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## *ACANTHASPIDIA NAMIBIA* N. SP. (ISOPODA, ACANTHASPIDIIDAE) FROM THE DEEP ANGOLA BASIN

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### ABSTRACT

*Acanthaspidia namibia* n. sp. was sampled off Namibia on the abyssal plain of the Angola Basin in 5390 m depth from board of the RV 'Meteor' in August 2000. *Acanthaspidia neonotus* (Menzies & George, 1972) is the most similar species, which has also been described from the deep sea, but from the Pacific Ocean in a comparative depth. The new species differs in bearing numerous long simple setae all over the body surface, and in the length of the maxillipedal epipod, which reaches the third palpal article, whereas that of *A. neonotus* reaches only the first.

### INTRODUCTION

The family Acanthaspidiidae was established by Menzies (1962). Since many of the included species are incompletely described (e.g., Kussakin, 1982) and did not form a monophylum, Brandt (1991a) reviewed the family, presented keys, and synonymised three genera with *Acanthaspidia* Stebbing, 1898. Besides *Acanthaspidia* the Acanthaspidiidae comprise only *Ianthopsis* Beddard, 1886, species which still bear eyes. Specimens of the Acanthaspidiidae occur predominantly in the deep sea, 19 species (including *Ianthopsis* spp.) have been sampled on the continental shelf around Antarctica where they are endemic, suggesting polar emergence of *Acanthaspidia* (Brandt, 1991b). Few species of *Acanthaspidia* were sampled deeper than 5000 m, most of these in the Atlantic sector of the

Southern Ocean (see species list of *Acanthaspidia*, Table 1). The species which is most similar to *Acanthaspidia namibia* n. sp. is *A. neonotus* (Menzies & George, 1972), but this species was sampled in the Pacific deep sea, off the Peru-Chile trench. The apomorphies of the new species are described and illustrated and how this species differs from *A. neonotus* is discussed.

### METHODS

During the expedition M48-1 with RV 'Meteor', samples were taken by means of an epibenthic sledge constructed after Brandt & Barthel (1995), a box corer as well as an Agassiz trawl. The material was sorted on deck or later with a Wild M5 dissecting microscope from samples, fixed in formaldehyde (4%) and later transferred into ethanol (70%). The taxonomic drawings were

Table 1. Species list and distribution of *Acanthaspidia* Stebbing, 1898.

Species	Locality	Depth (m)
<i>acanthonotus</i> <sup>1</sup> (Beddard, 1886)	S. of Kerguelen	3062-3398
<i>bifurcata</i> Menzies, 1962	S.E. Atlantic	2970
<i>bifurcatoides</i> Vasina & Kussakin, 1982	Scotia Sea	1729-1879
<i>curtispinosa</i> Vasina & Kussakin, 1982	Scotia Sea	6850-7219
<i>decorata</i> <sup>1</sup> (Hansen, 1895)	N. Atlantic	4000
<i>drygalskii</i> Vanhöffen, 1914	Antarctic	350-385
<i>hanseni</i> Birstein, 1963	N.W. Pacific	2940-3042
<i>iolanthoidea</i> Vasina & Kussakin, 1982	Scotia Sea	5600-6070
<i>laevis</i> Chardy, 1978	38°43'N 28°29'W	1240-1200
<i>longiramosa</i> Vasina & Kussakin, 1982	Scotia Sea	720-2016
<i>mucronata</i> <sup>3</sup> (Menzies & Schultz, 1968)	S. of Falkland Is.	567-864
<i>natalensis</i> <sup>3</sup> (Kensley, 1977)	South Africa	1360
<i>neonotus</i> <sup>1</sup> (Menzies & George, 1972)	Peru-Chile Trench	5750
<i>pleuronotus</i> <sup>1</sup> (Menzies & Schultz, 1968)	Weddell Sea	3784-3788
<i>porrecta</i> Menzies & Schultz, 1968	Drake Passage	3722-3822
<i>rostrata</i> <sup>2</sup> (Menzies & Schultz, 1968)	Drake Passage	1290-1455
<i>sulcatacornia</i> Menzies & Schultz, 1968	W. Scotia Basin	4008-4031
<i>typhlops</i> (G. O. Sars, 1879) <sup>4</sup>	Norwegian Sea	836-1416

Species previously described in the genus:

- 1 [Iolanthe]
- 2 [Exacanthaspidia]
- 3 [Paracanthaspidia]
- 4 [Acanthoniscus]

prepared using a Leica MZ12 dissecting microscope equipped with a camera lucida.

Type material for comparison was loaned by Dr B. Kensley, Smithsonian Institution, Washington, D.C., measurements were made according to Hessler (1970) and Wilson & Hessler (1980), spine-like setae equipped with a sensory seta are named 'sensory setae' according to Brandt (1998) in the description.

The specimen is 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, ZMH = Zoological Museum of Hamburg.

## SYSTEMATICS

Acanthaspidiidae Menzies, 1962

*Acanthaspidia* Stebbing, 1898

### *Acanthaspidia namibia* n. sp.

#### MATERIAL

HOLOTYPE: male, 23 mm length, ZMH 39879; AGT, station 339, 22-VII-2000, 5390 m, 16°05.1'S 05° 26.7'E. The single specimen was sampled in sponge tissue.

TYPE LOCALITY. - Angola Basin, Atlantic deep sea, 5390 m.

DESCRIPTION OF HOLOTYPE MALE. - Body (Fig. 1) 1.4 times as long as wide, dorsally scattered with long, simple setae. Lateral extensions of epimera with small blunt spines and also simple setae. Eyes absent. Head about as wide as first pereonite, with frontodorsally directed acuminate rostrum bearing small blunt spines and simple setae. Head laterally with two blunt spine-like extensions, the anterior one longer than the posterior one. All pereonites with a strong, long and acute mediodorsal, anterior spine, fourth pereonite also with a much smaller posterior one. Pereonite 1 longest but narrowest, bearing only one lateral spine, pereonites 2-4 about subequal in length,

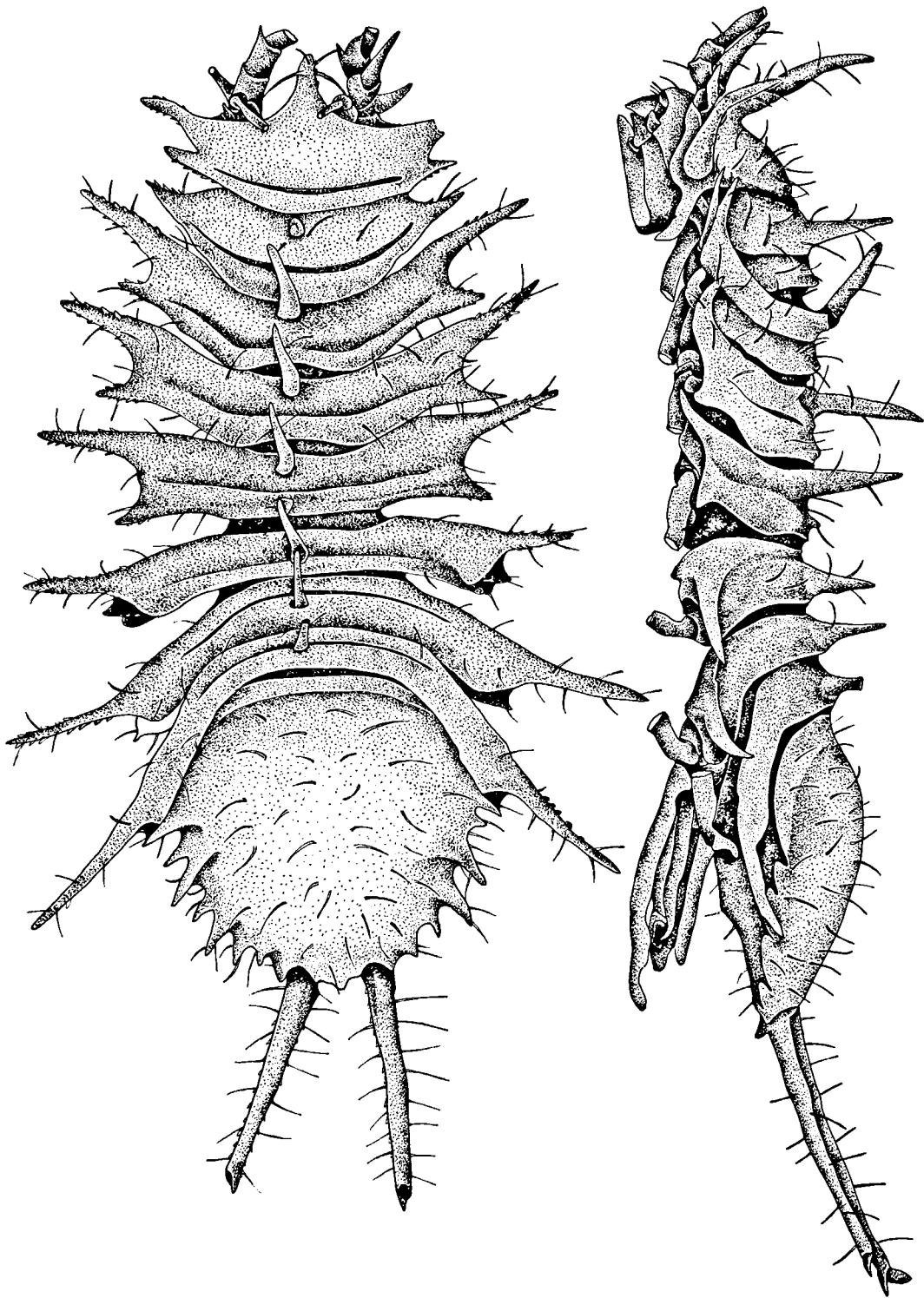


Fig. 1. *Acanthaspidia namibia* n. sp., holotype male of 23 mm length, with strongly dorsally curved rostrum and lateral epimeral spine.

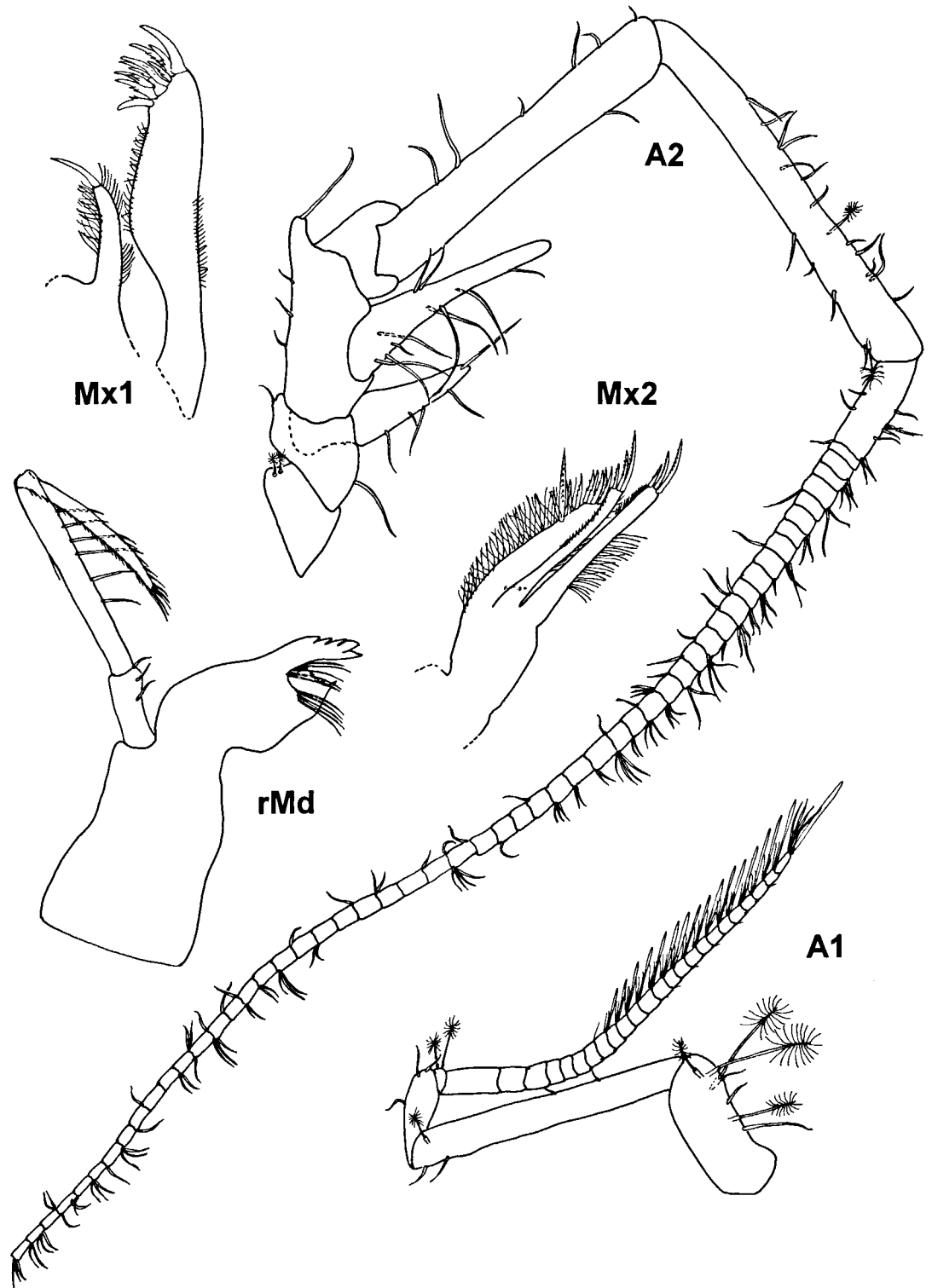


Fig. 2. *Acanthaspidia namibia* n. sp., holotype male, antennula, antenna, right mandible, maxillula, maxilla.

with two lateral spine-like extensions, anterior one longer than posterior one, pereonite 4 widest. Pereonites 5-7 about subequal in length, 6th and 7th pereonite widest, lateral spine-like extension of the 7th pereonite laterocaudally directed. All pleonites fused to pleotelson. Pleotelson round-oval, 0.3 as long as body, with seven to nine lateral strong spines on each side and long simple setae scattered over dorsal surface. Uropods with long sympodites and very short rami, sympodites 0.8 as long as pleotelson.

A1 (Fig. 2) with three peduncular and 25 flagellar articles. First peduncular article broadest, with two long and two short feather-like and three simple setae. Second peduncular article twice as long as first and only half as wide, with two distolateral and two medial simple setae. Third peduncular article shortest and narrowest, with three simple setae and one distal feather-like seta. First flagellar article small, ring-like, bearing two feather-like setae, second article longest, as broad as third peduncular article, without setae. Following flagellar articles decreasing in length and width, last 18 flagellar articles with one to four simple setae and one long aesthetasc each.

A2 (Fig. 2) with six peduncular and 54 flagellar articles. First peduncular article smallest, ring-like, with two short and small feather-like setae. Second peduncular article as short as first, with two simple setae and a strong lateral spine-like structure bearing five long simple setae. Third peduncular article slightly longer than first and second together, with four medial simple setae and an even longer lateral spine-like protrusion equipped with 10 simple setae of varying lengths. Fourth peduncular article only slightly longer than first, without setae. Fifth peduncular article as long as peduncular articles one to four, with six medial and one lateral simple seta; sixth peduncular article 1.2 times as long as fifth, with 12 simple and 1 feather-like medial setae and four lateral simple ones as well as one lateral feather-like seta. Following flagellar articles slightly narrowing in width, with varying numbers of simple setae.

LMd (Fig. 3) incisor with four teeth, lacinia mobilis shorter than incisor, bearing three teeth, spine row of 14 setulated setae, pars molaris broad, stout, with quadrangular triturative, grinding surface and few setae. Mandibular palp of three articles, first article shortest, with two

simple setae, last article slightly longer than first, with simple setae from medial margin to tip, few distodorsal setules; rMd (Fig. 2) similar to left, but without lacinia mobilis, and first palpal article with three, second with six simple setae.

Mx1 (Fig. 2) inner endite width 0.3 outer endite width. Outer endite with 10 strong spine-like serrated setae, inner endite with one long seta and some simple setae.

Mx2 (Fig. 2) consisting of three endites, innermost endite shortest and broadest, with seven distal strong setae, medial and outer endites each with three serrated setae of different lengths.

Mxp (Fig. 3) epipod reaching to mid of third palpal article. First palp article shortest; second palp article broadest, as long as third; third article about half as long as second and twice as wide as fourth; fourth article slightly longer than third, last article as long as third and narrowest. Palp length 3.1 palp width. Epipod length 3.6 width and 0.9 total basis length. Four coupling hooks, endite without fan setae.

Pereopods 1-7 (Figs. 3, 4) all similar in shape, basis always longest article, simple walking legs, increasing in length from 1-7. (Pereopods 4 and 5 were broken off on both sides of this specimen). Pereopod 1 (Fig. 3) shortest, with long basis bearing three dorsal feather-like setae and three simple dorsal setae as well as four simple ventral ones. Ischium two thirds of length of basis, with two simple ventral setae. Merus shorter than ischium, with four simple dorsal and six simple ventral setae, one small ventral sensory spine, carpus 0.7 length of basis, with seven dorsal and 16 ventral simple setae, six ventral small sensory setae. Propodus 0.8 length of carpus, with seven dorsal simple setae and one feather-like distodorsal seta, seven ventral simple and seven sensory setae. Dactylus less than half length of propodus, with one dorsal and two smaller ventral claws and some ventral and dorsal simple setae.

Pereopods 2, 3 (Fig. 3), and 6 and 7 (Fig. 4), basis longest article, with up to two dorsal feather-like setae. Ischium about two thirds of length of basis, with few short dorsal and ventral simple setae. Merus slightly shorter (0.7-0.8) than ischium, with several simple dorsal and ventral setae and none to three sensory setae. Carpus 0.8-0.9 length of basis, with several long dorsal and ventral setae and four (P2) - 23 (P7) ventral sensory

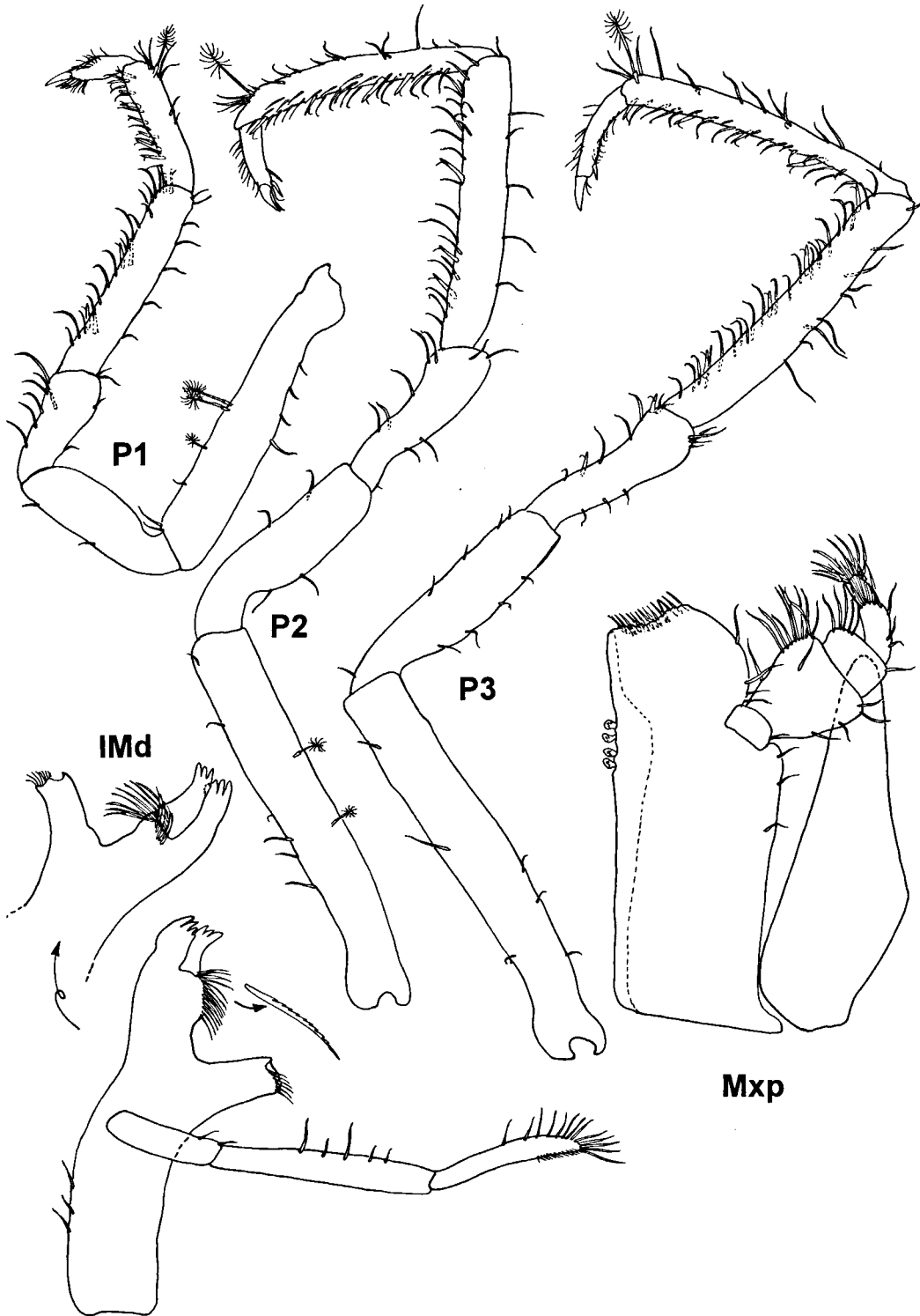


Fig. 3. *Acanthaspidia namibia* n. sp., holotype male, left mandible, maxilliped, pereopods 1, 2, 3.

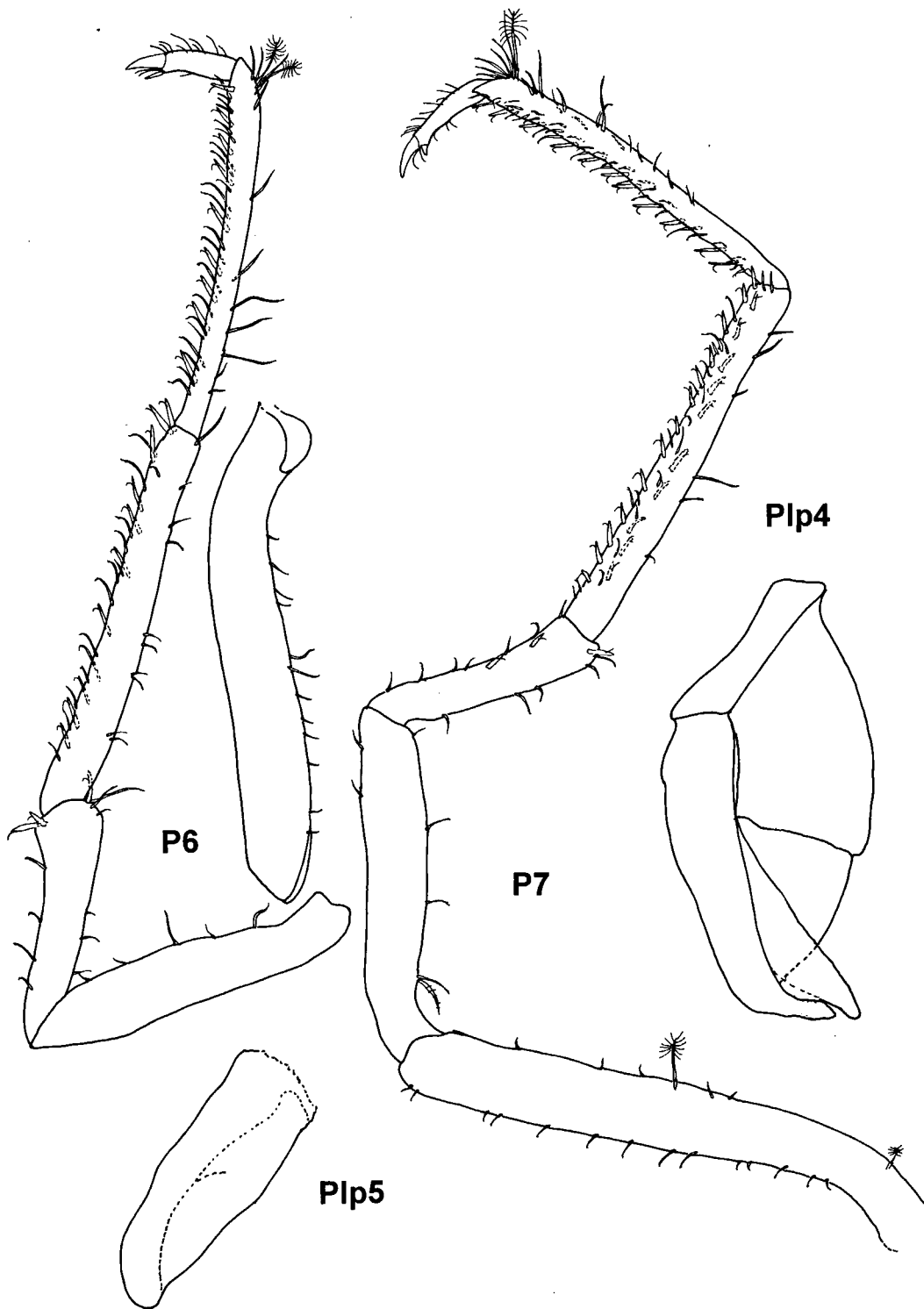


Fig. 4. *Acanthaspidia namibia* n. sp., holotype male, pereopods 6, 7, pleopods 4, 5.

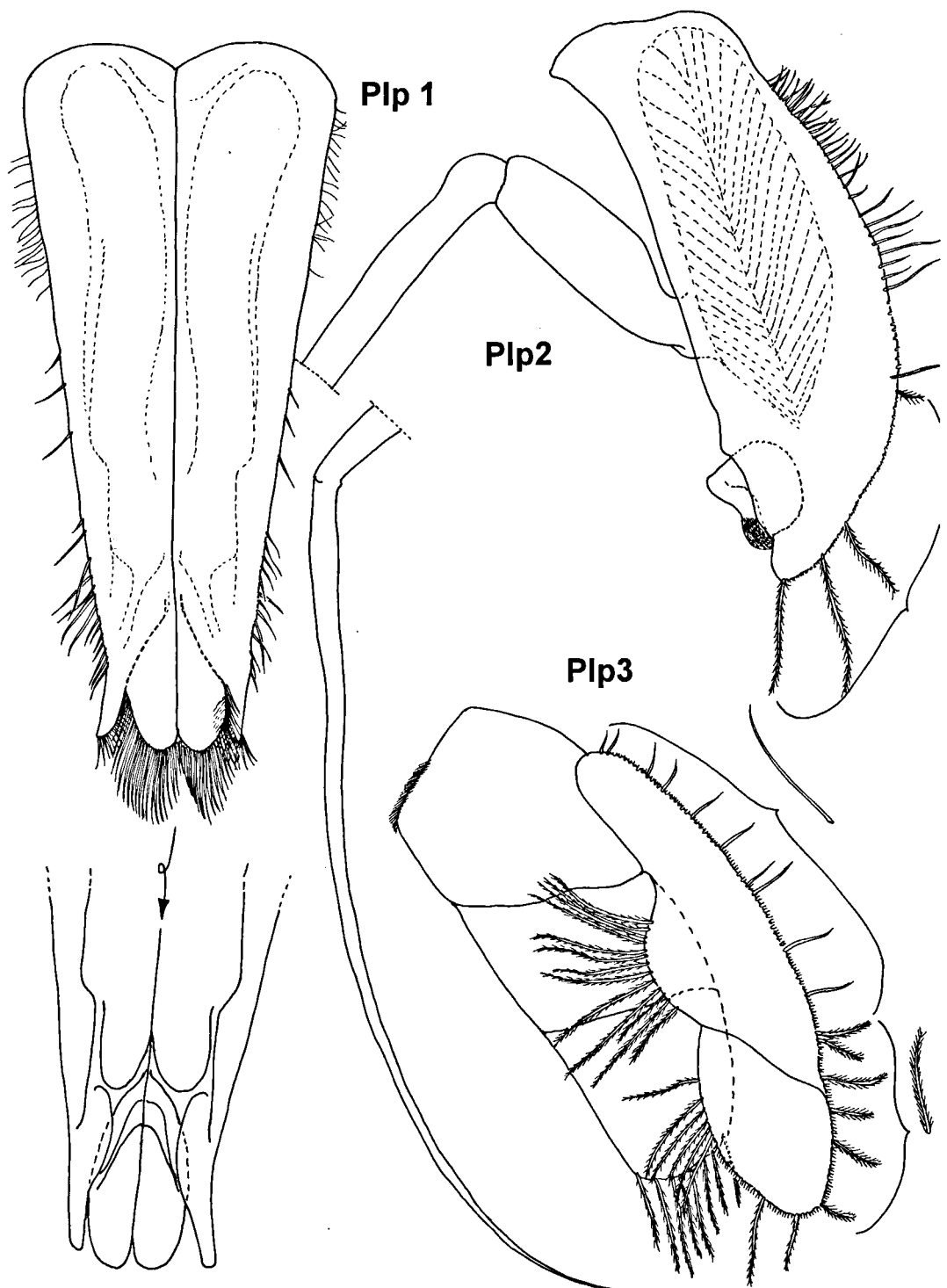


Fig 5. *Acanthaspidia namibia* n. sp., holotype male, pleopods 1-3.



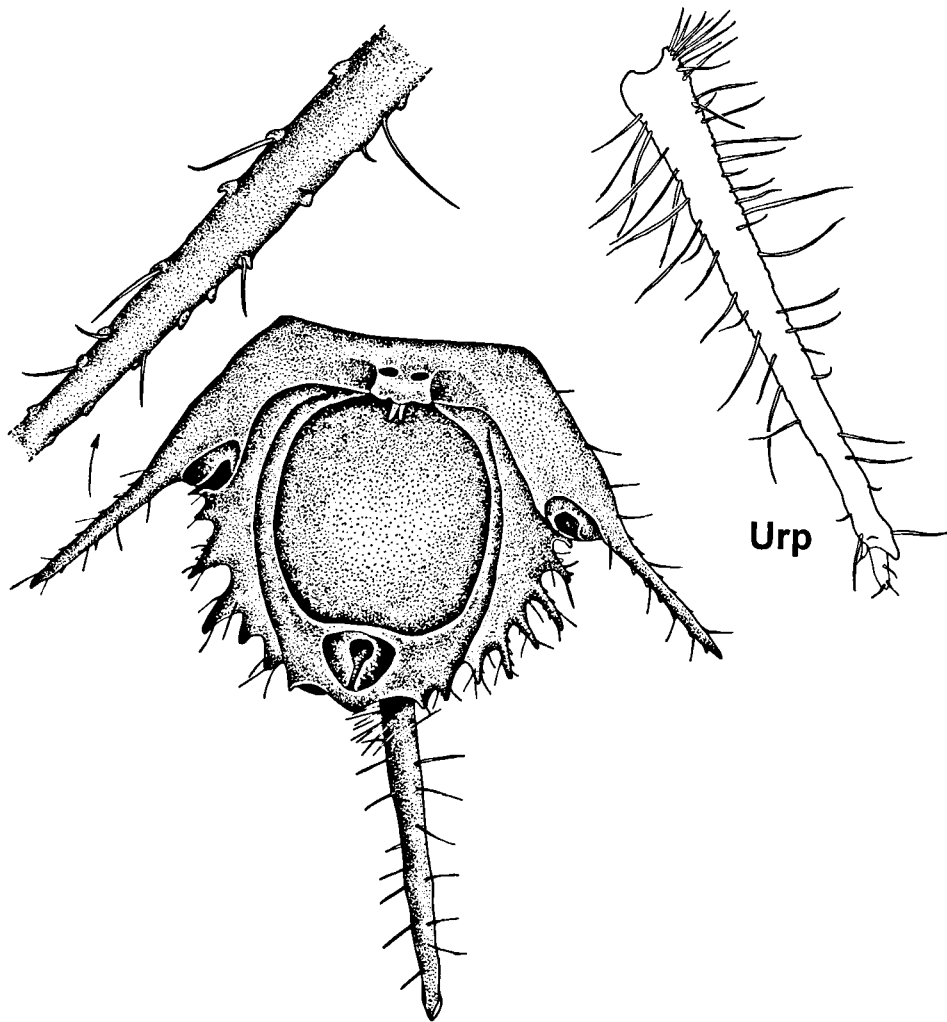


Fig. 6. *Acanthaspidia namibia* n. sp., holotype male, ventral view of pleotelson (without pleopods) and uropod.

setae. Propodus 0.9-1 length of carpus, with several long distal simple setae and one (two in P6) distodorsal feather-like setae, ventrally long simple setae and four (P2) - 12 (P7) sensory setae. Dactylus about 0.3 length of carpus, with a longer dorsal and ventral claw and several dorsal and ventral simple setae.

Pleopod 1 (Fig. 5) narrowing smoothly, 2.3 as long as proximal width and five times as long as distal width, tips rounded in ventral view.

Pleopod 2 (Fig. 5) sympod length 2.9 width. Lateral margin slightly rounded with many distolateral plumose setae and many lateral simple ones. Endopod inserting at 0.5 sympod length from distal tip. Stylet more than twice as long as

sympod, only slightly bent. Exopod, small, bare, with distal tuft of fine setae.

Pleopod 3 (Fig. 5) endopod with two segments with eight distal plumose setae, exopod slightly longer and more slender than endopod, consisting of two segments, distally with plumose, proximally with simple setae, proximal segment distomedially with rounded protrusion bearing long plumose setae.

Pleopod 4 (Fig. 4) sympod short, quadrangular, endopod slightly shorter than exopod and more slender.

Pleopod 5 (Fig. 4) only one small oval lobe.

Uropod (Fig. 6) with long and stout sympod, bearing long simple setae on lateral and medial

margins and scattered, blunt spine-like protrusions. Endopod 13 times shorter than sympod, with three simple short setae, exopod minute, with one distal short simple seta.

## REMARKS

The Acanthaspidiidae were revised by Brandt (1991a). The most similar species with this spine pattern on the dorsum of the body is *Acanthaspidia neonotus* (Menzies & George, 1972), which was described from the Pacific deep sea (USNM 121003; coll. 11-X-65, Peru-Chile Trench, 6°19'S 81°49'W, 5750 m). The new species differs only in bearing numerous long simple setae all over the body surface, and in bearing a maxillipedal epipod, which reaches the third palpal article, whereas that of *A. neonotus* reaches only the first; the lacinia mobilis of *A. namibia* bears three teeth, the one of *A. neonotus* four. Differences in measurements are as follows: body length: body width is 1.8 in *A. neonotus* and 1.4 in *A. namibia*; uropod length: pleotelson lengths is 2.2 in *A. neonotus* and 1.8 in *A. namibia*. Uropod rami of *A. namibia* are more slender and narrow than in *A. neonotus*, although this species is slightly larger. *A. iolanthoidea* Vasina & Kussakin (1982) has also a very similar spine pattern, however, this species has been sampled in the Antarctic and bears no setae on the dorsum. Moreover, it is incompletely described and illustrated and needs revision; unfortunately, the type material is lost. *Acanthaspidia acanthonotus* (Beddard, 1886) looks similar at first view as well, but this species can easily be discriminated in bearing only three lateral strong spines on lateral margins of the pleotelson, whereas the new species bears nine. *A. bifurcata* Menzies (1962) and *A. bifurcatoides* Kussakin & Vasina (1982), although similar to the new species as well, also lack dorsal setae and have an anteriorly divided frontally directed medial spine (rostrum) between the antennae; in the new species this is undivided.

All other species can easily be separated from the new species.

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