



The genera *Haliragoides* and *Neohela* in the North Atlantic, with the description of two new deepwater species from Norway and Svalbard (Crustacea: Amphipoda)

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Abstract: A new amphipod species of the genus *Haliragoides*, *H. niflheimri* sp. nov. and a new species from the genus *Neohela*, *N. lamia* sp. nov. are described. *Haliragoides niflheimri* sp. nov. has been found in deep water (1061-1221 m), North of Svalbard (near 80°50'N). It can be easily separated from the sympatric species *H. abyssi* Gurjanova, 1951 and *H. inermis* (G.O. Sars, 1883) by the anteroventral lobes of the head. In *H. niflheimri* sp. nov. and *H. inermis* these lobes are much longer and more ventrally directed than in *H. abyssi*. In *H. niflheimri* sp. nov., these lobes are broad, round-tipped and anteriorly smooth, whilst in *H. inermis* they are narrow, acute to subacute and anteriorly serrate. *Neohela lamia* sp. nov. has been recorded in Svalbard and Norway between 80°50'N and 63°10'N and at depths ranging from 860 to 1350 m. Its geographical range widely overlaps with that of *N. monstrosa* (Boeck, 1861), which dwells in shallower waters. *N. lamia* sp. nov., *N. monstrosa* and the Greenlandic *N. maxima* Stephensen, 1933 exhibit several clear-cut differences, the most striking being observed on the frontal area of head. The anterior margin of head has two triangular submedian teeth in *N. lamia* sp. nov., a tiny spiniform median rostrum in *N. monstrosa*, and a toothless margin in *N. maxima*.

Résumé : Les genres *Haliragoides* et *Neohela* dans l'Atlantique Nord, avec la description de deux nouvelles espèces des eaux profondes de la Norvège et du Svalbard (Crustacea : Amphipoda). Une nouvelle espèce d'amphipode du genre *Haliragoides*, *H. niflheimri* sp. nov. et une nouvelle espèce du genre *Neohela*, *N. lamia* sp. nov. sont décrites. *Haliragoides niflheimri* sp. nov. a été trouvée en eau profonde (1061-1221 m) au nord du Svalbard (vers 80°20'N). Elle se différencie aisément des espèces sympatriques *H. abyssi* Gurjanova, 1951 et *H. inermis* (G.O. Sars, 1883) par les lobes antéroventraux de sa tête. Chez *H. niflheimri* sp. nov. et *H. inermis*, ces lobes sont beaucoup plus longs et ont une orientation plus ventrale que chez *H. abyssi*. Chez *H. niflheimri* sp. nov., ces lobes sont larges, avec une extrémité arrondie et leur marge antérieure est lisse, alors que chez *H. inermis*, ils sont étroits, aigus à subaigus et sont denticulés sur leur bord antérieur. *Neohela lamia* sp. nov. a été récoltée au Svalbard et en Norvège, entre 80°50'N et 63°10'N, à des profondeurs allant de 860 à 1350 m. Son aire de distribution chevauche largement celle de *N. monstrosa* (Boeck, 1861), qui réside dans des eaux moins profondes. *N. lamia* sp. nov., *N. monstrosa* et l'espèce groenlandaise *H. maxima* Stephensen, 1933 présentent plusieurs différences bien tranchées, la plus frappante se situant au niveau de la région frontale de la tête: il y a deux dents triangulaires submédianes chez *N. lamia* sp. nov., un minuscule rostre spiniforme médiant chez *N. monstrosa*, et chez *N. maxima*, la marge antérieure de la tête est dépourvue de dent ou de rostre.

Keywords: *Haliragoides* • *Neohela* • Amphipoda • Crustacea • New species • Svalbard • Norway • Deepwater

Reçu le 28 mars 2006 ; accepté après révision le 30 octobre 2006.

Received 28 March 2006; accepted in revised form 30 October 2006.

Introduction

Most shallow-water and fjordic amphipod species from Norway and Svalbard have been accurately described in the unsurpassed 'Account of the Crustacea of Norway' by G.O. Sars, 1890-1895, which even today remains the standard identification handbook par excellence. The quality of Sars' book and the fact that cold-temperate and Arctic European amphipods have been extensively studied during the nineteenth and early twentieth centuries often suggest that taxonomic knowledge of this fauna is on the verge of completion. However this far too common mental picture is misleading. Certainly the coastal amphipods of continental Norway are well known. However in Svalbard, even the coastal waters yields from time to time very characteristic new species (e.g. d'Udekem d'Acoz, 2006). Furthermore, both in Svalbard and in continental Norway, as soon as samplings are carried out offshore below 700 m (i.e. in the water layer with negative temperatures), new species are collected on a regular basis. While the Norwegian deep seas have been already explored in the days of G.O. Sars (e.g. G.O. Sars, 1885), such naturalists of heroic times only deployed dredges and trawls, i.e. collecting gears which are not optimally designed for collecting tiny and fragile benthic or hyperbenthic organisms as amphipods. The systematic use of epibenthic sledges during the last decades of the twentieth century has provided a real breakthrough in facilitating collection in good condition, of large numbers of amphipods, even some that are quite brittle, and even in the deep sea. Whilst lists of deepwater Arctic and Subarctic amphipods have been published in a number of recent ecological papers (e.g. Brandt, 1997; Wiśniewski et al., 2003), very little effort has been invested in the study of the taxonomically interesting material gathered during such studies. Similarly, a number of deep sea samples from Svalbard and Norway have been deposited in the Tromsø Museum but so far these have not been thoroughly studied.

A recent personal examination of these samples has yielded quite a number of amphipod species which are potentially new. Two of them are described in the present paper. *Haliragoides niflheimri* sp. nov., a very characteristic species found in the deep waters North of Svalbard is possibly not so rare. However, the extremely delicate appendages drastically reduce chances of obtaining whole specimens suitable for taxonomic studies, a factor that may have contributed to its previous lack of detection.

The genus *Neohela* is strikingly characteristic. Representatives are uncommon, and only one eurybathic species, *N. monstrosa* (Boeck, 1861) has been recorded previously from Norway and Svalbard. Most biologists therefore automatically identify any specimen of *Neohela* as *N. monstrosa*, without paying any attention to their material. However even a superficial examination of

Norwegian and Svalbard *Neohela* available for study indicates that deepwater specimens belong to a species distinct from *N. monstrosa*. This deepwater form is here described as *Neohela lamia* sp. nov.

Abbreviations used in the captions of figures: A1, first antenna; A2, second antenna; Coxae 1-7, coxal plates of the first to seventh pereopods; Ep1-Ep3, first to third epimeral plates; Gn1, first gnathopod; Gn2, second gnathopod; Md, mandible; Mx1, first maxilla; Mx2, second maxilla; Mxp, maxilliped; P3-P7, third to seventh pereopods; PL1, first pleopod; U1-U3, first to third uropods.

In the description, the term "tooth" is used for non-articulated, pointed ectodermal structures, the term "spine" for stout, inflexible articulated structures, and the term "seta" for slender, flexible articulated structures. The following abbreviation is used for museum registration: TSZCr, Tromsø Samlinger Zoologi Crustacea (Tromsø University Museum, Zoological collections, Crustacea).

Systematics

Family EUSIRIDAE Stebbing, 1888

Genus *Haliragoides* G.O. Sars, 1895

Haliragoides G.O. Sars, 1895: 432 – type species: *Halirages inermis* G.O. Sars, 1883 – gender: masculine.

Composition

Three North Atlantic species: *H. abyssi* Gurjanova, 1951, *H. inermis* (G.O. Sars, 1883), *H. niflheimri* sp. nov. A fourth species named *H. australis* Chilton, 1912 has been described from the Austral Ocean (South Orkney Islands) (Chilton, 1912). However, as pointed out by Barnard & Karaman (1991), the real systematic position of this insufficiently described species is not clear.

Key to North Atlantic species

- 1 - Head with very large cheek process directed downwards2
- Head without large cheek process but instead with anteriorly directed triangular tooth on anteroventral corner *H. abyssi* Gurjanova, 1951
- 2 - Cheek process narrow, subacute to acute, with serrations on anterior margin; carpus of first and second gnathopods 2.3-2.4 times as long as wide *H. inermis* (G.O. Sars, 1883)
- Cheek process very broad, round-tipped, without serrations on anterior margin; carpus of first and second gnathopods 3.6-3.7 times as long as wide *H. niflheimri* sp. nov.

Haliragoides abyssi Gurjanova, 1951

Haliragoides abyssi Gurjanova, 1951: 624, fig. 424.

Diagnosis (after Gurjanova, 1951)

Eyes absent. Head without large cheek process, but instead with anteriorly directed triangular tooth on anteroventral corner; anteroventral border of head without serrations. Three long setae on lateral border of terminal article of mandibular palp. Carpus of first and second gnathopods 2.8-3.1 times as long as wide. Dactylus of first and second gnathopod shorter than half propodus. Posteroventral tooth of third epimeral plate obsolete. Telson entire, triangular, without apical denticulations.

Size

up to 11 mm (Gurjanova, 1951).

Ecology and distribution

Between 1140 and 2450 m (Gurjanova, 1951).

Distribution

Greenland Sea [no precise localities] (Gurjanova, 1951).

Haliragoides inermis (G.O. Sars, 1883)
(Figs 1 & 2)

Halirages inermis G.O. Sars, 1883: 103, pl. 5 fig. 5.

Haliragoides inermis; G.O. Sars, 1895: 433 pl. 153; Stebbing, 1906: 303; Gurjanova, 1951: 623, fig. 423.

Material examined

Svalbard. R/V Jan Mayen st. 356-05, Hinlopenrenna, 80°31.9'N 015°26.8'E, 247 m, 07.ix.2005: 1 specimen, leg. W. Vader, TSZCr 14355; R/V Jan Mayen st. 332-05, 79°16.4'N 026°37.0'E, 252 m, RP sledge, 05.ix.2005: 1 specimen, leg. W. Vader, TSZCr 14320; R/V Jan Mayen st. 383-05, Kongsfjord, 78°59.7'N 010°01.6'E, 264 m, RP sledge, 10.ix.2005: 5 specimens, leg. W. Vader, TSZCr 14248; R/V Jan Mayen st 1101-96, Billefjord, 78°38'N 016°34'E, 141 m, Sneli sledge, 05.ix.1996: 3 large specimens, leg. W. Vader, TSZCr 13110; R/V Jan Mayen st. 869-97, 78°13'N 019°28'E, 111 m, 13.ix.1997: 1 specimen, leg. W. Vader, TSZCr 10650; R/V Jan Mayen st. 822-94, Storfjord, 77°33' N 019°03' E, 177 m, 25.vii.1994: 1 large specimen, leg. W. Vader, TSZCr 9879; R/V Jan Mayen st. 1132-95, 77°32'N 019°05'E, 171 m, 10.ix.1995: about 12 very large specimens, leg. W. Vader, TSZCr 14839; R/V Jan Mayen st. 820-94, Storfjord, 77°31'N 019°04'E, 177 m, Beyer sledge, 25.vii.1994: 5 specimens, leg. W. Vader, TSZCr 9841; R/V Jan Mayen st. 820-94, Storfjord, 77°31'N 019°04'E, 177 m, Beyer sledge, 25.vii.1994: 2 specimens, leg. W. Vader, TSZCr 9860; R/V Jan Mayen st. 821-94, Storfjord, 77°30'N 019°02'E, 179 m, 25.vii.1994: 2 specimens, leg. W. Vader, TSZCr 9814; R/V Jan Mayen

st. 269-05, Hornsunddjupet, 76°45.8'N 014°57.5'E, 291 m, 31.viii.2005: 1 specimen, leg. W. Vader, TSZCr 14430.

Barents Sea. Akvaplan-Niva, campaign Barentshavet 02, st. 381, 75°50'N 029°32'E, 287 m, 24.iv.2002: 2 specimens, leg. H.C. Trannum, TSZCr 12 477; Akvaplan-Niva, Barentshavet 02, st. 373, 75°23'N 031°51'E, 300 m, 24.iv.2002: 2 specimens, leg. H.C. Trannum, TSZCr 12390; Akvaplan-Niva, Barentshavet 02, st. 370, 74°44'N 031°16'E, 292 m, 23.iv.2002: 2 specimens, leg. H.C. Trannum, TSZCr 12414; Akvaplan-Niva, Barentshavet 02, st. 370, 74°44'N 031°16'E, 292 m, 23.iv.2002: 2 specimens, leg. H.C. Trannum, TSZCr 12414; Akvaplan-Niva, Barentshavet 02, st. 351, 73°53'N 031°54'E, 329 m, 20.iv.2002: 2 specimens, leg. H.C. Trannum, TSZCr 12387; Akvaplan-Niva, Barentshavet 02, st. 357, 73°16'N 026°50'E, 429 m, 21.iv.2002: 3 specimens, leg. H.C. Trannum, TSZCr 12356; Akvaplan-Niva, Barentshavet 02, st. 341, 73°10'N 028°56'E, 328 m, 19.iv.2002: 2 specimens, leg. H.C. Trannum, TSZCr 12 423; Akvaplan-Niva, Barentshavet 02, st. 336, 72°28'N 028°30'E, 291 m, 19.04.2002: 3 specimens, leg. H.C. Trannum, TSZCr 12465; Akvaplan-Niva, Barentshavet 02, st. 313, 71°39'N 024°79'E, 275 m, 16.iv.2002: 1 mature female with huge oostegites, leg. H.C. Trannum, TSZCr 12 400; Akvaplan-Niva, Barentshavet 02, st. 317, 71°53'N 027°10'E, 307 m, 17.iv.2002: 2 specimens, leg. H.C. Trannum, TSZCr 12 472; Akvaplan-Niva, Barentshavet 02, st. 317, 71°53'N 027°10'E, 307 m, 17.iv.2002: 1 specimen, leg. H.C. Trannum, TSZCr 12435; Akvaplan-Niva, Barentshavet 02, st. 317, 71°53'N 027°10'E, 307 m, 17.iv.2002: 1 mature female with huge oostegites, leg. H.C. Trannum, TSZCr 12377; Akvaplan-Niva, Barentshavet 02, "Crustacea C115" (no more details): 3 mature females with huge oostegites, leg. H.C. Trannum, TSZCr 12 410.

Northern Norway. R/V Johan Ruud st. 1081-98, Porsanger, 70°30.6'N 025°33.4'E, 198 m, 23.ix.1998: 1 specimen, leg. W. Vader, TSZCr 10867; R/V Johan Ruud st. 1077/78/79/80-98, 70°26'N 025°22'E, 141-147 m, 23.ix.1998: about 12 specimens, leg. W. Vader, TSZCr 10838; R/V Johan Ruud st. 529-99, 69°56.2'N 029°55.9'E, 25.viii.1999: 1 specimen, leg. W. Vader, TSZCr 10984; R/V Johan Ruud st 37-96, Malangen, near Buvik, 69°30.4'N 018°05.9'E, 333 m, Beyer sledge, 12.ii.1996: 1 specimen, leg. J.R. Johnsen., TSZCr 13283; R/V Johan Ruud st. 1136-79, 69°27'N 015°20'E, 720-750 m, 21.viii.1979: 1 specimen, leg. T. Holthe, TSZCr 14 981; R/V Johan Ruud st 52-96, Tranøyfjord, near Dyrøy, 69°02.7'N 017°20.0'E, 413 m, Beyer sledge, 13.ii.1996: 2 specimens, leg. J.R. Johnsen; TSZCr 13285.

Western Norway. R/V Håkon Mosby st. 8103211, 63°10'N 004°49'E, 830-860 m, 21.iii.1981, 20h30, RP sledge: 10 specimens, leg. T. Brattegard, TSZCr 15066.

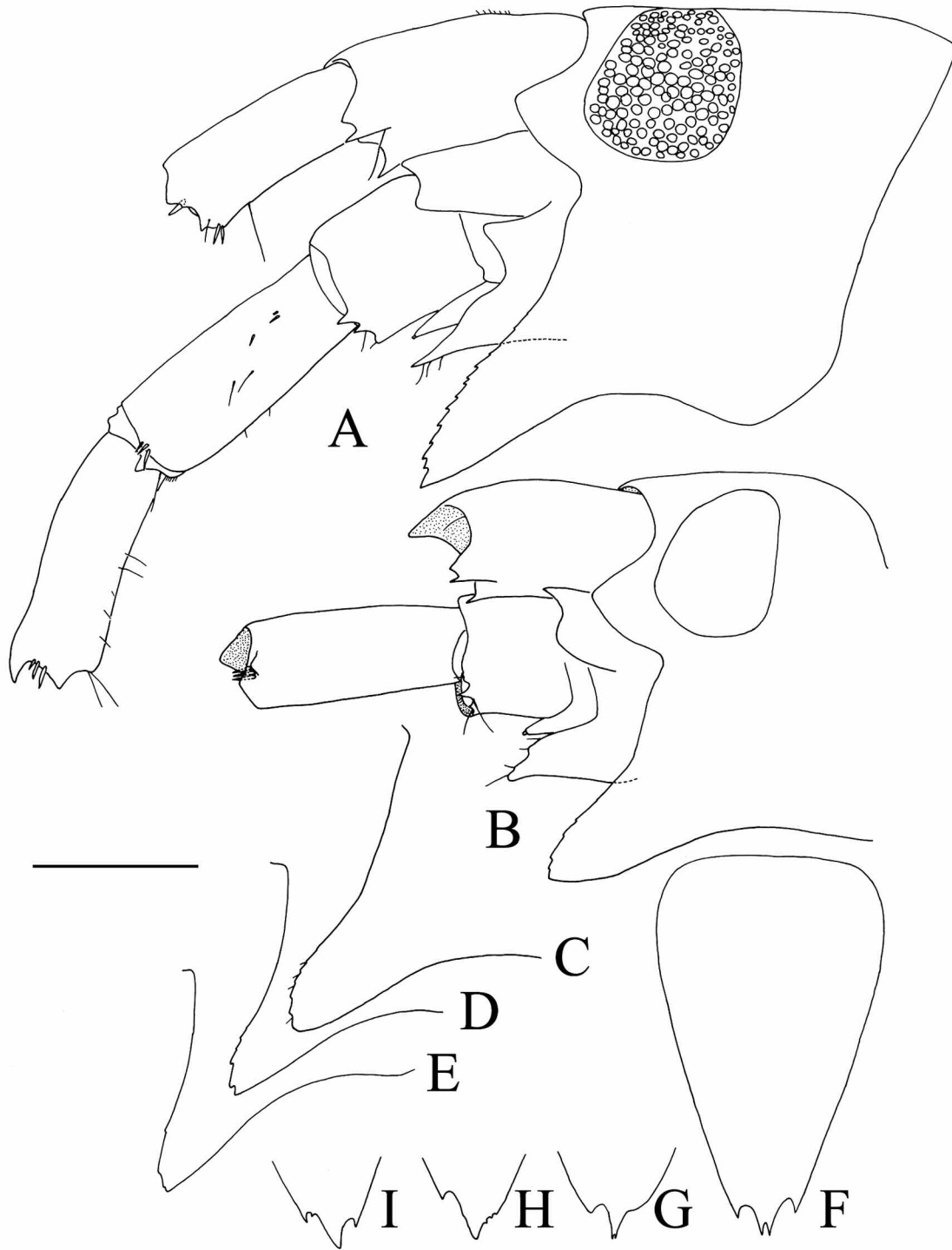


Figure 1. *Haliragoides inermis* (G.O. Sars, 1883), males A, F, G, st. 1132-05; B, C, H, I, St 8103211, D, st. 356, E, st. 269-05. **A-B.** Head and peduncle of antennae. **C-E.** Cheek process. **F.** Telson. **G-I.** Tip of telson. Scale bar: A, 0.70 mm; B, F, G, 0.60 mm; C, D, E, H, I, 0.42 mm.

Figure 1. *Haliragoides inermis* (G.O. Sars, 1883), mâles A, F, G, st. 1132-05; B, C, H, I, St 8103211, D, st. 356, E, st. 269-05. **A-B.** Tête et pédoncule des antennes. **C-E.** Lobe de la joue ; **F.** Telson. **G-I.** Extrémité du telson. Échelle : A, 0,70 mm ; B, F, G, 0,60 mm ; C, D, E, H, I, 0,42 mm.

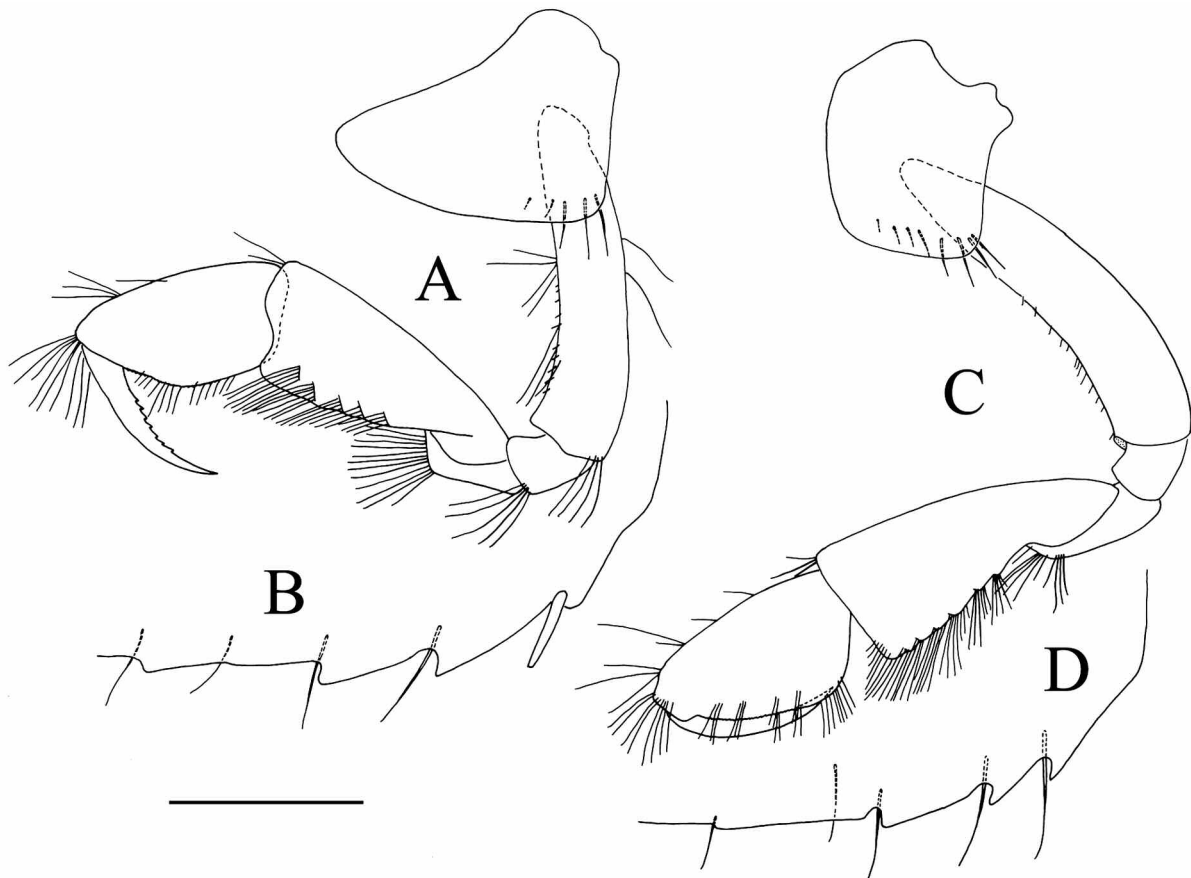


Figure 2. *Haliragoides inermis* (G.O. Sars, 1883), male, st. 1132-05. **A.** Left Gn1. **B.** Posteroventral corner of left coxa 1. **C.** Left Gn2; **D.** Posteroventral corner of left coxa 2. Scale bar: B, D, 0.10 mm; A, C, 0.88 mm.

Figure 2. *Haliragoides inermis* (G.O. Sars, 1883), mâle, st. 1132-05. **A.** Gn1 gauche. **B.** Angle posteroventral du coxa 1 gauche. **C.** Gn2 gauche. **D.** Angle posteroventral du coxa 2 gauche. Échelle : B, D, 0,10 mm ; A, C, 0,88 mm.

Diagnosis

Eyes present, ommatidia very distinct in alcohol. Head with very large and narrow cheek process directed downwards; tip of process usually subacute to acute; anterior margin of process with distinct serrations. One long seta on lateral border of terminal article of mandibular palp. Carpus of first and second gnathopods 2.3-2.4 times as long as wide. Dactylus of first and second gnathopods longer than half propodus. Posteroventral tooth of third epimeral plate triangular. Telson entire, triangular, with tip trifurcate, quadridentate to polydentate (right and left sides of telson not always symmetrical).

Size

Up to 18 mm.

Ecology

Usually found between 100 and 500 m, sometimes as

shallow as 10 m (in high arctic conditions) and as deep as 887 m (Stephensen, 1938, 1944a).

Distribution

Arctic and subarctic North Atlantic: Labrador, Gulf of St Lawrence, East Greenland, Faroe, Norway, Barents Sea (Stephensen, 1938, 1944a).

Haliragoides niflheimri sp. nov.

(Figs 3-6)

Material examined

Svalbard. R/V Jan Mayen, st. 362-05, Questrenna, 80°52.4'N 014°27.9'E, 07.ix.2005, 12h45, RP sledge, 1224 m: 1 holotype (male) + 4 paratypes, leg. W. Vader (previously identified as *H. abyssii*), TSZCr 14 359 [some parts of the holotype have been mounted on 12 slides, and the right Gn1 of a paratype has been mounted on 1 slide];

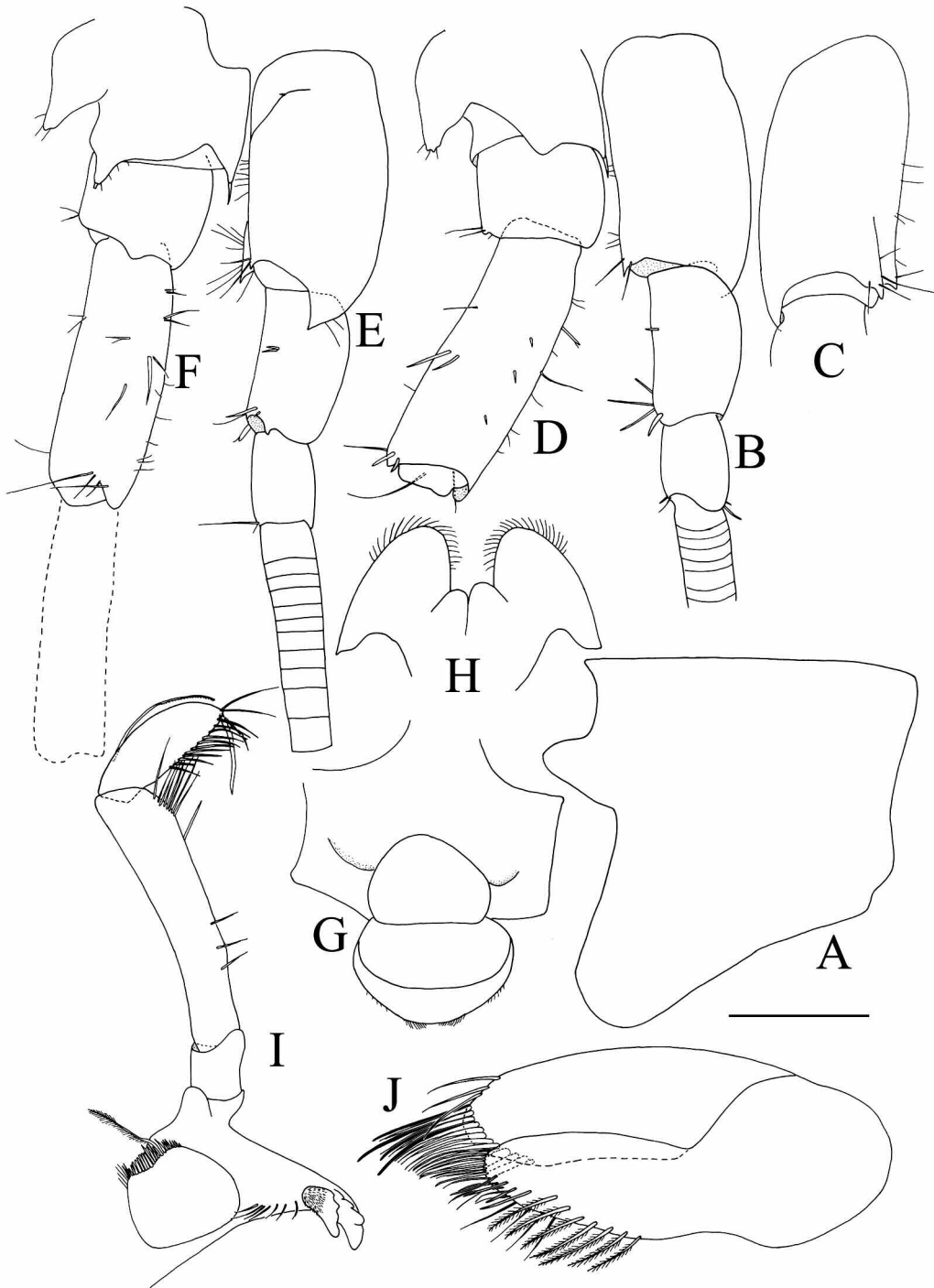


Figure 3. *Haliragoides niflheimri* sp. nov., st 362-05. A, C-J, holotype (male); B, paratype (male). **A.** Head. **B.** Peduncle of right A1 in lateral view. **C.** First article of peduncle of left A1 in lateral view (more oblique orientation, revealing the distomedial tooth). **D.** Peduncle of right A2 in lateral view. **E.** Peduncle of left A1 in medial view. **F.** Peduncle of left A2 in medial view. **G.** Upper lip and epistome. **H.** Lower lip. **I.** Left Md. **J.** Right Mx2. Scale bar: A, B, C, D, E, F, G, H, 0.42 mm; I, 0.30 mm; J, 0.21 mm.

Figure 3. *Haliragoides niflheimri* sp. nov., st 362-05. A, C-J holotype (mâle); B, paratype (mâle). **A.** Tête. **B.** Pédoncule de A1 droit en vue latérale. **C.** Premier article du pédoncule de A1 gauche en vue latérale (orientation plus oblique laissant voir la dent distomédiale). **D.** Pédoncule de A2 droit en vue latérale. **E.** Pédoncule de A1 gauche en vue médiale. **F.** Pédoncule de A2 gauche en vue médiale. **G.** Lèvre supérieure et épistome. **H.** Lèvre inférieure. **I.** Md gauche. **J.** Mx2 droit. Échelle : A, B, C, D, E, F, G, H, 0,42 mm ; I, 0,30 mm ; J, 0,21 mm.

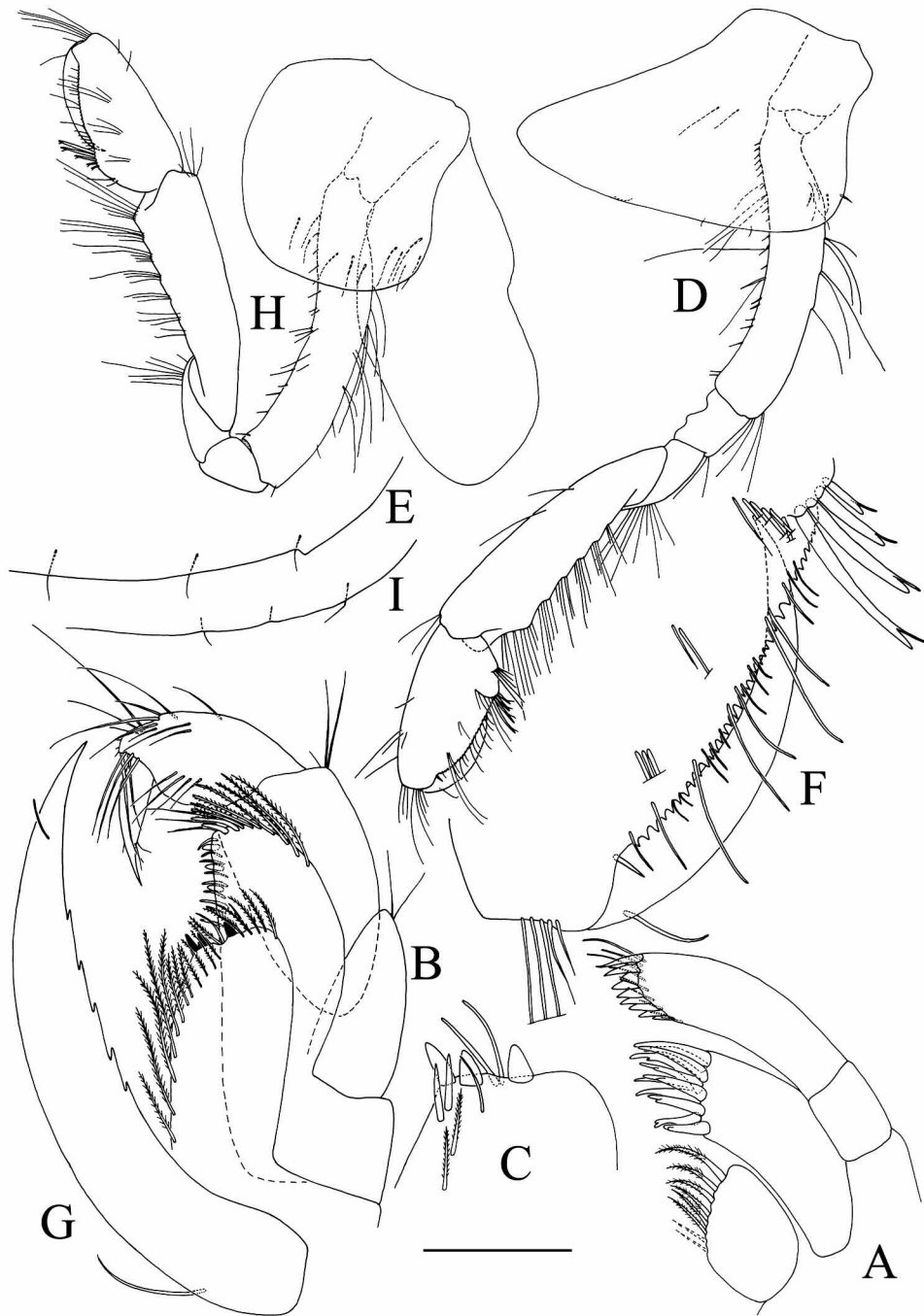


Figure 4. *Haliragoides niflheimri* sp. nov., st 362-05. A-F, H-I, holotype (male); G, paratype (female). A. Right Mx1. B. Right Mxp in medial view. C. Tip inner plate of left Mxp in lateral view. D. Left Gn1. E. Posteroventral corner of left coxa 1. F. Propodus palm of left Gn1. G. Dactylus of right Gn1. H. Left Gn2. I. Posteroventral corner of left coxa 2. Scale bar: D, H, 0.42 mm; A, B, 0.21 mm; C, E, F, G, I, 0.10 mm.

Figure 4. *Haliragoides niflheimri* sp. nov., st 362-05. A-F, H-I, holotype (mâle); G, paratype (femelle). A. Mxp1 droit. B. Mxp droit en vue médiale. C. Extrémité de la plaque interne du Mxp gauche en vue laterale. D. Gn1 gauche. E. Angle postéroventral du coxa 1 gauche. F. Bord antérieur de la pince du Gn1 gauche. G. Dactyle du P1 droit. H. Gn2 gauche. I. Angle postéroventral du coxa 2 gauche. Échelle : D, H, 0,42 mm ; A, B, 0,21 mm ; C, E, F, G, I, 0,10 mm.

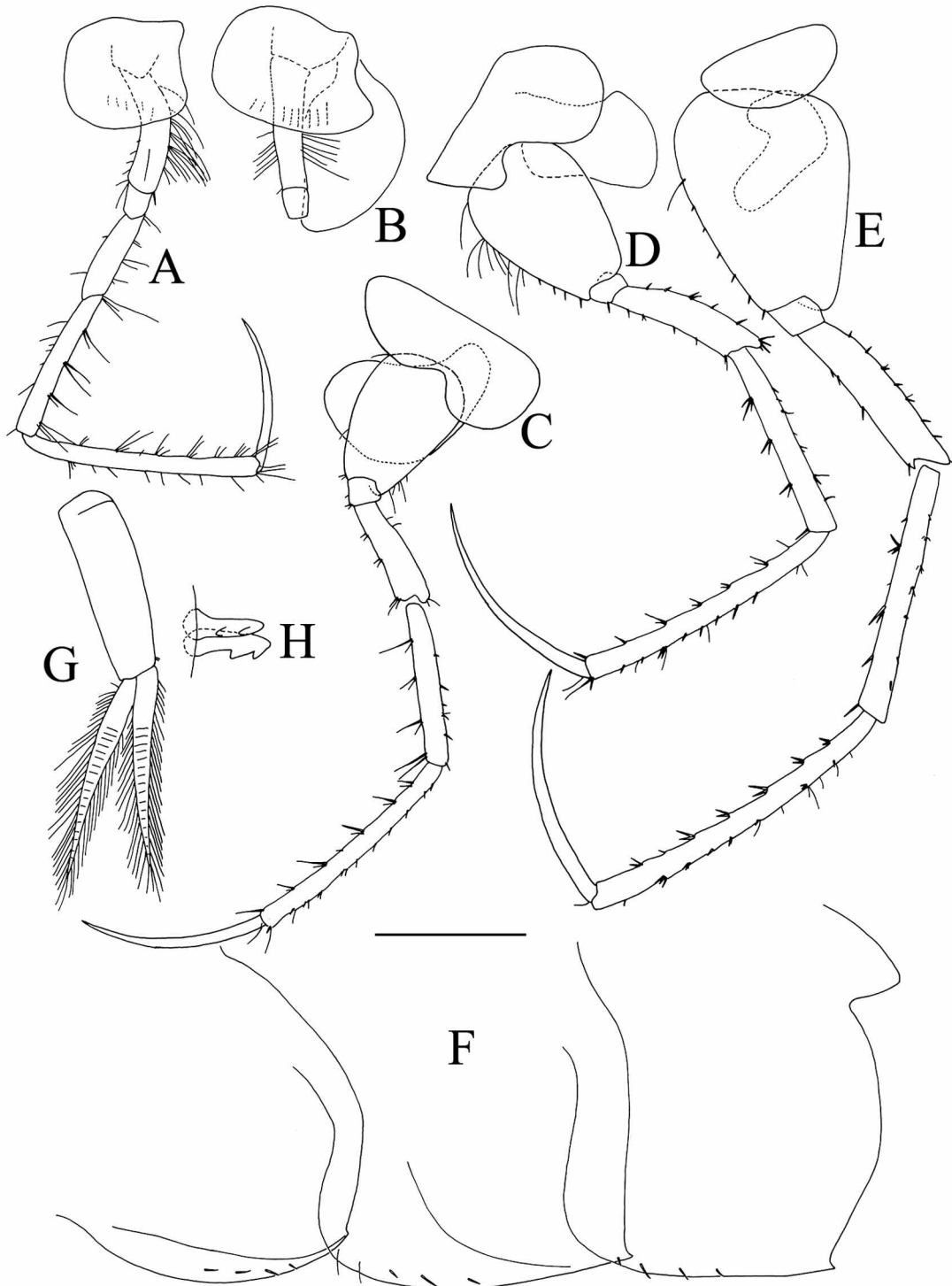


Figure 5. *Haliragoides niflheimri* sp. nov., st 362-05, holotype (male). **A.** Left P3. **B.** Left P4. **C.** Left P5. **D.** Left P6. **E.** Left P7. **F.** Left Ep1-Ep2-Ep3. **G.** Left PL1. **H.** Coupling hooks of left PL1. Scale bar: G, 1.24 mm; A, B, C, D, E, 0.88 mm; F, 0.60 mm; H, 0.071 mm.

Figure 5. *Haliragoides niflheimri* sp. nov., st 362-05, holotype (mâle). **A.** P3 gauche. **B.** P4 gauche. **C.** P5 gauche. **D.** P6 gauche. **E.** P7 gauche. **F.** Ep1-Ep2-Ep3 gauches. **G.** PL1 gauche. **H.** Crochets de couplage du PL1 gauche. Échelle : G, 1,24 mm ; A, B, C, D, E, 0,88 mm ; F, 0,60 mm ; H, 0,071 mm.

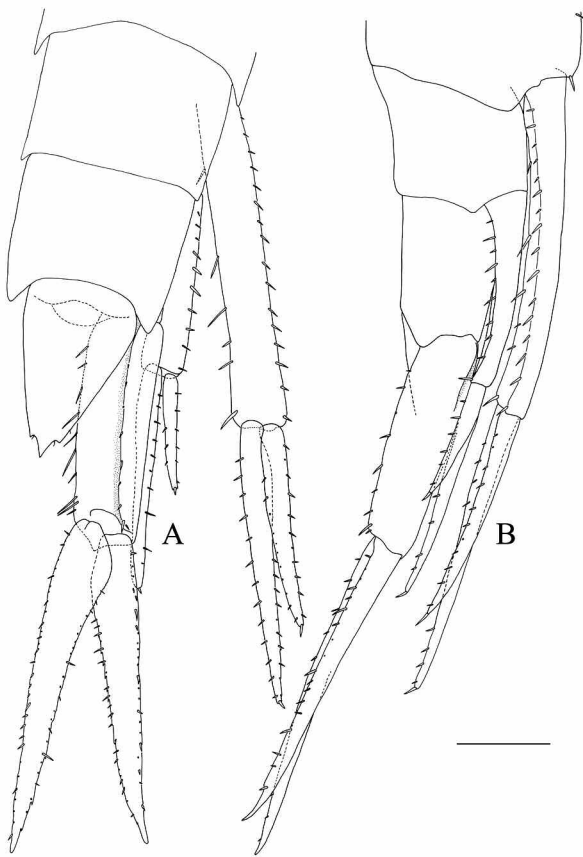


Figure 6. *Haliragoides niflheimri* sp. nov., st 362-05, holotype (male). **A.** Posterior part of body in dorsal view. **B.** Posterior part of body in lateral view. Scale Bar: A, B, 0.42 mm.

Figure 6. *Haliragoides niflheimri* sp. nov., st 362-05, holotype (mâle). **A.** Partie postérieure du corps en vue dorsale. **B.** Partie postérieure du corps en vue latérale. Échelle : A, B, 0,42 mm.

R/V Jan Mayen, st. 807-97, Questrenna, 80°49'N 13°53'E, RP sledge, 1061 m, 08.ix.1997: 1 specimen (paratype), leg. W. Vader (previously identified as *H. abyssii*), TSZCr 10 411.

Type locality

Svalbard, North West Spitsbergen, Questrenna, 80°52.4'N 014°27.9'E.

Etymology

Of the nine worlds of the Norse mythology, the Niflheimr is the grimmest one, being depicted as the realm of absolute iciness and darkness. The name, which is a genitive, alludes to the high arctic deepwater habitat of the species.

Diagnosis

Eyes present but disappearing in alcohol. Head with very large and broad cheek process directed downwards; tip of

process rounded; anterior margin of process without serrations. One long seta on lateral border of terminal article of mandibular palp. Carpus of first and second gnathopods 3.6-3.7 times as long as wide. Dactylus of first and second gnathopods longer than half propodus. Posteroventral tooth of third epimeral plate triangular. Telson entire, triangular, with tip trifurcate.

Description

Head: anteroventral corner forming a very strong cheek process obliquely pointing downwards; this process is broad with a rounded tip and has no anterior serrations.

Eyes: present but disappearing in alcohol after some time.

Peduncle of first antenna: article 1 > article 2 > article 3; article 1 with one lateral ventrodiscal tooth and one ventrodiscal tooth on medial side; dorsodistal margin sloping downwards in following a curve to form a very strong triangular tooth (inserted along the medial side of the proximal end of article 2); flagellum broken in all specimens.

A2 peduncle: articles 4 and 5 subequal; article 3 without teeth on ventrodiscal corner; flagellum broken in all specimens.

Upper lip with anterior lobe projecting on epistome.

Lower lip with outer lobes projecting far beyond inner lobes.

Mandible: article 2 of palp twice as long as article 3; article 3 with lateral border strongly convex and medial border nearly straight; lateral border with a single but very strong seta arising from the proximal 0.2.

First maxilla: palp with distal row of 9 triangular spines and distal row of setae; outer plate with 11 teeth; inner plate ovate with 8 very strong pappose setae.

Second maxilla: facial row of setae well developed.

Maxilliped: outer plate with anterior strong setae intergrading in medial nodular spines; inner plate with 3 anteriorly directed triangular spines; two narrow ventromedial spines pointing forwards (hence not interlocking).

Coxal gills on all pereiopods except the first gnathopod.

First gnathopod: coxa produced anteriorly, with posteroventral corner smooth; carpus 3.7 times as long as wide; propodus with group of bifid blunt-tipped spines at the level of the insertion of the tip of dactylus; palm oblique, minutely and regularly denticulate; dactylus dentate on anterior margin.

Second gnathopod: coxa not elongate, rounded, with posteroventral corner smooth; carpus 3.6 times as long as wide; propodus with group of bifid blunt-tipped spines at the level of the insertion of the tip of dactylus; palm oblique, minutely and regularly denticulate; dactylus dentate on anterior margin.

Third pereiopod: coxa broadly subquadrate, leg slender, with curved dactylus 0.6 times as long as propodus.

Fourth pereopod: incomplete in holotype, nearly identical (in size and morphology) to third pereopod in paratypes.

Fifth to seventh pereopods very similar (except coxa); leg slender, posterior border of basis straight, dactylus curved, 0.7 to 0.8 times as long as propodus.

First epimeral plate with posterior border broadly rounded, with obsolete posteroventral tooth, with 4 small isolated ventrolateral spines.

Second epimeral plate with posterior border nearly straight, with small triangular posteroventral tooth, with 3 small isolated ventrolateral spines.

Third epimeral plate with posterior border rounded, with small triangular posteroventral tooth, with 4 small isolated ventrolateral spines.

Pleopods with peduncle 3.2 times as long as wide; with 2 coupling hooks; peduncle and rami subequal.

Ventrolateral border of first urosomite with 1 lateral and 1 distal spine.

First uropod: 1.1 times as long as third uropod, 1.5 times as long as second uropod; peduncle with 16 small slender dorsolateral spines, with 6 longer slender dorsomedial spines, without ventrolateral spines; outer ramus 0.73 times as long as inner ramus but morphologically similar, tapering from basis to tip, with small slender spines on each side, with terminal stouter spine (the later not flanked by lateral spines).

Second uropod: peduncle with 10 small slender dorsolateral spines, with 5 longer slender dorsomedial spines; outer ramus 0.51 times as long as inner ramus but morphologically similar, tapering from proximal part to tip, with small slender spines on each side, with terminal stouter spine (the later not flanked by lateral spines).

Third uropod: peduncle elongate, with 9 small slender dorsolateral spines, with 10 longer slender dorsomedial spines; outer ramus nearly as long inner ramus and morphologically similar, strongly tapering from proximal part to tip, with tip very slightly curving upwards, with small slender spines on each side, without setae.

Telson entire, triangular with tip trifurcate, without spines.

Colour pattern

Live colour unrecorded. Eyes small and red when preserved in alcohol for less than one month, fading completely away afterwards.

Size

Up to 15 mm.

Ecology

The species has been found between 1061 and 1224 m, presumably at negative temperatures.

Distribution

Only known from North West Svalbard.

Remarks

All type specimens of *Haliragoides niflheimri* sp. nov. are very similar in size and morphology. None has full-grown oostegites. Sex has not been checked for every specimen because it would have resulted in damage in this very brittle species. *Haliragoides niflheimri* sp. nov. is closely related to the type species of the genus, *H. inermis* (G.O. Sars, 1883) (figs. 1-2) which also occurs in Svalbard albeit in shallower waters. The easiest character for separating the two species is the cheek process of the head. It is broad, round-tipped and toothless in *H. niflheimri* sp. nov., and it is narrow, subacute to acute and anteriorly with serrations in *H. inermis*. The carpus of the first and second pereopods is very long and slender (3.6-3.7 as long as wide) in *H. niflheimri* sp. nov., and shorter (2.3-2.4 as long as wide) in *H. inermis*. Finally the eyes disappear in alcohol in *H. niflheimri* sp. nov., whilst they remain very distinct (but colourless) with very discernible ommatidia in *H. inermis*.

Gurjanova (1951) described another deepwater arctic *Haliragoides* species, *H. abyssi* Gurjanova, 1951, which has not been available for study. Its type locality is simply described as "Greenland Sea, at depths of 1140 and 2450 m", without any detail on the sampling locations. This species, which is said to be eyeless, has a much shorter and much more acute cheek process than in the two aforementioned species: it is reduced to an anteriorly directed tooth instead of an elongated process obliquely directed downwards. Gurjanova (1951) shows 3 long setae on the outer border of the terminal article of the mandibular palp, whilst there is only one (very large) seta on this position in *H. inermis* and *H. niflheimri* sp. nov. The drawings of Gurjanova indicate that in *H. abyssi* the carpus of the first and second gnathopods are longer than in *H. inermis* but shorter than in *H. niflheimri* sp. nov. Gurjanova (1951) illustrates the third epimeral plate of *H. abyssi* with a small obsolete protrusion on the posteroventral corner, whilst there is a distinct triangular tooth in that position in *H. inermis* and *H. niflheimri* sp. nov. She illustrates the telson of *H. abyssi* as a triangle without lateral teeth, whilst the telson is tridentate or polydentate near the tip in *H. inermis* and *N. niflheimri* sp. nov.

Family UNCIOLIDAE Myers & Lowry, 2003

Genus *Neohela* S.I. Smith, 1881

Neohela Smith, 1881: 448 – type species *Hela monstrosa* Boeck, 1861 – gender: feminine. Syn.: *Hela* Boeck, 1861: 668 (name preoccupied); *Helella* G.O. Sars, 1883: 31 (junior synonym).

Composition

Three North Atlantic species: *N. lamia* sp. nov., *N. maxima* Stephensen, 1933, *N. monstrosa* (Boeck, 1861) and two North Pacific species: *N. intermedia* Coyle & Mueller, 1981 and *N. pacifica* Gurjanova, 1953.

Key to North Atlantic species

- 1 - Frontal margin of head with one median denticle or two submedian teeth; dactylus of P5 0.50 times as long as propodus 2
 - Frontal margin of head straight, without teeth; dactylus of P5 0.25 times as long as propodus
 *N. maxima* Stephensen, 1933
 2 - Frontal margin of head with one median denticle; dorsolateral border of peduncle of first uropod without spines, with a few long setae (usually 5 or less)
 *N. monstrosa* (Boeck, 1861)
 - Frontal margin of head with two submedian teeth; dorsolateral border of peduncle of first uropod with about 10 (or more) small spines, without setae *N. lamia* sp. nov.

Neohela lamia sp. nov. (Figs 7-10)

Neohela monstrosa; ? G.O. Sars, 1885: 68 (in part: deep records); ? Chevreux, 1899: 147; ? Chevreux 1900: 130; ? Stephensen, 1942: 404, (in part: deep records); ? Piepenburg et al., 1996: 439 (in part: deep records); ? Węśławski et al., 2003: 81.
 ? *Neohela* sp. A Węśławski et al, 2003: 81.

Material

Svalbard. R/V Jan Mayen st. 806-97, 80°50'N 13°53.6'E, 1192 m, date 8.ix.1997: 1 specimen, presumably male, paratype (total length = 13 mm), leg. W. Vader, TSZCr 10 327.

Northern Norway. R/V Johan Ruud st. 891-80, 69°07'N 13°32'E, 1350 m, sledge, 30.v.1980: 1 male, holotype [dissected, in 3 vials] (total length = 17 mm), leg. T. Holthe, TSZCr 15 206.

Western Norway.- R/V Håkon Mosby st. 8103211, 63°10'N 04°49'E, 830-860 m, RP sledge 21.iii.1981, 20h30: 1 specimen, presumably male, paratype (total length = 12 mm), leg. T. Brattgard, TSZCr 15057.

Type locality

Northern Norway, region of Troms, 69°07'N 13°32'E.

Etymology

Lamia, dreadful vampire-like monster from the Hellenic mythology. The name, which is a noun in apposition, has

been coined because the new species has a monster-like appearance just like the type species of the genus *Neohela*: *N. monstrosa* (Boeck, 1861).

Diagnosis

Frontal area with two submedian teeth. Third article of mandibular palp 0.7 times as long as second. Palm of first gnathopod with 2 teeth. Coxa 1-2 with small anterior tooth (smaller than in *N. maxima* and *N. monstrosa*), ventrally not crenulated but with spines. Dactylus of third pereopod 0.7 times as long as propodus; dactylus of fifth pereopod 0.5 times as long as propodus. Dorsolateral border of peduncle of first and second uropods with many spines, without setae. Outer ramus of first uropod straight. Lateral border of outer ramus of first uropod with well-spaced spines on distal third. Tip of rami of first uropod with three long slender spines (median the longest). Ramus of third uropod slender (6 times as long as wide). Telson fused with urosomite 3, triangular in shape.

Description

Head: frontal area with two triangular teeth separated by a wide V-shaped notch; lateral process well developed

Peduncle of antennae with many long slender spines and long setae.

Antenna 1: accessory flagellum with 5 articles in paratype from St. 8103211, lost in other (larger) specimens.

Upper lip with asymmetrical notch.

Mandible: article 3 of palp about 0.7 times as long as article 2.

Maxilla 1: article 2 of palp with row of slender spines and row of setae; outer plate with 9 spines; inner plate rather small (0.4 times as long as outer plate), with long setae.

Maxilla 2 without facial row of setae

Maxilliped: inner plate with 3 anteriorly directed nodular spines on distal margin and 1 ventromedial spine pointing in medial direction; outer plate with anterior strong curved setae intergrading with medial stout nodular spines.

Gnathopod 1 subchelate, propodus palm of adult male (holotype) transverse, with 2 large teeth, dactylus 1.6 times as long as palm; carpus 2.3 times as long as broad; coxa with anterior tooth fairly short (compared to that of *N. maxima* and *N. monstrosa*), without ventral crenulations but with several ventral and anterior spines.

Gnathopod 2 nearly as long as first gnathopod, subchelate, propodus palm of adult male (holotype) transverse, with median very obsolete and vaguely bicuspid tooth, dactylus slightly longer than palm; carpus 1.8 times as long as broad; coxa with anterior tooth fairly short (compared to that of *N. maxima* and *N. monstrosa*), without ventral crenulations but with several ventral and anterior spines.

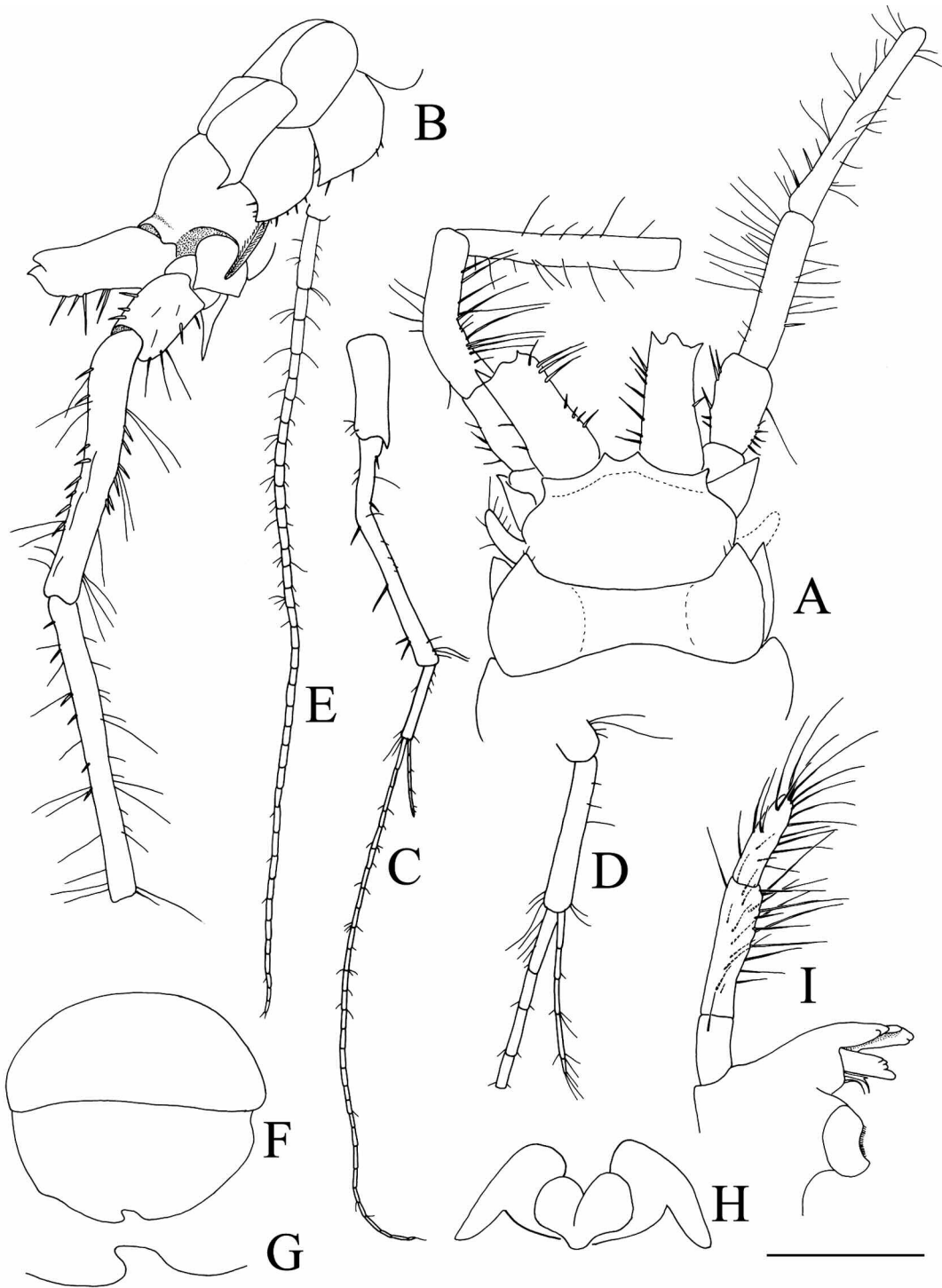


Figure 7. *Neohela lamia* sp. nov. A-B, E-I, holotype (male), R/V Johan Ruud, st 891-80; C-D, paratype (presumably male), St. 8103211. **A.** Anterior part of body in dorsal view. **B.** Anterior part of body in lateral view. **C.** Right A1. **D.** Accessory flagellum of right A1. **E.** Flagellum of left A2. **F.** Upper lip. **G.** Upper lip (detail of the median notch). **H.** Lower lip. **I.** Left Md. Scale bar: A, B, C, E, 1.76 mm; D, H, 0.88 mm; F, I, 0.60 mm; G, 0.30 mm.

Figure 7. *Neohela lamia* sp. nov. A-B, E-I, holotype (mâle), st 891-80 ; C-D, paratype (probablement mâle), St. 8103211. **A.** Partie antérieure du corps en vue dorsale. **B.** Partie antérieure du corps en vue latérale. **C.** A1 droit. **D.** Flagelle accessoire de A1 droit. **E.** Flagelle de A2 gauche. **F.** Lèvre supérieure. **G.** Lèvre supérieure (détail de l'encoche médiane). **H.** Lèvre inférieure. **I.** Md gauche. Échelle : A, B, C, E, 1,76 mm ; D, H, 0,88 mm ; F, I, 0,60 mm ; G, 0,30 mm.

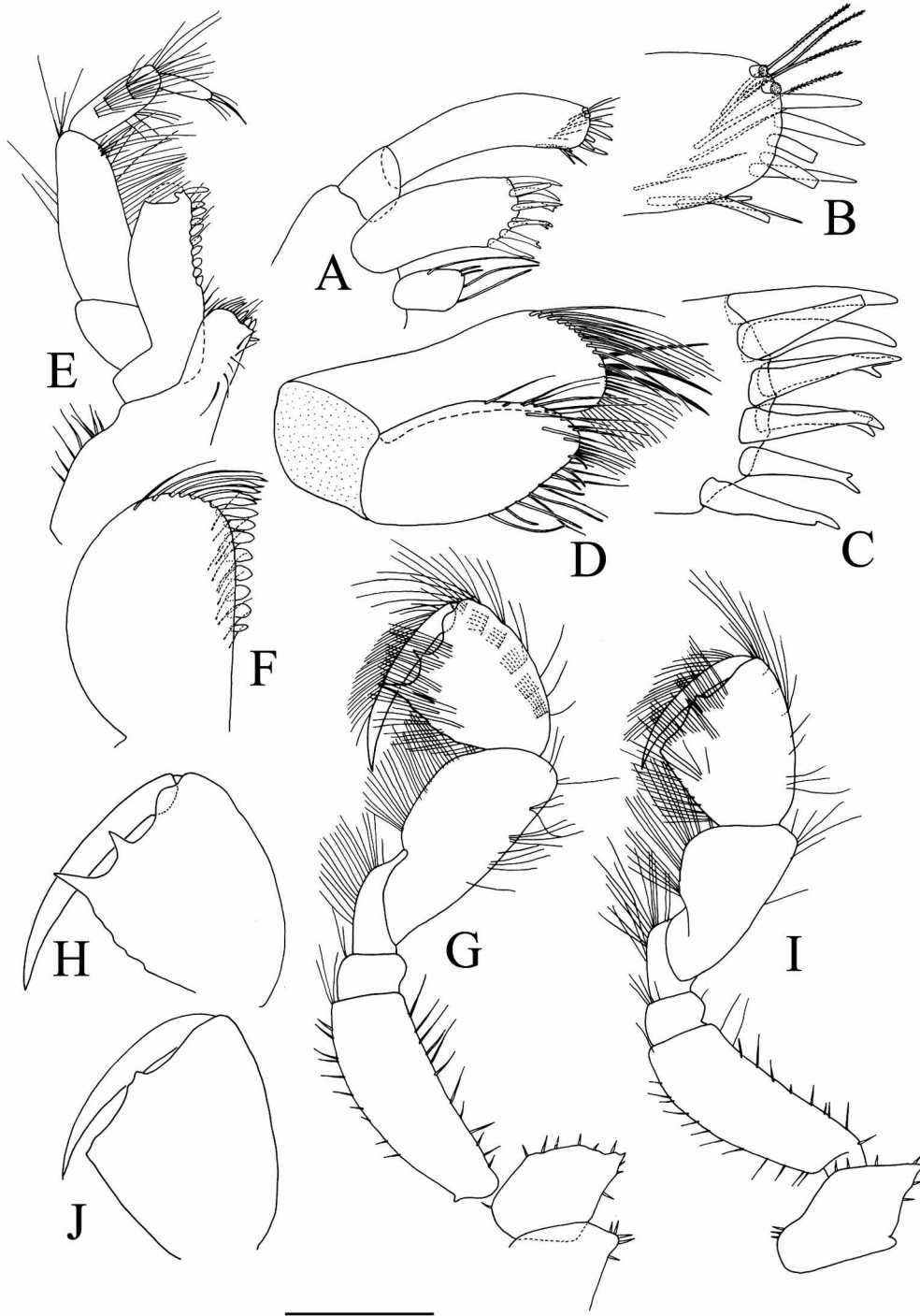


Figure 8. *Neohela lamia* sp. nov. A-E, G-J, holotype (male), st 891-80, F, paratype (presumably male), St. 8103211. A. Left Mx1. B. Left Mx1 (detail of palp). C. Left Mx1 (detail of outer plate). D. Left Mx2. E. Left Mxp. F. Outer plate of Mxp. G. Left Gn1. H. Propodus palm of left Gn1 (setae not shown). I. Left Gn2. J. Chela of left Gn2 (setae not shown). Scale bar: E, 1.77 mm; G, I, 1.24 mm; H, J, 0.88 mm; F, 0.60 mm; A, 0.42 mm; D, 0.30 mm; B, C, 0.14 mm.

Figure 8. *Neohela lamia* sp. nov. A-E, G-J, holotype (mâle), st 891-80, F, paratype (probablement mâle), St. 8103211. A. Mx1 gauche. B. Mx1 gauche (détail du palpe). C. Mx1 gauche (détail de la plaque extérieure). D. Mx2 gauche. E. Mxp gauche. F. Plaque extérieure du Mxp. G. Gn1 gauche ; H. Pince du Gn1 gauche (soies non montrées). I. Gn2 gauche. J. Pince du Gn2 gauche (soies non montrées). Échelle : E, 1,77 mm ; G, I, 1,24 mm ; H, J, 0,88 mm ; F, 0,60 mm ; A, 0,42 mm ; D, 0,30 mm ; B, C, 0,14 mm.

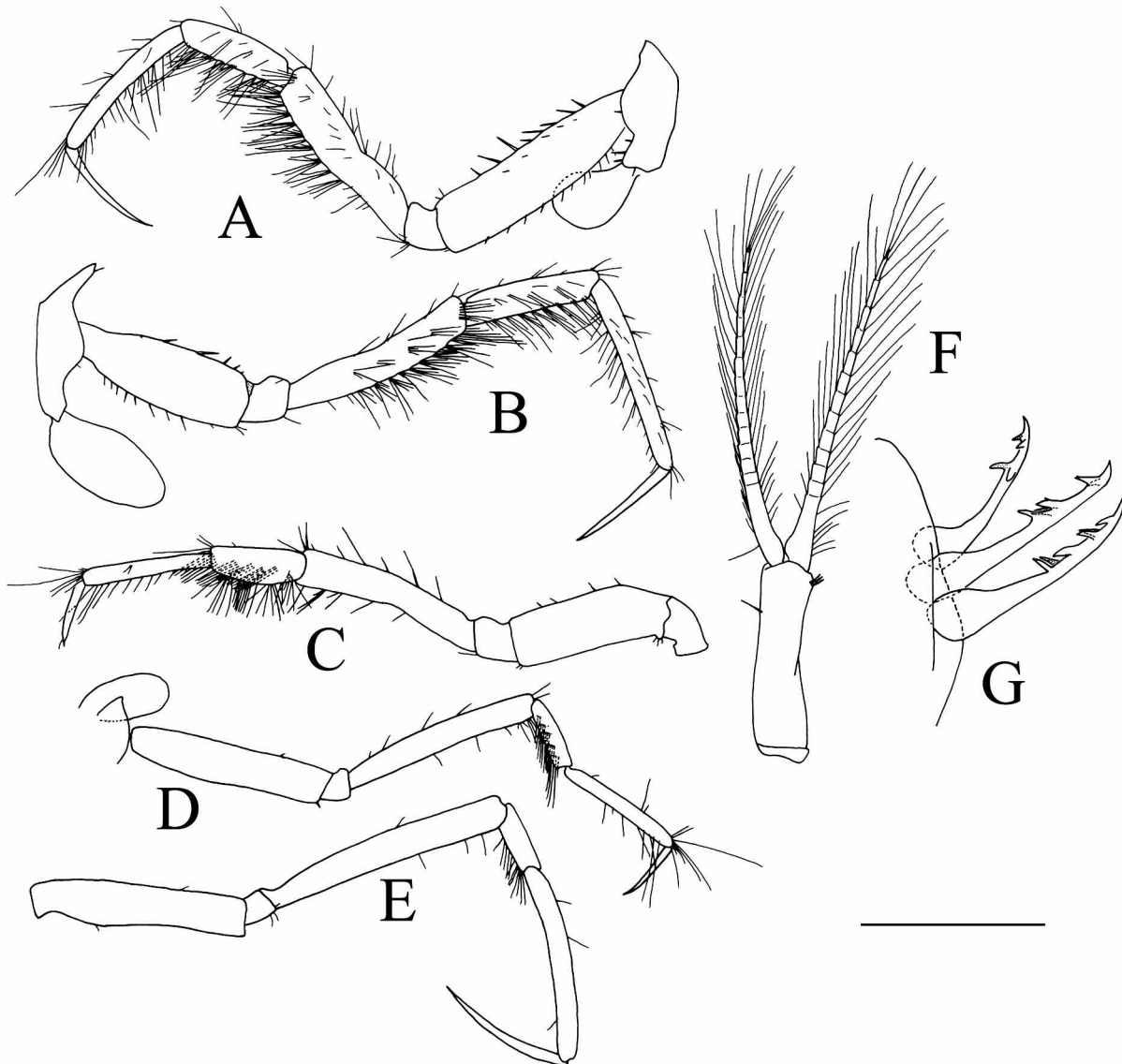


Figure 9. *Neohela lamia* sp. nov. A, B, C, F, G, holotype (male), st 891-8; D, E st. 806-97. **A.** Left P3. **B.** Right P4. **C.** Right P5. **D.** Left P6. **E.** Presumably left P7 (detached appendage). **F.** Right PL 1. **G.** Coupling hooks of right PL. Scale bar: A, B, C, D, E, 1.77 mm; H, 0.60 mm; G, 0.10 mm.

Figure 9. *Neohela lamia* sp. nov. A, B, C, F, G, holotype (mâle), st 891-8; D, E, st. 806-97. **A.** P3 gauche. **B.** P4 droit. **C.** P5 droit. **D.** P6 gauche. **E.** Probablement P7 gauche (appendice détaché). **F.** PL1 droit. **G.** Crochets de couplages du PL1 droit. Échelle : A, B, C, D, E, 1,77 mm ; H, 0,60 mm ; G, 0,10 mm.

Pereiopod 3: basis anteriorly with spinules; carpus 0.7 times as long as propodus and 0.6 times as long as merus; propodus 0.8 times as long as merus; dactylus 0.7 times as long as propodus.

Pereiopod 4: basis anteriorly with spinules; carpus 0.7 times as long as propodus and 0.7 times as long as merus; propodus equal to merus; dactylus 0.6 times as long as propodus

Pereiopods 5-7 increase in length from P5 to P7, with posterior border sparsely setose.

Pereiopod 5: dactylus nearly straight, about 0.5 times as long as propodus.

Pereiopod 6: dactylus nearly straight, about 0.5 times as long as propodus.

Pereiopod 7: dactylus curved, about 0.7 times as long as propodus.

Pleopods 1-2 with three coupling hooks; pleopod 3 with two coupling hooks; pleopod 1 with peduncle 3.5 times as long as wide, with rami slender and 1.6 times as long as peduncle.

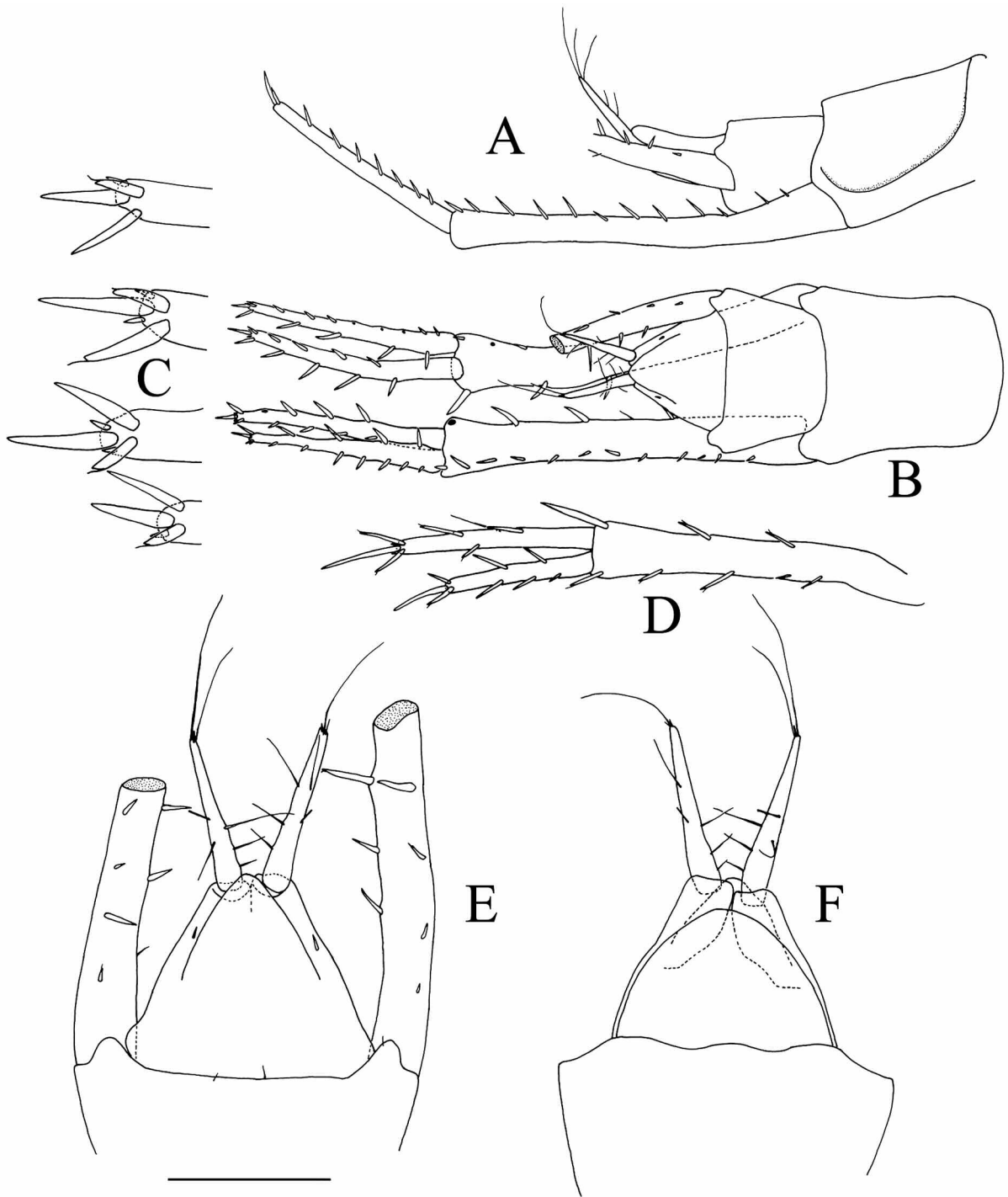


Figure 10. *Neohela lamia* sp. nov. A-C, E-F, holotype (male), st 891-80; D, paratype (presumably male), St. 8103211. **A.** Posterior part of body in lateral view. **B.** Posterior part of body in dorsal view. **C.** Tip of rami of left and right U1. **D.** Right U2 in dorsal view. **E.** Pleotelson and its peripheral appendages in dorsal view. **F.** Pleotelson and its peripheral appendages in ventral view. Scale bar: A, B, 1.24 mm; C, 0.30 mm; D, E, F, 0.60 mm.

Figure 10. *Neohela lamia* sp. nov. A-C, E-F, holotype (mâle), st 891-80 ; D, paratype (probablement mâle), St. 8103211. **A.** Partie postérieure du corps en vue latérale. **B.** Partie postérieure du corps en vue dorsale. **C.** Extrémité des ramus des U1 gauches et droits. **D.** U2 droit en vue dorsale. **E.** Pléotelson et ses appendices périphériques en vue dorsale. **F.** Pléotelson et ses appendices périphériques en vue ventrale. Échelle: A, B, 1,24 mm ; C, 0,30 mm ; D, E, F, 0,60 mm.

Uropod 1: peduncle with dorsal spines on medial and lateral sides (12 on the lateral side of the holotype); outer ramus straight with the spines of the lateral border well spaced (including on distal 0.3); tip of rami with several distal spines.

Uropod 2: peduncle with dorsal spines on medial and lateral sides (5 on lateral side of the paratype from st. 8103211); rami with spines on medial and lateral sides; tip of rami with several distal spines of which 3 are long and slender, especially the median one which is nearly 0.4 times as long as its ramus.

Uropod 3: peduncle with 1 spine, proximal part sandwiched between the telson and the ventral lobe of the third urosomite; ramus slender (6 times as long as wide), with setae.

Telson triangular, fused to third urosomite (junction indistinct in material examined).

Size

The largest specimen has a total length of 17 mm.

Ecology

The specimens examined have been collected between 830-860 m and 1350 m. G.O. Sars (1885) records *N. monstrosa* between 416 to 1215 fathoms (i.e. 761 to 2222 m), which seems unlikely for that species. It is possible that such deep records are based on *N. lamia* sp. nov.

Distribution

The material examined has been collected off North Svalbard, and off North and West Norway. The following deep records of *N. monstrosa*: North of Faeroe, North-west of Finnmark, West of Spitsbergen (G.O. Sars, 1885) and North of Spitsbergen (Chevreux, 1899), Spitsbergen (Piepenburg et al., 1996; Węśławski et al., 2003) are possibly based on *N. lamia* sp. nov. Aside "*Neohela monstrosa*", Węśławski et al. (2003) also record a deep-water *Neohela* sp. A which could well be *N. lamia* sp. nov. Unfortunately these authors give no morphological information about their specimens, so that it is impossible to have a hint of what they had at hand.

Remarks

None of the three specimens of *N. lamia* sp. nov. is intact. Parts missing in the holotype have been described and illustrated after the paratypes. The examination of the *N. lamia* sp. nov. from the area of Bergen (St. 8103211) suggests the occurrence of large eyes consisting of scattered ommatidia. However its long preservation prevents any definitive conclusion in this respect. The occurrence of eyes should be checked when fresh specimens become available for study.

The first antennae were still present in the smallest specimen only. This specimen had only 5 articles on the accessory flagellum but it is possible that larger specimens have a higher number of articles on this appendage.

Neohela maxima Stephensen, 1933

Neohela maxima Stephensen, 1933: 55, fig. 23 (as *N. monstrosa*: lapsus for *N. maxima*), 24, 25, 26 (left part of figure); Gurjanova, 1951: 961, fig. 668 (after Stephensen); Gurjanova, 1953: 240.

Diagnosis (after Stephensen, 1933)

Frontal area straight, without teeth or rostrum. Third article of mandibular palp presumably subequal to second [Stephensen (1933) does not illustrate or describe it but states "The oral parts agree well with those of *N. monstrosa*"]. Palm of first gnathopod with 3 teeth (median tooth closer to distal tooth than to proximal tooth). Coxa 1-2 with strong anterior tooth, ventrally crenulated but without spines. Dactylus of third pereopod 0.4 times as long as propodus; dactylus of fifth pereopod 0.25 times as long as propodus. Dorsolateral border of peduncle of first and second uropods with setae. Outer ramus of first uropod sigmoid in adults. Lateral border of outer ramus of first uropod with little-spaced spines on median part in adults (proximal third in juveniles). Tip of rami of first uropod with one short stout spine sometimes flanked by a tiny spinule on one side or on both sides. Ramus of third uropod stout (3 times as long as wide). Telson not fused with urosomite 3, oval in shape.

Size

up to 56 mm.

Ecology

Recorded once at 47 m depth (Stephensen, 1933).

Distribution

West Greenland: 71°21'N 54°29'W (Stephensen, 1933).

Remark

As far as I know, the species has never been recorded again after its original description.

Neohela monstrosa (Boeck, 1861)

(Fig. 11)

Hela monstrosa Boeck, 1861: 669; 1871: 181; 1876: 643, pl. 32 fig. 1.

Neohela monstrosa; Smith, 1881: 450; Hansen, 1888: 168;

Della Valle, 1893: 343, pl. 55 fig. 19-24; G.O. Sars, 1894: 624, pl. 224; Stebbing, 1906: 675; Shoemaker, 1930: 129; Stephensen, 1933: 51, fig. 26 (right figures), not fig. 23 (lapsus for *N. maxima*); 1942: 404 (? in part); Enequist, 1949: 381, fig. 67 (position in burrow); Coyle & Mueller, 1981: 11; Gurjanova, 1951: 959, fig. 667 (after Sars); 1953: 240; Barnard & Karaman, 1991: 215, fig. 39D, 42J, 44F, 45T (after Sars).

Neohela phasma S.I. Smith, 1881: 448; Stebbing, 1906: 676; Gurjanova, 1951: 959 (key).

Helella monstrosa G.O. Sars, 1883: 31.

Material examined

Svalbard. R/V Jan Mayen st. 1097-95, Blockfjorden, 79°27'07"N, 013°18'E, SCUBA diving, 6.ix.1995: a huge incomplete specimen, TSZCr 11 270; R/V Jan Mayen st. 1089-95, Austfjorden, 79°02.1'N 016°11.1'E, RP sledge, 159 m, 06.ix.1995: 2 specimens, TSZCr 14747; Tromsø Museum Biological Spitsbergen Expedition, st. 422-58, Van Mijenfjord, 77°45.4'N 14°54.8'E, 108-110 m, Aggasiz trawl, mud, 24.vii.1958: 1 large specimen, TSZCr 9169; R/V Jan Mayen st. 822-94, Storfjord, 77°33'N 019°03'E, 177 m, Beyer sledge, 25.vii.1994: 1 large specimen, presumably male, leg. W. Vader, TSZCr 9884.

Barents Sea. Akvaplan-Niva, campaign Barentshavet 02, st 362, 73°54'N 028°03'E, 388 m, 22.iv.2002: 1 large specimen, leg. H.C. Trannum, TSZCr 12345; Akvaplan-Niva, Barentshavet 02, st 357, 73°16'N 026°05'05"E, 429 m, 21.iv.2002: 1 large specimen, leg. H.C. Trannum, TSZCr 12355; Akvaplan-Niva, Barentshavet 02, st 335, 72°45'N 029°31'E, 283 m, 19.iv.2002: 1 large specimen, leg. H.C. Trannum, TSZCr 12369.

Northern Norway. M/K Asterias st. 4063-66, North of Kvitnes-Tana, 70°55'N 028°44'E, 300-320 m, 01.vii.1966: 1 large male, leg. E. Brun, TSZCr 7726; Porsangerfjord, station 30, 01.viii.1931, 270-280 m: 1 large specimen, leg. T. Soot-Ryen, TSZCr 4058; R/V Johan Ruud st. 1080-98, Porsanger, 70°26.53'N 025°22.06'E, 141 m, 23.ix.1998: 2 specimens, leg. W. Vader, TSZCr 10864; Skatøren, Tromsøundet, 69°42'N 019°02'E, about 20 fathoms, year 1889: 1 mid-sized specimen, leg. J. Sparre Schneider, TSZCr 1337; R/V Johan Ruud st. 1138-79, Fallbakkdypet, Torsken (municipality), 69°26'N 016°43'E, 330 m, 21.viii.1979: 1 large specimen, leg. T. Holthe, TSZCr 11990; R/V Johan Ruud st. 477-97, Vågsfjorden at Engenes (Ibestad municipality), 68°56'N 017°11'E, 325 m, Beyer sledge, 2.vii.1997: 1 small specimen, TSZCr 13002; R/V Johan Ruud 475-97, Andfjord at Nordrollnes, 68°51.9'N 016°58.6'E, Beyer sledge, 359 m, 02.vii.1997: 1 small specimen, leg. J. Berge, TSZCr 12988; M/K Asterias st. 5238-68, Gråfjord, 68°43'06"N 017°05'48"E, 300-325 m, 20.vi.1968: 1 large specimen, TSZCr 7808.

Diagnosis

Frontal area with tiny spiniform rostrum. Third article of mandibular palp about as long as second. Palm of first gnathopod with 3 teeth (median tooth equidistant to proximal and distal teeth). Coxa 1-2 with strong anterior tooth, ventrally not crenulated, ventrally and anteriorly without spines. Dactylus of third pereopod 0.6 times as long as propodus; dactylus of fifth pereopod 0.5 times as long as propodus. Dorsolateral border of peduncle of first and second uropods with a few setae, without spines. Outer ramus of first uropod straight or nearly so. Lateral border of outer ramus of first uropod with little-spaced spines on distal third. Tip of rami of first uropod with three long slender spines (median the longest). Ramus of third uropod slender (7 times as long as wide). Telson fused with urosomite 3, triangular in shape (suture often distinct).

Size

Up to 31 mm (Stephensen, 1944b).

Ecology

Neohela monstrosa lives on muddy bottoms; it is a detritus feeder and it does not consume living organisms as polychaetes; in aquarium it digs a 10 cm deep burrow which has usually (but not always) two openings; this burrow is used as a shelter and does not appear of any significance for feeding; the animal emerges from the burrow mainly at night but sometimes also in the day; it can swim slowly on a similar way to the Caprellidae (Enequist, 1949). The material available for study has been collected between 37 and 429 m. The specimen from Svalbard collected in SCUBA diving at the station 1097-95 was presumably collected at less than 30 m although there is no depth indication on its label. In literature, *N. monstrosa* has been recorded down to 2222 m (G.O. Sars, 1885) but all records below 700 m should be considered as very suspect and could refer to *N. lamia* sp. nov. or even additional new species.

Distribution

Arctic and subarctic parts of Northwest Atlantic, southwards to the Gulf of St Lawrence to south of New England; Greenland; Northeast Atlantic from Svalbard to the Kattegat (Stephensen, 1933).

Remarks

Shoemaker (1930) has shown that *N. phasma* Smith, 1881 is a junior synonym of *N. monstrosa* (Boeck, 1861).

Boeck (1871) indicates the occurrence of a rostrum in *N. monstrosa*: "Caput (...) in rostrum frontale productum". So there is no doubt that the type material of the *N. monstrosa*, which has been collected in the Christianafjord (Norway) at

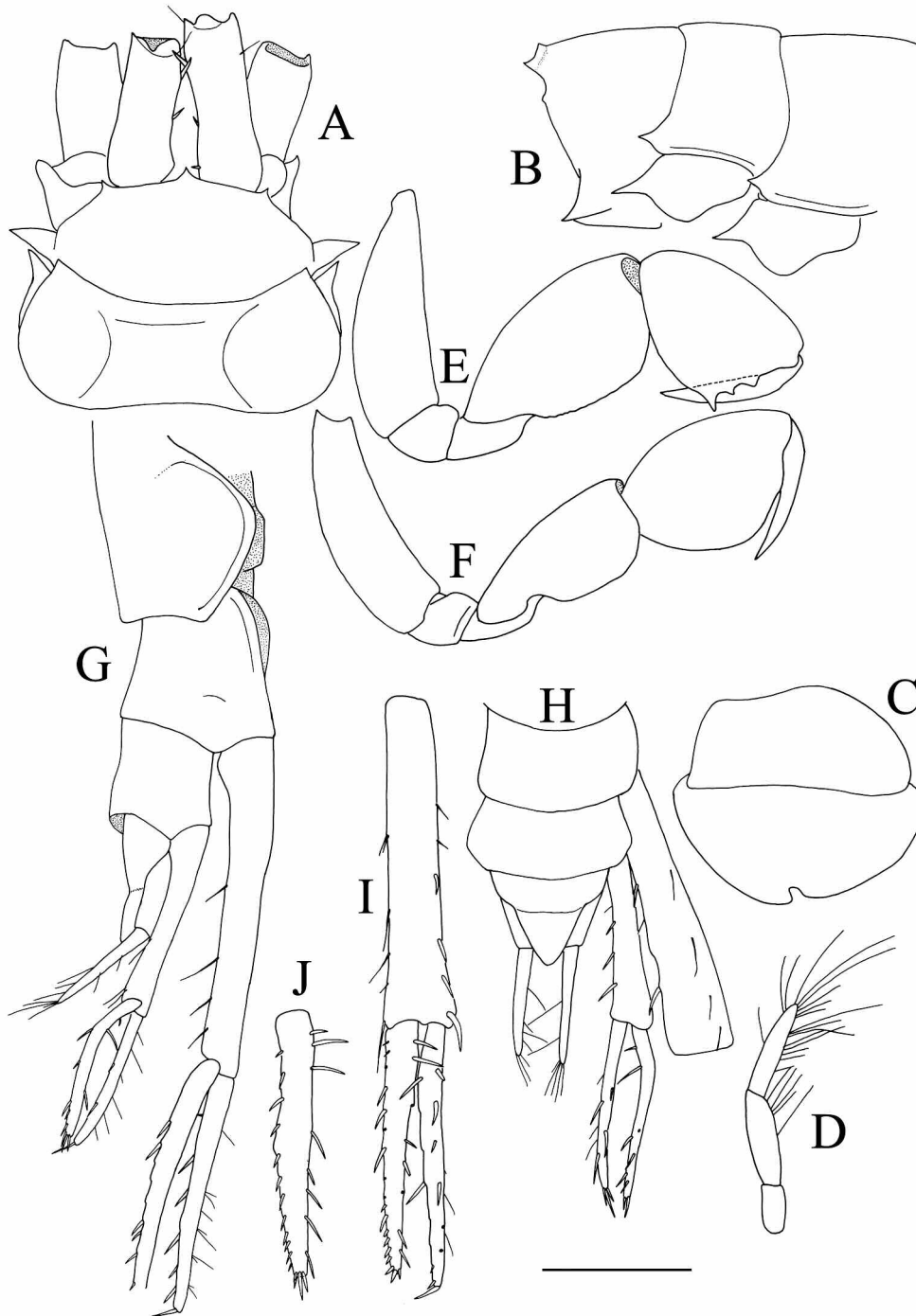


Figure 11. *Neohela monstrosa* (Boeck, 1861). A, C-I, female, st. 1089-95; B, male, st. 362-02; J, st. 822-94, male. A. Anterior part of body in dorsal view. B. Anterior part of body in lateral view. C. Upper lip. D. Palp of right mandible. E. Right Gn1 (setae not shown). F. Right Gn2 (setae not shown). G. Posterior part of body in lateral view. H. Posterior part of body in dorsal view. I. Left U1 in dorsal view. J. Outer ramus of left U1. Scale bar: A, E, F, 1.77 mm; B, G, H, I, 1.24 mm; J, 1.00 mm; D, 0.88 mm; C, 0.60 mm.

Figure 11. *Neohela monstrosa* (Boeck, 1861). A, C-I, femelle, st. 1089-95; B, mâle, st 362-02; J, st. 822-94, mâle. A. Partie antérieure du corps en vue dorsale. B. Partie antérieure du corps en vue latérale. C. Lèvre supérieure. D. Palpe du mandibule droit. E. Gn1 droit (soies non montrées). F. Gn2 droit (soies non montrées). G. Partie postérieure du corps en vue latérale. H. Partie postérieure du corps en vue dorsale. I. U1 gauche en vue dorsale. J. Ramus externe de U1 gauche. Échelle: A, E, F, 1,77 mm ; B, G, H, I, 1,24 mm ; J, 1,00 mm ; D, 0,88 mm ; C, 0,60 mm.

20-30 fathoms (Boeck, 1876) is distinct from *N. lamia* sp. nov.

G.O. Sars (1895) illustrates the notch of the upper lip of *N. monstrosa* as symmetrical. However the examination of the upper lip of a specimen indicates that the notch is distinctly asymmetrical, just as in *N. lamia* sp. nov. and *N. maxima* Stephensen, 1933.

In *N. monstrosa* the teeth of the first gnathopod are slightly more developed in males than in females.

The telson of *N. monstrosa* is always fused to the third urosomite. In some specimens the suture between these two segments is very clear, whilst in others it is rather indistinct.

Acknowledgements

I would like to thank Prof. Wim Vader for critical reading of the first draft manuscript.

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