

BEAUFORTIA

BULLETIN ZOOLOGICAL MUSEUM

UNIVERSITY OF AMSTERDAM

Vol. 52, no. 1

July 15, 2002

STORTHYNGURA SPINOSISSIMA N. SP. (MUNNOPSIDIDAE, ISOPODA, CRUSTACEA) FROM THE WEDDELL SEA AND THE DRAKE PASSAGE

ANGELIKA BRANDT

Zoological Institute and Zoological Museum, Martin-Luther-King-Platz 3, 20146 Hamburg, Germany
E-mail: abrandt@zoologie.uni-hamburg.de

ABSTRACT

Storothyngura spinosissima n. sp. is described from material obtained from the Weddell Sea, south of Vestkapp and in the Drake Passage, at a depth of 417-1681 m. The new species is most similar to *S. praegrandis* George & Menzies, 1968, but differs in the following details: the dorsum of *S. spinosissima* n. sp. is covered by numerous small spine-like tubercles and short, hair-like setules, which are absent in *S. praegrandis*; the tubercles of the latter are less numerous; the interantennular space of *S. spinosissima* n. sp. is narrower than in *S. praegrandis*; the antennula of *S. spinosissima* n. sp. bears a less pronounced distomedial spine on the first peduncular article; and the uropodal endopods are slightly shorter and the exopods less wide in *S. spinosissima* n. sp. than in *S. praegrandis*.

INTRODUCTION

The family Munnopsididae was established by Sars in 1869 for a large group of deep-sea Asellota. Almost every deep-sea expedition yields new munnopsid species, in particular of *Storothyngura* Vanhöffen, 1914, one of the most numerous and morphologically diverse genera, now consisting of 41 species. A revision and rediagnosis of *Storothyngura* and the establishment of other, new genera will soon be submitted by Maljutina (Maljutina, pers. comm.).

Storothyngura species are very diverse in the spination of the body and in the shape of pleotelson. Three species are now known from the southern Weddell Sea: *S. spinosissima* n. sp., *S. kussakini* Brandt & Maljutina, 2002, and *S. elegans* Vanhöffen, 1914. However, *S. spinosissima* n. sp. is

most similar to *S. praegrandis* George & Menzies, 1968 from the Drake Passage.

MATERIALS AND METHODS

Samples were taken by means of an Agassiz Trawl, a bottom trawl and a trap during the ANT XIII-3 expedition on board RV 'Polarstern' in February and March 1998, south of Vestkapp, Weddell Sea and in Drake Passage. Material was sorted on deck or in the on-board laboratory using a Wild M5 dissecting microscope for formaldehyde (4%) fixed samples, these being later transferred to ethanol (70%). Drawings were prepared using a Leica MZ12 stereomicroscope equipped with a camera lucida.

Measurements and terminology follow Brandt (1992) and Wilson (1989).

The specimens are deposited in the Zoological Museum of Hamburg (ZMH).

The following abbreviations are used in the text and figures: A1 = antennula; A2 = antenna; hy = hypopharynx; lMd = left mandible; MBC = multiple box corer; Mx1 = maxillula; Mx2 = maxilla; Mxp = maxilliped; P1-7 = pereopod 1-7; Plp 1-5 = pleopod 1-5; rMd = right mandible; Urp = uropod.

SYSTEMATICS

Asellota Latreille, 1802

Munnopsididae Sars, 1869

Storthyngura Vanhöffen, 1914

Storthyngura spinosissima n. sp.

Figs. 1-8

MATERIAL. - Holotype: female, 33 mm length, ZMH 39950 (south of Vestkapp), station 88, 4-II-1998, 73°28.5'-28.4'S 22°30.0'-40.5'W, Agassiz Trawl, 1681-1286 m depth.

Paratypes: 1 male, 22.5 mm length and 1 female, 26 mm length, ZMH 39951, bottom trawl, station 120 (south of Vestkapp), 7-II-1998 (Time: 11:20-13:08), 73°35.7'S 22°23.3'W, 812 m - 73°35.5'S 22°11.0'W, 489 m; 1 female of 24 mm length, ZMH 39952, Agassiz Trawl, station 338 (Drake Passage), 19-III-1998 (17:18-18:14), 61°33.9'S 58°12.2'W, 417 m - 61°34.0'S 58°09.8'W, 417 m; 2 females of 29.5 and 24 mm lengths, ZMH 39953, trap (south of Vestkapp), 5-II-1998, 73°35.7'S 22°23.4'W, 813 m; 1 ovigerous female of 31 mm length, ZMH 39954, bottom trawl, station 95 (south of Vestkapp), 5-II-1998 (6:17-8:11), 73°35.7'S 22°23.4'W, 813 m - 73°33.4'S 22°03.5'W, 726 m; 2 females, one damaged, one preparatory of 33 mm length, ZMH 39955, Agassiz Trawl, station 336, 19-III-1998 (12:57-15:00), 61°26.5'S 58°07.4'W, 1031 m - 61°27.6'S 58°04.1'W, 967 m; 2 males of 26 and 30.5 mm lengths, 3 females of 31 and 30 mm (one damaged unmeasured) lengths, 10 preparatory females of 33, 36, 28, 30, 32, 35, 41, 35, 34, 32 mm lengths, ZMH 39956, Agassiz Trawl (south of Vestkapp), station 88, 4-II-1998 (6:19-8:48), 73°28.5'S 22°30.0'W, 1681 m - 73°28.4'S 22°40.5'W, 1286 m depth, 2 males, same site data, ZMH 40072.

Also examined: Paratype of *Storthyngura praegrandis* George & Menzies, 1968 (USNM 120551), 60°57'-54'S 56°52'-58'W, 2672-2992 m depth, 13-III-1964, leg. R. Y. George and R. Menzies on board RV 'Eltanin'.

ETYMOLOGY. - The species is named with regard to the small spine-like tubercles on the body and antenna.

DESCRIPTION OF HOLOTYPE FEMALE. - Body (Fig.

1 dorsal view, Fig. 2 lateral view) 2.6 times as long as wide, dorsum with pereonites 1-4 each with one acute mediodorsal spine, pereonites 5-7 each with two spines and pleonite 1 with one. Pleotelson with three stout and two smaller spines, one dorsal, one anteromedially, two medial spines and caudolaterally of the last one two smaller blunt spines. Dorsal surface of body covered with small, blunt, spine-like tubercles and numerous short setules. Head 0.6 times as long as wide, as wide as first pereonite, 0.7 times as wide as pereonite 5, with two mediolateral spines on shallow elevations, dorsal spines or any sculpture. Interantennular distance 0.1 of head width and 0.3 of antenna basis width. Frons sloping, almost straight, just very slightly concave, frontal arch with swollen ridges on both sides, diverging from frontal margin of head to clypeus, clypeus 1.5 times as broad as labrum. Pereonites 1-4 slightly increasing in lengths, each bearing a single frontomedial acute spine, second and fourth one longest, pereonite 1 with lateral acute spine, pereonites 2 and 3 with a more rounded anterolateral and a posterolateral coxal spine, pereonite 4 with acute, long, slender anterolateral and shorter posterolateral spines, mediolateral spines longest.

Pereonites 5-7 (natasoma) length 1.3 of anterior body (head and pereonites 1-4). Pereonites 5-7 fused, elongated mediodorsally and slightly narrowed from 5 to 7, but increasing in length; each pereonite with two frontomedial spines, acute and longest on pereonite 5, smaller on pereonites 6 and 7; anterolateral spine-like extension of pereonite 5 slightly longer and more acute than those of pereonites 6 and 7, pereonite 7 with an additional mediocaudal spine. All spines frontally directed. Pleonite 1 indicated by a slight elevation and a strong frontally directed spine. Pleotelson 0.9 as long as wide, 0.25 of total body length and 0.8 of body width, slightly narrower than pereonite 6, roughly of triangular shape, broadest anteriorly, anterolateral processes slightly narrower and more blunt than in pereonite 7, medial spines slightly broader than anterolateral ones, directed laterally, caudolateral spines narrowest, less acute than medial, apex of star-like appearance with three spine-like extensions, lateral ones slightly more acute than caudomedial one. Dorsal surface with small, blunt, spine-like structures and small setules. Pre-anal ventral ridge acumi-

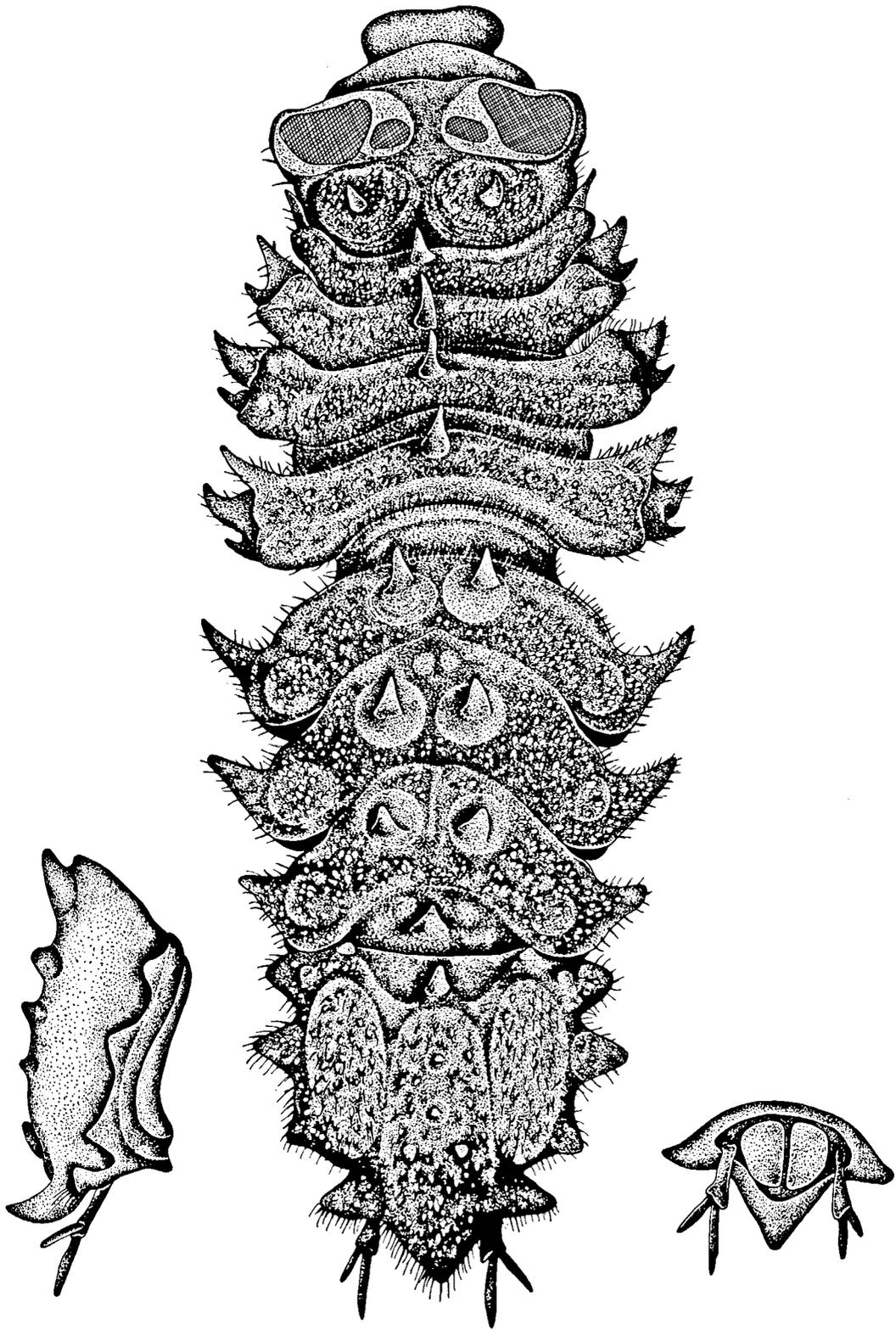


Fig. 1. *Storothyngura spinosissima* n. sp., holotype, dorsal view and pleotelson.

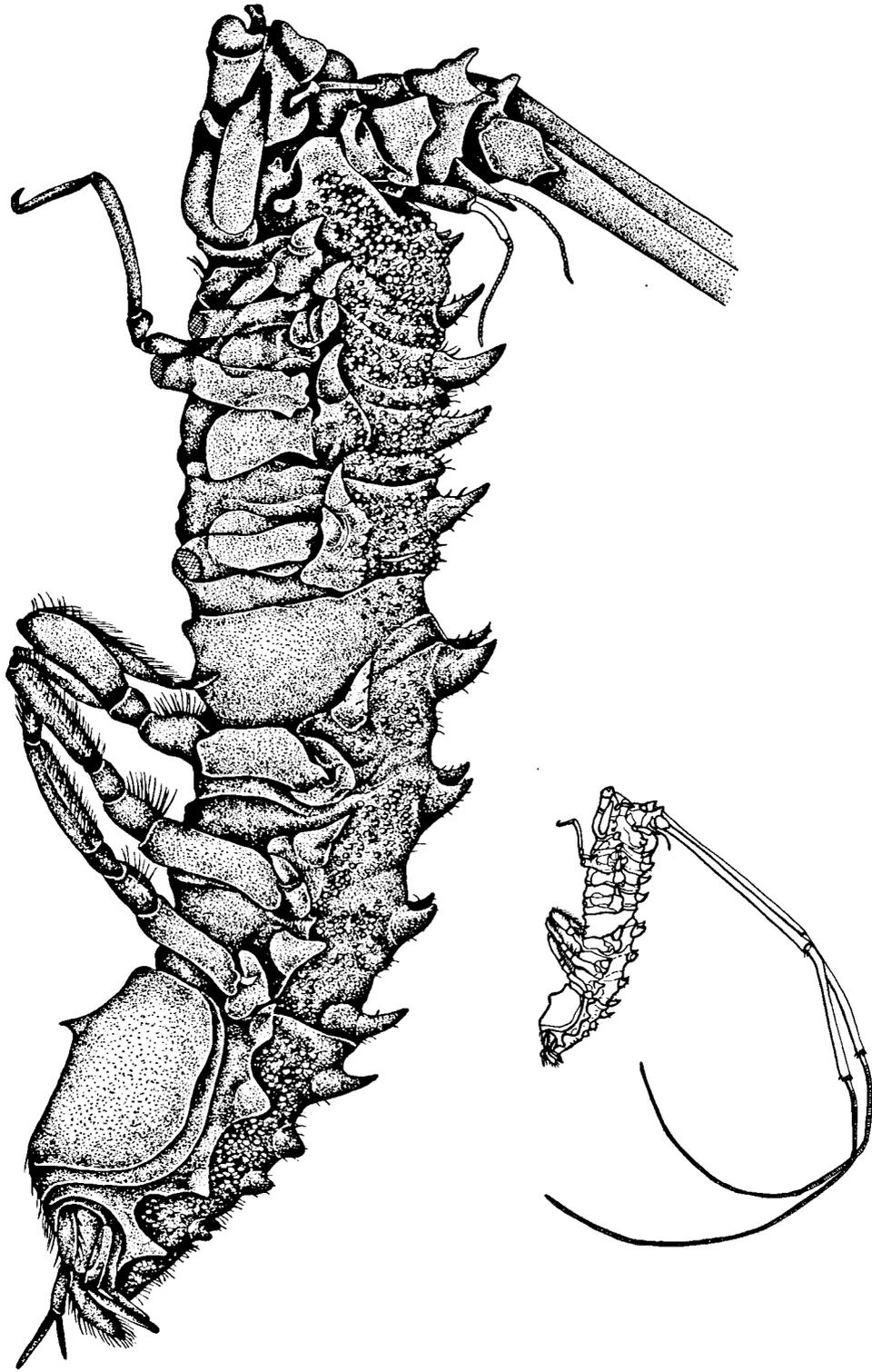


Fig. 2. *Storthygura spinosissima* n. sp., holotype, lateral view and outline with complete length of antennae.

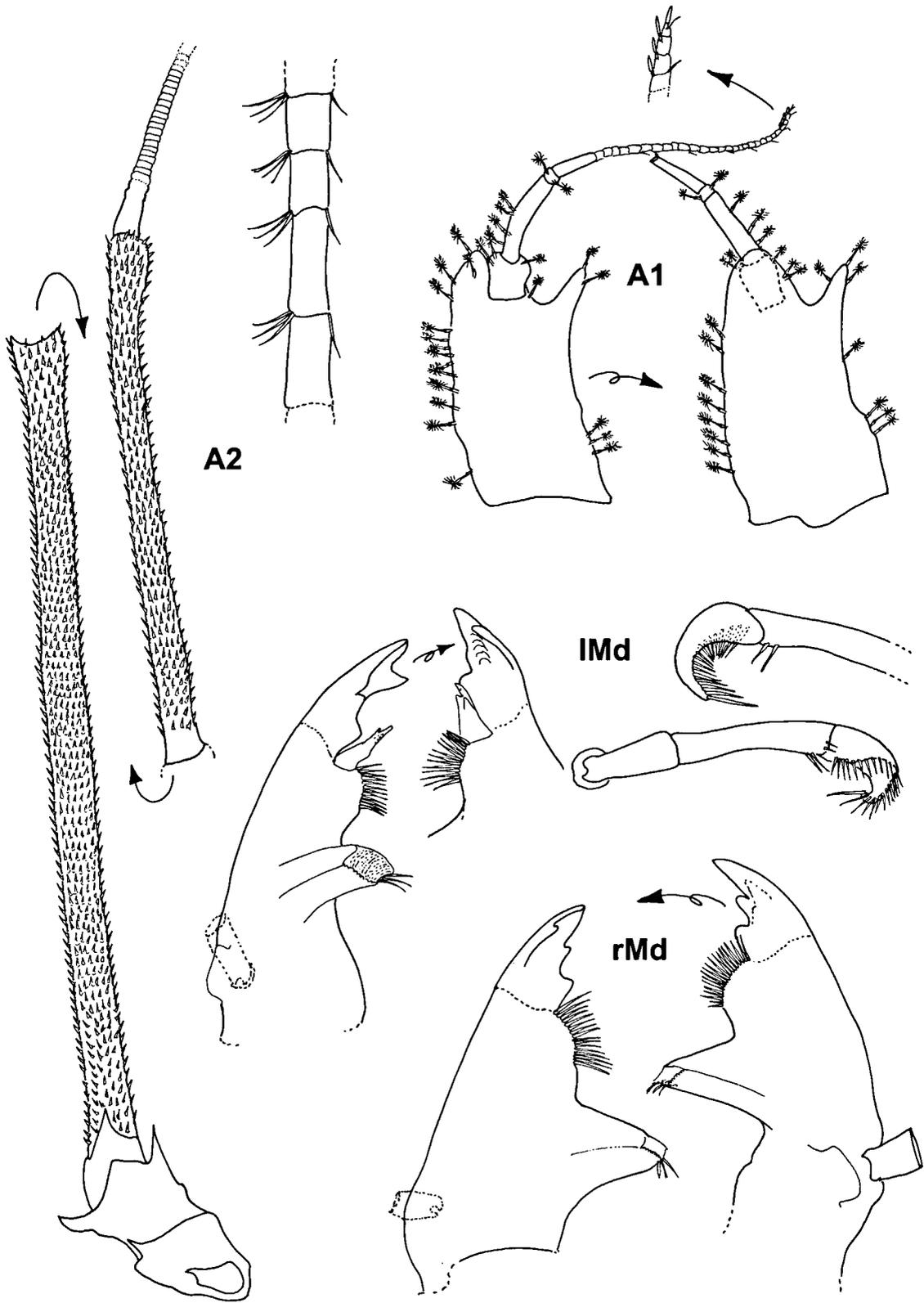


Fig. 3. *Storthyngura spinosissima* n. sp., holotype female, antennula, antenna, left and right mandible.

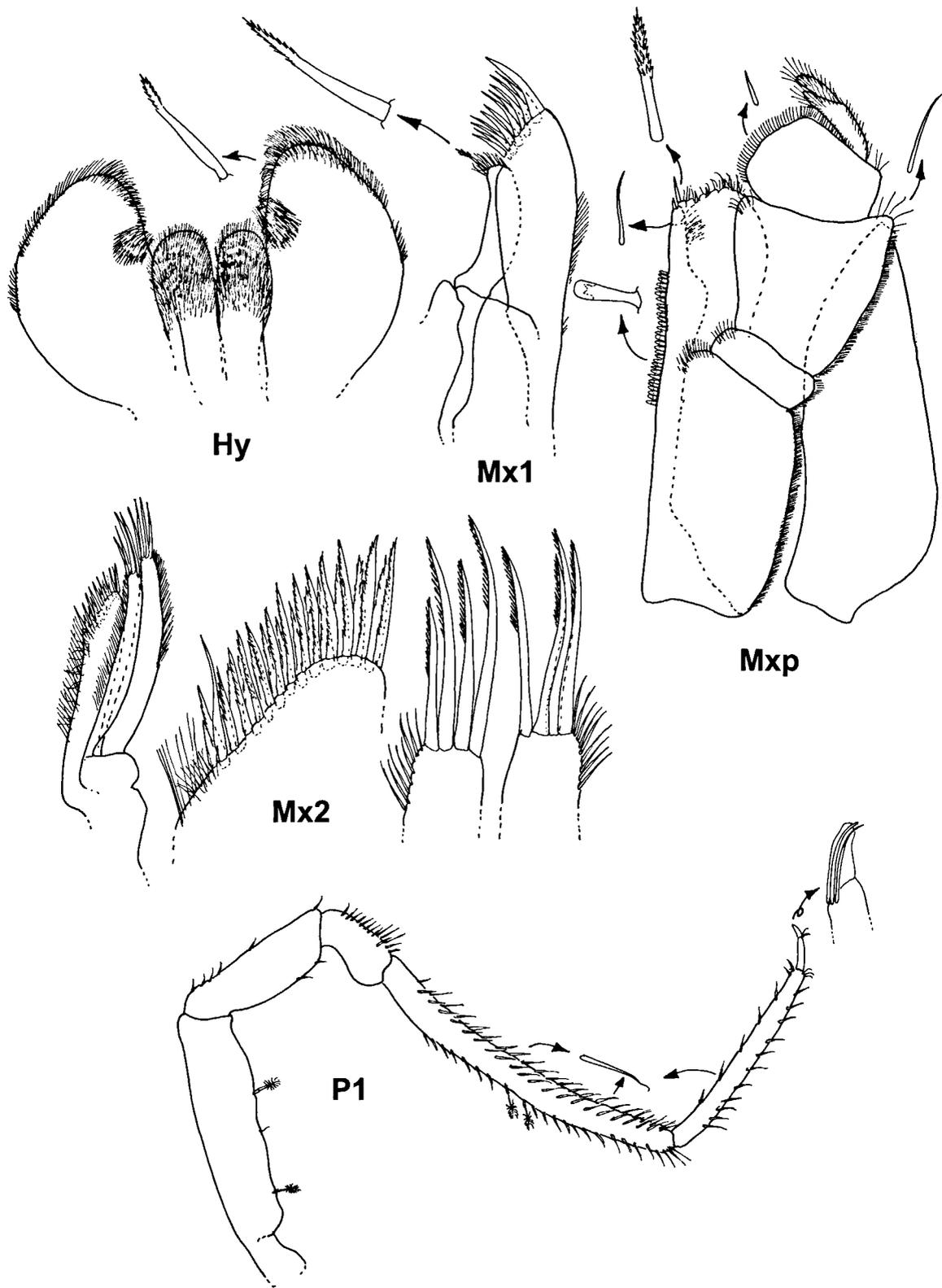


Fig. 4. *Storthingura spinosissima* n. sp., holotype female, hypopharynx, maxillula, maxilla, maxilliped, pereopod 1.

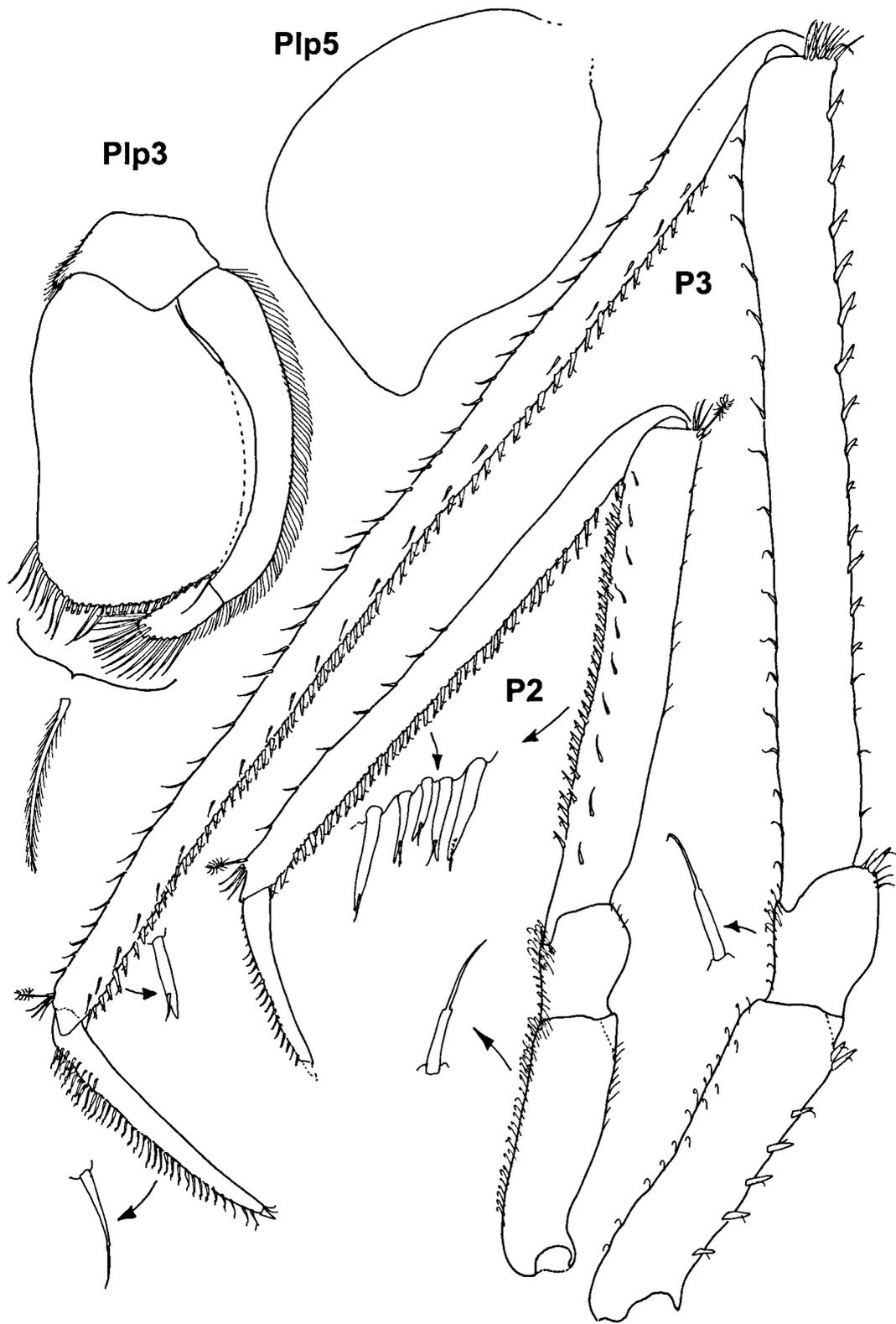


Fig. 5. *Storthyngura spinosissima* n. sp., holotype female, pereopods 2, 3, pleopods 3,5.

nating into short, almost triangular extension, shorter than apex of pleotelson, directed backwards and upwards.

A1 (Fig. 3) with three peduncular and about 30 flagellar articles. First article 2.2 times as long as wide, with distomedial spine-like extension, distolateral lobe slightly longer than article 2, with at least 22 short feather-like setae. Second article 0.2 times as long and 0.3 as broad as article 1, with three distolateral plumose setae. Third article half as narrow and twice as long as article 2, with four lateral feather-like setae. First flagellar article 0.6 as long as peduncular article 3, bearing two plumose setae. Second flagellar article longest, without setae. Following articles slightly decreasing in length to tip, with few short simple setae, at least the last three flagellar articles with short, minute aesthetascs.

A2 (Fig. 3) with six peduncular and > 263 flagellar articles (tip broken off). Total length at least 2.8 length of body (Fig. 2). First peduncular article with lateral spine (Fig. 2), second article almost triangular, without setae. Third article subquadrangular, also without setae, but with two distal spine-like extensions. Fourth article about as long as second, also with distal spine-like extension. Fifth article longest, 1.6 times as long as sixth, with numerous short spine-like setae all around. Last article slightly more slender than fifth, also with these short spine-like setae. Flagellar articles small, ring-like, with groups of three simple setae on one side and one simple seta on the other side. LMd (Fig. 3) incisor with three teeth, medial tooth longest, lacinia mobilis 0.5 of incisor length, also bearing three teeth, one longer and two shorter ones, acute tapering distally, spine row of more than 13 slender setae, pars molaris stout, tapering distally, with small, quadrangular triturative, grinding surface and few long lateral setae, condyle length 0.1 of mandibular body length. Mandibular palp slightly shorter than mandibular body. First article without setae, medial article 1.5 times as long as first, with few distally setulated setae. Last article slightly curled, with setulated setae from medial margin to tip. RMd (Fig. 3) similar to left, condyle 0.2 mandibular body length, without lacinia mobilis (palp not illustrated).

Hypopharynx (Fig. 4), both lobes with distal setae, on outer lobe setae distally setose on disto-

medial margins.

Mx1 (Fig. 4) inner endite width 0.4 outer endite width. Outer endite with 12 strong spine-like, slender, smooth setae and long marginal setules, inner endite with rounded tip, with one long curved, distally setulated seta and many long simple distal setules.

Mx2 (Fig. 4) inner endite with more than 24 distal strong setae arranged in two rows, and long medial setules, medial and outer endites with four distally setulated setae each.

Mxp (Fig. 4) with short quadrangular coxa. Endite reaching to beginning of third palp article, with one distally setulated seta, many long simple setae, some scale-like structures and three short blunt spine-like setae, with approximately 30 coupling hooks. Palp length 0.9 of total basis length. Article 1 shortest, with few medial and lateral simple setae; article 2 broadest, 1.5 as broad as endite, with few slender distomedial and -lateral simple setae; lateral margin of palp articles 1 and 2 with dense row of setules; article 3 slightly narrower than article 2, 0.6 times as long as article 2, medial lobe rounded, with numerous medial short simple setae; article 4 narrow distomedial protrusion short, with many simple setae on protrusion and on lateral margin, last article narrowest, half as long as article 4, with a tuft of distal simple setae. Epipod 3 times as long as broad, almost as long as basis, lateral angular projection in proximal third.

Pereopods 1-4 (Figs. 4, 5): pereopod 1 (Fig. 4) shortest, basis with two dorsal plumose and one simple seta. Ischium about 0.75 as long as basis, with proximoventral and distodorsal short simple setae. Merus small, half as long as ischium, almost quadrangular, with only ventral simple setae, carpus 1.5 of basis length, with many simple short setae on both margins, two mediodorsal plumose setae. Propodus about 0.6 of carpus length, with simple setae on both margins, propodus more slender than carpus, and half as wide as basis. Dactylus 0.2 as long as propodus, with single terminal unguis and two dorsal simple setae. Pereopods 2-4 (Figs. 5, 6) increasing in length from 2 to 4. All bases (not illustrated) of the same length in additional material, shorter than ischium and merus together. Ischium and merus with several ventral whip setae, on pereopods 2-4 and pereopod 4 with dorsal sensory setae. Carpus 1.6

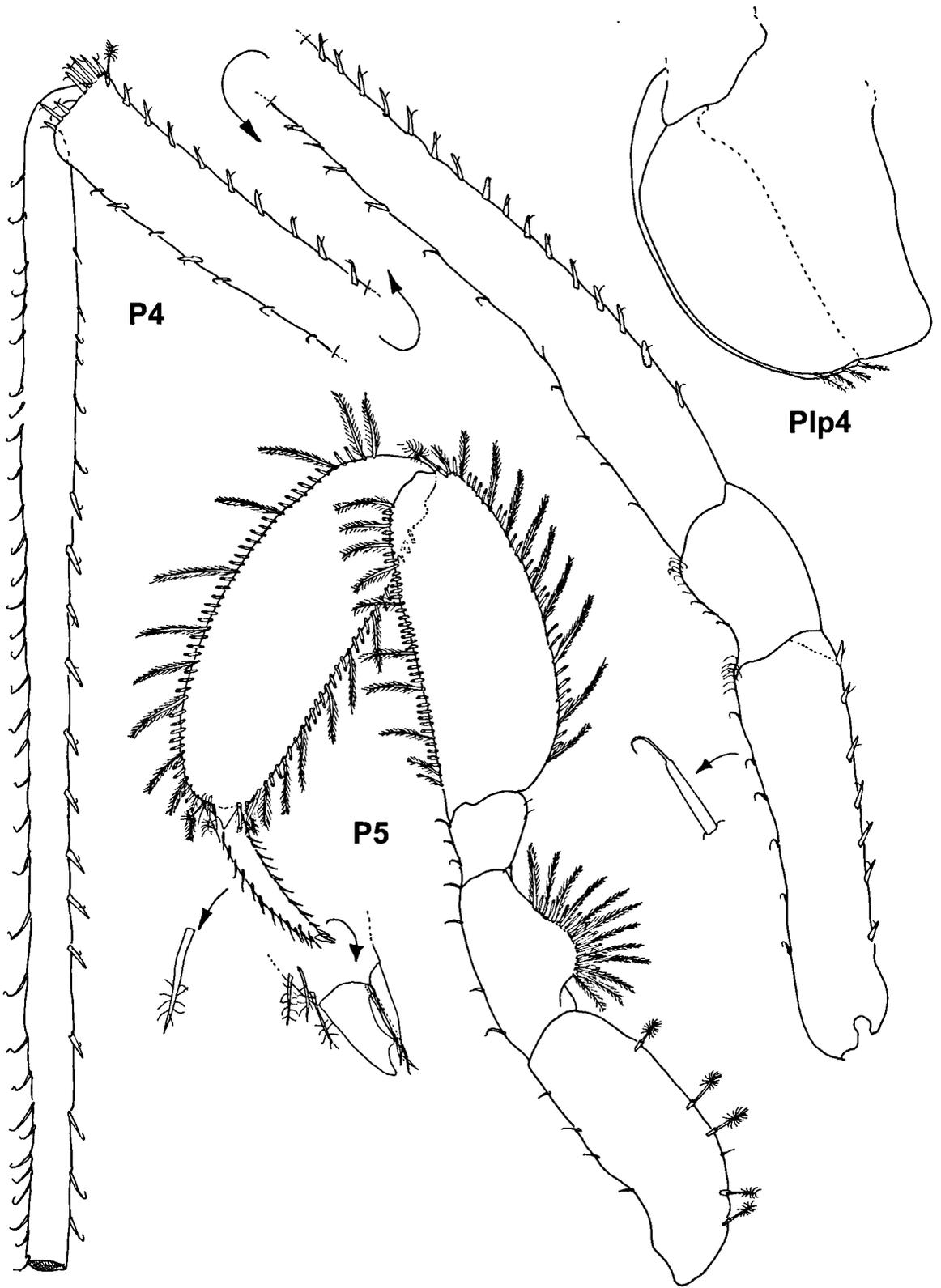


Fig. 6. *Storthyngura spinosissima* n. sp., holotype female, pereopods 4, 5, pleopod 4.

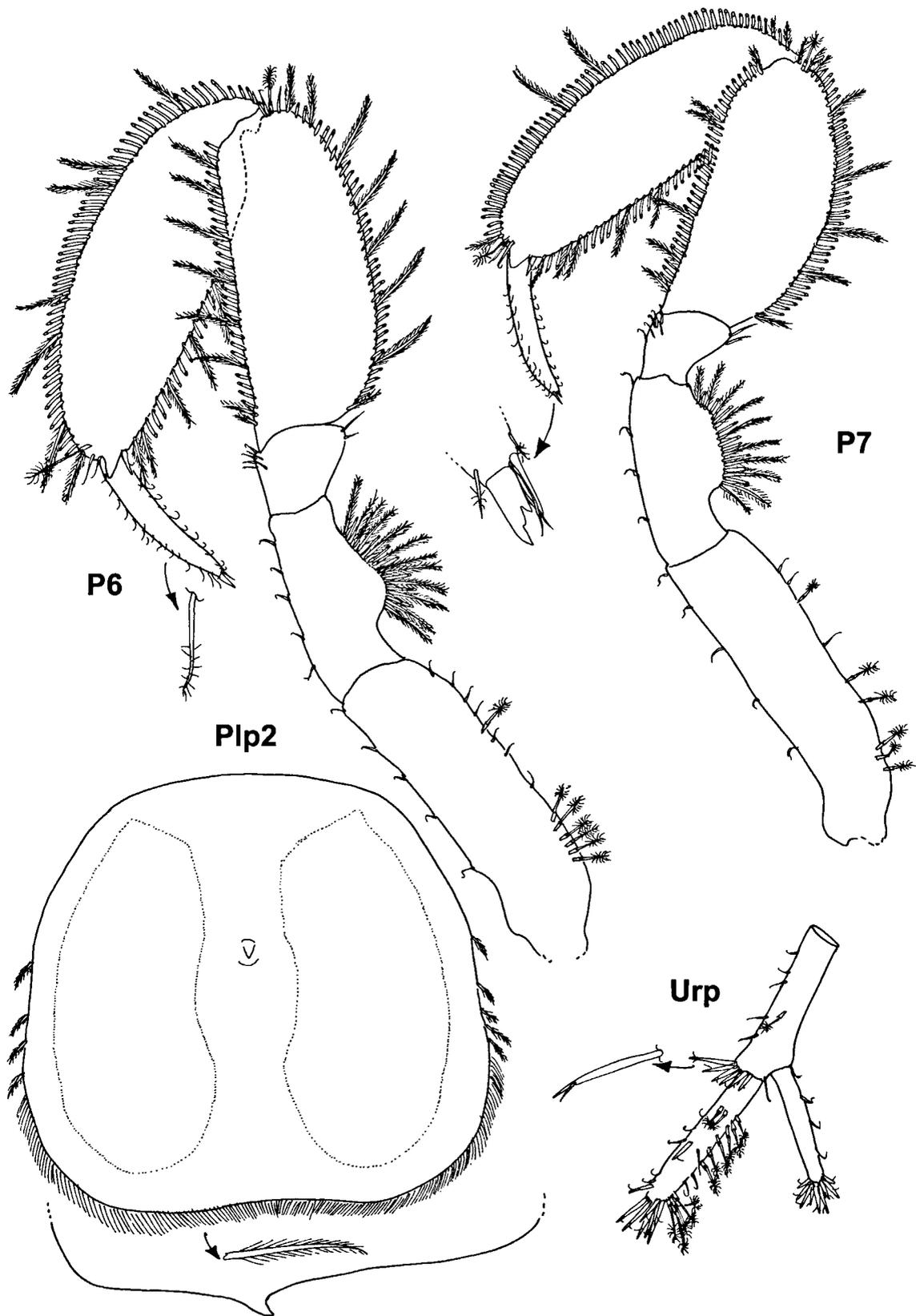


Fig. 7. *Storthygura spinosissima* n. sp., holotype female, pereopods 6, 7, pleopods 2, uropod.

of bases length, with dorsal simple short setae and a dense row of ventral short sensory setae, carpus of pereopod 3 and 4 with ventral whip setae and a row of dorsal sensory setae. Propodus always longest article, 1.1, 1.4, 1.4 of corresponding carpus length, with dorsal short simple setae and ventral slender sensory setae, distodorsally with a group of setae and one plumose seta. Dactylus of pereopods 2-4 about 0.3 of carpus length, with one terminal unguis.

Pereopods 5-7 (Figs. 6, 7) of similar shape and size, decreasing in lengths from 5 to 7, pereopod 5 about 0.6 times as long as pereopod 4 length, carpus and propodus expanded dorsally, oval in shape. Basis of pereopod 5 slightly shorter than carpus, of pereopod 6 as long as carpus, of pereopod 7 1.3 times as long as carpus, with five to seven dorsal plumose and few simple setae. Merus about half as long as ischium in all three legs, equipped with a semicircular row of > 20 long dorsal plumose setae. Carpi all elongate, about 2.5 times as long as wide, with a dorsal and ventral row of plumose setae about half as long as article width, carpus of pereopods 5-7 with distodorsal plumose seta. Propodi only slightly longer than carpi, with dorsal and ventral row of plumose setae, single plumose seta distodorsally and a distoventral sensory seta. Dactylus less than one-third of propodus length, with dorsal setose and ventral whip setae, one toothed distodorsal unguis and one smaller ventral unguis, surrounding two setae.

Pleopod 2 (Fig. 7) with ventral spine in proximal half, almost quadrangular, with four lateral, fringe of caudolateral and caudal short plumose setae. Pleopod 3 (Fig. 5) endopod 1.5 times as long as wide, with 28 distal plumose setae, exopod 1.1 times as long as endopod length and one-fifth of endopod width, consisting of two segments, distally with about 15 plumose setae, laterally with simple setules, proximal segment 4 times as long as distal segment. Pleopod 4 (Fig. 6) endopod 1.4 as long as wide, exopod distally with four plumose setae. Pleopod 5 (Fig. 5) only one almost quadrangular lobe, 1.5 times as long as broad.

Uropod (Fig. 7) about 0.2 as long as pleotelson, sympod stout, 5 times as long as wide, bearing six long distal sensory and seven shorter simple setae and one plumose seta. Endopod as long as sympod, with two lateral and seven distal sensory

setae, 13 plumose setae, most distally and laterally, few small whip setae; exopod slightly narrower and 0.7 times as long as endopod, with nine distal sensory setae of varying lengths, and three lateral whip setae.

DIFFERENCES OF PARATYPE MALE OF 30.5 MM (FIG. 8). - No obvious differences in dorsal body shape and spination visible. Maxilliped endite with at least 20 stout plumose slender setae (most broken off in this specimen), many more than in female.

Antennula similar to female (as only number of flagellar articles and aesthetascs differs, the male antennula is not illustrated), with a high number of plumose setae on peduncle, flagellum with 64 articles, article 1 longest, as in female, last 40 articles each with only one aesthetasc and a simple short seta each; aesthetascs longer than in female.

Pereopod 1 (Fig. 8) with less setae than in female, basis with four plumose setae, ischium and merus distodorsally with small simple seta, merus ventral margin with only six whip setae, fewer whip setae on ventral side of carpus, the two dorsomedial plumose setae of female are absent in male, however, male with more whip setae ventrally on propodus, dactylar unguis more differentiated. Differences in pereopods 5-7 are only referring to the number of the plumose setae on the basis, which differ slightly, usually there is one less in the male.

Pleopod 1 (Fig. 8) narrowing smoothly after two-thirds of length (waisted), then broadening again and tapering distally, 2.6 times as long as proximal width, 6.3 times as long as waist width and 9 times as long as distal width, tips rounded medially and having an acuminating distolateral process, distally seven simple setae, dorsally with groove through which the stylet of the 'appendix masculina' might be guided. Pleopod 2 (Fig. 6) sympod length 1.6 times width. Lateral margin rounded with many distolateral plumose and three mediolateral short simple setae. Endopod inserting 0.2 sympod length from distal tip. Stylet length 0.3 as long as sympod, almost straight. Exopod small, rounded, with fine setae.

Uropod of male with fewer setae, less sensory setae distally on sympod, fewer distally on exopod (six sensory and four simple short setae), endopod with three lateral sensory, two whip and only one

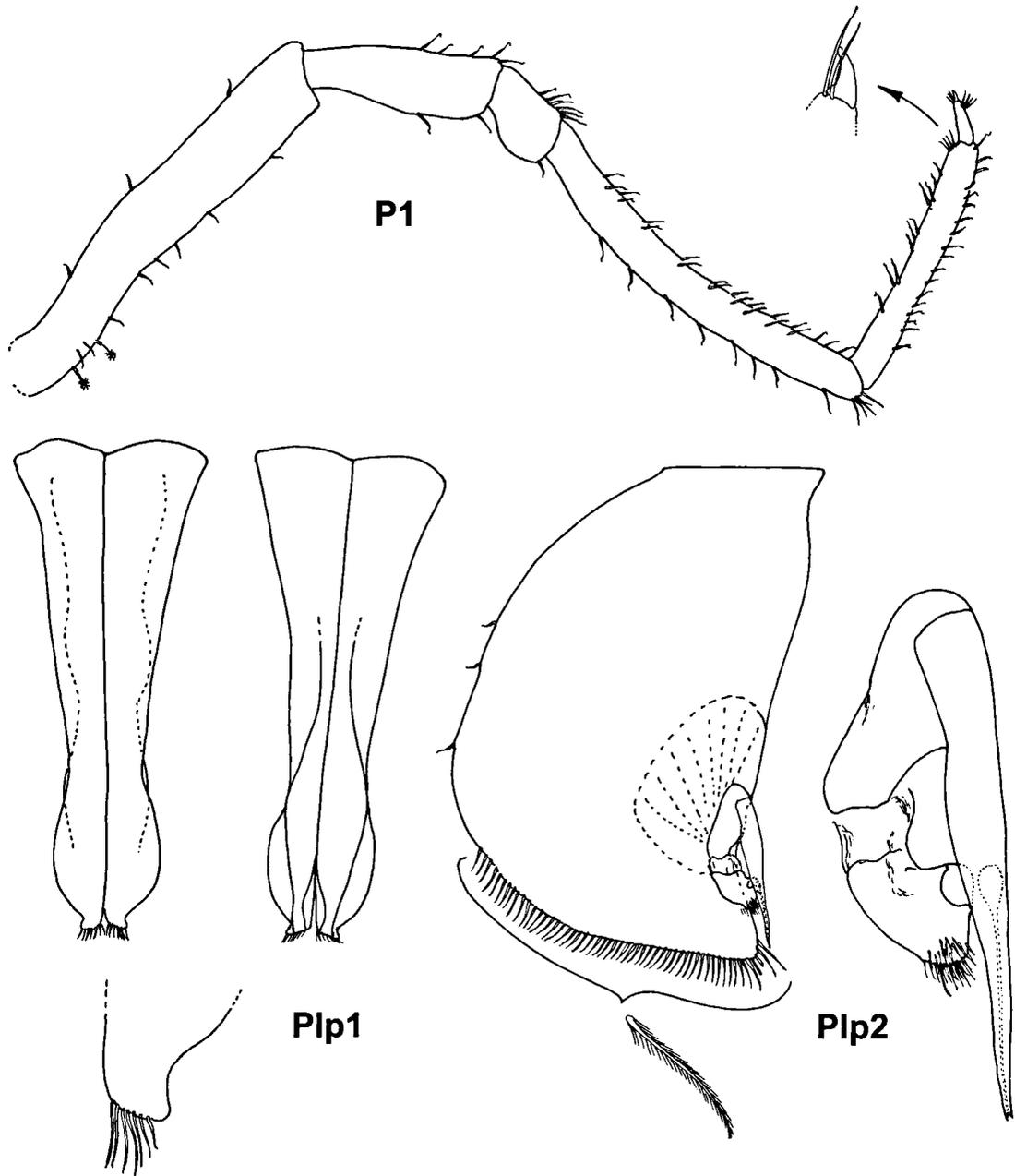


Fig. 8. *Storthyngura spinosissima* n. sp., paratype male, pereopod 1, pleopods 1, 2.

feather like setae, distally seven plumose setae and five sensory setae.

The males of *S. spinosissima* range from 22.5 to 30.5 mm lengths, the females from 24 (only one individual, most were longer) to 41 mm lengths.

TYPE LOCALITY. - Antarctica, Southern Ocean, Weddell Sea, south of Vestkapp.

DISTRIBUTION. - Antarctica, Southern Ocean, Weddell Sea, south of Vestkapp and Drake Passage, 417-1681 m.

REMARKS

Storthyngura spinosissima n. sp. is distinguished from all other species of the genus by the small spine-

like tubercles on the body and antenna and the hair-like setules on the dorsum. The new species is most similar to *Storthyngura praegrandis* George & Menzies, 1968 from the Drake Passage in terms of spination of the dorsum of the body and shape of the pleotelson. *S. spinosissima* n. sp. can easily be discriminated from *S. praegrandis* by: the spine-like tubercles and short, hair-like setules on the dorsum; interantennular space of *S. spinosissima* n. sp. being narrower than in *S. praegrandis*; antennula of *S. spinosissima* n. sp. bearing a less pronounced distomedial spine on first peduncular article; and uropodal endopods slightly shorter and the exopods less narrow in *S. spinosissima* n. sp. than in *S. praegrandis*.

Contrary to *S. praegrandis*, in *S. spinosissima* n. sp. the maxillipedal epipod is as long as the endite, and the uropod sympod less straight.

S. robustissima Monod, 1925 from the Shetland Islands also shows a similar spine pattern on the dorsum of the body, however, this species bears one additional spine on the pleotelson and has only very few small spine-like tubercles and setules on the dorsum of the body, which looks much smoother in general outline. Stephensen (1947) also illustrated the pleotelson and pleopods 1 and 2 of *S. robustissima*, however, his illustrations do not correspond to the description of Monod, they resemble *S. spinosissima* n. sp.. Stephensen's material is not available and the two frontolateral spines which he illustrated on the pleotelson are more closely situated in his illustration compared to those of *S. spinosissima* n. sp., whereas the third one is more an acute caudolateral corner rather than a spine as seen in *S. spinosissima* n. sp.

Interestingly, two females of *S. spinosissima* n. sp. were found in an 'autonomous' fish baited trap (De Broyer et al., 2001), indicating that scavenging might play a role in the feeding behaviour of this species.

ACKNOWLEDGEMENTS

The author is very grateful to the crew of the RV 'Polarstern' and the Alfred-Wegener-Institute for Polar- and Marine research, for logistics. Ms Monika Hänel kindly inked the dorsal and lateral view of the animal. Thanks are due to Marina Maljutina and Niel Bruce for helpful comments and suggestions for improvements.

REFERENCES

- BRANDT, A. 1992. The genus *Coperonus* (Isopoda: Asellota: Munnopsidae). J. Linn. Soc. **106**: 63-95.
- BRANDT, A. & M. MALYUTINA, 2002. *Storthyngura kusakini* sp. nov. from the Southern Ocean. Mitt. Mus. naturk. Berlin, Zool. Reihe **78** (1): 97-107.
- BROYER, C. DE, Y. SCAILTEUR, G. CHAPPELLE & M. RAUSCHERT, 2001. Diversity of epibenthic habitats of gammaridean amphipods in the eastern Weddell Sea. Polar Biology **24**: 744-753.
- GEORGE, R.Y. & R. J. MENZIES, 1968. Species of *Storthyngura* (Isopoda) from the Antarctic with description of six new species. Crustaceana **14** (3): 275-301.
- MONOD, T. M., 1925. Isopodes et Amphipodes de l'Expédition antarctique belge (s.y. Belgica). II. Bull. Mus. Hist. nat. Paris **31**: 296-299.
- SARS, G. O., 1869. Undersøgelser over Christianiafjordens Dybvandsfauna, anstillede paa en i Sommeren 1868 foretagen zoologisk Reise. Nyt Mag. Naturvid. **16**: 1-58.
- STEPHENSEN, K., 1947. Tanaidacea, Isopoda, Amphipoda and Pycnogonida. Scient. Results Norw. Antarct. Exped. **27**: 1-90.
- WILSON, G. D. F., 1989. A systematic revision of the deep-sea subfamily Lipomerinae of the isopod crustacean family Munnopsidae. Bull. Scripps Instn. Oceanogr. **27**: 1-138.
- VANHÖFFEN, E., 1914. Die Isopoden der Deutschen Südpolar-Expedition 1901-1903. Dt. Südpol.-Exped. **15**, Zoology **7** (4): 449-598.

Received: December 7, 2001