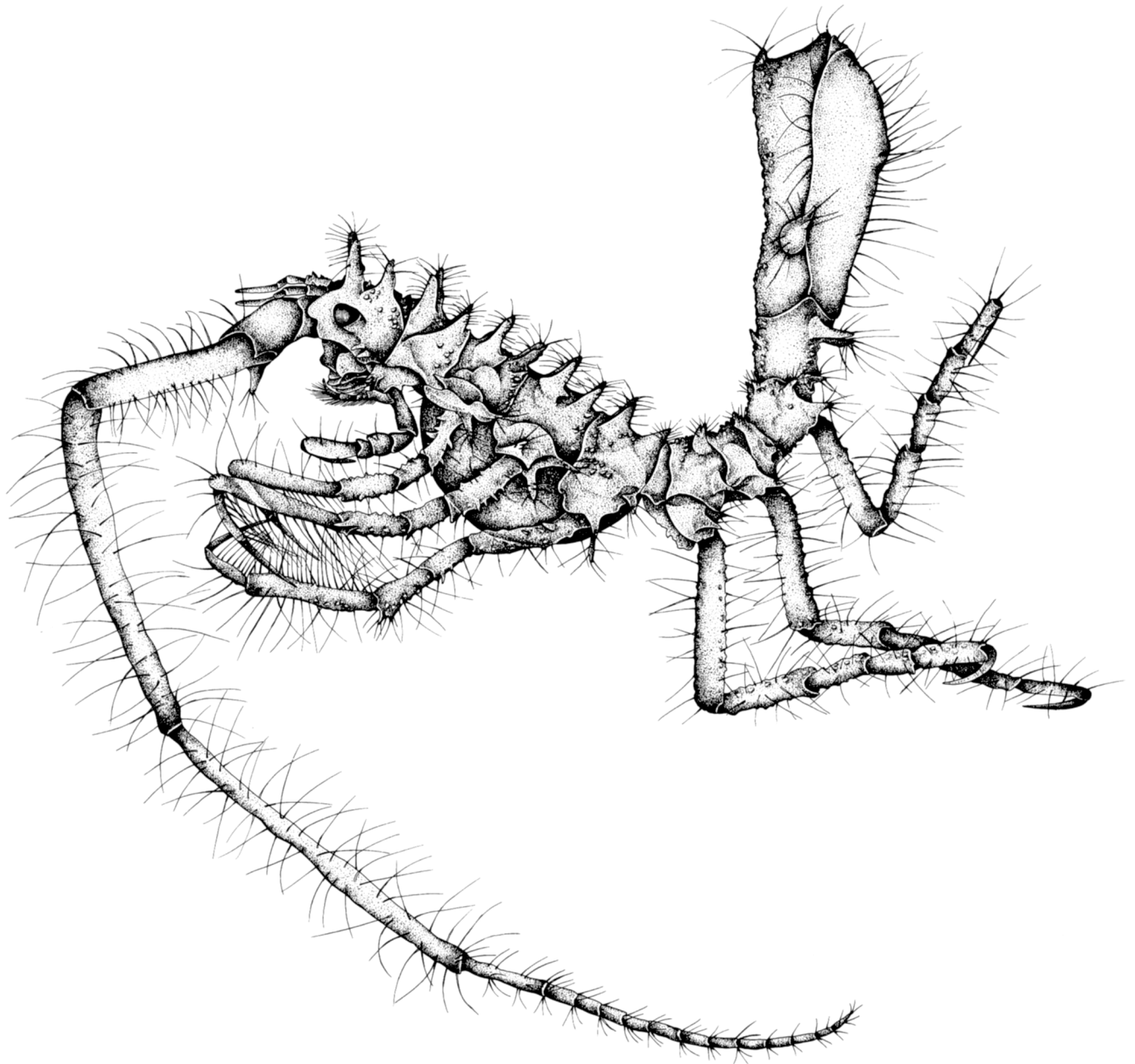


Fig. 2. *Dolichiscus spinosetosus* n. sp., female of 37 mm length in lateral view.

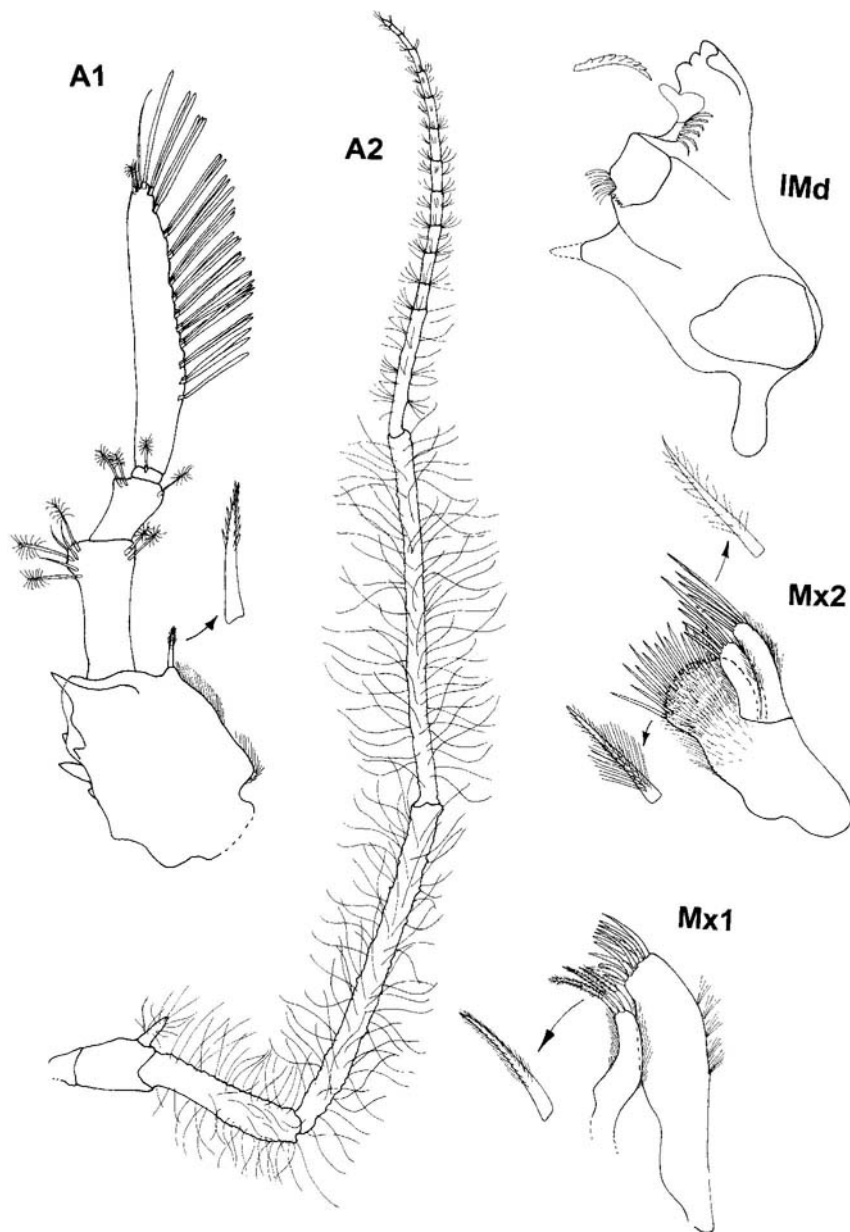


Fig. 3. *Dolichiscus spinosetosus* n. sp., female, antennula, antenna, left mandible, maxillula, maxilla.

Description of holotype female: Length of female 30–37 mm. Body long, slender (Figs 1 & 2); except for the anterior pereonites, which are laterally slightly widened. Pereonite 2 slightly shorter than one, about subequal in length to pereonites 3 & 4, pereonites 5–7 slightly smaller and narrower. All pleonites fused with pleotelson, although pleonite 1 is indicated by a deep suture line it is unmoveable. Head and all pereonites and pleonites equipped with long, strong blunt spines, covered with long setae and smaller, much shorter spines all over dorsum. Head with one large pair of straight supraocular spines and a slightly shorter pair of spines behind the supraocular ones. Eyes sessile, between round and triangular in shape, with another pair of smaller, more acute, laterally directed spines. Colour of eyes black in fixed condition, light grey in living animal. Pereonites 1–4 with two pairs of large and strong spines; pereonites 5–7 with one pair of shorter and

slightly caudally directed spines, decreasing in length from fifth to seventh pereonite. Coxal plates of all pereonites with lateral strong spines, strongest, most pronounced on pereonites 1–4, on pereonites 5–7 only one strong spine more caudally directed.

A1 (Fig. 3) with first peduncular article broadest, bearing a distolateral long setose seta and some lateral setules. On opposite side one long, strong, blunt distal spine and 3–4 shorter blunt ones more proximolaterally. Second article 0.9 times as long as first, with 2 simple and 5 distal feather-like setae, third article half as long as second, with 3 distal feather-like setae. First flagellar article, short, ring-like, bearing only a single feather-like seta. Second and last flagellar article longest, slender, with groups of 2–3 aesthetascs, except for first and last aesthetasc, which stand alone. Tip of antennula with additional long simple seta and short feather-like seta

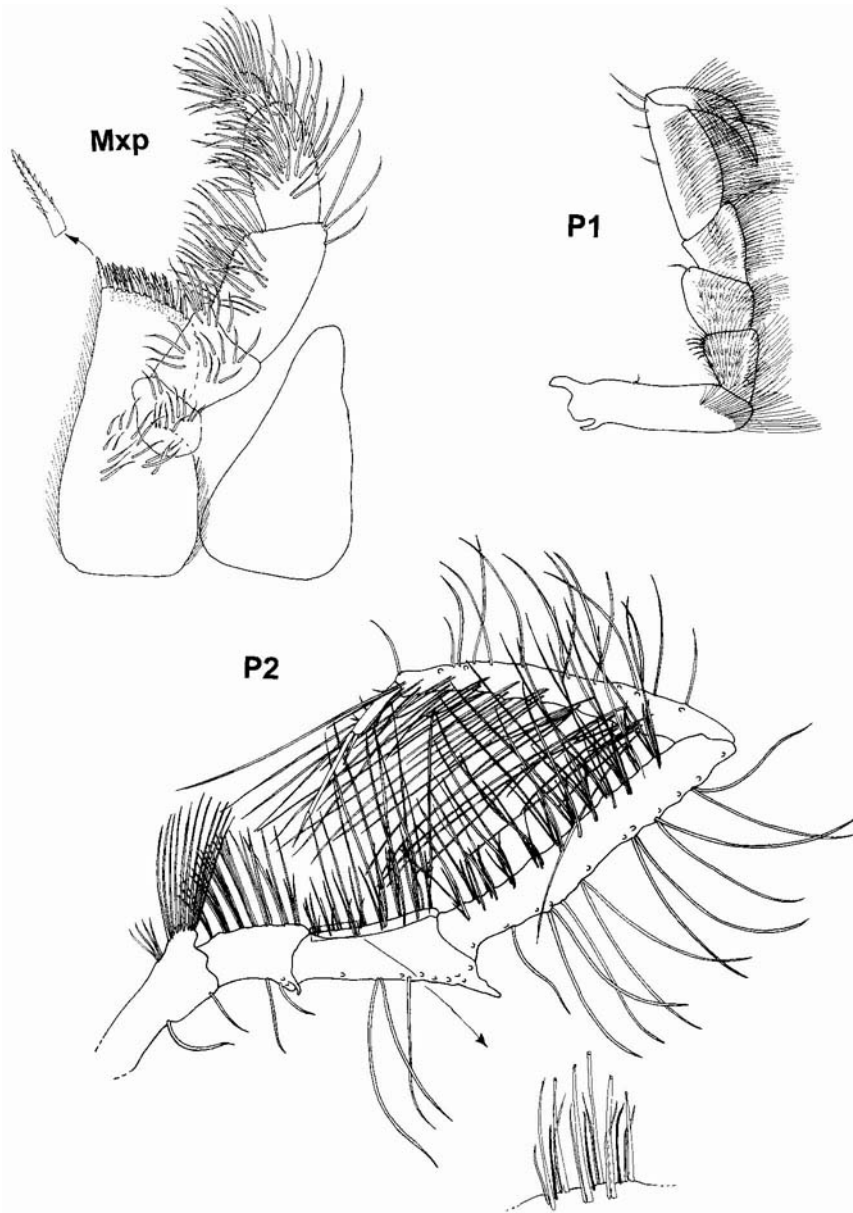


Fig. 4. *Dolichiscus spinosetosus* n. sp., female, maxilliped, pereopods 1, 2.

besides the aesthetasc.

A2 (Fig. 3) with 6 peduncular and 14 flagellar articles. First three peduncular articles short, with only few simple setae. Third article equipped with strong distolateral blunt spine. Fourth article twice as long as first. Fifth and sixth articles longest, about subequal in length. First flagellar article longest, slightly shorter than fourth peduncular one. Remaining flagellar articles measure about the same length, except for last three ones, which decrease in length and width.

Mandibles (Fig. 3) without palp, asymmetrical. Pars incisiva of rMd narrower than of lMd with three strong, blunt teeth, lMd with four teeth.

Mx1 (Fig. 3) of 2 endites, both slightly narrowing distally, lateral one distally curved medially, apex with 11 strong smooth spines. Medial endite shorter, with 3 strong, curved subsetulate spines of varying lengths.

Mx2 (Fig. 3) consisting of three endites. Outer, lateral, endite with 5 long setulated setae, medial endite with 5 setulated setae, inner endite with 2 rows of 9 shorter, but more densely setulated setae.

Mxp (Fig. 4) with long-oval epipod, strong endite and a five segmented palp. Endite distodorsally with 2 rows of strong blunt, spine-like setulated setae. Coupling hooks absent. Third and fourth palpal articles longest, last smallest, dense brush of long simple setae, especially on first to third articles.

P1 (Fig. 4) basis slightly longer than propodus, carpus trapezoidal, propodus subchelate and broad-oval. Dactylus shorter than propodus, with one long, strong distal claw. All articles densely setose. Ventral surface of propodus with few setae, most on medial part and on palm. Mediodorsal side of propodus forming a concave "spoon", curved dorsolateral surface with long setae, arranged in parallel transverse rows of

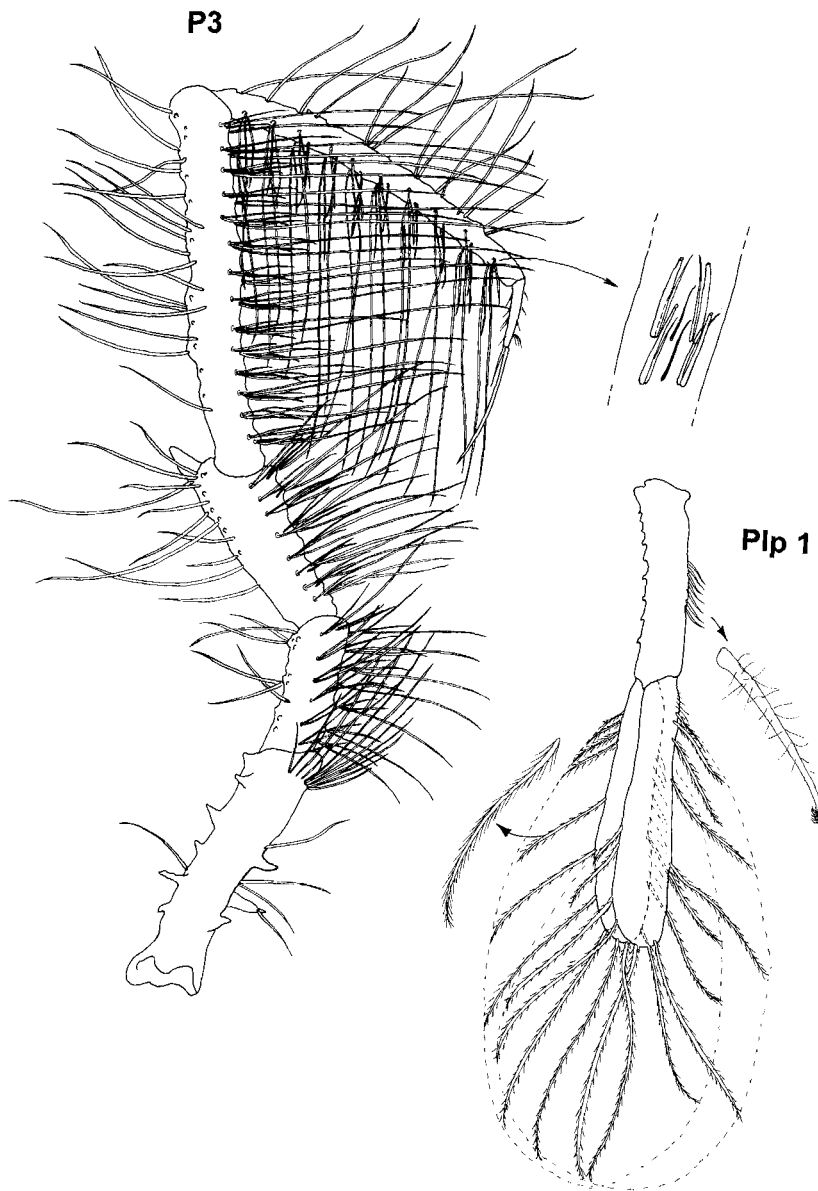


Fig. 5. *Dolichiscus spinosetosus* n. sp., female, pereopod 3, pleopod 1.

combs, dorsal part of palm bearing many medially directed setae.

P2–4 (Figs 4–6) similar. P2 shortest, P4 longest, many long setae on posteromedial margins, some long setae on anterolateral margins, especially on carpus and propodus. Strong spines on basis (except for P2) and some very small blunt spines scattered all over the legs. Strong and blunt distodorsal spines on merus, on P2 and P4 and also on ischium. On dactylus spines and long filter setae are lacking, dorsal claw slender and extremely prolonged, twice as long as the article in P4 and about three times as long in P2, ventral claw shorter. Merus, carpus and propodus with two rows of one very long and one shorter filter setae and a medial row of shorter and very slender setae (indicated in black in Figs 4 & 5).

P5–7 (Figs 6–8) similar in shape and setation and shorter and stouter than P2–P4, P7 smallest. Basis always the longest article, cuticle with several blunt spines and tubercles on

posterolateral surface. Merus, carpus, and propodus with ventral strong acute spine-like smooth setae, and some additional ventrolateral ones.

Plp1 (Fig. 5) with long sympod, 0.8 as long as rami, with 7 coupling setae medially and a lateral row of 9 short blunt spines. Both rami with many long marginal swimming setae.

Plp2 (Fig. 7) very similar to Plp1, but with much shorter sympod, about 0.2 as long as rami, without lateral spines, but with 7 medial coupling setae.

Plp3 (Fig. 7) with very short sympod, as following pleopods; exopod with shorter lateral plumose setae, endopod bare.

Plps4 & 5 (Fig. 8) similar to Plp3.

Urp (Fig. 8) medial surface without spines, some long simple setae, especially on outer margin. Larger ramus of uropod with 3 simple and 2 feather-like setae, smaller ramus with 3 simple setae.

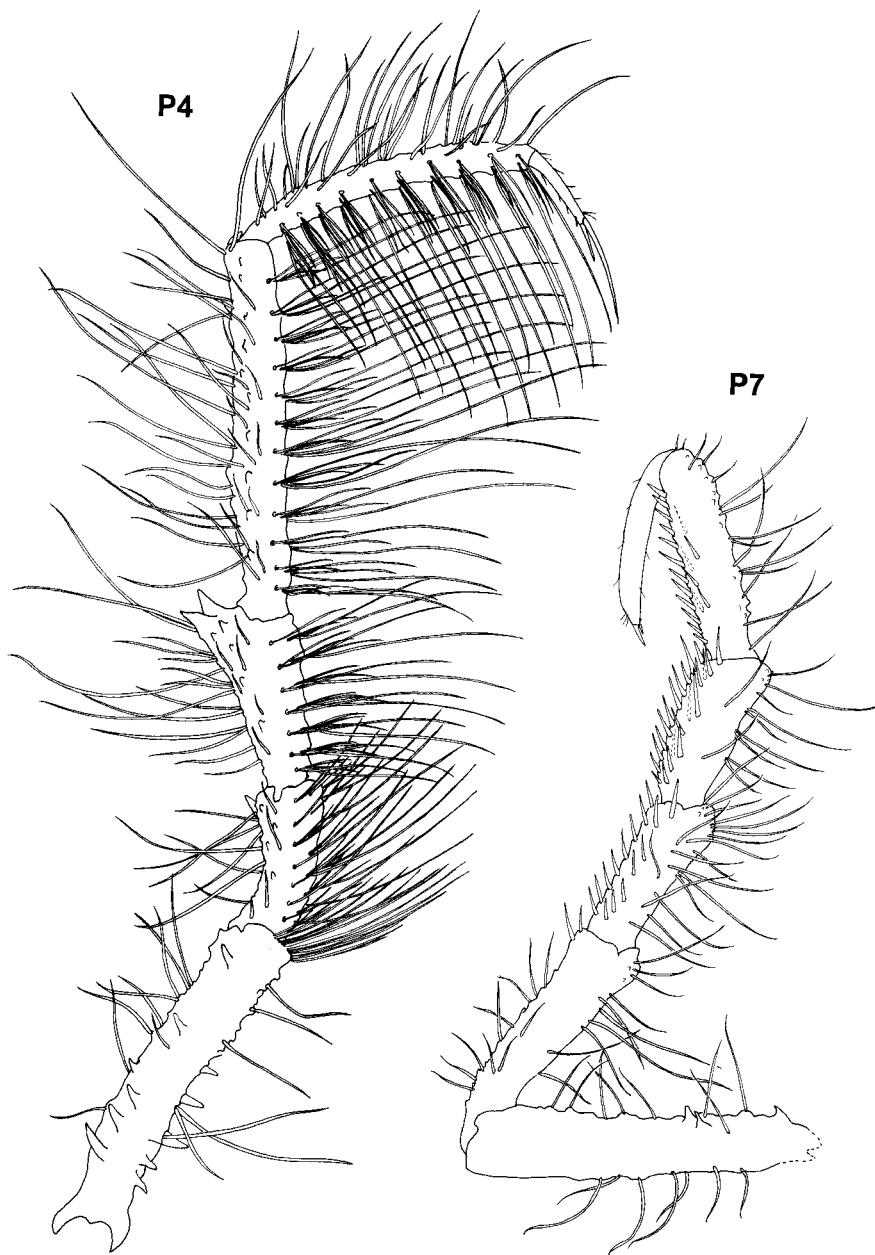


Fig. 6. *Dolichiscus spinosetosus* n. sp., female, pereopods 4, 7.

Remarks

Dolichiscus spinosetosus n. sp. appears to be most similar to *D. acanthaspidus* Schultz, 1981, especially with respect to the strong spine armature and the spine pattern following a comparison with the type material of *D. acanthaspidus* from the Smithsonian (USNM 181259). As all large spines of both species show a very similar pattern, these species are probably phylogenetically very closely related. *Dolichiscus spinosetosus* bears spines which are slightly stronger, less smooth, and some possess a blunt, tubercular tip. Moreover there is a larger number of smaller tubercular-like, blunt spines scattered all over the dorsum of the body of the new species than in *D. acanthaspidus*. Another striking character is the extremely high number of very long simple setae all over the body in

D. spinosetosus. These setae occur at the tip of the spines on the dorsal sides, on the pleotelson, on the pleotelsonic lateral spines, the dorsocaudal spine-like protrusion, and on the uropods. On all pereopods of the new species the number of long setae is much higher than in *D. acanthaspidus*, especially dorsally. While Schultz illustrated, for example, 6 long setae on the dorsal side of carpus of female P2, *D. spinosetosus* bears twice as many, and on propodus five times as many as illustrated by Schultz for *D. acanthaspidus*. The frontoventral margin of head of *D. spinosetosus* has a more pronounced incision than in *D. acanthaspidus*, with the eye slightly smaller and of different shape (more of a triangular shape than in *D. acanthaspidus*), whilst the caudoventral part of head has two small spines behind the eyes on the new species and only

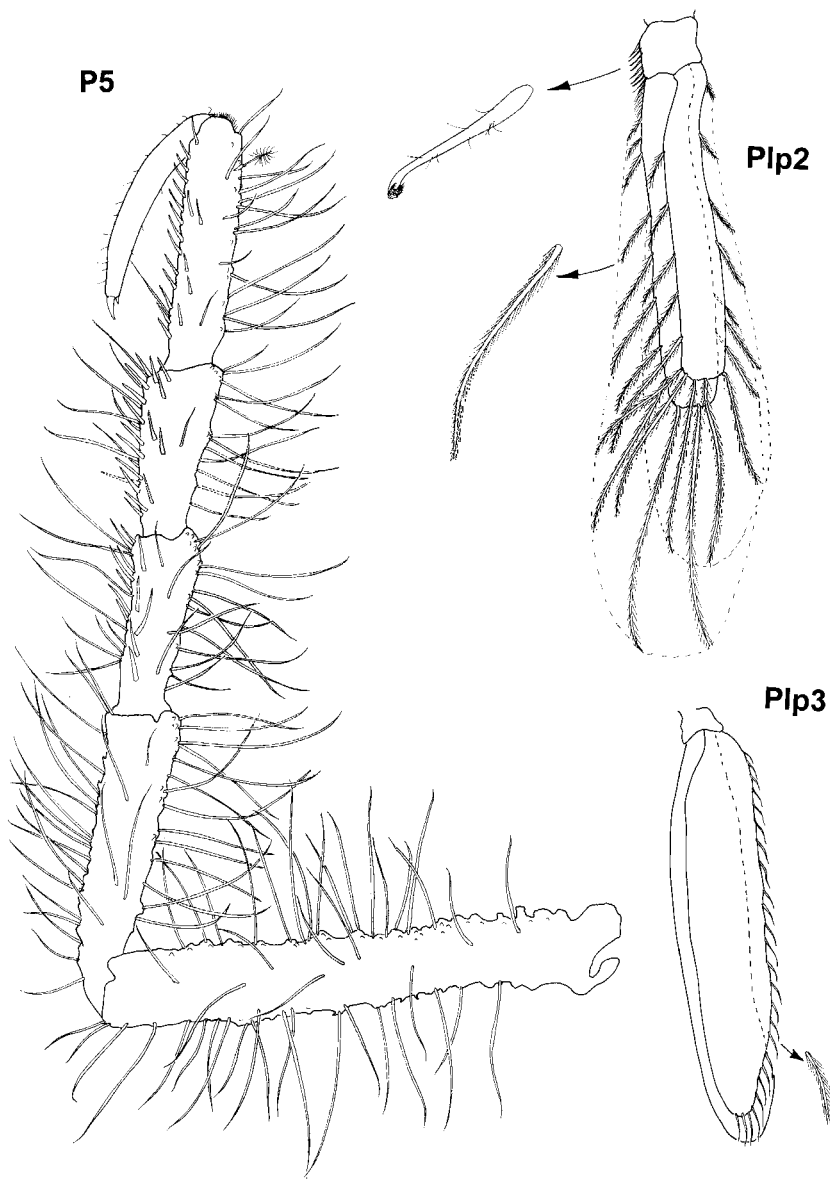


Fig. 7. *Dolichiscus spinosetosus* n. sp., female, pereopod 5, pleopods 2, 3.

one in *D. acanthaspidus*. Fifth to seventh pereonite have strong blunt spines in *D. spinosetosus* (even if decreasing in length and strength) whilst these are lacking in *D. acanthaspidus*. Pleotelson of the latter species is smoother and with many small blunt, tubercular-like spines in *D. spinosetosus*. The coxal plates of *D. spinosetosus* have larger and stronger spines than in *D. acanthaspidus*.

The strong proximal spines (3) illustrated by Schultz for the antennula of *D. acanthaspidus* are lacking in *D. spinosetosus*, but the new species bears a higher number of aesthetascs (13 groups instead of nine). The third peduncular article of antenna in *D. acanthaspidus* has a proximal spine additional to the distal ones; this proximal one is lacking in *D. spinosetosus*. Sixth antennal article of *D. acanthaspidus* is 1.2 times as long as fifth, whilst in *D. spinosetosus* these are almost the same length. While *D. acanthaspidus* was found

in the Ross Sea and the Balleny Islands between 55 and 622 m, *D. spinosetosus* is known only from Kapp Norvegia, Weddell Sea, between 389–246 m.

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Fig. 8. *Dolichiscus spinosetosus* n. sp., female, pereiopod 6, pleopods 4, 5, uropod.

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