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SPHAEROMATIDAE (CRUSTACEA, ISOPODA) OF THE BEAGLE CHANNEL AND DESCRIPTION OF *CYMODOPSIS BEAGELI* N. SP.

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ABSTRACT

During an expedition with RV *Victor Hensen* (1994) and the RV *Polarstern* (1996) Isopoda Sphaeromatidae were collected in and off the eastern entrance of the Beagle Channel. The species found, *Caecocassidias patagonica* Kussakin, 1967, *Cassidinopsis emarginata* (Guérin-Méneville, 1843) and *Moruloidea darwini* (Cunningham, 1871), were previously all poorly or insufficiently described; therefore a redescription is presented herein. *Exosphaeroma gigas* (Leach, 1818) was also collected frequently, but it was already redescribed earlier and thus only the localities are presented. Moreover, a new species, *Cymodopsis beageli*, n.sp., which is most closely allied to *Cymodopsis sphyracephalata* Hurley & Janssen, 1977, is described from the Beagle Channel.

INTRODUCTION

Specimens of the poorly known sphaeromatid isopods - *Caecocassidias patagonica* Kussakin (1967), *Cassidinopsis emarginata* (Guérin-Méneville, 1843), and *Moruloidea darwini* (Cunningham, 1871) - were discovered in collections of isopods from the Beagle Channel and east of the southern part of Tierra del Fuego (off the eastern entrance of the Beagle Channel). The existing descriptions of these three above mentioned species are only brief, with incomplete illustra-

tions. Dorsal and lateral view of these species have never been presented until now, nor complete illustrations of all appendages. *Exosphaeroma gigas* (Leach, 1818), however, was redescribed by Brandt & Wägele (1989) and is therefore not illustrated in the present paper, but the localities of the records of this circum-polar species from the southern hemisphere are presented. *Caecocassidias patagonica* has only been treated by Kussakin (1967). The genus *Caecocassidias* is monotypical; Kussakin (1967) found the species in the Atlantic Ocean, off Argentina, north of

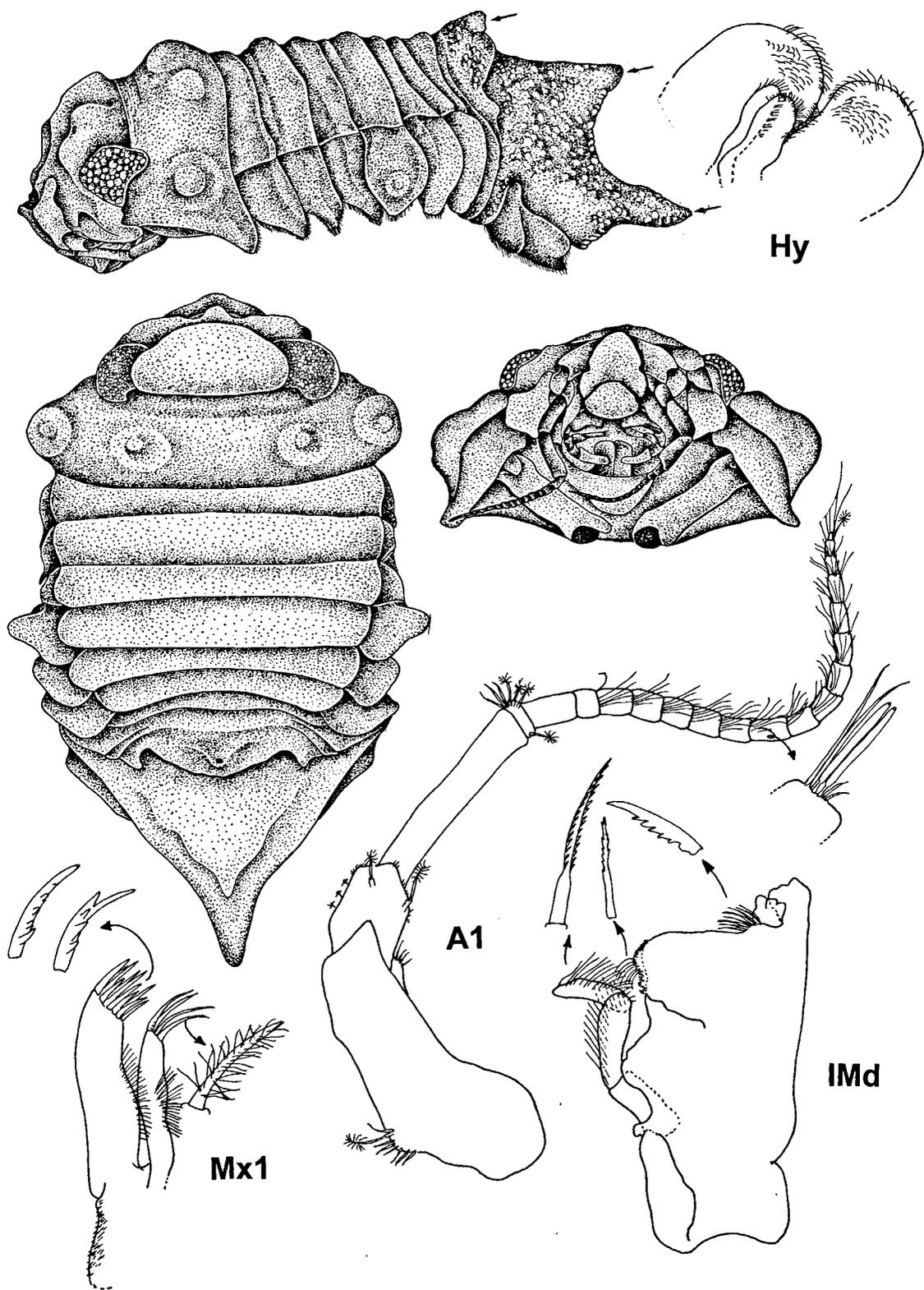


Fig. 1. *Cymodopsis beageli* n. sp., holotype male of 11 mm length in dorsal and lateral view and frontoventral view of head; antennula, left mandible, maxillula and hypopharynx.

the Falkland Islands in 400-680 m depth. Since then it has never been mentioned again in the literature. However, the collection of this beautiful and characteristic species east off the Beagle Channel now allows a complete and detailed redescription.

The species *Cassidinopsis emarginata* is known from the Subantarctic. This genus is also monotypic. It was found on algae and is distributed circumantarctically, on Tierra del Fuego, the Falkland Islands, South Georgia, the Crozet Islands, Kerguelen Island, and on Macquarie Island. Its depth record ranges from 0-32 m (Harrison & Ellis, 1991). *Moruloidea darwinii*, has frequently been reported and sampled in Argentina, the Magellan region and on Tierra del Fuego, South America, but is also known from South and West Australia, Kerguelen Island, and the Falkland Islands in the intertidal and sublittoral from 0 m down towards 500 m depth (Harrison & Ellis, 1991). However, the descriptions of both species, *Cassidinopsis emarginata* and *Moruloidea darwinii*, were very incomplete, the habitus was only outlined and only very few appendages were illustrated; complete descriptions of these species are still lacking.

A key to the genera of the Sphaeromatidae including distribution lists of the species was already published by Harrison & Ellis (1991). For distribution of the species presented compare Fig. 15.

MATERIAL AND METHODS

The species of the Sphaeromatidae presented, were collected in November 1994 during the "Joint Chilean-German-Italian Magellan *Victor Hensen* Campaign", a cruise with RV *Victor Hensen* by means of an epibenthic sledge (Brandt & Barthel, 1995) in and off the Beagle Channel, and during an expedition with RV *Polarstern* in 1996 (ANT XIII/4) off the eastern entrance of the Beagle Channel, with the same epibenthic sledge. On the vessels, the animals were fixed in formalin (4%), and later transferred into ethanol (70%). The drawings were prepared with the help of a camera lucida. The specimens are deposited in the Zoological Museum of Hamburg.

The following abbreviations are used in the text and figures: A1 = antennula, A2 = antenna, BMNH = National History Museum, London, Hy = hypopharynx (= paragnaths), lMd = left mandible, Mx1 = maxillula, Mx2 = maxilla, Mxp = maxillipede, P1-7 = pereopod 1-7, Plp 1-5 = pleopod 1-5, rMd = right mandible, Urp = uropod, ZMH = Zoological Museum of Hamburg, ZMSP = Zoological Museum St. Petersburg.

SYSTEMATICS

***Cymodopsis beageli* n. sp.**

Figs. 1-4

Type material.- Holotype male of 11 mm length, ZMH K-38299.

Type locality.- ANT XIII/4, st. 40/115, southern South America, Tierra del Fuego, off the eastern entrance of the Beagle Channel (compare Figure 15).

Description of holotype male

Length of male, 11 mm; head with one dorsomedial elevation and two frontolateral protrusions in front of the eyes (Fig. 1). Eyes large, of yellow-brownish color in fixed condition, slightly quadrangular, consisting of many ocellae. Pereionite 1 longest and almost as broad as fourth one, not fused with cephalothorax and equipped with 2 dorsal and 2 lateral blunt spines. Pereionites 2-4 smallest and shortest, equal in size and length, pereionite 5 broadest and slightly longer than 2-4 and 6-7. All pereionites smooth, with a horizontal shallow ridge dorsally of pereionites 3-5 as illustrated in lateral view on Fig. 1. All pleonites fused with pleotelson, but pleonite 1 indicated by deep suture. Pleotelson narrowing and acuminate caudally, with elongated caudal apex, pleotelson broadest anteriorly, equipped with 3 strong dorsal blunt spines, one anteriorly, one medially and one caudally (see dorsal and lateral view with arrows in Figure 1). Uropods inserted anteriolaterally.

A1 (Fig. 1) with 3 peduncular and 18 flagellar articles. First peduncular article longest, with a mediolateral feather-like seta and few medial and

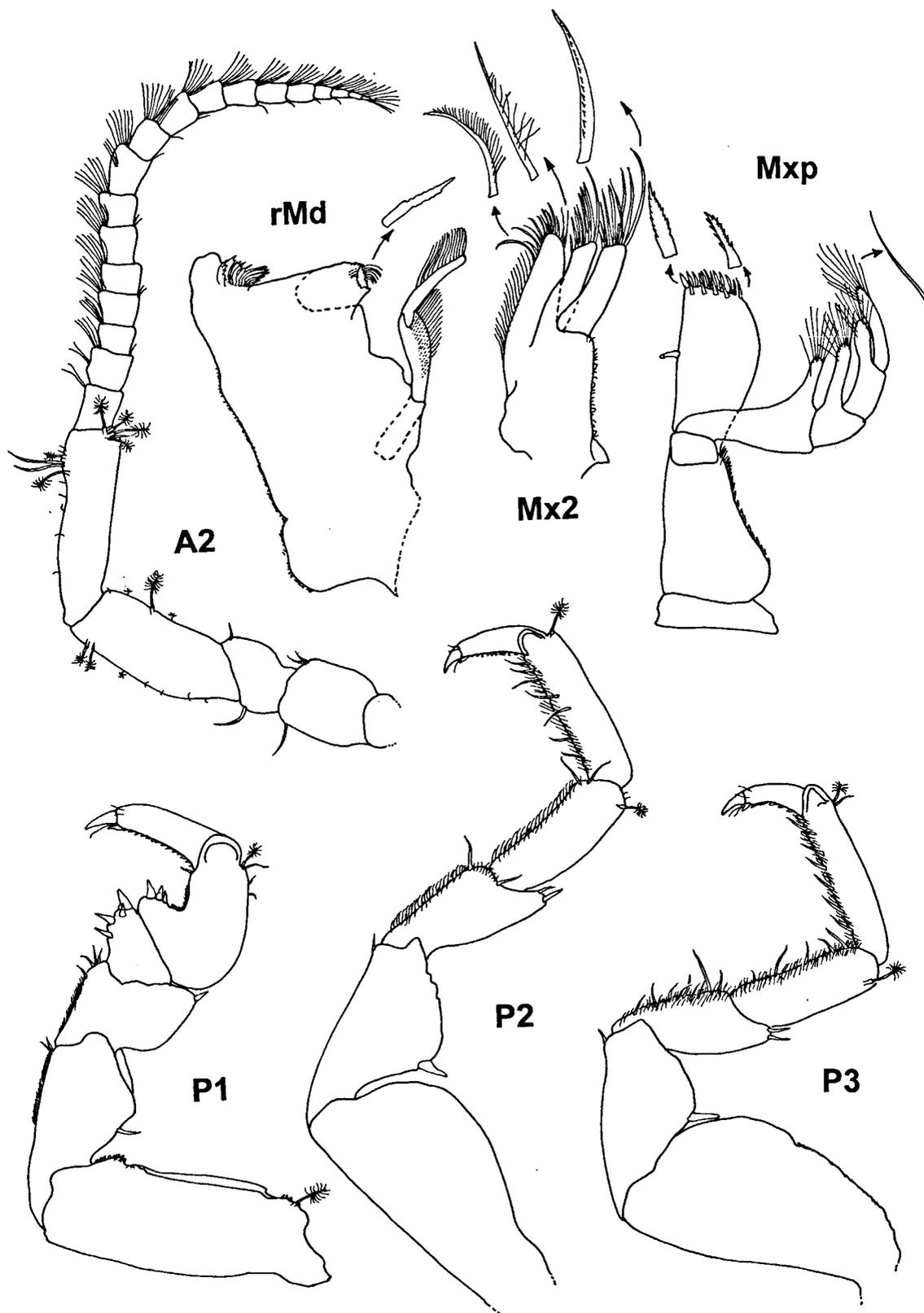


Fig. 2. *Cymodopsis beageli* n. sp., holotype male, antenna, right mandible, maxilla, maxillipede, and pereopods 1-3.

distal simple setae. Second article one fourth of first in length, with 2 feather-like and 3 very small distally branched setae, third article as long as first, without setae. First flagellar article small, ring-like, with 3 simple and 4 feather-like setae, second flagellar article three times as long as first, without setation, third and following flagellar articles narrowing distally, with 2 aesthetascs and 2 long and 2 short simple setae, last article also bearing a single feather-like seta.

A2 (Fig. 2) with 5 peduncular and 18 flagellar articles. First peduncular article short, ring-like, without setation. Second article about three times as long as first, almost of quadrangular shape, with 3 simple distal setae. Third article shorter than second, with 2 distal simple setae. Fourth article about as long as the first three articles together, with 3 feather-like setae and some very small hair-like structures, some distally branched. Fifth article about as long as fourth, with 4 distal and 2 distomedial feather-like and 2 distomedial simple setae and some short setules. First flagellar article longest, with 2 simple apical setae, second flagellar article also with 2 simple setae, following articles narrowing and shortening, with groups of 4-8 apical simple setae and 1 shorter simple seta on the opposite side.

Mandibles (Figs. 1 and 2) asymmetrical, palp consisting of three articles. Pars incisiva of right mandible narrower than of left with one strong, blunt tooth with two notches, on left mandible with three notches. Lacinia mobilis with 1 strong tooth, bearing three notches distally, spine row of 8-9 laterally serrated setae. Pars molaris stout, with some long laterally serrated mediolateral setae, broad grinding surface and indented lower margin. First article of palp about as long as third, without setation. Second article of palp longest, second and third articles of both mandibles with lateral rows of setae, on distal two thirds of articles.

Hy (Fig. 1) consisting of 2 smaller inner lobes and 2 larger outer lobes, both lobes with short simple apical setae.

Mx1 (Fig. 1) of 2 endites, both slightly narrowing distally, lateral one with 11 strong spines of different shapes, some equipped with additional subsetules. Medial endite shorter, with 4 strong, curved subsetulate spines.

Mx2 (Fig. 2) consisting of three endites, inner

one shortest and broadest, equipped medially with some long simple setules, and 13 setulated apical setae of varying lengths. Medial endite with 4 setulated setae, longer and stronger than those on inner endite. Outer endite with 9 setae, which bear a lateral row of small spinules.

Mxp (Fig. 2) without epipod, strong endite and a five segmented palp. Endite on distal margin with 2 distodorsal rows of laterally serrated setae. One coupling hook medially on endite. First article of palp shortest and quadrangular in shape. Second article longest and broadest, distally with distolateral protrusion, about as long as basis of next following article of palp. Second, third and fourth articles all distomedially extremely produced, with a dense medial brush of long simple setae. Last article almost three times as long as first article and very slender, also with long simple setae.

P1 (Fig. 2) shortest and strongest pereopod. Basis longest article, with a proximal feather-like seta and some shallow distodorsal teeth-like structures. Ischium shorter than basis, mediolaterally slightly widening, with mediolateral strong simple spine-like seta and 2 simple ventral short setae. Merus almost half as long as ischium, with 1 distodorsal simple short spine-like seta, and 4 simple distoventral setae, as well as some small setules. Carpus slightly shorter than merus, of quadrangular shape, with 4 ventral strong spine-like setae of varying lengths. Propodus proximally broader than distally, proximally with medioventral protrusion, equipped with 3 strong spine-like setae, in concave medioventral notch some small teeth-like structures. Distodorsally of propodus 1 feather-like seta and 3 simple setae of varying lengths. Dactylus about as long as propodus, with 1 longer and 1 shorter distal claw and a seta inbetween, ventrally with a row of small teeth.

P2-7 (Figs. 2 and 3) similar in shape and setation to pereopod 1, but longer and less stout. Basis of P2-4 distally broader than proximally, without setation, of P 5-7 not produced distally, with some distal setules and 2 feather-like setae each. Ischium of P2-5 also equipped with 1 distodorsal simple short spine-like seta, on P6 and P7 merus elongated, almost as long as basis, lacking this strong seta. Merus of P2-P7 shorter than ischium, ventral side covered with setules of

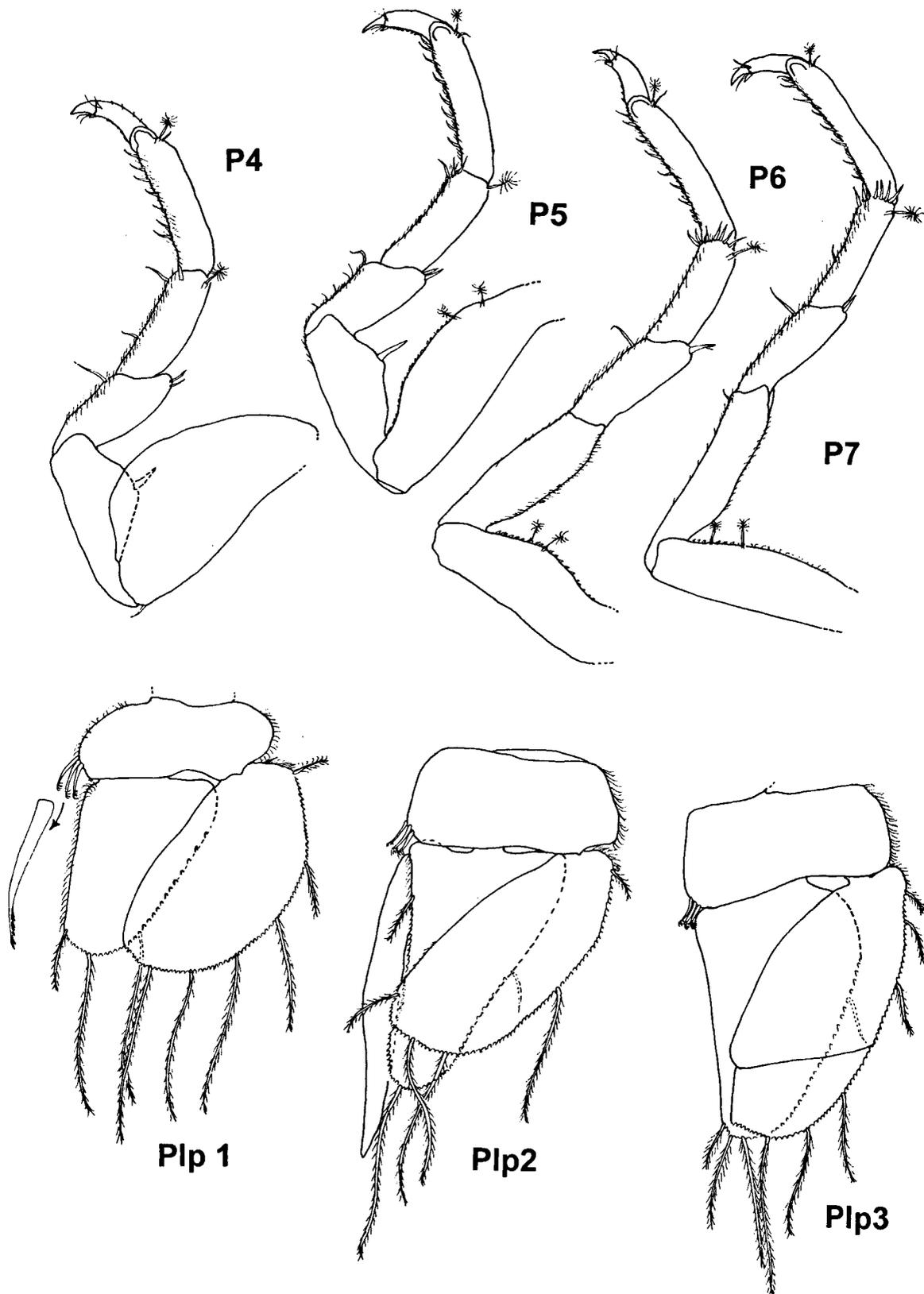


Fig. 3. *Cymodopsis beageli* n. sp., holotype male, perieopods 4-7, and pleopods 1-3.

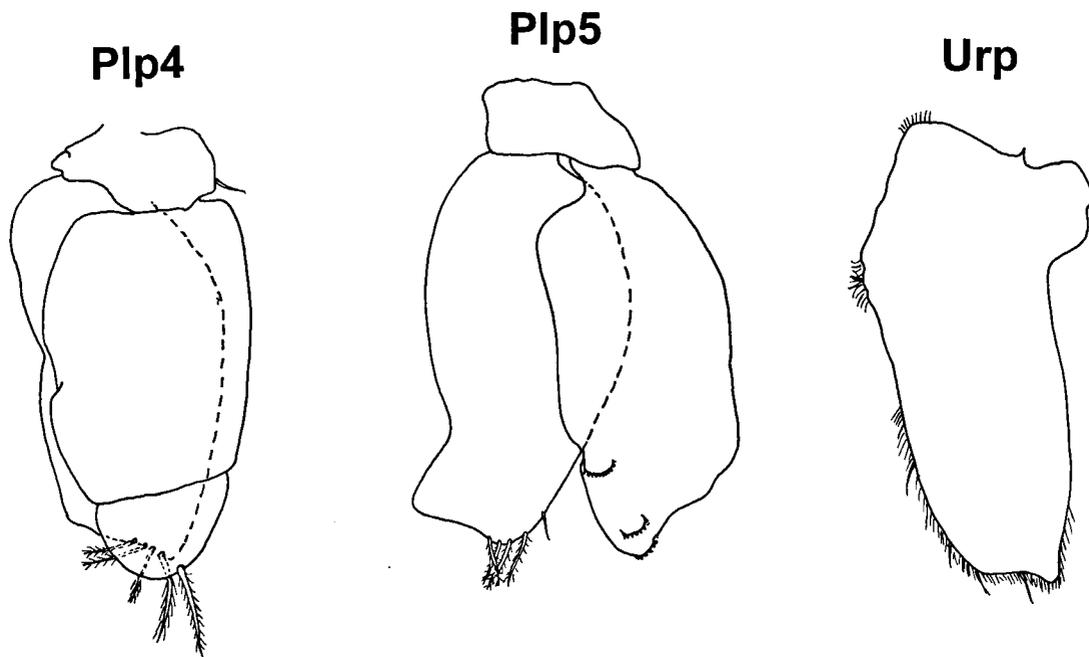


Fig. 4. *Cymodopsis beageli* n. sp., holotype male, pleopods 4 and 5, uropod.

different density, most densely covered on P3 and P3. Ventrally and distodorsally with some simple long setae. Carpus slightly longer than merus, ventrally also with setules and some simple setae, distodorsally with a feather-like seta. Propodus only slightly longer than carpus, similar in setation to carpus, except a complete ventral row of long simple setae and an accompanying simple seta besides the feather-like distodorsal seta. Dactylus as in P1.

Plp1 (Fig. 3) of male with short, round oval sympod, bearing three long medial coupling setae. Endopod of male almost of triangular shape, with medial row of setules and distal and distolateral row of long plumose setae. Exopod with distolateral and distal long plumose setae.

Plp2 (Fig. 3) of male also with short sympod, but almost of quadrangular shape, also equipped with 3 medial coupling hooks. Endopod slightly longer than exopod, almost triangular, with broad, distally acuminate appendix masculina, inserting proximolaterally and exceeding the endopod about one fourth of its length. Endopod also distally and distolaterally with row of long plumose setae. Exopod long oval, with distal and distolateral row of long plumose setae.

Plp3 (Fig. 3) of male with short, almost quadrangular sympod, bearing three long medial coupling setae as well. Endopod with distal and distolateral row of long plumose setae. Exopod long-oval, with distinct suture line in apical third of ramus, bearing distolateral and distal long plumose setae.

Plp 4 and 5 (Fig. 4) both about subequal in size, with thin endo- and exopod, endopod of Plp 4 with 4 apical plumose setae, exopod also with suture line in apical part of the ramus, but only with 1 single plumose distal seta; plp 5 endopod with 4 plumose and 1 simple setae, exopod with 3 distomedial lobes, equipped with small teeth-like structures.

Urp (Fig. 4) with fused sympod, endo-, and exopods, bearing some proximal, some lateral and some distal setules, distolaterally 4 simple setae.

REMARKS

Cymodopsis beageli n.sp., is most closely allied to *Cymodopsis sphyracephalata* Hurley & Janssen, 1977, which was found in New Zealand (NZ 01 Holotype H-147; stn. F147) This new species was also compared with material from *Cymodopsis*

sphyracephalata Hurley & Janssen, 1977 from the National Museum of New Zealand BS 648; 42°29.2'S 176°06.3'E, northern Mernoo slope, 1568 m, 11.1.1979, R. V. Tangaroa (NZOI stn. R6), on mud and boulders, det. G. F. Hicks (CR 8290). However, the clypeus of *C. beageli* is less elongated distally than that of *C. sphyracephalata*, the mediodorsal aspects of the pereionites of the new species are less pronounced than in *C. sphyracephalata*, and the pleotelson of *C. beageli* is broader and more robust and also slightly shorter than in *C. sphyracephalata*. Moreover, the mediodorsal blunt spine on pleotelson of the latter is only a shallower protrusion compared to the pronounced spine of *C. beageli*. Like for *C. sphyracephalata* the female of *C. beageli* is unknown.

Exosphaeroma gigas (Leach, 1818)

Sphaeroma gigas Leach 1818

Sphaeroma juvenii Kraus, 1843

Sphaeroma propinqua Nicolet, 1849

Sphaeroma chilensis Dana, 1853

Sphaeroma obtusa Hutton, 1879 (in Chilton, 1909)

Type material.- BMNH 1979:420:1, syn-type, locality unknown; pres.: Sir Joseph Banks Collection (via the Linnean Society of London). Material from the present collections: 10 juveniles from station 1200 (14.11.1994, RV *Victor Hensen*), 55°38.52'S-55°38.57'S, 67°12.86'W-67°12.26'W, 40 m depth, on crushed mollusc shells; 2 juveniles from station 1206 (14.11.1994, RV *Victor Hensen*), 55°48.13'S-55°48.10'S, 66°58.45'W-66°58.62'W, 66 m depth, on fine, crushed mollusc shells; 121 juveniles on station 1213 (15.11.1994, RV *Victor Hensen*), 55°06.89'S-55°06.72'S, 66°39.95'W-66°39.92'W, 63 m depth, on crushed mollusc shells.

Distribution.- Circum-Antarctic: Peru, Magellan area, Tierra del Fuego, Chile, Falkland Islands, Crozet Island, Kerguelen Island, South Africa, Macquarie Island, Tasmania, South Australia, Campbell Island, Auckland Islands, New Zealand, Chatham Rise, depth ranging from 0-270 m (localities after Dana, 1953; Vanhöffen, 1914; Tattersall, 1914, Kussakin, 1967) (compare Fig. 15).

Caecocassidias patagonica Kussakin, 1967
Figs. 5-8

Caecocassidias patagonica Kussakin, 1967: 237
Caecocassidias patagonica; Harrison, 1984: 371

Type material.- 2 paratype females of 12 and 13 mm length, ZMSP N2/46721.

Type locality.- Atlantic ocean 43°40'S 59°35'E, off Argentina, north of the Falkland Islands, in 400-500 m depth, coll. Koltun & Pasternak, 16.6.1958, vessel „Ob“.

Material used for redescription.- Male of 15,5 mm length, ANT XIII/4, st. 40/109, southern South America, Tierra del Fuego, off the eastern entrance of the Beagle Channel, ZMH K- 38300 (compare Fig. 15).

Redescription of male

Length of male, 15,5 mm; head straight, very flat, laterally elongated and broader than following pereionites, with dorsal setules (Fig. 5). Eyes not discernable, not any vestige of eyes found. Pereionite 1 slightly shorter than second, which is the longest pereionite, not fused with cephalothorax. All pereionites of about equal width. Pereionite 2 slightly longer than following. All pereionites with shallow dorsomedial elevation and short dorsomedial setules.

All pleonites fused with pleotelson, but pleonites 1 and 2 indicated by suture lines laterally. Pleotelson narrowing and acuminate caudally (see dorsal view in Fig. 5), with elongated caudal apex, pleotelson broadest anteriorly, equipped with 1 dorsomedial strong blunt spine (lateral view in Fig. 5). Uropods inserted anteriolaterally.

A1 (Fig. 6) with 3 peduncular and 16 flagellar articles. First peduncular article longest, with two lateral short setae. Second article one fourth of first in length, with 5 feather-like setae and some small setules, third article about as long as second, but only a fourth in width of second, with some lateral fine setules and 2 longer simple setae. First flagellar article small, ring-like, with 4 feather-like setae, second flagellar article four times as long as first, without setation, third and following flagellar articles narrowing distally. Fifth to fifteenth articles with 1 aesthetasc and 2

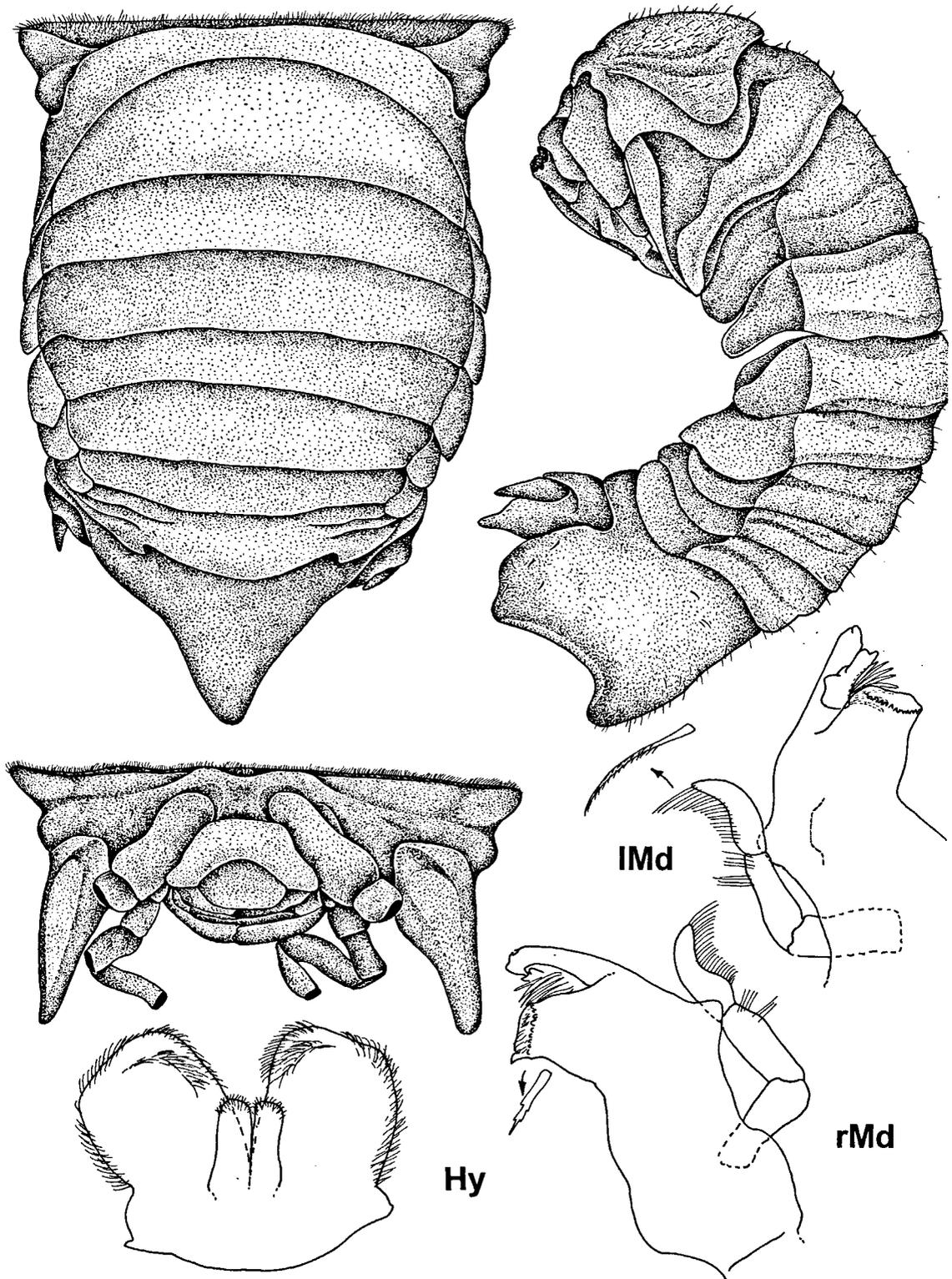


Fig. 5. *Caecocassidias patagonica* Kussakin, 1967, male of 15.5 mm length in dorsal and lateral view and frontoventral view of head, left and right mandibles and hypopharynx.

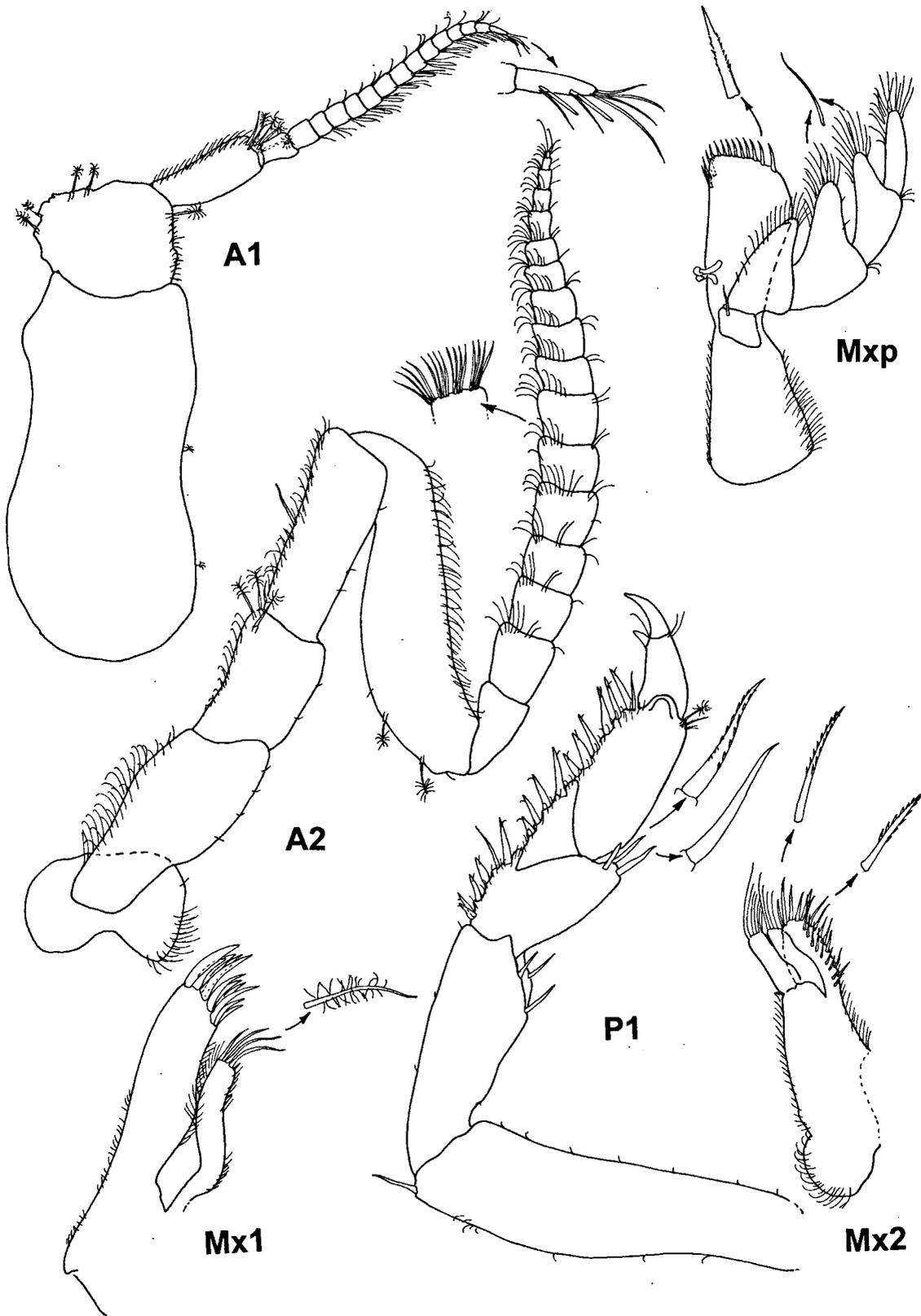


Fig. 6. *Caecocassidias patagonica* Kussakin, 1967, male antennula, antenna, maxillula, maxilla, maxillipede, and pereopod 1.

simple setae laterally and some simple setae also medially, last article with 2 aesthetascs and 4 apical simple setae.

A2 (Fig. 6) with 5 peduncular and 17 flagellar articles. First peduncular article short, ring-like, with only some lateral setae. Second article about three times as long as first, long-oval, with some medial setules. Third article shorter than second, also with medial setules and 3 distal feather-like setae. Fourth article about as long as the second, with 1 simple medial seta and setules. Fifth peduncular article longest, with medial setules and 2 distolateral feather-like setae. First flagellar article longest, but narrower than fifth, without setation; second and following flagellar articles shortening, with groups of up to 16 apical simple setae medially and 1-2 on the opposite side. Last flagellar article smallest, knob-like, with 8 simple setae of different lengths.

Mandibles (Fig. 5) asymmetrical, palp consisting of three articles.

Pars incisiva of right mandible not narrower than of left and with three blunt teeth, on left mandible with 2 teeth. Lacinia mobilis of rMd with 3 blunt teeth and 7 setae in spine row, lacinia mobilis of lMd with 2 strong blunt distal teeth and 2 lateral shallower notches, spine row of 8 laterally serrated setae. Pars molaris stout, with few long laterally serrated mediolateral setae, broad grinding surface and indented lower margin. All articles of palp about the same length, first most-proximal one without setation. Second article of palp with 7-8 distolateral setulated setae, last article with row of lateral setulated setae.

Hy (Fig. 5) consisting of 2 smaller inner lobes and 2 larger outer lobes, both lobes with short simple apical setae, outer lobe also with lateral setules.

Mx1 (Fig. 6) of 2 endites, lateral one slightly narrowing distally, lateral one with 11 strong spines. Medial endite shorter, with 4 strong, curved spines, which are densely setose.

Mx2 (Fig. 6) consisting of three endites, inner one shortest and broadest, covered with some longer simple setules medially, and 14 setulated apical and lateral setae of varying lengths, as well as another second lateral row of 9 simple setae. Medial endite with 4 setulated setae, which are

longer and stronger than on the inner endite. Outer endite with 7 setae, which bear a lateral row of small spinules.

Mxp (Fig. 6) without epipod, strong endite and a five segmented palp. Endite on distal margin with 1 distodorsal row of laterally serrated setae. Two coupling hooks medially on endite. First palpal article shortest and of quadrangular shape, with a single simple seta. Second article twice as long as first, with medial long simple setae. Second, third and fourth articles all distomedially extremely produced, with a dense medial brush of long simple setae. Tip of last article, which is 2.5 as long as first article and very slender, also with long simple setae.

P1 (Fig. 6) shortest pereopod. Basis longest article, with a distoventral simple long seta. Ischium shorter than basis, mediolaterally slightly widening, with 3 mediolateral spine-like setae. Merus almost half as long as ischium, with 3 distodorsal strong spine-like setae, and ventral sensory setae, as well as a simple seta. Carpus slightly shorter than merus, quadrangular in shape, with 3 ventral strong sensory setae, increasing in length distally. Propodus about two thirds of length of ischium, equipped with 6 strong ventral sensory spines and a simple seta, distodorsally of propodus 1 feather-like seta and 3 simple short setae. Dactylus about two thirds of propodus, with 1 longer and 1 shorter distal claw and a seta in between, ventrally smooth.

P2-7 (Figs. 7 and 8) similar in shape and setation to pereopod 1, but longer. Basis of P2-7 distoventrally with 2 long simple setae, dorsally of basis 2-7 feather-like setae. Ischium also with 1-3 distodorsal simple short spine-like setae, only distoventrally of P7 a short simple seta. Merus of P2-P7 about half as short as ischium, ventral side with 2-6 strong spine-like setae, distodorsally 2-3. Carpus slightly longer than merus, ventrally with up to 10 strong spine-like setae, and distodorsally with a group of 2-6 strong setae, P2 also with a feather-like seta. Propodus only slightly longer than carpus, similar in setation to carpus, with a ventral row of long strong spine-like setae and a simple distoventral seta, distodorsally long simple setae and on P2-4 with a feather-like or a setulated seta. Dactylus as in P1, with small ventral setules.

Plp1 (Fig. 7) of male with short, almost quad-

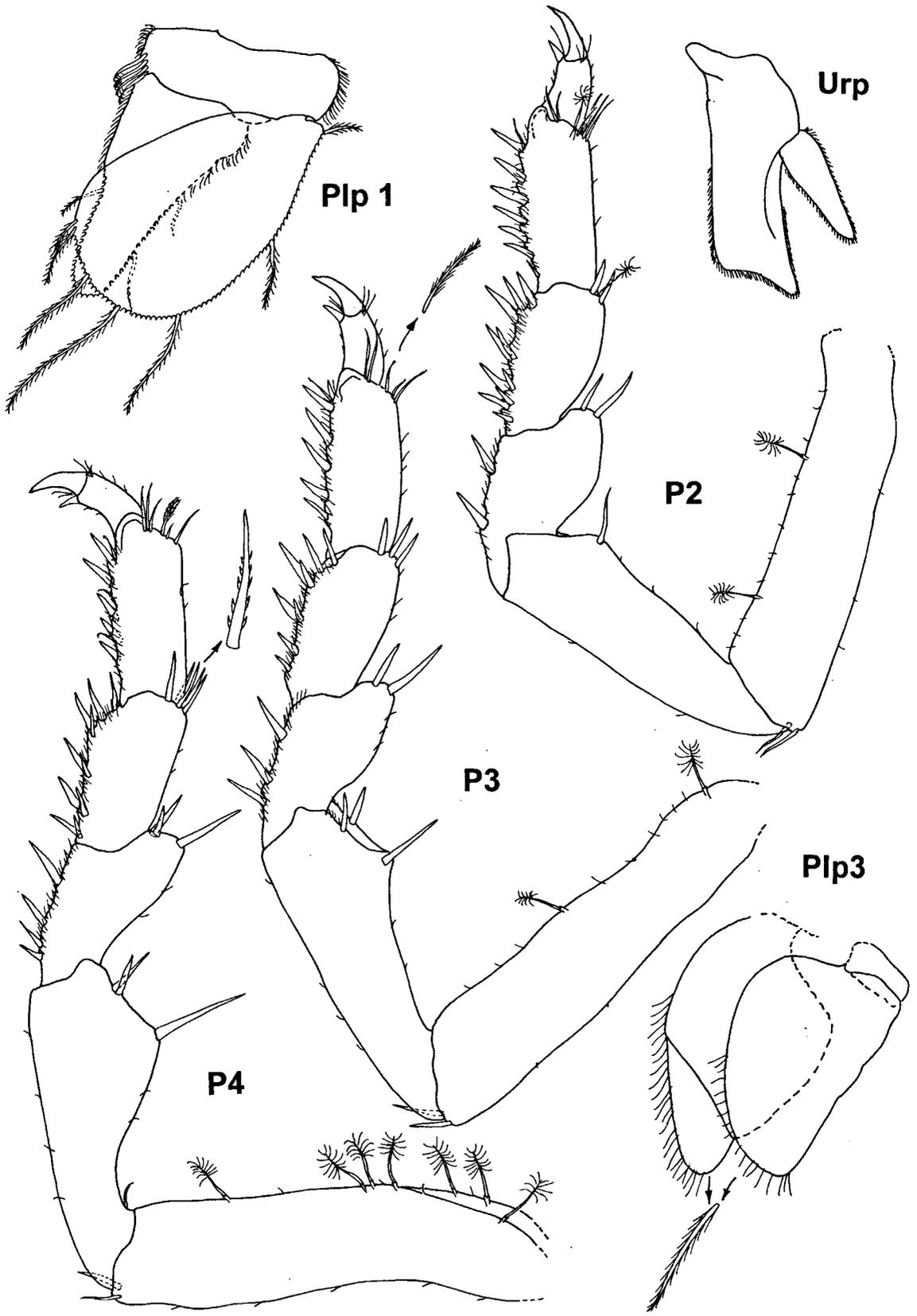


Fig. 7. *Caecocassidas patagonica* Kussakin, 1967, male pereiopods 2-4, pleopods 1 and 3, uropod.

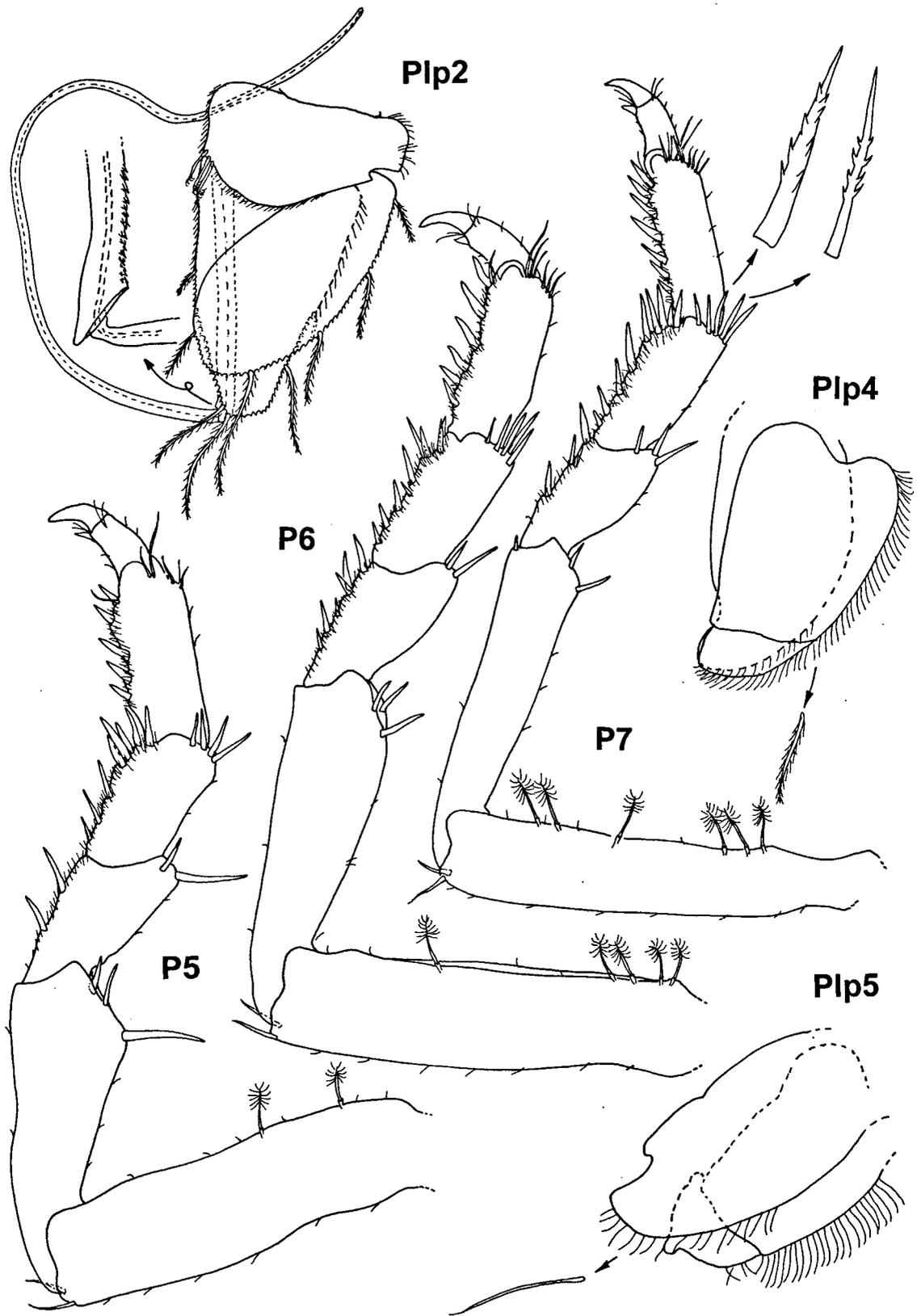


Fig. 8. *Caecocassidias patagonica* Kussakin, 1967, male pereiopods 5-7, and pleopods 2, 4-5.

rangular sympod, bearing 4 long medial coupling setae. Endopod of male almost of triangular shape, with proximomedial and -lateral row of setules and distal and distolateral row of long plumose setae. Exopod with distolateral and distal long plumose setae.

Plp2 (Fig. 8) of male with longer sympod, but also of quadrangular shape, mediolaterally protruded, equipped with 3 medial coupling hooks. Endopod slightly longer than exopod, almost triangular, with very long and slender, distally acuminating appendix masculina, inserting proximolaterally and exceeding the endopod about 2.5 of its length. Endopod also distally and distolaterally with row of long plumose setae. Exopod broad oval, with distal and distolateral row of long plumose setae.

Plp3 (Fig. 7) of male with short, narrow, almost quadrangular sympod, without coupling setae. Endopod with distal row of plumose setae. Exopod with distinct suture line in apical third of ramus, also with distolateral and distal plumose setae.

Plp 4 and 5 (Fig. 8) both about subequal in size, with thin endo- and exopods, both rami of Plp 4 with some distal plumose setae, exopod also with suture line in apical part of the ramus, but only with 1 single plumose distal seta; plp 5 both rami with distolateral plumose setae, exopod also with suture line.

Urp (Fig. 7) with fused sympod and endopod, exopod inserted after one third of length of sympod, shorter than sympod and proximally half as wide as sympod, distally acuminating. Sympod and exopod distolaterally with short setules.

DISTRIBUTION

South America, Magellan area, subantarctic (compare Fig. 15).

REMARKS

This genus is monotypical and very distinct due to the very straight head, which is extremely flat (compare also Kussakin, 1967), laterally elongated and broader than following pereionites. Moreover, it bears dorsal setules (Fig. 5). Interestingly the shape of the head of the paratype females differed from the illustration of the holotype male Kussakin presented (1967), and also from the redescribed male from off South America (Fig. 5).

In both females, the head was not flat, but more rounded, as in species of the other genera of the Sphaeromatidae, and it was also less protruded laterally. However, as this species is very distinct, there is no doubt that these were the females of the same species. The differences in the shape of the males' and females' heads might therefore be attributed to sexual dimorphism.

Cassidinopsis emarginata (Guérin-Méneville, 1843)

Figs. 9-11

Guérin-Méneville, 1843

Cassidinopsis emarginata Hansen, 1905: 108, 128

Museum material.- ZMH K-16651, Observatory Bay, Kerguelen Island, leg. "Deutsche Südpolar-Expedition" 1901-1903, from RV „Gauss“. ZMH K-22878, off the eastern mouth of the Beagle Channel, Isla Picton, 4 fathoms, on kelp, leg. "Hamburger Magalhaensische Sammelreise" 1892-1893, coll. 5.7.1893 by W. Michaelsen, det. Ohlin. K-22885, Tierra del Fuego, leg. "Hamburger Magalhaensische Sammelreise" 1892-1893, coll. 17.12.1892 by W. Michaelsen, det. Ohlin. K-22887, South Georgia, Royal Bay, 54°30.58'S 30°00.45'W, „Deutsche Polarstation auf Süd-Georgien“ 1882-1994, coll. 18.1.1884 by K. v. den Steinen, det. Ohlin.

Material used for redescription.- Female of 37 mm length; ANT XIII/4, st. 40/115, southern South America, Tierra del Fuego, off the eastern entrance of the Beagle Channel.

REDESCRIPTION OF FEMALE

Length of female 37 mm; head very small and smooth, one fourth of width of body (see dorsal view in Fig. 9). Eyes small, round and black. Pereionite 1 slightly longer than second, but less wide, not fused with head. Pereionites 4 and 5 longest, 5 widest. All pereionites smooth, without setae.

All pleonites fused with pleotelson, but pleonites 1 indicated by a complete suture line and 2-3 by lateral suture lines. Pleotelson narrowing caudally (see dorsal view in Fig. 9), with slightly convex caudal apex, pleotelson broadest in ante-

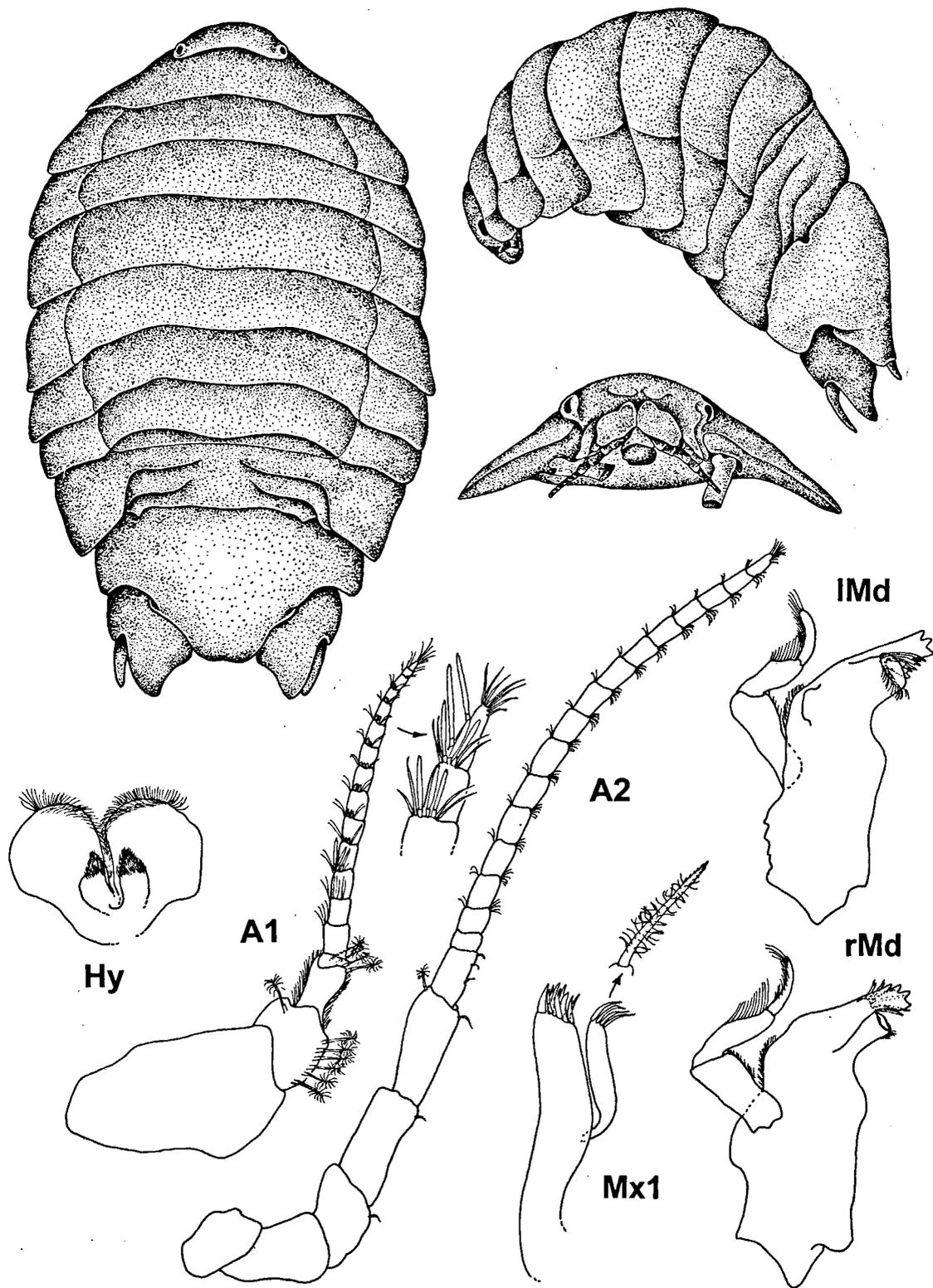


Fig. 9. *Cassidinopsis emarginata* (Guérin-Méneville, 1843), female of 37 mm length in dorsal and lateral view and frontoventral view of head, antennula, antenna, left and right mandibles, hypopharynx, and maxillula.

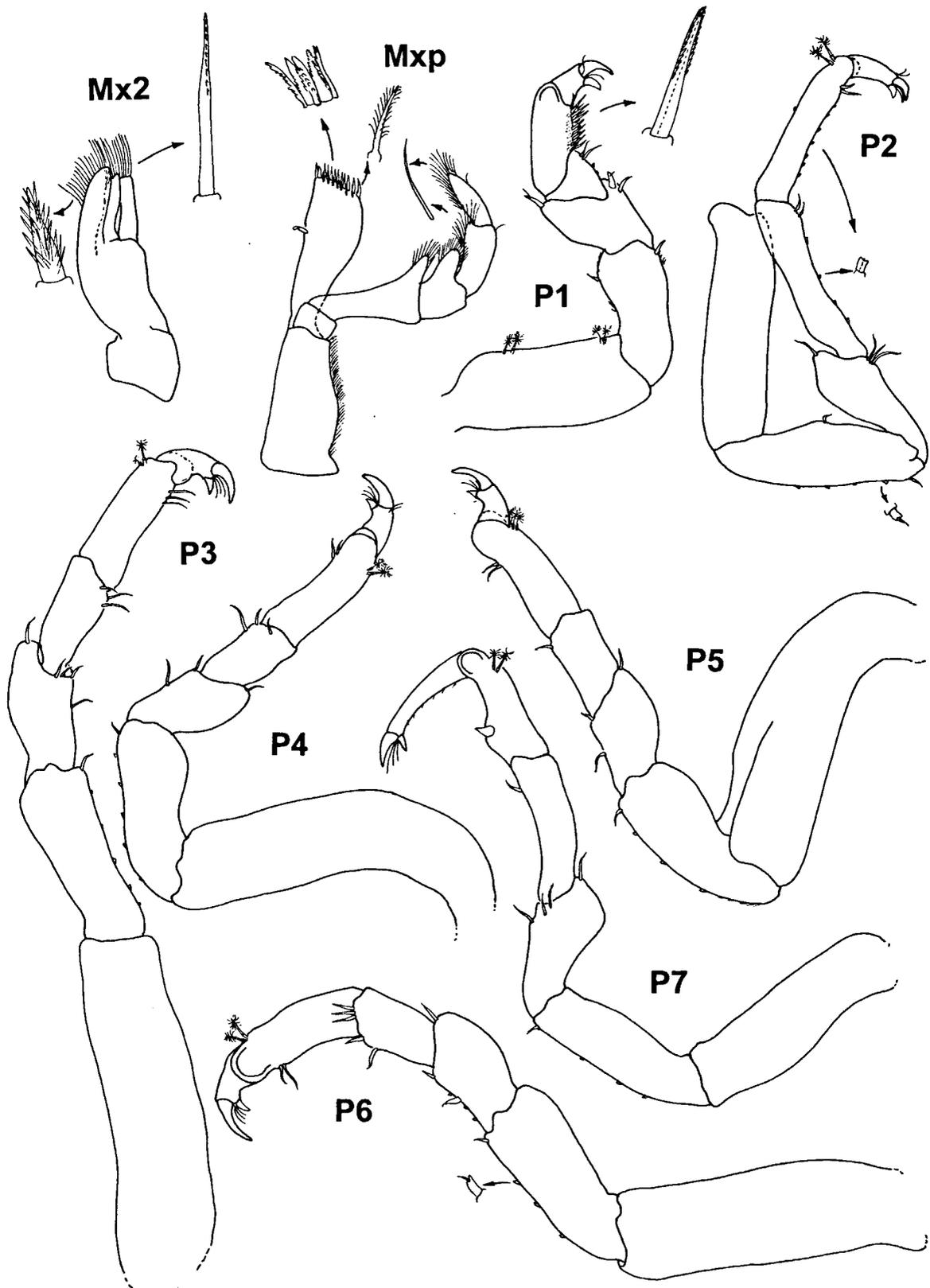


Fig. 10. *Cassidinopsis emarginata* (Guérin-Méneville, 1843), female maxilla, maxillipede, and pereopods 1-7.

rior half of length, until to the insertion of the uropods, mediolaterally, from this point telson is narrowing.

A1 (Fig. 9) with 3 peduncular and 15 flagellar articles. First peduncular article longest and broadest, without setae. Second article one fourth of first in length, with 6 medial feather-like setae and one lateral one, third article slightly shorter than second, but only a third of width of second, with some lateral fine setae. First flagellar article small, ring-like, with 4 feather-like setae, second flagellar article 2.5 times as long as first, with only 4 simple setae, third with 7 simple setae, and following flagellar articles narrowing distally and slightly shortening. Fifth to fourteenth articles with 3 aesthetascs and 2 simple setae on both sides of the aesthetascs, last article with 5 aesthetascs and 7 apical simple setae.

A2 (Fig. 9) with 5 peduncular and 17 flagellar articles. First peduncular article short, ring-like, without setation. Second article about twice as long as first, long-oval, without setae. Third article only slightly shorter than second, with 1 distomedial simple seta. Fourth article longer than second, but shorter than second and third together, with 1 simple medial seta. Fifth peduncular article about as long as fourth, with a medial simple a distolateral feather-like seta. First flagellar article longest, but slightly narrower than fifth, with 3 small medial simple setae; second article a third of length of first, third article slightly longer than second; third to last articles with groups of 5-6 medial and 2 lateral short, fine simple setae. Last flagellar article with 11 simple setae of varying lengths.

Mandibles (Fig. 9) asymmetrical, palp consisting of three articles.

Pars incisiva of right mandible not narrower than of left, with 4 blunt teeth, on left mandible 3 teeth. Lacinia mobilis of rMd small, rudimentary, spine row with 6 setae, lacinia mobilis of lMd with 3 strong blunt distal teeth and spine row of 5-6 laterally serrated setae. Pars molaris stout, of lMd stronger than of rMd, with few mediolateral setae, broad grinding surface and indented lower margin. First article of palp longest, third shortest; first with some short distolateral setules, distolateral half of second with setulated setae, third narrowest and slightly shorter than second, also with a row of ventrolat-

eral serrated setae.

Hy (Fig. 9) consisting of 2 smaller inner lobes and 2 larger outer lobes, both lobes with short simple apical setae.

Mx1 (Fig. 9) of 2 endites, lateral one with 10 strong spines. Medial endite shorter, with 4 strong, curved spines, which are densely setose.

Mx2 (Fig. 10) consisting of three endites, inner one shortest and broadest, with 16 setulated apical and distolateral setae of varying lengths (see detail in Fig. 10); medial and outer endite with 5 setae, bearing some lateral small teeth, each.

Mxp (Fig. 10) without epipod, strong endite and a five segmented palp. Endite proximolaterally with fine setules, on distal margin with 2 distodorsal rows of laterally with teeth equipped serrated setae and some setulated ones distolaterally. Only one coupling hook medially on endite. First palpal article shortest and of quadrangular shape, without setae. Second article 4.5 times as long as first, with distomedial long simple setae. Second and third articles distomedially produced, with a dense medial brush of long simple setae. Distomedial half of fourth and tip of last article, which is only slightly shorter than fourth also with long simple setae.

P1 (Fig. 10) shortest pereopod. Basis longest article, with 4 dorsal short feather-like setae. Ischium shorter than basis, with 1 distomedial and one distodorsal simple seta. Merus slightly shorter than ischium, with 1 distodorsal sensory seta. One distoventral and a single simple seta. Carpus about two thirds of length of merus, of almost quadrangular shape, with 2 ventral simple setae. Propodus slightly shorter than ischium, equipped with two rows of 7-8 strong setulated setae. Dactylus about half length of propodus, with 1 longer and 1 shorter distal claw and a seta inbetween, ventrally smooth.

P2-7 (Fig. 10) similar in shape and setation to pereopod 1, but longer and more slender. Pereopod 3 longest appendage, anterior pereopods decreasing in length again. Basis of P2-7 also longest articles, without setation. Ischium of P2 with a mediodorsal simple seta, of P3-7 not. Ventrally with some short, blunt sensory setae (see detail of P2 and P6). Merus of P2-P7 about two thirds of length of ischium, with 2-3 ventral simple setae and 1 distodorsal one.

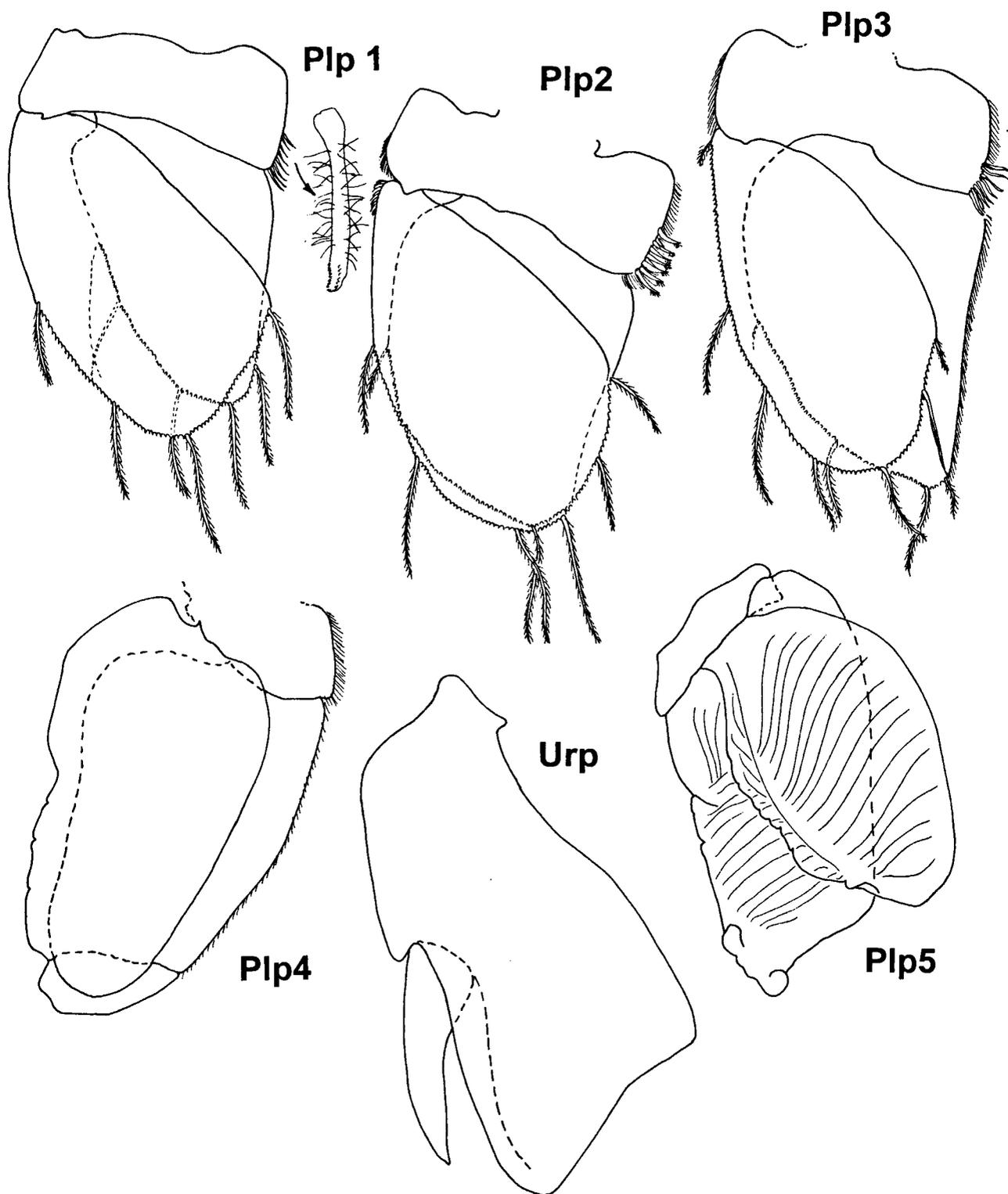


Fig. 11. *Cassidinopsis emarginata* (Guérin-Méneville, 1843), female pleopods 1-5, and uropod.

Carpus about as long as ischium in P2, in the following pereopods shorter, ventrally on P2 with 7 short, blunt sensory spines. Propodus longer than carpus (except for P2), similar in setation to carpus, but with 2 distodorsal feather-like setae. Propodus of P7 subchelate, proximally widened, with medioventral strong spine-like seta. Dactylus of P1-6 similar in shape, dactylus of P7 much longer, as long as propodus, building a subchela with propodus.

Plp1 (Fig. 11) of female with short, almost quadrangular sympod, bearing 8 long medial coupling setae. Endopod of more triangular shape, with distal and distolateral row of long plumose setae. Exopod also with distolateral long plumose setae.

Plp2 (Fig. 11) of female also with sympod of quadrangular shape, with 7 medial coupling hooks. Exopod slightly longer than endopod, both rami with distolateral rows of long plumose setae.

Plp3 (Fig. 11) of female also with almost quadrangular sympod, with 8 coupling setae. Endo- and exopod with plumose setae distolaterally. Exopod without suture line in apical third of ramus.

Plp4 and 5 (Fig. 11) both about subequal in size, with thin endo- and exopods, both rami of Plps4 and 5 without plumose setae, exopod of Plp4 also with suture line in apical part of the ramus; plp5 both rami without setae, cuticle very thin, exopod without suture line.

Urp (Fig. 11) with fused sympod and endopod, exopod inserted after one third of length of sympod, slightly shorter than half length of sympod and proximally a fourth as wide as sympod, distally acuminate. Sympod and exopod without setation.

DISTRIBUTION

Subantarctic, (circum-polar on Tierra del Fuego, Falkland Islands, South Georgia, Crozet Islands, Kerguelen, Macquarie Island) Sublittoral (0-32 m depth) on algae (compare Fig. 15).

REMARKS

This is a very distinctive species, as it has a very small head and a round-oval body shape. It cannot be confused with any other species. However, the previous descriptions were too poor

(very short, and not illustrating the chaetotaxy well enough) and incomplete (only mouthparts, pleopods and P1,2 and P5 were illustrated) to allow future phylogenetic comparisons. Therefore a complete redescription is presented herein.

Moruloidea darwinii (Cunningham, 1871)

Figs. 12-14

Cymodocea darwinii Cunningham, 1871

Museum material.- ZMH K-19343, Tierra del Fuego, leg. W. Michaelsen, 7.12.1892. ZMH K-19344, Punta Arenas, Magellan Strait, leg. W. Michaelsen, 1.12.1892.

Additional material used for redescription.- 22 females and 316 juveniles from station 1200 (14.11.1994, RV *Victor Hensen*), 55°38.52'S-55°38.57'S, 67°12.86'W-67°12.26'W, 40 m depth, on crushed mollusc shells; 3 juveniles from station 1206 (14.11.1994, RV *Victor Hensen*), 55°48.13'S-55°48.10'S, 66°58.45'W - 66°58.62'W, 66 m depth, on fine, crushed mollusc shells; 31 females (7.5-8 mm length) and 751 juveniles (2-3 mm length) on station 1213 (15.11.1994, RV *Victor Hensen*), 55°06.89'S-55°06.72'S, 66°39.95'W-66°39.92'W, 63 m depth, on crushed mollusc shells; 1 juvenile from station 1248 (19.11.1994, RV *Victor Hensen*), 54°58.80'S-54°58.78'S, 69°01.75'W-69°01.98'W, 217 m depth, on fine mud and sand.

REDESCRIPTION OF FEMALE

Length of female 7 mm; head short, but wide, with shallow dorsal elevation (see lateral view in Fig. 12), with short dorsal setae (Fig. 12). Eyes small, black, rounded. Pereonite 1 longest, pereonite 5 widest. Pereonite 1 not fused with cephalothorax. All pereonites (except 5) of about equal width. Pereonite 7 slightly shorter than the others. Pereonites 1-6 with shallow dorsomedial elevation and all with short dorsomedial setae.

All pleonites fused with pleotelson, but pleonites 1-3 indicated by lateral suture lines. Pleotelson distinctly narrowing from the broadest proximal part, narrowing posteriorly, tip tube-like, with a caudal invagination opening

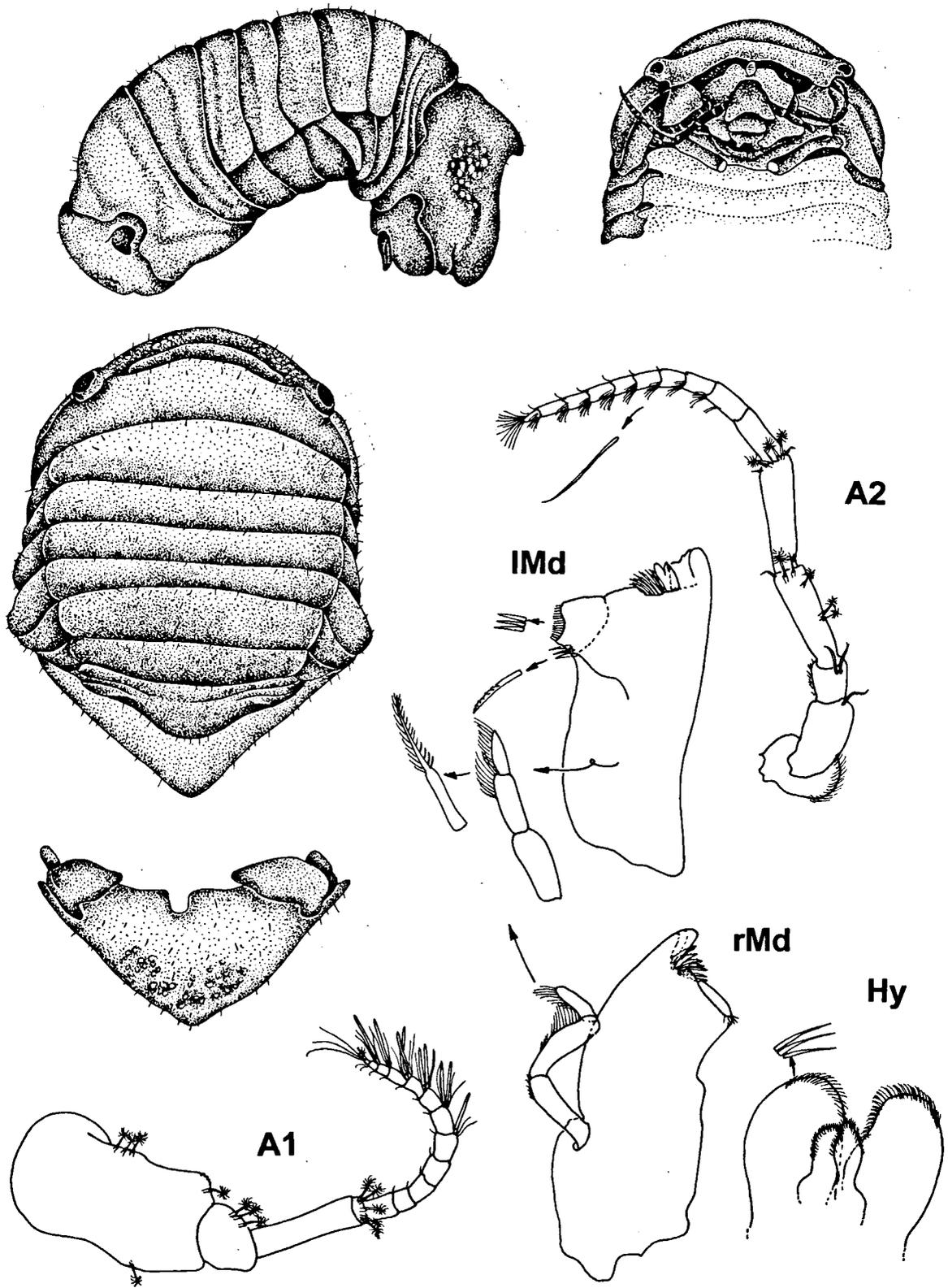


Fig. 12. *Moruloidea darwinii* (Cunningham, 1871), female of 7 mm length in dorsal and lateral view, and frontoventral view of head, detail of pleotelson, antennula, antenna, left and right mandibles, and hypopharynx.

into the respiratory chamber. Dorsally after one third of length the pleotelson is equipped with 1 dorsomedial strong blunt spine (lateral view in Fig. 12). Dorsolaterally and -caudally of this spine some short knob-like elevations. Uropods inserted caudolaterally.

A1 (Fig. 12) with 3 peduncular and 13 flagellar articles. First peduncular article longest and broadest, with 4 lateral and 1 medial feather-like setae. Second article one fourth of first in length, with 3 distolateral feather-like setae, third article two thirds of length of first, without setae. First flagellar article small, ring-like, with 5 feather-like setae, second flagellar article twice as long as first, with only a short setule, third to fifth flagellar articles also with setae, and following flagellar articles with 1-2 aesthetascs and 2-3 long simple setae. Last article with 3 long apical simple setae and 1 short feathelike seta.

A2 (Fig. 12) with 5 peduncular and 10 flagellar articles. First peduncular article short, ring-like, with only some setules. Second article about two times as long as first, with a distomedial simple seta. Third article shorter than second, with 2 medial simple setae. Fourth article about as long as the second and third, with 1 simple and 5 feather-like setae. Fifth peduncular article as long as fourth, with 4 distal simple and 3 feather-like setae. First flagellar article longest, but narrower than fifth peduncular, without setation; second and following flagellar articles shortening and narrowing, with groups of 5-6 apical simple setae. Last flagellar article smallest, with 12 simple setae of different lengths.

Mandibles (Fig. 12) asymmetrical, palp consisting of three articles.

Pars incisiva of right mandible narrower than of left, with three blunt teeth, on left mandible 4 teeth. Lacinia mobilis of rMd reduced, 7 setae in spine row, lacinia mobilis of lMd with 3 strong blunt distal teeth, spine row of 6 laterally serrated setae. Pars molaris stout, with few long lateral simple setae, broad grinding surface and indented lower margin. First and second articles of palp longest, first on rMd with short setae. Second article of palp with a row of distolateral setulated seta, last article with row of lateroventral setulated setae.

Hy (Fig. 12) consisting of 2 smaller inner lobes and 2 larger outer lobes, both lobes with short

simple apical setae.

Mx1 (Fig. 13) of 2 endites, lateral one slightly narrowing distally, lateral one with 10 strong spines. Medial endite shorter, with 4 strong, curved spines, which are densely setulate.

Mx2 (Fig. 13) consisting of three endites, inner one shortest and broadest, with 10 setulated apical and lateral setae of varying lengths. Medial endite with 7 serrated setae. Outer endite also with 7 serrated setae, which bear a lateral row of small spinules.

Mxp (Fig. 13) without epipod, strong endite and a five segmented palp. Endite on distal margin with 11 distodorsal of laterally serrated setae. One coupling hook medially on endite. First article of palp shortest and of quadrangular shape, without setae. Second article three times as long as first, with 6 medial long simple setae. Second, third and fourth articles all distomedially produced, with a medial brush of long simple setae. Tip of last article, which is about as long as fourth, also with long simple setae.

P1 (Fig. 13) shortest and strongest pereopod. Basis longest article; ischium shorter than basis, ventrally with 3 simple setae, distodorsally with 1 sensory setae; merus almost half as long as ischium, with 1 distodorsal strong sensory setae, and 4 ventral sensory setae, a well as a simple seta; carpus slightly shorter than merus, of quadrangular shape, with 3 ventral strong sensory setae; propodus about as long as ischium, equipped with 3 strong ventral sensory setae and a distodorsal feather-like seta; dactylus slightly shorter than propodus, with 1 longer and 1 shorter distal claw and a seta inbetween, ventrally smooth, dorsally with fine setae. Merus, carpus, and propodus of P1 with ventral row of small teeth-like structures (see detail in Fig. 13).

P2-7 (Figs. 13 and 14) similar in shape and setation to pereopod 1, but longer, carpus and propodus with ventral row of small teeth-like structures. Basis of P2-7 distodorsally with 2-4 feather-like setae and some simple setae. Ischium also with 1-2 distodorsal simple setae, 1 short distoventral sensory or simple seta. Merus of P2-P7 about half as short as ischium, ventral side with 1-3 small sensory setae, distodorsally 1-2. Carpus slightly shorter than merus, ventrally with 2-5 sensory setae, and distodorsally 1 feather-like seta and a simple or sensory seta. Propodus about as

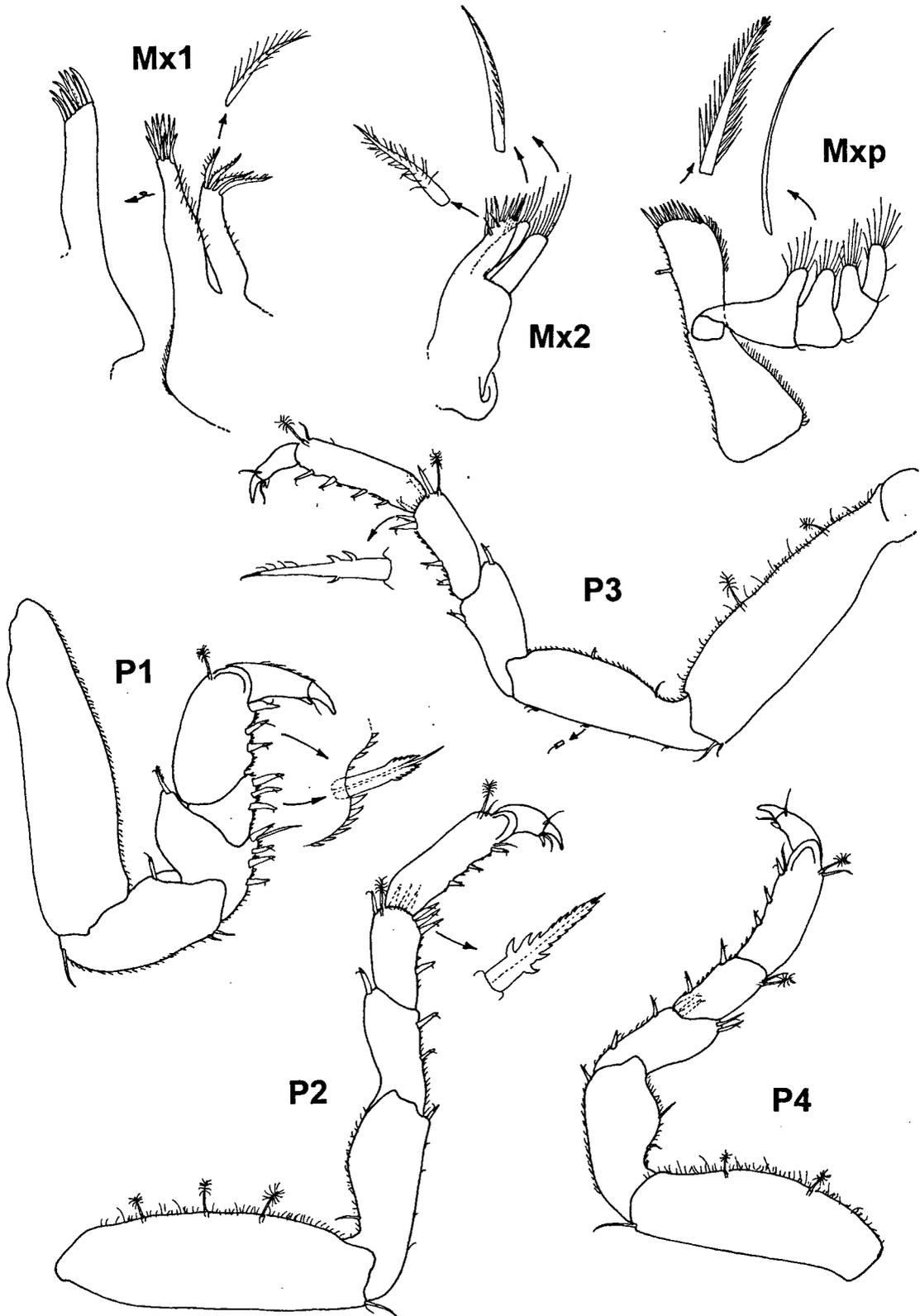


Fig. 13. *Moruloidea darwinii* (Cunningham, 1871), female maxillula, maxilla, maxillipede, and pereopods 1-4.

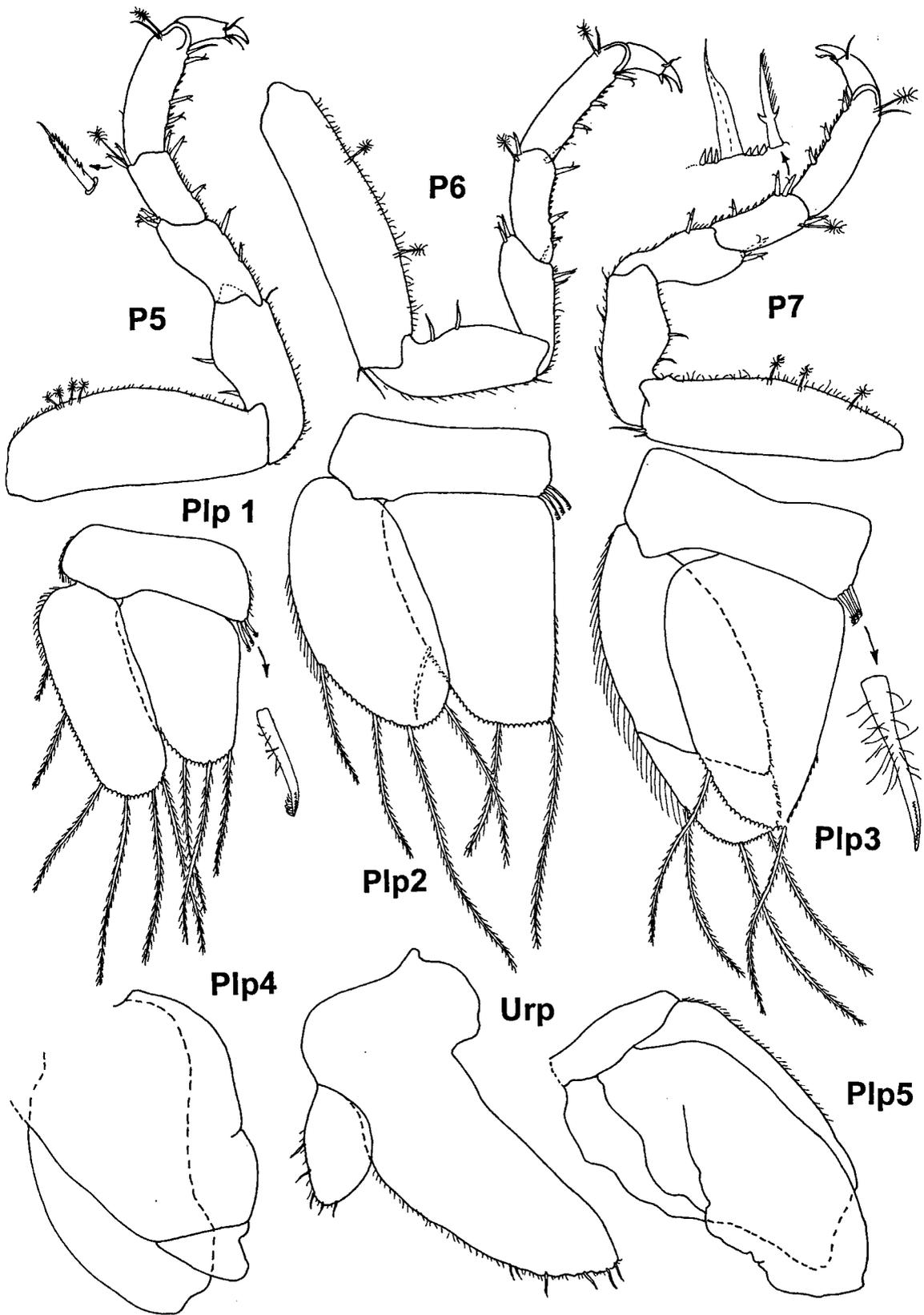


Fig. 14. *Moruloidea darwinii* (Cunningham, 1871), female pereiopods 5-7, pleopods 1-5, and uropod.

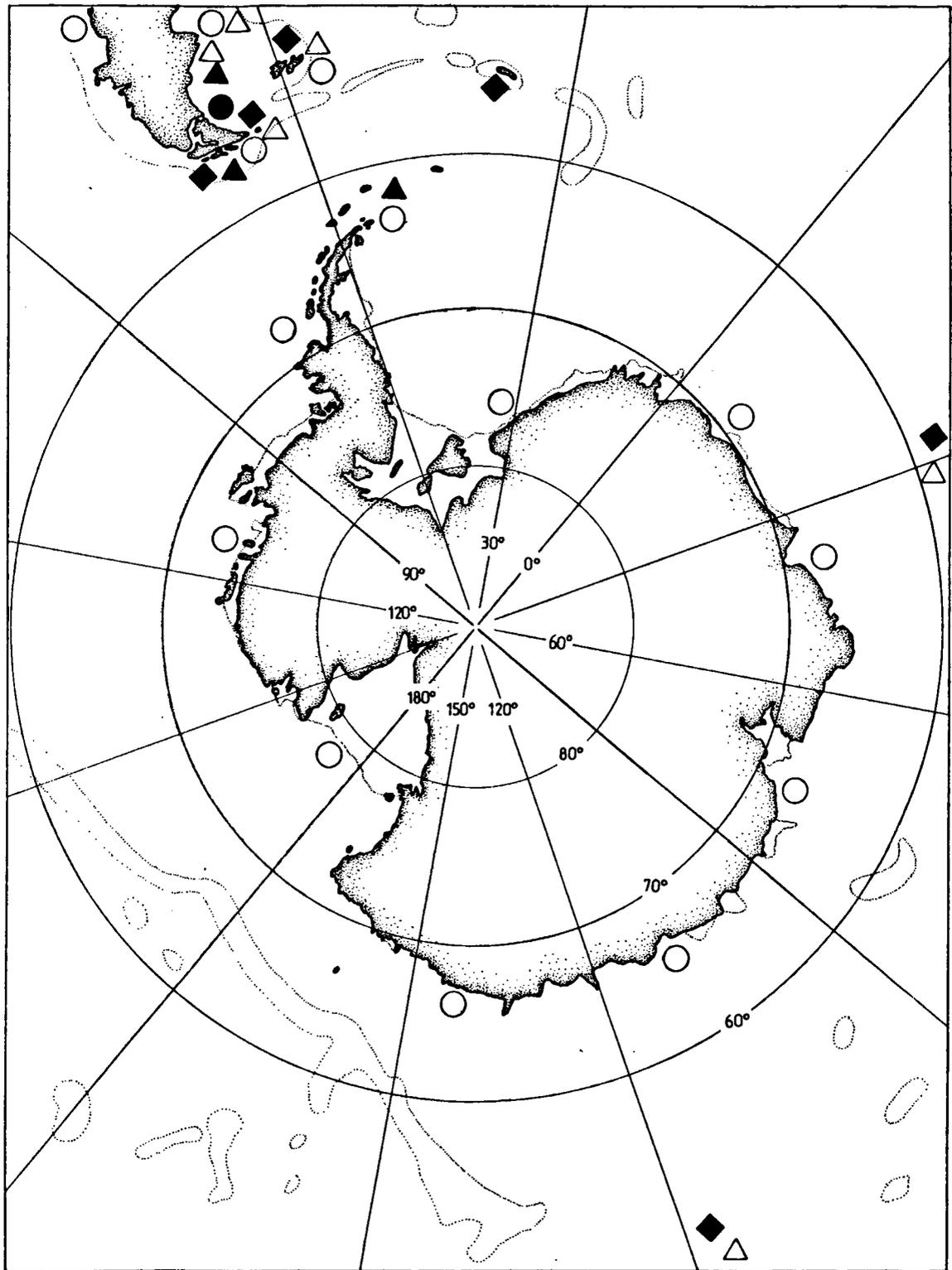


Fig. 15. Distribution of the sphaerotid species found in the Beagle Channel. Black circle: *Cymodopsis beageli* n. sp.; white circle: *Exosphaeroma gigas* (Leach, 1818); black triangle: *Caecocassidias patagonica* Kussakin, 1967; white triangle: *Moruloidea darwini* (Cunningham, 1871); black square: *Cassinidopsis emarginata* (Guérin-Méneville, 1843).

long as ischium, similar in setation to carpus. Dactylus as in P1, but dorsally without setae.

Plp1 (Fig. 14) of female with short, almost quadrangular sympod, bearing 3 long medial coupling setae. Endopod of male almost of triangular shape, with distal and distolateral row of long plumose setae. Exopod long-oval, with distolateral and distal long plumose setae.

Plp2 (Fig. 14) of female also with quadrangular sympod, equipped with 3 medial coupling hooks. Endopod and exopod of about the same length, endopod almost triangular, also distally and distolaterally with row of long plumose setae. Exopod broad oval, with distal and distolateral row of long plumose setae.

Plp3 (Fig. 14) of female with short, narrow, almost quadrangular sympod, with 3 coupling setae. Endopod with distal row of plumose setae. Exopod with distinct suture line in apical third of ramus, also with distal plumose setae and lateral long setules.

Plp 4 and 5 (Fig. 14) both about subequal in size, with thin endo- and exopods, exopod of Plp 4 with suture line in apical part of the ramus; plp 5 both rami thin, exopod with distolateral setules, without suture line.

Urp (Fig. 14) with fused sympod and endopod, exopod inserted after one fourth of length of sympod, shorter than sympod, about one third of proximal width of sympod, round-oval. Sympod and exopod distolaterally with short setules and 5-6 simple setae.

DISTRIBUTION

South and West Australia, Kerguelen Island, Falkland Islands, Argentina, Tierra del Fuego. Intertidal (0-500 m) (compare Fig. 15).

REMARKS

The genus *Moruloidea* contains 4 species (Harrison & Ellis, 1991) and is distributed in South and West Australia, Kerguelen Island, Falkland Islands, Argentina and was very commonly found in Tierra del Fuego (0-500 m). Due to the brief and incomplete original description of *Moruloidea darwinii* a complete redescription with illustration of all appendages was badly needed.

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