POLYASCOPHORUS, A NEW GENUS OF ANCORABOLIDAE (CRUSTACEA, COPEPODA), INCLUDING THE DESCRIPTION OF TWO NEW SPECIES AND THE RE-ALLOCATION OF CERATONOTUS GORBUNOVI

K George

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POLYASCOPHORUS, A NEW GENUS OF ANCORABOLIDAE (CRUSTACEA, COPEPODA), INCLUDING THE DESCRIPTION OF TWO NEW SPECIES AND THE RE-ALLOCATION OF *CERATONOTUS GORBUNOVI*

K.H. GEORGE

Fachbereich Biologie, Arbeitsgruppe Zoomorphologie, Carl von Ossietzky-Universität, 26111 Oldenburg, Germany
E-mail. : george@biologie.uni-oldenburg.de

COPEPODA
HARPACTICOIDA
ANCORABOLIDAE
POLYASCOPHORUS
PHYLOGÉNIE

RÉSUMÉ. – Deux espèces nouvelles de Copépodes Harpacticoïdes sont décrites. L'une provient de la Mer de Barents (Arctique), l'autre de la Mer de Weddell (Antarctique). *Polyascophorus martinezi* gen. et sp. n. et *P. schminkei* sp. n. appartiennent à la sous-famille des Ancorabolinae Sars, 1909 (Copepoda, Harpacticoida, Ancorabolidae). En effet, elles ont en commun les caractères apomorphiques suivants : perte de l'exp. A2, prolongation du basis P1, enp. P1 non-préhensile, et perte de la soie proximale externe sur l'exp. 3 P2-P4. Mais ces deux espèces diffèrent par de nombreux caractères communs de toutes les espèces connues d'Ancorabolinae ; un nouveau genre est donc créé. D'autre part, *Ceratonotus gorbunovi* (Smirnov, 1946) est transféré dans ce nouveau genre en raison de plusieurs caractères communs avec les deux nouvelles espèces décrites ici.

COPEPODA
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PHYLOGENY

ABSTRACT. – Two new species of copepods are described, one from the Barents Sea (Arctic), and the other from the Weddell Sea (Antarctic). *Polyascophorus martinezi* gen. et sp. n. and *P. schminkei* sp. n. belong to the Ancorabolinae Sars, 1909 (Copepoda, Harpacticoida, Ancorabolidae), because they share the following apomorphic characters : loss of exp A2, prolongation of basis P1, enp P1 not prehensile, loss of first outer seta of exp 3 P2-P4. On the other hand, they differ in so many characters from all hitherto known taxa within Ancorabolinae that a new genus is established. *Ceratonotus gorbunovi* (Smirnov, 1946) is transferred into the new genus *Polyascophorus*, due to several characters it shares with the two new species described here.

INTRODUCTION

Ancorabolidae Sars, 1909 is one of the most peculiar taxa within the Harpacticoida. General body shape, high variability in body ornamentation, presence of dorsal, dorsolateral and/or lateral processes, peraeopods with extremely prolonged bases, all contribute to the bizarre appearance of the Ancorabolidae and especially the subfamily Ancorabolinae Sars, 1909. This exotic nature goes along with a certain rarity of Ancorabolidae in meiofaunal samples. To explain this rarity, most Ancorabolidae are said to be inhabitants primarily of muddy bottoms of the deep sea (see e.g. Lang 1948 ; Noodt 1971 ; Hicks & Coull 1983 ; Huys & Boxshall 1991). As demonstrated by George (1993), Ancorabolidae are not primarily deep sea inhabitants but can be found in several kinds of littoral, and sublittoral habitats, as well including muddy and sandy substrates and even the phytal. This is evidenced in recent years by several records of Ancorabolidae from the northern and the southern hemisphere (e.g. Mielke 1985 ; 1987 ; Fiers 1988 ; Schizas & Shirley 1994 ; George, in press ; George & Schminke a ; George & Schminke b).

Polyascophorus gen. n. discovered in the Arctic and Antarctic fits the picture of a worldwide distribution even at the genus level. Like the genera *Ancorabolus* Norman, 1903 (George unpubl.), *Arthropsyllus* Sars, 1909 (George, in press), *Ceratonotus* Sars, 1909 (George & Schminke in press) and *Echinocletodes* Lang, 1936 (Dinet 1974) the new genus is represented in both hemispheres. Due to the increase of meiofaunal sampling, all mentioned genera, with the exception of *Echinocletodes*, have been discovered in the southern hemisphere in the past decade.

MATERIAL AND METHODS

Samples were taken by using the Giant Boxcorer and/or the Multicorer (Hain *et al.* 1987 ; Martínez pers. com.). The material was fixed immediately with formaline. Meiofauna was extracted by decantation and centrifugation. Specimens have been cleared up with W15 and glycerol. Drawings were made with the aid of a camera lucida on a Leitz-Dialux 20 EB compound microscope equipped with a phase contrast 100x objective.

The morphological terminology has been adopted from Huys & Boxshall (1991). The terminology related to systematics is used according to Ax (1984). Abbreviations used in the text : cphth : cephalothorax, A1 : antennule, A2 : antenna, md : mandible, mxl : maxillule, mx : maxilla, mxp : maxilliped, enp : endopod, exp : exopod, exp1 : first segment of exp, GDS : genital double somite, CR : caudal ramus, P1-P6 : swimming legs 1-6, benp : baseoendopod.

DESCRIPTIONS

Polyascophorus gen. n.

Diagnosis : Ancorabolidae Sars, 1909, subfamily Ancorabolinae Sars, 1909. Body slender, covered dorsally with several tube pores. Rostrum very small, with several long spinules and 1 long tube pore, additionally with 2 bulbous hyaline appendages. Free thoracic somites dorsally with single tube pore each. At least somites bearing P2 to P4 dorsally with a pair of cuticular processes, bearing a sensillum at their tips. Telson broader than long, with anal operculum bearing small spinules and flanked by 2 sensilla. CR approximately 3 times longer than broad, bearing 7 setae and 1 to 2 tube pores. A1 female 4-segmented, with 1 aesthetasc on third and on last segment, 6-segmented and subchirocerous in male. Exp and enp P1 2-segmented. Exp2 with 5, enp2 with at most 2 setae. P2 to P4 with 3-segmented exps, enps 1- to 2-segmented or absent. Exp3 of P2 and P3 on outer subterminal margin with tube pore. Benp P5 reduced, with single seta accompanied by at least 1 tube pore. Outer basal seta inserting from a long digitiform process. Exp fused or not with benp, bearing 5 setae. Type species : *Polyascophorus martinezi* gen. et sp. n.

Polyascophorus martinezi gen. et sp. n.

Localities : Four females (holotype and 3 paratypes) and 1 male (allotype) were collected during leg ARK IX/4 of the Expedition "Arctic '93" of RV "Polarstern". Holotype, paratype 1 and allotype were found in material of station 27/025, collected on 21/08/1993 at 82°07,1'N/42°33,4'O at a depth of 529 m. Paratype 2 was found on 21/08/1993 at 82°01,4'N/43°34,2'O, at a depth of 286 m (station 27/027), and paratype 3 was collected on 20/08/1993 at 82°09,8'N/42°02,7'O, at a depth of 1,016 m (station 27/024). The type material has been transferred to 16 slides, using glycerol as embedding medium. The slides are labelled UNIOL 1998.001/1 (holotype), UNIOL 1998.002/1-4 (allotype), UNIOL 1998.003/1-9 (paratype 1), UNIOL 1998.004/1 (paratype 2), UNIOL 1998.005/1 (paratype 3) and stored in the Collection of the AG Zoomorphologie, Carl von Ossietzky Universität, D-26111 Oldenburg, Germany.

Female

Body (Fig. 1A) long (approximately 530 µm, incl. CR) and slender. Rostrum (Fig. 1B) very small, with several long fine spinules, 2 sensilla and 1 long tube pore. Additionally with 2 hyaline bulbous appendages. Cphth as long as first 3 free thoracic somites, covered with several sensilla and bearing 4 pairs of tube pores. Anteriorly with a pair of long cuticular processes, each bearing a single sensillum at the tip. Cphth laterally at posterior end with a pair of long bifurcated cuticular processes, bearing a single sensillum at each tip, and with an additional sensillum at their bases. Free thoracic somites except last one dorsally and laterally with single tube pores, dorsally also with a pair of sensilla. Additionally with pairs of dorsolateral cuticular processes, which are successively smaller from first to fourth somite. Each process with a sensillum at its tip, and a second one at its base except last pair. Last thoracic somite with a pair of sensilla dorsally, first abdominal somite additionally with a pair of tube pores posteriorly. Both somites fused to form a GDS. P6 fused to form a single genital operculum (Fig. 1C). Next 2 abdominal somites with a pair of tube pores and a pair of dorsal sensilla posteriorly. Penultimate somite without sensilla but with a row of spinules posteriorly. Telson smaller than preceding somites, with spinule fringed anal operculum flanked by 2 sensilla arising from small knobs, ventrally with pair of tube pores at posterior margin (Fig. 1D).

CR approximately 3,5 times longer than broad, bearing one tube pore proximally and 7 setae (I-VII) altogether (Fig. 1D). Seta I (bipinnate) and II (bare) inserting laterally midlength of CR, III (bipinnate) inserting ventrally in a subterminal position, flanked by small spinules and accompanied by long tube pore.Tube pore itself is flanked by 3 strong spinules. Seta IV (bare), V (bipinnate) and VI (bare) inserting terminally. IV and VI small, IV approximately 3 times longer than VI. V longer than CR. VII biarticulated, inserting dorsally.

A1 (Fig. 2A) 4-segmented, first segment longest, covered with long slender spinules and distally with single bipinnate seta. Following

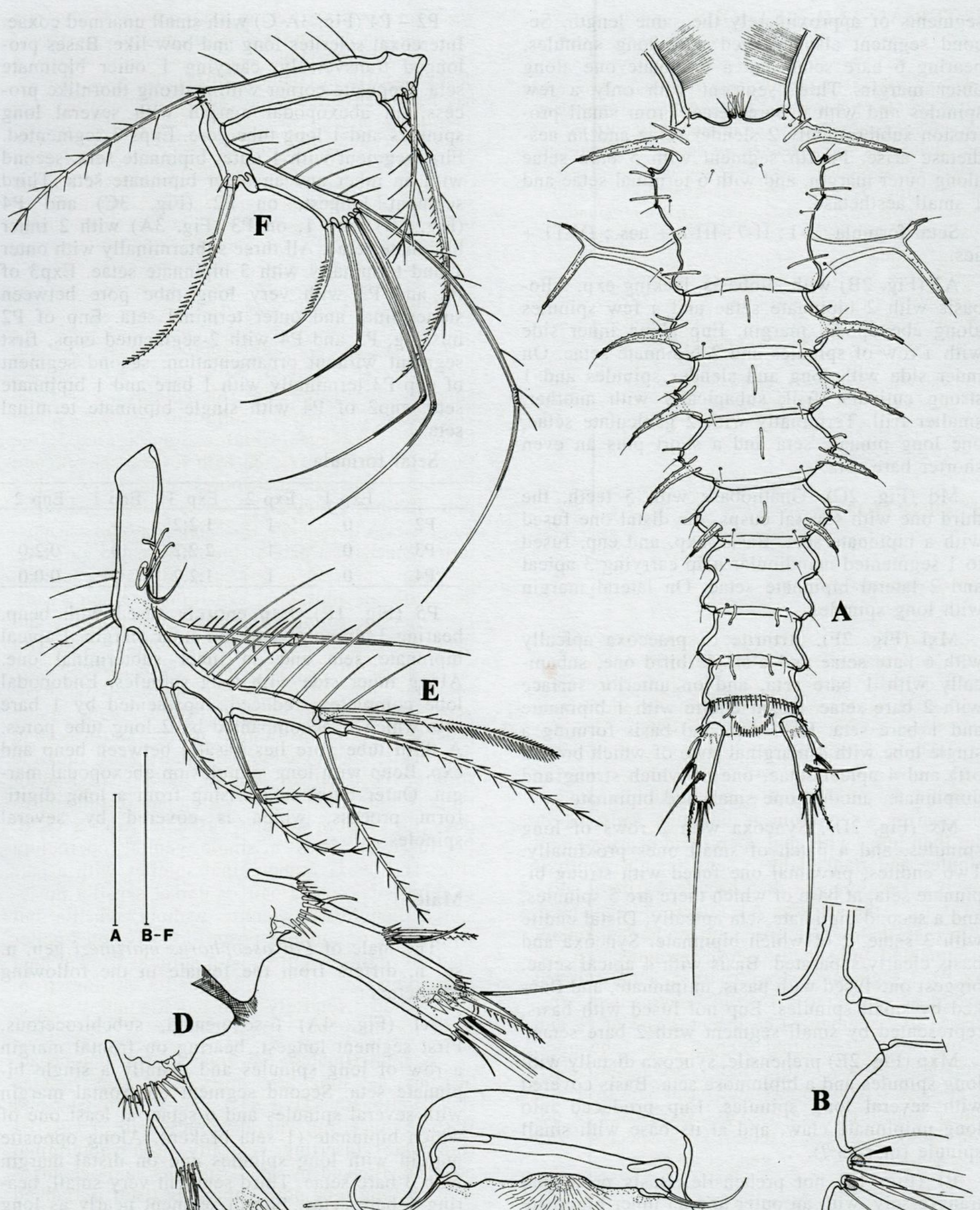

Fig. 1. – *Polyascophorus martinezi* gen. et sp. n., female. A, Habitus, dorsal ; B, Rostrum, triangular arrow indicating bulb-like appendages ; C, Genital field ; D, CR, ventral ; E, P5 ; F, P1. Scale bars : A, 100 µm ; B-F, 50 µm.

segments of approximately the same length. Second segment also covered with long spinules, bearing 6 bare setae and a bipinnate one along outer margin. Third segment with only a few spinules and with 6 bare setae. From small protrusion subterminally 2 slender setae and an aesthetasc arise. Fourth segment with 5 bare setae along outer margin, and with 6 terminal setae and 1 small aesthetasc.

Setal formula : I-1 ; II-7 ;-III-8 + aes. ; IV-11 + aes.

A2 (Fig. 2B) with allobasis, lacking exp. Allobasis with 2 bipinnate setae and a few spinules along abexopodal margin. Enp along inner side with a row of spinules and 2 bipinnate setae. On inner side with long and slender spinules and 1 strong cuticular frill, subapically with another, smaller frill. Terminally with 2 geniculate setae, one long pinnate seta and a short plus an even shorter bare seta.

Md (Fig. 2C). Gnathobase with 5 teeth, the third one with several cusps, the distal one fused with a bipinnate seta. Basis, exp. and enp. fused to 1-segmented mandibular palp carrying 3 apical and 2 lateral bipinnate setae. On lateral margin with long spinules.

Mxl (Fig. 2F). Arthrite of praecoxa apically with 6 bare setae and a single bifid one, subapically with 1 bare seta, and on anterior surface with 2 bare setae. Coxal endite with 1 bipinnate and 1 bare seta. Enp, exp, and basis forming a single lobe with 4 marginal (two of which broken off) and 4 apical setae, one of which strong and unipinnate, another one small and bipinnate.

Mx (Fig. 2D). Syncoxa with 2 rows of long spinules, and a patch of small ones proximally. Two endites, proximal one fused with strong bipinnate seta, at base of which there are 5 spinules, and a second bipinnate seta apically. Distal endite with 3 setae, 2 of which bipinnate. Syncoxa and basis clearly separated. Basis with 4 apical setae, biggest one fused with basis, unipinnate, and flanked by small spinules. Enp not fused with basis, represented by small segment with 2 bare setae.

Mxp (Fig. 2E) prehensile, syncoxa distally with long spinules and a biplumose seta. Basis covered with several long spinules. Enp produced into long unipinnate claw, and at its base with small spinule (or seta ?).

P1 (Fig. 1F) not prehensile. Basis prolonged transversely, with an outer and an inner bipinnate seta, the latter one arising from a small protrusion. On abexopodal margin with long spinules. Exp 2-segmented, first segment with 1 bipinnate seta. Second segment longer than first, subterminally with an unipinnate seta, terminally with 4 geniculate setae, the inner of which unipinnate. Enp 2-segmented, segments of nearly equal length. Second segment with 1 bipinnate geniculate seta.

P2 – P4 (Fig. 3A-C) with small unarmed coxae. Intercoxal sclerites long and bow-like. Bases prolonged transversely, carrying 1 outer bipinnate seta. Opposite corner with a strong thornlike process, on abexopodal margin with several long spinules and 1 long tube pore. Exps 3-segmented. First segment with 1 outer bipinnate seta, second with an inner and an outer bipinnate seta. Third segment longest, on P2 (Fig. 3C) and P4 (Fig. 3B) with 1, on P3 (Fig. 3A) with 2 inner bipinnate setae. All three subterminally with outer 1 and terminally with 3 bipinnate setae. Exp3 of P2 and P3 with very long tube pore between subterminal and outer terminal seta. Enp of P2 missing, P3 and P4 with 2-segmented enps, first segment without ornamentation, second segment of enp P3 terminally with 1 bare and 1 bipinnate seta, enp2 of P4 with single bipinnate terminal seta.

Setal formula :

	Exp 1	Exp 2	Exp 3	Enp 1	Enp 2
P2	0	1	1;2;2	–	–
P3	0	1	2;2;2	0	0;2;0
P4	0	1	1;2;2	0	0;0;0

P5 (Fig. 1E). Exp entirely fused with benp, bearing 3 bipinnate setae on outer margin, 1 apical bipinnate seta and an inner subterminal one. Along inner side with long spinules. Endopodal lobe completely reduced, represented by 1 bare seta which is accompanied by 2 long tube pores. A third tube pore lies basally between benp and exp. Benp with long spinules on abexopodal margin. Outer basal seta arising from a long digitiform process, which is covered by several spinules.

Male

The male of *Polyascophorus martinezi* gen. n. sp. n. differs from the female in the following characters :

A1 (Fig. 4A) 6-segmented, subchirocerous. First segment longest, bearing on frontal margin a row of long spinules and distally a single bipinnate seta. Second segment on frontal margin with several spinules and 6 setae, at least one of which bipinnate (1 seta broken). Along opposite margin with long spinules and on distal margin with 3 bare setae. Third segment very small, bearing 6 bare setae. Fourth segment nearly as long as second, slightly swollen, bearing 5 bare setae near frontal margin and a protrusion carrying an aesthetasc and 1 bare seta. Protrusion flanked by another bare seta, and on distal margin with a third seta. Fifth segment smallest, without any setae. Sixth segment as long as third one, carrying 3 bare setae on frontal margin and 3 on opposite side, arising from small knobs. Two more setae

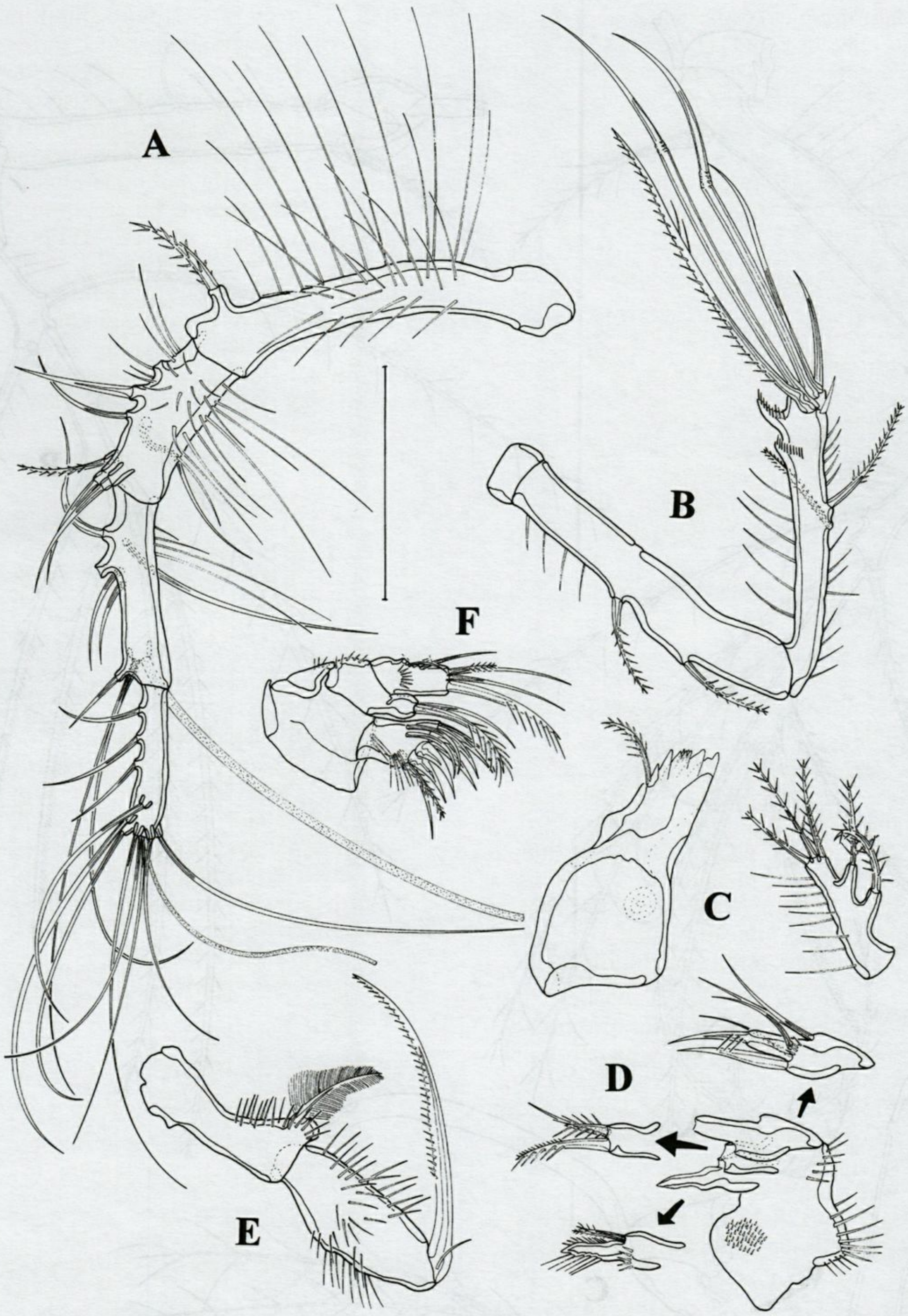

Fig. 2. – *Polyascophorus martinezi* gen. et sp. n., female. A, A1; B, A2; C, Md, split into gnathobase (left) and palp (right); D, Mx; E, Mxp; F, Mxl. Scale bar 50 µm.

on middle of segment, and with 2 bare setae and a small aesthetasc terminally.

Setal formula: I-1; II-9; III-6; IV-8 + aes; V-0; VI-10 + aes.

P3 (Fig. 4B). Basis and exp like in female. Enp 3-segmented, first and third segment very small, of nearly same length. Second segment nearly four times longer than first, distally on inner side with a pointed apophysis which is nearly twice as long as third segment. First and second segment without setae, third segment with 1 long and 1 short bipinnate seta.

P4 (Fig. 4C). Basis and exp like in female. Enp 2-segmented, carrying a long and a short bipinnate seta on distal segment.

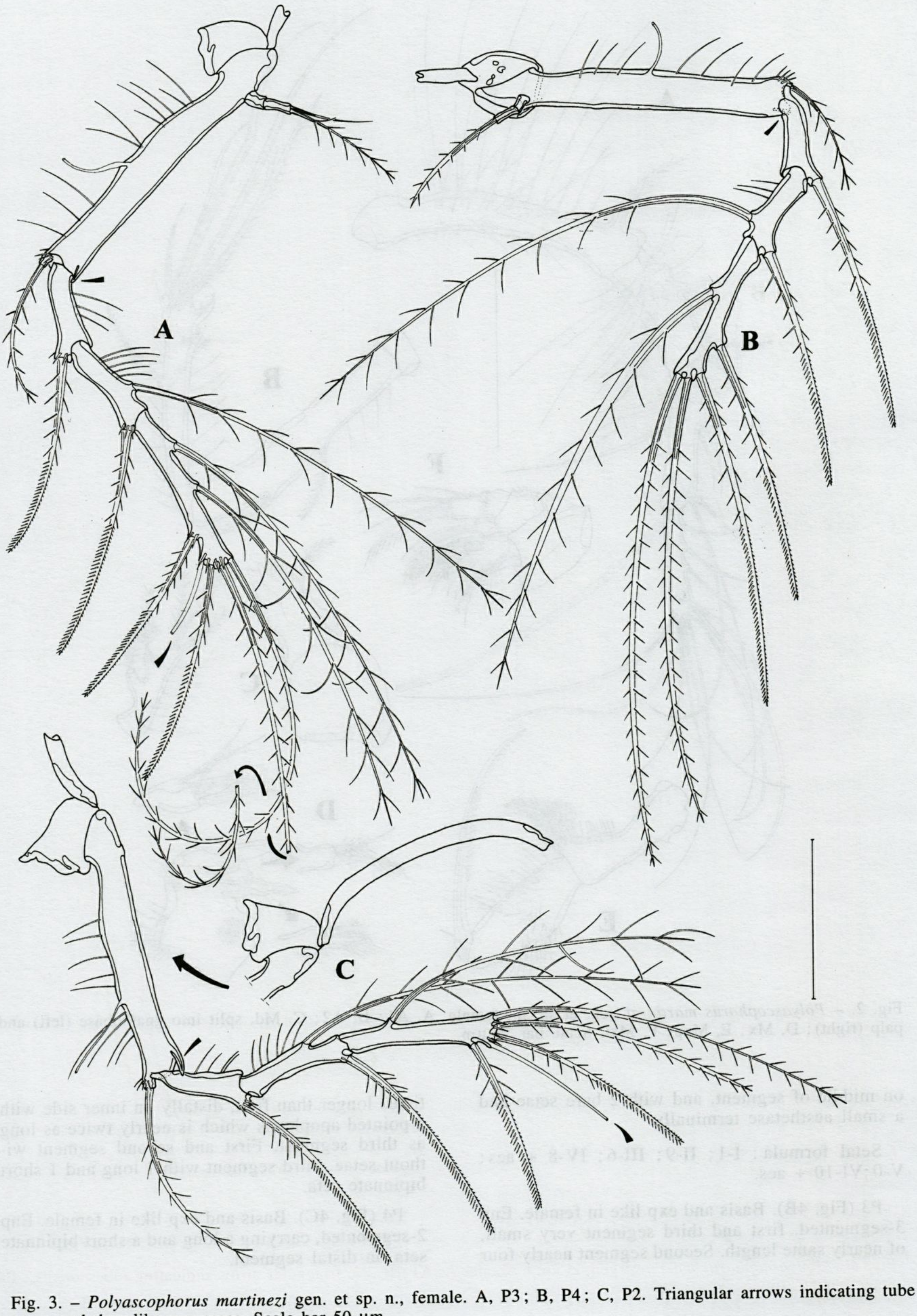

Fig. 3. – *Polyascophorus martinezi* gen. et sp. n., female. A, P3 ; B, P4 ; C, P2. Triangular arrows indicating tube pores and thornlike processes. Scale bar 50 µm.

Fig. 4. – *Polyascophorus martinezi* gen. et sp. n., male. A, A1 ; B, P3, triangular arrow indicating tube pore ; C, P4. Scale bar 50 µm.

Polyascophorus schminkei sp. n.

Localities : The material (holotype, allotype, paratypes, 1 copepodid) was collected during ANT V/3 of RV "Polarstern" along the shelf ice of the eastern Weddell Sea (Antarctica) (Hain *et al.*, 1987). One female (holotype) was collected on 14/11/1986 at station 592, at 73°55,0'S/22°58,6'W, at a depth of 211 m. Two additional females (paratypes 1 and 2) and 1 copepodid were found in material from station 528, collected on 22/10/1986 at 72°28,1'S/17°20,6'W, at a depth of 300 m, and 1 badly damaged male (allotype) was collected on 31/10/1986 at station 553, at 74°02,4'S/24°22,7'W, at a depth of 376 m. A third female (paratype 3) was found on 25/10/1986 at station 539, at 74°06,1'S/24°39,7'W, at a depth of 541 m. The type material has been transferred to 15 slides, using glycerol as embedding medium. The slides are labelled UNIOL 1998.006/1 (holotype), UNIOL 1998.007/1-4 (allotype), UNIOL 1998.008/1-8 (paratype 1), UNIOL 1998.009/1 (paratype 2), UNIOL 1998/010/1 (paratype 3) and stored in the Collection of the AG Zoomorphologie, Carl von Ossietzky Universität, D-26111 Oldenburg, Germany.

Female

Body (Fig. 5A) long (approximately 520 µm, incl. CR) and slender. Rostrum (Fig. 6A) very small, with several long fine spinules, 2 sensilla, and 1 long tube pore and 2 hyaline bulbous appendages. Cphth as long as first 3 free thoracic somites, covered with several sensilla and bearing 4 pairs of tube pores. Cphth without cuticular processes. Posterior part of cphth slightly produced laterally, extensions bearing several long spinules and a sensillum apically. Free thoracic and abdominal somites except penultimate one and telson also with lateral extensions bearing long spinules and a sensillum apically. Free thoracic somites 1 to 5 each with single tube pore dorsally. First four thoracic somites also with a pair of dorsal and dorsolateral sensilla, fifth somite only with one pair of sensilla. First three thoracic somites each with 1 pair of dorsolateral cuticular processes, which are successively smaller in size from first to third somite. Each process bears a sensillum at its tip. First abdominal somite with a pair of tube pores, a pair of dorsal sensilla and a row of spinules along posterior margin. Fused with last thoracic somite to form a GDS. P6 fused to form a single genital operculum (Fig. 6C). Following abdominal somite posteriorly also with a pair of tube pores, dorsal sensilla and spinules. Penultimate somite lacking sensilla and tube pores, but with row of spinules along posterior margin. Telson (Fig. 5A, B) smaller than preceding somites, with spinule fringed anal operculum flanked by 2 sensilla arising from small knobs.

CR (Fig. 5B) approximately 3,5 times longer than broad, bearing one tube pore proximally and altogether 7 setae (I-VII). Seta I (bipinnate) and II (bare) inserting laterally midlength of CR, III (bipinnate) inserting ventrally in a subterminal position, IV, V and VI (all bare) inserting terminally. IV and VI small, IV approximately twice as long as VI. V longer than CR. VII biarticulated, inserting dorsally in subterminal position, accompanied by several spinules.

A1 (Fig. 6A) 4-segmented, all segments of nearly equal length. First segment covered with long slender spinules and with a single bipinnate seta distally. Second segment also covered with long spinules, bearing 6(?) bare setae (1 seta broken off) and 2 bipinnate ones along outer margin. Third segment with 4 bare setae and a bipinnate one along outer margin and with 1 apical seta. Two slender setae and an aesthetasc arise from a terminal protrusion. Fourth segment with 3 setae along outer margin, one in the middle of the segment (unfortunately broken in Fig. 6A) and one on the opposite margin. Terminally with 6 setae and 1 small aesthetasc.

Setal formula : I-1 ; II-8 ;-III-8 + aes. ; IV-11 + aes.

A2 (Fig. 5C) with allobasis, lacking exp. Allobasis with 2 bipinnate setae and a few spinules along abexopodal margin. Enp on inner side with a row of spinules and 2 bipinnate setae. Apically with strong cuticular frill, a smaller frill subapically. Terminally with 2 geniculate setae, one long unipinnate seta, and a short plus an even shorter bare seta.

Md (Fig. 6E). For technical difficulties gnathobase not observable. Basis, exp. and enp. fused to 1-segmented mandibular palp carrying 2 apical setae, one of which bare, the other bipinnate. Laterally with 2 bipinnate setae, and on opposite margin with a single bipinnate seta. On lateral margin and subapically with long spinules.

Mxl (Fig. 6D). Arthrite of praecoxa apically with 6 bare setae, subapically with a single bipinnate seta and on anterior surface with 2 bare setae. On opposite side with single bare seta. Coxal endite with 2 bare setae. Enp, exp, and basis forming a single lobe bearing 3 marginal bipinnate and 5 apical setae, two of which strong and unipinnate, the remaining ones bare and longer.

Mx (Fig. 6F). Syncoxa with several spinules and two endites. Proximal endite fused with a strong bipinnate seta, at base of which there are 4 spinules, and a second bare seta apically. Distal endite with 3 short setae, 2 of which unipinnate. Syncoxa and basis clearly separated. Basis with 4 apical setae, the biggest one unipinnate and fused with basis. Enp fused with basis, represented by 2 bare setae.

Mxp (Fig. 6B) prehensile, syncoxa distally with long spinules and a biplumose seta. Basis covered with several long spinules. Enp produced

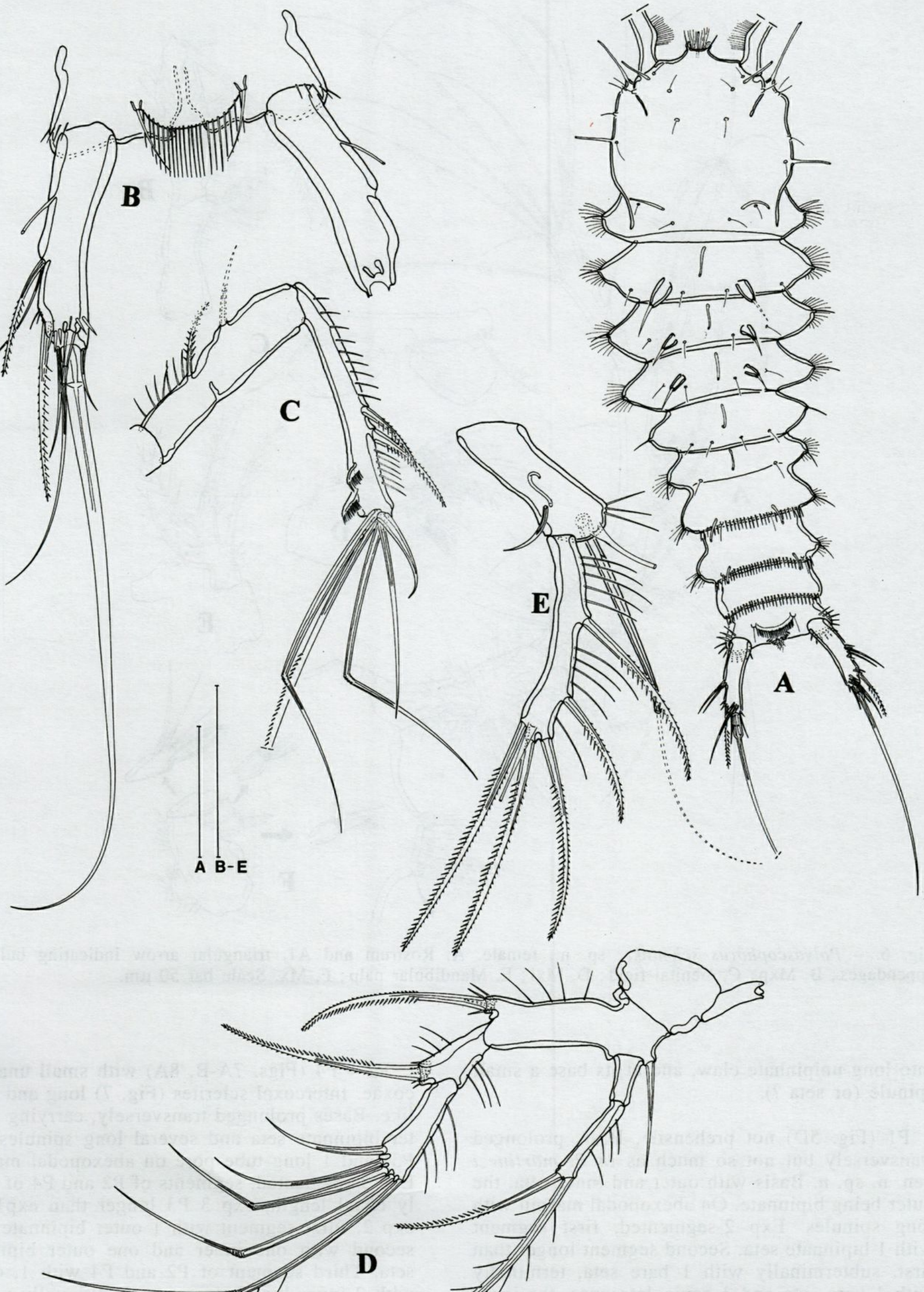

Fig. 5. – *Polyascophorus schminkei* sp. n., female. A, Habitus, dorsal ; B, Telson and CR, dorsal ; C, A2 ; D, P1 ; E, P5. Scale bars : A, 100 µm, B-E, 50 µm.

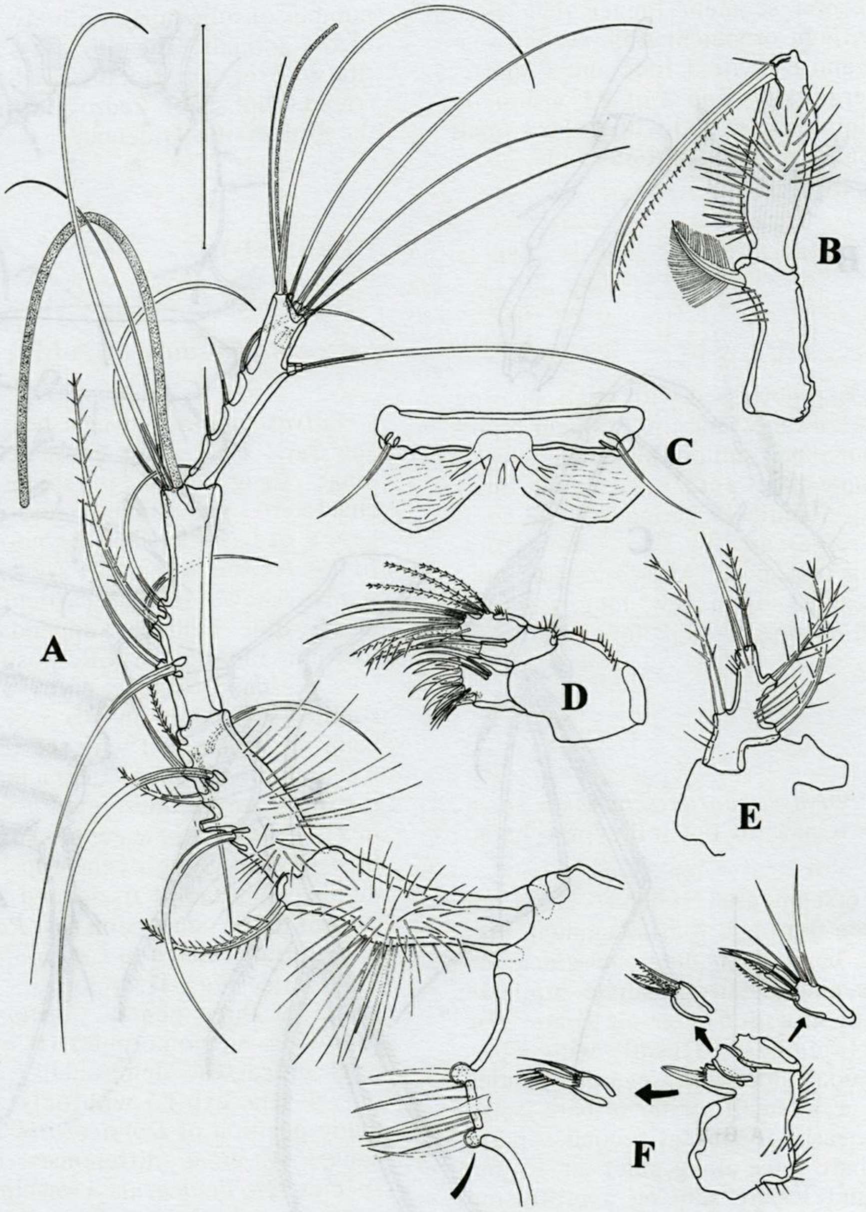

Fig. 6. – *Polyascophorus schminkei* sp. n., female. A, Rostrum and A1, triangular arrow indicating bulb-like appendages; B, Mxp; C, Genital field; D, Mxl; E, Mandibular palp; F, Mx. Scale bar 50 µm.

into long unipinnate claw, and at its base a small spinule (or seta ?).

P1 (Fig. 5D) not prehensile. Basis prolonged transversely but not so much as in *P. martinezi* gen. n. sp. n. Basis with outer and inner seta, the outer being bipinnate. On abexopodal margin with long spinules. Exp 2-segmented, first segment with 1 bipinnate seta. Second segment longer than first, subterminally with 1 bare seta, terminally with 1 bare seta and 3 geniculate ones, the inner of which unipinnate. Enp 2-segmented, second segment longer than first, with a short bipinnate and a longer, bipinnate and geniculate seta.

P2 – P4 (Figs. 7A-B, 8A) with small unarmed coxae. Intercoxal sclerites (Fig. 7) long and bow-like. Bases prolonged transversely, carrying 1 outer bipinnate seta and several long spinules (P2, P3) and 1 long tube pore on abexopodal margin. Exp 3-segmented, segments of P2 and P4 of nearly equal length, exp 3 P3 longer than exp1 and exp 2. First segment with 1 outer bipinnate seta, second with one inner and one outer bipinnate seta. Third segment of P2 and P4 with 1, of P3 with 2 inner bipinnate setae. Additionally with 2 subterminal and 2 terminal bipinnate setae. Exp 3 of P2 and P3 with long tube pore between subterminal and outer terminal seta. Enp of P2-P4

2-segmented, second segment longer than first. First segment without ornamentation, second segment of enp P2 and P4 with 1 long and 1 shorter bipinnate seta terminally. Enp 2 of P3 terminally with 2 long bipinnate setae and with a third small bipinnate one, subterminally on outer side.

Setal formula :

	Exp 1	Exp 2	Exp 3	Enp 1	Enp 2
P2	0	1	1;2;2	0	0;2;0
P3	0	1	2;2;2	0	0;2;1
P4	0	1	1;2;2	0	0;2;0

P5 (Fig. 5E). Exp not fused with benp, bearing 2 bipinnate setae on outer margin, 2 apical bipinnate setae and an inner subterminal one. Subterminally with long tube pore, and along outer margin with long spinules. Endopodal lobe completely reduced, represented by 1 bare seta accompanied by 1 long tube pore. A second tube pore distally, accompanied by a few long spinules. Outer basal seta arising from a long digitiform bare process.

Male

The male of *Polyascophorus schminkei* sp. n. differs from the female in the following characters :

A1 (Fig. 8C) 6-segmented, subchirocerous, geniculation between third and fourth segment. First segment longest, bearing on outer margin a row of long spinules and distally a single bipinnate seta. Second segment with 6 setae on frontal margin, two of which bipinnate. Distally with 3 bare setae and on caudal side with several spinules. Third segment very small, with 6 bare setae. Fourth segment nearly as long as second, slightly swollen, with 7 bare setae along outer margin and one aesthetasc and 1 bare seta on a protrusion. Protrusion flanked by another bare seta. Fifth segment smallest, without ornamentation. Sixth segment as long as third one, carrying 1 bare seta on outer margin and 6 ones on opposite side, five of which arising from small knobs. Subterminally with 2 bare setae and a small aesthetasc.

Setal formula : I-1 ; II-9 ; III-6 ; IV-9 + aes ; V-0 ;VI-9 + aes.

P3 (Fig. 8B) slightly damaged. Basis and exp like in female. Enp 3-segmented, first and third segment very small, nearly of equal length. Second segment nearly four times longer than first, distally on inner side with a pointed apophysis which is nearly 0,5 times longer than third segment. First and second segment without setae, setation of third segment unknown.

Etymology. The generic name is derived from the Greek termini "poly" (=many), "asc" (=tube), and "phorus" (=to bear), referring to the high number of tube pores on body and swimming legs of the animals. The specific names are in dedication to Prof. Dr. Horst Kurt Schminke and to my friend, Dipl.-Biol. Pedro Martínez Arbizu (both at the Universität Oldenburg, Germany).

DISCUSSION

Systematic position of Polyascophorus gen. n.

Polyascophorus gen. n. belongs to Ancorabolinae Sars, 1909 since compared with Laophontodinae Lang, 1944 it shares the apomorphic characters of this taxon : loss of exp A2, prolongation of basis P1, enp P1 not prehensile, loss of first outer seta of exp 3 P2-P4. On the other hand, it also shows several particular characters, like the hyaline bulb-like appendages on the small rostrum, the size of CR, position of seta III on CR, presence of tube pores on cphth and body somites as well as on exp 3 of P2 and P3 and on benp P5. Compared with the remaining genera of Ancorabolinae, these characters (except size of rostrum) can be interpreted as autapomorphies (C in Fig. 9) of the new genus. Some other characters like the shortening of the enp P1 and the reduced number of setae of its second segment (A in Fig. 9) lead to the conclusion that *Polyascophorus* gen. n. is closely related to *Ceratonotus* Sars, 1909 and to *Dorsiceratus* Drzycimski, 1967. Within this group of three genera *Ceratonotus* presents the following autapomorphies (B in Fig. 9) : dorsolateral processes "dendroidal", allobasis A2 with only 1 seta, exp P5 with only 3 setae. The systematic position of *Dorsiceratus* is problematic, because of great differences between the two species, *D. octocornis* Drzycimski, 1967 and *D. triarticulatus* Coull, 1973. While *D. octocornis* shows great similarity with the above-mentioned genera, *D. triarticulatus* deviates from them in having a 3-segmented exp P1 and long CR.

Systematic position of Ceratonotus gorbunovi (Smirnov, 1946)

Since its description by Smirnov (1946), the systematic position of *Echinopsyllus gorbunovi* within Ancorabolinae Sars, 1909 has remained unclear. Smirnov himself found *E. gorbunovi* to show greatest affinities with *Echinopsyllus normani* Sars, 1909, and regarded them as congeners. Later Soyer (1964) when describing a new species of *Ceratonotus* Sars, 1909, transferred Smirnov's *Echinopsyllus gorbunovi* into this genus. However, in the light of the two new species described here both placements appear unsatisfactory.

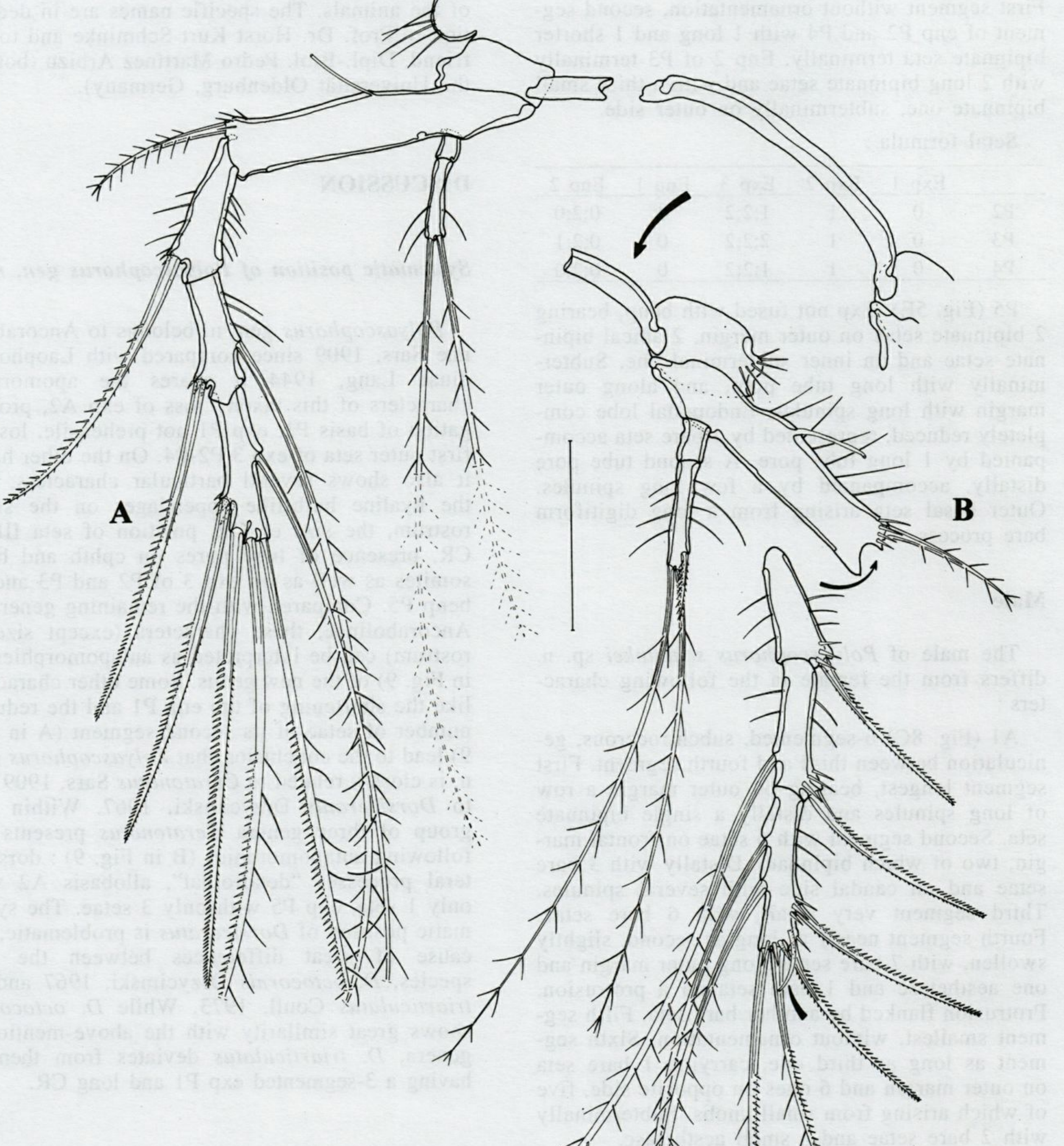

Fig. 7. – *Polyascophorus schminkei* sp. n., female. A, P4, setae completed according to counterpart; B, P3, triangular arrow indicating tube pore. Scale bar 50 µm.

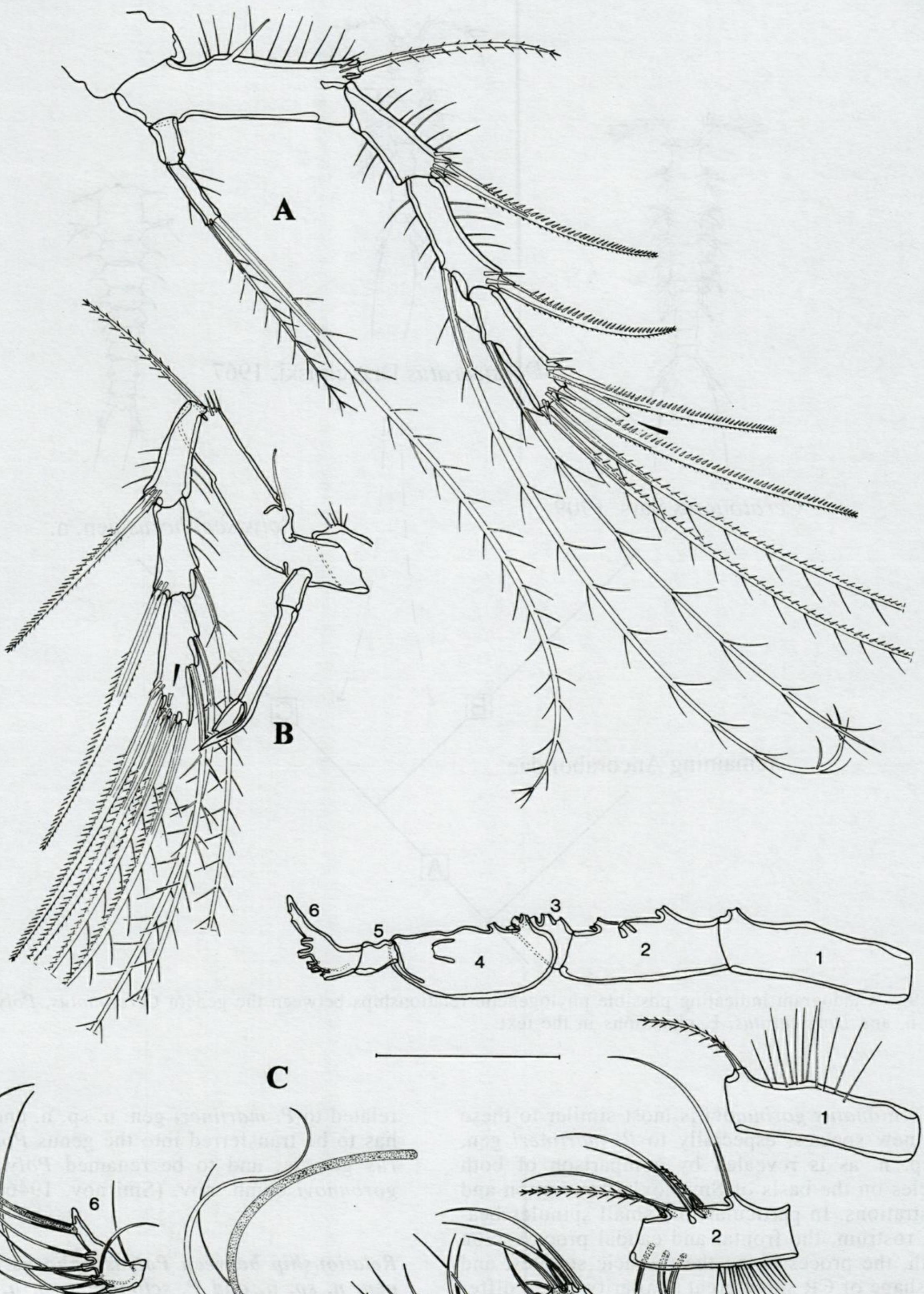

Fig. 8. – *Polyascophorus schminkei* sp. n. A, P2 female ; B, P3 male ; C, A1 male. Triangular arrows indicating tube pores. Scale bar 50 µm.

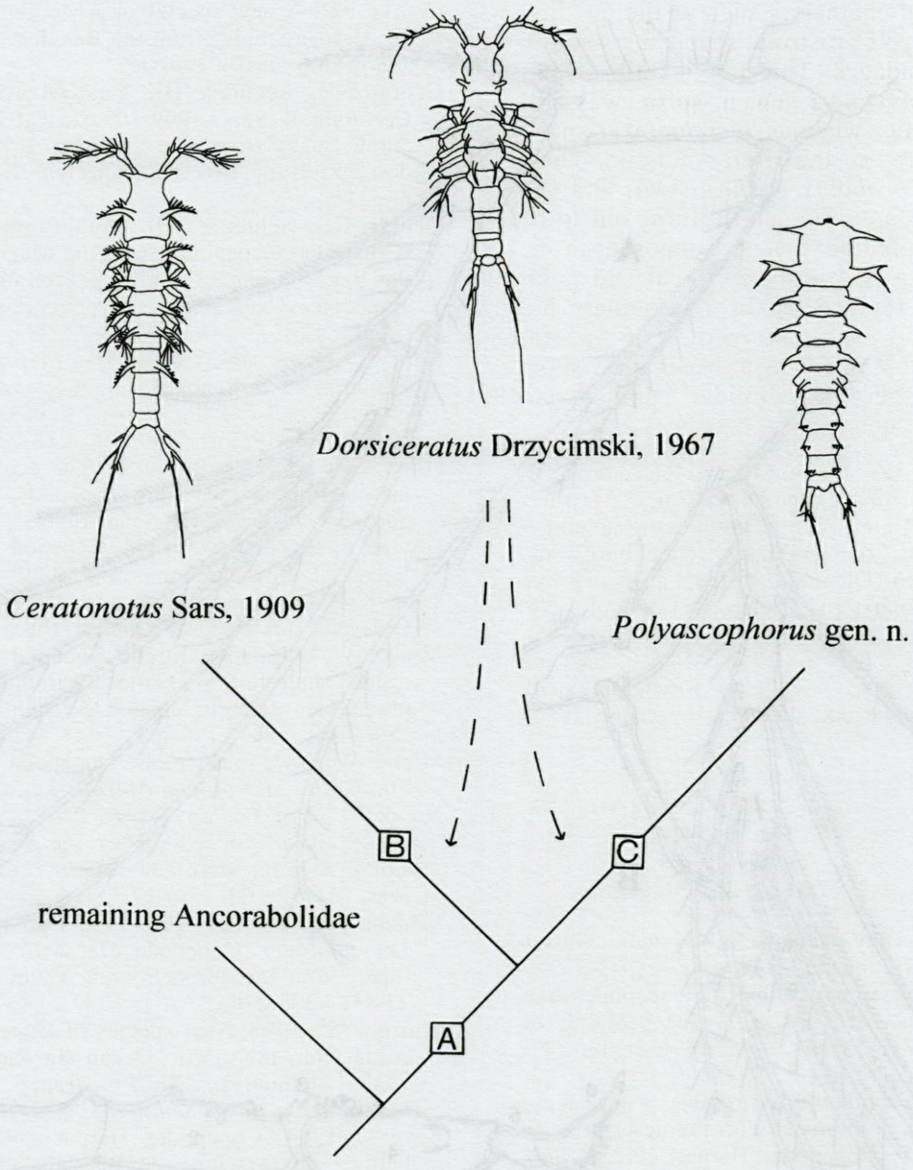

Fig. 9. – Cladogram indicating possible phylogenetic relationships between the genera *Ceratonotus*, *Polyascophorus* gen. n. and *Dorsiceratus*. Explanations in the text.

Ceratonotus gorbunovi is most similar to these two new species, especially to *P. martinezi* gen. n. sp. n. as is revealed by comparison of both species on the basis of Smirnov's description and illustrations. In particular, the small spinules-bearing rostrum, the frontal and caudal processes on cphth, the processes on the thoracic somites, and the shape of CR show great similarity. They differ in characters like the dorsolateral transverse rows of minute spinules and a 1-segmented enp of P3 and P4 with only 1 seta in *Ceratonotus gorbunovi*, and the loss of enp P2 in *Polyascophorus martinezi* gen. n. sp. n. Several characters cannot yet be verified because Smirnov's illustrations are not detailed enough. However, the above-mentioned similarities suggest that *C. gorbunovi* is closely related to *P. martinezi* gen. n. sp. n. and therefore has to be transferred into the genus *Polyascophorus* gen. n., and to be renamed *Polyascophorus gorbunovi* comb. nov. (Smirnov, 1946).

Relationship between Polyascophorus martinezi gen. n. sp. n. and P. schminkei sp. n.

The close relationship between *Polyascophorus martinezi* gen. n. sp. n. and *P. schminkei* sp. n. is evidenced by the generic characters. Despite evident differences, e.g. in the ornamentation of cphth and thoracic somites, or like the presence of thornlike processes in the bases of P2 to P4 in *P. martinezi* gen. n. sp. n., the two species are almost identical in characters such as the position of tube pores, shape of rostrum, shape and setation of CR, and appendages. This implies close relationship, yet *P. martinezi* gen. n. sp. n. was collected in the Arctic, whereas *P. schminkei* sp. n. has been discovered in the High Antarctic. Thus, together with *Ancorabolus, Arthropsyllus* and *Ceratonotus, Polyascophorus* gen. n. turns out to be the fourth ancoraboline genus, supposed to be distributed only in the northern boreal and polar regions, but also represented in the southern hemisphere. This and additional records of Ancorabolidae all over the world in past decades, show that the idea of the Ancorabolidae being a rare taxon is certainly not true.

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