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Antarctic Serolidae and Cirolanidae (Crustacea: Isopoda): New Genera, New Species, and Redescriptions

by
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with 65 text-figures

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Contents

1. Introduction

During several expeditions of RV "Polarstern" a large number of isopods has been collected in the Weddell Sea and around the Antarctic Peninsula. This paper deals with the taxonomy of the Serolidae and Cirolanidae. Several new species and genera are described and some redescriptions of already known species are presented. In addition, a key to all Antarctic Serolidae is included. The descriptions will serve as a basis for future studies on functional morphology, zoogeography, ecology, and for a monograph on the Antarctic Isopoda.

The Serolidae are frequent in the southern hemisphere; most of them live on sand and mud. The biology of these animals is almost unknown. Some remarks on their biology are published by Bastida y Torti (1970) and Moreira (1972). The serolids are able to burrow in sand. The subchelate first pereopods support the mouthparts during the intake of food; their task during burrowing is unknown. Serolids are carnivorous, they feed on polychaets and in aquaria also on dead shrimp and krill.

Many descriptions of Antarctic serolids have been published (e. g. Sheppard, 1933 and 1957; Beddard, 1884; Kussakin and Vasina, 1980; Nordenstam, 1933; Moreira, 1972, 1974, 1976, 1977; Pfeffer, 1887; Richardson, 1911), but these are often short or the illustrations incomplete. Therefore, revisions are badly needed, particularly for the definition of new genera. A revision of the genus "*Serolis*" can only be prepared step by step after reexamination of all type materials and with redescriptions of many species. In the present study only some of the species of "*Serolis*", especially those with characteristic apomorphies, are transferred into new genera, whereas all others, including the new species, remain in the polyphyletic genus "*Serolis*" Leach, 1814. It is not possible to find clear apomorphies to define monophyletic genera within this genus without the study of more material. Future revisions must carefully work out the morphological differences between groups of species. For this purpose redescriptions are as valuable as descriptions of new species. An alternative to the splitting of "*Serolis*", which began with the publications of Cals (1977, 1982), Poore (1985, 1987), Menzies (1962) would be to keep *all* species in the genus *Serolis*, but this would be no stimulus for more detailed studies on this family.

The theoretical basis for this taxonomic work is the phylogenetic systematics of Hennig (1950) that demands monophyletic taxa.

The Antarctic Cirolanidae, first described by Vanhöffen, 1914 are difficult to discriminate with the illustrations of Vanhöffen. Therefore redescriptions of the most frequent Antarctic species of this family are presented.

2. Materials and Methods

During the first "Polarstern" expeditions (data see station list, Tab. 1) samples of isopods were collected by means of an agassiz-trawl with an aperture of 3x1 m and a mesh size of 3 cm (Drescher et al. 1983). Specimens were immediately sorted out on deck or later with a dissecting microscope from subsamples, fixed in formalin (4%) and transferred into alcohol (70%). The taxonomic drawings were prepared with a camera lucida. For comparisons and for the construction of the key, a picture card - index with photocopies of all published drawings was used.

Type material was borrowed from the Zoological Museum of Hamburg (ZMH), the British Museum of Natural History (BM[NH]), the Senckenberg Museum of Frankfurt (SMF), the Zoological Museum of East-Berlin (ZMB) and the Naturhistoriska Riksmuseet of Stockholm. The additional material remains in the collection of Dr. Wägele in Oldenburg.

2.1 Abbreviations used in text and figures

A1	-	antennula
A2	-	antenna
BM(NH)	-	British Museum (Natural History), London
lMd	-	left mandible
(m)	-	male
Mx1	-	maxillula
Mx2	-	maxilla
Mxp	-	maxilliped
P1-7	-	pereopod 1-7
Plp1-5	-	pleopod 1-5
rMd	-	right mandible
SMF	-	Senckenberg Museum, Frankfurt/Main
Urp	-	uropod
ZMB	-	Zoological Museum, Museum for Natural History of the Humboldt University, Berlin (East)
ZMG	-	Zoological Museum, Göttingen

2.2 Table 1: Station List (abbreviations explained below)

Sample No	*Position*	*Depth(m)*	*Date*	*Gear*
A 9	73°41.78'S 20°55.05'W	191	8.02.83	AGT
A 19	76°45.06'S 31°59.08'W	257	22.02.83	AGT
A/4	70°34.75'S 8° 5.03'W	124	2. 1.83	AGT
A/10	73°41.78'S 20°55.50'W	191	8. 2.83	Bongo

A/16	77°14.75'S 41°60.75'W	669	18.02.83	BT
A/24	72°54.77'S 19°39.90'W	429	25.02.83	AGT
A 27	70°26.94'S 08°39.86'W	346	1.03.83	AGT
A 29	62°53.82'S 54°51.97'W	183-176	12.03.83	AGT
A 30	62°38.81'S 55°45.02'W	277,5	12.03.83	AGT
A 31	61°13.45'S 58°21.00'W	130	14.03.83	AGT
A2/341	76°56.02'S 52°09.00'W	295-300	26.01.84	AGT
A2/474	76°56.07'S 49°44.00 W	224-210	14.02.84	AGT
A2/490	77°39.60'S 35°13.50'W	387-404	20.02.84	BT
A 3/ 2	Off Arctowski King George Is.	15,2	19.11.84	BC
A 3/ 3	Off Arctowski King George Is.	30-50	19.11.84	BC
A 3/ 8	Off Elephant Island	30-35	25.11.84	BC
A 3/13	63°11.19'S 58°49.03'W	98	4.12.84	AGT

Sample No	*Position*	*Depth(m)*	*Date*	*Gear*
A 3/16	61°20.58'S 54°45.71'W	259-295	10.01.85	GN
A 3/18	60°43.12'S 45°30.86'W	141-190	13.01.85	AGT
A 3/19	60°42.40'S 45.33.07'W	86	13.01.85	AGT
A 3/39	72°30.35'S 17°29.88'W	240-254	15.02.85	AGT
A3/1	52°17.49'S 69°08.96'W	35	15.11.84	BT
A3/14	62°59.76'S 57°58.88'W	490	08.01.85	Van Veen
A3/15	62°08.84'S 58°00.46'W	449	8. 1.85	AGT
A3/20	71°21.61'S 13°24.50'W	225	21. 1.85	AGT
A3/21	73°12.39'S 20°46.24'W	710-650	22.01.85	BT
A3/22	73°11.10'S 20°34.15'W	413-429	23.01.85	BT
A3/25	72°35.67'S 18°08.17'W	606-656	27.01.85	AGT

A3/26	72°31.64'S 17°34.97'W	242-264	29.01.85	AGT
A3/27	72°46.99'S 19°27.36'W	400	31.01.85	BT
A3/29	73°42.38'S 20°59.53'W	197-211	01.02.85	BT
A3/32	77°39.63'S 35°23.91'W	439-444	03.02.85	AGT
A3/41	72°27.28'S 17°32.94'W	455-473	16. 2.85	AGT
A3/43	73°23.36'S 21°30.37'W	465-481	18.02.85	BT
A3/44	72°53.10'S 19°29.33'W	421-429	20.02.85	BT

Sample No	*Position*	*Depth(m)*	*Date*	*Gear*
A3/45	70°33.34'S 08°07.34'W	165	24.02.85	AGT
PS06/158	62°43.00'S 55°56.00'W	114-112	26.11.84	AGT
PS06/203	62°05.00'S 58°41.00'W	281-140	3.12.84	AGT
PS06/208	63°11.00'S 58°50.00'W	97	4.12.84	AGT
68WH/133	61°11.10'S 54°34.50'W	302	21. 2 85	BC
68WH/137	61°20.20'S 05°44.39'W	364	21.02.85	BC
68WH/138	61°20.40'S 05°60.91'W	340	22.02.85	BC
68WH/142	61°12.00'S 56°08.90'W	318	22. 2.85	BC
68WH/148	61°14.50'S 5°51.20'W	139	23.02.85	BC
68WH/154	61°05.60'S 05°60.91'W	274	24.02.85	BC
68WH/155	61°01.60'S 55°53.00'W	179	25. 2.85	BC
68WH/161	60°53.20'S 05°54.61'W	310	26.02.85	BC
68WH/165	60°51.20'S 55°42.90'W	256	26.02.85	BC
68WH/171	60°51.60'S 05°54.58'W	284	27.02.85	BC
04/417	57°46.10'S 56°50.80'W	348-345	05.02.84	AGT
04/450	75°49.20'S 56°15.10'W	456-444	08.02.84	AGT
04/490	77°39.60'S 35°13.50'W	387-404	20.02.84	BT

04/506	75°51.10'S 34°24.50'W	728-628	22.02.84	AGT
Sample No	*Position*	*Depth(m)*	*Date*	*Gear*
A6/2 St. 12/086	60°50.00'S 55°37.60'W	430	01.11.87	BT
A6/2 St. 12/087	60°50.90'S 55°30.80'W	425	01.11.87	BT
A6/2 St. 12/088	61°51.80'S 55°28.50'W	300-351	01.11.87	BT
A6/2 St. 118	62°51.10'S 56°08.00'W	210-420	05.11.87	BT
A6/2 St. 141	63°23.90'S 59°51.10'W	147	16.11.87	BT
A6/2 St. 195	64°47.10'S 67°36.60'W	357	03.12.87	BT
A6/2 St. 207	62°46.70'S 60°55.90'W	133	07.12.87	BT
A6/2 St. 218	61°00.10'S 55°09.20'W	189-238	13.12.87	BT
A6/2 St. 220	60°56.80'S 55°11.30'W	371-277	13.12.87	BT
A6/2 St. 221	60°56.20'S 55°30.20'W	372	13.12.87	BT
A6/2 St. 223	60°51.20'S 55°33.40'W	283-341	14.12.87	BT
A6/2 St. 224	60°52.70'S 55°27.70'W	267-241	14.12.87	BT
A6/2 St. 225	60°50.70'S 55°35.70'W	404-242	14.12.87	BT
A6/2 St. 230	61°01.50'S 54°49.30'W	379-522	15.12.87	BT
A6/2 St. 231	61°03.30'S 54°35.70'W	331-359	15.12.87	BT

A = samples of the RV "Polarstern" taken in the Weddell-Sea
AGT = agassiz trawl
BC = box corer
GN = ground net
PS = samples of the RV "Polarstern" taken in the Weddell-Sea
WH = samples of the RV "Walter Herwig" taken at the Antarctic Peninsula

2.3 General Morphology

For a better understanding of the apomorphic characters of genera and species, a brief summary of the general morphology of the Serolidae will be presented (Fig. 1): Head anterolaterally produced, transverse or round elevations frontomedially between the eyes, lateral margins directed caudally. Eyes large, dorsal, reniform. The first of the seven pereonites fused with head. Following five free pereonites

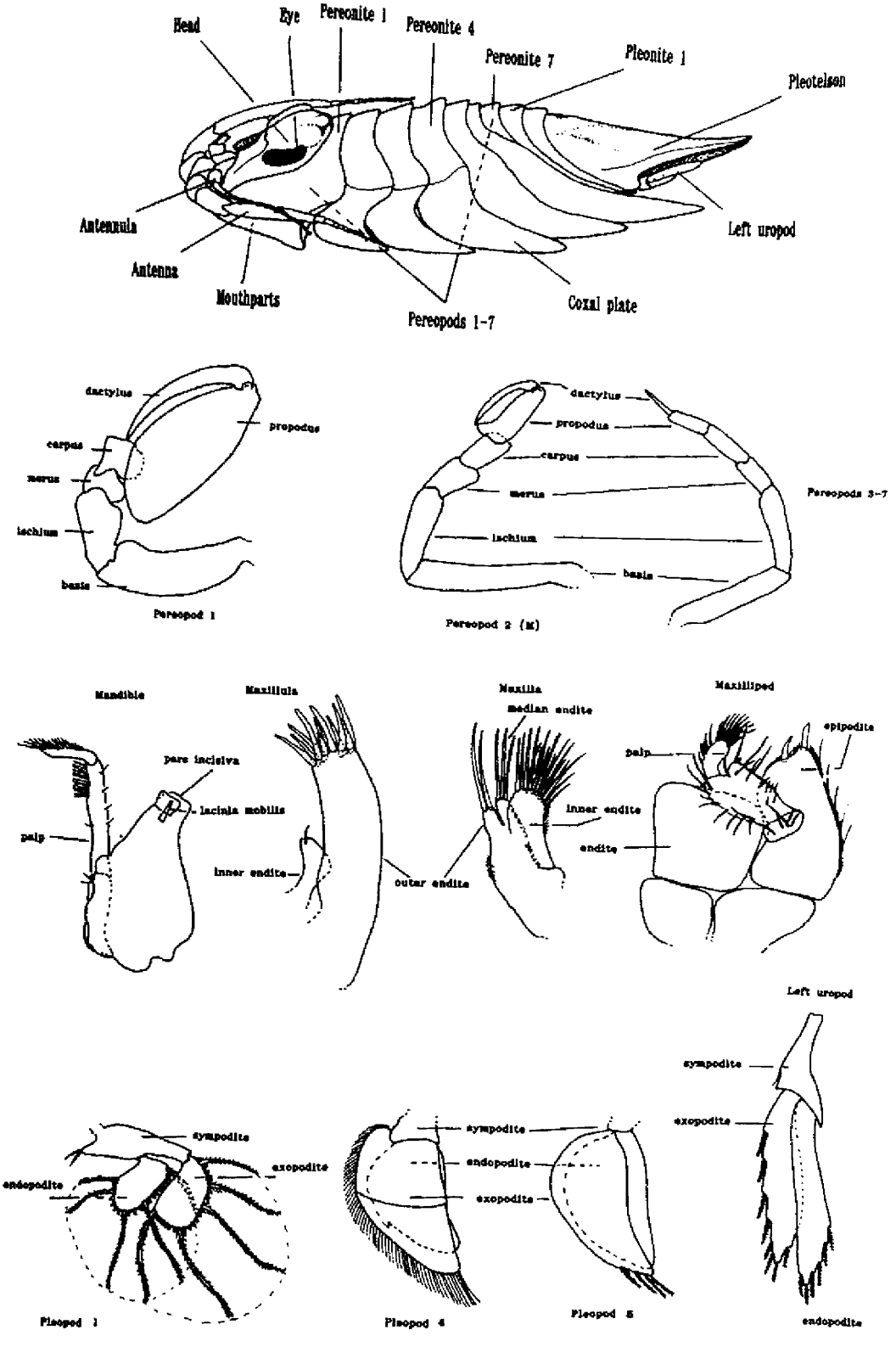


Figure 1: General morphology of the Serolidae. Diagrammatic drawings of a lateral view, the mouthparts, the first, second (male) and an anterior pereopod, pleopods 1, 4 and 5 and the uropod.

about subequal in length, seventh pereonite smallest and shortest. Coxal plates indicated by dorsal sutures from the second to the fourth or fifth pereonite; posterolateral angles of coxal plates elongate and laterocaudally directed. Pleonites 1 and 2 free, following pleonites fused with pleotelson. Pleotelson of triangular shape, caudally narrower than frontally, often with long elevated median keel.

Antennula with three peduncular articles and multiarticulate flagellum. Antenna consisting of 5 peduncular and many flagellar articles. Mandibles asymmetrical, palp three jointed; pars incisiva of left mandible broader than of right, one broad cutting surface; lacinia mobilis with one or more blunt teeth, accompanying a bilobed or simple spine-like structure (rudiment of the spinerow); pars molaris lacking. Second palpal article longest, with a row of distolateral spines, last palpal article smallest and laterally bent, also with a row of spines. Maxillula consisting of two endites; lateral endite distally curved medially, apically with 11 strong spines; median endite small rudiment with one apical bristle. Maxilla consisting of three endites; inner endite with most setae, positioned in several rows; median endite with longer spines and setae; outer endite longest and narrowest, with fewest and longest spines. Maxilliped with large quadrangular epipodite, endite shorter than epipodite, palp three-jointed. Endite with strong apical spines, coupling hooks absent. Second palpal article longest and broadest, last palpal article of bean-like outline.

Pereopod 1 shorter and stouter than following pereopods, with long basis, short merus and carpus, and propodus broad oval, subchelate, dactylus reaching almost to the distal part of the carpus; carpus distomedially with sensory spines (Brandt, in press); propodus medioventrally with a row of slender sensory spines. Pereopods 2-7 similar, pereopod 7 shortest; basis long, ischium slightly shorter, merus, carpus and propodus shorter than ischium, apically with many spines or setae, dactylus very small and slender, often not surpassing apical spines of propodus. Male pereopod 2 with broad subchelate propodus (sexual dimorphism), proximally broadest, with strong sensory spines, dactylus slightly bent dorsally. Pleopods 1-3 similar, used as swimming appendages, with sympodite of almost triangular shape, almost as long as exopodite and several proximomedial coupling setae (arrow in Fig. 1); endopodite smaller than exopodite, both with long marginal plumose setae. Male pleopod 2 with long stiletto-like appendix masculina, much longer than endopodite. Pleopod 4 with operculiform exopodite, strongly chitinized, marginally a row of plumose or simple setae; endopodite somewhat smaller, without setae; sympodite very small. Pleopod 5 large, respiratory, with smaller exopodite, endopodite slightly larger. Uropod with elongate trapezoidal sympodite; exopodite shorter than endopodite, medio- and distolateral margins deeply serrated; sympodite prolonged in *Leptoserolis* n.gen, or fused with endopodite in *Spinoserolis* Nordenstam, 1933.

2.4 Key to the Antarctic species of Serolidae

1a	Endopod of the uropod fused with sympodite (Fig. 2). Uropod long and acute.	(2)
1b	Endopod of uropod free (Fig. 1), uropod with 2 movable rami.	(3)

2(1a) ..... *Spinoserolis* Nordenstam, 1933

2a Dorsal surface of head and body strongly sculptured (Fig. 2); pleotelson furnished with tubercles. *Spinoserolis beddardi* (Calman, 1920)

2b Dorsal surface of head and pereonites almost smooth; pleotelson smooth, only with a median and a pair of subterminal ridges and a lateral ridge.
..... *Spinoserolis latifrons* (White, 1847)

3a (1b) Pereonite 7 not fused with pereonite 6 (4)

3b Pereonite 7 dorsomedially fused with pereonite 6 Y (37)

4a (3a) Coxal plates 2-5 indicated by dorsal sutures. (5)

4b Coxal plates 2-4 indicated by dorsal sutures. (8)

5a (4a) Dorsomedially on body row of caudally directed spines (7)

5b Dorsomedial spines absent (6)

6a Coxal plates of sixth pereonite extend backwards to about middle of pleotelson, epimera of pleonites 1 and 2 not extending far beyond the anterior margin of the terminal segment.
..... *Serolis paradoxa* Fabricius, 1775

6b Coxal plates of sixth pereonite extending backwards to the middle of the pleotelson length, longer than subequal epimera of the first and second pleonites; pleotelson of triangular shape, caudally acuminating; median ridge of pleotelson frontally triangular, mediolaterally a pair of curved carinae (Fig. 11).
..... *Serolis aestimabilis* n.sp.

7 (5a) First epimera longer than second, slightly surpassing pleotelsonic apex; pleotelson with long caudally directed spines and mediolateral ridges; uropods inserted in small notches in the last third of pleotelson length, rami directed towards the tip of the pleotelson.
..... *Acanthoserolis* n.gen.

7a Pereonites and pleonites with dorsomedial, caudally directed spines.
..... *Acanthoserolis polaris* (Richardson, 1911)

7b Pereonites and pleonites without dorsomedial, caudally directed spines.
..... *Acanthoserolis schythei* (LÄtken, 1858)

8a (4b) Sixth coxal plates caudolaterally surpassing epimera of first and second pleonites. (20)

8b Sixth coxal plates caudolaterally not surpassing epimera of first and second pleonite (9)

9a (8b) Epimera of first pleonite caudally surpassing second. (10)

9b Epimera of second pleonite caudally surpassing first. (11)

10a (9a) Pleotelson with well-developed spine in anterior median dorsal line, followed by a median carina extending to its extremity, on both sides of the median, two lateral oblique carinae terminating in small spines some distance from the lateral margins.
. *Serolis glacialis* Tattersall, 1921

10b Coxal plates of pereonites laterally of quadrangular outline; pereonites and pleonites mediocaudally with small semicircular prolongation; pleotelson with median ridge, frontally of triangular shape and caudally narrowing, laterally on each side an elevation, terminating in caudally directed spines (Fig. 15). *Serolis nobilis* n.sp.

11a (9b)	Caudal margin of pleotelson tricuspidate (Fig. 36). ..... *Serolis septemcarinata* Miers, 1875
11b	Caudal margin of pleotelson not tricuspidate; pleotelson as broad as long or even longer. (12)
12a (11b)	Pleotelson with a well-developed anterodorsal spine, followed by a median carina. (13)
12b	Pleotelson without well-developed anterodorsal spine. (14)
13a (12a)	Median carina slight, terminating in a spine that is slightly shorter than the caudolateral tips of the sixth pereonite; two lateral carinae on either side, terminating in spines and two inner which are also terminating in a small spine. ..... *Serolis kempi* Sheppard, 1933
13b	Median carina extending through pleotelson, with two lateral carinae on either side of it, each terminating in a small spine near the lateral margins (Fig. 40). ..... *Serolis polita* Pfeffer, 1887
14a	Coxal plates of pereonites laterally broadened and caudally not acute, body smooth; pleotelson with median keel, frontally beginning triangular, laterally of this keel two carinae; tip of pleotelson slightly concave (Fig. 31). ..... *Serolis reptans* n.sp.
14b	Coxal plates of pereonites laterally not broadened. (15)
15a	Pleotelson broad or quadrangular, uropods inserting laterally after two thirds of pleotelson length. (16)
15b	Pleotelson of triangular shape; uropods inserting after one third of pleotelson length. (17)
16a	Body oval and spineless; uropods broad, quite short, surpassing caudal apex of pleotelson. ..... *Serolis elliptica* Sheppard, 1933
16b	Body oval; pereonites and pleonites mediocaudally with spine; uropods long and slender, extending beyond caudal apex of pleotelson. ..... *Serolis exigua* Nordenstam, 1933
17a	Coxal plates about subequal in length, laterally not prolonged. (18)
17b	Coxal plates laterally prolonged (19)
18a	Body oval, smooth; eyes reniform and narrow; median keel of pleotelson with triangular frontal beginning. (36) ..... *Serolis ovata* Sheppard, 1957
18b	Body oval; pereonites and pleonites with mediocaudal spines; apex of pleotelson pointed. ..... *Serolis pallida* Beddard, 1884
19a	Body oval, smooth; coxal plates of pereonites not much elongate further caudally than those of preceding segments; pleotelson acuminating, with median keel, frontally triangular and a pairs of lateral carinae, caudally prolonged into a spine (Fig. 28). ..... *Serolis leachi* n.sp.
19b	Body almost round, smooth; coxal plates of pereonites much elongate caudally, more than those of the preceding segments; pleotelson with blunt pointed tip, median keel frontally triangular, with a median semicircular structure on this triangle, laterally of the keel a pair of carinae terminating into a spine; laterocaudal margin of pleotelson slightly serrated (Fig. 24). ..... *Serolis serratus* n.sp.
20a	Epimera of first and second pleonites very short, not extending beyond anterior margin of pleotelson. (21)

20b Epimera of first and second pleonites extending beyond anterior margin of pleotelson. (23)

21a Pleotelson with three dorsal carinae, median one medially *not* interrupted; carpus of pereopod 1 medioventrally without field of setae. ..... *Serolis carinata* Lockington

21b Pleotelson with three dorsal carinae, median one medially interrupted; carpus of pereopod 1 medioventrally with field of setae. ..... *Cristaserolis* n.gen. (22)

22a Pleotelsonic lateral carinae well-developed, ending in spines, caudal margin of pleotelson acuminating posteriorly; body pear-shaped. ..... *Cristaserolis plana* (Dana, 1853) [This species is probably synonymous with *Serolis convexa* Cunningham, 1871, (Sheppard, 1933)]

22b Lateral carinae of pleotelson well-developed; caudal margin of pleotelson almost circular; body broad oval. ..... *Cristaserolis gaudichaudii* (Audouin & Milne-Edwards, 1840)

23a Coxal plates of sixth pereonite extending backwards almost to the middle of the pleotelson length or only slightly surpassing epimera of first and second pleonites; margins of coxal plates, epimera and of pleotelson very much thickened (Fig. 38). ..... *Serolis bouvieri* Richardson, 1906

23b Coxal plates of sixth pereonite extending backwards for about two thirds of the pleotelson length. (24)

24 Pereonites and pleonites with mediocaudal spines or shallow mediocaudal prolongation. (25)

24a Pleotelson very broad, tergum tubercular. ..... *Serolis rugosa* Kussakin, 1982

24b Pereonite and pleonites with shallow mediocaudal prolongation; body surface smooth; pleotelson triangular, tip acuminating, median keel of pleotelson frontally of triangular shape, laterally of this keel two pairs of carinae, caudally extending into a spine (Fig. 19). ..... *Serolis waegelei* n.sp.

25a Mediocaudal spine of head, if present, short, not surpassing first pereonite. (28)

25b Head with mediocaudal spine, surpassing at least the first pereonite; mediocaudal spines on all pereonites and pleonites; pleotelson with a pair of strong mediolateral caudally directed spines, caudal tip round, prolonged, almost as long as thorax. ..... *Cuspidoserolis* n.gen. (26)

26a Eyes very large; mediocaudal spine of head reaching to the middle of the third pereonite; anterior beginning of pleotelsonic median keel of circular shape. .....*Cuspidoserolis gerlachei* (Monod, 1925)

26b Eyes long and slender. (27)

27a Mediocaudal spine of head reaching the middle of the second pereonite; pereonites 2 – 4 with a pair of mediolateral spines beneath sutures of coxal plates; median keel of pleotelson frontally of triangular shape; body tubercular. ..... *Cuspidoserolis luethjei* (Wägele, 1986)

27b Mediocaudal spine of head reaching to caudal margin of third

pereonite; median keel of pleotelson straight; tip of pleotelson slightly acuminating; laterocaudal tips of pereonites very pointed.
..... *Cuspidoserolis johnstoni* (Hale, 1952)

28a Coxal plates of sixth pereonite extending far caudally, surpassing the apex of the pleotelson. (32)

28b Coxal plates of sixth pereonite extending far caudally, almost reaching apex of pleotelson. (29)

29a Pleotelson *without* spines, of almost triangular outline, acuminating from the middle to the tip; median keel of the pleotelson frontally beginning triangular, frontolaterally of median ridge a pair of carinae (Fig. 37).
..... *Serolis acuminata* Sheppard, 1957

29b Pleotelson *with* spines. (30)

30 Head sculptured, with lobe-like protrusions between the eyes and on caudal margin of the head; all pereonites laterocaudally much prolonged, epimera of pleonites about as long as sixth coxal plates; pleotelson with a pair of large mediolateral spines, mediodorsal ridge with few short acute caudally directed spines.
..... *Ceratoserolis* Cals, 1977

30a Outline of body long-oval, coxal plate of sixth pereonite surpassing the articulation of the uropods, reaching to the middle of the pleotelson and being much longer than both epimera; coxal plates and epimera caudally acute; pleotelson with a very long, slender and acute tip, dorsally furnished with small spines.
..... *Ceratoserolis meridionalis* (Bruce, 1908)

30b Body broad.

31a Body broad, outline almost round; coxal plates of sixth pereonite terminating slightly before the articulation of the uropods, only little longer than epimera of pleonites 1 and 2; coxal plates and epimera caudally both very acute; pleotelson broader than long, caudally pointed and caudolateral margin serrated.
..... *Ceratoserolis trilobitoides* (Eights, 1883)

31b Body broad, outline oval; coxal plates of sixth pereonite terminating at the articulation of the uropods; sixth coxal plates only slightly longer than second epimera; coxal plates and epimera caudally acuminating; pleotelson as long as broad, caudolateral margin not serrated (Fig. 6).
..... *Ceratoserolis pasternaki* (Kussakin, 1967)

32a Eyes absent; sixth coxal plate only slightly longer than pleotelsonic apex, second epimera extending to articulation of the uropods.
..... *Serolis antarctica* Beddard, 1884

32b Eyes present; sixth coxal plates and both epimera very much prolonged, much longer than pleotelson. (33)

33 Eyes round; pleotelson caudally round; uropods mediolaterally inserting. (34)
..... *Acutiserolis* n.gen.

33a Eyes not heavily pigmented; coxal plates long and spiniform; sixth coxal plate at least twice as long as pleotelson; first epimera longer than second, also surpassing pleotelsonic apex.
..... *Acutiserolis bromleyana* (Suhm, 1874)

33b Eyes big, almost round; coxal plates acute, of pereonite 6 very much prolonged and spiniform, at least one and a half times as long as pleotelson; first epimera longer than second, only slightly surpassing caudal apex; second epimera extending to articulation of the uropods; shape of pleotelson almost round.
..... *Acutiserolis macdonnellae* (Menzies, 1962)

34 Eyes large, reniform. (35)

34a Coxal plates acute, spiniform and all very much caudally prolonged, more than twice as long as pleotelson; first epimera longer than second, one and a half times as long as pleotelson; second epimera do not reach articulation of the uropods.
..... *Acutiserolis neaera* (Beddard, 1884)

34b Coxal plates prolonged, very acute and spiniform; sixth coxal plates nearly one and a half times as long as pleotelson; first epimera longer than second, both surpassing articulation of the uropods; pereonites and pleonites mediocaudally with strong spine; pleotelson with median ridge and a pair of anteromedial carinae, caudally prolonged into a spine. ..... *Acutiserolis spinosa* (Kussakin, 1967)

35 Eyes small, reniform.

35a Coxal plates blunt pointed, caudally prolonged; sixth coxal plates at least one and a half times as long as pleotelson; first epimera longer than second, surpassing caudal apex; second epimera almost reaching to tip of the pleotelson.
..... *Acutiserolis maryannae* (Menzies, 1962)

35b Coxal plates blunt pointed, caudally prolonged; sixth coxal plates only little surpassing caudal apex of pleotelson; fist epimera only slightly longer than second, reaching to median part of pleotelson.
..... *Acutiserolis margaretae* (Menzies, 1962)

36a Coxal plate and epimera not very much prolonged.
Caudal border of fifth and sixth pereonite mediocaudally interrupted, so that for a short distance the fifth, sixth and seventh pereonites are mediodorsally fused. (38)

36b Caudal border of sixth pereonite mediodorsally interrupted, so that for a short distance the sixth and seventh pereonites are mediodorsally fused, uropods with elongate sympodite, exopodite only slightly shorter than endopodite. (37)
..... *Leptoserolis* n.gen.(37)

37a Mediocaudally of pereonites and pleonites a small blunt peg; pleotelson triangular-shaped, with sharp median ridge and a pair of mediolateral ridges; tip of pleotelson blunt pointed.
..... *Leptoserolis nototropis* (Sheppard, 1933)

37b Pereonites and pleonites smooth; pleotelson of triangular outline, with shallow median ridge; tip of pleotelson concave; third palpal article of maxilliped reduced in size; sympodite of uropod longer than exo- and endopodite.
..... *Leptoserolis orbiculata* (Sheppard, 1933)

38a Eyes reniform, slit-like. (39)

38b Eyes reniform, but *not* slit-like. (40)

39a Pleotelson caudally acuminating; endopodite of uropod wanting.
..... *Serolis platygaster* Sheppard, 1933

39b Eyes reniform, slit-like; pleotelson with mediocaudal spine and a pair of mediolateral elevations on pereonites 2-6; pleotelson caudally trifid; uropod endopodite of quadrangular outline. ..... *Serolis aspera* Sheppard, 1933

40 Pleotelson caudally concave, with anteromedial spine and two pairs of carinae, laterally terminating in spines; pereonites and pleonites with mediocaudal spine, pereonites 2-4 with lateromedial elevations, pereonites 5 and 6 with two pairs of mediolateral, caudally directed spines (Fig. 42). ..... *Serolis pagenstecheri* Pfeffer, 1887

3. Results: Taxonomy

The genus *Serolis* is a collection of species groups with very different characters. Some new genera have already been established to distinguish characteristic species groups, namely *Atlantoserolis* Cals, 1982; *Basserolis* Poore, 1985; *Glabroserolis* Menzies, 1962; *Ceratoserolis* Cals, 1977 and *Serolina* Poore, 1987. Sheppard (1933) already discussed some groups of *Serolis*, which had been established by Calman (1920) and Nordenstam (1933). She argued that the characters of these groups are not evident enough to establish new genera. She suggested a reorganization of the species groups of the genus *Serolis* instead by means of geographical barriers or areas. In this manuscript some new genera are established, based on morphological criteria (apomorphies). These genera are described and discussed in the following. The still paraphyletic genus *Serolis* cannot be revised at present, because redescriptions of many species are still needed; further work is necessary to obtain a phylogenetic system of the Serolidae. The subgenus *Spinoserolis*, proposed by Nordenstam (1933), can be nominated now to a genus, apomorphies define this genus quite clear (see diagnosis of Spinoserolis). The subgenera *Homoserolis* and *Heteroserolis*, also established by Nordenstam (1933), have been rejected by Sheppard (1933), as the characters of both subgenera are no apomorphies. „*Homoserolis* and *Heteroserolis* contain certain species which have characters in common, and which do not agree with the diagnostic characters of either subgenus„ (Sheppard, 1933).

4. Some genera of the Serolidae

4.1 *Acutiserolis* n.gen.

Diagnosis: Body dorsoventrally flattened, outline (without coxae or epimera) oval; head caudomedially sometimes with a small protrusion; eyes reniform. Pereonites often with a strong mediocaudal spine, coxal plates of all pereonites acute, and markedly elongate laterocaudally. Caudal point of sixth coxal plate surpassing caudally epimera of pleon and telsonic apex. The latter are more than twice as long as the pleotelson. Coxal plates 2-4 or 2-5 with dorsal suture, separating the plates from the tergites, without interlocking keys. Seventh pereonite small, without coxal plates. Epimera of first and second pleonites also laterocaudally elongate. First pair of epimera longer than second and often slightly longer than pleotelson, second pair of epimera about as long as pleotelson. Pleotelson smooth or with two medially blunt caudally directed spines, caudal margin of pleotelson rounded, not serrated. Palp of maxilliped with three articles. Second palpal article medially with a small incision. Carpus of male pereopod 1 medioventrally without setae. Male pereopod 2 with a propodus that is proximally almost as broad as the whole length of the propodus measures, dactylus of P2 without long setae. Long setae of pereopods 3-7 often setulated. Appendix masculina of male pleopod 2 more than three times as long as endopodite (with setae) inserting proximolaterally, not situated on a peduncle. Uropods biramous, rami oval and flattened, sympodite short, exopodite only slightly shorter than endopodite. Uropods inserting mediolaterally of pleotelson, within a small proximolateral caudally directed notch; uropods do not reach the tip of pleotelson or are just slightly longer.

Type species: Acutiserolis spinosa (Kussakin, 1967)
= *Serolis spinosa* Kussakin, 1967

Deviation and gender of name: The name is derived from the Latin „acutus„, which means pointed, acute, combined with the generic name „*Serolis*„. It refers to the very long and acute epimers of this genus. The gender is masculine.

Composition of the genus: Acutiserolis bromleyana (Suhm, 1876); *Acutiserolis macdonnellae* (Menzies, 1962); *Acutiserolis maryannae* (Menzies, 1962); *Acutiserolis neaera* (Beddard, 1884); *Acutiserolis spinosa* (Kussakin, 1967) (type species). *Remarks:* This genus can be distinguished from other genera by the very long characteristic coxal plates and epimera; the sixth coxal plate is about two to three times as long as the pleotelson; also the first pair of pleonal epimera is longer than the pleotelson. In the species descriptions only few of the appendages of *A. bromleyana* (Suhm, 1876), *A. macdonnellae* (Menzies, 1962), *A. neaera* (Beddard, 1884) and *A. spinosa* (Kussakin, 1967) have been drawn. Male appendages are only illustrated in *A. bromleyana*, *A. neaera* and *A. spinosa*. Redescriptions of these species are therefore badly needed. Although this genus occurs in the deep sea (species occur in depths of 500 to 3000 m), the species still bears eyes.

4.2 *Acanthoserolis* n.gen.

Diagnosis: Body dorsoventrally flattened, broad, almost round; head dorsally with two small frontomedial elevations and three caudally directed lobes between the eyes; eyes reniform. All pereonites dorsally with mediocaudal spines, which are indicated by shallow protrusions at least (*A. schythei*). Coxal plates of all pereonites prolonged and relatively broad, with acute tips directed caudally. Interlocking keys sometimes present. Caudal point of sixth coxal plate reaching to telsonic apex. Coxal plates 2-5 separated by dorsal sutures; seventh pereonite small, without coxal plates. First pair of epimera much longer than second, slightly surpassing telsonic apex. Second pair of epimera reaching half of the length of pleotelson. Pleotelson dorsally with long acute, frontomedial, caudally directed elevation and with a pair of curved ridges, situated close to the anterior and lateral margins of the segment. Behind this, there is a second ridge on either side of the median spine, arising from a small flat proximomedial angular process: the ridge reaches outwards to terminate in an angular process near the posterolateral angle of the segment. Both median spine-like elevations are long, prominent and acute. Sides of pleotelson slightly converging and terminating in an acute tooth on each side; teeth are situated laterally of the angle in which the sympodite of the uropod is inserted. Palp of maxilliped with three articles. Carpus of male pereopod 1 ventrally without setae. Pereopod 2 of male with a prolonged and broadened lower part of propodus that narrows distally, and not concave ventromedially; dactylus of P2 without long simple setae. Setae of pereopods 2-4 often setulated (*A. polaris*). Appendix masculina of male pleopod 2 inserting proximolaterally of long-oval endopodite on a small peduncle. Angle between appendix and endopodite more than 90°. Uropods biramous, with short sympodite; rami oval, flattened, exopodite only slightly shorter than endopodite; uropods inserting caudolaterally in the middle or the last third of the pleotelson, behind a small caudally directed protrusion of the pleotelson (*A. polaris*), rami of uropods directed towards the tip of pleotelson.

Type species: Acanthoserolis polaris (Richardson, 1911)
= *Serolis polaris* Richardson, 1911

Deviation and gender of name: The name is derived from the Greek „acanthos„ which means spine, combined with the generic name „*Serolis*„. It refers to the mediocaudal spines of the pereonites and to the characteristic spine armature of the telson. The gender is masculine.

Composition of the genus: Acanthoserolis polaris (Richardson, 1911); *Acanthoserolis schythei* (LÄtken, 1858)

Remarks: This genus can be distinguished from other genera by its characteristic spine armature of the telson: two long, median, caudally-directed spines and ridges curving laterally of these. The second epimera are much shorter than in any other genus. The species of the genus are distributed around the Magellan region, Patagonia, Falkland Island, South Sandwich Islands. The descriptions of the species published by Moreira (1976, 1977) are very detailed and redescriptions of these species are therefore not necessary. A problem is the species *Serolis paradoxa* Fabricius, 1775. Sheppard (1933) argues that *Serolis paradoxa* is very closely related to *S. schythei* LÄtken, 1858 and *S. polaris* Richardson, 1911, the type species of the new genus *Acanthoserolis*. Because the illustrations published of

Serolis paradoxa are quite poor, it is not possible to decide this question until a redescription has been done. As far as the drawing of the dorsal view published by Audouin and Milne-Edwards (1841) is concerned, the coxal plates are not so prolonged laterocaudally as in *A. polaris* and in *A. schythei*; furthermore both epimera are much shorter than in *Acanthoserolis*. No other species of „*Serolis*„ is characterized by such terminal uropods, except *Acutiserolis neaera* (Beddard, 1884), but in this species, the caudally-directed notches (where the uropods insert in *Acanthoserolis)* are missing; also, *Acutiserolis neaera* is characterized by very long coxal plates and epimera, which are much shorter in *Acanthoserolis*.

4.3 *Cuspidoserolis* n.gen.

Diagnosis: Body depressed, outline (without coxae or epimera) long oval, head caudomedially with two broad protuberances between the eyes, and with a long caudal spine that surpasses the caudal margin of the first, sometimes the second, pereonite. Eyes large, reniform. Coxal plates of all pereonites acute, with the tips caudally directed, coxal plates of pereonite 6 prolonged caudally, reaching at least to the mid of the pleotelson. Interlocking keys absent. Coxal plates 2-4 with dorsal sutures, separating the plates from the tergites. Seventh pereonite small, without coxal plates. Seventh pereonite and pleonites 1 and 2 dorsally with a median spine, which is directed caudally. First and second epimera also with spines directed caudally of about the same length; both spines not reaching the caudal tips of the sixth coxal plates. Pleotelson prolonged, almost as long as thorax. Caudal margin of telson round or slightly pointed, not serrated. Two caudal spine-like protuberances situated mediodorsally besides the median keel of the pleotelson. Palp of maxilliped with three articles. Carpus of male pereopod 1 ventrally without setae. Propodus of male pereopod 2 proximally much broader than distally, narrowing distally, medioventrally not concave; dactylus of P2 distally without long simple setae. Setae on pereopods 2-7 not setulated. Appendix masculina of pleopod 2 about two times as long as semi-oval endopodite (with setae) inserting proximolaterally, without peduncle. Uropods biramous; sympodite short, almost triangular, rami flattened, long-oval, exopodite almost half as long as endopodite, inserting mediolaterally below the caudal spine-like protuberances on pleotelson.

Type species: Cuspidoserolis luethjei (Wägele, 1986)
= *Serolis luethjei* Wägele, 1986

Deviation and gender of name: The name is derived from the Latin „cuspidus„, which means spine, point, combined with the generic name „*Serolis*„. It refers to the long mediocaudal spine of the cephalothorax and the mediocaudal spines on the pereonites. The gender is masculine.

Composition of the genus: Cuspidoserolis luethjei (Wägele, 1986) (type species); *Cuspidoserolis gerlachei* (Monod, 1925); *Cuspidoserolis johnstoni* (Hale 1952).

Remarks: Cuspidoserolis n.gen. can be distinguished from other genera by the characteristic long and strong mediocaudal spine on caudal margin of head, surpassing at least the first, sometimes even the second pereonite. *S. elongata* Beddard, 1884, *S. exigua* Nordenstam, 1933, *S. pallida* Beddard, 1884, *S. rugosa* Kussakin, 1982 and *S. tuberculata* Grube, 1875 also have a small blunt mediocaudal spine on caudal margin of head, but in all species the spine is much

shorter than in *Cuspidoserolis*. Compared with other genera, this genus shows an elongation of the epimera of the sixth pereonite, but these are not as developed as in the members of the genus *Acutiserolis*. The pleotelson is prolonged, much longer than in other genera; its breadth is almost as wide as the length of the telson.

4.4 *Cristaserolis* n.gen.

Diagnosis: Body dorsoventrally flattened (outline oval and little elongate); head with small black reniform eyes, standing closer together than in other genera. Head without elevations or cuticular structures around the eyes; head mediocaudally crescent-shaped. Pereonites without mediodorsal spines coxal plates of all pereonites broad, but not much elongate, without interlocking keys, only the sixth coxal plate a little more elongate laterocaudally, surpassing caudally the pleonal epimera, but reaching at least half of pleotelson. Coxal plates 2-4 with dorsal sutures, separating plates from the tergites; seventh pereonite small, without coxal plate. First and second pleonites with short epimera only, not longer than half of pleotelson length; both about subequal in length. Pleotelson longer than wide, without spine armature except small mediolateral spine-like protrusions. Median ridge of pleotelson broad, tip of pleotelson rounded or concave. Palp of maxilliped with three articles; third article small, reduced in size. Carpus of male pereopod 1 with many setae mediolaterally. Propodus of male pereopod 2 with a bulbous lower part, proximally almost as broad as the total length of the propodus; two rows of strong sensory spines mediolaterally, which are concave in the middle; dactylus of P2 distally without long simple setae. Setae on pereopods 2-7 sometimes setulated. Appendix masculina of pleopod 2 inserting proximolaterally on a small peduncle, more than three times as long as endopodite (with setae); angle between appendix and endopodite more than 90°. Uropods biramous, endo- and exopodite slender, exopodite slightly smaller than endopodite. Uropods inserting ventrolaterally after two thirds of pleotelson length.

Type species: Cristaserolis gaudichaudii (Audouin & Milne-Edwards, 1841)
= *Serolis gaudichaudii* Audouin & Milne-Edwards, 1841

Deviation and gender of name: The name is derived from the Latin „crista„, which means brush, comb, combined with the generic name „*Serolis*„. It refers to the brush-like setae on mediolateral margin of pereopod 1. The gender is masculine.

Composition of the genus: Cristaserolis gaudichaudii (Audouin & Milne-Edwards, 1841) (type species); *Cristaserolis convexa* (Cunningham, 1871) = *Serolis laevis* (Richardson, 1911).
The Non-Antarctic species are: *Cristaserolis marplatensis* (Bastida & Torti, 1970); *Cristaserolis similis* (Moreira, 1974).

Remarks: This genus can be distinguished from most other genera by the absence of protuberances on the head. Moreover the genus is not characterized by elongations of the epimera, which are instead quite short. A special spine armature of the pereonites and the pleotelson is lacking in this genus. Epimera of first and second pleonites quite short in comparison to other genera. Third palpal article of maxilliped reduced in size. The most striking feature, lacking in all other genera, is the carpus of the male pereopod 1, which is characterized by a dense field of setae. The illustrations of the species of this genus are incomplete, especially those of *C. con-*

vexa (Cunningham, 1871) of which only a very poor dorsal view exist. In comparison to *Leptoserolis nototropis* (Sheppard, 1933) and *L. orbiculata* (Sheppard, 1933), the species of *Cristaserolis* are more slender and longer in proportion to the width, besides the uropods are shorter and the sympodite is not prolonged like in *Leptoserolis*. *Serolis platygaster* Sheppard, 1933 can easily be distinguished from *Cristaserolis* by the very small slit-shaped eyes. The epimera of the first and second pleonites are also much longer.

4.5 *Spinoserolis* Nordenstam, 1933 (Figs. 2-5)

Diagnosis: Body dorsoventrally flattened, (outline almost oval, little elongate). Cephalon frontolaterally protruded; small ridge-like elevations fronto- and caudomedially of head. Caudal margin of cephalothorax smooth, without acute mediocaudal spines. Pereonites dorsally with cuticular protrusions and tubercles, or smooth. Coxal plates of all pereonites short, not much elongate laterocaudally, without interlocking keys. Second to sixth coxal plate with dorsal sutures; seventh pereonite very small, without coxal plate. First and second pleonites only slightly longer than seventh pereonite, but not extending to the frontolateral margins of pleotelson; laterally the pleonites are framed by the frontolateral margin of pleotelson. Pleotelson at least with one median, longitudinal elevated ridge, sometimes with another marginal frontolaterally curved ridge. Caudal tip of telson concave. Palp of maxilliped with three articles, third very slender, bean-like. Carpus of male pereopod 1 mediolaterally without setae. Propodus of male pereopod 2 with a bulbous lower part, proximally very broad, with two lateroventral rows of strong sensory spines, surface between these spines concave; dactylus of male P2 distodorsally with many long simple setae. Appendix masculina of male pleopod 2 inserting proximolaterally, without peduncle, about one and a half to two times as long as endopodite. Angle between appendix and endopodite about 90°. Uropods uniramous, sympodite fused with endopodite, the latter very long, slender and acute, exopodite short and inserting mediolaterally of the other ramus. Uropods inserting frontolaterally of pleotelson in corners of the caudally prolonged pleotelson.

Type species: Spinoserolis beddardi (Calman, 1920)
= *Serolis beddardi* Calman, 1920

Composition of the genus: Spinoserolis beddardi (Calman, 1920) (type species); *Spinoserolis latifrons* (White, 1847).

Remarks: Spinoserolis Nordenstam, 1933 can be distinguished from other genera by the characteristic small epimera of the pleotelson. Another characteristic feature that is obviously lacking in all other genera is the slenderness of the uropod sympodite, the fusion with the endopodite and the mediolateral insertion of a very small exopodite. The members of this genus have already been placed by Nordenstam (1933) into a subgenus and, as the apomorphies of coxal plates, pleonites and uropods are evident enough, these species can be appointed to a new genus (this classification was also accepted by Sheppard, 1933). Calman (1920) has also already discussed the relationship of "*Serolis beddardi*" Calman, 1920 and "*Serolis latifrons*" White, 1847 with regard to the posterior thoracic somites and the modified uropods. In these species the reduced ramus is the exopodite, whereas

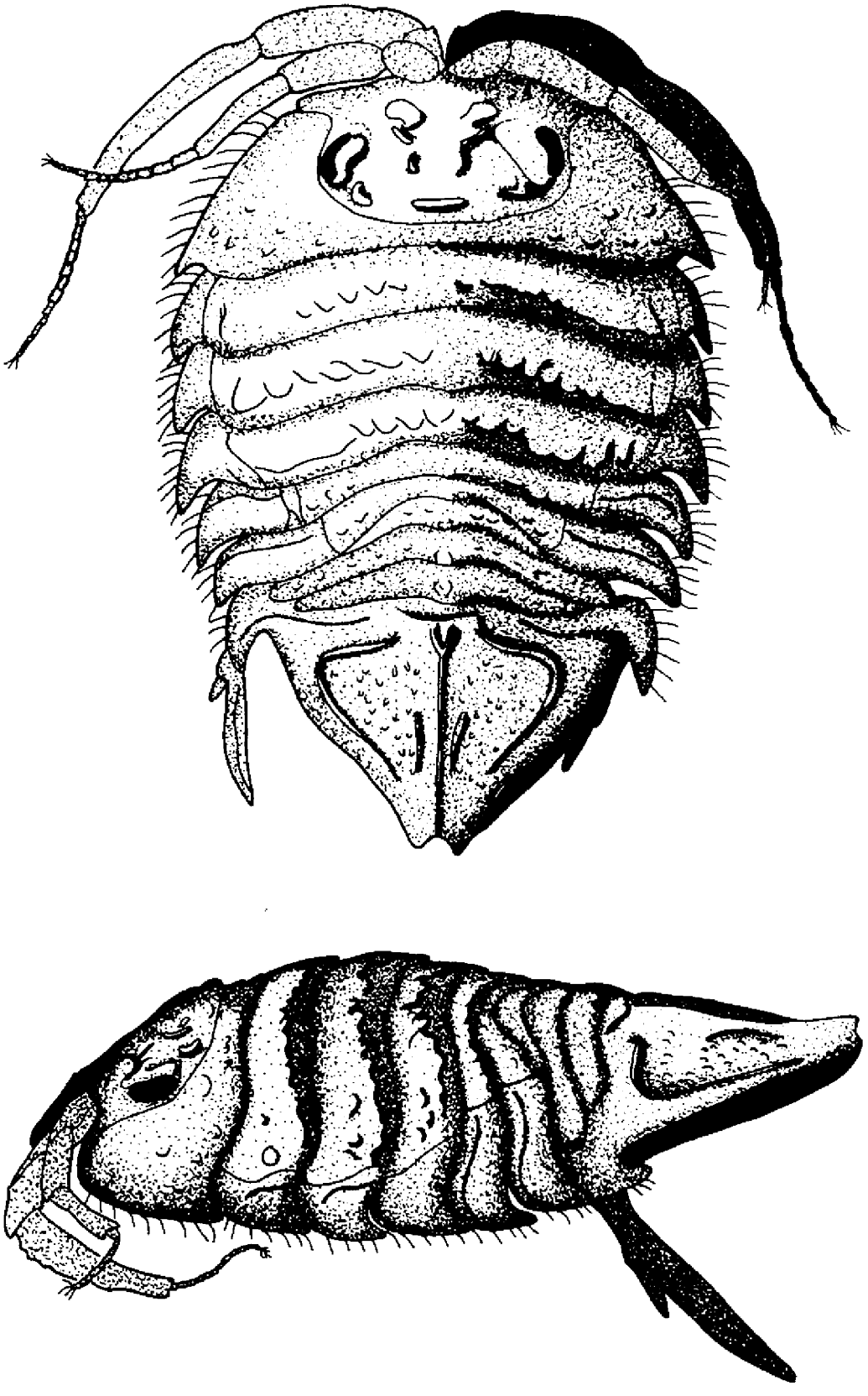


Figure 2: Female of *Spinoserolis beddardi* (Calman, 1920) in dorsal and lateral view.

the endopodite became fused with the sympodite and is extraordinary elongate. *Serolis platygaster* Sheppard, 1933 does not belong to this group although the endopodite of the uropod is also lacking, because the shape of the body differs much from that of the aforementioned species: the epimera are not reduced in size, the eyes are much smaller and narrower and the third palpal article of the maxilliped is reduced in size, furthermore the free pleonites are not framed by the pleotelson.

4.5.1 Redescription of *Spinoserolis beddardi* (Calman, 1920) (Figs. 2-5)

= *Serolis beddardi* Calman, 1920

Material: Female, 23 mm, sample A3/43, 73°23.36'S 21°30.37'W, 465-481 m, ground net; samples A3/2, 3 specimens; A3/3, 3 specimens; A3/8, 362 specimens; A3/43, 26 specimens, Antarctic Peninsula, King George Island.

Redescription:
Anterolateral angles of head markedly elongate frontolaterally (Fig. 2) covering part of the anterolateral margin of the first pereonite. Head frontally widest. Two small oval elevations frontomedially between the eyes. Several small eleva[tions posteromedially of the eyes; a median transverse elevation on caudal margin of head. Another small semicircular elevation between this elevation and the eyes.

Coxal plates indicated by dorsal grooves from second to sixth pereonite. Posterolateral angles of coxal plates of the second to the sixth pereonite reaching further caudally than those of the preceding segments, and increasing in width. Seventh pereonite very small, without epimera. Fifth and sixth pereonite with a transverse suture on coxal plates. Pereonites, especially first to third, with a transversal row of protrusions each, which are lobe-like on caudal margin. Fourth to seventh pereonite and first and second pleonal segment only with small tubercles. All pereonites covered with hairs on lateral margin and dorsal surface. Both of the free pleonites without epimera. Lateral margins not prolonged caudally. Following pleonites fused with pleotelson. Pleotelson very broad, of nearly triangular outline, with a pair of frontolateral, epimera-like protrusions in front of the insertion of the uropods, and dorsally with several ridges. Longitudinal ridge frontally beginning with a V-shaped part. Laterally of the median ridge on each side a small curving ridge close to the anterior and lateral margins of the segment and another semi-oval ridge on lateral margin of pleotelson. Apex of pleotelson concave.

A1 (Fig. 3) with three peduncular and 18 flagellar articles. First peduncular article broader and shorter than second, with one small bristle; second article three times as long as first one, with a lateral row of slender bristles and a small proximomedial bristle. Third peduncular article narrower than second, but about as long as second, also with a lateral row of slender bristles. First flagellar article shortest but broadest. All flagellar articles with three distomedial simple setae and one aesthetasc, except the flagellar articles 1-5 and the last one. Flagellar articles 1 and 2 without distomedial bristles, articles 3, 4 and 5 only with three simple setae, but without aesthetasc, last article also lacking the aesthetasc, but with 5 long simple setae.

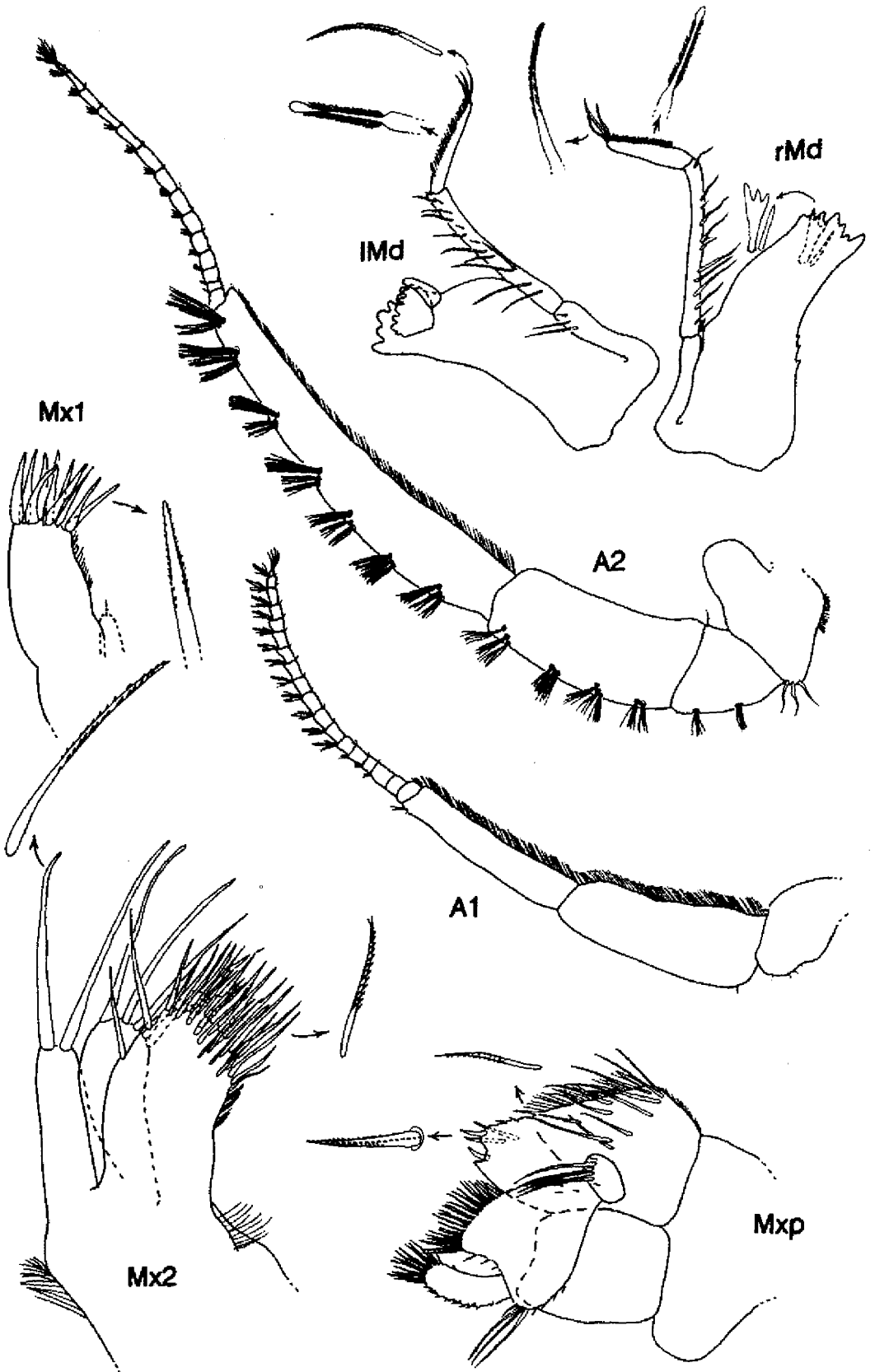


Figure 3: Female of *Spinoserolis beddardi* (Calman, 1920), antennula, antenna, both mandibles, maxillula, maxilla and maxilliped (with details of setation).

A2 (Fig. 3) consisting of 5 peduncular and 14 flagellar articles. First peduncular article very short (not shown in Fig. 3). Second one longer than first, with some short median distal bristles and three median distal long simple setae. Third peduncular article longer than second, with two distolateral groups of simple setae. Fourth article more than twice as long as third one, with a longitudinal row of three groups of 5-6 long setae, fourth article broadest, fifth article also with a longitudinal row of setae; fifth article longest. All flagellar articles with distolateral setae, last article shortest and smallest, with 10 distal setae.

Mandibles (Fig. 3) asymmetrical, with a three-jointed palp. Pars incisiva of rMd narrower than left, with one broad serrated surface of 6 blunt small teeth. Lacinia mobilis of rMd smaller than pars incisiva, with 3 teeth, of the spine row only one single spine-like structure is present, pars molaris absent. First palpal article shorter than second, without any bristles or setae; second with a lateral row of 11 lateral long simple setae. Last palpal article smallest and bent laterally, with a row of serrated bulbous spines (see detail in Fig. 3). Pars incisiva of lMd broader than of right, with one broad cutting surface of 6 teeth, but stronger than in rMd, lacinia mobilis with seven small blunt teeth and a spine-like structure, the rudiment of the spine row, pars molaris absent. Palp constructed like in the rMd, but first palpal article with three distomedial setae and second article with more lateral long setae than in rMd.

Lateral endite of Mxl (Fig. 3) distally curved medially, apically with 10 strong cuticularized teeth, some of them with two rows of spinules. Median endite small rudiment with one short apical bristle.

Mx2 (Fig. 3) with three endites. Inner endite with 31 slender setae, positioned in three rows and setulated in the upper part; median endite with five setae, outer endite with two long setae, all setae distally setulated for about one third of length (see detail in Fig. 3).

Mxp (Fig. 3) with strong quadrangular epipodite, strong endite, which is longer than epipodite, and a three-jointed palp. Endite slightly bent laterally, with some proximomedial long simple setae and distally four strong setulated spines (see detail in Fig. 3), no coupling hooks present. First article small, ring-like, with 4 long setae. Second palpal article longest and broadest in its distal region, with long lateromedial setae and three very long setae distolaterally. Last article narrowest, but longer than first, with lots of simple setae, most on tip of the palp and some shorter laterally of the article.

P1 (Fig. 4) shorter and stronger than all following pereopods, with long basis, short merus and carpus, propodus broad oval, subchelate, dactylus without claw almost reaching distal part of carpus. Ischium with some small simple bristles distodorsally, merus with 8 short bristles. Carpus with two distomedial strong spines and four short bristles.

Mediolateral surface of propodus with one long row of sensory spines, the sensory bristle inserts distolaterally. Alternating to these sensory spines, shorter and broader sensory spines occur, being densely covered with small setules in transverse rows. Basally to some of the sensory spines a short bristle occurs.

P2 of male (Fig. 5) with broad subchelate propodus, proximally broadest, distally narrowing, with two lateroventral rows of strong sensory spines. The surface bet-

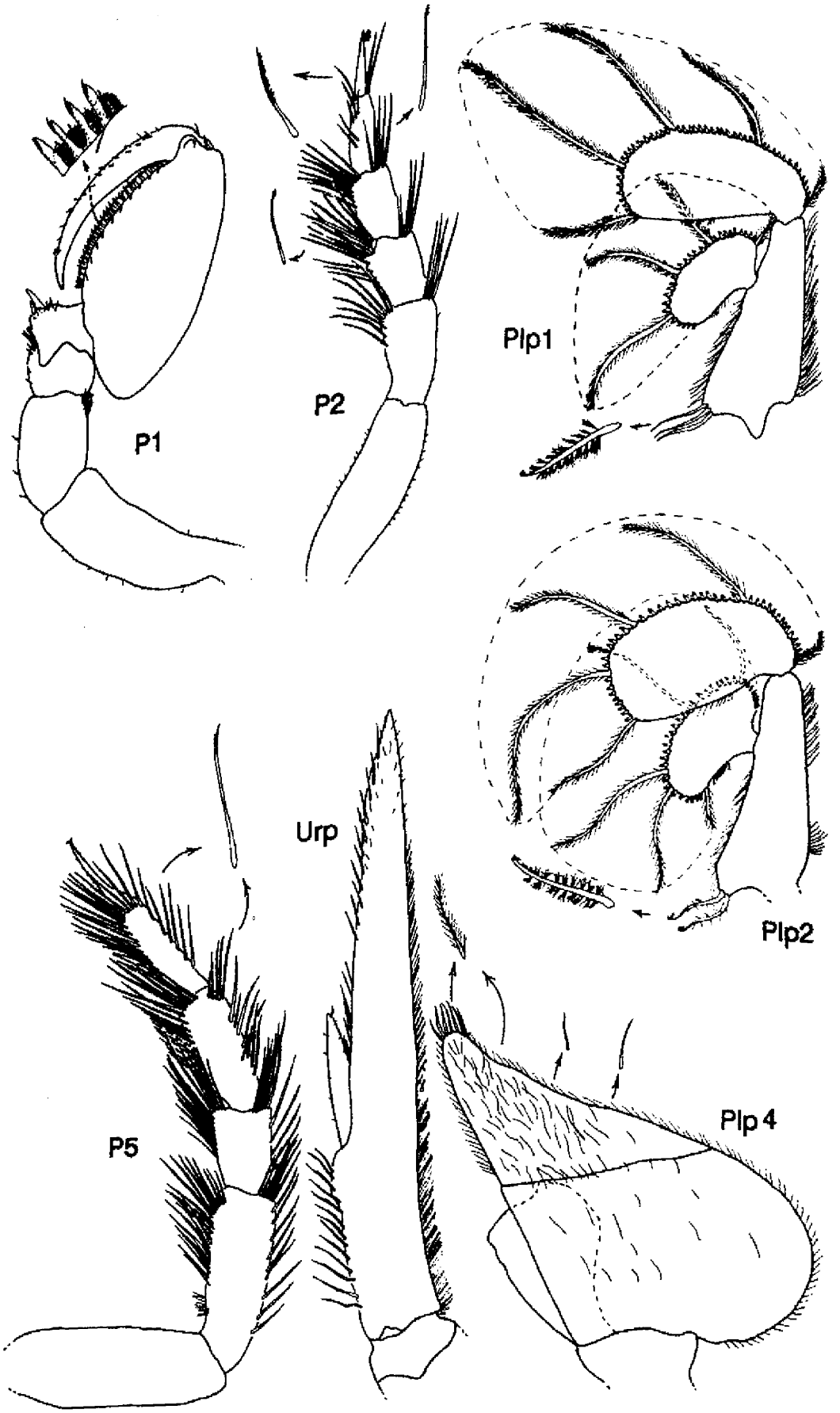


Figure 4: Female of *Spinoserolis beddardi* (Calman, 1920), pereopods 1, 2 and 5, pleopods 1, 2 and 4 and uropod (with details of setation).

ween the spines is concave. The dactylus is fitting directly between the rows of sensory spines.

P2-7 (Fig. 4) similar, P7 shortest (only P2 and P5 are shown in Fig. 4). Long basis without feather-like bristles, ischium slightly shorter, with many distodorsal and distoventral long setae. Ventrally and dorsally on merus, carpus and propodus many long setae, some of them serrated in the upper part (see detail in Fig. 4); laterally no setae present. Dactylus very small and slender, slightly longer than distodorsal setae of propodus, with a very short claw.

Plp1 (Fig. 4) with long sympodite of almost triangular shape, nearly as long as exopodite, which bears 3 small proximal bristles. Endopodite slightly smaller than exopodite, both with many long marginal plumose setae.

Plp2 and Plp3 (for Plp2 see Fig. 4) constructed like Plp1, but only with 2 small proximal bristles.

Plp2 of male (Fig. 5) with strong appendix masculina, which is about one and a half to two times as long as the endopodite (included the setae). Exo- and endopodite constructed as in female Plp2.

Exopodite of Plp4 (Fig. 4) operculiform, strongly chitinized, medially subdivided by a transversal fusion line, lateral margin with a row of short smooth setae, the longest distal setae are setulated. Surface of exopodite covered with simple bristles, especially in the apical region. Endopodite smaller, without setae. Sympodite very small.

Plp5 (not shown in Fig. 4) smallest, with short sympodite, exopodite without setae, endopodite smaller.

Urp (Fig. 4) with long and slender sympodite that is fused to the endopodite and short laterally inserting exopodite. Exopodite only with one apical simple bristle and some very short hairs. Sympodite proximolaterally with long simple setae, distolateral margin of endopodite with simple, shorter setae.

Remarks: Spinoserolis beddardi (Calman, 1920) has only been drawn in dorsal view and of the appendages only illustrations of the pars incisiva of the mandibles, the first and second pereopods (distal parts), and the uropod exist, therefore complete illustrations of all appendages are presented in this redescription, to enable scientists to compare *Spinoserolis beddardi* with other species of the genus. *S. beddardi* is very different to *Serolis latifrons* (White, 1847) and can therefore easily be distinguished. *S. latifrons* is not characterized by such small and narrow elevations on the head, which look like small ridges as in *S. beddardi*, *S. latifrons* instead bears broader elevations. The lateral margins of the pereonites of *S. beddardi* possess long cuticular hairs, which are absent in *S. latifrons*. Lobe-like protrusions of the cuticle on the pereonites (see dorsal view) of *Spinoserolis beddardi*, which resemble the dorsal surface of *Glyptonotus antarcticus* Eights, 1852, do not occur in *S. latifrons* or any other species of the family. Coxal plates of *Spinoserolis beddardi* dorsally with sutures from the second to the sixth pereonite, whereas in other species of the family these sutures are generally visible from the second to the fourth or fifth pereonite. White (1847) did not draw sutures of the coxal plates in *S. latifrons*. Another striking feature is that the pleonites one and two are very short and do not reach the lateral margins of the sixth pereonite or frontolateral margins of pleotelson. This can also be found in *S. latifrons*. The pleotelson bears some

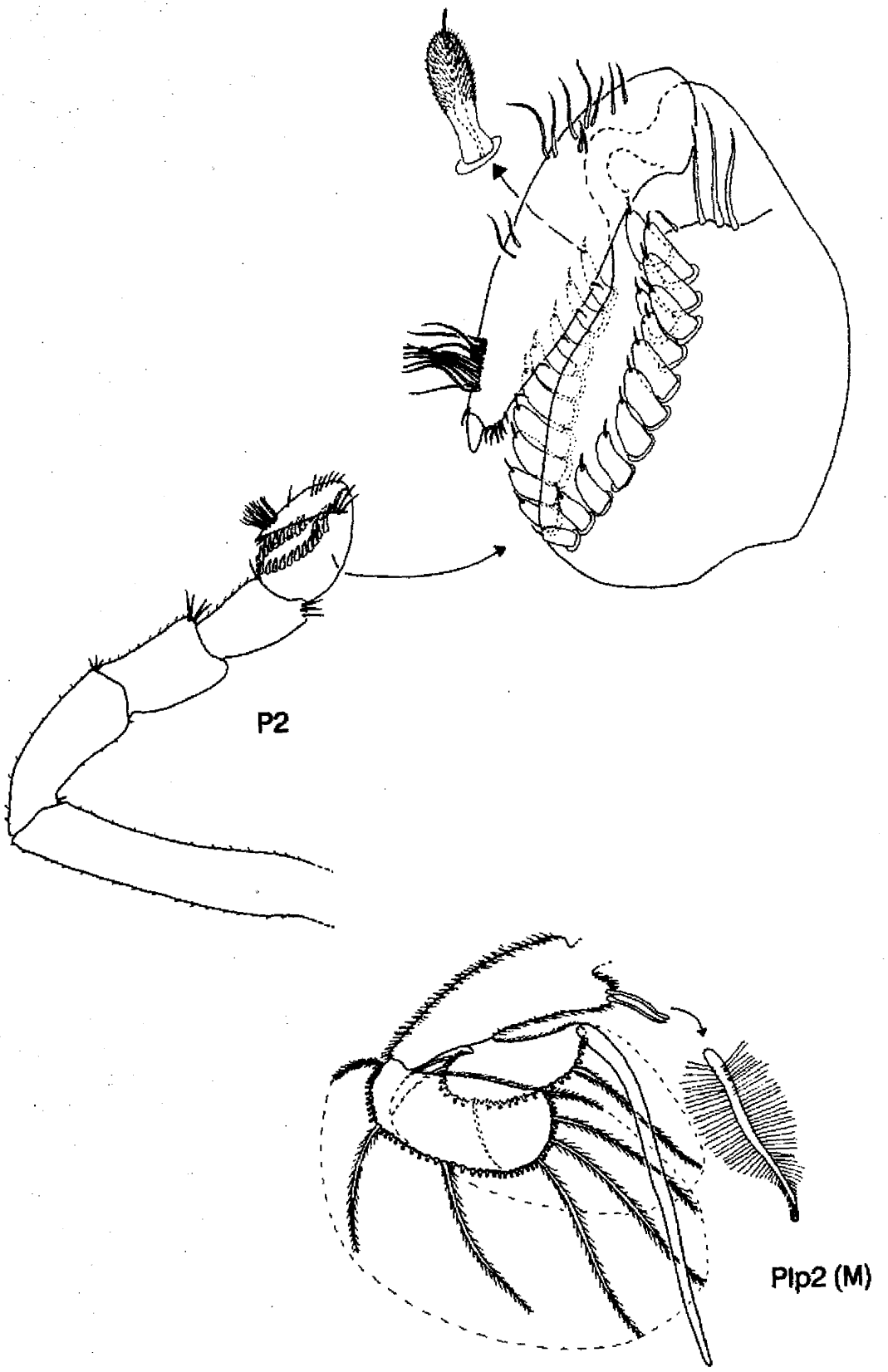


Figure 5: Male of *Spinoserolis beddardi* (Calman, 1920), pereopod 2 with detail of propodus and sensory spines and pleopod 2.

characteristic features, which allow an easy discrimination from *S. latifrons*. Besides the median ridge which begins V-shaped and is quite narrow, two smaller lateral and two larger laterally bent ridges or elevations occur, which are in comparison to other species very slender, these are lacking in *S. latifrons*. The tubercles between the median and the lateral ridge are also lacking in *S. latifrons*.

4.6 *Leptoserolis* n.gen.

Diagnosis: Body long oval, dorsoventrally; head frontolaterally prolonged and caudomedially with a short protrusion. Following pereonites sometimes with short caudomedial caudally directed spines, coxal plates of all pereonites broad, but not much elongate laterocaudally, without interlocking keys. Caudal point of sixth coxal plate surpassing caudally both pleonal epimera, reaching to the midst of pleotelson. Coxal plates 2-4 with dorsal sutures, separating the plates from the tergites; seventh pereonite small, without coxal plates. Epimera of first and second pleonites not reaching as far caudally as the caudal tips of the sixth coxal plates, with the tendency of reduction of size, both about subequal in length. Pleotelson with one longitudinal median keel, sometimes with another pair of lateral ridge running almost parallel to the median keel. Caudal tip of pleotelson concave or little elongate and rounded. Maxilla of only two endites. Palp of maxilliped with three articles, sometimes third article reduced in size. Carpus of male pereopod 1 mediolaterally without setae. Propodus of male pereopod 2 with a bulbous lower part about half as wide as the total length, with two rows of sensory spines (propodus distally broader than in *Spinoserolis)*, dactylus without long setae. Setae of pereopods 2-7 not setulated. Drawings of appendix masculina of male pleopod 2 do not exist. Uropods biramous, sympodite extremely prolonged, almost as long or even longer than rami, exopodite almost as long as endopodite.

Type species: Leptoserolis orbiculata (Sheppard, 1933)
= *Serolis orbiculata* Sheppard, 1933

Deviation and gender of name: The name is derived from the Greek „leptos„, which means slender, combined with the generic name „*Serolis*„. It refers to the long and slender sympodite of the uropods. The gender of the name is masculine.

Composition of the genus: Leptoserolis orbiculata (Sheppard, 1933) (type species); *Leptoserolis nototropis* (Sheppard, 1933);
The Non-Antarctic forms are: *Leptoserolis bonaerensis* (Bastida & Torti, 1967); *Leptoserolis uaperta* (Moreira, 1972).

Remarks: This genus is most similar to the genus *Serolina* Poore (1987). *Serolina* does not bear such long uropods with a very much prolonged sympodite as *Leptoserolis* does. The sympodite of *Leptoserolis* is more than half as long or even longer [*Leptoserolis orbiculata* (Sheppard, 1933)] than endo- and exopodite, which are almost subequal in length. In *Serolina* the exopodite is much shorter. The species of this genus have been found around the Falkland Islands and in the Magellan Strait at depths of about 100 meters.

4.7 *Ceratoserolis* Cals, 1977

Diagnosis: Body outline broad oval, dorsoventrally flattened; head sculptured, caudomedially between the eyes lobe-like protrusions with deep posterior notches; eyes reniform, with frontomedial small laterally bent elevations. Mediolaterally of head on both sides a shallow suture running almost parallel to the caudal margin of the first pereonite. Cephalothorax and pereonites without spines, coxal plates of all pereonites, especially that of the sixth segment caudally acute and little elongate caudolaterally. Transverse ridges laterally of first to sixth coxal plates, first to fifth pereonite caudally with interlocking keys. Second to fourth coxal plate with dorsal suture, separating the plates from the tergites, seventh pereonite small, without coxal plate. Epimera of first and second pleonites, almost subequal in length, almost reaching the apex of the last coxal plate. Pleotelson dorsally with a pair of mediolateral telsonic spines. Mediodorsal ridge with few short acute spines, laterofrontally a curved ridge on both sides of the median ridge, prolonged into a small acute mediolateral spine. More spines on the pleotelson between the mediolateral spines and the caudal apex. Pleotelsonic apex pointed, caudal margin of telson serrated or smooth. Palp of maxilliped three jointed. Carpus of male pereopod 1 mediolaterally without setae. Propodus of male pereopod 2 subchelate, with a bulbous lower part, medially much narrower (about half as broad), dactylus slightly bent dorsally, this builds a hole for grasping when the dactylus is moved towards the propodus. Dactylus dorsally with short simple setae from the middle to the tip. Pleopod 2 of male with proximolaterally inserting appendix masculina that is more than two times as long as the endopodite (with setae). Uropods biramous, flattened, elongate trapezoidal sympodite, more than half as long as endopodite, sympodite inserting mediolaterally of pleotelson in the corner of a small caudally directed protrusion, exopodite slightly shorter than endopodite, both deeply serrated.

Type species: Ceratoserolis trilobitoides (Eights, 1833)
= *Serolis trilobitoides* Eights, 1833
= *Serolis cornuta* Studer, 1879
= *Serolis zoiphila* Stechov, 1921

Composition of the genus: Ceratoserolis trilobitoides (Eights, 1833) (type species); *Ceratoserolis pasternaki* (Kussakin, 1967); *Ceratoserolis meridionalis* (Bruce, 1908).

Remarks: Ceratoserolis was first described by Cals in 1977, who did not give a detailed diagnosis for this genus. Wägele (1986) has already discussed some characteristic features, and has suggested that the genus *Ceratoserolis* is not rejected. The most striking features distinguishing this genus from other genera are the sculptured cuticle between the eyes, the prolonged, caudally-directed coxal plates with interlocking keys, the absence of dorsal spines on the pereonites, the typical pleotelson with its mediodorsal longitudinal keel, which bears few strong spines, the prominent acute spines laterally of the median keel and the serrated caudal margin of the telson. The latter feature is absent in *C. pasternaki*.

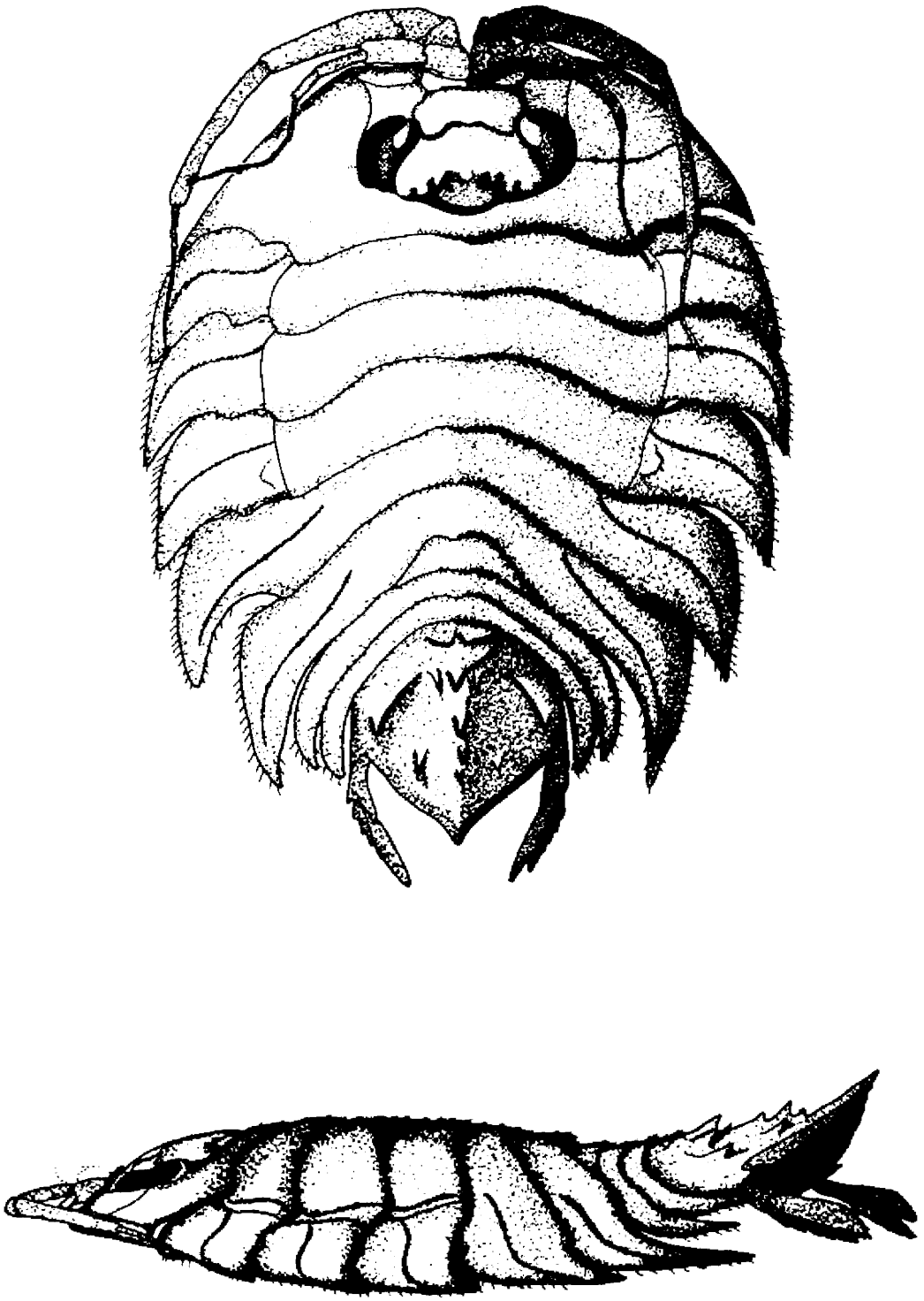


Figure 6: Female of *Ceratoserolis pasternaki* (Kussakin, 1967) in dorsal and lateral view.

4.7.1 Redescription of *Ceratoserolis pasternaki* (Kussakin, 1967) (Figs. 6-10)

= *Serolis pasternaki* Kussakin, 1967

Material used for redescription: Ovigerous female, 40mm, sample A3/26, 72°31.64'S 17°34.97'W, 242-264m, agassiz trawl.

Distribution: Weddell Sea

Redescription of female:
Anterolateral angles of head markedly elongate laterally (Fig. 6). One broader transverse elevation consisting of two lobes frontomedially between the eyes, lateral margins directed caudally. One broad elevation, narrowest frontally posteromedially of the eyes, broadening caudally. Elevation mediocaudally concave, caudal margin characterized by small invaginations which form some small lobes. Elevation followed by another small oval elevation on caudomedial margin of the head. Coxal plates indicated by dorsal grooves from second to fourth pereonite. Posterolateral angles of coxal plates of the second to the sixth pereonite elongate further caudally than those of the preceding segments. Seventh pereonite very small, without coxal plates. Second to sixth pereonite with a transverse suture on the coxal plates of pereonites 2-4, on pereonites 5 and 6 positioned like in the foregoing pereonites, but prolonged a little more medially. All pereonites covered with hairs on lateral margins. Free pleonites a little shorter than sixth pereonite, second segment little longer than first. Laterocaudal points of sixth pereonite surpassing caudally the lateral tips of the first and second pleonites. Following pleonites fused with pleotelson. Pleotelson with one long elevated median keel. At the anterior base of this keel two small triangular elevations present, with caudally directed tips. One large frontolaterally curved ridge prolonged into a spine laterally of this ridge, with the tip directed caudally. Between this spine and the apex of the pleotelson two smaller spines occur on each side, also directed caudally. Medially on the ridge 4 caudally directed spines.

A1 (Fig. 7) with three peduncular and 20 flagellar articles. First peduncular article broader but shorter than second, without bristles or setae; second article with two lateral feather-like bristles. Third peduncular article narrower than second, but longer than first, without any setation, last peduncular article shortest and smallest. All flagellar articles except the first, which is the longest and bears two proximal feather-like bristles, with three distolateral simple setae and one aesthetasc. This pattern is also lacking in the last but one and the last flagellar articles. Penultimate article only with one single aesthetasc, last article with 4 simple setae and one feather-like bristle.

A2 (Fig. 7) consisting of 5 peduncular and 13 flagellar articles. First peduncular article very short, (not shown in Fig. 7). Second one longer than third, with some short distomedial bristles. Fourth peduncular article with a longitudinal row of long setae in groups of 5 to 6, fourth article broadest, fifth article also with a longitudina l row of setae, longest. All flagellar articles with distolateral setae, flagellar articles 2-6 with a lateral row of small strong cuticularized teeth (see detail in Fig. 7), last article shortest and smallest, with 7 distal setae.

Mandibles asymmetrical, with a three-jointed palp (Fig. 7). Pars incisiva o rMd narrower than left, with one broad toothless surface. Pars incisiva of lMd broader than of right, with one broad cutting surface, lacinia mobilis broad, with three

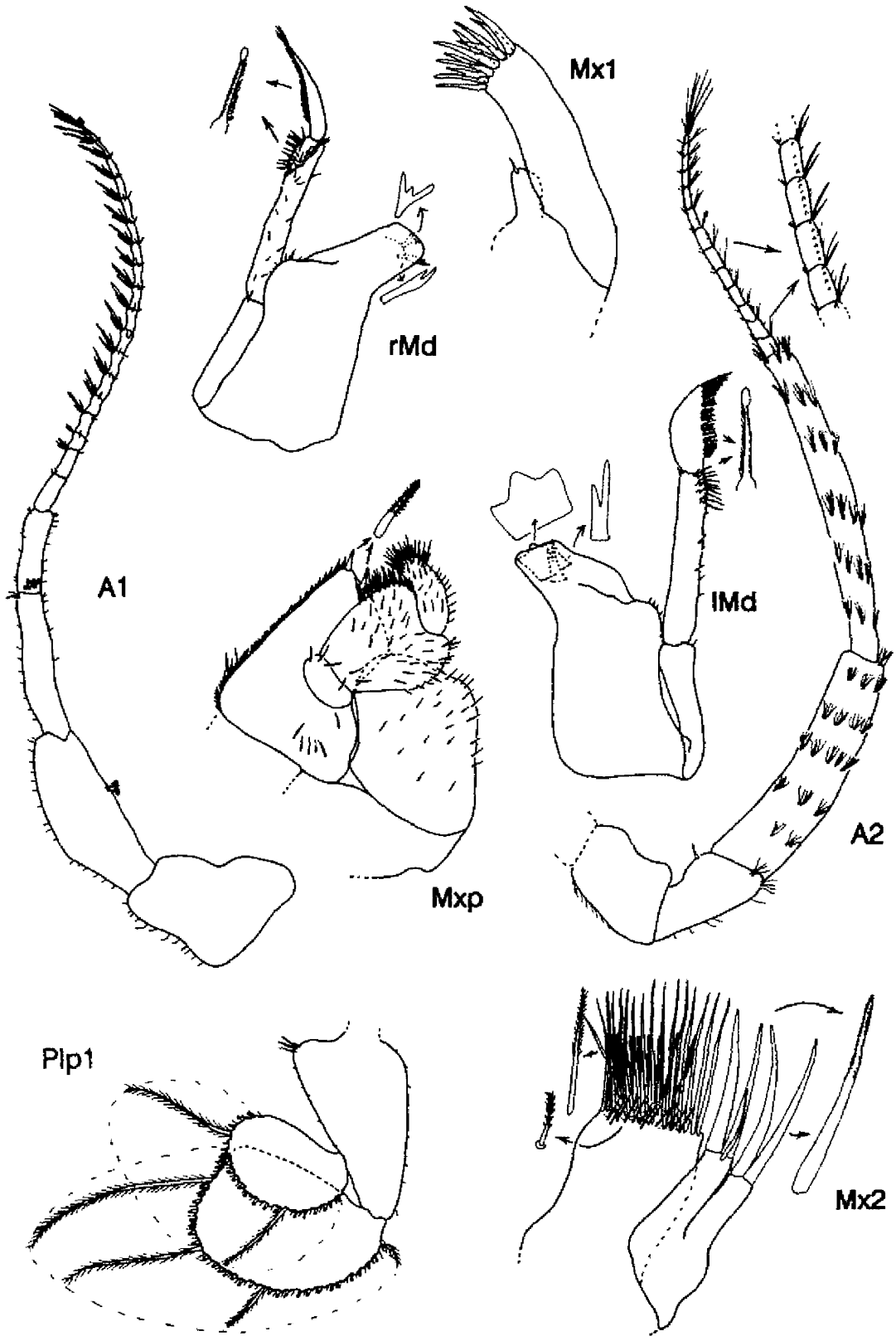


Figure 7: Female of *Ceratoserolis pasternaki* (Kussakin, 1967), antennula, antenna, both mandibles, maxillula, maxilla, maxilliped and pleopod 1 (with details of setation).

blunt apical teeth and an accompanying bilobed spine-like structure (rudiment of the spine row), pars molaris absent. Lacinia mobilis of rMd smaller than pars incisiva, with 3 blunt teeth and accompanying one single small bilobed spine-like structure, pars molaris lacking. First palpal article shorter than second, with one distal simple seta; second with a row of 11 distolateral spines each with a bulbous tip and setules on both sides, except the proximal broader part and the tip, laterally several simple short bristles and many bristles irregularly dispersed all over the surface of the article; last palpal article smallest and laterally bent, also with a row of serrated spines (see detail in Fig. 7).

Lateral endite of Mx1 (Fig. 7) distally curved medially, apically with 11 strong cuticularized teeth. Median endite small rudiment with one short apical bristle. Mx2 (Fig. 7) of three endites. Inner endite with 36 slender setae, positioned in three rows and setulated in the upper part, the median of these rows with 16 long setae, the last row with shorter setae compared to the median row, the row in front with 12 small setae, bearing the strongest spinules (detail in Fig. 7); median endite with two long spines and one short setae, outer endite with two long spines. All spines distally setulated for about one third of length (see detail in Fig. 7).

Mxp (Fig. 7) with large quadrangular epipodite; endite shorter than epipodite; palp three-jointed. Endite with some proximomedial simple setae and two strong spinulated spines (see detail in Fig. 7), no coupling hooks present. First palpal article small, oval, with 3 short bristles, second article longest and broadest, with long median setae and some shorter ones dispersed all over the surface, last article narrowest, longer than first, of bean-like outline, with lots of simple setae, most on tip of the palp and some shorter all over the article.

P1 (Fig. 8) shorter and stronger than all following pereopods, with long basis, short merus and carpus, and propodus broad oval, subchelate, dactylus reaching almost to the distal part of carpus. Ischium with 8 simple bristles, merus with 9 short bristles. Carpus with two distomedial sensory spines covered with small spinules (see detail in Fig. 8) and with many short bristles. Mediolateral surface of propodus with one long row of slender sensory spines, whose sensory bristle divides the spine mediodistally. Alternating to these shorter and broader sensory spines occur, being densely covered with small setules. Basally of the sensory spines a row of short bristles occur.

P2-7 (Figs. 8 and 9) similar, P7 shortest. Long basis with few dorsal feather-like bristles, ischium slightly shorter, with 1-2 proximodorsal small spines and some distodorsal long setae. Ventrally on merus, carpus and propodus one transverse group of strong spines and simple bristles and 1-4 medioventral small spines. Distodorsally of merus, carpus and propodus a row of long spines or setae. Some of the spines or the long setae with tooth-like structures. Dactylus very small and slender, slightly longer than distodorsal setae of propodus, with a very short claw. Propodus with 1 distolateral feather-like bristle.

P2 of male (Fig. 10) with broad subchelate propodus, proximally broadest, with 10 strong sensory spines and narrowing medially to about half of the width, dactylus slightly bent dorsally, with some dorsal short simple bristles.

Plp1 (Fig. 7) with sympodite of almost triangular shape, nearly as long as exopodite, with 3 small proximomedial bristles. Endopodite slightly smaller than exopodite, both with many long marginal plumose setae.

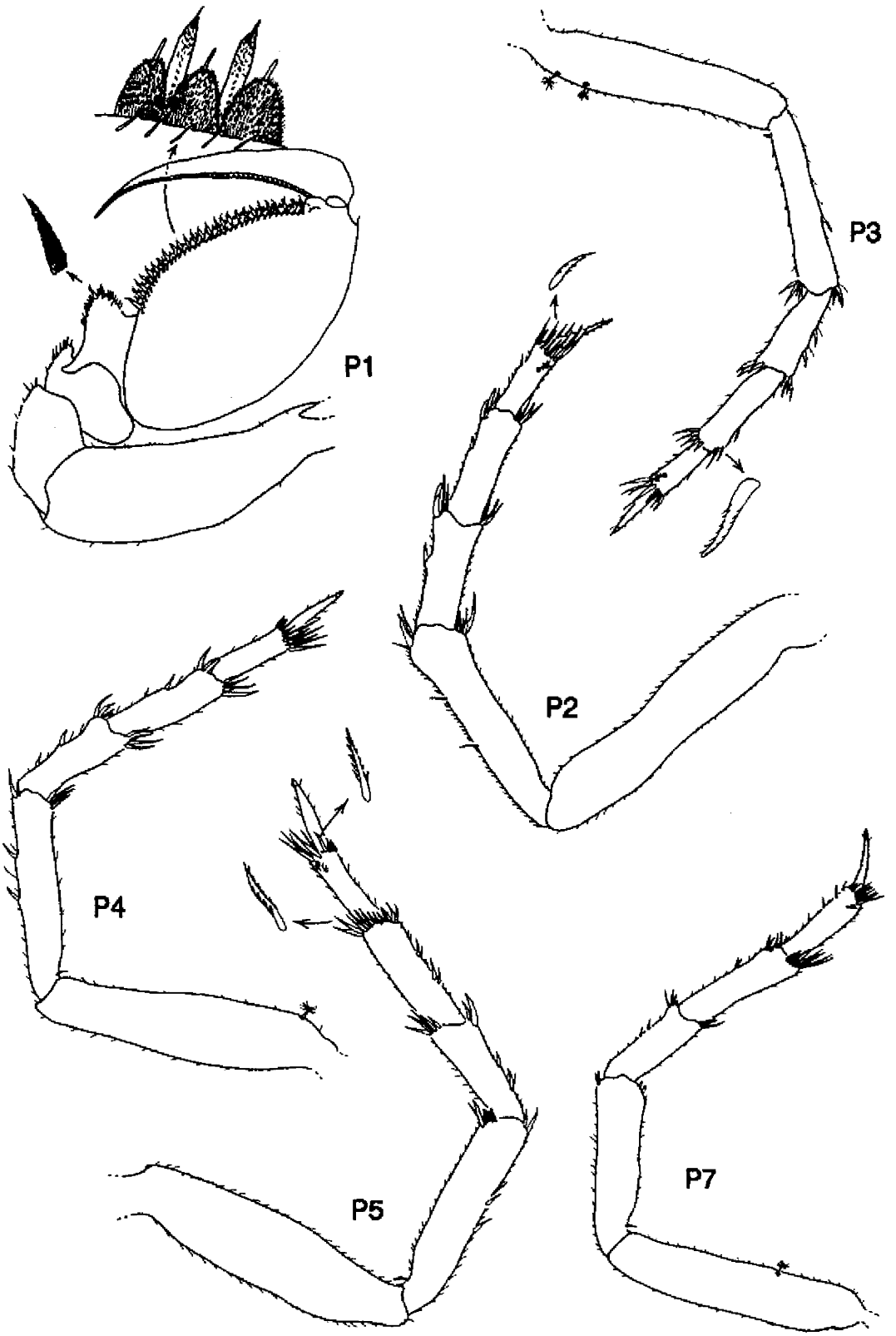


Figure 8: Female of *Ceratoserolis pasternaki* (Kussakin, 1967), pereopods 1, 2, 3, 4, 5 and 7 (with details of setation).

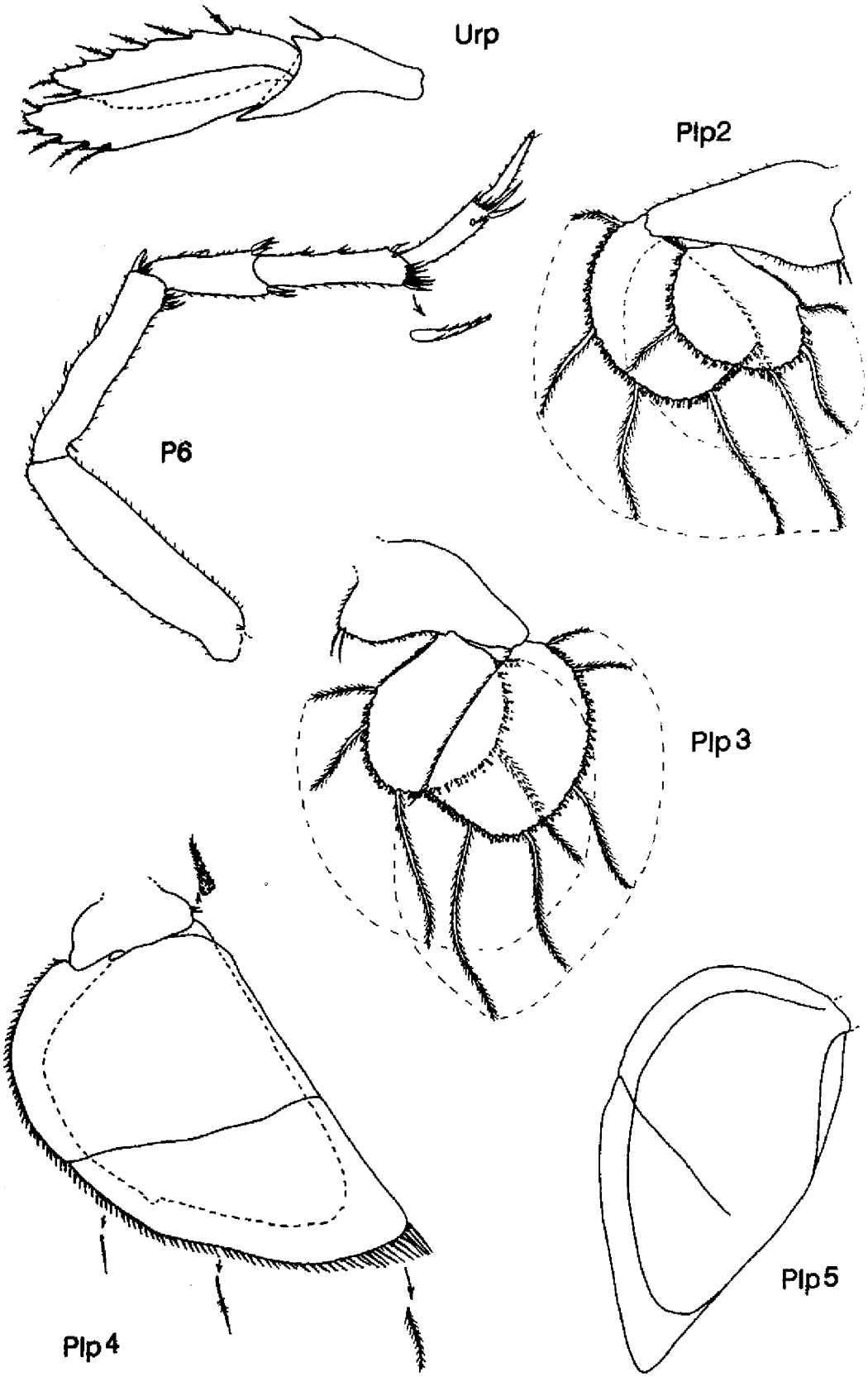


Figure 9: Female of *Ceratoserolis pasternaki* (Kussakin, 1967), pereopod 6, pleopods 2, 3, 4 and 5 and uropod (with details of setation).

Plp2 and Plp3 (Fig. 9) constructed like Plp1, but only with 2 small proximomedial bristles.

Plp2 of male (Fig. 10) with long stiletto-like appendix masculina that is more than two times as long as endopodite (with setae).

Exopodite of Plp4 (Fig. 9) operculiform, strongly chitinized, medially with transversal fusion line, lateral margin with a row of quite short marginal plumose or simple setae; endopodite smaller, without setae and with one mediolateral small protrusion. Sympodite very small.

Plp5 (Fig. 9) without setae, endopodite smaller than exopodite, outline similar to Plp4, sympodite small.

Urp (Fig. 9) with elongate trapezoidal sympodite, with one long lateral seta, median margin prolonged, forming a distal acute point; exopodite shorter than endopodite, medio- and distolateral margins deeply serrated with 6 lateral and 3 median notches, one long seta in each notch, setae bearing 6-8 small setules. Endopodite slightly larger, with 5 setae inserting each in a notch.

Remarks:
Ceratoserolis pasternaki was first described by Kussakin (1967), but as the original description is not detailed enough for comparison with new material, a redescription has become necessary. Coxal plates of *Ceratoserolis pasternaki* bear interlocking keys, surpassing the following coxal plate, a characteristic feature for this species. These are also present in *Ceratoserolis trilobitoides* Eights, 1833, but not as distinct as in *Ceratoserolis pasternaki*. Pleotelson of *Ceratoserolis pasternaki* in contrast to *C. trilobitoides* without median ridge; medially a row of 5-pointed caudally-directed spines is present, in *C. trilobitoides* the number of these spines is much higher and three further lateral spines, the outermost frontally prolonged into a frontally curved ridge are present, laterocaudal margin of *Ceratoserolis pasternaki* smooth and not serrated as in *Ceratoserolis trilobitoides*. The long caudal serrated protrusion of *C. meridionalis* (Bruce, 1908) is lacking in *C. pasternaki*.

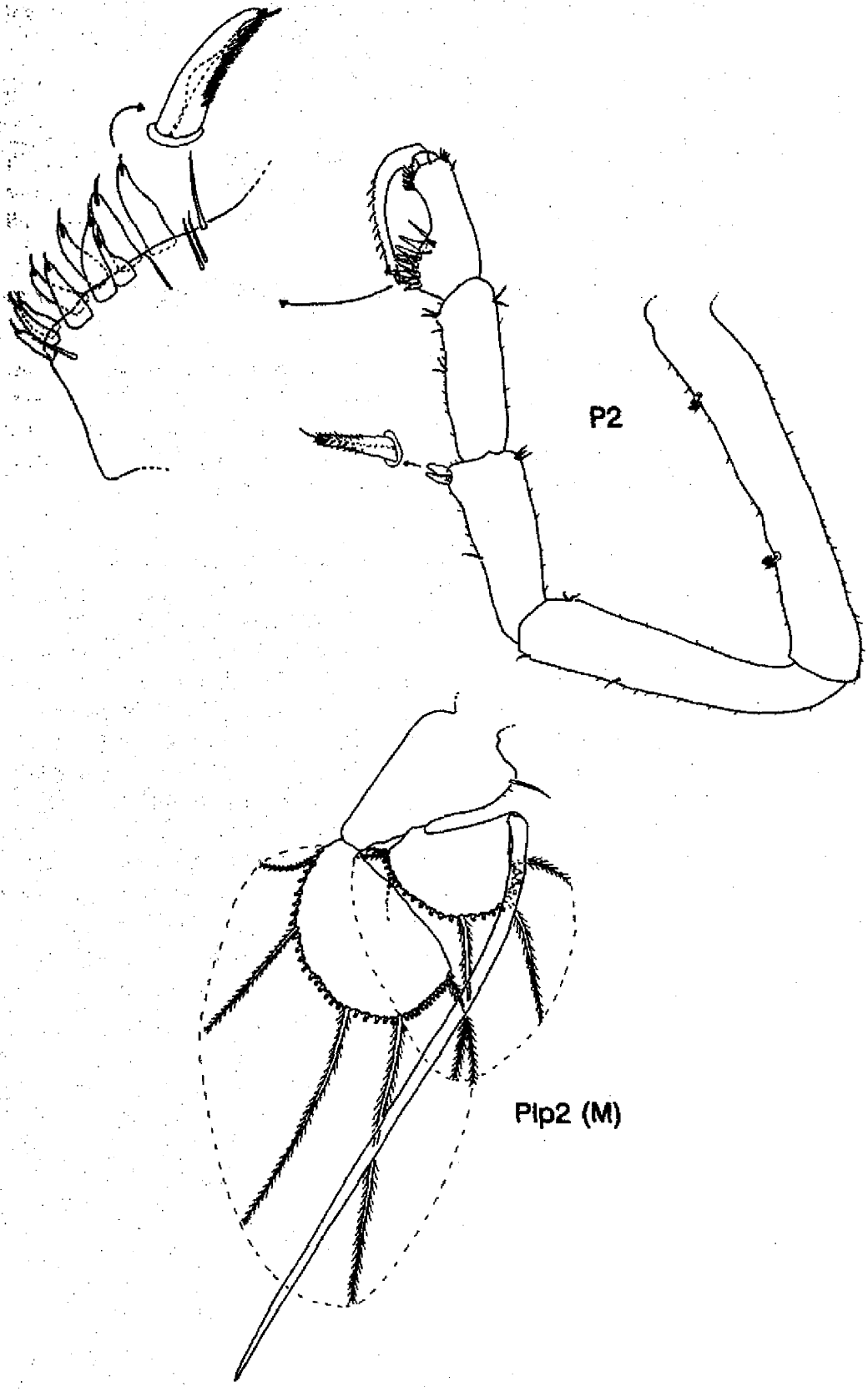


Figure 10: Male of *Ceratoserolis pasternaki* (Kussakin, 1967), pereopod 2 with detail of propodus and sensory spine and pleopod 2.

5. New species of *Serolis*

5.1 *Serolis aestimabilis* n.sp. (Figs. 11-14)

Holotype: Male, 17mm, sample A04/474, 76°56.7'S 49°44.0'W, 224-216m, agassiz trawl; BM(NH) 1988.179.1.

Paratypes: 1 male, A3/16, 61°20.58'S 54°45.71'W, 259-295m, bottom trawl; 1 male and 2 immature, sample A2/341, 76°39.2'S 52°09.0'W, 295-300m, agassiz trawl; BM(NH) 1988.180.4.

Distribution: Weddell Sea, only known from type locality.

Description of male holotype:
Anterolateral angles of head markedly elongate laterally (Fig. 11); head frontally widest. An elevation frontomedially between the eyes, medially narrowest. Two larger round elevations posteromedially of the eyes, with a deep lateromedial running groove. A small triangular elevation medially on caudal margin of head a small triangular elevation, situated between the large round elevations. Second to fifth pereonite with coxal plates marked off by dorsal sutures. Posterolateral angles of the coxal plates of the second to the sixth pereonite all reaching successively further caudally than those of the preceding segments. The epimera of the first and second pleonites do not reach as far back as the apex of the sixth coxal plate. Following pereonites fused with pleotelson. Pleotelson with one long median ridge, which is broadest frontally and becomes narrower caudally. An elevation laterally on each side, mediocaudally bent and also narrowing caudally. Tip of pleotelson acuminate (see Fig. 11).

A1 (Fig. 12) with three peduncular segments, first one not much broader than the following ones, second one about as long as first one, third one longest with some short lateral bristles and three longer lateral setae. Of the 22 flagellar articles the first one is longer than the following ones and bears three proximal feather-like bristles.

First and second flagellar articles lack an aesthetasc. All following 20 flagellar articles bear a lateral aesthetasc in a group of three simple setae, except the penultimate flagellar article, which has no simple setae, but a lateral feather-like bristle. On opposite side of the aesthetasc a short lateral simple bristle. Last article with 5 long simple setae.

A2 (Fig. 12) consisting of 5 peduncular and 13 flagellar articles. First peduncular article very short, (not shown in Fig. 12). Second peduncular article longer than third, with two short simple bristles, second peduncular article inserted distolaterally with two groups of 5 simple setae. Fourth peduncular article broadest and a little shorter than the fifth, with several longitudinal rows of groups of 6 simple setae. Fifth peduncular article with most groups of setae. All flagellar articles with groups of 2-4 distolateral simple setae and two shorter ones on opposite side. Last flagellar article with six long simple setae.

Mandibles (Fig. 12) asymmetrical, with a three-jointed palp. Pars incisiva of rMd narrower than left. Lacinia mobilis of rMd smaller than pars incisiva, with four

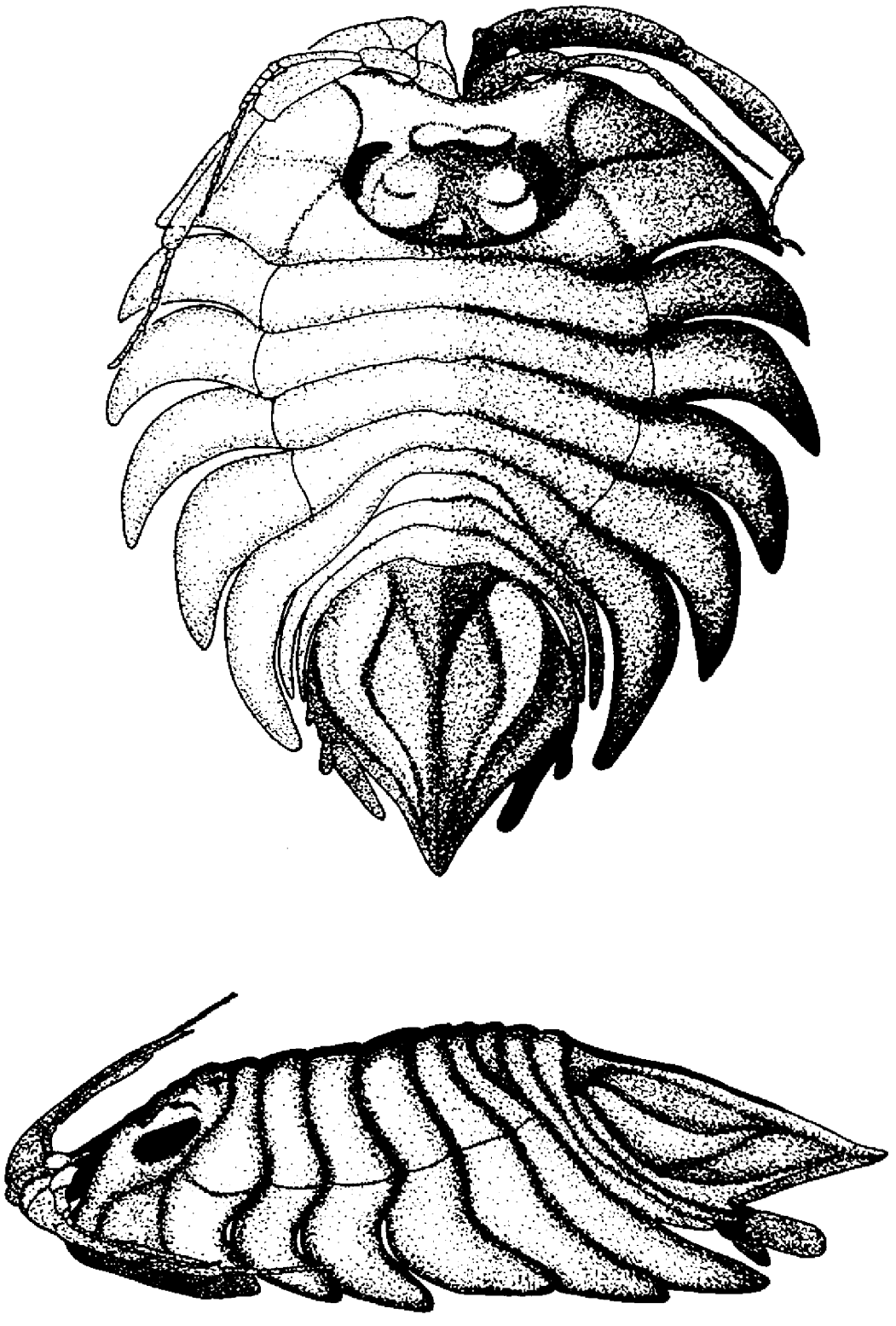


Figure 11: Holotype male of *Serolis aestimabilis* n.sp BM(NH), in dorsal and lateral view.

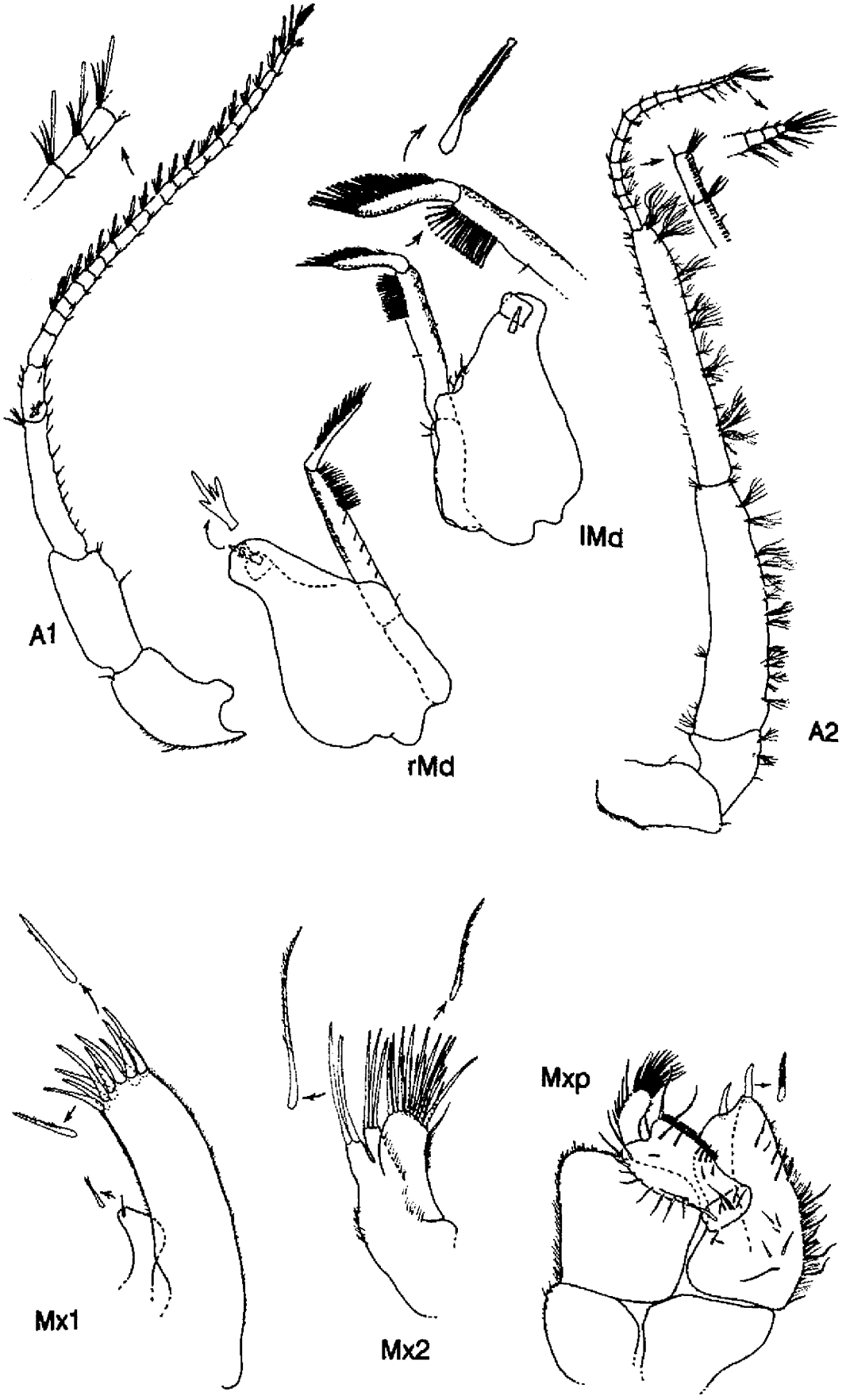


Figure 12: Holotype male of *Serolis aestimabilis* n.sp BM(NH), antennula, antenna, both mandibles, maxillula, maxilla and maxilliped (with details of setation).

distal teeth accompanied by a small spine-like structure, pars molaris lacking. First palpal article broadest, second one about one and a half as long as first, with a distolateral row of 19 serrated spines, with a bulbous tip. On opposite side of these spines there are scale-like structures. Last article smallest and bent laterally, with a dorsal row of these serrated spines (see detail in Fig. 12). Pars incisiva of lMd slightly broader than that of the right one, with broad cutting surface, lacinia mobilis with one broad surface and accompanied by a single spine (rudiment of the spine row), pars molaris absent. Palp constructed like in the rMd.

Lateral endite of Mx1 (Fig. 12) distally curved medially, apically with 11 strong cuticularized teeth, some of them covered with bristles and others with small teeth. Medial endite small rudiment, with one short apical bristle.

Mx2 (Fig. 12) of three endites. Inner endite with 17 slender setae, median endite with three long setae, outer endite with two long setae: all setae setulated in two rows (see detail in Fig. 12).

Mxp (Fig. 12) with large quadrangular epipodite, strong endite, longer than the epipodite; palp three-jointed. Endite apically narrower with two strong setulated spines, no coupling hooks present, but mediolateral surface of endite covered with lots of simple bristles and setae. Second palpal article longest, with lots of long setae on both margins, most mediolaterally. First article smallest, oval, with some simple setae, last article longer and narrower than first, of bean-like outline, with many simple setae, especially on palpal tip.

P1 (Fig. 13) stronger than all following pereopods, with long basis, short merus and carpus, propodus broad, subchelate. Basis and ischium without any spines or setae, merus with one distal simple seta, carpus with one short bristle and two strong setulated sensory spines (see detail in Fig. 13). Mediolateral surface of propodus with one long row of sensory spines, the sensory hair divides the spine distally. Alternating to these sensory spines shorter and broader ones occur, which are densely covered with small setules and which also bear a sensory bristle. Near the basis the broad sensory spines a short single bristle. Distolaterally of propodus there is a single short bristle. Dactylus long and slender with some short dorsal bristles and without claw.

P2 (Fig. 13) in male with long and slender basis, long ischium with lots of simple ventral setae as well as some short dorsal ones. Dorsal surface of basis with two feather-like bristles. Merus and carpus subequal in length with a ventral row of simple setae and some distodorsal ones, on carpus a distodorsal sensory spine. Propodus broadened in the lower part, as broad as half of the length of the propodus. Distally it narrows to about one third of the article's length. Ventrally the propodus bears 11 strong sensory spines, whose sensory hair divides the sensory spine in its broad distal region. The spine itself is covered with small spinules. Distodorsally a transverse row of long simple setae. Dactylus as long as propodus, with few short distodorsal bristles, claws very short, ventral claw smallest.

P3-7 (Fig. 13) similar, P7 shortest. Long basis with 1-3 feather-like bristles. Ischium slightly shorter than basis with a proximodorsal small sensory spine, distodorsal side with a single simple seta.

Ventrally several long simple setae present on ischium, merus, carpus and propodus, most dense on carpus and propodus. Distodorsally of merus a transverse

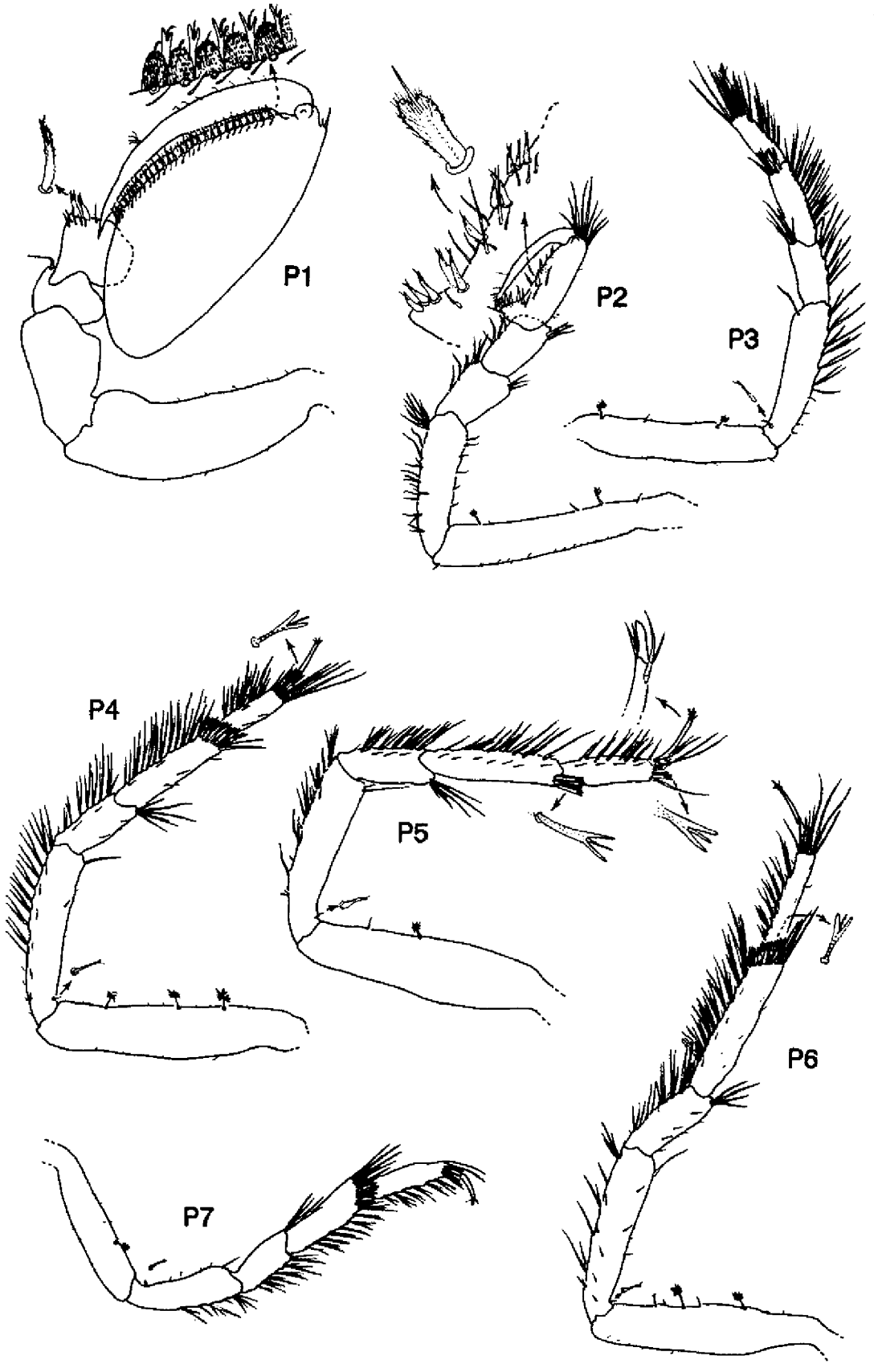


Figure 13: Holotype male of *Serolis aestimabilis* n.sp. BM(NH), pereopods 1-7 with details of setation and detail of propodus of pereopod 2.

row of long simple setae, on carpus this row of setae is continued distolaterally by sensory spines, which distally have two lobes, divided by the sensory bristle. Distodorsal region of propodus similar to that of carpus, but with longer simple setae. Dactylus very small and slender, not longer than the distal setae of the propodus, with a very short apical claw and three short bristles.

Plp1 (Fig. 14) with long sympodite that bears two proximomedial setulated bristles. Endo- and exopodite with lots of long plumose setae and with some short simple bristles on their surface, endopodite smaller.

Sympodite of Plp2 (Fig. 14) as in Plp1, but with lots of small marginal bristles. Endopodite of Plp2 with long stiletto-like appendix masculina inserting proximolaterally and with fewer and slightly shorter marginal plumose setae. Exopodite more rounded than endopodite, with longer marginal setae.

Plp3 (Fig. 14) similar to Plp1, but sympodite covered with small marginal bristles, as in Plp2. Endopodite slightly smaller than exopodite.

Exopodite of Plp4 (Fig. 14) operculiform, strongly chitinized, medially with transversal fusion line, with a lateral row of short marginal plumose setae. Endopodite small without bristles or setae; sympodite very short.

Plp5 (Fig. 14), with short sympodite and an exopodite with 4 short distal plumose setae, endopodite smooth, shorter than exopodite.

Urp (Fig. 14), with elongate trapezoidal sympodite, bearing one short plumose seta. Exopodite much shorter than endopodite, both rami with distal and mediolateral marginal plumose setae, each inserting on a small notch.

Remarks:
The following new species must remain in the genus „Serolis„ for the present, as no clear apomorphies can yet be defined for species groups (potential new genera) without a revision of further species.

In its general morphology *Serolis aestimabilis* n.sp. is most similar to *Serolis septemcarinata* Miers, 1875 and *Serolis acuminata* Sheppard, 1957. The two round elevations situated between the eyes are covered with lots of small tubercles in *Serolis acuminata* (see dorsal view in Fig. 37 in the redescription), while being smooth and divided by a transverse groove in *Serolis aestimabilis*. Lateral margins of the coxal plates of *Serolis acuminata* characterized by small cuticular hairs, which are lacking in *Serolis aestimabilis*. Coxal plates of *Serolis aestimabilis* marked off by dorsal sutures from the second to the fifth pereonite, *Serolis acuminata* and *Serolis septemcarinata* on the contrary only bear sutures from the second to the fourth pereonite. The pleotelson of *Serolis aestimabilis* is characterized by a median keel, frontally broadest as in both other species and narrowing caudally. Frontal triangular apex of this keel with a small oval longitudinal hole in *Serolis acuminata* (see Fig. 37 in the redescription) which is lacking in *Serolis aestimabilis*. Tip of telson acuminate like in *Serolis acuminata*, but shorter and broader. The pleotelson of *Serolis septemcarinata* is not acuminate (see dorsal view of redescription in Fig. 36), its tip is characterized by two caudal invaginations, the dorsal ridge is broader than in *Serolis aestimabilis* and *Serolis acuminata*; on both sides of the median ridge two further pairs of keels are present in *Serolis septemcarinata*, which each end in a pointed caudal tip. In *Serolis aestimabilis* on the contrary, only one mediocaudally bent and caudally narrowing

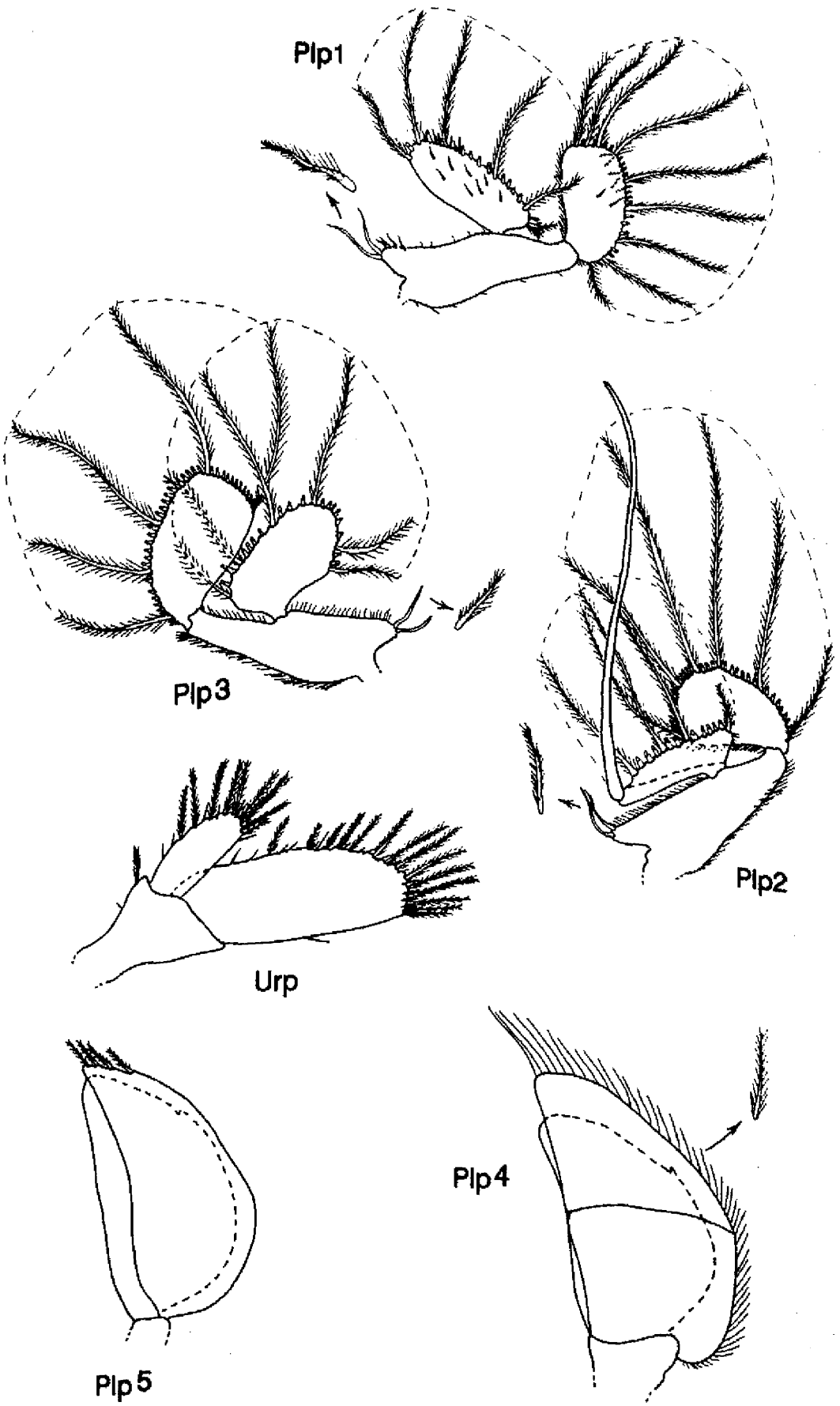


Figure 14: Holotype male of *Serolis aestimabilis* n.sp BM(NH), pleopods 1-5 and uropod (with details of setation).

elevation is present on each side. The exopod of the uropods is larger in *S. septemcarinata* than in *S. aestimabilis* and *S. acuminata*. *Serolis pagenstecheri* bears caudally-directed spines on all pereonites, which are lacking in *S. aestimabilis*.

5.2 *Serolis nobilis* n.sp. (Figs. 15-18)

Holotype: Ovigerous female, 15mm, sample A3/39, 72°30.35'S 17°29.88'W, 240-254m, agassiz trawl; BM(NH) 1988.181.1.

Distribution: Weddell Sea, only known from type locality.

Description of female holotype:
Anterolateral angles of head not as long as in foregoing species (Fig. 15). One broader transverse elevation frontomedially between the eyes, ending directly in front of the eyes. Two larger round elevations posteromedially of the eyes, between these a small triangular one, mediocaudally of head. Second to fourth pereonite with dorsal sutures on coxal plates. Posterolateral angles of second to sixth coxal plates all reaching successively further caudally than those of the preceding segments. Lateral margins not much longer than length of the corresponding pereonites. Seventh pereonite very small without coxal plates. All pereonites and the first two pleonites on caudal margin with a dorsomedial short but broad caudally directed spine. First pleonite free and longest, second pleonite also free, but shorter, epimera of both reaching more caudally than the posterolateral angles of the sixth coxal plate. Following pleonites fused with pleotelson. Pleotelson with one long median keel, broadening frontally and caudally slightly widening. At both sides of this keel two pairs of triangular spine-like elevations with a caudally directed tip, outermost elevation larger.

A1 (Fig. 16) with three peduncular and 22 flagellar articles. First peduncular article hardly shorter than second, second article slightly shorter than first with one mediolateral feather-like bristle. Third peduncular article longest, with some short lateral bristles and three distal simple setae. Of the 21 flagellar articles the first one is longest and broadest and bears three proximal feather like bristles. Second article about as long as first, but more slender. Flagellar articles 1-5 without aesthetascs, only short distal bristles occur. 16.-19. flagellar articles with one distolateral aesthetasc, three short bristles on the same side and another distal short bristle on opposite side. In the penultimate flagellar article only one single but very long aesthetasc. Last flagellar article smallest, but twice as long as forelast, with 4 simple setae.

A2 (Fig. 16) consisting of 5 peduncular and 14 flagellar articles. First peduncular article very short, (not shown in Fig. 16). Second peduncular article longer and broader than third, with one distolateral simple bristle. Fourth peduncular article slightly narrower than second and third with several longitudinal rows of groups of about 5 simple setae. Fifth peduncular article narrower than fourth, also with groups of simple setae. All flagellar articles with 1-2 distolateral simple setae; last flagellar article with 4 long simple setae.

Mandibles (Fig. 16) asymmetrical, with a three-jointed palp. Pars incisiva of rMd narrower than left with one broad toothless surface. Lacinia mobilis of rMd slightly smaller than pars incisiva, with 4 teeth. Of the spine row only one small

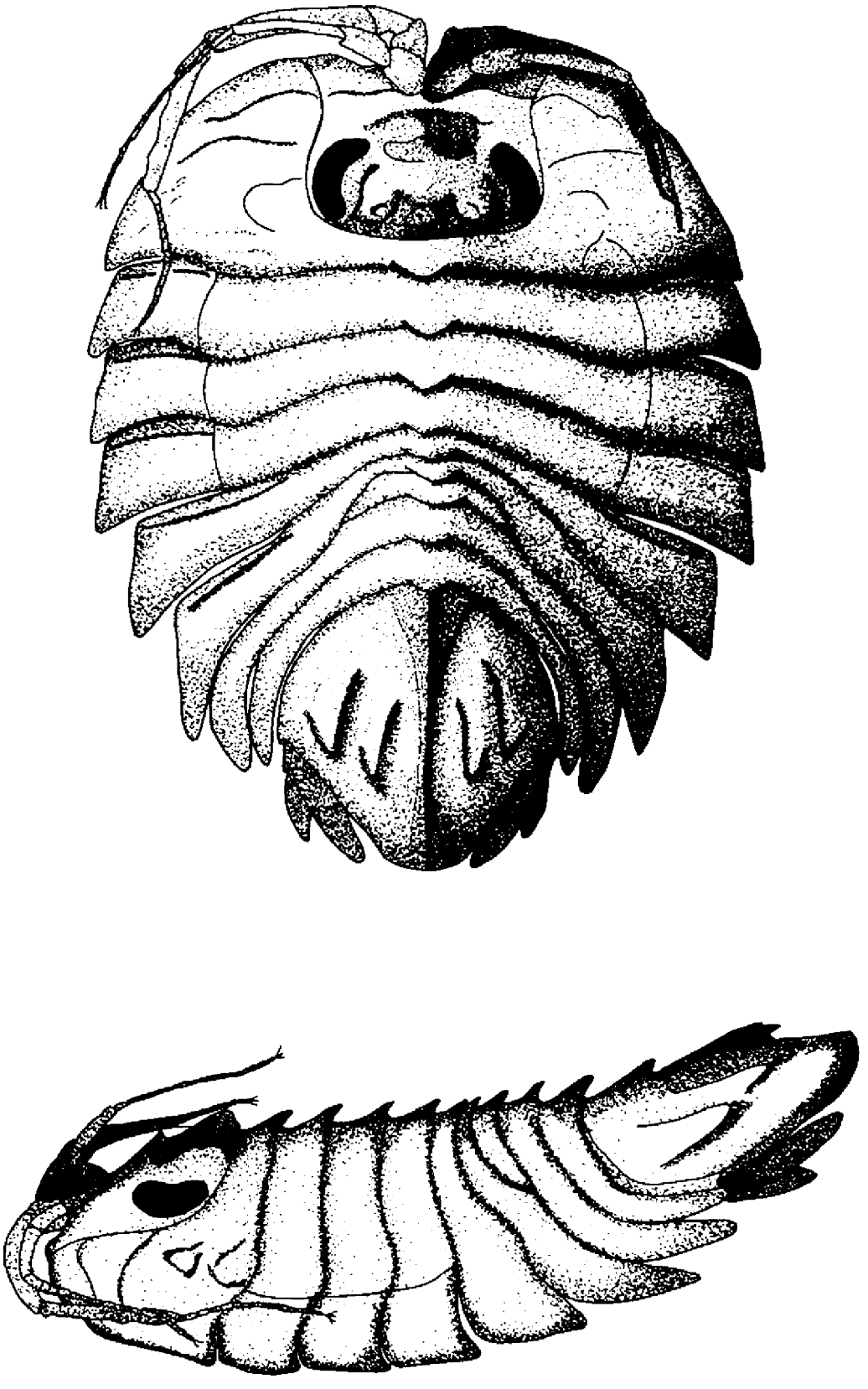


Figure 15: Holotype female of *Serolis nobilis* n.sp. BM(NH), in dorsal and lateral view.

rudiment is present, pars molaris lacking. First palpal article slightly shorter than second, without spines or setae; second article with a row of 20 distolateral spines, with a bulbous tip and with spinules on both sides, below the bulbous tip for about 2 thirds of the whole spine length. Last palpal article smallest and bent laterally, with a dorsal row of these serrated spines (see detail in Fig. 16). Pars incisiva of lMd slightly broader than that of the right one, with one broad cutting surface, lacinia mobilis with one broad tooth. Of the spine row only one spine is present, pars molaris absent. Palp constructed like in the rMd.

Lateral endite of Mx1 (Fig. 16) distally curved medially, apically with 11 strong cuticularized teeth. Median endite small rudiment with one small apical bristle.

Mx2 (Fig. 16) consisting of three endites. Inner endite with 12 slender setae, positioned in two rows, distally setulated in two rows, median endite with four long setae setulated in the upper two thirds, outer endite with two long setae, all setae with two setulated rows (see detail in Fig. 16).

Mxp (Fig. 16) with large quadrangular epipodite, strong endite, longer than epipodite, palp three-jointed. Endite slightly bent over the epipodite in the distal half, with two strong spinulated apical spines (see detail in Fig. 16); no coupling hooks present, but mediolateral surface of endite covered with lots of simple bristles and some longer setae. Second palpal article longest and broadest, with lots of long setae most mediolaterally and in the distal part. First article smallest, oval, last article longer but narrower than first, of bean-like outline, with lots of long simple setae, most on palpal tip.

P1 (Fig. 17) stronger than all following pereopods, with long basis, short merus and carpus, propodus broad, subchelate. Basis and ischium without any spines or setae, merus with two small bristles, carpus with two mediodistal sensory spines (see detail in Fig. 17), spinulated in the upper two thirds and 3 simple short bristles. Mediolateral surface of propodus with one long row of sensory spines, whose sensory hair divides the spine distally. Alternating to these sensory spines there are shorter and broader ones, which are densely covered with small setules and which also bear a sensory bristle. Basally to the broad spines a short simple bristle. Distomedially of propodus a single but longer sensory spine, similar to that one on carpus. Distolaterally of propodus a single short bristle. Dactylus long and slender, almost as long as propodus, without claw.

P2-7 (Fig. 17) similar, P7 shortest. Long basis with many feather-like bristles. Ischium slightly shorter than basis with a proximodorsal small sensory spine, distodorsal side sometimes with a single simple seta. Ventrally several simple setae present on ischium, merus, carpus and propodus, most dense on carpus and propodus. Distodorsally on carpus and propodus a row of long setae, which bear tooth-like structures in two rows. Dactylus very short and slender in P2-7, only little longer than the distal setae of the propodus, with a very short apical claw and three apical short bristles. Propodus of P4-7 with 1-2 distal feather-like bristles.

Sympodite of Plp1 (Fig. 17) of almost triangular shape and nearly as long as exopodite, with three proximomedial setulated bristles. Endo- and exopodite with long marginal plumose setae. Endopodite smaller than exopodite.

Plp2 (Fig. 18) constructed like Plp1, but sympodite only with two proximolateral setulated bristles (Plp3 not shown in Fig. 18, but also constructed like Plp1).

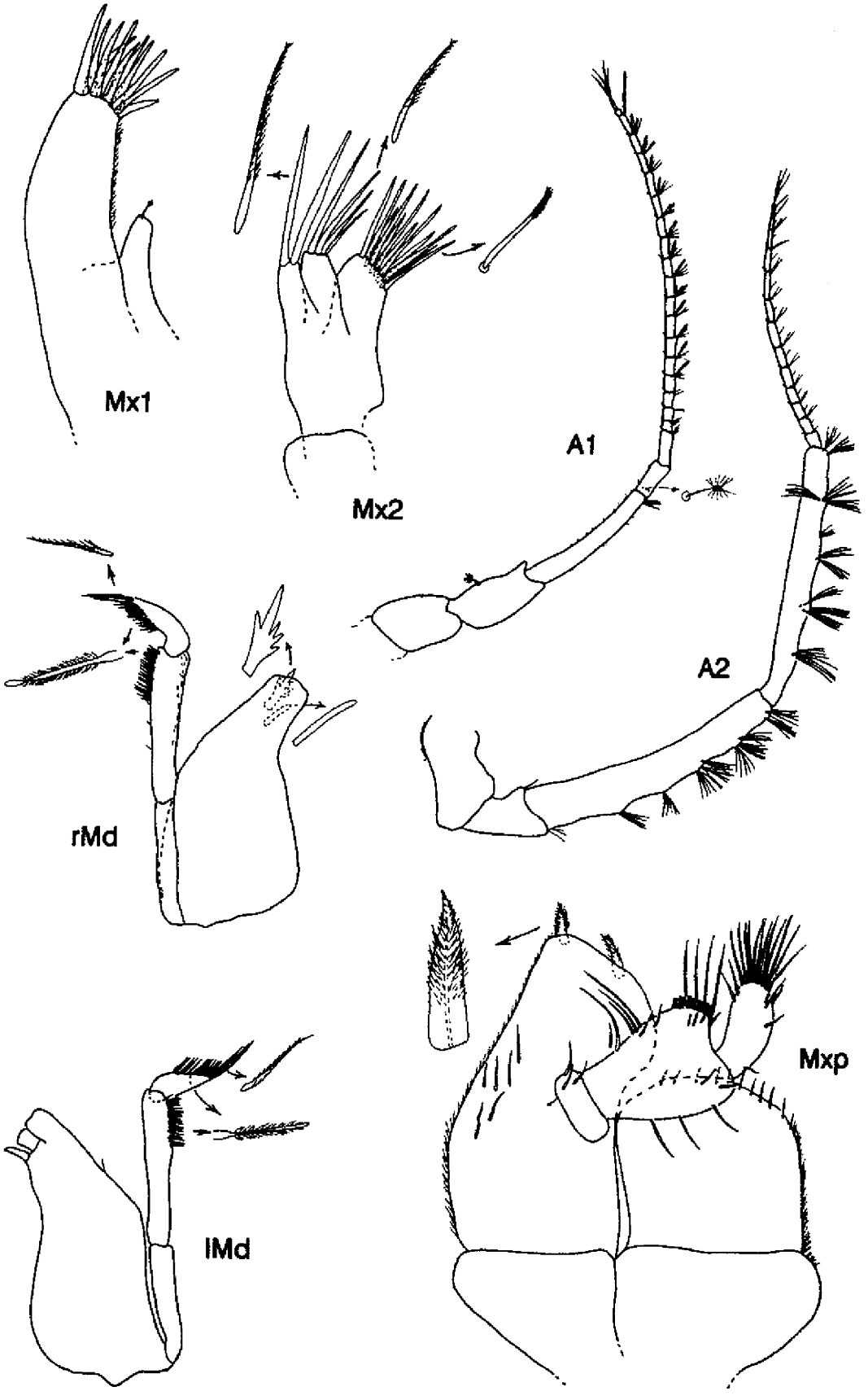


Figure 16: Holotype female of *Serolis nobilis* n.sp. BM(NH), antennula, antenna, mandibles, maxillula, maxilla and maxilliped (with details of setation).

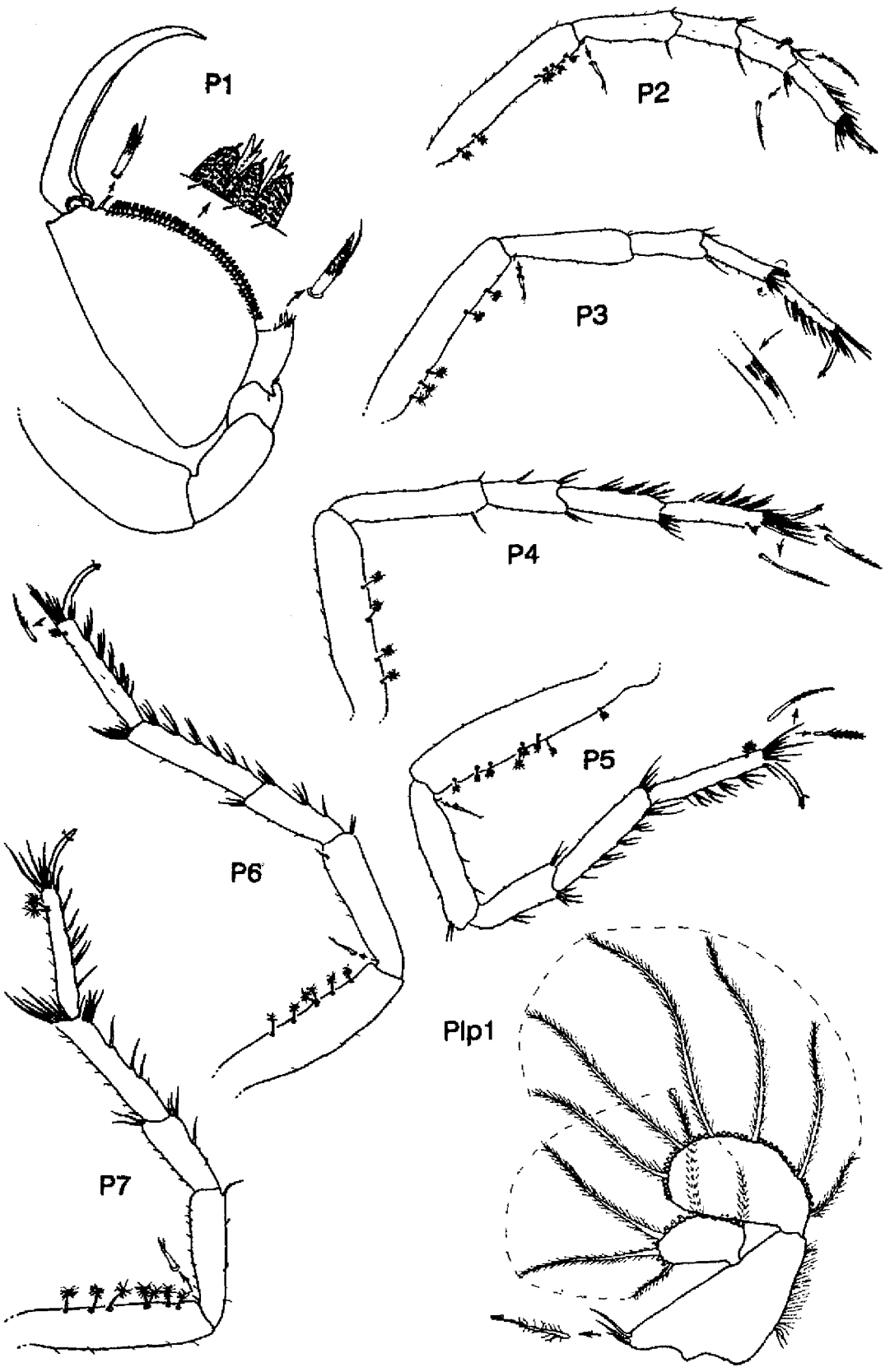


Figure 17: Holotype female of *Serolis nobilis* n.sp. BM(NH), pereopods 1-7 and pleopod 1 (with details of setation).

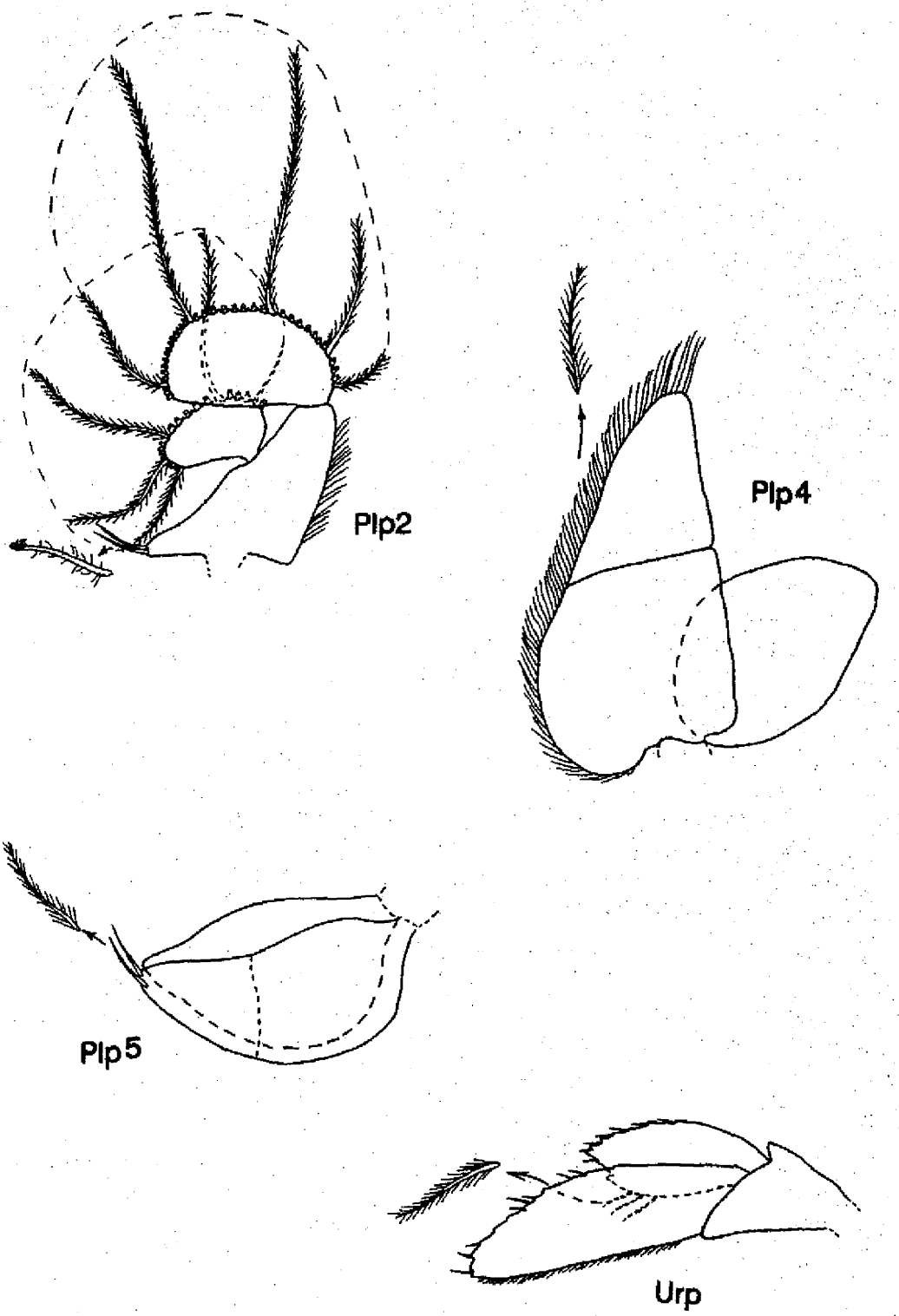


Figure 18: Holotype female of *Serolis nobilis* n.sp BM(NH), pleopods 2, 4 and 5 and uropod, (with details of setation).

Exopodite of Plp4 (Fig. 18) operculiform, strongly chitinized, medially with transversal fusion line, with a lateral row of shorter marginal plumose setae. Endopodite smaller and rounder, without bristles. (Sympodite not shown in Fig. 18).

Plp5 (Fig. 18) with short sympodite (not shown in Fig. 18), exopodite with 2 distal plumose setae, endopodite smaller, without setae.

Trapezoidal sympodite of Urp (Fig. 18) without setae or spines, but a small lateral notch where the exopodite inserts. Exopodite shorter than endopodite, with few mediolateral setulated setae.

Remarks:
Serolis nobilis n. sp. is most similar to *Serolis waegelei* n. sp.. Mediocaudal elevations of head of *Serolis nobilis* are round, whereas they are somewhat semicircular in *Serolis waegelei*. Both species bear strong dorsomedial spines on all pereonites and the first and second abdominal segments. The coxal plates of *Serolis waegelei* are laterally rounder with lateral margins surrounded by small hairs, which are absent in *Serolis nobilis*. Instead of this the coxal plates of *Serolis nobilis* are characterized by shallow frontolateral transverse ridges. First abdominal segment of *Serolis nobilis* longer than second, extending more caudally than posterolateral angles of sixth pereonite. In *Serolis waegelei* both free abdominal segments are much shorter than sixth pereonite and about subequal in length. Pleotelson of both species with a long median ridge, in *Serolis nobilis* frontally and caudally triangular, in *Serolis waegelei* only frontally triangular.

Dorsally on pleotelson both species bear two pairs of elevations, outermost elevation being larger, but in *Serolis nobilis* a little more pointed. Tip of telson longer and more acuminate in *Serolis waegelei* than in *Serolis nobilis*, which has a round caudal pleotelsonic margin. Uropods of *Serolis nobilis* slightly longer and more slender than in *Serolis waegelei*. Compared with *Serolis septemcarinata* Miers, 1875, *Serolis polita* Pfeffer, 1887 and *Serolis ovata* Sheppard, 1957, *Serolis nobilis* can easily be identified by the mediocaudal spines on all pereonites and the first and second pleonites, which are lacking in the other species. *Serolis glacialis* Tattersall, 1921 is also similar to *S. nobilis*, but characterized by big, round elevations mediolaterally of the dorsal sutures on coxal plates 2-5 and on pereonite 1, which are absent in *S. nobilis*. Besides *S. glacialis* bears another frontomedial spine and mediolaterally a transverse keel on each side of the pleotelson, these are also lacking in *S. nobilis*.

Serolis kempi Sheppard, 1833 can be distinguished from *S. nobilis* by the fifth to the seventh pereonites, which are lacking the mediocaudal spine and by the pleotelson, which is characterized by three strong dorsomedial, caudally-directed spines, instead of a median keel as in *S. nobilis*.

5.3 *Serolis waegelei* n.sp. (Figs. 19-23)

Holotype: Female, 10mm, sample A31, 61°13.45'S 55°58.21'W, Antarctic Peninsula, 130m, agassiz trawl; BM(NH) 1988.182.1

Paratypes: Male, 9 mm, sample 68 WH/148, 61°14.50'S 55°51.20'W, 139 m depth, box corer; ovigerous female, 9 mm, sample A 31; one female of 7 mm length, sam-

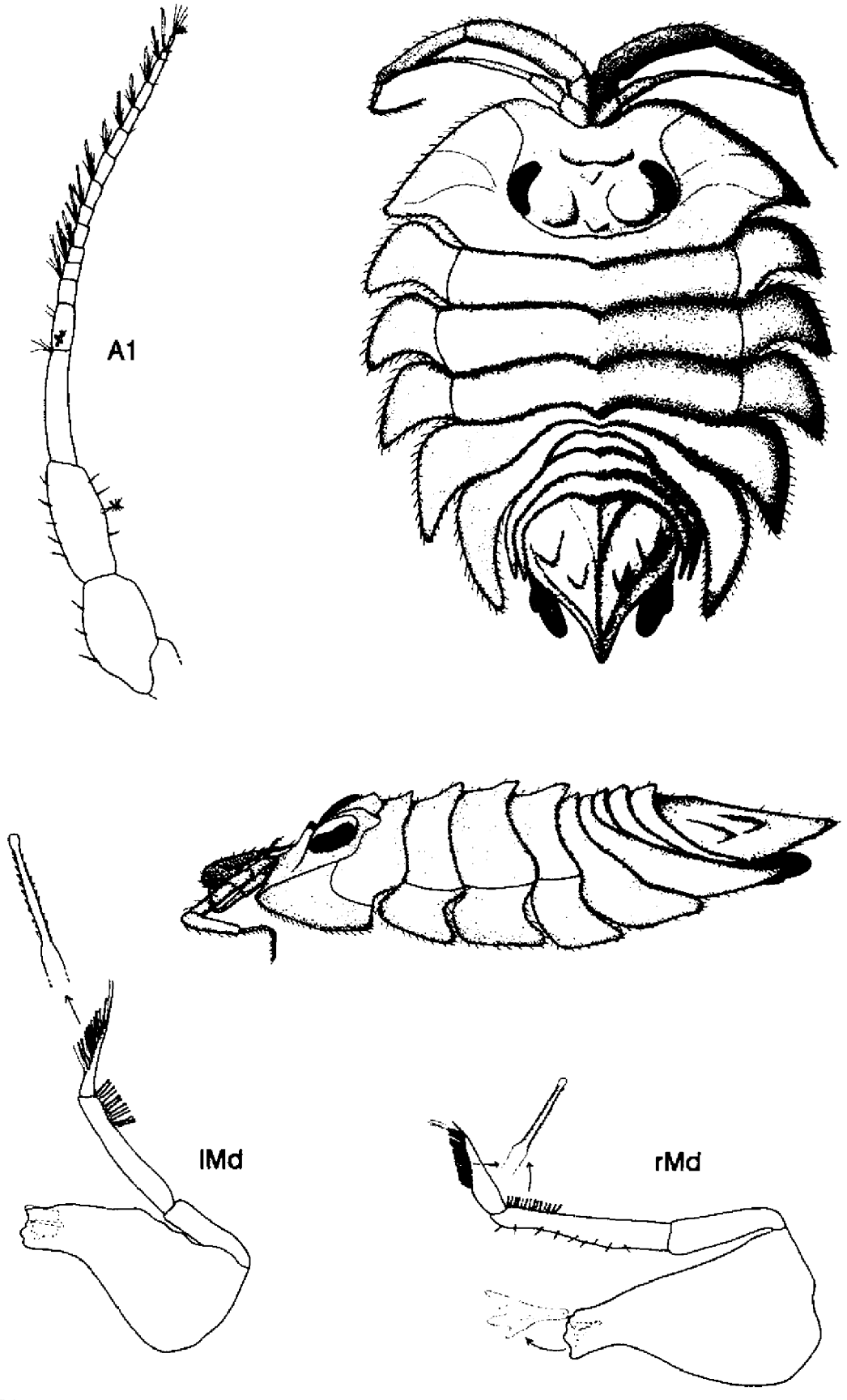


Figure 19: Holotype female of *Serolis waegelei* n.sp. BM(NH), in dorsal and lateral view, antennula and both mandibles (with details of setation).

ple 68WH/148; two immature specimens of 7 and 4 mm length, samples 68WH/155 and 68WH/166. All paratypes off Antarctic Peninsula (for exact data see station list); BM(NH) 1988.183-187.5

Distribution: Antarctic Peninsula, off South Shetland Islands, known only from type locality.

Description of female holotype:
Anterolateral angles of head markedly elongate frontolaterally (Fig. 19). A broader transverse elevation frontomedially between the eyes. Two almost round elevations posteromedially of the eyes. A smaller triangular elevation on mediocaudal margin of the head, behind the first elevation. Second to fourth pereonite with coxal plates indicated by dorsal grooves. Posterolateral angles of coxal plates of the fourth to the sixth pereonite all reaching successively further caudally than those of the preceding segments. Seventh pereonite without coxal plates. Sixth coxal plate surpassing caudally the tips of pleonites and insertion of the uropods. Caudal margin of the first four pereonites with strong median spines, caudally directed, the following pereonites and the pleonites 1 and 2 without or only with small protrusions. Lateral margins of all pereonites surrounded with hairs. Both free pleonites subequal in length, caudolateral tips reaching to sympodites of the uropods. Pleotelson with one long elevated median keel, frontal part triangular. Two pairs of triangular elevations laterally of this keel, with one tip directed to the caudal margin of pleotelson, the outer elevation being larger.

A1 (Fig. 19) with three peduncular and 14 flagellar articles. First peduncular article slightly broader and longer than second, with three small simple bristles. Second article with one lateral feather-like bristle and 8 simple setae. Third peduncular article narrower than second, about as long as first, with three distolateral setae. First flagellar article longest, with three proximal feather-like bristles. All following flagellar articles with three distolateral simple setae and one aesthetasc, except the last but one and the last flagellar articles. Penultimate article only with one single aesthetasc, last article with 4 simple setae and one feather-like bristle.

A2 (Fig. 20) consisting of 5 peduncular and 12 flagellar articles. First peduncular article very short. Second one longer than third, with some short mediolateral bristles. Third peduncular article with a longitudinal row of long setae in groups of 5 to 6, third and fourth article broadest, fifth article longest. Fourth and fifth article with several longitudinal rows of groups of 5 to 6 simple setae (see detail in Fig. 20), fifth article with two lateral feather-like bristles. All flagellar articles with distolateral setae, flagellar articles 1-9 with a lateral row of small strong cuticularized teeth, last article shortest and smallest, with 6 distal setae.

Mandibles (Fig. 19) asymmetrical, with a three-jointed palp. Pars incisiva of rMd narrower than left, with 4 shallow blunt teeth. Lacinia mobilis of rMd with 4 teeth, nearby a small spine-like structure (rudiment of the spine row); pars molaris lacking. First palpal article shorter than second, second with a row of 14 distolateral spines, with a bulbous tip and spinules on both sides, except the proximal broader part and the bulbous tip. On the other side of the palpal article 9 short bristles. Last palpal article smallest and bent laterally, also with a row of serrated spines (see detail in Fig. 19). Pars incisiva of lMd broader than of right, broad cutting surface with 4 blunt small teeth, lacinia mobilis broad, with 4 small blunt teeth and a spine-like structure nearby. Palp as in rMd.

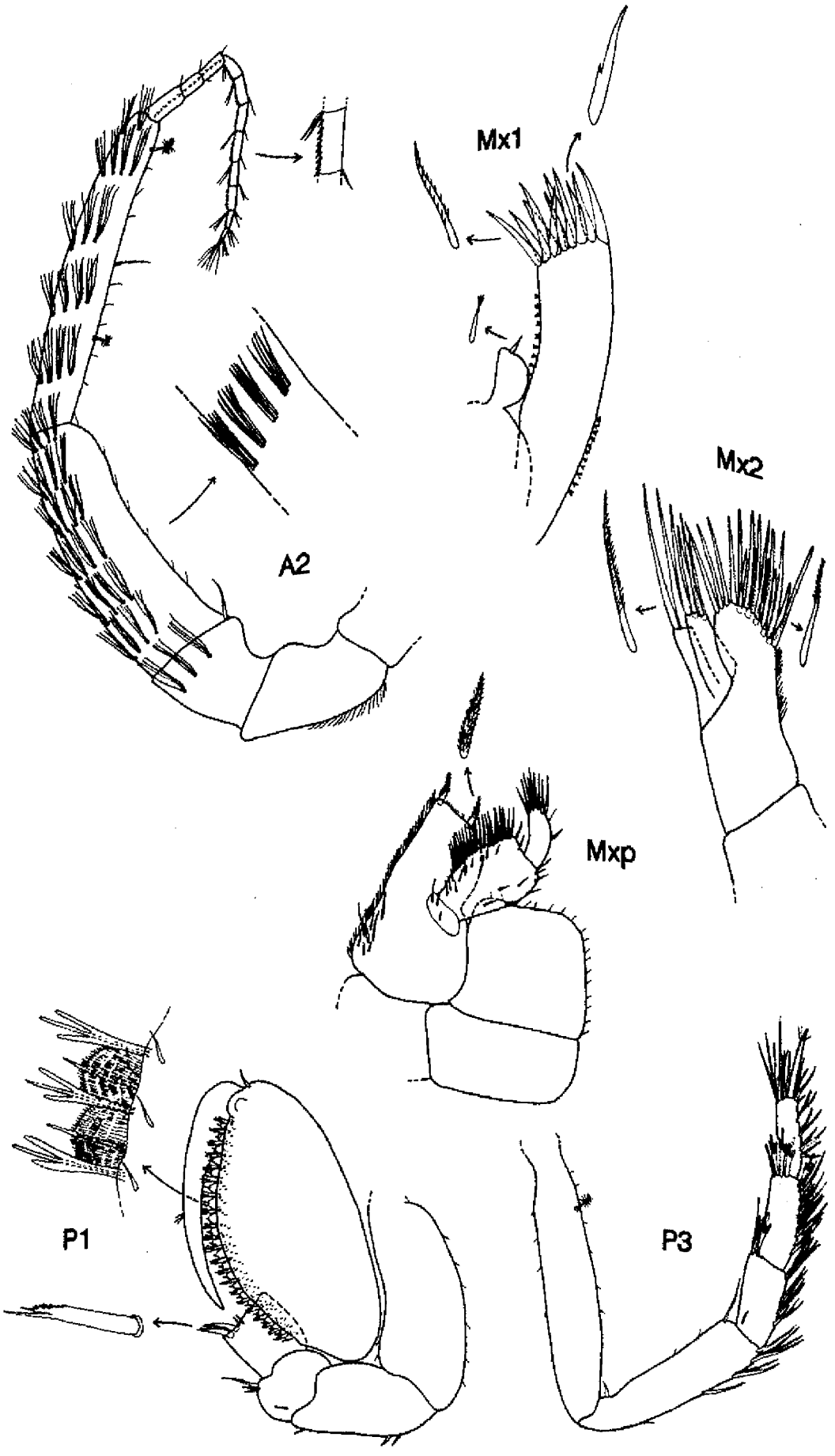


Figure 20: Holotype female of *Serolis waegelei* n.sp. BM(NH), antenna, maxillula, maxilla, maxilliped and pereopods 1 and 3 (with details of setation).

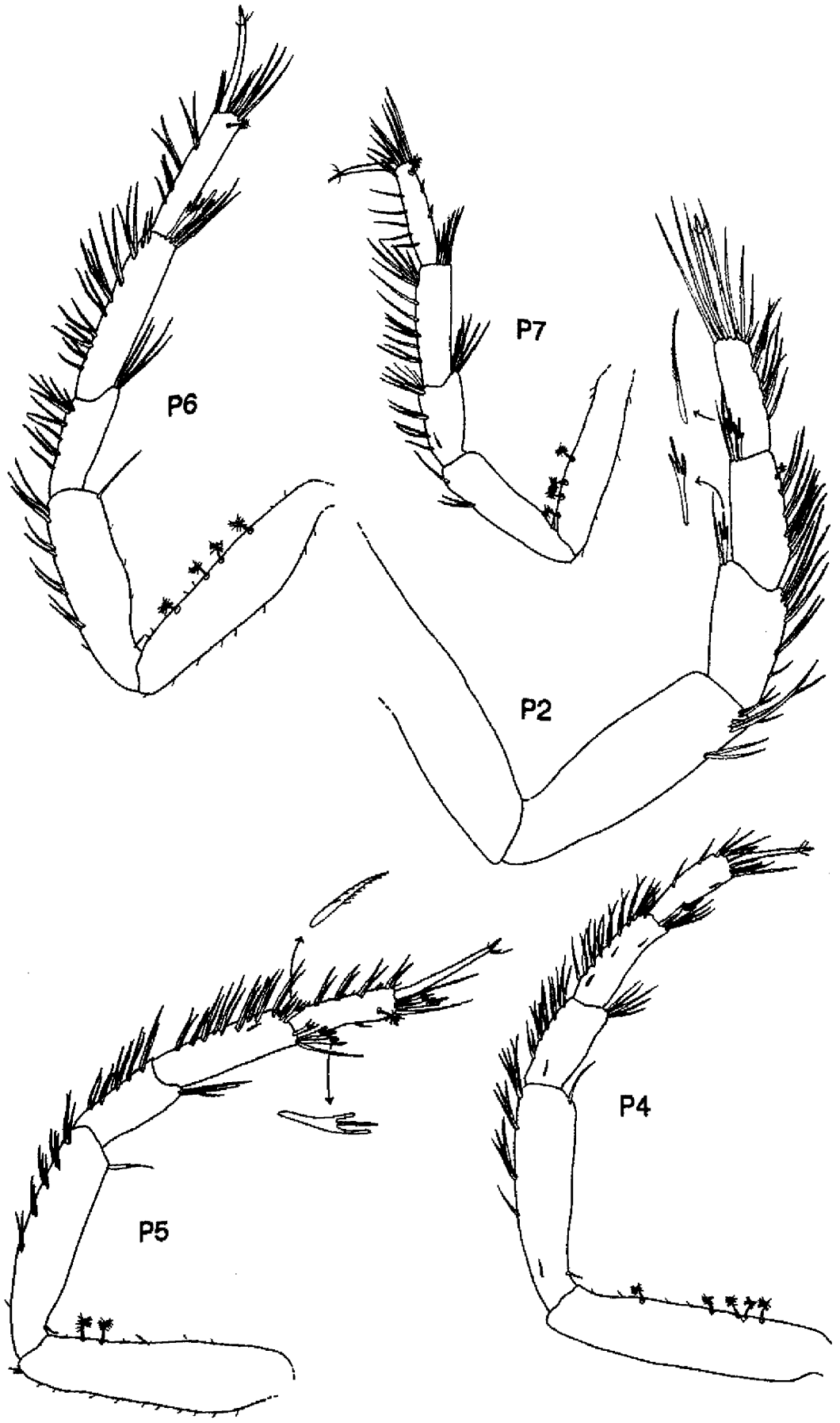


Figure 21: Holotype female of *Serolis waegelei* n.sp. BM(NH), pereopods 2, 4, 5, 6 and 7 (with details of setation).

Lateral endite of Mx1 (Fig. 20) distally curved medially, apically with 11 strong cuticularized teeth, some of them with one tooth-like structure and a row of short setules on both sides. Median endite small rudiment, with one short apical bristle.

Mx2 (Fig. 20) of three endites. Inner endite with 16 slender setae, positioned in two rows and setulated in the upper part; median endite with four long setae, outer endite with two long setae; all setae distally setulated for two thirds of length (see detail in Fig. 20).

Mxp (Fig. 20) with large quadrangular epipodite, strong endite, which is almost twice as long as epipodite, palp three-jointed. Endite slightly bent over the epipodite in the distal half, with some proximomedial simple setae and two strong apical setulated spines (see detail in Fig. 20), no coupling hooks present. Second palpal article longest and broadest, with long median setae and some shorter ones irregularly dispersed all over the surface. First article small, oval, with 3 short bristles, last article narrowest, but longer than first and of bean-like outline, with lots of simple setae, most on tip of the palp.

P1 (Fig. 20) stronger than all following pereopods, with long basis, short merus and carpus, propodus broad oval, subchelate, dactylus almost as long as propodus, without claw. Ischium with 3 simple bristles, merus with 3 short bristles and one long distomedial one. Carpus with two distomedial sensory spines (see detail in Fig. 20) and two short bristles. Mediolateral surface of propodus with one long row of sensory spines, its sensory bristle divides the spine mediodistally. Alternating to these sensory spines, shorter and broader sensory spines occur, densely covered with small spinules. Basally to the broader sensory spines single small bristles.

P2-7 (Figs. 20 and 21) similar, P7 shortest. Long basis with up to 4 dorsal feather-like bristles; ischium slightly shorter, with a proximodorsal small spine and one distodorsal long seta. Ventrally of ischium, merus, carpus and propodus several transverse groups of long simple setae. Distodorsally of merus, carpus and propodus a row of long simple setae, covered with setules, forked spines with three distal prongs. Dactylus very short and slender, as long as or slightly longer than distodorsal setae of propodus, with a short claw and three apical short bristles. Propodus of P5-7 with 1 distolateral feather-like bristle.

P2 of male (Fig. 23) with strong subchelate propodus, proximally twice as broad as distally, with 11 strong sensory spines. Propodus gradually decreasing in breath. Dactylus as long as propodus, with short distal claw and few simple short setae.

P4 of male (Fig. 23) similar to P4 of female, only with some more simple setae.

Sympodite of Plp1 (Fig. 22) almost triangular in shape and nearly as long as exopodite, bearing 2 proximal plumose setae. Endopodite smaller than exopodite, both with long marginal plumose setae.

Plp2 (Fig. 22) and Plp3 constructed like Plp1.

Plp2 of male (Fig. 23) with long stiletto-like appendix masculina, almost twice as long as endopodite (with setae).

Exopodite of Plp4 (Fig. 22) operculiform, strongly chitinized, medially with transversal fusion line, laterally covered with a row of very short marginal plumose setae. Endopodite smaller, without setae and with one mediolateral small protrusion.

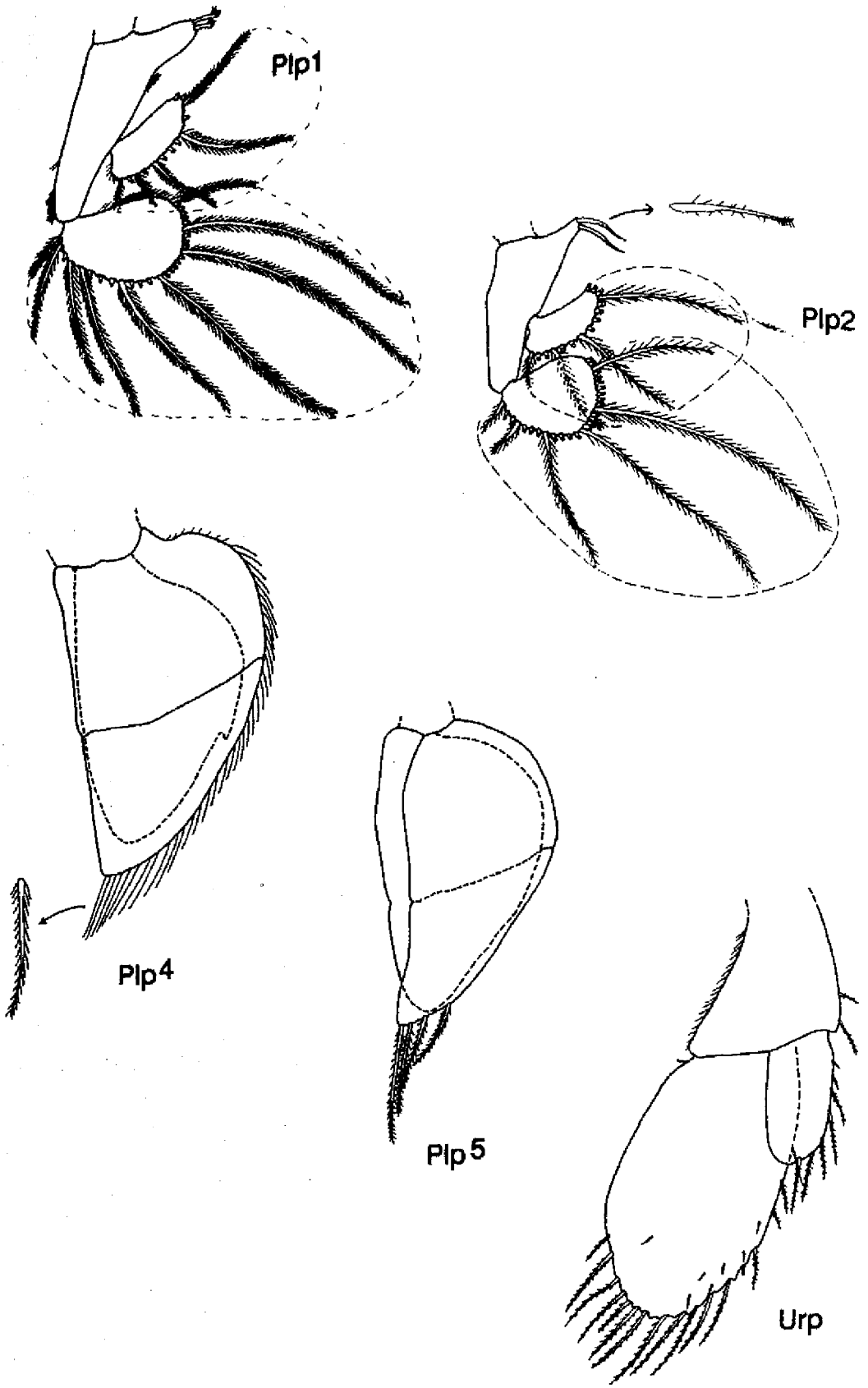


Figure 22: Holotype female of *Serolis waegelei* n.sp. BM(NH), pleopods 1, 2, 4 and 5 and uropod (with details of setation).

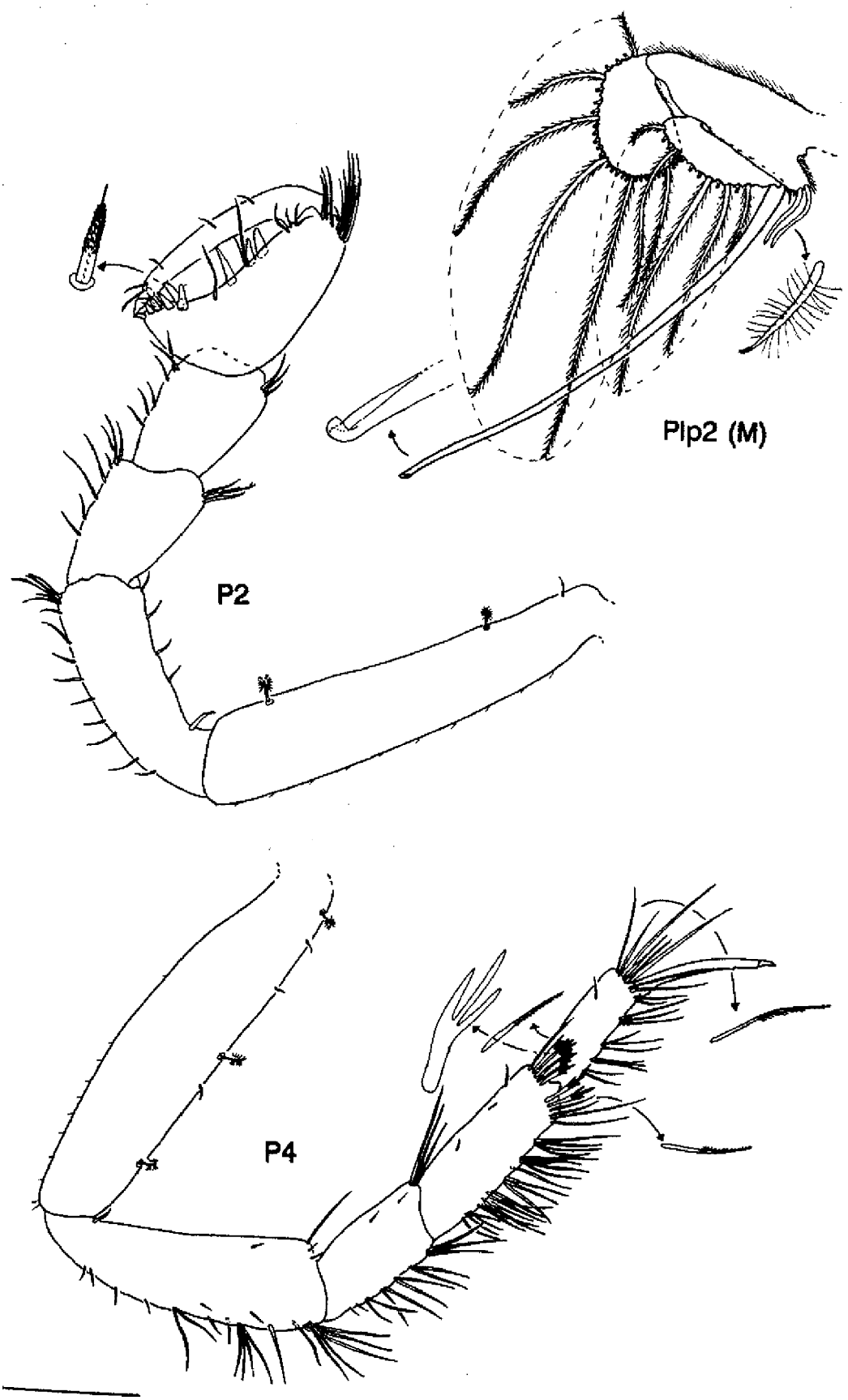


Figure 23: Paratype male of *Serolis waegelei* n.sp. BM(NH), pereopods 2 and 4 and pleopod 2 (with details of setation).

Plp5 (Fig. 22) smallest, exopodite with 4 long distal plumose setae, endopodite smaller, without setae.

Urp (Fig. 22) with trapezoidal sympodite, longer than the exopodite and bearing two lateral short plumose setae; exopodite much shorter than endopodite, with few mediolateral plumose setae. Endopodite larger, with 17 marginal setae and some short bristles.

Remarks:
Serolis waegelei n.sp. is most similar to *Serolis nobilis* n.sp. and *Serolis septemcarinata* Miers, 1875. As the differences between *S. waegelei* and *S. nobilis* have already been discussed in the foregoing remarks, this discussion can be omitted here. The differences between *S. septemcarinata* (see Fig. 36 in the redescription) and *S. waegelei* concern the elevations of the head, the form of the coxal plates, the epimera of the pleonites and the pleotelson. The head of *S. waegelei* bears two round elevations between the eyes and a small triangular one on caudal margin of head. *S. septemcarinata* instead has one broad transverse elevation, narrowest medially and broadening laterocaudally. Mediocaudally in the concave invagination there is a small oval elevation. The coxal plates of *S. waegelei* are more prominent than in *S. septemcarinata* and bear cuticular hairs on the lateral margins and dorsally.

The epimera of the pleonites of *S. waegelei* are much shorter compared with those of *S. septemcarinata*, they do not surpass the caudolateral margins of the sixth coxal plate. The pleotelson of *S. waegelei* has a more acute apex and bears no mediolateral invaginations like the pleotelson of *S. septemcarinata*. Besides the median keel of *S. waegelei* is more slender and the triangular elevations are broader, whereas in *S. septemcarinata* these elevations have a longitudinally elongate shape with a more acute caudal tip. Compared with *Serolis acuminata* Sheppard, 1957, *S. waegelei* can be distinguished by a broader and shorter pleotelson that is characterized by two caudally-directed spines on both sides of the median keel. Instead of these there is one laterally bent keel in *S. acuminata*, frontolaterally on both sides of the median keel.

5.4 *Serolis serratus* n.sp. (Figs. 24-27)

Holotype: Female, 11mm, sample A3/18, 60°43.12'S45°30.86'W, Antarctic Peninsula, 141-190 m, agassiz trawl; BM(NH) 1988.188.1.

Distribution: Antarctic Peninsula, off South Orkney Islands, known only from type locality.

Description of male holotype:
Anterolateral angles of head markedly elongate in a lateral direction (Fig. 24); head frontally widest. An elevation frontomedially between the eyes, narrowing medially. Two larger round elevations similar in shape to the frontomedial ones posteromedially of the eyes. A small round elevation medially on caudal margin of head. Coxal plates marked off by dorsal sutures from the second to the fourth pereonite. Second to sixth pereonite with coxal plates. Posterolateral angles of these plates all reaching successively further caudally than those of the preceding segments. Seventh pereonite without coxal plate. Epimera of the first and second

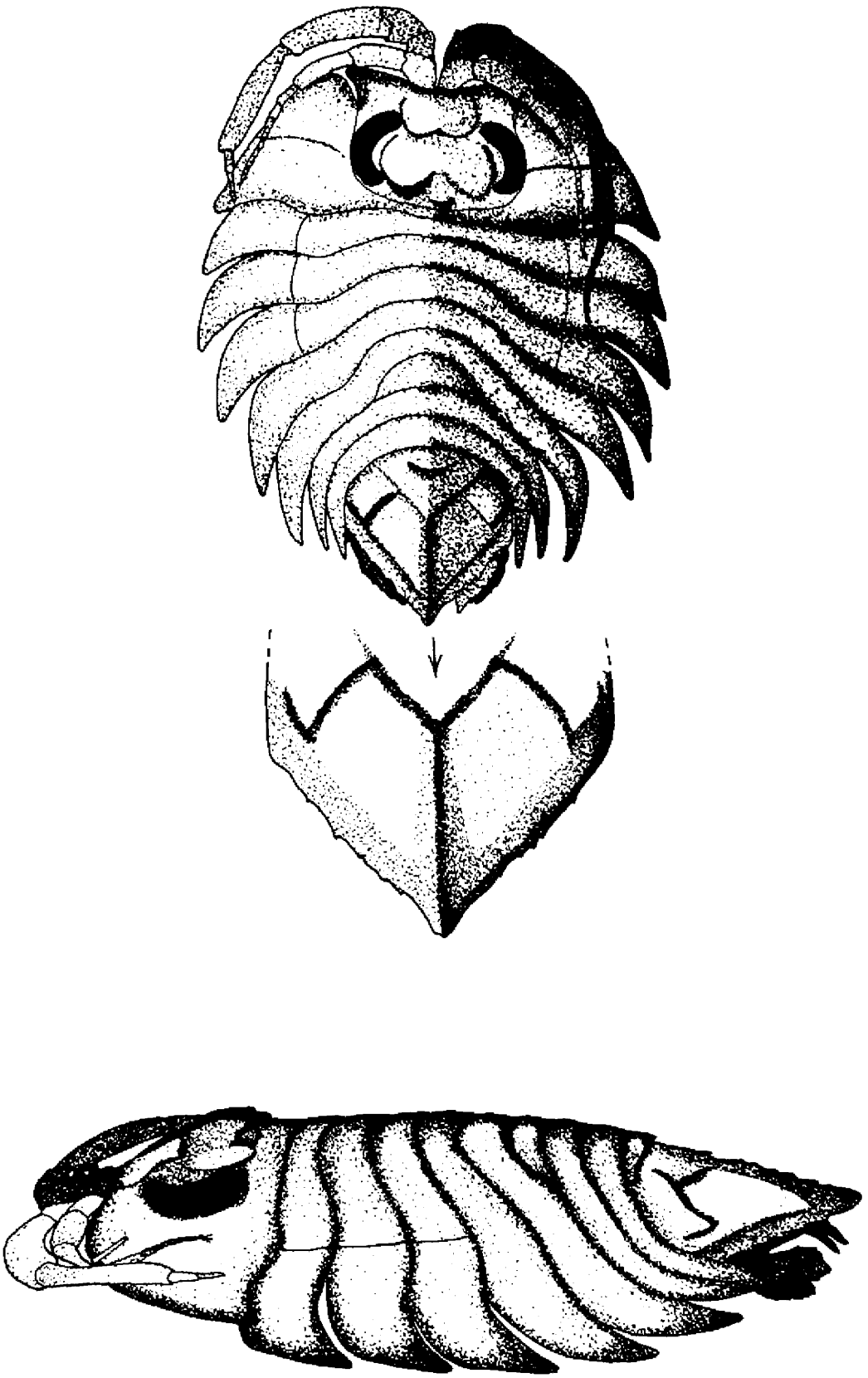


Figure 24: Holotype male of *Serolis serratus* n.sp. BM(NH), in dorsal and lateral view, with detail of caudal apex of pleotelson.

free pleonite longer than apex of sixth pereonite. Pleotelson with one long median keel, frontally triangular. Medially on the triangle another small elevation. Two acute, caudally directed elevations laterally of this triangle, beginning in curving ridges from the triangular elevation. They are not longer than the frontal part of the median keel. Tip of pleotelson acuminate, caudolateral margins of pleotelson serrated (see detail in Fig. 24).

A1 (Fig. 25) with three peduncular segments, first one not much broader than the following one, second article one and a half times longer than first one, with one lateral feather-like bristle; third one longest with some short lateral bristles. Of the 12 flagellar articles, the first and second one being slightly longer than the following, without aesthetascs. First article with three proximal feather-like bristles. Aesthetascs on all flagellar articles of holotype broken off, only small distolateral setae still present. Tip of the antennula with 4 simple setae and one small feather-like bristle.

A2 (Fig. 25) consisting of 5 peduncular and at least 9 flagellar articles. First peduncular article very short, second peduncular article longer than third, with three short distolateral simple bristles, fourth peduncular article broadest and a little shorter than the fifth, with several longitudinal rows of groups of 3-6 simple setae, fifth peduncular article with most groups of setae. All flagellar articles with groups of 3 distolateral simple setae and a single one on opposite side. Tip of the flagellum broken (therefore the total number of flagellar articles is not known). Except the first flagellar article all present ones with a longitudinal row of small teeth-like structures.

Mandibles (Fig. 25) asymmetrical, with a three-jointed palp. Pars incisiva of rMd narrower than left. Lacinia mobilis of rMd with 5 teeth, accompanied by a spine, distally forked; pars molaris absent. First palpal article smaller than second, with two simple setae. Second one about one and a half times longer than first one, with a distolateral row of 7 serrated spines, with a bulbous tip and two simple setae. Last article smallest and laterally bent, with a dorsal row of these serrated spines (see detail in Fig. 25). Pars incisiva of lMd slightly broader than of the right one, with one broad cutting surface, lacinia mobilis broad, basally a spine-like structure.

Lateral endite of Mx1 distally curved medially (Fig. 25), apically with 10 strong cuticularized teeth, some of them covered with small teeth. Median endite small, but lost during dissection.

Mx2 (Fig. 25) consisting of three endites, inner endite with 16 slender setae, positioned in two rows, median endite with two long setae, outer endite with one long seta, all setae with two rows of small setules (see detail in Fig. 25).

Mxp (Fig. 25) with large quadrangular epipodite, strong endite, which is longer than the epipodite, palp three-jointed. Endite dorsally narrower than proximally, apically with two strong setulated spines (see detail in Fig. 25), no coupling hooks present, mediolateral surface of endite covered with several simple bristles and setae. Second palpal article longest and broadest, with many long mediolateral setae and few short ones on opposite margin. First article smallest and oval, with some simple setae, last article longer than first, of bean-like outline with many simple setae, especially on the palpal tip.

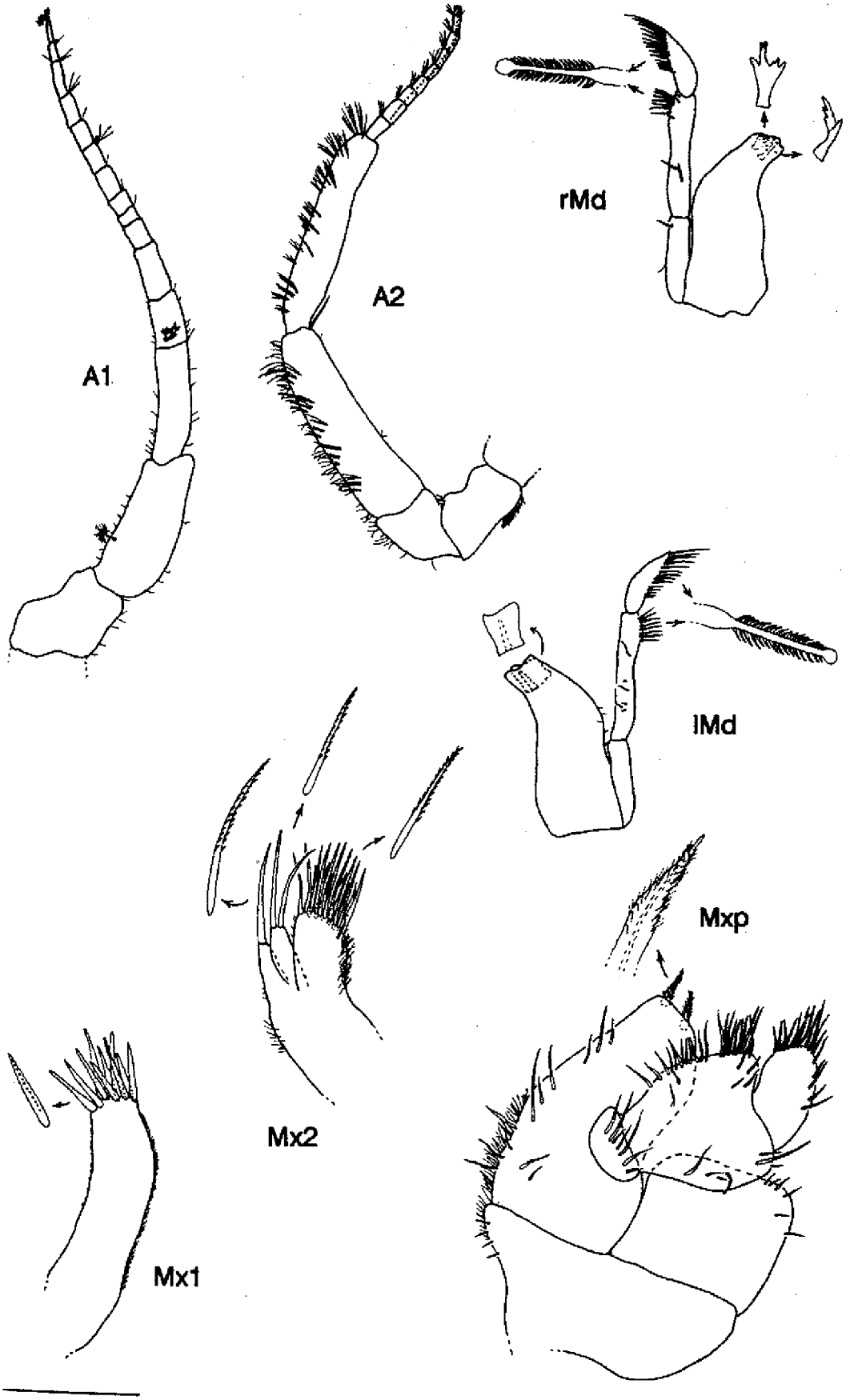


Figure 25: Holotype male of *Serolis serratus* n.sp. BM(NH), antennula, antenna, both mandibles, maxillula, maxilla and maxilliped (with details of setation).

P1 (Fig. 26) stronger than all following pereopods, with long basis, short merus and carpus, broad subchelate propodus and long and slender dactylus. Basis without any spines or setae, ischium with two distomedial short bristles, merus with four distomedial simple seta, carpus with several short bristles and three strong setulated sensory spines (see detail in Fig. 26). Palm of propodus with row of long slender sensory spines, their sensory hairs divide the spines distally. Alternating to these spines there are shorter and broader bifurcate ones, which are densely covered with small spinules and which also bear a sensory bristle. On the basis of every fourth of these sensory spines a short single bristle. Distodorsally of propodus a single short bristle. Dactylus long and slender with some short dorsal bristles.

P2-7 are similar (Fig. 26), P7 shortest (P5 and P7 damaged in holotype). Long basis with several feather-like bristles. Ischium slightly shorter than basis, with a proximodorsal short bristle, distodorsal side with 2-3 single simple setae. Ventrally several simple setae present on ischium, merus, carpus and propodus, most dense on carpus and propodus, fewer in number than in foregoing species. Distodorsally of merus, carpus and propodus a row of long simple setae. Distodorsal region of propodus similar to that of carpus, but with longer simple setae. Dactylus very small and slender, not much longer than the distal setae of the propodus, with a very short apical claw and two apical short bristles.

Plp1 (Fig. 26) with long sympodite of almost triangular shape, nearly as long as exopodite, bearing three proximomedial setulated bristles. Endo- and exopodite with many long marginal plumose setae, endopodite smaller.

Sympodite of Plp2 (Fig. 26) as in Plp1, but with two proximomedial setulated bristles and lots of small marginal bristles. Endopodite of Plp2 smaller, with fewer and slightly shorter marginal plumose setae. Exopodite more round than endopodite, with longer marginal setae.

Plp3 (not shown in Fig. 26) similar to Plp1.

Exopodite of Plp4 (Fig. 27) operculiform, strongly chitinized, medially with transversal fusion line and short marginal plumose setae. Endopodite small, without bristles or setae; sympodite very short.

Plp5 (Fig. 27) with short sympodite and an exopodite with 1 distal short plumose seta, endopodite smooth, smaller than exopodite.

Urp (Fig. 27) with broad trapezoidal sympodite, almost as long as exopodite and mediocaudally prolonged, bearing medially two short simple setae. Exopodite shorter than endopodite, with 9 distal and mediolateral marginal plumose setae, endopodite only with 6 distomedial marginal setae. Distal margin of endopodite and lateral margin of exopodite serrated.

Remarks:
Similar to *Serolis serratus* n.sp. are the species *Serolis kempi* Sheppard, 1933 and *Serolis pagenstecheri* Pfeffer, 1887. These species can be distinguished from *Serolis serratus* by the mediocaudal spines on the pereonites and pleonites and the pleotelsonic caudal margin, which is not as acute as in *Serolis serratus*. *Serolis serratus* n.sp. is also similar to *Serolis aestimabilis* n.sp. and *Serolis waegelei* n.sp., but nevertheless differs in many details. First the mediocaudal elevation between the eyes is not medially divided in *Serolis serratus*. In *Serolis aestimabilis* the

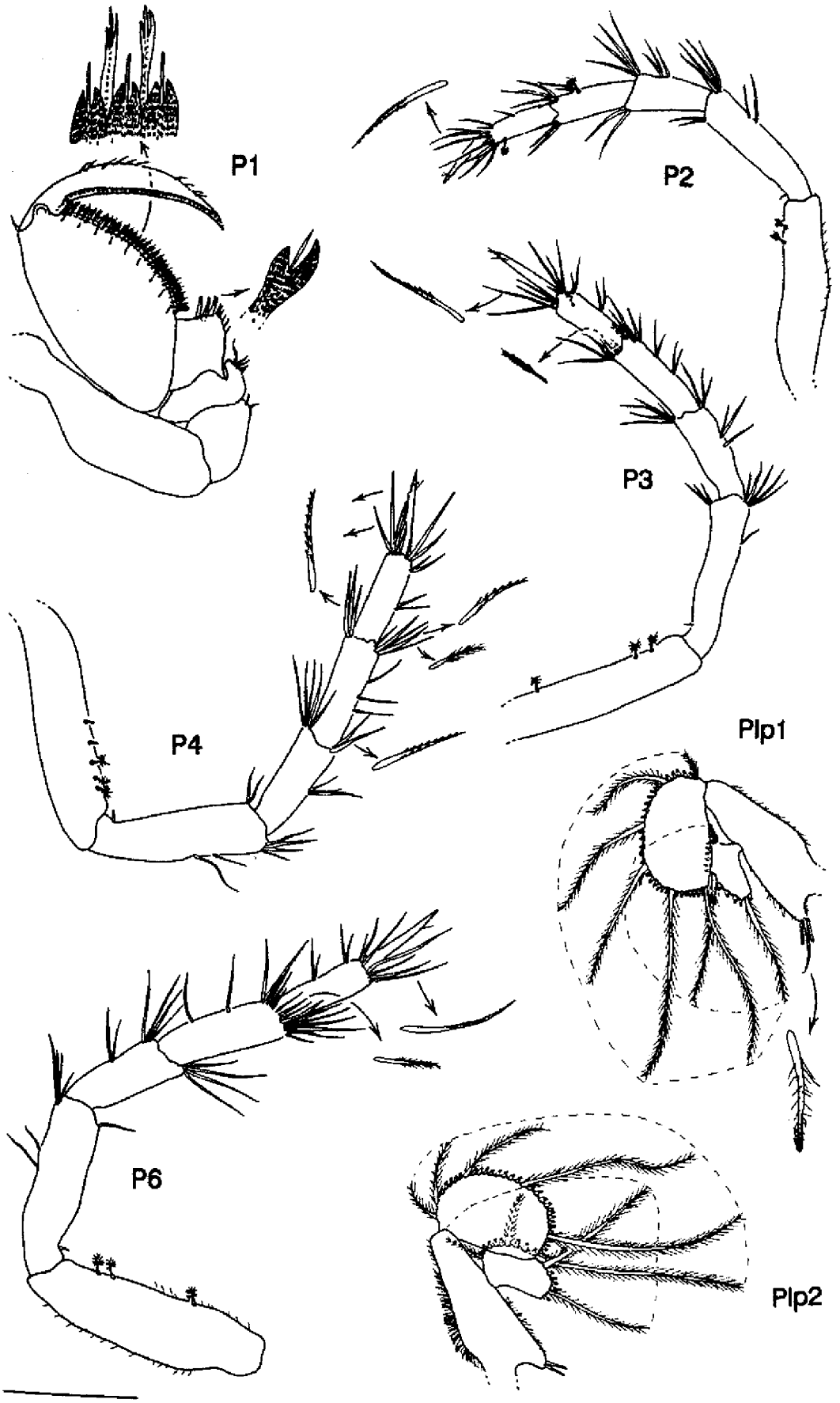


Figure 26: Holotype male of *Serolis serratus* n.sp. BM(NH), pereopods 1, 2, 3, 4 and 6 and pleopods 1 and 2 (with details of setation).

mediocaudal elevation between the eyes is medially divided by a transverse groove and not prolonged into the small elevation mediocaudally of the head. The lateral margins of the pereonites are surrounded by very small bristles in *Serolis waegelei*. These are lacking in *Serolis serratus*. As far as the pleotelson is concerned, *Serolis serratus* can easily be distinguished from *Serolis aestimabilis* and *Serolis waegelei* by the different outline, the serrated lateral margins of the pleotelson and the serrated median ridge. *Serolis serratus* is characterized by a less acuminate pleotelson than both other species. The latter bears only one pair of dorsal triangular elevations, each with a very acute caudal tip, whereas *Serolis waegelei* is characterized by two pairs of lateral, less acute elevations, and *Serolis aestimabilis* possesses a mediocaudally bent and caudally narrowing larger elevation. Furthermore on the triangular apex of the median ridge of *Serolis serratus* another small semicircular elevation is present. In *Serolis serratus* the lateral margins of uropod exo- and endopodite are deeply serrated in contrast to the other species.

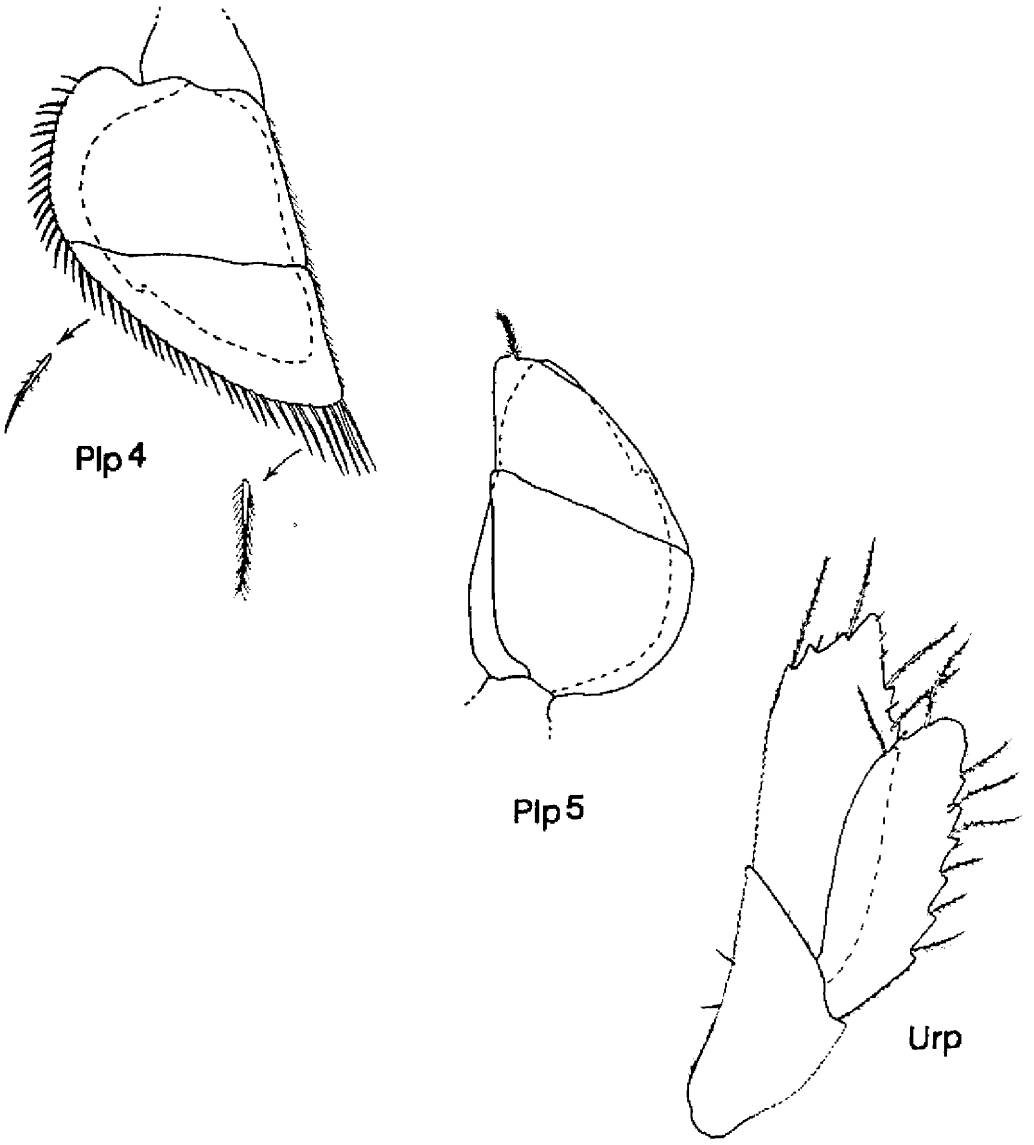


Figure 27: Holotype male of *Serolis serratus* n.sp. BM(NH), Pleopods 4 (with detail of plumose setae) and 5 and uropod.

5.5 *Serolis leachi* n.sp. (Figs. 28-30)

Holotype: Male, 10 mm, sample A19, 76°45.6'S 31°59.8'W, South Georgia, 257 m, agassiz trawl; BM(NH) 1988.189.1.

Paratypes: 1 immature, 6 mm, sample A 19, 76°45.6'S 31°59.8'W, South Georgia, 257 m, agassiz trawl. Male, 11 mm, sample PS06/158, southwest of Falkland Islands (for data see station list); BM(NH):1988:190-191.

Description of male holotype:
Anterolateral angles of head slightly elongate laterally (Fig. 28). A shallow oval elevation frontomedially between the eyes. Two larger round elevations covered with small tubercles posteromedially of the eyes. A small round elevation, situated mediocaudally between the larger elevations, medially on caudal margin of the head. Second to fourth coxal plates marked off by dorsal sutures. Posterolateral angles of the coxal plates of the second to the sixth pereonite quite small, reaching successively further caudally than those of the preceding segments. Seventh pereonite very small, without coxal plates. Epimera of first and second free pleonites not surpassed caudally by coxal plate of the sixth pereonite. Epimera of second pleonite longer than of first. Following pleonites fused with pleotelson. Pleotelson with one long median keel, its frontal root triangular. Laterally on dorsal surface two longitudinal ridges, forming a caudally directed point on each side of the median keel; median ridge longer than lateral. Tip of the telson acuminate.

A1 (Fig. 28) with three peduncular segments, first one not much broader than the following ones, second one longer than first, with a strong lateral protrusion, third one longest, without setation. First flagellar article slightly shorter than second, with three bristles and a small feather-like bristle. Of the 15 flagellar articles the second is longest. All flagellar articles except the first bear a lateral aesthetasc which stands in a group of three simple setae; flagellar articles 3, 6, 8 and 10 with an additional small bristle. Tip of flagellum with 5 long simple setae.

A2 (Fig. 28) consisting of 5 peduncular and 8 flagellar articles. First peduncular article very short. Second peduncular article longer than third, all without any setation. Fourth peduncular article broadest and about as long as the fifth. Fourth and fifth peduncular article laterally with some protrusions on these groups of simple setae. All flagellar articles about the same size, flagellar articles 4-8 with 2-3 distal bristles, tip of flagellum with 5 long simple setae and a short bristle.

Mandibles asymmetrical, with a three-jointed palp (Fig. 28). Pars incisiva of rMd narrower than left. Lacinia mobilis of rMd, with 4 distal blunt teeth, nearby one small spine; pars molaris lacking. First palpal article broadest, second one longest with a distolateral row of 18 serrated spines, with a bulbous tip. Last article smallest and laterally bent, with a dorsal row of these serrated spines (see detail in Fig. 28). Pars incisiva of lMd broader than in rMd, broad cutting surface, smooth lacinia mobilis with 3 teeth, proximally a spine.

Lateral endite of Mx1 (Fig. 28) distally curved medially, apically with 11 strong cuticularized teeth, some of them setulated in two rows, others with small teeth. Median endite small rudiment with one small apical bristle.

Mx2 (Fig. 28) of three endites. Inner endite with 12 slender setae, positioned in two rows, median endite with three long setae, outer endite with two long setae. All

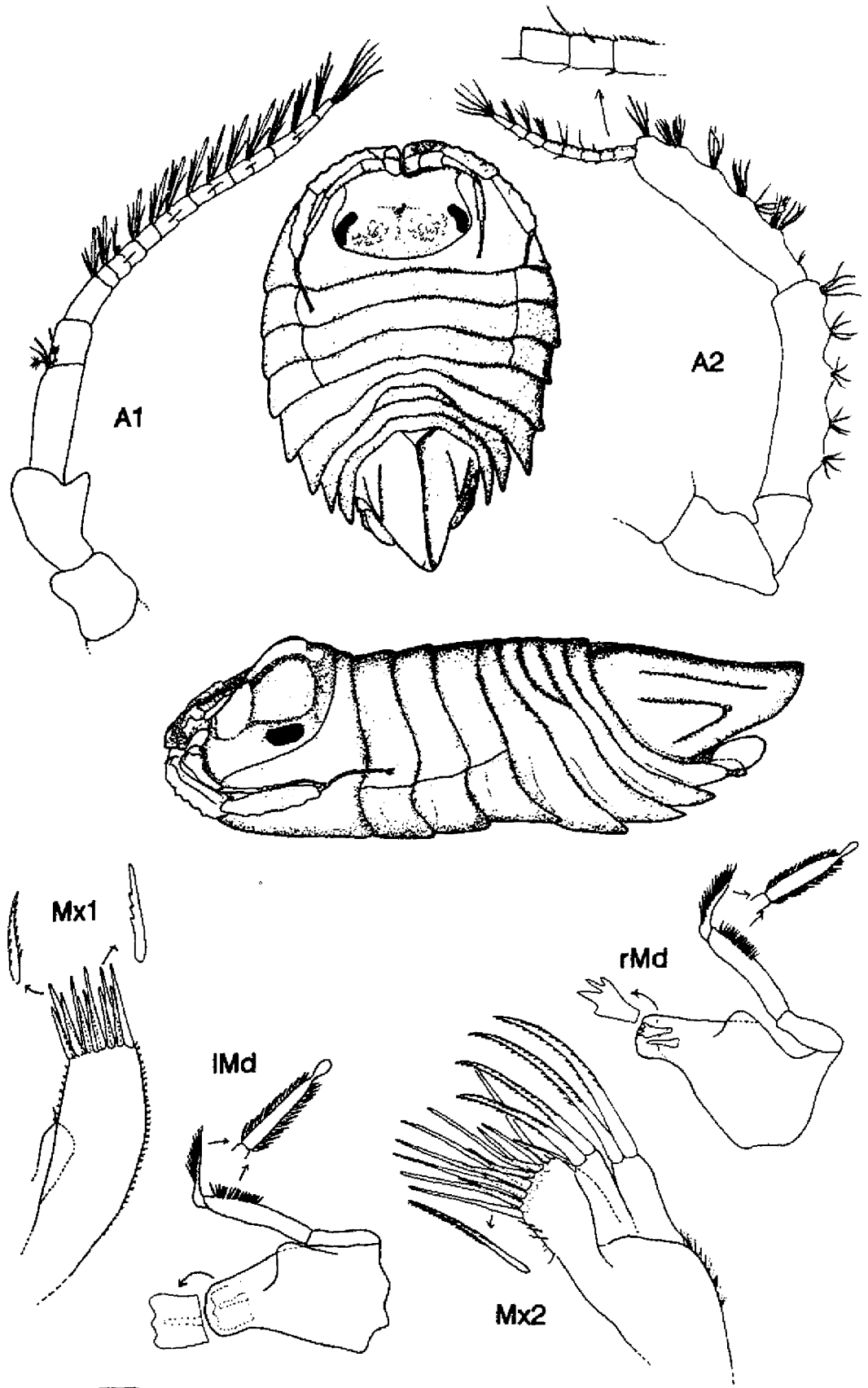


Figure 28: Holotype male of *Serolis leachi* n.sp. BM(NH), in dorsal and lateral view, antennula, antenna, both mandibles, maxillula and maxilla (with details of setation).

setae with two rows of setules (see detail in Fig. 28); inner endite with the smallest setules, mediolaterally of this endite 4 small bristles.

Mxp (Fig. 29) with large quadrangular epipodite, strong endite, which is almost one third longer than epipodite, palp three-jointed. Endite dorsally narrower, with two strong setulated spines, no coupling hooks present, but mediolateral surface of endite with 5 small bristles. Second palpal article longest, with long setae, most of these medially, some shorter setae all over the article. First article smallest, oval, with two small bristles, last article longer and narrower than first, of bean-like outline, with many simple setae on palpal tip.

P1 (Fig. 29) stronger than all following pereopods, with long basis, short merus and carpus, propodus broad-oval, subchelate. Basis and ischium without any spines or setae, merus with one distal simple seta, carpus with 12 short bristles and two strong setulated sensory spines, which are covered with small spinules on one side (see detail in Fig. 29).

Mediolateral surface of propodus with one row of long, slender sensory spines, the sensory hair of which divides the spine distally. Alternating to these sensory spines shorter and broader ones, densely covered with small spinules, also bearing a sensory bristle. Near the broad sensory spines a short single bristle. Distolaterally on propodus also two short bristles. Dactylus long and slender, with some short dorsal bristles, without claw. P2 (Fig. 29) in male with long and slender basis, which bears three feather-like bristles, long ischium, merus and carpus about equal in length with a distoventral row of spines, on carpus also 4 distodorsal spines. Propodus broadened in the lower part, about as broad as half of the article's total length; after one third of length the propodus narrows to about one third of the length. Ventrally on propodus 10 strong sensory spines and 7 simple setae. Sensory spines covered with small setules, especially in the upper half. Dactylus shorter than propodus, with few short distodorsal bristles and a small claw.

P3-7 (Fig. 29) similar, P7 shortest. Long basis with 2-3 feather-like bristles. Ischium shorter than basis, with a proximodorsal small sensory spine, distodorsal side with two simple setae. Ventrally several long spines present on ischium, merus, carpus and propodus, positioned in groups of 1-3, most dense on carpus and propodus. Distodorsally on merus one spine, on carpus a row of apical spines. Distodorsal region of propodus similar to that of carpus, but with longer simple setae. Dactylus short and slender, about twice as long as the distal setae of the propodus, with a short apical claw and two apical bristles.

Plp1 (Fig. 30) with sympodite almost triangular in shape, nearly as long as exopodite, that bears three proximolateral setulated bristles. Endo- and exopodite with lots of long marginal swimming setae, endopodite smaller.

Sympodite of Plp2 (Fig. 30) as in Plp1, but with only two proximolateral setulated bristles. Endopodite of Plp2 with long stiletto-like appendix masculina, inserting proximolaterally. Exopodite larger and rounder than endopodite, with longer marginal setae.

Plp3 (Fig. 30) similar to Plp1, but sympodite covered with many marginal small bristles. Endopodite smaller than exopodite.

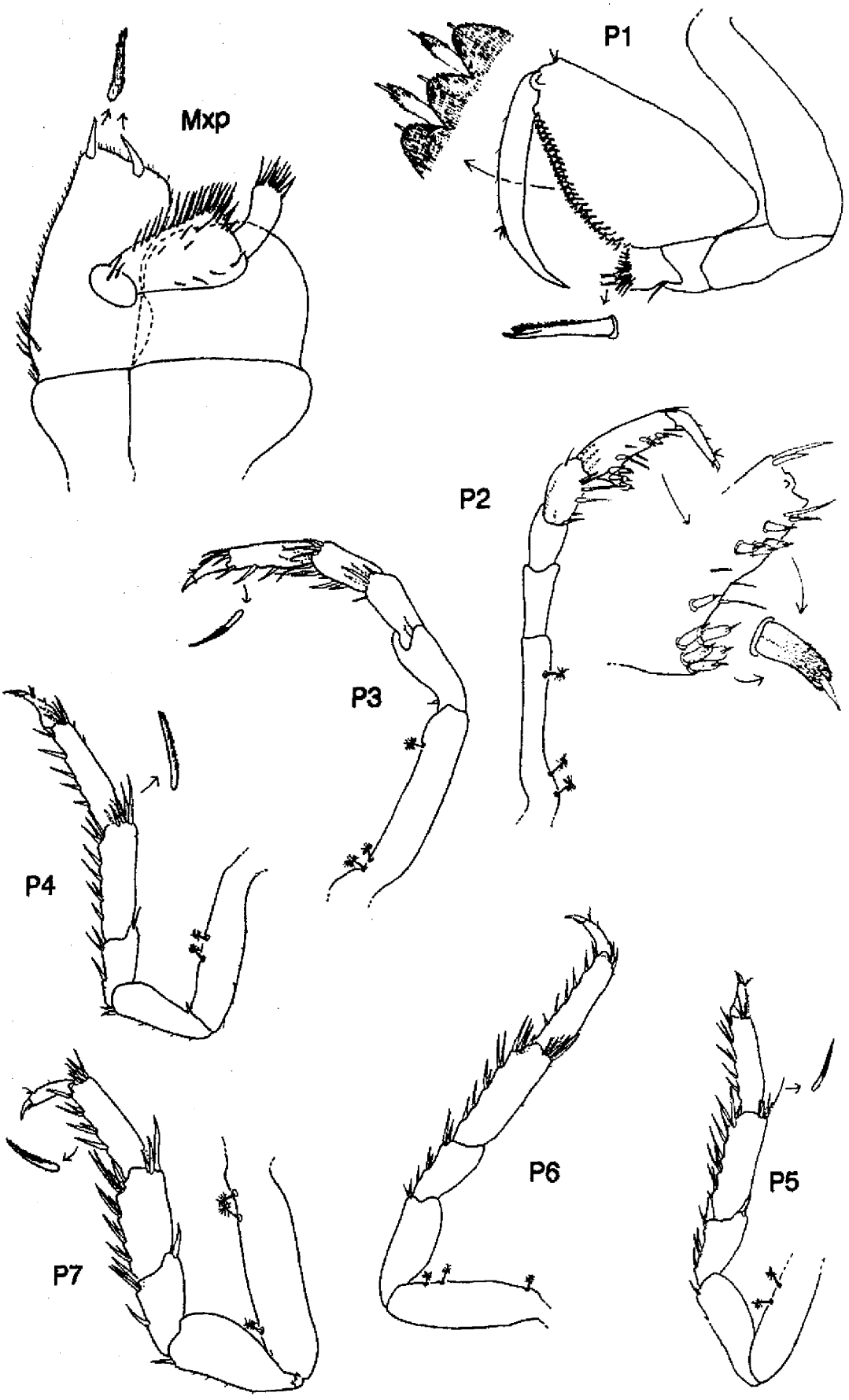


Figure 29: Holotype male of *Serolis leachi* n.sp. BM(NH), maxilliped, pereopods 1–7 (with details of setation and detail of propodus of pereopod 2)

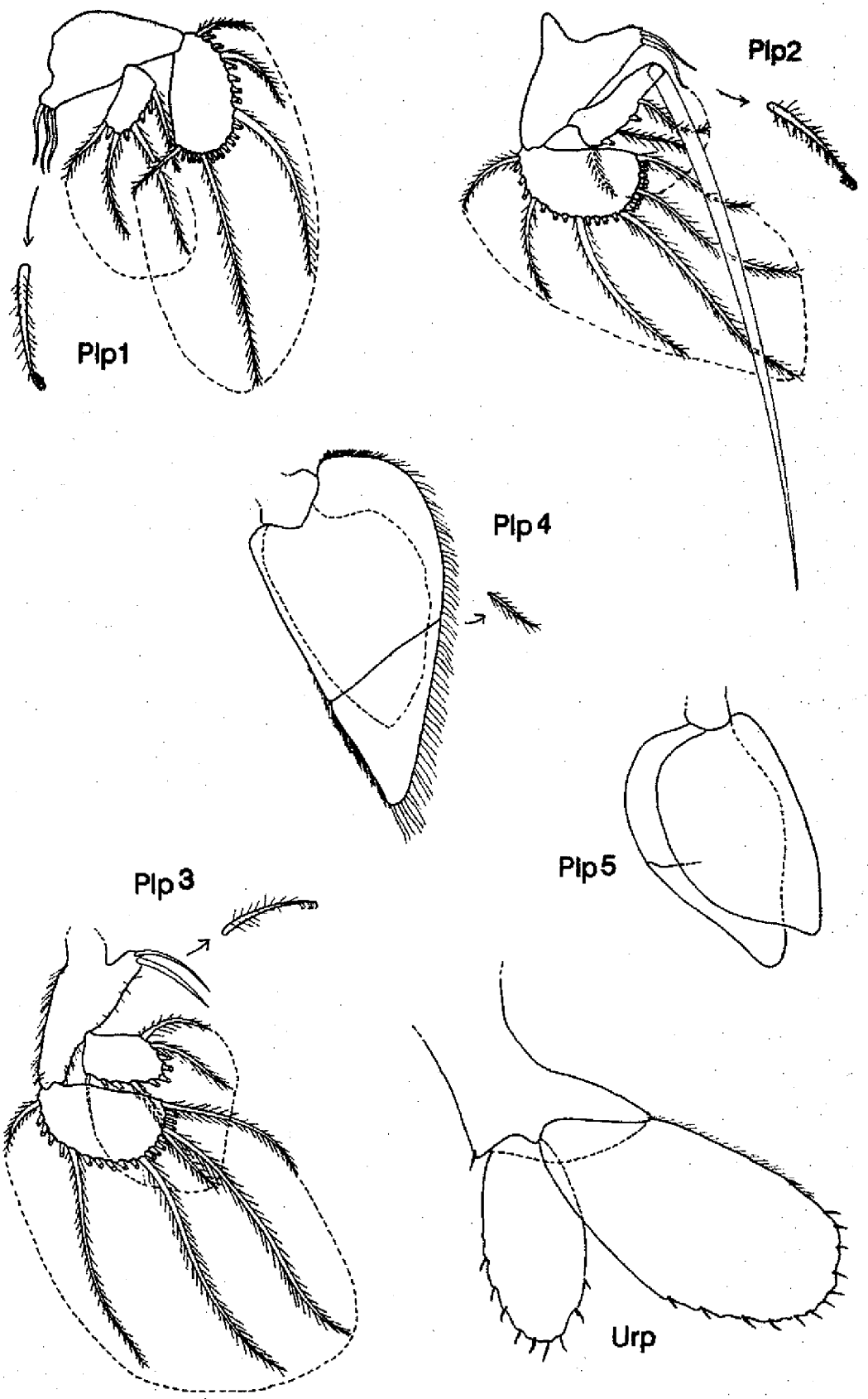


Figure 30: Holotype male of *Serolis leachi* n.sp. BM(NH), pleopods 1-5 and uropod (with details of setation).

Exopodite of Plp4 (Fig. 30) operculiform, strongly chitinized, medially with transversal suture, with a lateral row of short marginal plumose setae. Endopodite small, without bristles or setae, sympodite very short.
Plp5 (Fig. 30) with short sympodite and an exopodite with 4 distal serrated setae.

Urp (Fig. 30) with trapezoidal sympodite that measures about the same length as the exopodite, bearing one short seta. Exopodite shorter than endopodite, both rami with small distal and lateral bristles.

Remarks:
Serolis leachi n.sp. is most similar to *Serolis septemcarinata* Miers, 1875 and *Serolis ovata* Sheppard, 1957 as far as the lateral margins of the pereonites are concerned. The coxal plates of all three species are shorter and broader than in *Serolis aestimabilis* n.sp. Striking differences of *Serolis leachi* compared to *Serolis septemcarinata* are the two mediocaudal elevations between the eyes, characterized as in *Serolis septemcarinata* by many small tubercles all over the surface. In *Serolis septemcarinata* the mediocaudal elevation between the eyes is not medially subdivided, but as the head of the syntype of *S. septemcarinata* (see Fig. 36, redescription) is densely covered with bryozons, it cannot be stated, whether the tubercles are lacking in this species or not.

The fourth and fifth antennal articles of *Serolis leachi* are quite similar to *Serolis ovata*, but these species can easily be differentiated from the latter by several details. First of all the numbers of flagellar articles on both antennulae and antennae of *Serolis leachi* are lower than in *Serolis ovata*. Furthermore the lateral margins of the pereonites of *Serolis leachi* are caudally more acute. The epimera of pleonites one and two of *Serolis leachi* are longer and laterocaudally more pointed than in *Serolis ovata*. The pleotelson of *Serolis leachi* is longer, the median ridge narrower and more distinct than in *Serolis ovata*. Pleotelson of *Serolis ovata* shorter and broader.

5.6 *Serolis reptans* n.sp. (Figs. 31-35)

Holotype: 1 female of 15 mm length, sample off Admiralty Bay, Rock Napier, Desmarestia, in a depth of 18-12 m (18.02.1988); BM(NH) 1988.192.1.

Paratypes: 1 male of 20 mm length, same locality as holotype. 2 males of 19 and 21 mm length, 1 female of 17 mm length and one immature of 12 mm length, off same locality as holotype; 1 male of 19 mm length found in Admiralty Bay, Rock Napier in a depth of 28 m; BM(NH) 1988.193.1 and BM(NH) 1988.194.5.

Distribution: Known only from type locality.

Description of female holotype:
Anterolateral angles of head markedly elongate in a lateral direction (Fig. 31); head frontally widest. A very shallow elevation, medially narrowest frontomedially between the eyes. Two round elevations without any cuticular structures posteromedially of the eyes. A small round elevation caudomedially of the head, situated between the large round elevations. Body surface smooth, without any structures. Coxal plates without interlocking keys, marked off by dorsal sutures from the second to the fourth pereonite. Posterolateral angles of the coxal plates of the second to the sixth pereonite and the epimera all reaching successively further

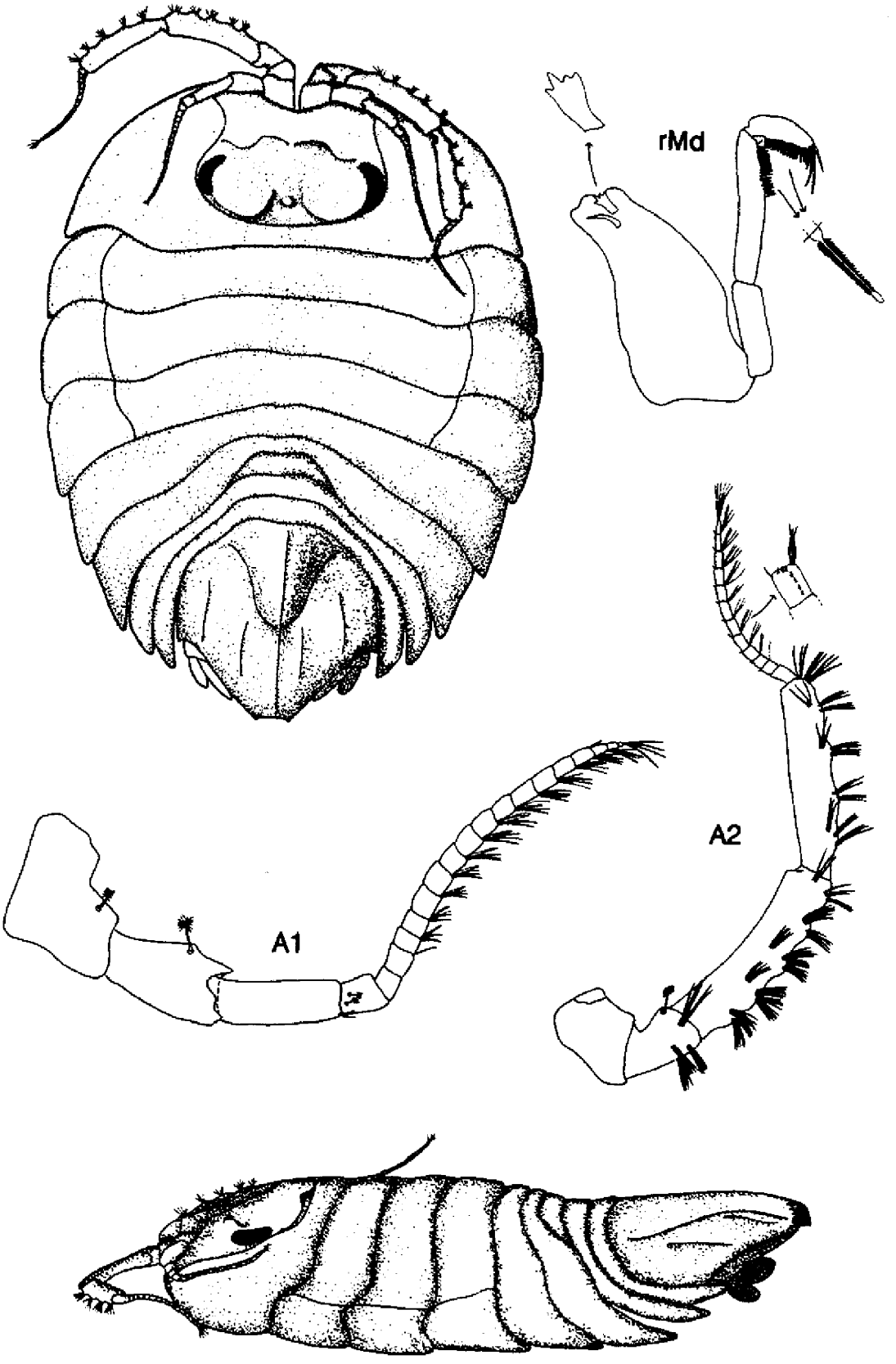


Figure 31: Holotype female of *Serolis reptans* n.sp. BM(NH), dorsal and lateral view, antennula, antenna and right mandible.

caudally than those of the preceding segments. First and second pleonites free, not fused. Epimera of second pleonite slightly longer than first, measuring more than two thirds of the pleotelson length. Following pleonites fused with pleotelson. Pleotelson with one long median ridge, which is broadest frontally and narrowing towards the caudal margin, which is slightly concave. On both sides of the median ridge another two longitudinal keels, the outer situated more frontally of pleotelson. Uropods biramous, small, inserting mediolaterally of pleotelson in two small corners, beginning on caudal margins of outer keels.

A1 (Fig. 31) with three peduncular segments, first one much broader than the following, second one slightly longer than first one, distally prolonged into three blunt tips, third one longest with two short distolateral bristles and three longer lateral setae. From the 18 flagellar articles the first one is longer than the following ones and bears two proximal feather-like bristles. First, second and third flagellar articles lack an aesthetasc. All following 15 flagellar articles bear a lateral aesthetasc in a group of three simple setae, except the last two flagellar articles, which do not have aesthetascs, last article with four long simple setae.

A2 (Fig. 31) consisting of 5 peduncular and 12 flagellar articles. First peduncular article very short, (not shown in Fig. 31). Second peduncular article longer than third, without any bristles, third peduncular article distolaterally inserted with four groups of 5 simple setae. Fourth peduncular article broadest and as long as the fifth, lateral surface waved, with several rows of groups of 5 simple setae. Fifth peduncular article with fewer groups of 3 setae. Second to last flagellar articles with up to four distolateral simple setae and one shorter seta on opposite side. Last flagellar article with six long simple setae. First to seventh flagellar article with a lateral row of very short and acute teeth, distolaterally of this row another two teeth.

Mandibles (Figs. 31 and 32) asymmetrical, palp three-jointed. Pars incisiva of rMd narrower than left. Lacinia mobilis of rMd smaller than pars incisiva, distally with four short teeth, proximolaterally of lacinia one spine (rudiment of the spine row), pars molaris absent. First palpal article broadest, second one about one and a half as long as first, with a distolateral row of 21 serrated spines, with a bulbous tip. Last article smallest and laterally bent, also with a row of these serrated spines (see detail in Fig. 31). Pars incisiva of lMd slightly broader than that of the right one, with a cutting surface that consists of four blunt teeth, lacinia mobilis smaller and narrower than pars incisiva, consisting of 6 blunt teeth, nearby a spine-like structure.

Lateral endite of Mx1 (Fig. 32) distally curved medially, apically with 11 strong cuticularized teeth, some of them covered with small teeth. Median endite small rudiment, with one short apical bristle.

Mx2 (Fig. 32) of three endites. Inner endite with 17 slender setae, positioned in 5 rows, median endite with four long setae, outer endite with two long setae, all setae setulated on one side (see detail in Fig. 32).

Mxp (Fig. 32) with large quadrangular epipodite, strong endite, which is longer than the epipodite, palp three-jointed. Endite distally broad, only slightly narrower than proximally, with two strong sensory spines, no coupling hooks present, but mediolateral surface of endite with six simple bristles thin hairs.

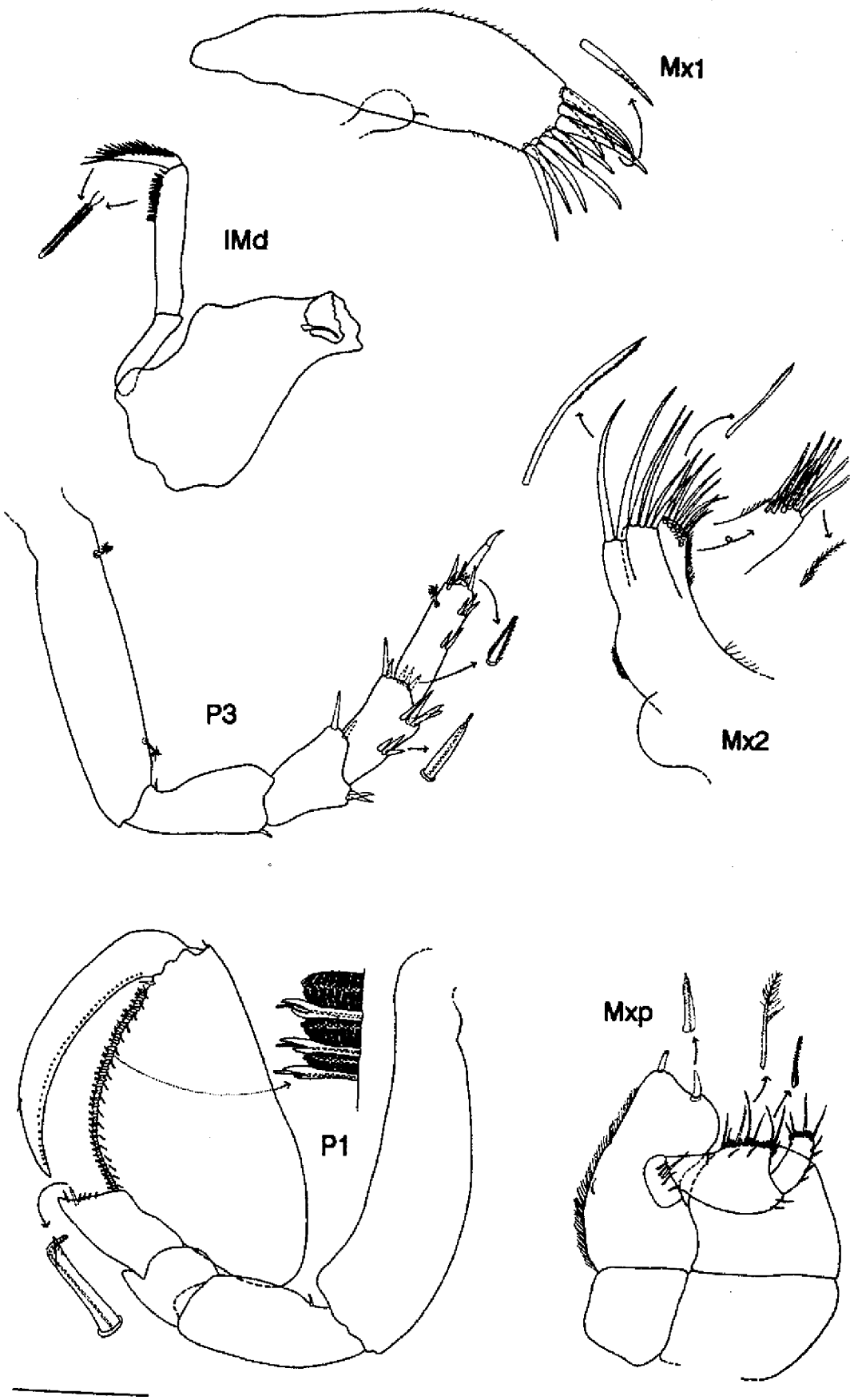


Figure 32: Holotype female of *Serolis reptans* n.sp. BM(NH), left mandible, maxillula, maxilla, maxilliped, pereopods 1 and 3 (with details of setation).

First palpal article smallest, oval, with five simple setae, second palpal article longest, with lots of long setae medially and two single ones on opposite side. Last article longer but narrower than first, of bean-like outline, with many setulated setae, especially on palpal tip (for details of setation see Fig. 32).

P1 (Fig. 32) stronger than all following pereopods, with long basis, short merus and carpus, propodus broad, subchelate. Basis without any spines or setae, ischium only with a proximodorsal short seta, merus without setae, carpus with two small sensory spines covered with some small teeth and four small setae (see detail in Fig. 32). Mediolateral surface of propodus with one long row of sensory spines, the sensory hair divides the spine so that three branches are present distally. Alternating to these sensory spines shorter and broader ones occur, which are densely covered with small setules and which also bear a sensory bristle. On the basis of these sensory spines a short single bristle. Distolaterally of propodus a single short bristle. Dactylus long and slender with one short dorsal bristles, but without claw, ventrally with a row of small holes.

P2 (Fig. 33) in holotype female with long and slender basis that bears three feather-like bristles, long ischium with one simple distoventral seta and a small proximodorsal one. Merus and carpus about subequal in length with some sensory spines, carpus distoventrally with one feather-like bristle. Propodus almost twice as long as carpus, with two sensory spines and one single feather-like bristle. Dactylus smallest, with a short claw and two small bristles.

P2 of paratype male (Fig. 33) with long basis that bears neither spines nor setae, ischium slightly shorter than basis, with two distoventral setae and three short bristles, merus and carpus about subequal in length, merus with two strong distoventral sensory spines, two simple setae and another distodorsal sensory spine, carpus with three ventral sensory spines a single distodorsal one and two small simple bristles. Propodus broad, subchelate, proximoventrally broadened, much broader than distally. Proximally with two rows of four broad short sensory spines each (for details see Fig. 33) and two sensory spines that are more slender. Surface between these sensory spines concave. The broadness of the propodus decreases distally, distoventrally of propodus one spine and two simple setae, distodorsally five acute spines, distolaterally a single feather-like bristle.

Dactylus almost as long as propodus proximodorsally slightly bent, leaving a space for grasping between propodus and dactylus, distally a strong small claw and many simple small bristles.

P3-7 (Figs. 32-34) similar, P7 shortest. Long basis with 1-4 feather-like bristles. Ischium slightly shorter than basis with a proximodorsal small sensory spine, distoventral side with some simple sensory spines. Ventrally several long simple sensory spines present on ischium, merus, carpus and propodus, most on merus carpus and propodus. Distodorsally and distolaterally of merus, carpus and propodus many long sensory spines, most on carpus, some of them being spinulated (see details of setation). Number of spines increasing from P3 - P7. Distodorsal region of propodus similar to that of carpus, but with longer simple setae. Dactylus very small and slender, half as long as propodus, with one apical claw. P4 of paratype male (see Fig. 33) not much different to that of female, only with few more ventral sensory spines, probably due to the greater length of the animal. Propodus distolaterally with a feather-like bristle, lacking in holotype female.

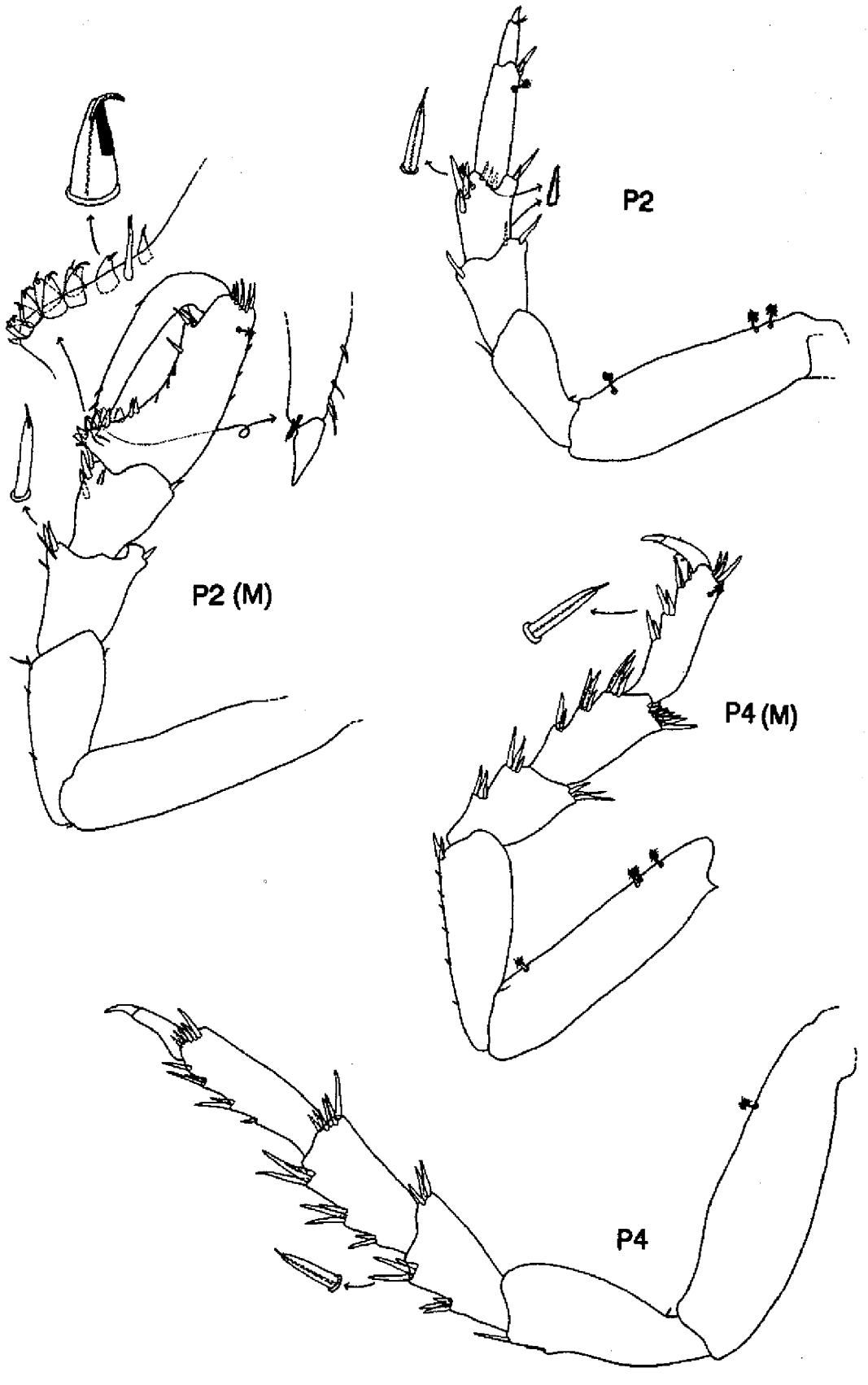


Figure 33: Holotype female of *Serolis reptans* n.sp. BM(NH), pereopods 2 and 4 and paratype male of *Serolis reptans* n.sp. BM(NH), pereopods 2 and 4 (M) (with details of setation).

Plp1 (Fig. 34) with long sympodite that bears three proximomedial setulated setae and lots of small simple marginal bristles. Endo- and exopodite semi-oval, with lots of long plumose setae. Endopodite only half as large as exopodite

Sympodite of Plp2 (Fig. 34) as in Plp1, also with lots of small marginal bristles, but proximomedially only with two setulated setae. Endo- and exopodite semioval, with long plumose setae, endopodite smaller than exopodite. Endopodite of paratype male plp2 (see Fig. 35) with long stiletto-like appendix masculina inserting proximolaterally, more than 4 times as long as endopodite (with setae).

Plp3 (Fig. 35) similar to Plp1 and Plp2. Endopodite also smaller than exopodite.

Exopodite of Plp4 (Fig. 35) operculiform, strongly chitinized, after two thirds with transverse suture and a lateral row of short marginal plumose setae (see details of setation). Endopodite small without setation; sympodite very short.

Plp5 (Fig. 35) with short sympodite, exo- and endopodite without setation.

Urp (Fig. 35) with elongate trapezoidal sympodite, without setation. Both rami oval, exopodite shorter than endopodite, both with distal and mediolateral short marginal plumose setae, each inserting in a small notch (see detail of Fig. 35). Laterally of endopodite three short proximal feather-like bristles, medially many short simple bristles.

Remarks:
Serolis reptans n.sp., has been caught by Dr. Wägele while diving in the Admiralty Bay during the Antarctic summer (February 1988). It could be observed that *S. reptans* was climbing on rocks. Until now, this has not been reported for any other species of the family, which are commonly adapted for burrowing in sand. Although *Serolis reptans* seems to be the only climbing species, no clear apomorphies can yet be defined and therefore *S. reptans* must also remain in the genus „*Serolis*„ for the present. Compared to other species of „*Serolis*„, *Serolis reptans* is most similar to *Serolis exigua* Nordenstam, 1933 (drawing by Moreira, 1977), but nevertheless can be distinguished from this species by some features. Striking differences between the two species are the mediocaudal blunt, small caudally-directed spines on mediocaudal margin of all pereonites and pleonites one and two of *Serolis exigua,* which are absent in *Serolis reptans.* Besides the eyes of *Serolis exigua* are much larger than in *Serolis reptans. Serolis reptans* has a broader frontal margin of the first pereonite, which is rounder in *Serolis exigua.* The shape of the body of *Serolis exigua* is more elongate than in *Serolis reptans.* Pleotelson of *Serolis reptans* with a more prominent median keel, and on both sides of the median keel another two smaller longitudinal keels are present. The frontal apex of the median keel of *Serolis reptans* is much broader compared to that of *Serolis exigua.* Laterally of the median ridge of *Serolis exigua* there are two frontal ridges which run together mediolaterally of the median ridge. Caudal margin of pleotelson of *Serolis reptans* concave, in *Serolis exigua* it is round or very bluntly pointed. In comparison with *Serolis septemcarinata* the small mediocaudal elevation on the head of *Serolis reptans* is much smaller. The shallow dorsolateral transverse sutures on all pereonites and the first pleonite which are present in *Serolis septemcarinata* are absent in *Serolis reptans.* The frontolateral elevation of *Serolis septemcarinata* is also lacking in *Serolis reptans.*

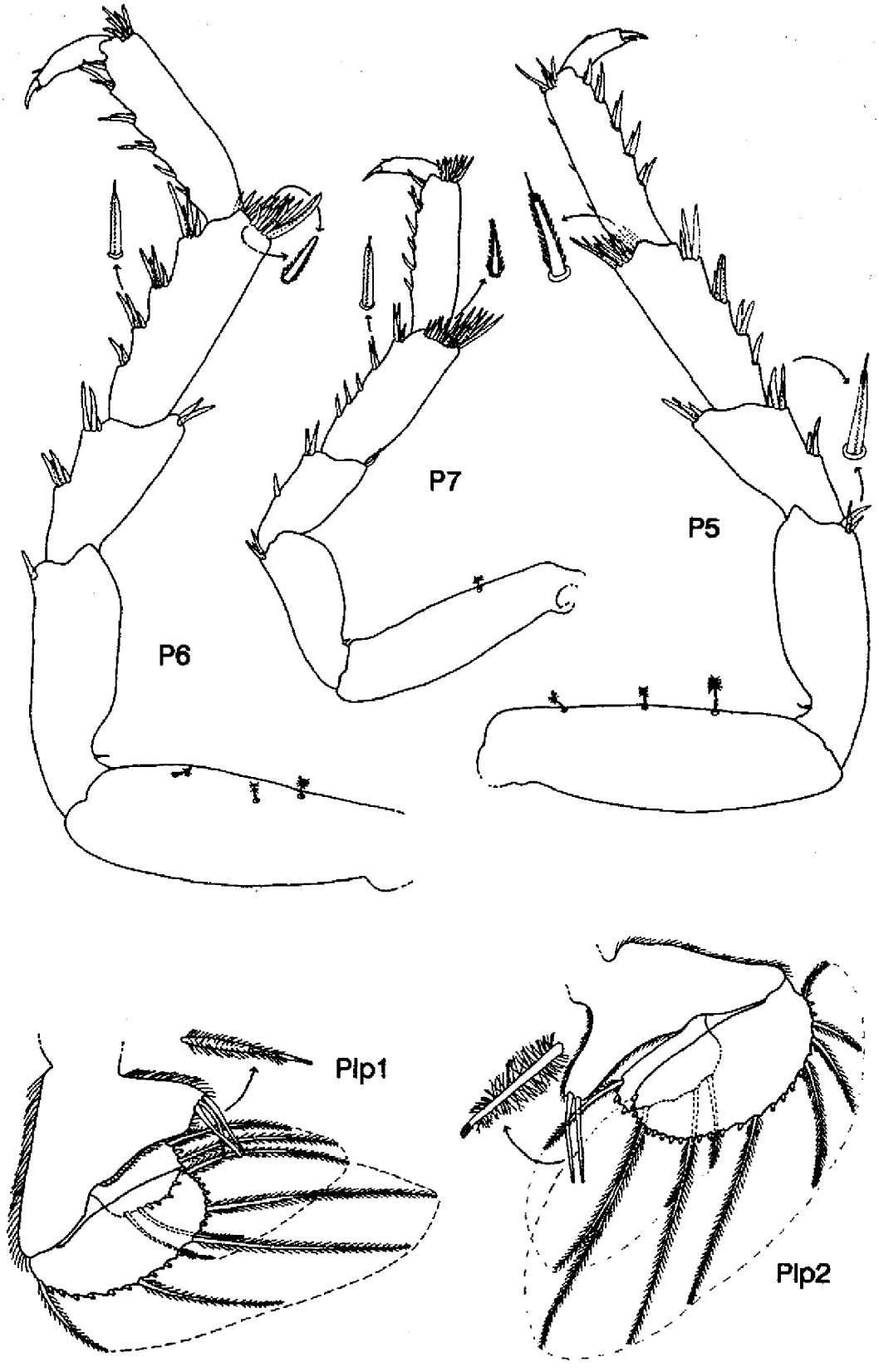


Figure 34: Holotype female of *Serolis reptans* n.sp. BM(NH), pereopods 5, 6 and 7 and pleopods 1 and 2 (with details of setation).

6. Redescriptions of Species of Serolis

6.1 *Serolis septemcarinata* Miers, 1875 (Fig. 36)

Synonymy: = *Serolis quadricarinata* White, 1847
= *Serolis ovalis* Studer, 1879

Material: Female, 9 mm, BM(NH) 1847.70, syntype, Crozet Island, H.M.S. „Erebus„, coll. A. Smith, Antarctic Voyage.

Distribution: Subantarctic: South Shetlands, South Georgia, Antarctic Peninsula, Kerguelen, Prince Edwards Islands, Crozet Islands.

Description of female syntype:
Anterolateral angles of head markedly elongate laterally (Fig. 36). One broad transverse elevation frontomedially between the eyes. (Pfeffer, 1887) presented drawings of *S. septemcarinata* with many tubercles on the elevations between the eyes, but as the syntype is covered with a dense carpet of bryozons, the underlying structures are difficult to identify. One broad elevation posteromedially of the eyes, narrowest medially, laterocaudally broadening. A small oval elevation occurs mediocaudally of the concave invagination. Second to fourth coxal plates indicated by dorsal grooves. Posterolateral angles of coxal plates of the second to the sixth pereonite all reaching successively further caudally than those of the preceding segments. Seventh pereonite small, without coxal plates. All pereonites and the first pleonite with shallow dorsolateral transverse sutures. Both free pleonites with epimera that reach further caudally than sixth pereonite, second epimera longest. Following pleonites fused with pleotelson. Pleotelson with one long elevated median keel, beginning frontally with a broadened part. Laterally of this dorsal keel two pairs of longitudinal elevations occur, the outer pair being longer. Frontolaterally a laterally bent elevation is present on both sides of the pleotelson. Two median invaginations on caudal margin of pleotelson.

Remarks:
The type material had not been dissected, therefore only redescriptions of the body shape are presented.

Serolis septemcarinata was first described by Miers (1875), but as the existing drawings are very small and poor, a redescription of this species became necessary to enable taxonomists to easily discriminate this species from other material. The drawings published by Collinge (1918) and Pfeffer (1887) are quite different. In the dorsal view Pfeffers' *S. septemcarinata* bears many tubercles on the elevations between the eyes and the shape of the body is oval. Collinge presented a dorsal view without tubercles on the head, instead of these tubercles on the coxal plates have been drawn. It might be that both of the drawn specimens had been covered with bryozons on different parts of the body. The body shape of Collinge's *S. septemcarinata* is rounder, the coxal plates are caudally more acute and prolonged.

Serolis septemcarinata is most similar to *Serolis leachi* n.sp., but can nevertheless can be distinguished by its fourth and fifth antennal segments, which are smooth.

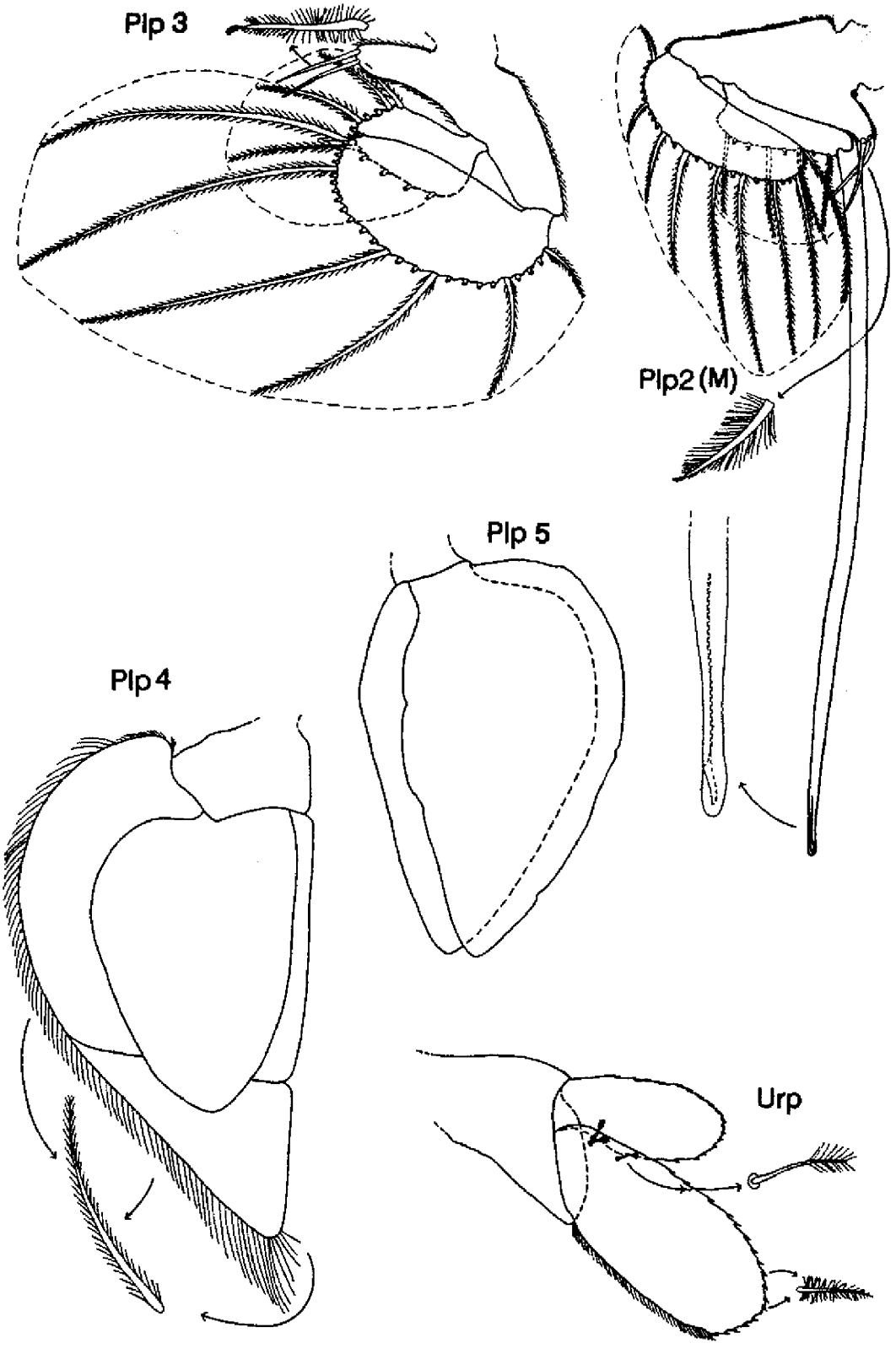


Figure 35: Holotype female of *Serolis reptans* n.sp. BM(NH), pleopods 3, 4 and 5 and uropod and paratype male of *Serolis reptans* n.sp. BM(NH), pleopod 2 (M) (with details of setation).

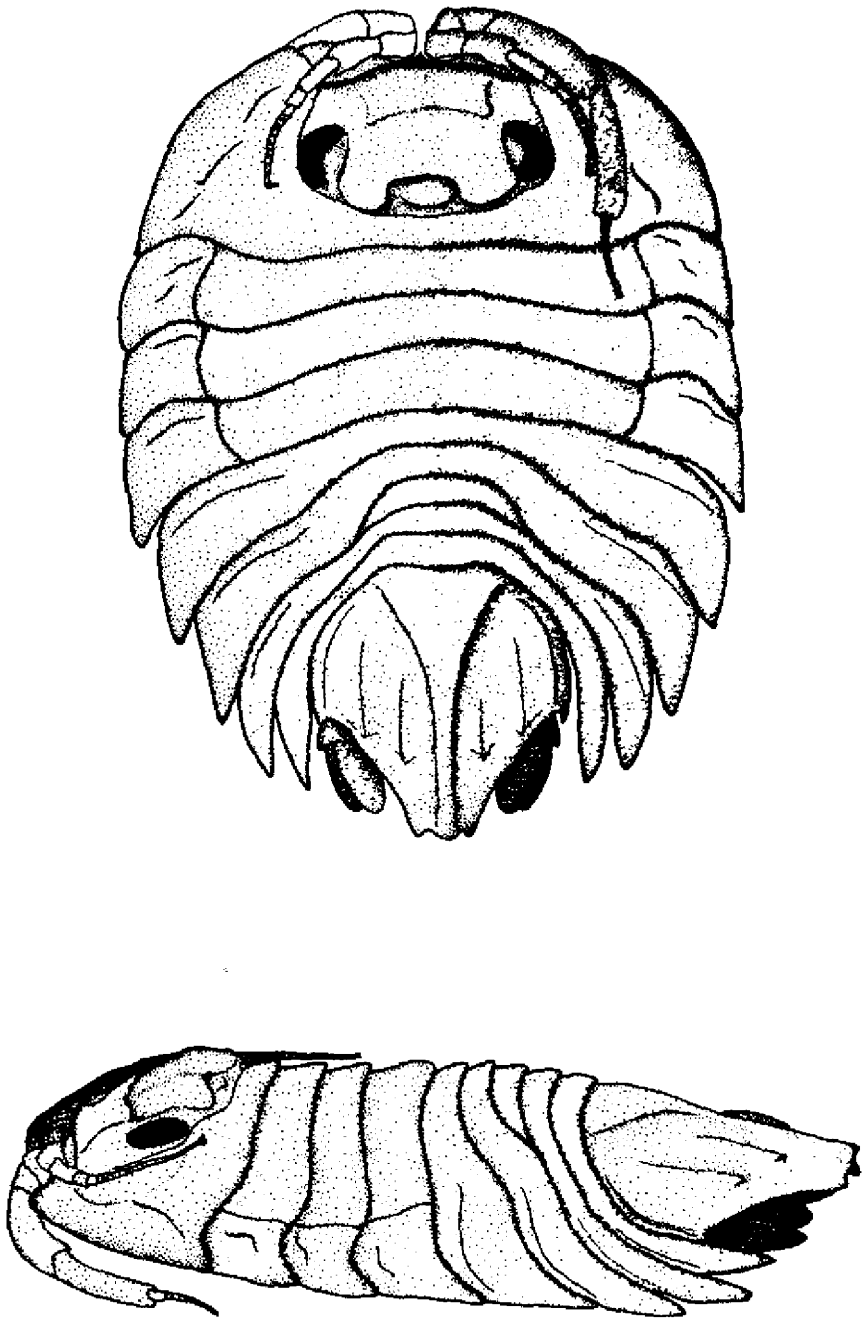


Figure 36: Syntype of *Serolis septemcarinata* Miers, 1875 (BM[NH]) in dorsal and lateral view (the head was covered with bryozons, therefore it is not possible to show whether the elevation between the eyes is structured or not).

Mediocaudal elevations of head of *Serolis septemcarinata* medially not divided as in *Serolis leachi*. The latter bears a characteristic tip of the telson, which is caudally lobed. Median ridge prolonged into a convex protrusion with two lateral invaginations giving the impression of three telsonic tips.

6.2 *Serolis acuminata* Sheppard, 1957 (Fig. 37)

Material: Male, 12 mm, BM(NH) 1959.4.9.116-135, Syntypes, „Discovery„ St. 1660 "This is the male specimen chosen by Beddard (1957) as holotype".

Distribution: Ross Sea

Description of male holotype:
Anterolateral angles of head markedly elongate laterally (Fig. 37). One small elevation frontomedially between the eyes. Two large round elevations posteromedially of the eyes, caudally broadest and covered with small tubercles. Between these, a small round elevation on caudal margin of the head. Second to fourth coxal plates indicated by dorsal sutures. Posterolateral angles of coxal plates of pereonites 3-6 all reaching successively further back than those of the preceding segments. Coxal plates not overlapping, with free margins. Seventh pereonite small, without coxal plates. All pereonites and epimera of the first two free pleonites with marginal small hairs. Both free epimera about subequal in length, only about half as long as the coxal plates of the sixth pereonite. Following pereonites fused with pleotelson. Pleotelson with one frontal triangular elevation, its tip directed backwards. A small longitudinal oval hole medially on the triangular elevation, caudally prolonged into an elevated median keel. A pair of longitudinal, slightly curved ridges mediolaterally of this keel. Tip of pleotelson acuminating and caudally prolonged. The uropods are almost inserted in the middle of the pleotelson and do not reach to the end of it.

Remarks:
Serolis acuminata was first described by Sheppard (1957). A reexamination of the type material revealed some differences in the general morphology. Though Sheppards dorsal view of the animal is a good drawing. The frontolateral keels on the telson are curved in the syntype which has been redescribed. In the dorsal view of Sheppards drawing these keels are straight.

Serolis acuminata is most similar to *Serolis aestimabilis* n.sp., *Serolis waegelei* n.sp. and *Serolis serratus* n.sp., but nevertheless can easily be distinguished from these species by the following features: *Serolis serratus* bears a mediocaudal elevation on the head, which is not medially subdivided, in *Serolis acuminata* two separate elevations are present on the head. Abdominal segments one and two of *Serolis serratus* longer than sixth pereonite, in *Serolis acuminata* these are shorter. Telson of *Serolis acuminata* longer than that of *Serolis serratus*, tip more pointed, laterocaudal margins not serrated. *Serolis aestimabilis* lacks the small cuticular hairs on lateral margin of pereonites, mediocaudal elevations of head not covered with small tubercles, like in *Serolis acuminata*, but medially subdivided by a shallow transverse groove. Telson of *Serolis aestimabilis* less acute, shorter, frontal triangular region of median ridge without small longitudinal oval whole, lateral elevations somewhat broader and longer.

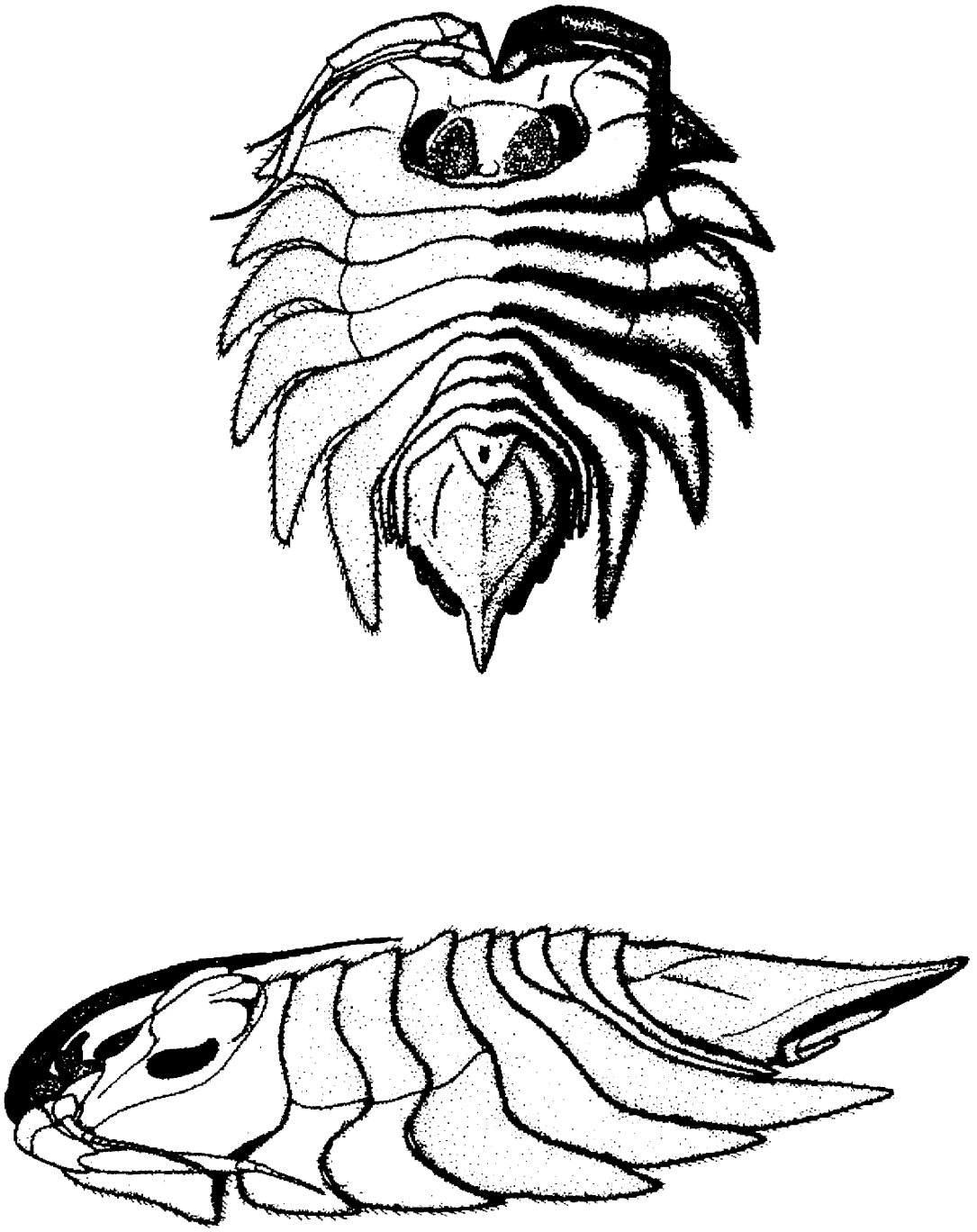


Figure 37: Syntype of *Serolis acuminata* Sheppard, 1957 (BM[NH]) in dorsal and lateral view.

Serolis waegelei also has small cuticular hairs laterally on pereonites, but mediocaudal elevations of head without tubercles, somewhat semicircular. Mediocaudal protrusions of pereonites stronger developed than in *Serolis acuminata*. Telson of *Serolis waegelei* shorter than in the latter, tip not as pointed, triangular beginning of median ridge also lacking a median whole, laterally of median ridge two small elevations are present, in *Serolis acuminata* only one.

6.3 *Serolis bouvieri* Richardson, 1906 (Figs. 38 and 39)

Material: Female, 17 mm, sample A27, 70°26.94'S 8°39.86'W, 346m, agassiz trawl, 1.3.83; A9, 3 specimens; A27, 2 specimens; A29, 14 specimens; A30, 3 specimens; A3/2, 1 specimen; A3/3, 1 specimen; A3/13, 1 specimen; A3/16, 3 specimens; A3/19, 1 specimen; A3/43, 11 specimens; Antarctic Peninsula (for exact data, see station list).

Distribution: Booth-Wandel Island, Flanders Bay, Palmer Archipelago, Graham Region, South Shetland Islands, King George Island, Elephant Island, Antarctic Peninsula.

Redescription of 4 Serolis bouvieri 5:
Dorsal cuticle of body rough, covered with small pits. Anterolateral angles of head markedly elongate laterally (Fig. 38). One broader transverse elevation frontomedially between the eyes. Two round elevations mediocaudally of the head, characterized by a groove mediocaudally. A small oval elevation on mediocaudal margin of the eyes a small oval elevation. Coxal plates indicated by dorsal grooves from second to fourth pereonite, separating the plates from the tergites. Posterolateral angles of coxal plates of the second to the sixth pereonite all reaching successively further caudally than those of the preceding segments. Pereonites 5 and 6 mediodorsally very short. Seventh pereonite small, mediodorsally slightly longer than fifth and sixth, without coxal plates. Second to sixth pereonite with 2-3 transverse sutures on the coxal plates of pereonites 2-4, on pereonites 5 and 6 positioned like in the foregoing pereonites, but a little more medially prolonged. All pereonites with marginal short hairs. Both pairs of epimera of free pleonites a little shorter than the coxal plates of the sixth pereonite, epimera of second pleonite little longer than of first. Pleotelson with one long median keel, beginning in frontal semicircular elevation. Two pairs of large triangular elevations laterally of this keel, with a caudally directed tip. Caudal tip of pleotelson concave, end of median keel forming small tip in this concavity.

P1 (not shown in Fig. 38) stronger than all following pereopods, with long basis, short merus and carpus and broad subchelate propodus. Carpus with two strong sensory spines, mediolateral surface of propodus with one long row of sensory spines, whose sensory hair divides the spine distally. Alternating to these spines shorter and broader spines occur, densely covered with setules, also with a sensory bristle. Dactylus long and slender, without claw.

P2-7 (Fig. 38) similar, P7 shortest (only P2 and P6 are shown in Fig. 38). Long basis with 2-4 dorsal feather-like bristles, ischium slightly shorter, with 1-2 proximodorsal small spines and one distodorsal long seta. Distodorsally of merus, carpus and propodus several long setae and sensory spines (for detail see Fig. 38).

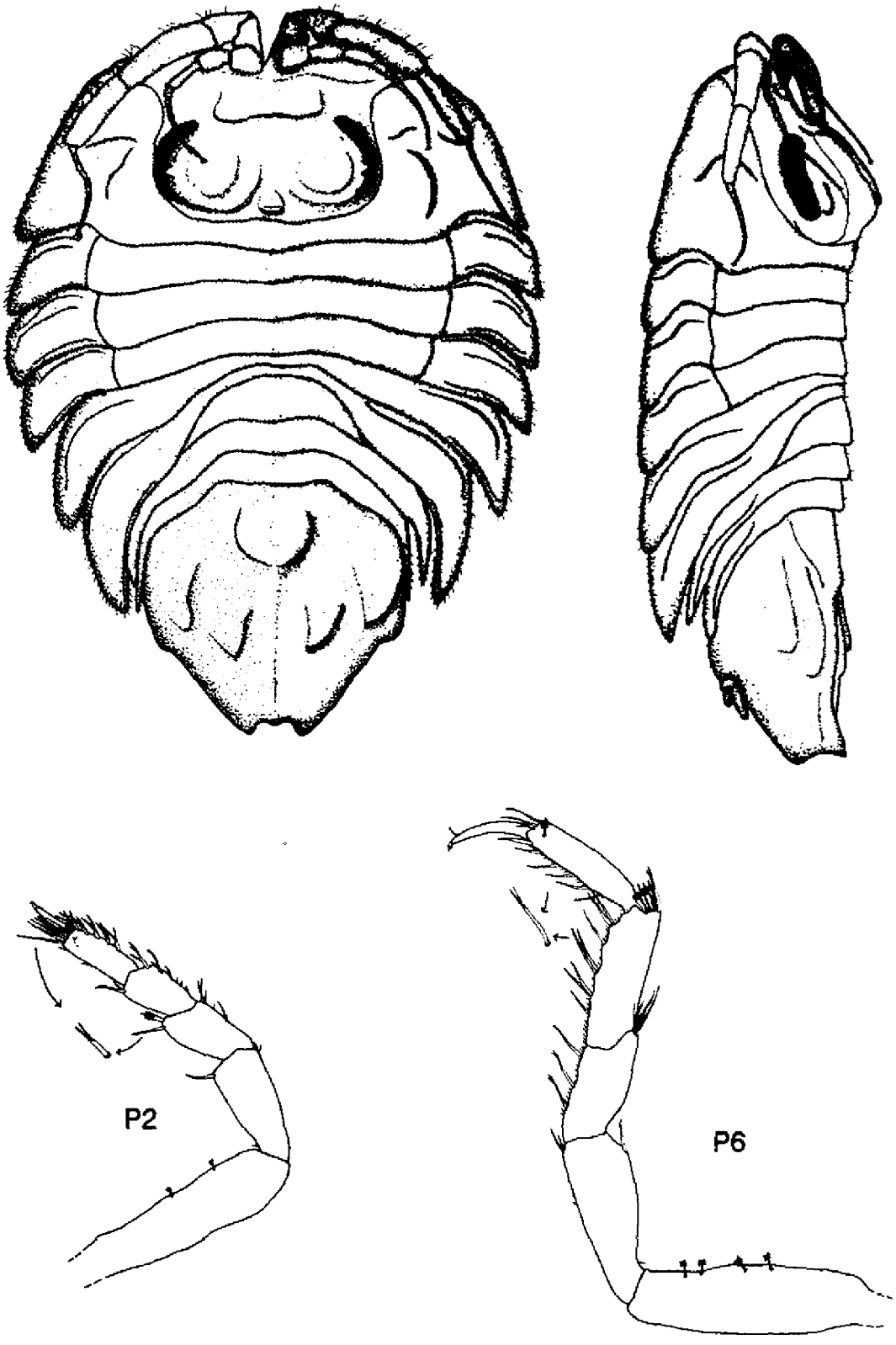


Figure 38: Female of *Serolis bouvieri* Richardson, 1906 [BM(NH)] in dorsal and lateral view (the small cuticular pits all over the body surface are not drawn) and pereopods 2 and 6 (with details of setation).

Ventrally of merus, carpus and propodus long and slender sensory spines. Distodorsally of merus and carpus forked spines with three tips. Distolaterally on propodus a single small feather-like bristle. Dactylus shorter than propodus, slender, slightly longer than distodorsal setae of propodus, with a very short claw.

Plp2 (see Fig. 39) with sympodite of almost triangular shape, which bears 2 strong proximomedial bristles. Endopodite slightly smaller than exopodite, both with lots of long marginal plumose setae.

Plp1 and Plp3 (not shown in Fig. 39) constructed like Plp2.

Exopodite of Plp4 (Fig. 39) operculiform, strongly chitinized, with transversal fusion line, laterally with a row of short marginal plumose setae, endopodite smaller, without setae and with one mediolateral small protrusion. Sympodite very small, with small marginal setulated setae.

Plp5 (Fig. 39) smallest, exopodite with 2 small apical setae, endopodite slightly smaller.

Urp (Fig. 39) with trapezoidal sympodite that bears two long lateral setae; exopodite shorter than endopodite, median and distal margins with several long plumose setae. Endopodite with 7 plumose setae, exopodite with 4 setae.

Remarks:
Serolis bouvieri was first described by Richardson (1906). As already good drawings of some appendages exist, only drawings of P2 and P6, Plp2, 4, and 5 and the Urp are presented in figures 37 and 38. *Serolis bouvieri* is a very individual species that can easily be distinguished from other serolids by the armouring with a very strong and rough cuticle. The eyes are inserted laterally of two round elevations on the head. Mediolaterally to the eyes a characteristic small spine surpasses the eyes (Fig. 38). The caudal apex of the coxal plates is rounded. These features allow an easy discrimination of *Serolis bouvieri*.

6.4 *Serolis polita* Moreira, 1972 (Figs. 40 and 41)

Material: Female, 19 mm, sample A3/ 43, 73°23.36'S, 21°30.37'W, Weddell Sea, 465-481 m depth, bottom trawl. Sample A3/8, many specimens; A3/43, 11 specimens (for data see station list).

Distribution: Weddell Sea, Antarctic Peninsula, Elephant Island, South Sandwich Islands, King Edward Cove and Cumberland Bay, South Georgia, Patagonia, Peter's Island, South Shetland Islands, Booth-Wandel Island, Anvers Island.

Redescription:
Serolis polita, which was originally described by Pfeffer (1887), is most similar to *Serolis septemcarinata* Pfeffer, 1883 and *Serolis pagenstecheri* Pfeffer, 1887. As the drawings of the dorsal view of the animal are only very small and many appendages have not been drawn, a redescription of this species became necessary. Moreira (1972) already presented good drawings of the first and second pereopod, to illustrate the sexual dimorphism of P2 and Nordenstam (1933) presented drawings of the mouthparts, therefore only drawings of the A2, P7, Plp1, 4 and 5 and the Urp are presented in this redescription.

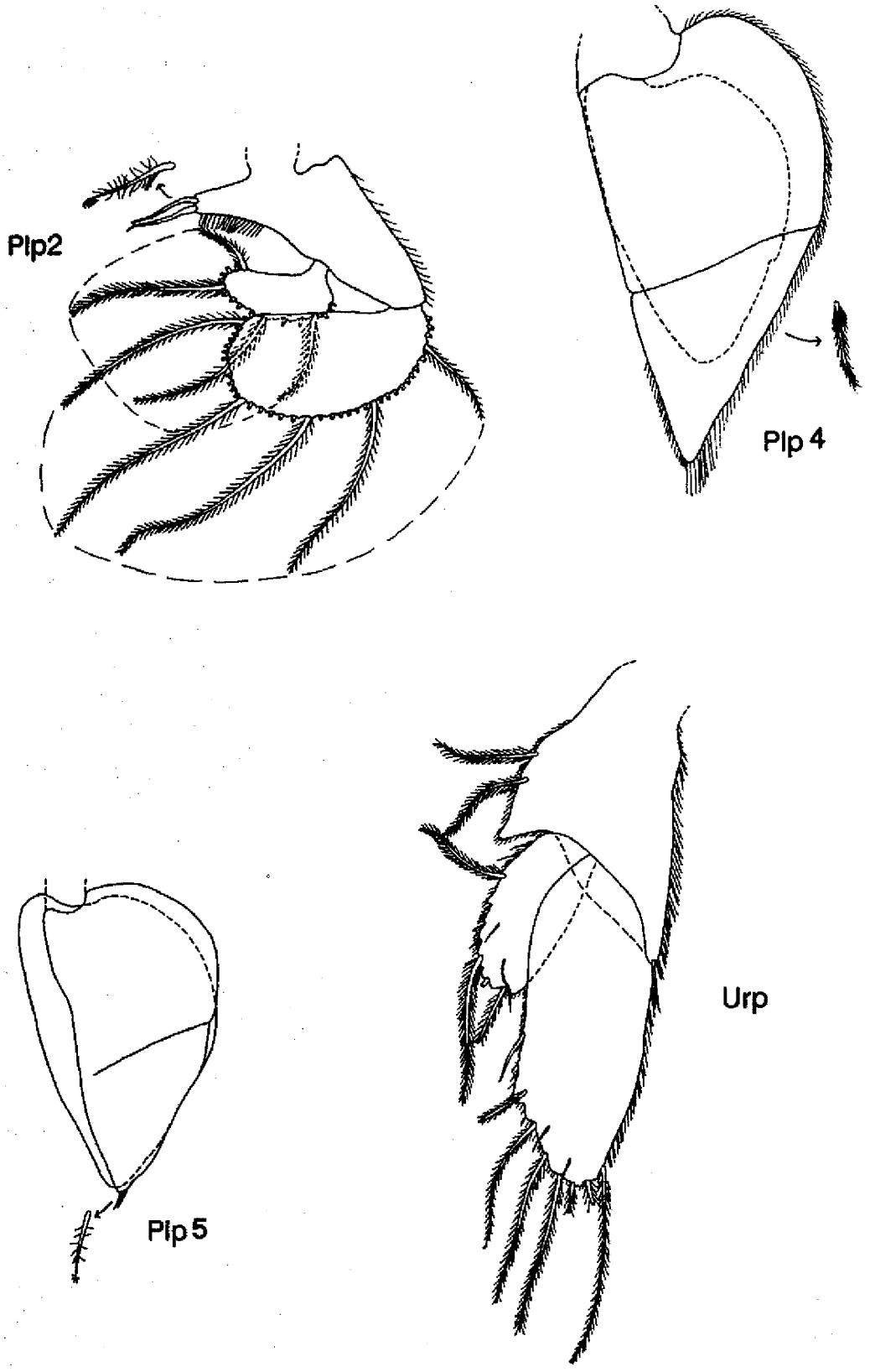


Figure 39: Female of *Serolis bouvieri* Richardson, 1906 [BM(NH)], pleopods 2, 4 and 5 and uropod (with details of setation).

Anterolateral angles of head markedly elongate laterally (Fig. 40). One broader transverse elevation of two lobes frontomedially between the eyes, with caudally directed lateral margins. Two oval longitudinal elevations posteromedially of the eyes. A small oval transverse elevation with a prolonged frontal beginning medially of these. Two small semi-oval elevations between the frontal elevation and the longitudinal elevations between the eyes. Coxal plates indicated by dorsal grooves from second to fourth pereonite. Posterolateral angles of coxal plates of the second to the sixth pereonite all reaching successively further caudally than those of the preceding segments. Seventh pereonite small, without coxal plates. Second to fifth pereonite with a transverse suture on the coxal plates, on pereonite 5 positioned like in the foregoing pereonites, but prolonged a little more medially. All pereonites with marginal short hairs laterocaudally. Coxal plates shorter than in other serolids. Both free pleonites longer than the coxal plates of the sixth pereonite, epimera of the second pleonite little longer than first. Following pleonites fused with pleotelson. Pleotelson with one long elevated median keel, beginning in rounded elevation. On this round elevation two small longitudinal ridges exist, around these six small tubercles occur. Caudally the keel broadens, another tubercle on distal part of the keel.

Laterally of this keel two pairs of triangular elevations, the tips caudally directed. The outer pair is larger. Caudal margin of pleotelson concave.

A2 (Fig. 41) consisting of 5 peduncular and 14 flagellar articles. First peduncular article very short. Second one longer than third, with some short proximomedial bristles. Fourth peduncular article more than twice as long as third, with long setae, setae in groups of 5 to 6, arranged in longitudinal rows of 3 groups of setae. Fourth article broadest, fifth article also with transverse rows of setae; fifth article longest. All flagellar articles with distal groups of small setae, flagellar articles 3-9 with a longitudinal and distally transverse row of small strong cuticularized teeth (see detail in Fig. 41), last article shortest and smallest, with many distal setae.

P7 (Fig. 41) shortest. Long basis with 3 dorsal feather-like bristles, ischium slightly shorter, with many distodorsal long setae and some distoventral long setae. Ventrally on merus, carpus and propodus several transverse groups of strong spines, some of them laterally serrated (see detail in Fig. 41) and with simple setae. Distodorsally on merus, carpus and propodus a row of long spines or setae. Some on carpus and propodus with spines or setules (see detail in Fig. 41). Distodorsal long setae of ischium and merus instead densely setulated. Dactylus very small and slender, longer than distodorsal setae of propodus, with a very short claw and several bristles. The longest of these bristles with small setules. Propodus with 1 distolateral feather-like bristle.

Plp1 (Fig. 41) with sympodite of almost triangular shape, nearly as long as exopodite, which bears 3 small proximal bristles. Endopodite slightly smaller than exopodite, both with long marginal plumose setae. Exopodite also with additional small bristles.

Exopodite of Plp4 (Fig. 41) operculiform, strongly chitinized, medially subdivided by a fusion line, laterally with short marginal plumose setae, the proximal setae are simple. Endopodite smaller, without setae and with one mediolateral small protrusion. Sympodite very small.

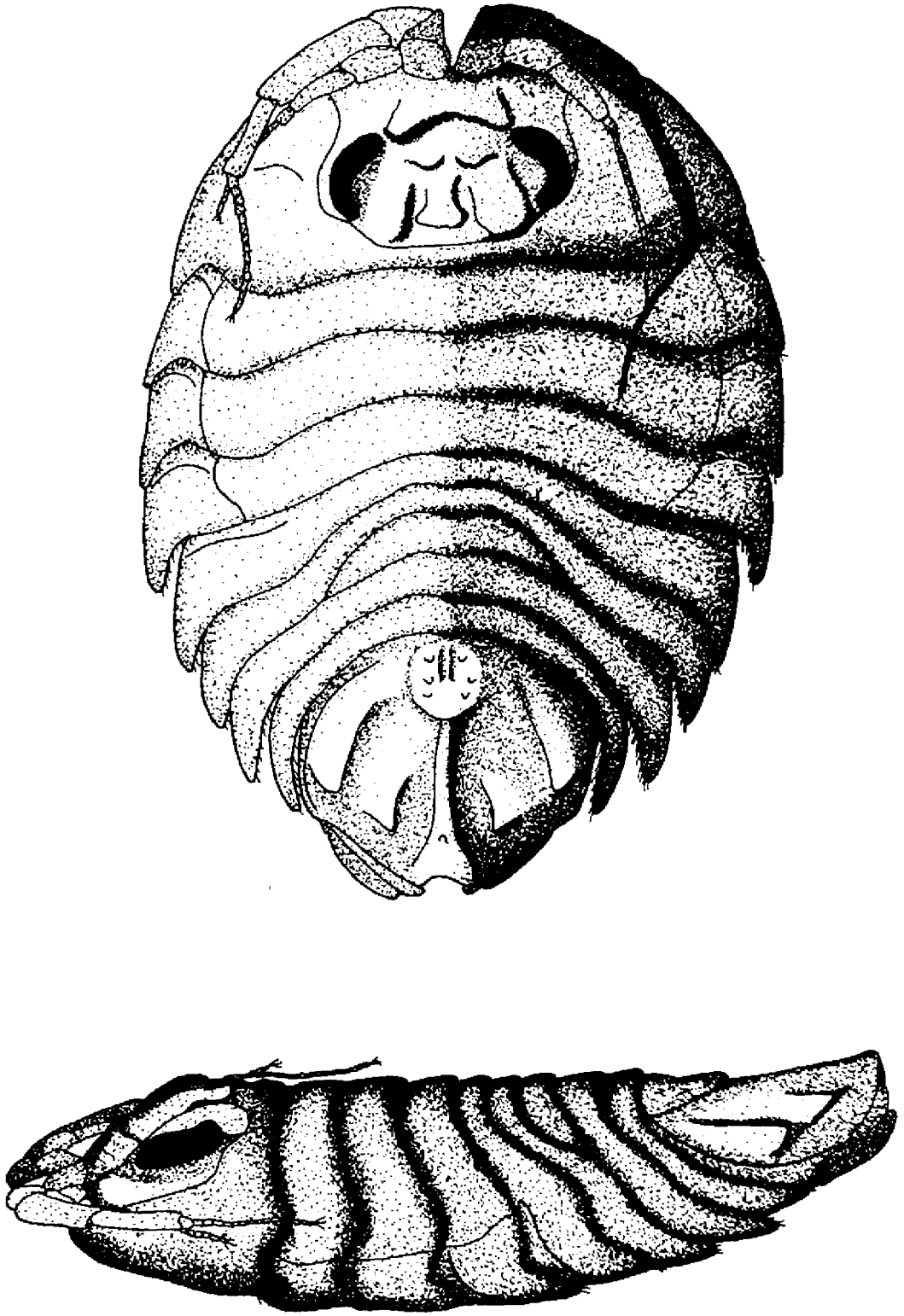


Figure 40: Female of *Serolis polita* Pfeffer, 1887 in dorsal and lateral view (specimens are little longer and more oval in shape than in the drawings of Pfeffer).

Plp5 (not shown in Fig. 41) smallest, exopodite with a single apical bristle, endopodite smaller.

Urp (Fig. 41) with trapezoidal sympodite, covered with 6 long lateral setae and a single distomedial seta, serrated in the upper part (see detail); exopodite shorter than endopodite, lateral and distal margins with plumose long setae and short simple bristles between these setae (see detail in Fig. 41).

Remarks:
The features useful for a discrimination of this species are the following: first the posteromedial elevations between the eyes of *Serolis polita* are not fused medially as in *Serolis septemcarinata* and the small elevation in between is frontally prolonged in the latter, whereas in *Serolis septemcarinata* the small oval elevation is positioned transversely on the caudal margin of the head. In *Serolis pagenstecheri* the posteromedial elevations are frontomedially fused and caudally prolonged into a third lobe of this elevation. The small cuticular hairs on the caudolateral margin of the pereonites, are wanting in both *Serolis septemcarinata* and *Serolis pagenstecheri*. With regard to the telson, the lateral elevations on both sides of the median ridge are caudally more pointed in *Serolis septemcarinata*. In comparison to the dorsal view given by Pfeffer (1887) the specimens used for redescription are more oval, not almost round.

6.5 *Serolis pagenstecheri* Pfeffer, 1887 (Figs. 42 and 43)

Material: Female, 16 mm, sample A3/18, 60°43.12'S 45°30.86'W, South Orkney Islands, 141-190m, agassiz trawl. Samples A3/16, 7 specimens; A3/18, many specimens, for exact data see station list.

Distribution: South Georgia, South Orkney Islands.

Redescription:
Anterolateral angles of head markedly elongate laterally (Fig. 42). Four small transverse oval elevations frontomedially between the eyes. Two short oval diagonal elevations between the frontal elevations and the large posteromedial ones. Larger round elevations on caudal margin of posteromedial characterized by a small triangular elevation. Coxal plates indicated by dorsal grooves from second to fourth pereonite. Posterolateral angles of coxal plates of the second to the sixth pereonite all reaching successively further caudally than those of the preceding segments. Fifth and sixth pereonite mediodorsally very small. Seventh pereonite small, but larger than fifth and sixth, without coxal plates. Second to sixth pereonite with a transverse suture on the coxal plates of pereonites 2-4, separating the plates from the tergites, on pereonites 5 and 6 positioned like in the foregoing pereonites, but a little more medially prolonged. Pereonites 5, 6 and 7 mediodorsally fused. Pereonites 1-4, pereonite 7 and the first two pleonites with a strong mediocaudal spine, pereonites 2-6 also with another lateral pair of spines, most acute on pereonites 2 and 3. Epimera of both free pleonites a little shorter than the coxal plates of the sixth pereonite, second epimera caudally surpassing first epimera. Following pleonites fused with pleotelson. Pleotelson with long elevated median keel, frontally beginning in semi-oval elevation, caudally ending in semicircular elevation around the concave tip of the pleotelson. Laterally of this

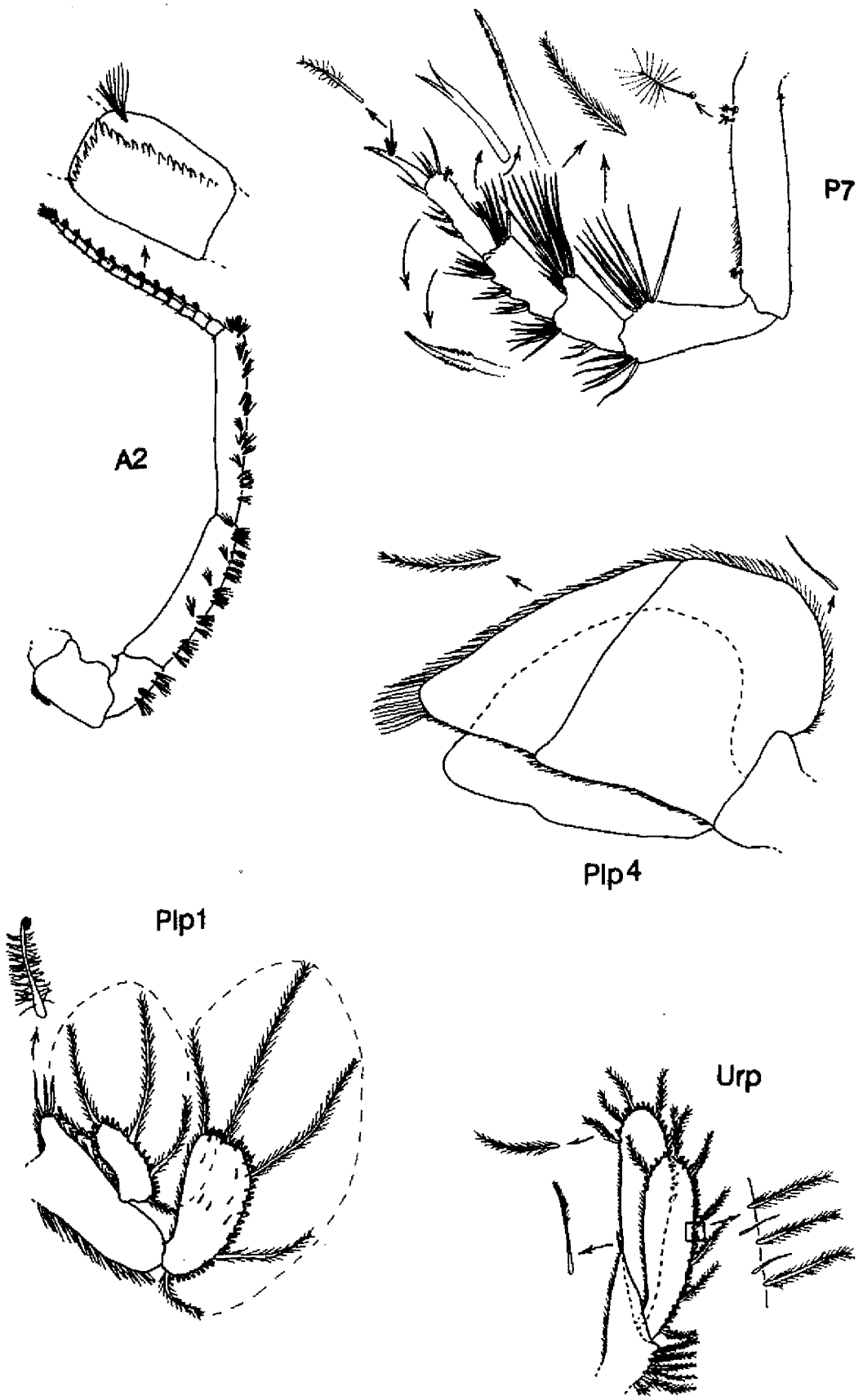


Figure 41: Female of *Serolis polita* Pfeffer, 1887, antenna, pereopod 7, pleopods 1 and 4 and uropod (with details of setation).

keel, two pairs of triangular elevations with a caudally directed tip. Mediolaterally a longitudinal ridge parallel to second pleonite.

A1 (Fig. 42) with three peduncular and 20 flagellar articles. First peduncular article broader but shorter than second, with lateral simple bristles; second article also with lateral row of simple bristles. Third peduncular article narrower than second, but longest, with several simple setae. First flagellar article longer than following articles, with 2 feather-like bristles and small apical hairs. All flagellar articles except articles 1-4 with three distolateral simple setae; flagellar articles 8-17 each with a lateral aesthetasc medially of the simple setae. Eighteenth flagellar article only with a longer medial seta, last but one article only with two aesthetascs, last flagellar article with 4 simple long setae and a single feather-like bristle.

A2 (Fig. 42) consisting of 5 peduncular and 15 flagellar articles. First peduncular article very short, (not shown in Fig. 42). Second one longer than third. Fourth peduncular article broadest, double as long as third, with longitudinal rows of long setae in groups of 5 to 6, fifth article longest, also with longitudinal rows of setae and with a mediolateral feather-like bristle. All flagellar articles with distolateral setae, except the first article, flagellar articles 2-7 with a longitudinal row of small strong cuticularized teeth, last article shortest and smallest, with 7 distal setae.

Mandibles (Fig. 42) asymmetrical, with a three-jointed palp. Pars incisiva of rMd narrower than left, with one broad toothless edge. Lacinia mobilis of rMd with 2 teeth and nearby one single slender spine-like structure, pars molaris lacking. First palpal article shorter than second, second with a row of many distolateral spines, tip bulbous, spinulated in two rows, except on proximal broader part and on bulbous tip. Last palpal article smallest and bent laterally, also with a row of spinulated spines (see detail in Fig. 42). Pars incisiva of lMd broader than of right, with one broad cutting edge, lacinia mobilis broad, a spine-like structure nearby, pars molaris absent. Palp as in rMd.

Lateral endite of Mx1 (Fig. 42) distally curved medially, apically with 11 strong cuticularized teeth, some covered with setules; one single small spine. Median endite small rudiment.

Mx2 (Fig. 43) of three endites. Inner endite with 15 slender setae, positioned in two rows and sparsely setulated in the upper part, median endite with two strong and long setae, outer endite with two long setae: all setae distally setulated for about half of the length (see detail in Fig. 43).

Mxp (Fig. 43) with quadrangular epipodite, strong endite, which is only little longer than epipodite, palp three-jointed. Endite with some proximomedial simple setae and apically two strong spinulated spines (see detail in Fig. 43), no coupling hooks present. Second palpal article longest and broadest in the upper part, with long median setae, long distolateral setae and some shorter ones dispersed all over the surface. First article small, long-oval, with 4 short bristles, last article narrowest, but longer than first, with lots of simple setae, most on tip of the palp.

P1 (see Fig. 43) shorter and stronger than all following pereopods, with long basis, short merus and carpus, broad-oval subchelate propodus, dactylus almost as long as propodus, without claw. Ischium with 2 simple bristles, merus with 3 short bristles. Carpus with two distomedial sensory spines (see detail in Fig. 43) and 5 short bristles. Palm of propodus with row of long sensory spines, the sensory bris-

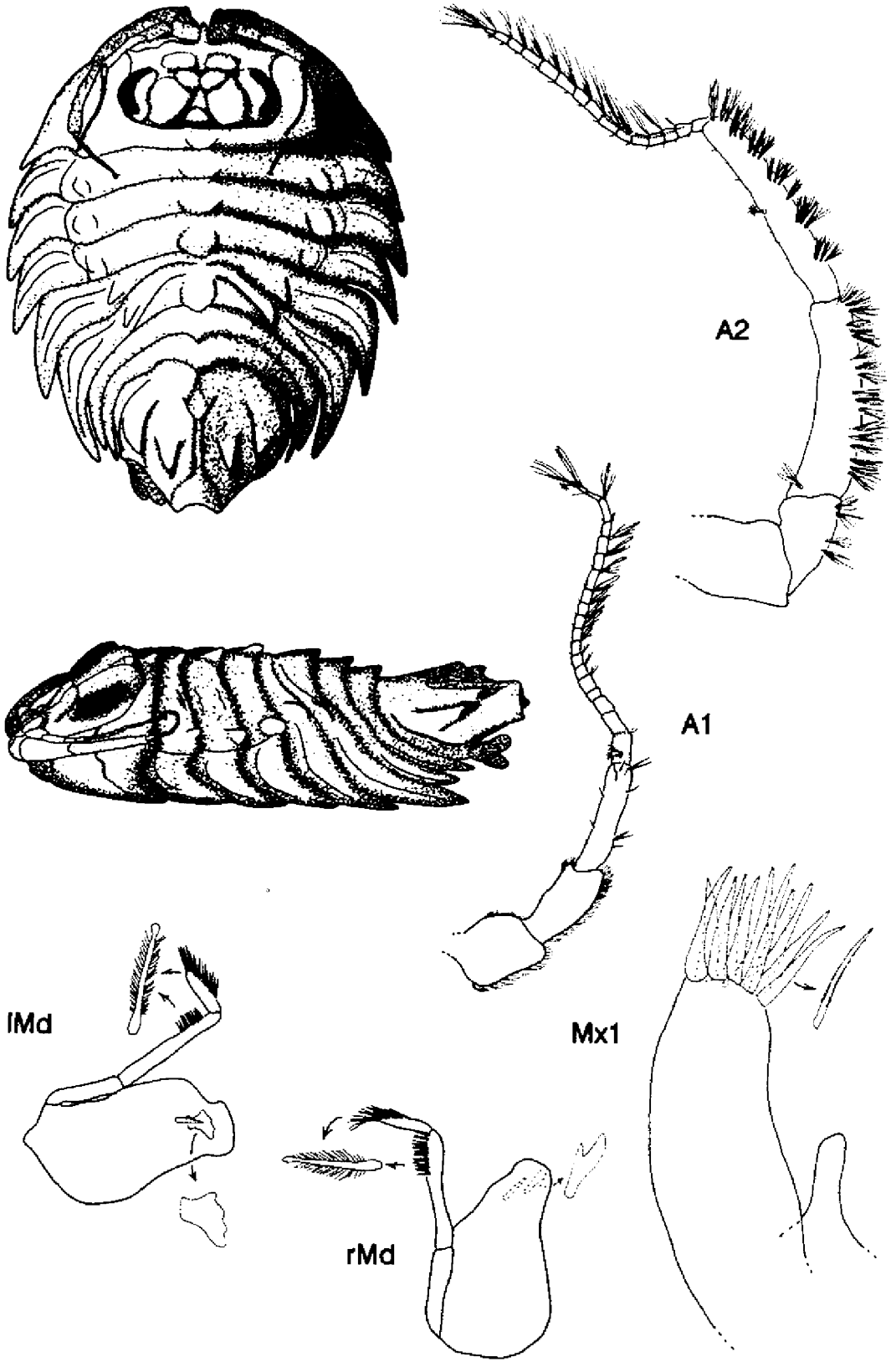


Figure 42: Female of *Serolis pagenstecheri* Pfeffer, 1887 in dorsal and lateral view, antennula, antenna, both mandibles and maxillula (with details of setation).

tle inserting distolaterally. Alternating to these sensory spines shorter and broader sensory spines occur, being densely covered with small spinules. Basally to some of these a short bristle occurs.

P2-7 (Fig. 43) similar, P7 shortest (in Fig. 43 only P2 and P5 are shown). Long basis with several dorsal feather-like bristles, ischium slightly shorter, with 1-2 distodorsal small spines and some distoventral long setae. Dorsally on merus, carpus and propodus 2-5 forked spines (see detail in Fig. 43). Distoventrally on merus, carpus and propodus long setae. Some of the setae with setules or spinules (see detail in Fig. 43). Dactylus short and slender, slightly longer than distodorsal setae of propodus, in P2 shorter, with a very short claw. Propodus with 1 distolateral feather-like bristle.

Plp3 (Fig. 43) with sympodite of almost triangular shape, bearing 2 small proximal bristles. Endopodite slightly smaller than exopodite, both with long marginal plumose setae.

Exopodite of Plp4 (Fig. 43) operculiform, strongly chitinized, medially subdivided by fusion line, laterally with row of short marginal plumose setae. Endopodite smaller, without setae and with one mediolateral small protrusion. Sympodite very small, laterally with small setules.

Exopodite of Plp5 (Fig. 43) smallest, with one short simple apical bristle, endopodite slightly smaller.

Trapezoidal sympodite of Urp (Fig. 43) with two lateral setae; exopodite shorter than endopodite, distal margin of endopodite with 12 long plumose setae and some small ones; mediodistal- and lateral margin of exopodite with 17 long plumose setae and some shorter simple ones.

Remarks:
Serolis pagenstecheri was first described by Pfeffer (1887). Pereonites 5-7 are dorsomedially fused as in *Serolis aspera* Sheppard, 1933, *Serolis bakeri* Chilton, 1917, *Serolis elongata* Beddard, 1884, *Serolis foresti* Bastida y Torti, 1970, *Serolis mirabilis* Moreira, 1976, *Serolis minuta* Beddard, 1884, *Leptoserolis nototropis* Sheppard, 1933, *Serolis platygaster* Sheppard, 1933 and *Serolis yongei* Hale, 1933. Of these species only *Serolis aspera. Leptoserolis nototropis, Serolis pagenstecheri* and *Serolis platygaster* have been found in Antarctic waters. From these two species *Serolis pagenstecheri* can easily be distinguished by the many elevations on the head, which are less numerous in both other species. Moreover *Serolis pagenstecheri* is characterized by several strong spines, present dorsomedially of pereonites 2-4 and 7 and on both free abdominal segments. Mediolaterally just beneath the coxal plates of pereonites 2-6 another strong caudally-directed spine occurs on each side. In *Leptoserolis nototropis* the dorsomedial spines are much shorter and more slender, the dorsolateral spines are lacking, whereas *Serolis platygaster* is even wanting the dorsomedial spines. The lateral margins of the pereonites are more elongate and the caudolateral tips of the epimers a little more pointed in *Serolis pagenstecheri* than in both *Leptoserolis nototropis* and *Serolis platygaster.* The spine armature of the pleotelson of *Serolis pagenstecheri* is also quite different to that of both other species, because of the strong frontomedial spine and the two strong dorsolateral spines beneath the median ridge of the pleotelson, which are both lacking in *Leptoserolis nototropis. Serolis pagenstecheri* is the only of these three Antarctic forms, characterized by a concave

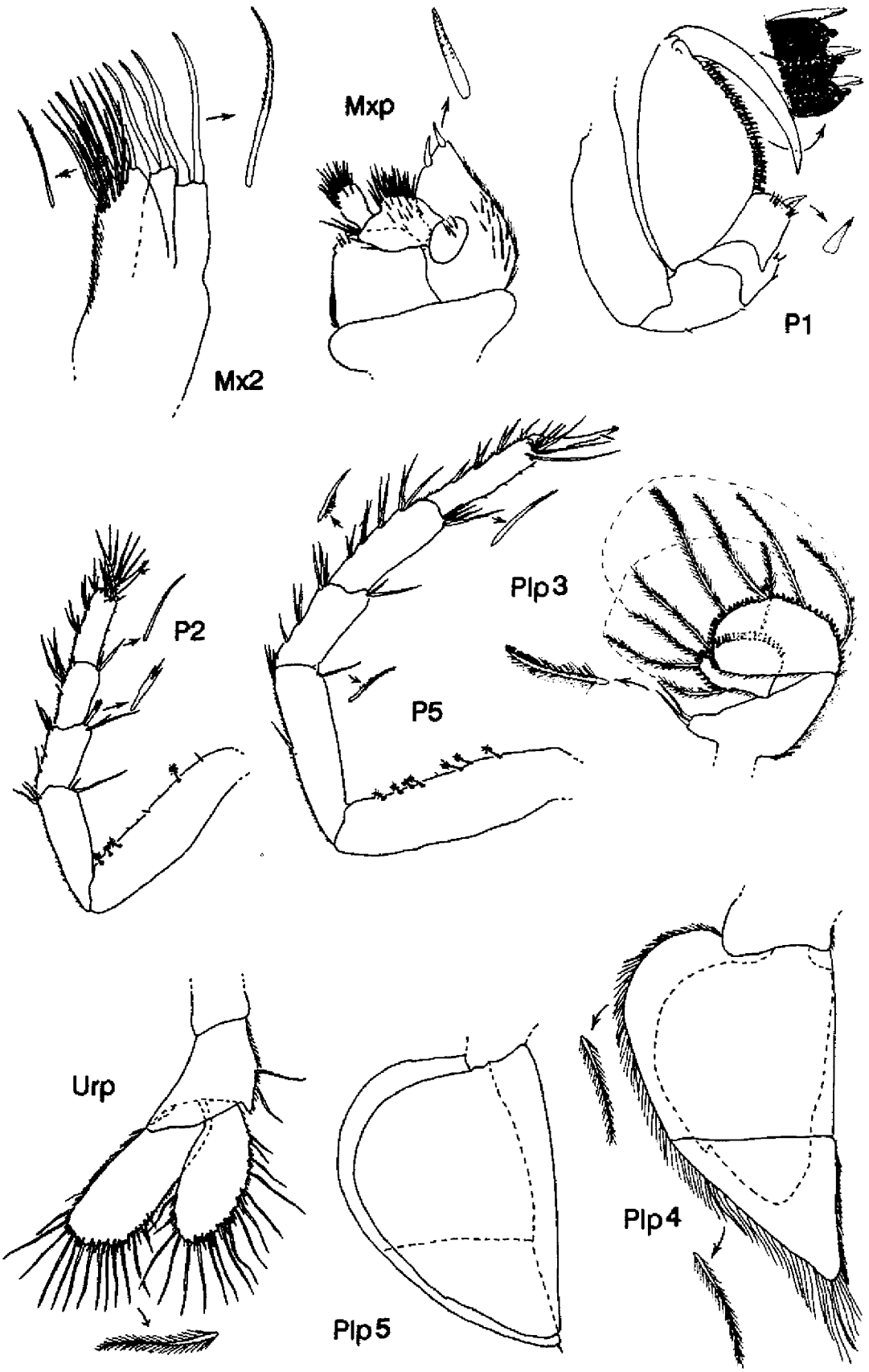


Figure 43: Female of *Serolis pagenstecheri* Pfeffer, 1887, maxilla, maxilliped, pereopods 1, 2 and 5, pleopods 3, 5 and 5 and uropod (with details of setation).

mediocaudal tip of the pleotelson. *Serolis aspera* is very similar to *Serolis pagenstecheri*, but the four frontal elevations on the head of *S. pagenstecheri* are wanting in *S. aspera*. In this species only two frontal elevations are present. Besides the pleotelson of *Serolis pagenstecheri* is concave, *Serolis aspera* bears a small protrusion within this concavity.

7. Redescriptions of Antarctic Cirolanidae

Until now most of the taxonomic descriptions of Antarctic Cirolanidae have been done by Vanhöffen (1914). In the original descriptions he did not carefully draw all appendages; only the mouthparts in lateral and ventral view, the head in lateral view, the distal parts of pereopods 2 and 7, the male pleopod 2 and the epimera of the pleonites have been illustrated. Vanhöffen's descriptions of *Cirolana albinota*, *C. oculata*, *C. obtusata* and *C. intermedia* are based on material of the German Antarctic Expedition (1901-1903). The redescriptions have also been done on the basis of the original material, collected by Vanhöffen. As it is not clear which of the specimens are the holotypes, lectotypes have been selected out of the syntypes, the other specimens of Vanhöffen's samples have to be regarded as paralectotypes in future.

7.1 Key to species of *Natatolana* (Cirolanidae)

The Antarctic species of *Natatolana* are all similar. Type material had not been available from all species, therefore only four species have been redescribed. *Cirolana bathypelagica* (Schultz, 1977) was transferred into the new genus and family *Protognathia* (Protognathiidae), which has an intermediate position between the Cirolanidae and Gnathiidae (Wägele & Brandt, 1988). The following species can easily be distinguished by color and form of the eyes (Fig. 44).

1a	Eyes present	(2)
1b	Eyes absent ..... *Natatolana meridionalis* (Hodgson, 1910)	
2a	*Natatolana* with long-oval eyes.	(5)
2b	*Natatolana* with round eyes.	(3)
3a	Eyes large	(4)
3b	Eyes small, light-pink, with 9 vertical and 10 horizontal ocelli (Fig. 45). ..... *Natatolana albinota* (Vanhöffen, 1914)	
4a	Eyes hyacinth-red to black, with 12 horizontal and 17 vertical ocelli (Fig. 61). ..... *Natatolana oculata* (Vanhöffen, 1914)	
4b	Eyes with 8 vertical and 13 horizontal ocelli. ..... *Natatolana nitida* (Hale, 1952)	
5a	Eyes of normal size, light-red, with 8 horizontal and 9 vertical ocelli (Fig. 51). ..... *Natatolana intermedia* (Vanhöffen, 1914)	
5b	Eyes large, black or dark brown, with 9 vertical and 13 horizontal ocelli (Fig. 56). ..... *Natatolana obtusata* (Vanhöffen, 1914)	

7.2 General Morphology

Body more than twice as long as broad, dorsoventrally not flattened as in Serolidae. Head small and eyes round or oval (not reniform as in Serolidae) of different size (Fig. 44) and with different number of ocelli, sometimes partly covered

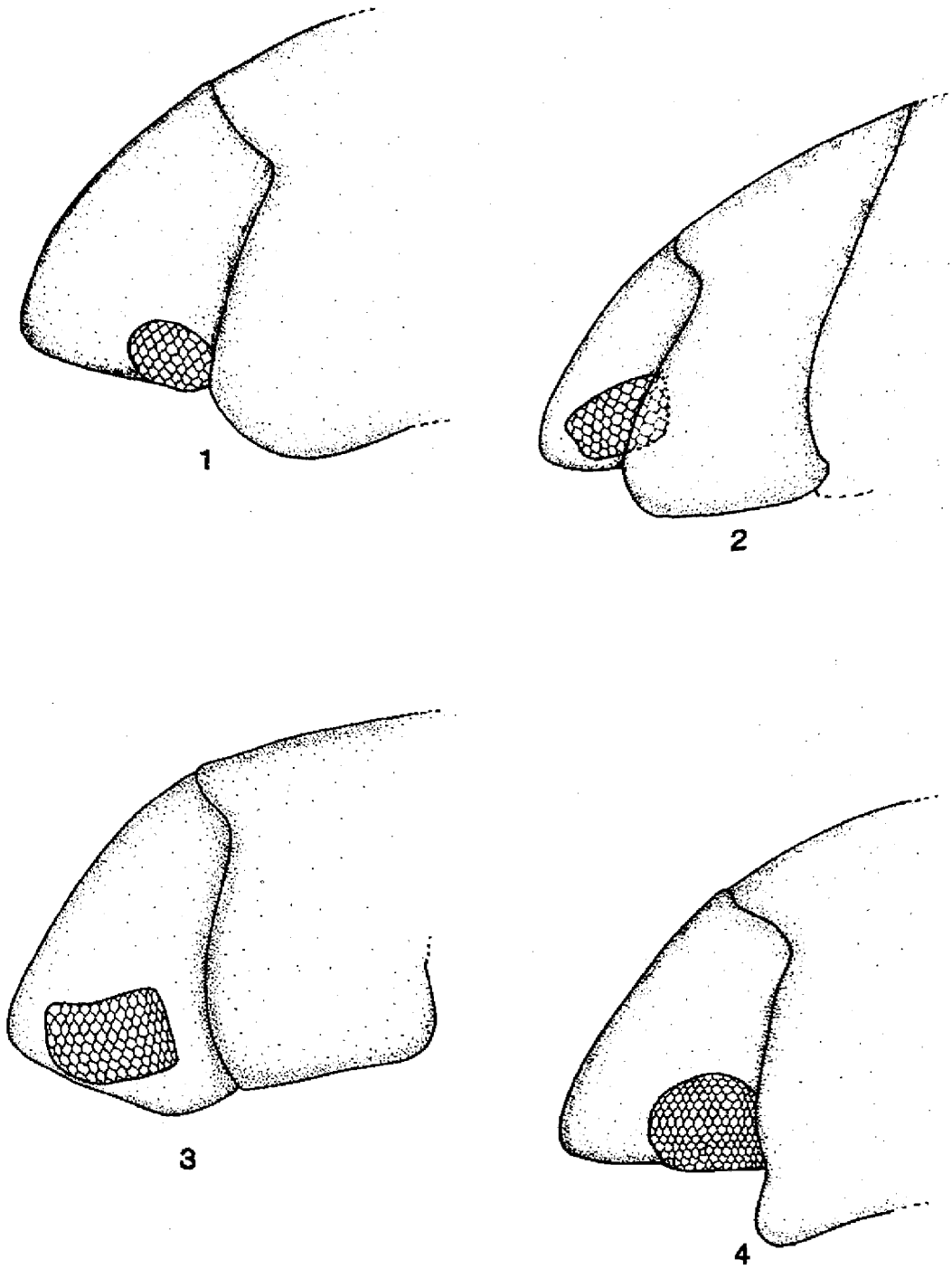


Figure 44: Lateral view of head and eye of *Natatolana albinota* (Vanhöffen, 1914), SMF (1); *Natatolana intermedia* (Vanhöffen, 1914), SMF (2); *Natatolana obtusata* (Vanhöffen, 1914), SMF (3); *Natatolana oculata* (Vanhöffen, 1914), ZMB (4).

by the first pereonite. Frontal lamina most often straight and long, clypeus triangular, laterally much elongate and slender. Pereonites smooth. Fourth and fifth pereonite largest and longest, second and seventh smallest. Coxal plates with curved carina, coxal plate 7 reaching beyond epimer of pleonite 1. Pleonites 1-5 free (in comparison to species of the Serolidae, which only bear two free pleonites). Epimera of last pleonite reduced. Distal margin of pleotelson with sensory spines on both sides and groups of long setae between them; caudal tip of telson shallowly pointed.

All flagellar articles of A2 with a dense group of lateral simple short setae and many aesthetascs.

Mandibles asymmetrical, palp three-jointed. Pars incisiva of rMd slightly narrower than left, with three strong teeth, a caudal long and quite acute tooth, situated near to the mouth and two smaller ones. Of these the frontal one is blunt. Lacinia mobilis with three teeth, proximally a lobe with many small, more acute teeth; pars molaris a great lobe, with a row of small strong acute teeth on one side. First article of palp without any setae, second article with many simple setae, especially in the upper part, in several rows; third article smallest, slightly bent, with one row of simple setae.

Mx 1 with lateral endite of 11 stout spines, median endite short, distally almost quadrangular, with 3 strong stout apical teeth, covered with some setules.

Mx 2 of three lobes, similar to Mx 2 of the Serolidae.

Mxp with small endite (compared to the Serolidae), bearing a coupling hook; five palpal articles laterally surrounded by a large number of long lateral and shorter median simple setae; third palpal article longest and broadest, last article smallest and narrowest.

Pereopod 1 (not subchelate as in the Serolidae) with long basis bearing two dorsal rows of long simple setae, merus distodorsally prolonged, reaching at half length of propodus; posterior margin of merus with many acute sensory spines; carpus posterodistal margin with sensory spines; propodal palm with some large acute sensory spines. Pleopods comparable with the generic condition.

Uropod with almost triangular sympodite bearing distomedially many long setulated setae, distolaterally some long and strong anterolateral sensory spines and long simple setae. Exopodite of Urp slightly shorter and narrower than endopodite, with several strong sensory spines, each situated in a small notch, many dense setulated setae between them. Endopodite also with sensory spines.

8. Redescriptions of Cirolanidae (Genus Natatolana)

8.1 *Natatolana albinota* (Vanhöffen, 1914) (Figs. 45-50)

Synonymy: Natatolana albinota = *Cirolana albinota* Vanhöffen, 1914

Material: The redescription of this species is based on the original material of Vanhöffen, 1914. Originally the material has been located in the Zoological Museum of Göttingen (ZMG), but as the collection of crustaceans has been given to the Senckenberg Museum, the Cirolanidae of Vanhöffen can be loaned from there in future (Türkay, 1988). It was not obvious from the present material, which of the specimens has been the holotype of Vanhöffen's description. Therefore a lectotype ZMG 259 has been chosen. It is an adult male of 40,5 mm length. The additional material (paralectotypes, ZMG 258) of Vanhöffen off the Senckenberg Museum includes three additional males of 37, 40 and 42 mm and three females of 35, 35 (ovigerous females) and 43 mm (ovigerous female), Deutsche Südpolarexpedition 1901-1903, Gauss Station, Posadowsky Bay, 66°2.9'S 89°38.5'W, in a depth of 385m.

Further material has been collected during expeditions of the RV „Polarstern„, this will remain in the collection of Dr. J.W.Wägele: A 16, 1 specimen; A3/14, 1 specimen; A3/15, 8 specimens; A3/20, 5 specimens; A3/21, 3 specimens; A3/22, 1 specimen; A3/27, 1 specimen; A3/32, 2 specimens; A3/44, 43 specimens; 04/ 417, 1 specimen; 04/450, 2 specimens; 04/490, 1 specimen; 04/506, 1 specimen; A6/2 St.207, 5 specimens; A6/2 St. 221, 2 specimens; A6/2 St.223, 1 specimen; A6/2 St. 225, 6 specimens; A6/2 St. 230, 46 specimens; 68 WH/ 271, 1 specimen (for exact data see station list). Maximum length of males measuring 42 mm and maximum length of females measuring 43 mm, Antarctic Peninsula and Weddell Sea.

Distribution: Gauss Station; Discovery Bay; Davis Sea; Banzare Coasts; Lars Christensen Coast; Enderby Land; Ross Sea; South Chile, Antarctic Peninsula and Weddell Sea in a depth between 35 and 670 m.

Redescription of male: Body slightly more than twice as long as broad (Fig. 45). Head small, smaller than first pereonite, with caudal margin posterolaterally bent. Eyes relatively small compared to the body length, partly covered by the first pereonite, laterally much prolonged, ventrally reniform, caudolaterally acuminating. Color of eyes light-pink, number of ocelli: 9 vertical x 10 longitudinal (Fig. 44-1). Frontal lamina straight-sided, more than three times as long as broad, with blunt anterior margin. Clypeus triangular, laterally much elongate and slender, laterally surpassing the labrum. Pereonites smooth. Fourth and fifth pereonite largest and longest, second and seventh smallest. Coxal plates 1-3 with curved carina, reaching from anterolateral to posterolateral point of coxal plate; coxal plates 4-7 with more pronounced but less curved median carina, more diagonally running; coxal plate 7 reaching beyond epimer of pleonite 1. Pleonites 1-5 free, not fused. Epimera of pleonite 3 narrower and more laterally directed than preceding plate, posteriorly acute. Epimera of fourth pleonite caudally directed, with acute tips, epimera of last pleonite reduced. Distal margin of telson with 6 sensory spines on both sides and groups of five to six long setae between them; caudal tip of telson shallowly pointed.

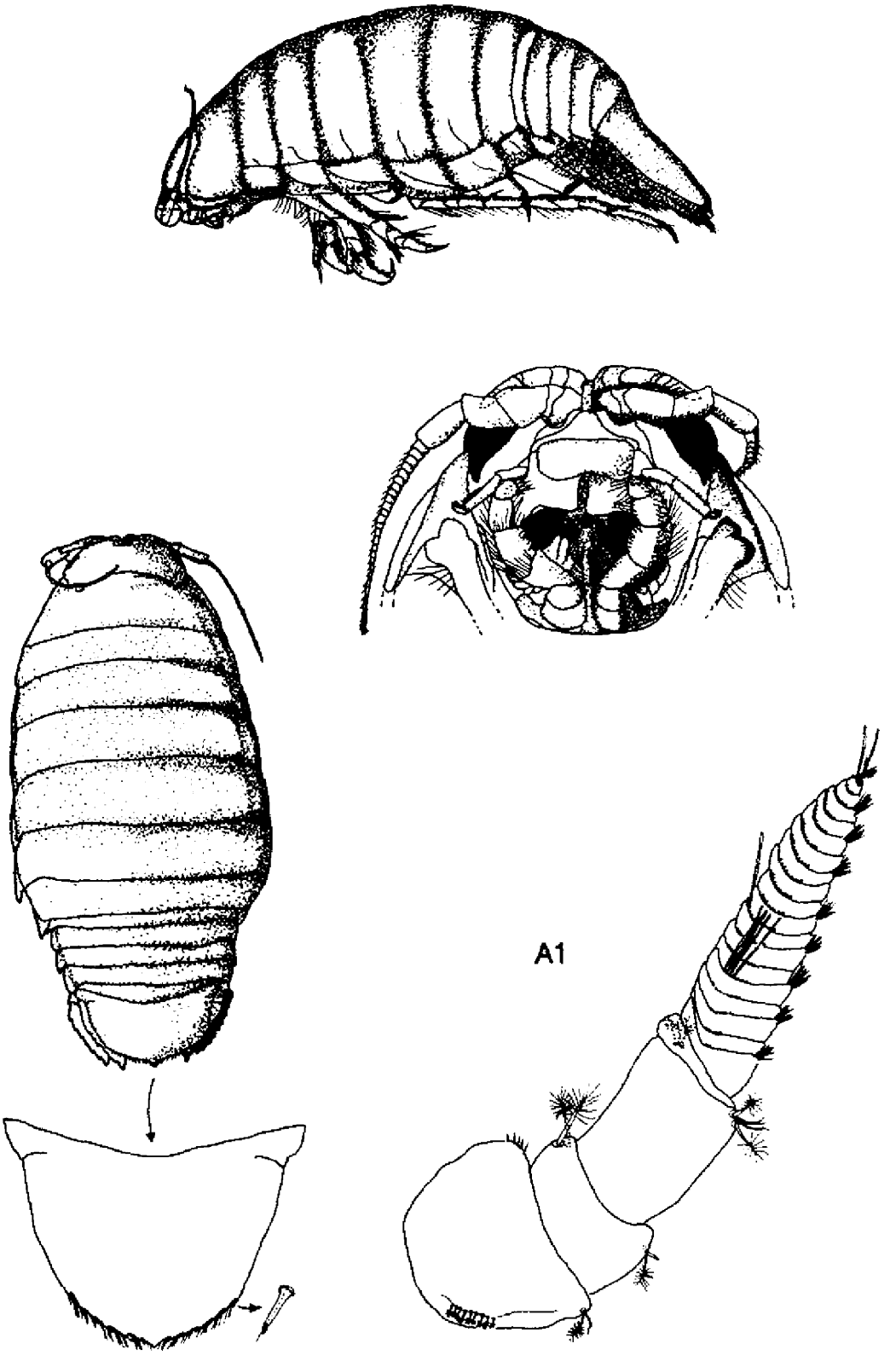


Figure 45: Natatolana albinota (Vanhöffen, 1914), SMF; Male in dorsal (with detail of telson) and lateral view, head in ventral view and antennula.

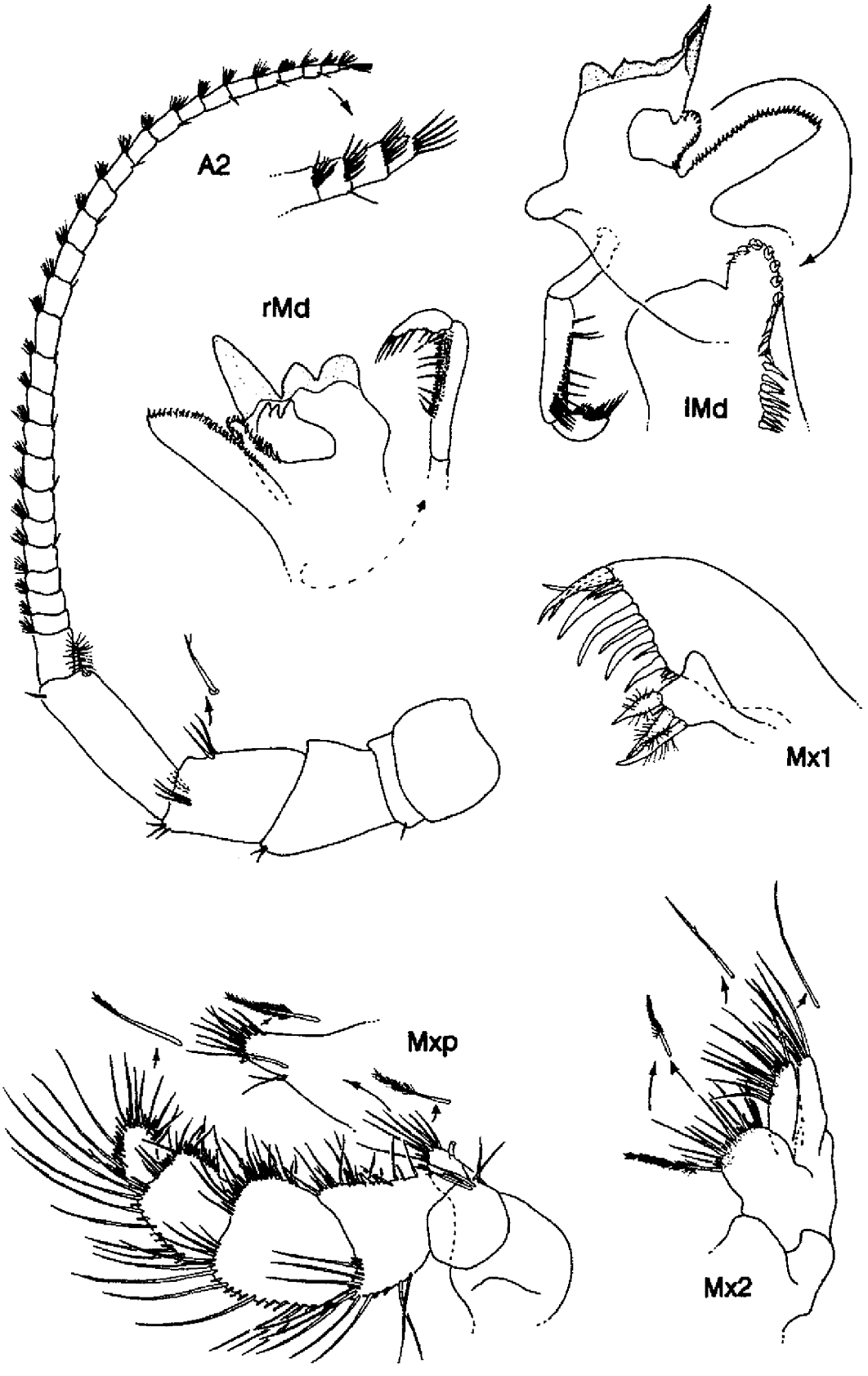


Figure 46: Natatolana albinota (Vanhöffen, 1914), SMF; Antenna, both mandibles, maxillula, maxilla and maxilliped of male (with details of setation).

A 1 (Fig. 45) with three peduncular and 20 flagellar articles. First peduncular article broadest, with some distal simple short bristles and one feather-like bristle, proximolaterally with a row of 9 small feather-like bristles; second peduncular article smallest, with two long feather-like bristles on one side and another one on opposite side; third peduncular article longest and narrowest, with two apical feather-like bristles and three simple setae. First flagellar article forming a very small ring, bearing three feather-like bristles; following 18 flagellar articles with a row of long and slender aesthetascs and each second or third article with a group of short simple setae, last article with simple setae and one feather-like bristle.

A 2 (Fig. 46) with 5 peduncular and 27 flagellar articles. First peduncular article broadest, second one shortest, with a single short seta; third article about as long as first and second article together, with two short setae; fourth article longer than third, with 4 groups of three slender sensory spines; fifth peduncular article longest and narrowest, with one single long feather-like bristle and another simple one.

First flagellar article longest and broadest; all flagellar articles with a dense group of lateral simple short setae and on every second or third article another lateral single seta; tip of antenna with five simple setae.

Mandibles (Fig. 46) asymmetrical, palp three-jointed. Pars incisiva of rMd slightly narrower than left, with three strong teeth, a caudal long and quite acute tooth, which is situated near to the mouth and two smaller ones. Of these the frontal one is blunt. Lacinia mobilis with three teeth, proximally a lobe with many small, more acute teeth; pars molaris a great lobe, with a row of small strong acute teeth on one side. First article of palp without any setae, second article with many simple setae, especially in the upper part, in several rows; third article smallest, slightly bent, with one row of simple setae. Pars incisiva of lMd broader than of right, but similar; lacinia mobilis consisting of one broad blunt tooth. Pars molaris and palp as in rMd.

Mx 1 (Fig. 46), lateral endite with 11 stout spines and some proximal short bristles, median endite short, distally almost quadrangular, with one simple seta and 3 strong stout apical teeth, covered with some setules.

Mx 2 (Fig. 46) of three lobes, proximal and median lobe of two rows of setae; first row of proximal lobe with 8, second with 18 setae; first row of median endite with 2, second row with 12 setae; distal lobe bearing five setae (for details of setation see Fig. 46).

Mxp (Fig. 46) with small endite, bearing only one coupling hook; five palpal articles bearing a large number of long lateral and shorter median simple setae; third palpal article longest and broadest, last article smallest and narrowest.

Pereopod 1 (Fig. 47) with long basis bearing two dorsal rows of long simple setae, merus distodorsally prolonged, reaching at half length of propodus; posterior margin of merus with 20 acute sensory spines; carpus posterodistal margin with 2 long and 4 shorter sensory spines; propodal palm with 7 large acute sensory spines; dactylus distodorsally with 7 small simple setae. Pereopods 2 and 3 (Fig. 47) similar to pereopod 1, but spines of merus and carpus larger, of propodus smaller, carpus somewhat longer than in P1, propodal palm with 5-7 smaller sensory spines, distodorsally of ischium additional sensory spines.

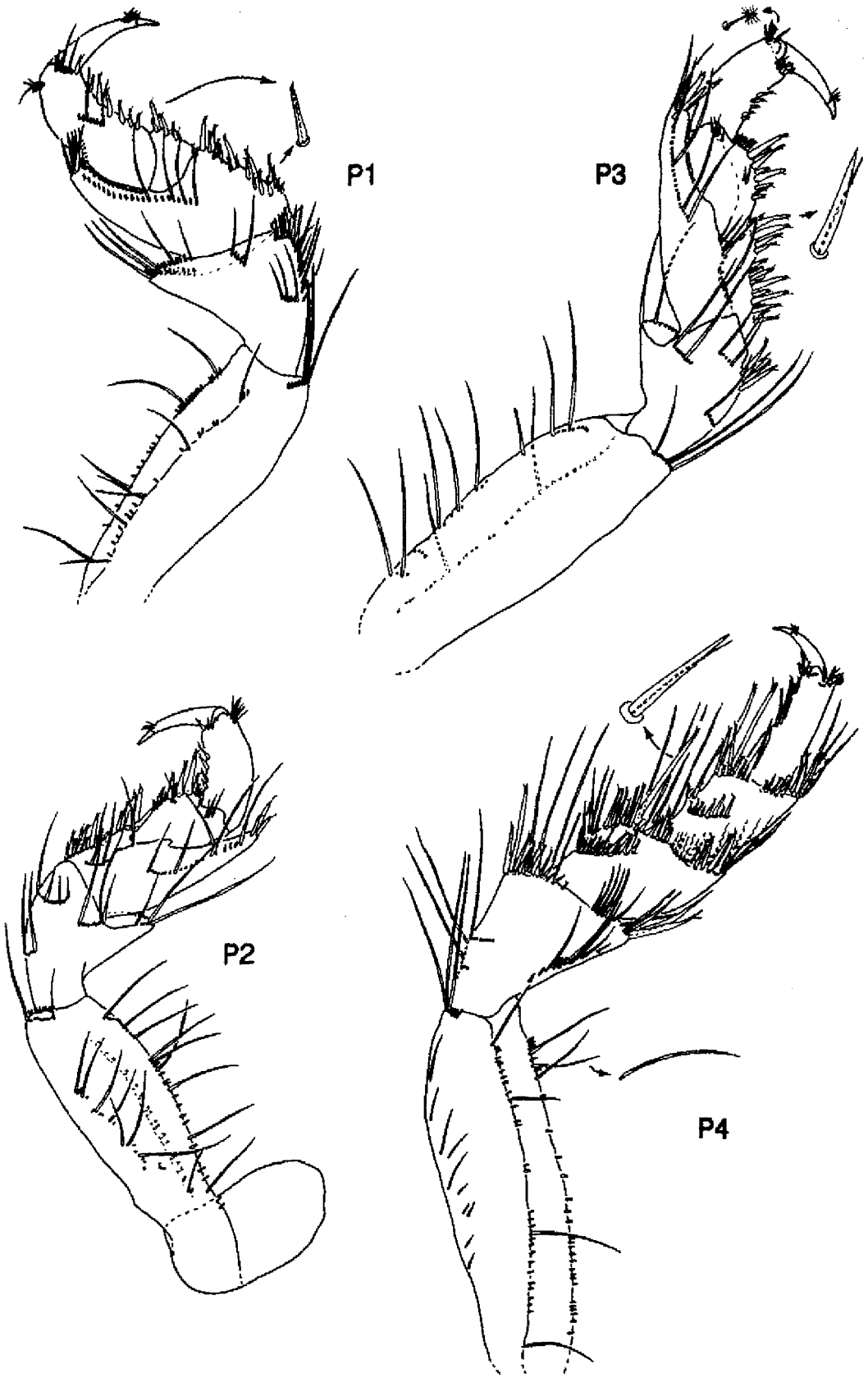


Figure 47: *Natatolana albinota* (Vanhöffen, 1914), SMF; Male pereopods 1-4 (with details of setation).

Pereopods 4-7 (Figs. 47 and 48), essentially similar, but basis widening and all articles increasing in length, basis of pereopods 6 and 7 also with two dorsal rows of long setae, but setae more dense and setulated, posterior margin of basis as in Pl-3 shallowly convex; ischium, merus and carpus with groups of sensory spines at different angles and along posterior margins; merus distodorsally not prolonged; propodus with 3 groups of 2-3 sensory spines on posterior margin and a group of some setae distodorsally; dactylus with few simple setae.

Pleopods (Figs. 49 and 50) conform to the generic condition; Plp2 (Fig. 49) of male with appendix masculina, extending beyond the apex of endopodite, about as long as swimming setae of endopodite and exopodite; Plp3 (Fig. 49) similar to Plp1 and 2; Plp4 (Fig. 49) with shorter sympodite, exopodite with suture reaching to the middle of the exopodite; Plp5 (Fig. 50) smallest, sympodite shortest, posteromedial setae lacking, exopodite of Plp5 with median subdividing suture.

Urp (Fig. 50) with almost triangular sympodite bearing distomedially many long setulated setae, distolaterally three long and strong anterolateral sensory spines and three long simple setae. Exopodite of Urp slightly shorter and narrower than endopodite, with 10 strong sensory spines (8 on lateral margin), each situated in a small notch, many dense setulated setae between them. Endopodite with 8 strong sensory spines and many setulated setae between them, mediolaterally endopodite slightly curved towards pleotelson.

Variations of spine armature of tail fan: The number of the distal pleotelsonic sensory spines varies between 6 and 9 pairs, depending on the body length of the animal, but independently of the sex. The number of spines on the uropod exopodite lies between 7 and 9, of the endopodite between 9 and 11 spines.

Remarks:
In his description of *Natatolana albinota*, Vanhöffen (1914) illustrated only the head in lateral and ventral view, pereopods 2 and 7 (only distal part) , the lateral margins of the pleonites and the second pleopod of the male. In another illustration by Schultz (1977) all appendages have been drawn. This species was mentioned as *N. oculata* (Vanhöffen, 1914) by Schultz (1977) in his description, whereas in the figure Schultz named it *N. albinota.*

The illustrations do not solve the question, which of the two species has been drawn, *Natatolana albinota* can easily be distinguished from the other species of the genus by the form and color of the eyes. The eyes of the latter are almost round, like in *N. oculata* (Vanhöffen, 1914), but the number of ocelli is very low (9x10), independently of the animals length. *N. oculata* also has round eyes, but they consist of 12x17 ocelli. The color of the latter's eyes is light red, whereas the large round eyes of *N. oculata* are dark hyacinth-red. The eyes of the other Antarctic species are more elongate. Frontal lamina of *N. albinota* straight-sided, more than three times as long as broad, with blunt anterior margin, whereas in *N. intermedia* (Vanhöffen, 1914) the lamina narrows anteriorly and forms an acute, blunt point, in *N. obtusata* (Vanhöffen, 1914) the lamina frontalis is quite short, posteriorly and anteriorly also blunt, in *N. oculata* (Vanhöffen, 1914) it is longest. The epimera of the third and fourth pleonite both with quite acute tips, the third epimera a little more laterally bent than the fourth, in *N. oculata* these epimera are much more acute and laterally bent. Pleotelsonic apex with a small blunt tip and 7-9 sensory spines on both sides, situated in a small notch, in *N. oculata* only with 5 sensory spines. In *N.*

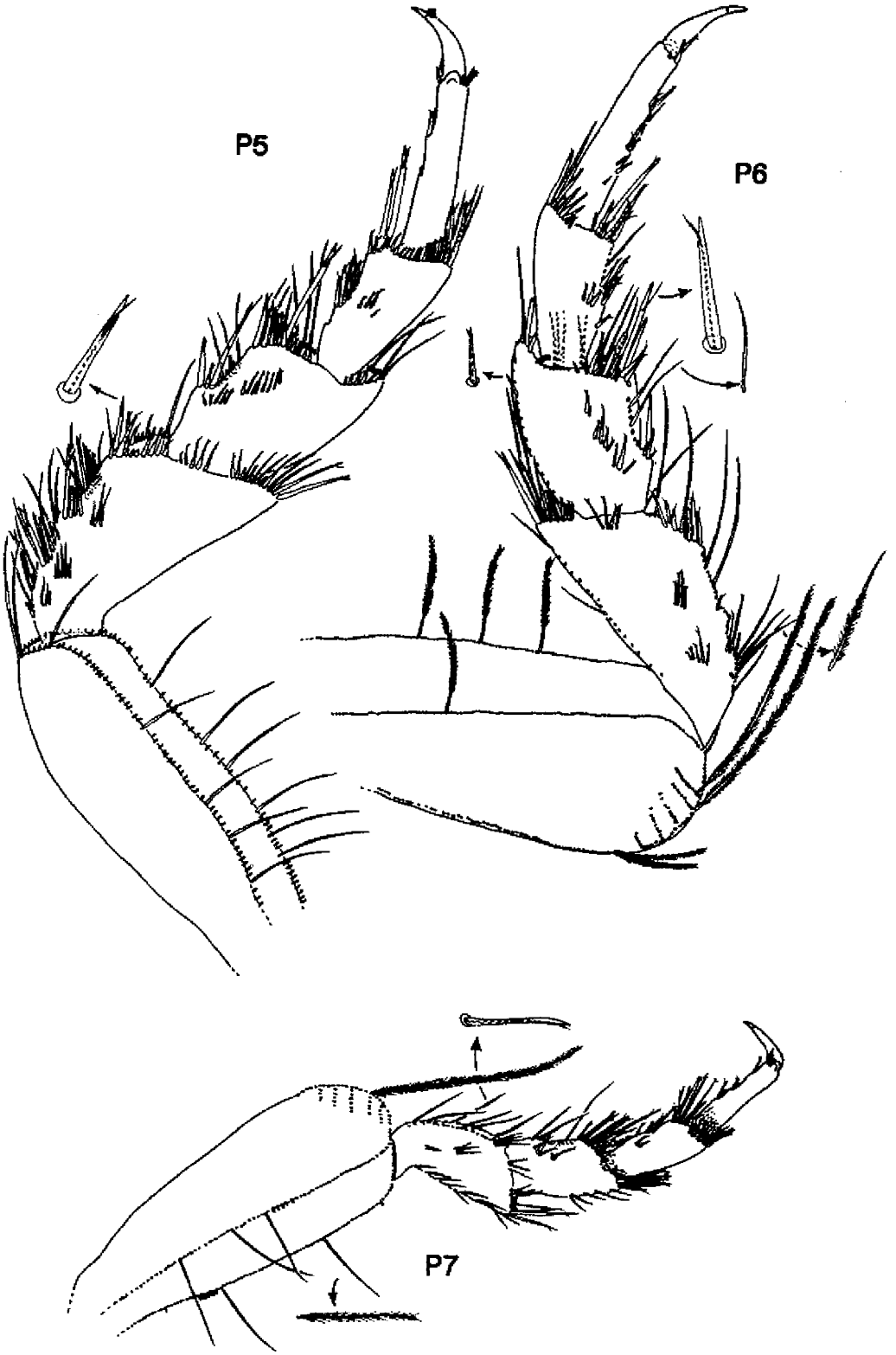
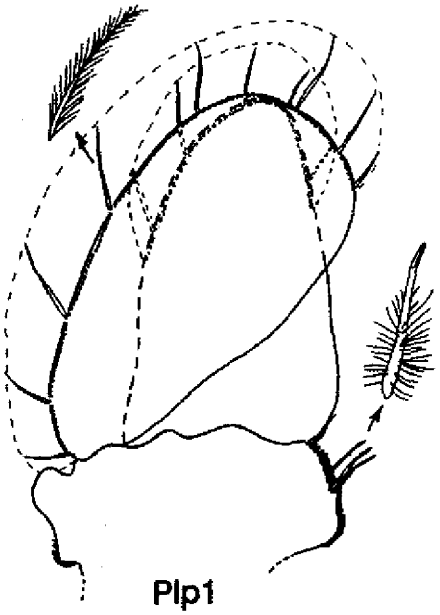
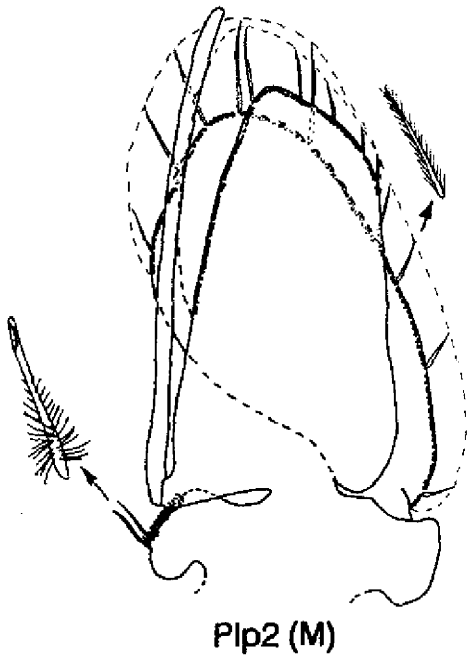
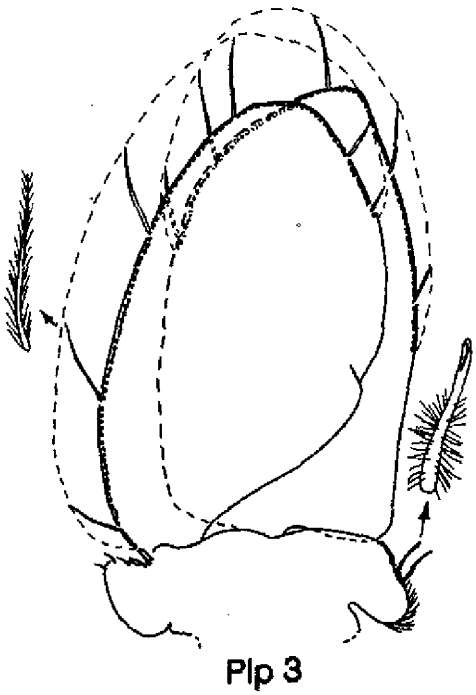


Figure 48: Natatolana albinota (Vanhöffen, 1914), SMF; Male pereopods 5-7 (with details of setation).







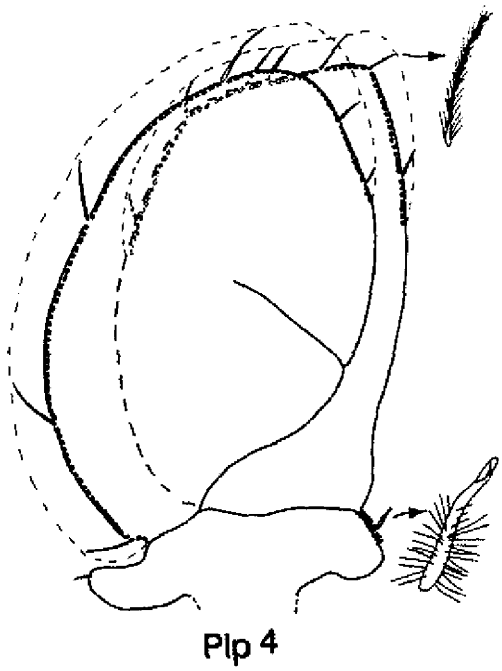


Figure 49: Natatolana albinota (Vanhöffen, 1914), SMF; Male pleopods 1-4 (with details of setation). Small circles indicating insertion of plumose setae.

intermedia the notches are deeper. Caudolateral margins on both sides of the tip quite straight, not laterally bent like in *N. obtusata* and *N. oculata*. Appendix masculina of male pleopod 2 much longer than exo- and endopodite, distolaterally not bent like in *N. intermedia* or with a broadened and slightly bent distal part like in *N. obtusata*.

8.2 *Natatolana intermedia* (Vanhöffen, 1914) (Figs. 51-55)

Synonymy: Natatolana intermedia = *Cirolana intermedia* Vanhöffen, 1914.

Material: Lectotype: ZMG 260: 1 male of 15,5 mm length, off Gauss Station, Posadowsky Bay, 66°2.9'S 89°38.5'W, in a depth of 385 m. *Paralectotypes* ZMG 261: one male of 17 mm length and 4 females of 13, 14, 15 and 16 mm length (all specimens from the same locality and loaned by the Senckenberg Museum in Frankfurt).

ZMB 17618: 1 male of 24 mm length and 2 females of 25 and 26 mm length and ZMB 17620: 1 male of 24 mm length and 6 females of 14, 15, 15, 15, 18 and 24 mm length (all specimens off Gauss Station in a depth of 385 m).

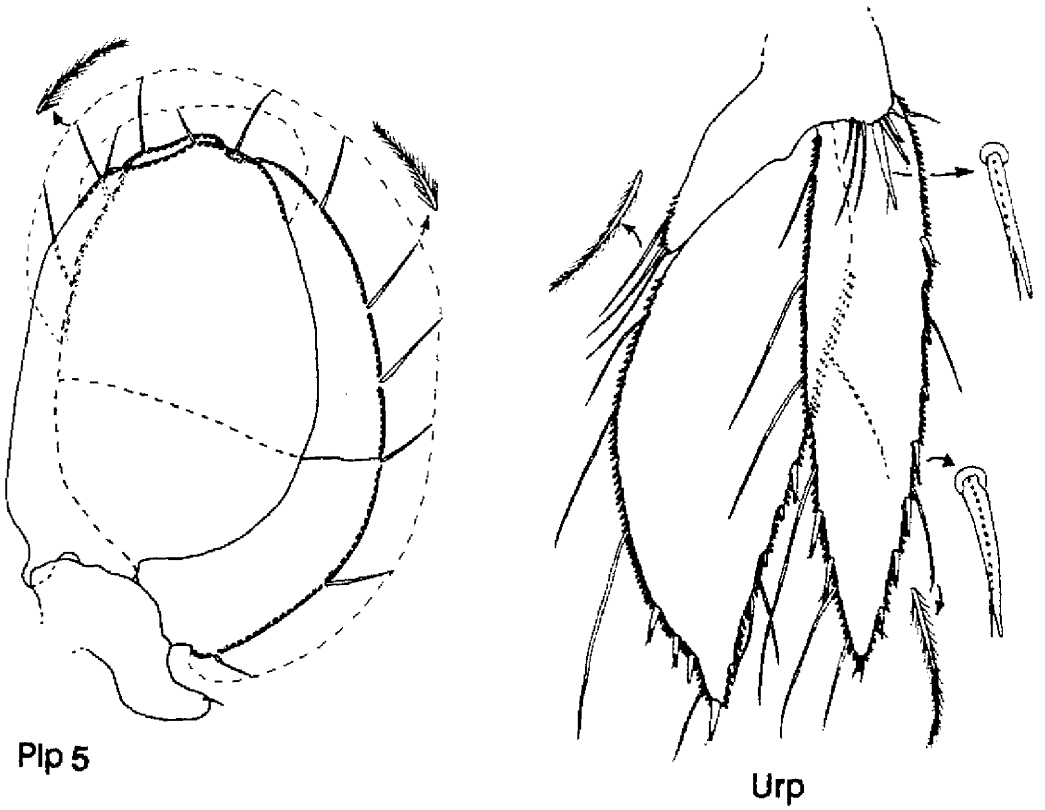


Figure 50: Natatolana albinota (Vanhöffen, 1914), SMF; Male pleopod 5 and uropod (with details of setation). Small circles indicating insertion of plumose setae.

Material collected during expeditions with the RV „Polarstern„ and the RV „Walter Herwig„: A 4, 3 specimens; A 10, 1 specimen; A 22, 1 specimen; A 27, 1 specimen; A3/20, 3 specimens; A3/22, 1 specimen; A3/29, 3 specimens; A3/41, 1 specimen; A3/43, 7 specimens; A3/45, 1 specimen; A6/2 St. 12/086, 5 specimens; A6/2 St. 12/087, 9 specimens; A6/2 St. 12/088, 2 specimens; A6/2 St. 118, 1 specimen; A6/2 St. 141, 1 specimen; A6/2 St. 195, 1 specimen; A6/2 St. 207, 33 adult specimens and many mancas; A6/2 St. 218, 3 specimens; A6/2 St. 220, 4 specimens; A6/2 St. 221, 6 specimens; A6/2 St. 223, 8 specimens; A6/2 St. 224, 7 specimens; A6/2 St. 225, 67 specimens; A6/2 St. 230, 18 specimens; A6/2 St. 231, 10 specimens; PS06/151, 5 specimens; PS06/158, 1 specimen; PS06/203, 13 specimens; PS06/208, 2 specimens; 68WH/133, 1 specimen; 68/137, 1 specimen; 68H/138, 3 specimens; 68WH/142, 2 specimens; 68WH/154, 2 specimens; 68WH/165, 1 specimen, 68WH/171, 3 specimens; 68WH/ 278, 3 specimens (for exact data see station list). The maximum length of females measures 23 mm, of males 24 mm, Antarctic Peninsula and Weddell Sea.

Distribution: Gauss Station, McMurdo Sound, Banzare Coast, Kemp Coast, Davis Sea, Ross Sea, Enderby Land, Lars Christensen Coast, Antarctic Peninsula and Weddell Sea.

Redescription of male: Body oval, two times as long as broad (Fig. 51). Head small, smaller than first pereonite. Eyes light red, long oval, of median size and caudally partly covered by the first pereonite, ventrally round, 8 horizontal x 9 vertical ocelli (Fig. 44-2). Frontal lamina slightly narrowed anteriorly , forming an acute blunt point. Clypeus triangular, laterally much prolonged and broader than labrum. Following pereonites quite smooth, without cuticular structures. Fourth to sixth pereonite largest and longest, second, third and seventh smallest. Coxal plates 1-3 with curved carina, reaching from anterolateral to posterolateral point of coxal plate; coxal plates 4-7 with more pronounced but less curved median carina, extending diagonally; coxal plate 7 reaching beyond epimera of pleonite 1. Pleonites 1-5 free, not fused. Epimera of pleonite 3 longer than preceding plate, posteriorly acute, not longer than fourth epimer. Epimera of last pleonite reduced. Distal margin of pleotelson with 7-8 sensory spines on both sides and groups of 2-5 long setulated setae between them (depending of the animal's length); caudal tip of telson shallowly pointed.

A 1 (Fig. 52) with three peduncular and 12 flagellar articles. First peduncular article broadest, with one distolateral feather-like bristle, proximolaterally with a row of 8 small feather-like bristles; second peduncular article smallest, with one long distolateral feather-like bristle and four shorter feather-like bristles running transversely below; third peduncular article longest, with three distolateral simple setae. First flagellar article forming a very small ring, bearing a single featherlike bristle; following 11 flagellar articles with a row of long and slender aesthetascs and each second article with a group of short simple setae (aesthetasc-like, because of a pore at the tip), last article with four simple setae and one small feather-like bristle.

A 2 (Fig. 52) with 5 peduncular and 19 flagellar articles. First peduncular article broadest, second one shortest, without setation; third article about as long as first and second articles together, with three short setae; fourth article as long as third, with 2 groups of two small simple setae and a small single one broken off; fifth peduncular article longest and narrowest, with one long distolateral feather-like

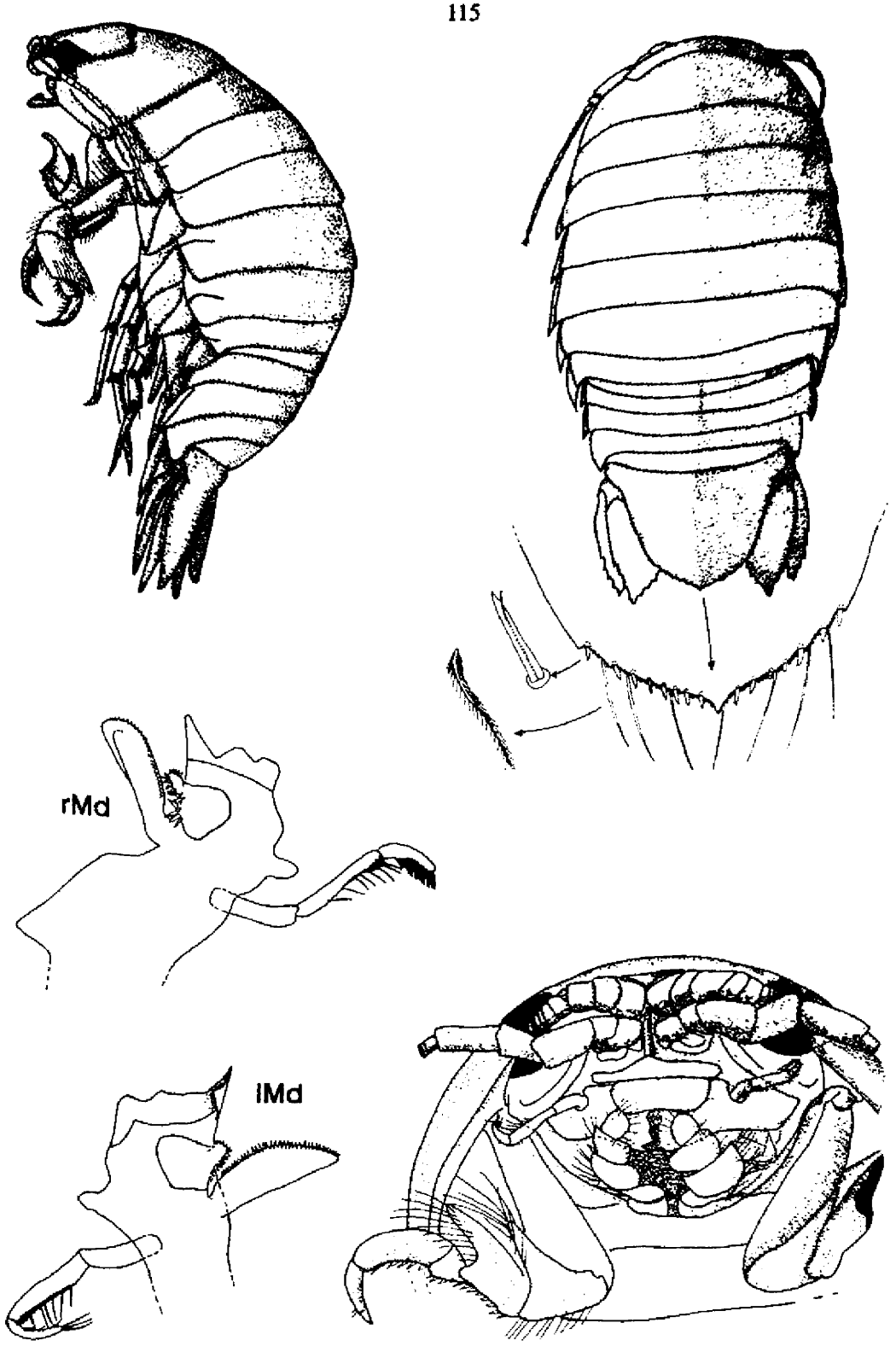


Figure 51: Natatolana intermedia (Vanhöffen, 1914), SMF; Male in dorsal (with detail of telson) and lateral view, ventral view of head and both mandibles (with details of setation).

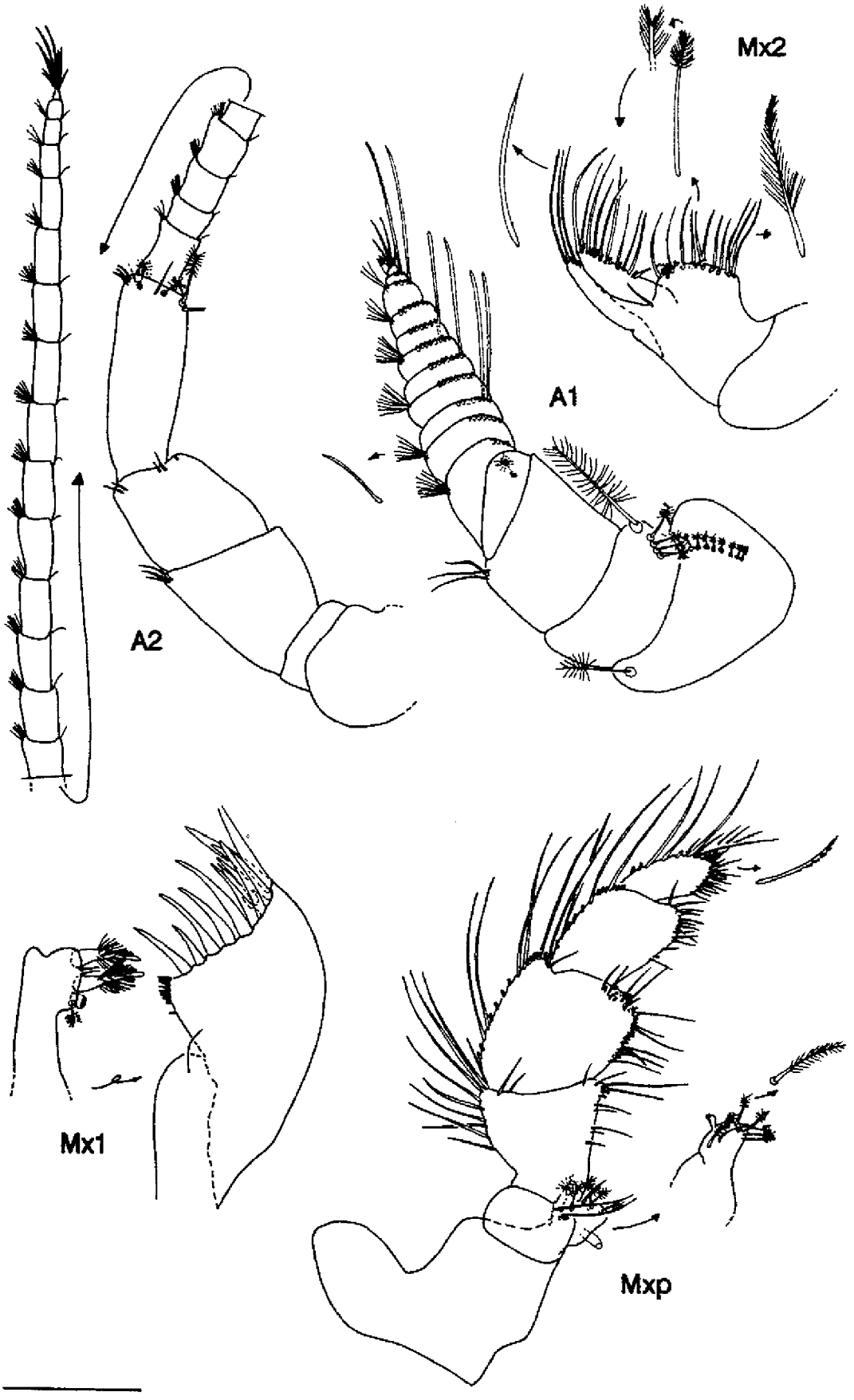


Figure 52: Natatolana intermedia (Vanhöffen, 1914), SMF; Male antennula, antenna, maxillula, maxilla and maxilliped (with details of setation).

bristle and another two shorter feather-like bristles apically, between these bristles some simple setae occur, one seta broken off (in Fig. 52). First flagellar article longest; all flagellar articles with a dense group of lateral simple setae (aesthetasc-like, with a pore at the tip) and another lateral single seta; tip of antenna with many long and short simple setae.

Mandibles (Fig. 51) asymmetrical, with three jointed palp. Pars incisiva of rMd slightly narrower than left, with three strong teeth, frontal tooth long and quite acute, the other two smaller, caudal one blunt. Lacinia mobilis one big lobe; proximally a smaller lobe with many small lateral, more acute teeth; pars molaris a great longitudinal lobe, with a lateral row of small strong acute teeth on one side. First article of palp without any setae, second article longest, with many simple setae, especially in the upper part, in several rows; third article smallest, slightly bent, with one row of simple setae. Pars incisiva of lMd broader than of right, with a longer frontal tooth; lacinia mobilis and proximal lobe also similar. Pars molaris and palp as in rMd.

Mx 1 (Fig. 52), lateral endite with 12 stout spines and some proximal short bristles, median endite short, distally almost quadrangular, with 3 strong stout apical spines (in Fig. 52 one tooth is broken off), covered with spinules; one feather-like bristle and two simple setae.

Mx 2 (Fig. 52) of three lobes, proximal and median lobe of two rows of setae; first row of proximal lobe with 10, second with 13 setae; first row of median endite with 10, second row also with 10 setae; distal lobe bearing five setae (for details of setation see Fig. 52).

Mxp (Fig. 52) with small endite, bearing only one coupling hook and seven feather-like setae; five palpal articles, bearing a large number of long lateral and smaller median simple setae; third palpal article longest and broadest, last article smallest and narrowest. Setae of last article distolaterally serrated on one side.

Pereopod 1 (Fig. 53) with long basis bearing two dorsal rows of long simple setae and another lateroventral row of long simple setae, ischium and especially merus distodorsally prolonged, merus reaching one third of propodus length, posterior margin of merus with 16 acute sensory spines of different length; carpus posterodistal margin with 2 long and 4 shorter sensory spines; propodal palm with 6 large acute sensory spines; dactylus distodorsally with 3 small simple setae (for details of setation see Fig. 53). Pereopods 2 and 3 (Fig. 53) similar to pereopod 1, carpus larger, additional sensory spines posterolaterally on ischium and spines of merus and carpus longer and more numerous, of propodus smaller and fewer in number, propodal palm with 3-5 smaller sensory spines.

Pereopods 4 and 5 (Figs. 54 and 55) similar, ischium and merus distodorsally not prolonged, P4 with most sensory spines. (many sensory spines of P5 broken off in this specimen Fig. 55). Articles of P4 and 5 all larger than in the foregoing pereopods, basis of pereopods 6 and 7 also with two dorsal rows of long setae, but setae setulated and more numerous, long setulated setae on shallowly convex posterior margin of basis; ischium, merus and carpus with groups of sensory spines at different angles and along posterior margins; merus distodorsally not prolonged; propodus with 3 groups of 2-3 sensory spines on posterior margin and a group of some setae distodorsally; dactylus with few simple setae.

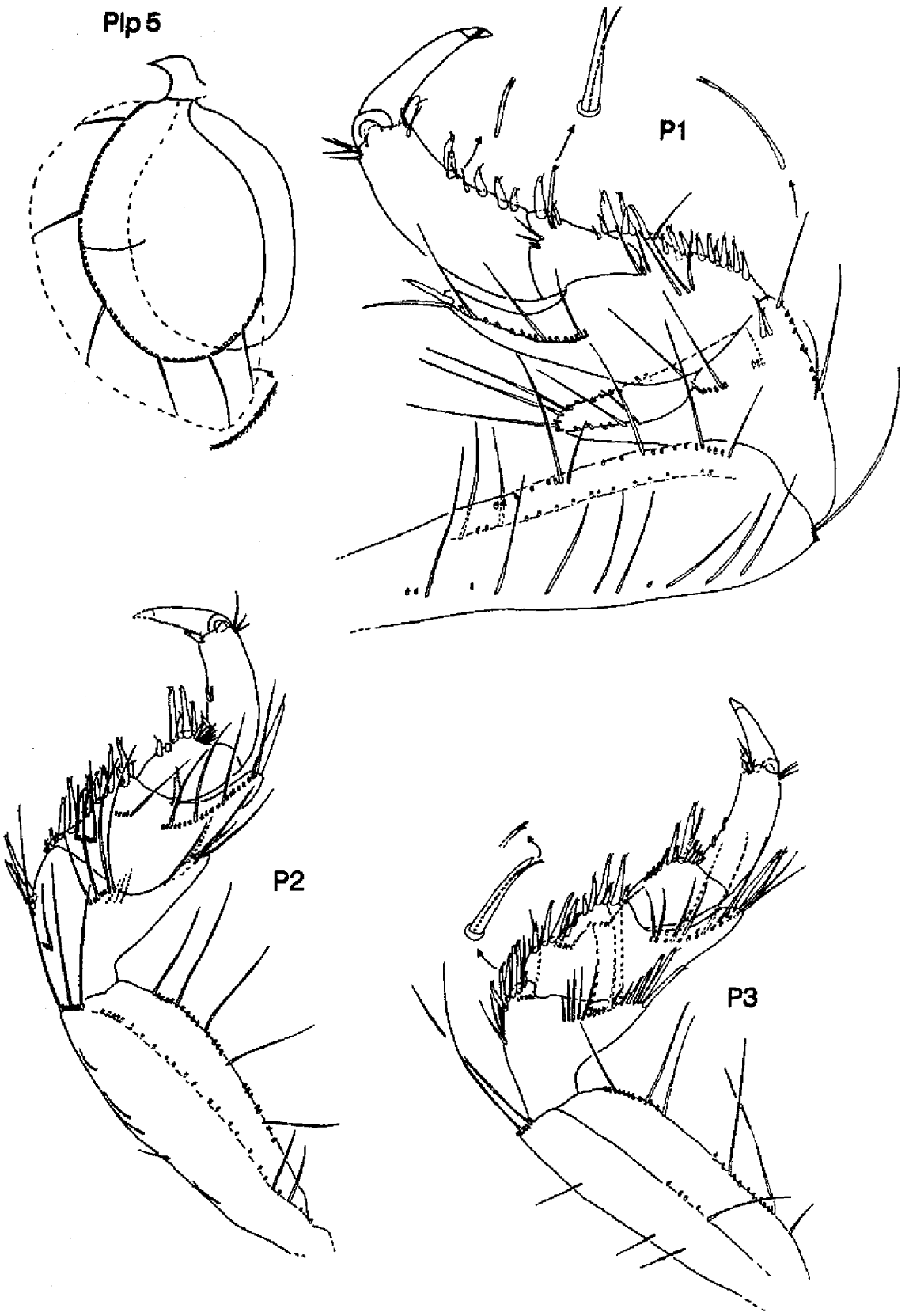


Figure 53: Natatolana intermedia (Vanhöffen, 1914), SMF; Male pereopods 1-3 and pleopod 5 (with details of setation). Small circles indicating insertion of plumose setae.

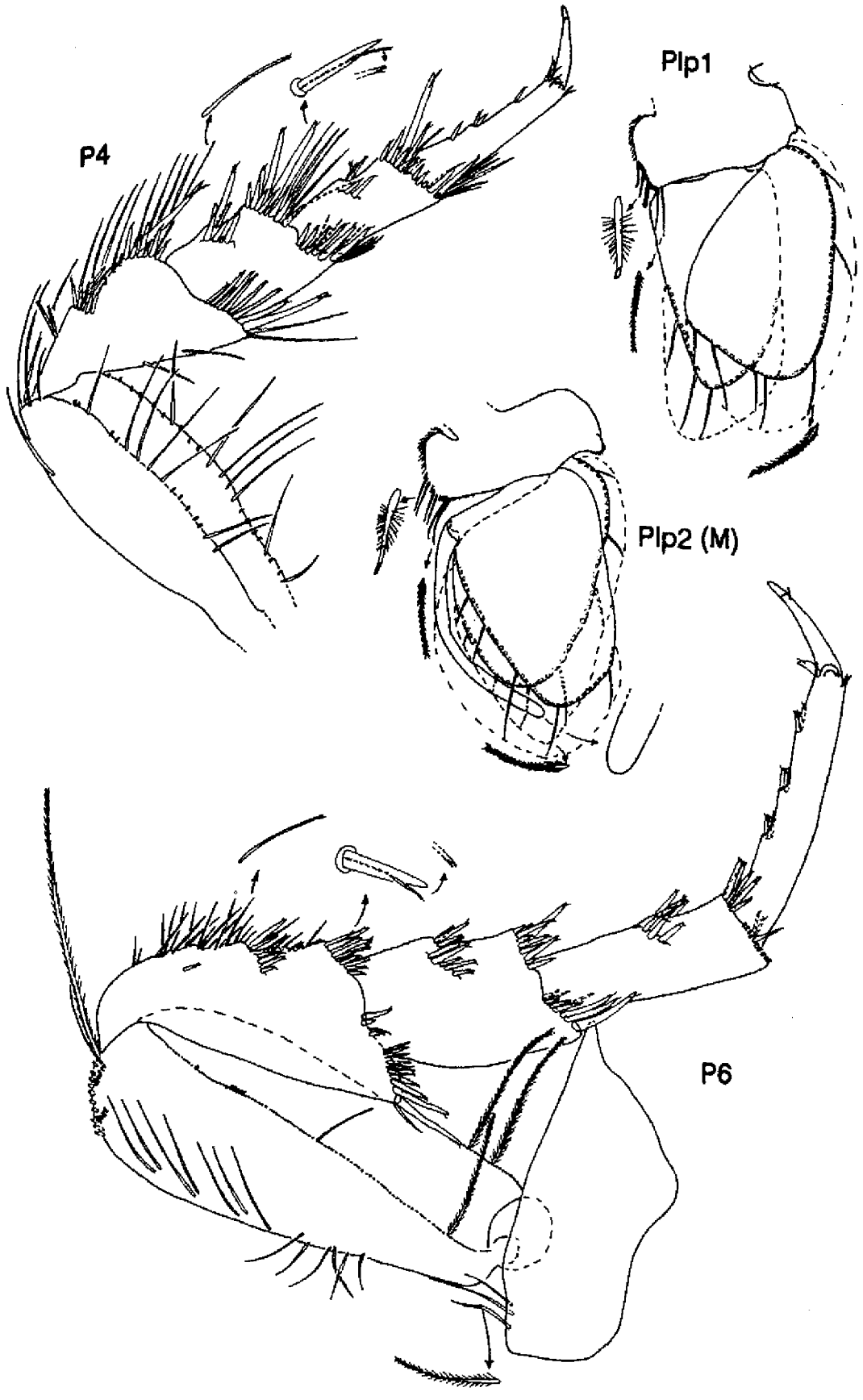


Figure 54: Natatolana intermedia (Vanhöffen, 1914), SMF; Male pereopods 4 and 6 and pleopods 1 and 2 (with details of setation). Small circles indicating insertion of plumose setae.

Pleopods (Figs. 52-54) conform to the generic condition (for setation see Figs.); Plp2 (Fig. 54) of male with appendix masculina mediolaterally bent, extending beyond the apex of endopodite, not reaching beyond swimming setae of endopodite and exopodite, apex of appendix round, not narrowed; Plp3 (Fig. 55) similar to Plp1 and 2; Plp4 (Fig. 55) slightly shorter and smaller than pleopods 1-3, exopodite with suture extending transversely through the middle of the exopodite; Plp5 (Fig. 53) smallest, sympodite shortest, posteromedial setae lacking, exopodite of Plp5 with median subdividing suture, endopodite without swimming setae.

Urp (Fig. 55) with almost triangular sympodite bearing 9 long distomedial setulated setae medially, four long and strong anterolateral sensory spines (one broken off in Fig. 55) and two long simple setae. Exopodite of Urp slightly shorter and much narrower than endopodite, margin with 9 strong sensory spines, each situated in a small notch and dense setulated setae between them. Margin of endopodite with 10 strong sensory spines and many setulated setae between them, mediolaterally endopodite slightly bent.

Variations of spine armature of tail fan: Mediocaudal margin of pleotelson with 5-8 pairs of sensory spines, exopodite of uropod with 9-11 sensory spines, endopodite with 8-9 spines, depending on the length of the animal.

Remarks:
In the description of *Natatolana intermedia* (Vanhöffen, 1914) only the head in ventral view, the distal parts of the first, second and seventh pereopods, the epimera of the pleonites, the male pleopod 2 and the caudal margin of the pleotelson have been drawn. Further illustrations by other authors do not exist. *Natatolana intermedia* (Vanhöffen, 1914) is much smaller than *Natatolana albinota* (Vanhöffen, 1914), *Natatolana obtusata* (Vanhöffen, 1914) and *Natatolana oculata* (Vanhöffen, 1914) and can be distinguished from these species by the long-oval light-red eyes, which consist of 8 horizontal x 9 vertical ocelli. Long oval eyes are also characteristic for *N. obtusata*, but this species has more ocelli (8x13) and the eyes are dark brown or black after fixation, the eyes of *N. intermedia* on the contrary remain light-red. Moreover *N. intermedia* is much shorter and smaller than *N. obtusata*. In contrast to the other Antarctic species of the genus *Natatolana*, *N. intermedia* bears less setae on all appendages, including the mouthparts. Frontal lamina of the latter slightly narrowed anteriorly, whereas in the other Antarctic species it is not narrowing and the anterior margin is blunt. The epimera of the third and fourth pleonites both have an acute tip and are about subequal in length. Third epimera more laterally protruded than in *N. albinota*. The lateral margins of the pleotelson are not as straight as in *N. albinota* and the number of sensory spines of *N. intermedia* is higher (5-7 spines) than in *N. obtusata* (5-6 spines), whose spines are longer and stronger than in the latter.

8.3 *Natatolana obtusata* (Vanhöffen, 1914) (Figs. 56-60)

Synonymy: Natatolana obtusata = *Cirolana obtusata* Vanhöffen, 1914

Material: Lectotype: ZMG 262 (material collected by Vanhöffen, now located in the Senckenberg Museum of Frankfurt): 1 adult male, 38 mm length, sample off Gauss Station, POsadowsky Bay, 66°2.9'S 89°38.5'W, in 385 m depth. *Paralec-*

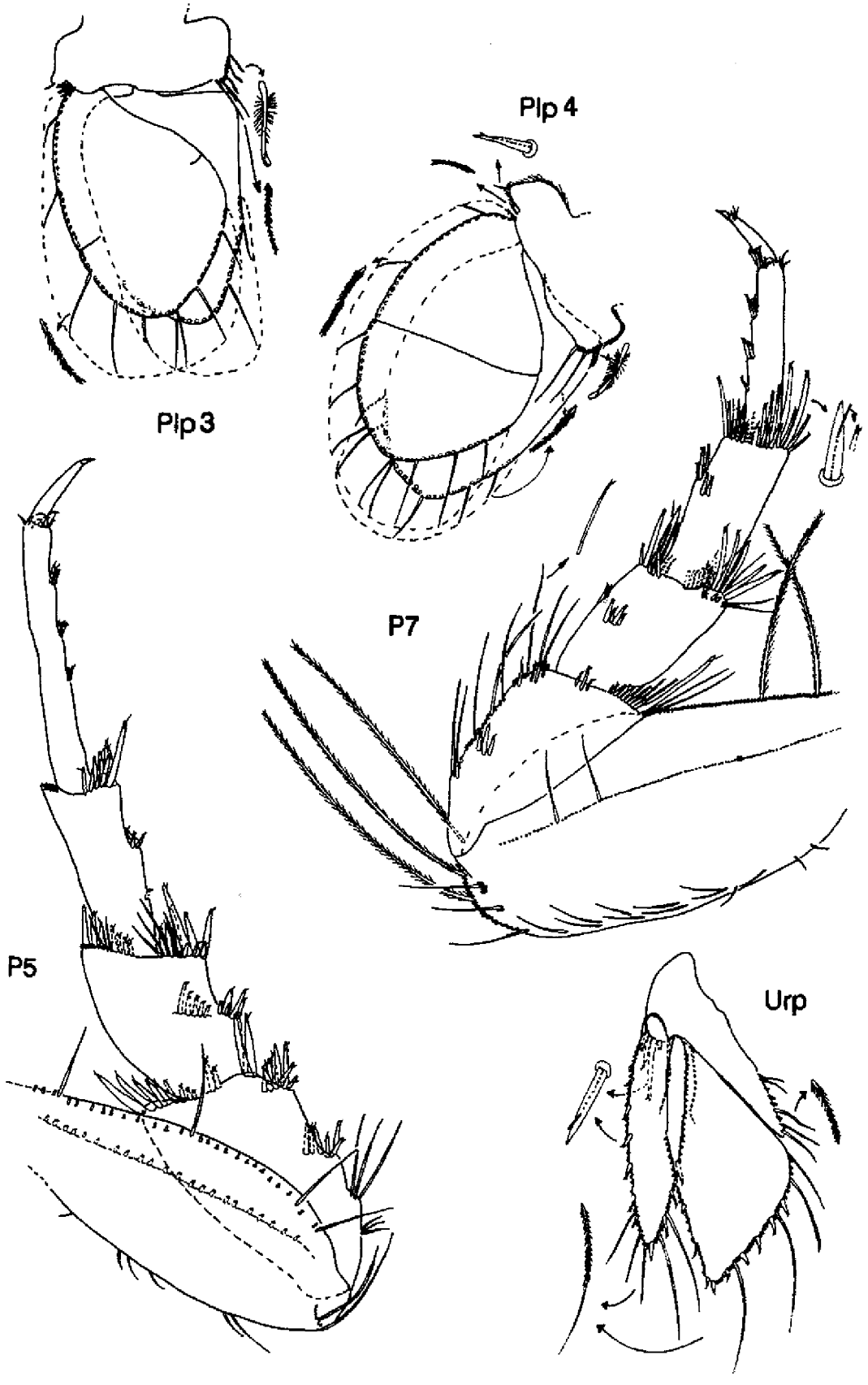


Figure 55: Natatolana intermedia (Vanhöffen, 1914), SMF; Male pereopods 5 and 7, pleopods 3 and 4 and uropod (with details of setation). Small circles indicating insertion of plumose setae.

lotypes: ZMG 263: 1 male of 27 mm length and 5 females of 19, 20, 27, 28 and 30mm length.

ZMB 17605: Three females of 28, 29 and 30 mm length. ZMB 17607: two females of 32 and 35 mm length. All samples off Gauss Station in 385 m depth.

Samples taken on expeditions with the RV „Polarstern„ and „Walter Herwig„: A 24, 1 specimen; A3/14, 1 specimen; A3/20, 1 specimen; A3/25, 1 specimen; A3/26, 1 specimen; A3/41, 2 specimens; A3/44, 48 specimens; A6/2 St. 12/086, 3 specimens; A6/2 St. 195, 1 specimen; 68 WH/155, 1 specimen (for exact data see station list). Maximum length of males: 27 mm, of females 37 mm, Antarctic Peninsula and Weddell Sea.

Distribution: Gauss Station, Posadowsky Bay, off Oates Land; Visikoi, S. Sandwich, 10-17 m depth; Bridgeman, S. Sandwich, Antarctic Peninsula, Weddell Sea, 750 m depth.

Redescription of male:
Body twice as long as broad (Fig. 56). Head small, smaller width and shorter than first pereonite, with posterolateral caudally bent angles. Eyes large and laterocaudally much prolonged, ventrally oval. Number of ocelli: 9 vertical x 13 horizontal (Fig. 44-3), color of eyes black or dark red-brown after fixation. Lamina frontalis quite short, straight-sided, anteriorly and posteriorly blunt, angled margins. Clypeus triangular, broader than labrum, horizontal diameter as large as of labrum. All following pereonites quite smooth, only with a very light white pigmentation, no cuticular structures present. Fourth to sixth pereonite largest and longest, second and seventh pereonite smallest.

Coxal plates 1-3 with slightly curved carinae, situated near the lateral margin; coxal plates 4-7 with longer and more pronounced carinae, extending diagonally. Coxal plate 7 covering epimera of pleonite 1 (see lateral view in Fig. 56). Pleonites 1-5 free, not fused. Epimera of pleonite 3 narrower than preceding plate, posteriorly acute like foregoing one and little longer. Epimera of pleonite 4 caudally round, not as pointed as epimera 1-4. Epimera of pleonite 5 not visible in dorsal and lateral view. Caudal margin of pleotelson slightly pointed, laterocaudal margins not straight. Smooth caudal margin of telson with 6 sensory spines on both sides of the caudal tip and groups of small setae inbetween.

A 1 (Fig. 57) with three peduncular and 13 flagellar articles. First peduncular article broadest, with 6 lateral feather-like bristles and one feather-like bristle, distolaterally (on opposite side) together with a simple bristle; second peduncular article smallest, with three feather-like bristles on one side, another single one and a simple bristle on opposite side; third peduncular article longest and narrowest, with two apical feather-like bristles, three simple setae and another two setae on opposite side. First flagellar article forming a very small ring, bearing a single feather-like bristle and a simple one; following 11 flagellar articles with a row of long and slender aesthetascs (see detail in Fig. 57) and each second or third article with a group of short simple setae, last article with simple setae and one feather-like bristle.

A 2 (Fig. 57) with 5 peduncular and 26 flagellar articles. First peduncular article not much broader than following, second one shortest, first and second article without setation; third article about as long as fourth, with three short setae; fourth

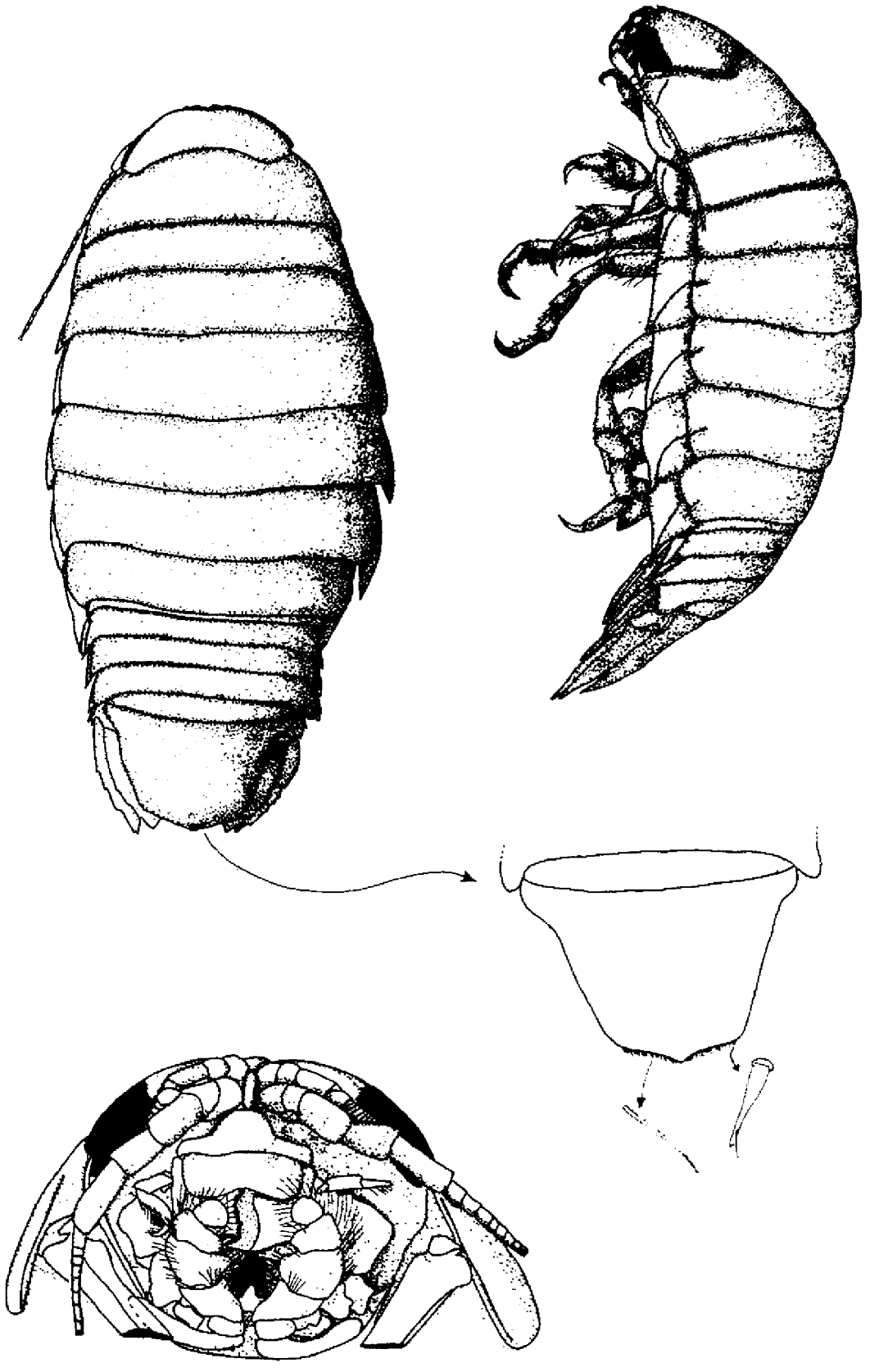


Figure 56: Natatolana obtusata (Vanhöffen, 1914), SMF; Male in dorsal (with detail of telson) and lateral view and ventral view of head.

article with 2 groups of three simple setae per group; fifth peduncular article longest and narrowest, with one feather-like bristle and another smaller feather-like bristle on opposite side together with several simple setae. First flagellar article longer than second, with four distolateral simple setae; all flagellar articles (except the second one) with a dense group of lateral short setae and on every second or third article another lateral single seta; tip of antenna with six setae.

Mandibles (Fig. 57) asymmetrical, with three jointed palp. Pars incisiva of rMd slightly narrower than left, with three strong teeth, frontal one being long and quite acute, the other two smaller, the caudal blunt. Lacinia mobilis of two blunt teeth; proximally many small, acute lateral teeth, pars molaris a great long-oval lobe, with an anterolateral row of small strong acute teeth. First article of palp without any setae, second article longer than first, with many simple setae, especially in the upper part, in several rows; third article smallest, slightly bent, with one row of simple setae. Pars incisiva of lMd broader than of right, frontal tooth much longer and stronger; lacinia mobilis of one broad blunt tooth; proximally a small lobe also covered with teeth. Pars molaris and palp as in rMd.

Mx 1 (Fig. 57), lateral endite with 12 stout spines and some proximal short bristles, median endite short, distally almost quadrangular, with 3 strong stout apical spines, covered with some setules and one simple seta.

Mx 2 (Fig. 57) of three lobes, proximal and median lobe of two rows of setae; first row of proximal lobe with 14, second with 16 setae; first row of median endite with 10, second row with 12 setae; distal lobe bearing eight setae (for details of setation see Fig. 57).

Mxp (Fig. 57) with small endite (see detail), bearing three coupling hooks and 10 setulated setae irregularly dispersed; five palpal articles bearing a large number of long lateral and shorter median setae (for setation see Fig. 57), third palpal article longest and broadest, last article smallest and narrowest.

Pereopod 1 (Fig. 58) with long basis bearing two rows of long simple setae dorsally and another row ventrally, merus distodorsally prolonged, reaching almost to half length of propodus, posterior margin of merus with 18 acute sensory spines; carpus posterodistal margin with 3 long and 1 shorter sensory spines; propodal palm with 9 large acute sensory spines; dactylus distodorsally with 4 small simple setae (for details of setation of pereopods see Fig. 58). Pereopods 2 and 3 (Fig. 58) similar to pereopod 1, but carpus larger, spines of merus and carpus larger, of propodus smaller and fewer, propodal palm with 5-6 smaller sensory spines, distodorsally on merus additional sensory spines.

Pereopods 4-7 (Figs. 59 and 60), essentially similar, all articles increasing in length from the first to the seventh pereopod, basis of pereopods 6 and 7 also with two dorsal rows of long setae, but setae setulated more numerous, posterior margin of basis shallowly convex as in all pereopods; ischium, merus and carpus with groups of sensory spines at different angles and along posterior margins; merus distodorsally not much prolonged; propodus with 3 groups of 2-3 sensory spines on posterior margin and a group of some setae distodorsally; dactylus with few simple setae.

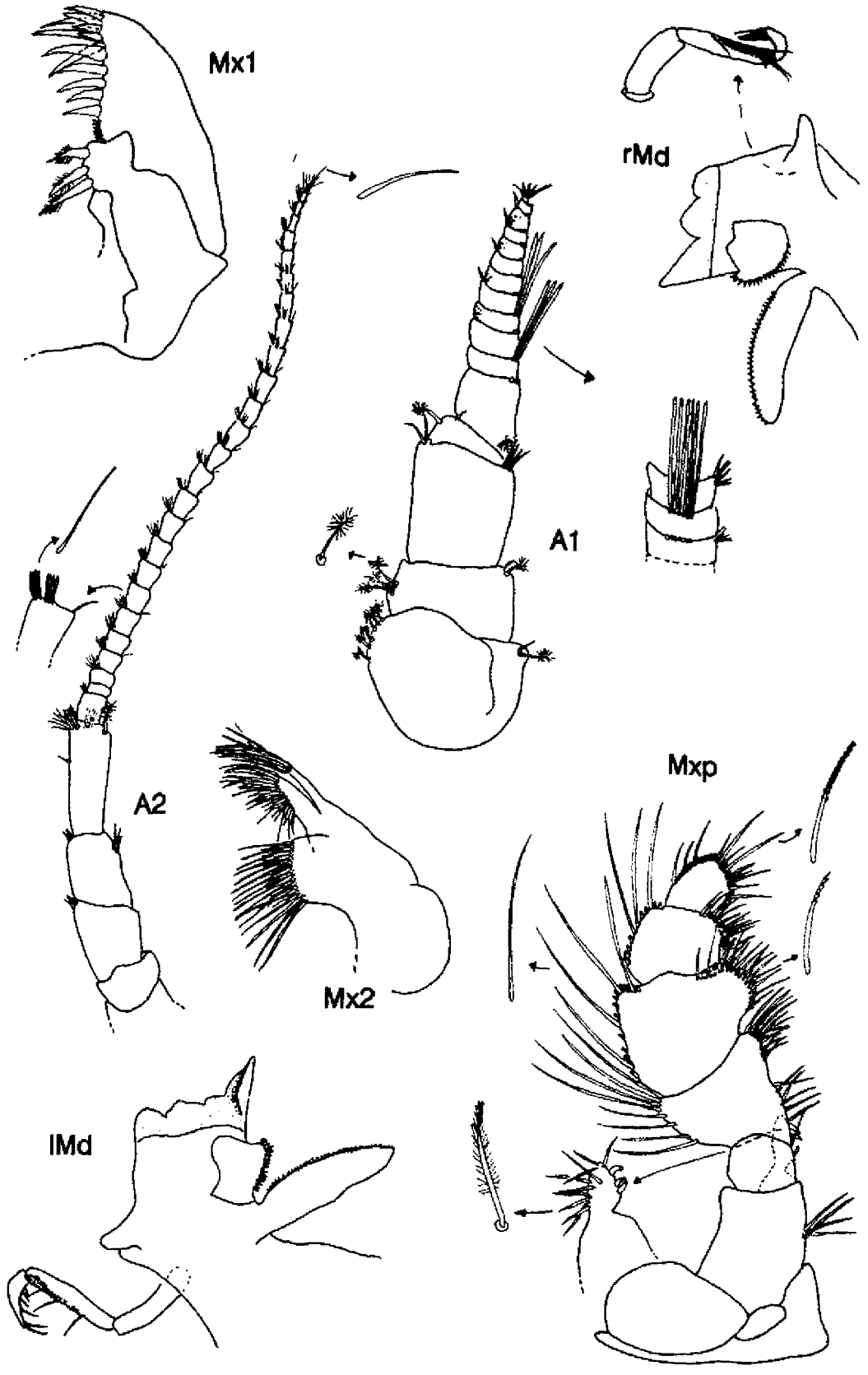


Figure 57: Natatolana obtusata (Vanhöffen, 1914), SMF; Male antennula, antenna, both mandibles, maxillula, maxilla and maxilliped (with details of setation).

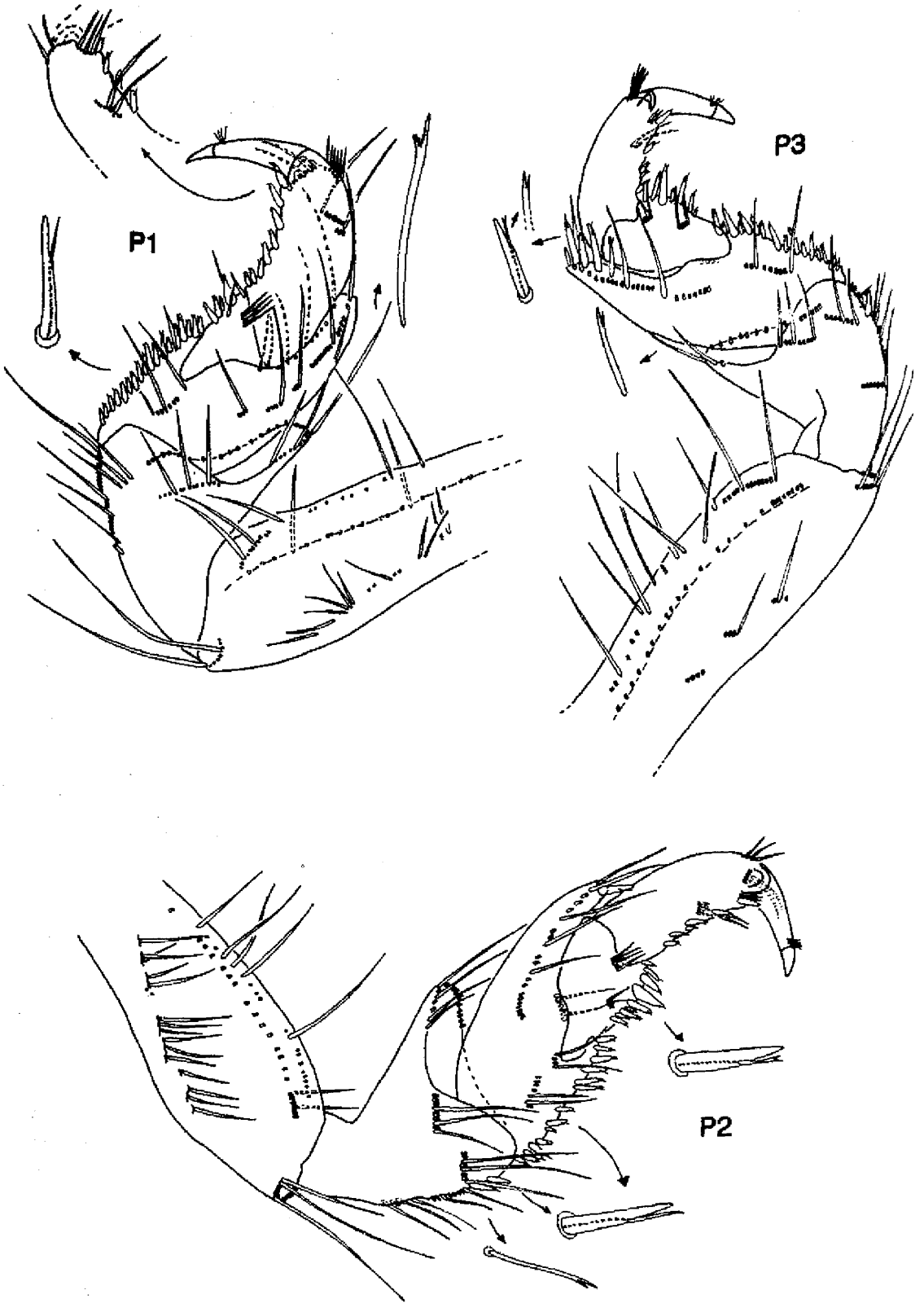


Figure 58: Natatolana obtusata (Vanhöffen, 1914), SMF; Male pereopods 1-3 (with details of setation).

Pleopods (Figs. 59 and 60) conform to the generic condition; Plp2 (Fig. 60) of male with appendix masculina, not reaching the apex of endopodite, apex of appendix narrowed and mediolaterally bent; Plp3 (Fig. 60) similar to Plp1 and 2; Plp4 (Fig. 59) with shorter sympodite, exopodite with suture extending diagonally through the middle of exopodite; Plp5 (Fig. 60) smallest, sympodite shortest, only with one posterolateral short seta, posteromedial setae lacking, exopodite of Plp5 also with median subdividing suture.

Urp (Fig. 60) with almost triangular sympodite bearing many long distomedial setulated setae, four long and strong distolateral sensory spines (two of them broken off in Fig. 60) and five long simple setae. Exopodite of Urp as long as endopodite but narrower, with 8 strong sensory spines (most of them broken off in Fig. 60), each situated in a small notch and many dense setulated setae between them. Endopodite with 9 strong sensory spines and many setulated setae between them, medially endopodite slightly bent outwards (for details of setation see Fig. 60).

Variations of spine armature: Number of pleotelsonic spines varying from 5 to 6 pairs of spines, endopodite and exopodite of uropods with 6-8 sensory spines, due to the body length of the animal.

Remarks:
Natatolana obtusata was first described by Vanhöffen (1914), but has only illustrated the head in lateral view, the distal aspects of the first, second and seventh pereopods, the epimera of the pleonites, the male pleopod 2 and the caudal margin of the pleotelson. Other drawings have been presented by Stephensen (1947), but it is not quite clear, whether the illustrated appendages really belong to *N. obtusata*, as the species name in the figure legend has been supplied with a „?„. For these reasons a redescription of this species has been done with the illustration of all appendages. *Natatolana obtusata* (Vanhöffen, 1914) is like *N. albinota* (Vanhöffen, 1914) a very large species, but can be distinguished from this species by the very big dark, almost black eyes, which consist of 13 horizontal and 9 vertical ocelli. The eyes of *N. albinota* only have 9 horizontal and 10 vertical ocelli. Moreover the eyes of the latter are more elongate and dark, whereas the eyes of *N. albinota* are small, round and lightpink. The eyes of the latter are not covered by the first pereonite as much as in *N. albinota*. Lamina frontalis quite short in the latter, straight-sided and anteriorly and posteriorly blunt, angled margins. In *N. albinota* and *N. oculata* (Vanhöffen, 1914) the frontal lamina is much longer than broad, in *N. obtusata* it is anteriorly narrowed and little acute. The tips of the third epimera are quite acute and slightly longer than the epimera of the second pleonite. In the other Antarctic species it is not as much prolonged as in the latter. The epimera of the fourth pleonite are shorter than the foregoing ones and the tips are blunt, not pointed like in *N. albinota*, *N. intermedia* and *N. oculata*. Pleotelsonic apex with a small blunt tip and 5-6 very small sensory spines, each situated in a small notch. The other Antarctic species are characterized by much stronger and longer spines. The lateral margins of the latter's pleotelson are not as straightsided as in *N. albinota*, *N. intermedia* and *N. oculata*, they are slightly bent outwards. The uropods are constructed like in the other Antarctic species, but the number of sensory spines (8-9) is lower than in the other species.

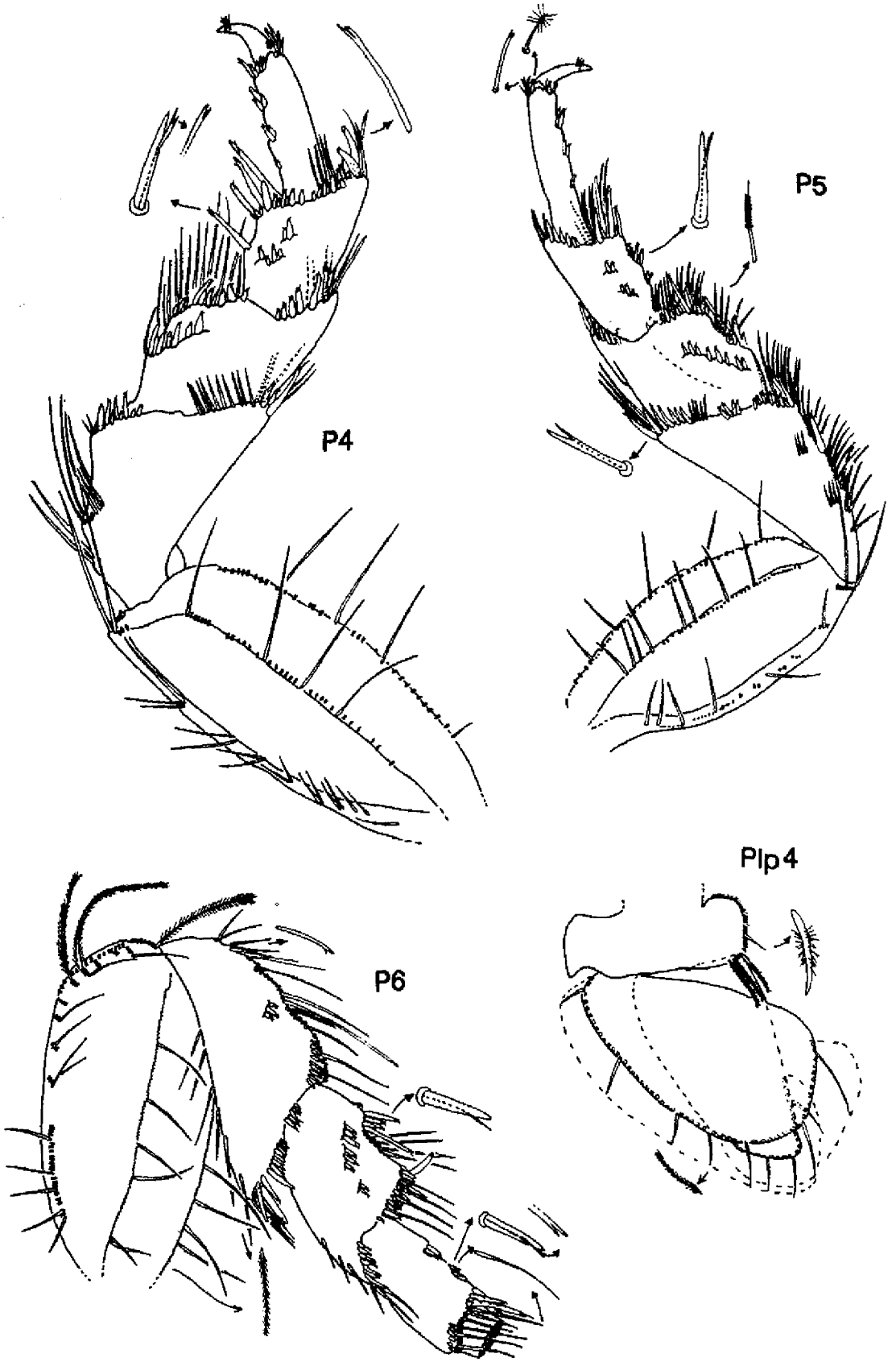


Figure 59: Natatolana obtusata (Vanhöffen, 1914), SMF; Male pereopods 4-6 and pleopod 4 (with details of setation). Small circles indicating insertion of plumose setae.

8.4 *Natatolana oculata* (Vanhöffen, 1914) (Figs. 61-65)

Synonymy: Natatolana oculata = *Cirolana oculata* Vanhöffen, 1914.

Material: Lectotype: ZMB 17617: 1 male of 21 mm length and 1 ovigerous female of 34 mm length, both off Gauss Station in a depth of 385 m (selected by Vanhöffen).

Samples of expeditions on the RV „Polarstern„ and „Walter Herwig„: Female of 26 mm length, sample Ant VI/2 St. 230; A27, 2 specimens; A29, 1 specimen; A30, 1 specimen; A31, 1 specimen; A2/490, 1 specimen; A3/1, 6 specimens; A3/14, 2 specimens; A3/44, 3 specimens; A6/2 St. 221, 1 specimen; A6/2 St. 225, 3 specimens; A6/2, St. 230, 11 specimens; A6/2 St. 231, 1 specimen; PS06/151, 5 specimens; 68WH/138, 1 specimen; 68WH/161, 1 specimen (for exact data see station list). The maximum length of males measures 35 mm, of females 28 mm, Antarctic Peninsula and Weddell Sea.

Distribution: Magellan Strait, South Shetland Islands, Antarctic Peninsula and Weddell Sea.

Redescription of female: Body slightly more twice as long as broad (Fig. 61). Head small, smaller than first pereonite. Eyes large, hyacinth-red in living condition, after fixation they are black, almost round, 12 horizontal x 17 vertical ocelli (Fig. 44-4). Frontal lamina straight-sided, long and slender, almost five times as long as broad. Clypeus triangular, broader than labrum, horizontal diameter of clypeus smaller than of labrum. All pereonites smooth, without cuticular ornamentation. Fourth to sixth pereonite largest and longest, second and seventh smallest. Coxal plates 1-3 with curved carina, reaching from anterolateral to posterolateral point of coxal plate; coxal plates 4-7 with more pronounced but less curved median carina, more diagonally running; coxal plate 7 covering part of epimer of pleonite 1.

Pleonites 1-5 free, not fused. Epimera of pleonite 3 longer than preceding plate, posteriorly acute and laterally bent. Epimera of pleonite 4 acute, as long as of pleonite 3, less bent and directed caudally. Epimera of last pleonite reduced. Distal margin of pleotelson with 5 very small sensory spines on both sides and groups of four long setae between them; caudal tip of telson shallowly pointed.

A 1 (Fig. 61) with three peduncular and 17 flagellar articles. First peduncular article broadest, with two distal simple short setae; second peduncular article smallest, with one long feather-like bristles on one side and two short simple setae on opposite side; third peduncular article longest and narrowest, with one lateral feather-like bristle and three simple setae. First flagellar article broadest and longest, all flagellar articles with a row of long and slender aesthetascs and each second article with a group of short simple setae, last article with three simple setae and one feather-like bristle.

A 2 (Fig. 62) with 5 peduncular and at least 22 flagellar articles (flagellum broken off in this specimen). First peduncular article broadest, second one shortest, third article about as long as first and second articles together, distally with group of five short setae; fourth article longer than third, with 2 groups of simple small bristles and one longer feather-like bristle between them; on opposite side 8 lateral long simple setae. fifth peduncular article longest and narrowest, with two long distolateral feather-like bristle and another shorter one on opposite side and many small simple setae. First flagellar article longest; all flagellar articles with a dense

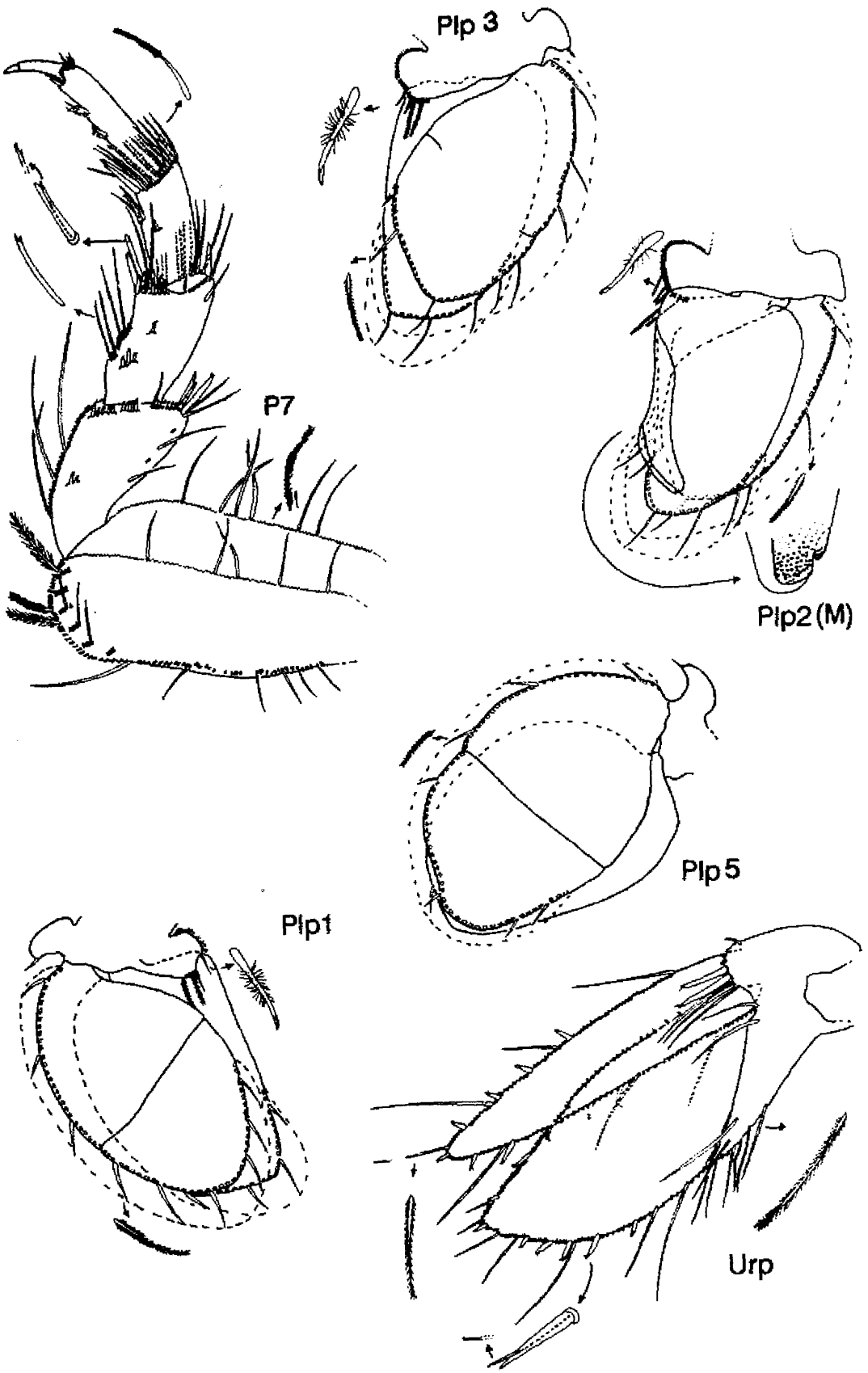


Figure 60: Natatolana obtusata (Vanhöffen, 1914), SMF; Male pereopod 7, pleopods 1, 2 (detail: tip of appendix masculina), 3 and 5 and uropod (with details of setation). Small circles indicating insertion of plumose setae.

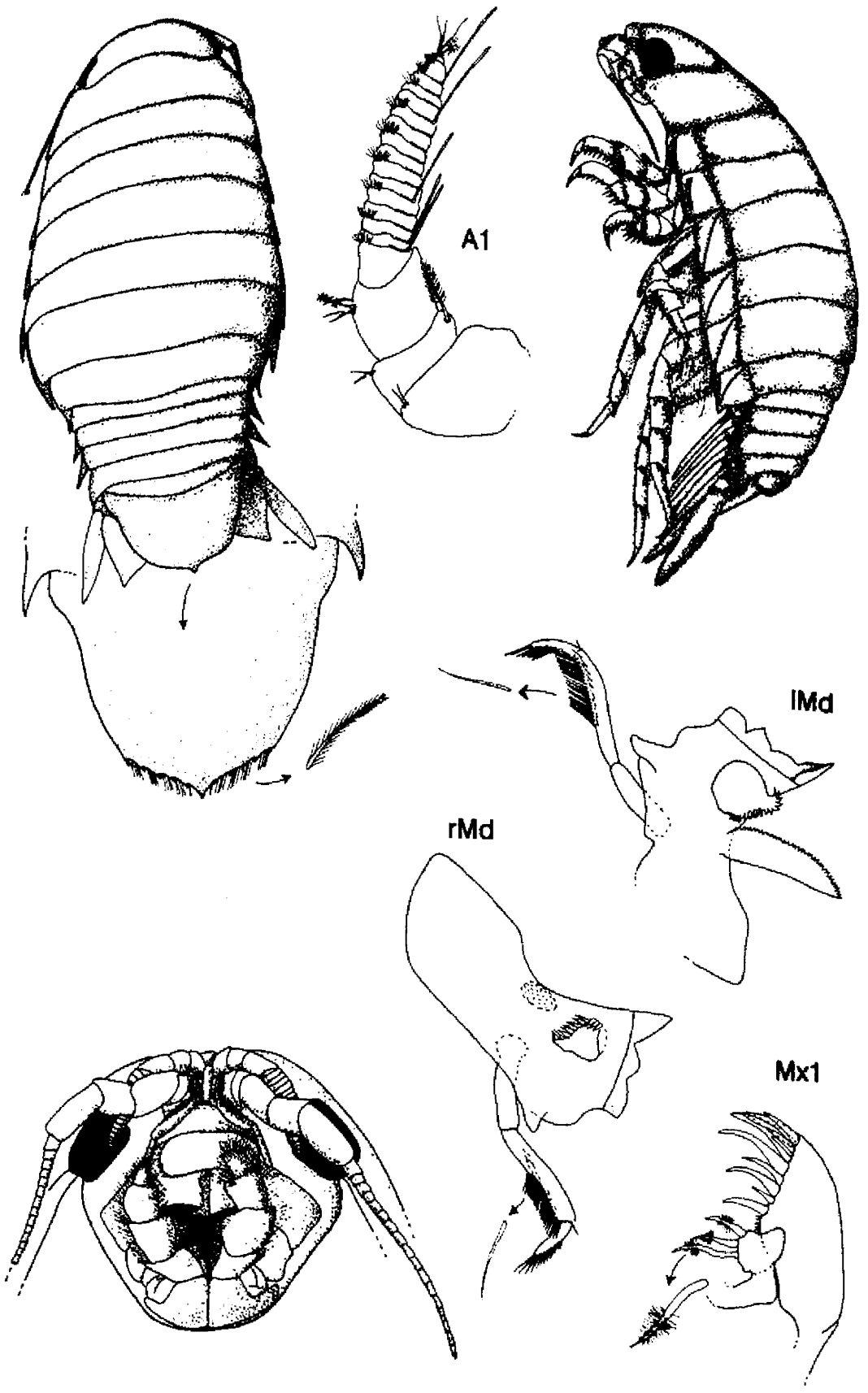


Figure 61: Natatolana oculata (Vanhöffen, 1914), ZMB; Female in dorsal (with detail of telson) and lateral view, ventral view of head, antennula, both mandibles and maxillula (with details of setation).

group of lateral simple short setae and another lateral single seta; tip of antenna broken off in this specimen.

Mandibles (Fig. 61) asymmetrical, with three jointed palp. Pars incisiva of rMd slightly narrower than left, with three strong teeth, frontal one being long and quite acute, the other two are smaller, caudal one blunt. Lacinia mobilis a great lobe; proximally many small acute teeth, pars molaris broken off in this species. First article of palp without any setae, second article with many simple setae, especially in the upper part; third article smallest, slightly bent, with one row of simple setae. Pars incisiva of lMd broader than of right; lacinia mobilis with only one broad lobe; proximally many small teeth. Pars molaris a great lobe, with a lateral row of small strong acute teeth on one margin and palp as in rMd.

Mx 1 (Fig. 61), lateral endite with 11 stout spines and some proximal short bristles, median endite short, distally almost quadrangular, with 3 strong stout apical spines, covered with some spinules; one simple seta.

Mx 2 (Fig. 62) of three lobes, median lobe of two rows of setae, proximal lobe of three rows of setae; first row of proximal lobe with 16, second with 11 setae, third with 5 setae; first row of median endite with 9, second row with 8 setae; distal lobe bearing three setae (for details of setation see Fig. 62).

Mxp (Fig. 62) with small endite, bearing three coupling hooks and 9 feather-like bristles. Five palpal articles with a large number of long lateral simple setae, third palpal article longest and broadest, last article smallest and narrowest.

Pereopod 1 (Fig. 62) with long basis bearing two rows of long simple setae, merus distodorsally prolonged, reaching one third of the length of propodus, posterior margin of merus with 18 slender acute sensory spines; carpus posterodistal margin with 2 long and 4 shorter sensory spines; propodal palm with 7 large acute sensory spines; dactylus distodorsally with 6 small simple setae. Pereopods 2 and 3 (Figs. 62 and 63) similar to pereopod 1, but carpus larger, spines of merus and carpus larger and more numerous, of propodus smaller; merus dorsally also prolonged, but only slightly surpassing the carpus; propodal palm with 5-7 smaller sensory spines, distodorsally of ischium additional long and slender sensory spines. Pereopods 4-7 (Figs. 63-65) essentially similar, but all articles increasing in length, basis of pereopods 6 and 7 also with two dorsal rows of long setae, but setae more dense and setulated; ischium, merus and carpus with groups of sensory spines at different angles and along posterior margins; merus distodorsally not prolonged; propodus with 3 groups of 2-3 sensory spines on posterior margin and a group of some setae distodorsally; dactylus with few simple setae.

Pleopods (Figs. 63 and 64) conform to the generic condition, increasing in length and breath from the first to the fifth pleopod. Plp2 of male (not shown in Fig. 64, the drawing represents the female Plp2) with appendix masculina, extending beyond the apex of endopodite, about surpassing the setulated setae of endopodite and exopodite extend, apex of appendix narrowed.

Plp3 (Fig. 64) similar to Plp1 and 2; Plp4 (Fig. 64) with shorter sympodite, exopodite with suture reaching to the middle of the exopodite; Plp5 (Fig. 64) smallest, sympodite shortest, posteromedial setae lacking, exopodite of Plp5 with median subdividing suture.

Urp (Fig. 65) with almost triangular sympodite bearing many long distomedial

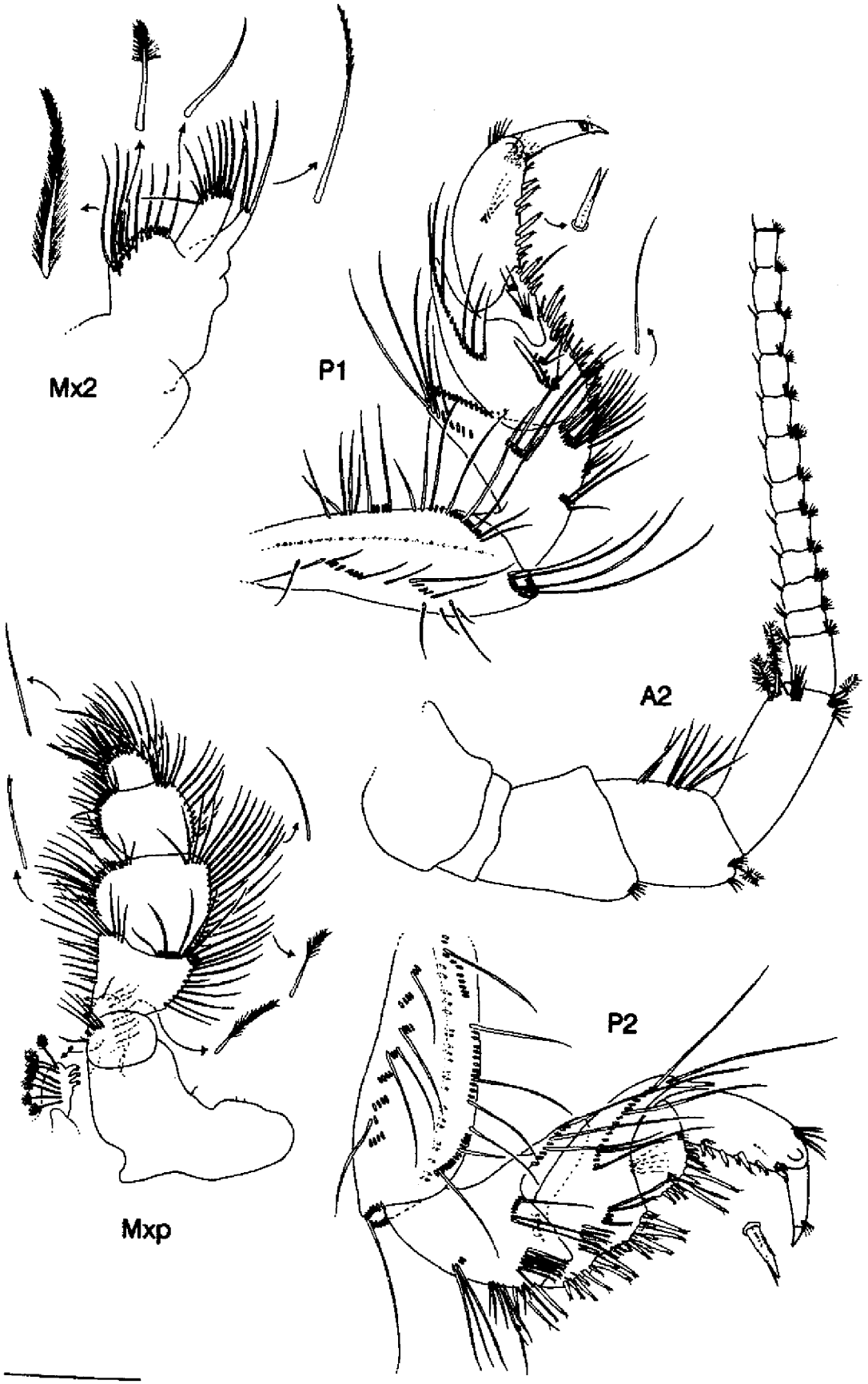


Figure 62: Natatolana oculata (Vanhöffen, 1914), ZMB; Female antenna, maxilla, maxilliped and pereopods 1 and 2 (with details of setation).

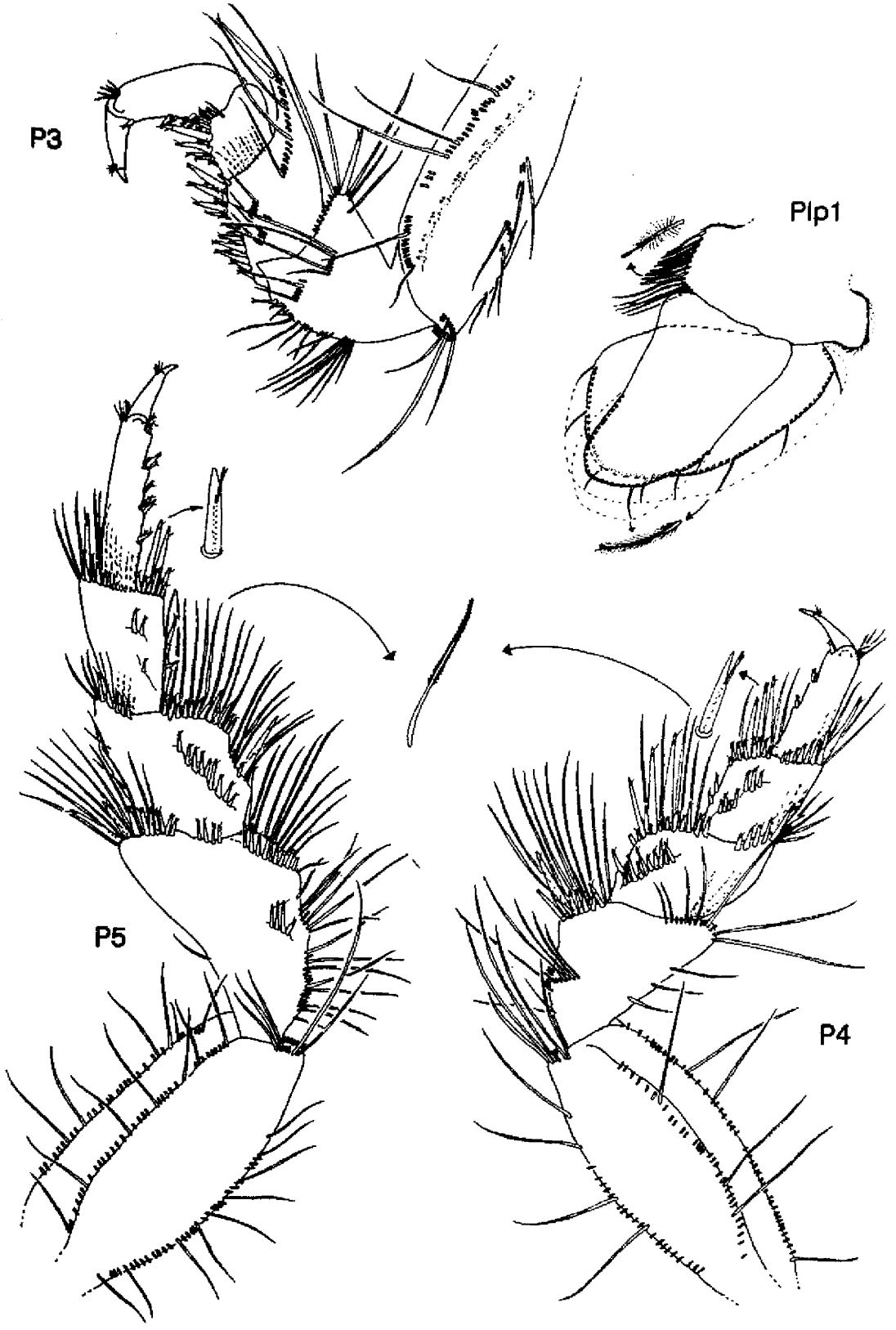


Figure 63: Natatolana oculata (Vanhöffen, 1914), ZMB; Female pereopods 3-5 and pleopod 1 (with details of setation). Small circles indicating insertion of plumose setae.

setulated setae, four long and strong distolateral sensory spines and six long simple setae. Exopodite of Urp slightly shorter and narrower than endopodite, with 9 strong sensory spines, each situated in a small notch and many dense setulated setae between them. Endopodite with 10 strong sensory spines and many setulated setae between them, median margin of endopodite strongly convex.

Variations of spine armature of tail fan: Pleotelsonic apex with 4-6 pairs of sensory spines, exopodite of uropod with 8-10 sensory spines, endopodite of uropod with 9-11 sensory spines, depending of the animal's length.

Remarks:
In the descriptions of *Natatolana oculata* (Vanhöffen, 1914) only illustrated the head in lateral view, the distal parts of the first, second and seventh pereopods, the epimera of the pleonites, the male pleopod 2 and the pleotelsonic apex. No other drawings of this Antarctic species exist, therefore complete illustrations of all appendages are presented within the redescription. *Natatolana oculata* (Vanhöffen, 1914) is much larger than *N. intermedia* (Vanhöffen, 1914) and can be distinguished from the other members of the genus by the great dark round hyacinth-red eyes, which consist of more ocelli (12x17) than the other Antarctic species. The other Antarctic species that has round eyes is *N. albinota* (Vanhöffen, 1914), but the eyes of this species are much smaller, the number of ocelli is less and the color of the eyes is light-pink. The eyes are only slightly covered by the first pereonite, like in *N. albinota*. Lamina frontalis more than five times as long as broad, much longer than in the other Antarctic species, even longer than in *N. albinota*.

The epimera of the third and fourth pleonites both have very acute tips, not like in *N. obtusata* which also has dark eyes, but rounded anterior margins of the fourth epimera. Epimera of pleonite three laterally bent, more than in *N. albinota*, of pleonite four caudally directed. Pleotelsonic apex with a small acute tip and 4-6 sensory spines on both sides, situated in small notches, fewer spines than in the other Antarctic species.

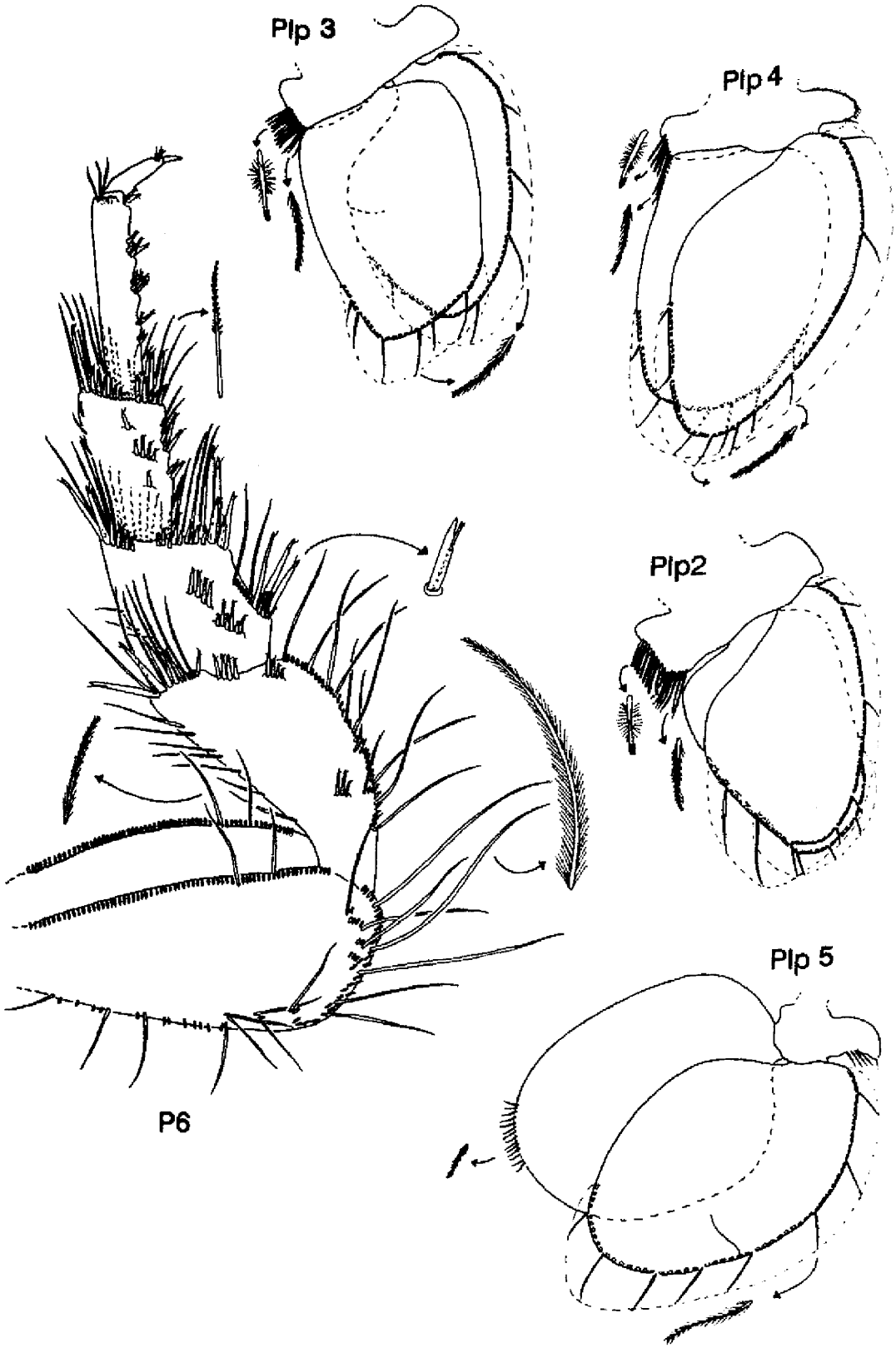


Figure 64: Natatolana oculata (Vanhöffen, 1914), ZMB; Female pereopod 6 and pleopods 2-5 (with details of setation). Small circles indicating insertion of plumose setae.

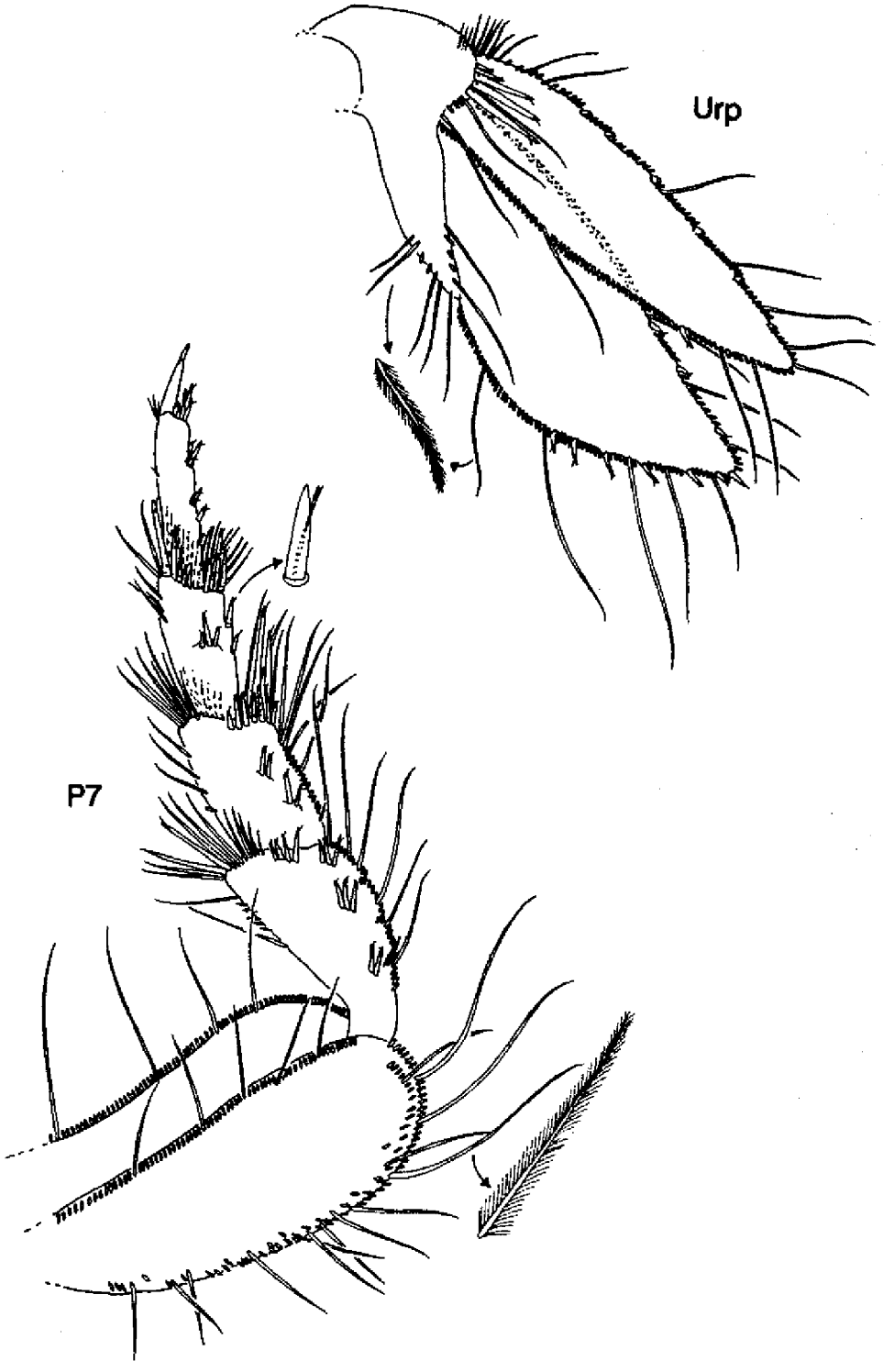


Figure 65: Natatolana oculata (Vanhöffen, 1914), ZMB; Female pereopod 7 and uropod (with details of setation).

9. Abstract

German: Während der Expeditionen „Antarktis I„ - „Antarktis III„ (1983-1985) von FS Polarstern wurden die folgenden Seroliden in der Weddell-See gesammelt: *Serolis aestimabilis* n.sp.; *Serolis nobilis* n.sp.; *Serolis waegelei* n.sp.; *Serolis serratus* n.sp.; *Serolis leachi* n.sp.; *Serolis reptans* n.sp.; *Ceratoserolis pasternaki* (Kussakin, 1967); *Serolis bouvieri* Richardson, 1906; *Serolis beddardi* Calman, 1920; *Serolis polita* Pfeffer, 1887 und *Serolis pagenstecheri* Pfeffer, 1887. *Serolis septemcarinata* Miers, 1875 und *Serolis acuminata* Sheppard 1933 wurden anhand von Typenmaterial nachbeschrieben. Einige neue Gattungen wurden errichtet: *Acanthoserolis* n. gen.; *Acutiserolis* n. gen.; *Cuspidoserolis* n. gen.; *Cristaserolis* n. gen.; *Spinoserolis* Nordenstam, 1933 und *Leptoserolis* n. gen.

Außerdem erfolgte eine Nachbeschreibung der Arten *Natatolana albinota* (Vanhöffen, 1914), *Natatolana intermedia* (Vanhöffen, 1914), *Natatolana obtusata* (Vanhöffen, 1914) und *Natatolana oculata* (Vanhöffen, 1914).

English: During the expeditions „Antarctis I„ - „Antarctis III„ (1983 -1985) of RV Polarstern, the following Serolidae have been collected in the Weddell-Sea: *Serolis aestimabilis* n.sp.; *Serolis nobilis* n.sp.; *Serolis waegelei* n.sp.; *Serolis serratus* n.sp.; *Serolis leachi* n.sp.; *Serolis reptans* n.sp.; *Ceratoserolis pasternaki* (Kussakin, 1967); *Serolis bouvieri* Richardson, 1906; *Serolis beddardi* Calman, 1920; *Serolis polita* Pfeffer, 1887 and *Serolis pagenstecheri* Pfeffer, 1887. *Serolis septemcarinata* Miers, 1875 and *Serolis acuminata* Sheppard, 1933 have been described with the reexamination of type material. Some new genera have been erected: *Acanthoserolis* n. gen.; *Acutiserolis* n. gen.; *Cuspidoserolis* n. gen.; *Cristaserolis* n. gen.; *Spinoserolis* Nordenstam, 1933 und *Leptoserolis* n. gen.

Besides redescriptions of the Antarctic cirolanid species *Natatolana albinota* (Vanhöffen, 1914), *Natatolana intermedia* (Vanhöffen, 1914), *Natatolana obtusata* (Vanhöffen, 1914) and *Natatolana oculata* (Vanhöffen, 1914) are presented.

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