Proc. NIPR Symp. Polar Biol., **5**, 65–82, 1992

THREE SPECIES OF AMPHIPOD CRUSTACEANS COLLECTED FROM BREID AND LÜTZOW-HOLM BAYS, ANTARCTICA, DURING THE JARE-26 CRUISE

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Abstract: Three species of amphipod crustaceans were described based on the specimens collected from Breid and Lützow-Holm Bays, Antarctica, during the Japanese Antarctic Research Expedition (JARE-26 Cruise): *Aeginoides gaussi* SCHELLENBERG, 1926 and *Dodecasella elegans* K. H. BARNARD, 1931 of the phtisicid Caprellidea, and *Neoxenodice hoshiaii* n. sp. of the podocerid Gammaridea. *Dodecasella elegans* seems to show a sexual dimorphism in enlargement of gills on pereonite IV in the male. *Neoxenodice hoshiaii* n. sp. is closely related to *N. cryophile* LOWRY, 1976 from the Ross Sea, but distinguished from *N. cryophile* by the compressed form of coxae on pereonites III to IV.

1. Introduction

During the JARE-26 Cruise (1984/1985), benthic animals were collected by beam-trawl from Breid Bay and the Günnerus Bank at the entrance of Lützow-Holm Bay near Syowa Station, Antarctica. Several specimens of caprellid and caprellid-like gammarid amphipods were sorted out from these samples by the staff of the National Institute of Polar Research, Tokyo, and brought to us for taxonomic study. They were referred to two known species of the phtisicid caprellids and a new species of podocerid gammarid.

The caprellidean amphipods of the Antarctic and Subantarctic Seas have been primarily studied by STEBBING (1883, 1888), PFEFFER (1888), MAYER (1890, 1903), SCHELLENBERG (1926, 1931), K. H. BARNARD (1930, 1931, 1932), STEPHENSEN (1947), ARIMOTO (1970), MCCAIN and GRAY (1971), MCCAIN (1972), VASSILENKO (1972) and THURSTON (1972, 1974). MCCAIN and GRAY (1971) reviewed the taxonomy and distribution of the Caprellidea and listed 21 valid species of 11 genera including six new species in detail. VASSILENKO (1972) resurrected two species of the genus *Caprellinoides*, i. e., *C. antarctica* SCHELLENBERG, 1926 and *C. spinosa* K. H. BARNARD, 1930, which had been considered junior synonyms of *C. mayeri* (PFEFFER, 1888) by MCCAIN and GRAY (1971). Apart from these 23 species, *Protellopsis kergueleni* STEBBING, 1888 originally described from Kerguelen Island, South Indian Ocean was collected in the vicinity of Heard Island (ARIMOTO, 1970).

The gammarid genus *Neoxenodice*, which is very similar to caprellid amphipods

in general external appearance, has been reported from abyssal depths close to Antarctica and from the Ross Sea (SCHELLENBERG, 1926; J. L. BARNARD, 1962; LOWRY, 1976; LEDOYER, 1986). The Podoceridae including this genus is thought to be close to the ancestral form of the Caprellidea (e. g., MCCAIN 1968; LAUBITZ, 1976, 1979; J. L. BARNARD and KARAMAN, 1983).

Although several studies on the cladistics of the caprellidean amphipods had been made (e. g., MCCAIN, 1970; VASSILENKO, 1974), none of them has been in good agreement until now. It partially depends on the paucity of detailed descriptions of each genus and species. The present study, thus, deals with redescriptions of two phtisicid caprellids, *Aeginoides gaussi* SCHELLENBERG, 1926 and *Dodecasella elegans* K. H. BARNARD, 1931 together with the revised generic diagnosis. A new species of podocerid gammarid is also described herein under the name of *Neoxenodice hoshiaii*. The bulk of specimens examined is deposited in the National Science Museum, Tokyo, and some specimens of each species are in the National Institute of Polar Research, Tokyo.

2. Sampling Stations

Beam-trawl sampling was conducted at five stations in Breid Bay and the Günnerus Bank by the icebreaker Shirase from December 1984 to February 1985. The sampling stations are shown in Table 1. Detailed topography of the sampling area is referred to NUMANAMI and OKUTANI (1990).

Table 1. Sampling stations during the JARE-26 Cruise.

Area	St.	Date	Time	Location	Depth (m)
Breid Bay	5	Feb. 8, 1985	12: 55	70°09.0′S, 23°46.3′E	275–283
	7	Dec. 27, 1984	18: 23	70°09.1′S, 24°01.9′E	295–310
	8	Dec. 29, 1984	16: 47	70°08.5′S, 24°16.8′E	270
	9	Feb. 10, 1985	15: 39	70°13.7′S, 24°25.7′E	276–289
Günnerus Bank		Feb. 25, 1985	11: 13	68°23.5′S, 34°07.5′E	281–282

3. Systematics

Order AMPHIPODA

Suborder CAPRELLIDEA

Family Phtisicidae

Genus *Aeginoides* SCHELLENBERG, 1926

Diagnosis: Flagella of antennae I and II more than 3-segmented. Mandibular palp 3-segmented; setal formula of terminal article 1-x-1. Upper lip symmetrically formed shallow rectangular projection. Head fused with pereonite I. Gills on pereonites III and IV. Vestigial coxae on gnathopod II and pereopods V to VII. Pereopod III 1-segmented. Pereopod IV absent. Pereopod V 4-segmented. Male abdomen reduced to a segment, with a pair of coalescent pleopods and 2 pairs of uropods.

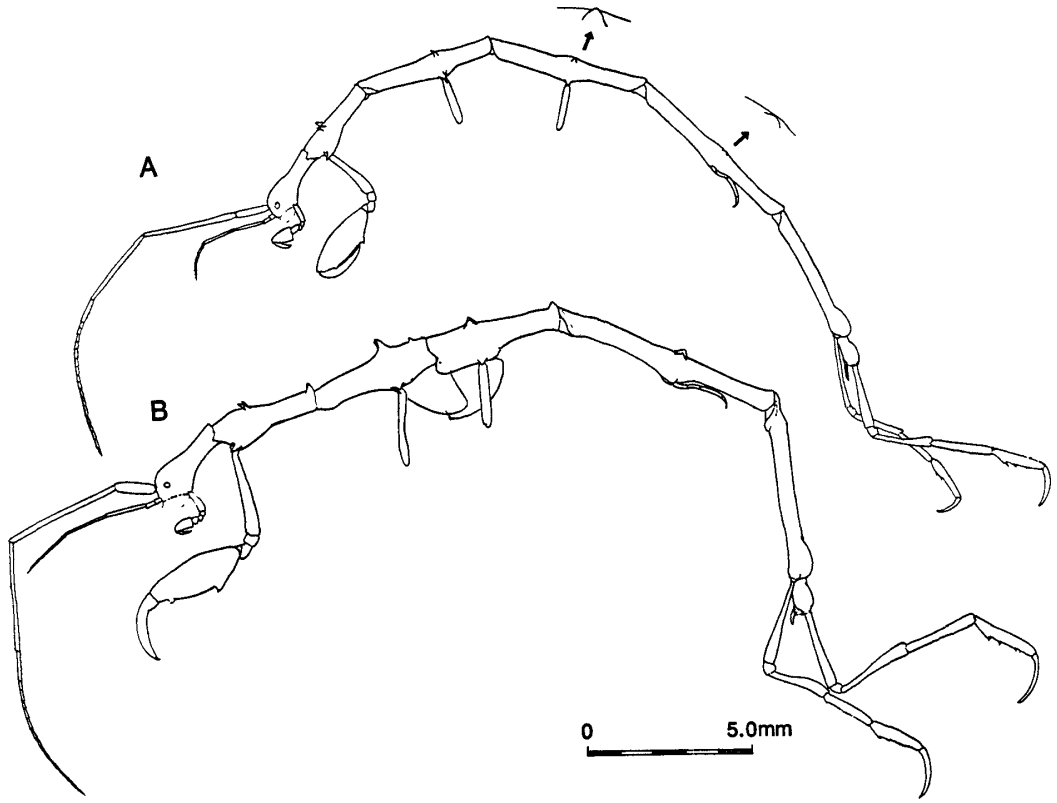

Fig. 1. Aeginoides gaussi SCHELLENBERG, *1926. Male (A) and female (B) from Breid Bay, Antarctica.*

Remarks: The genus *Aeginoides*, which was established on *A. gaussi* SCHELLENBERG, 1926 from South Georgia Island, has so far been monotypic. SCHELLENBERG (1926) described pereopod IV of this species as small knob-like appearance, but STEPHENSEN (1947) reported that a mature female carries a spine rather than a pereopod near the base of the gill on pereonite IV. The specimens at hand (Fig. 1) carry small mid-lateral projection near the gill on pereonite IV instead of the degenerated form of pereopod IV or spine, as well as that described by MCCAIN and GRAY (1971).

The male abdomen carries three pairs of appendages (Fig. 2I) on the ventral surface which are called "abdominal appendage" or "abdominal lobe" without referring to their origin in the past taxonomical studies. The posterior two pairs are two-segmented in cylindrical form, being very similar to the uropods of *Cercops* and *Caprogammarus*, which are considered to be primitive in the Caprellidea, due to five-segmented abdomen (e. g., LAUBITZ, 1970; VASSILENKO, 1974; TAKEUCHI and ISHIMARU, 1991). The anterior pair resembles the degenerate form of pleopods of *Cercops* which are dwarfish and carry long apical setae on the distal segment (e. g., LAUBITZ, 1970; VASSILENKO, 1974).

Aeginoides gaussi SCHELLENBERG, 1926

(Figs. 1–3)

Aeginoides gaussi SCHELLENBERG, 1926, 465–467; K. H. BARNARD, 1930, 442–443; K. H. BARNARD, 1932, 305–306; STEPHENSEN, 1947, 79; MCCAIN and STEINBERG 1970, 7–8; MCCAIN and GRAY, 1971, 121; VASSILENKO, 1972, 348–351.

Material examined: Breid Bay—St. 5, 1 male and 4 mature females (Nos. 1–5), Feb. 8, 1985; St. 8, 1 mature female (No. 6), Dec. 29, 1984; St. 9, 5 males, 8 mature and 5 immature females (Nos. 7–24), Feb. 10, 1985. Günnerus Bank—1 male and 2 mature females (Nos. 25–27), Feb. 25, 1985.

Distribution: Type locality: 65°59′S 89°33′E, 350 m. Circumantarctic recorded from the Ross Sea, Adelie Land, Breid Bay and Günnerus Bank at the entrance of Lützow-Holm Bay, South Georgia Island, South Shetland Islands, and Anderssenodden, Peter's Island.

Diagnosis: Since this genus is monotypic, the diagnostic characters of the genus are adapted for the species.

Description: Male. No. 7 from St. 9 (Figs. 1A, 2A–I and 3). Body length 24.7 mm; body somites very slender. Length of head and pereonite I combined 2.0 mm, and each length of pereonites II–VII, 2.6, 4.3, 4.9, 5.7, 4.3 and 0.9 mm, respectively. Head round dorsally, completely fused with pereonite I. Pereonite II carrying a pair of anteriorly pointed mid-dorsal projections, triangular anterolateral ones, and small lateral ones; pereonite III with a pair of small triangular mid-dorsal projections; pereonite IV with a pair of smaller mid-dorsal projections.

Antenna I very slender, subequal to 1/2 of body length; peduncular segments longer in order of II, III and I; flagellum 18-segmented, shorter than peduncular segments I and II combined; basal segment composed of fused probable 6 segments. Antenna II shorter than peduncle of antenna I; flagellum 8-segmented.

Gnathopod I with carpal subequal to ischium and merus combined; propodus triangular with a grasping and an accessory spine on the knob near proximal part; palm weakly convex and setose.

Gnathopod II situated near anterior end of pereonite II; coxa vestigial; basis a little shorter than pereonite II; propodus elliptical, subequal to 1.5 times of the width; a small knob with a grasping and 2 accessory spines at 2/5 from proximal end of palm; a small triangular projection situated near distal end.

Pereopod III without coxa, cylindrical and carrying 2 terminal setae.

Pereopod V without coxa; articulation between segments I and II incomplete and oblique; segment III, probable propodus, cylindrical and shallowly concave.

Pereopods VI and VII slender, with vestigial coxae; segments of pereopod VI longer in order of basis, merus, propodus, carpus, dactylus and ischium; ischium expanded laterally to form a round projection; merus expanded posterolaterally to form a round projection; palm of propodus carrying 2 short triangular projections each with a pair of spines; palm between first projection and distal end weakly convex. Pereopod VII longer than pereopod VI, very similar except for carpus longer than propodus.

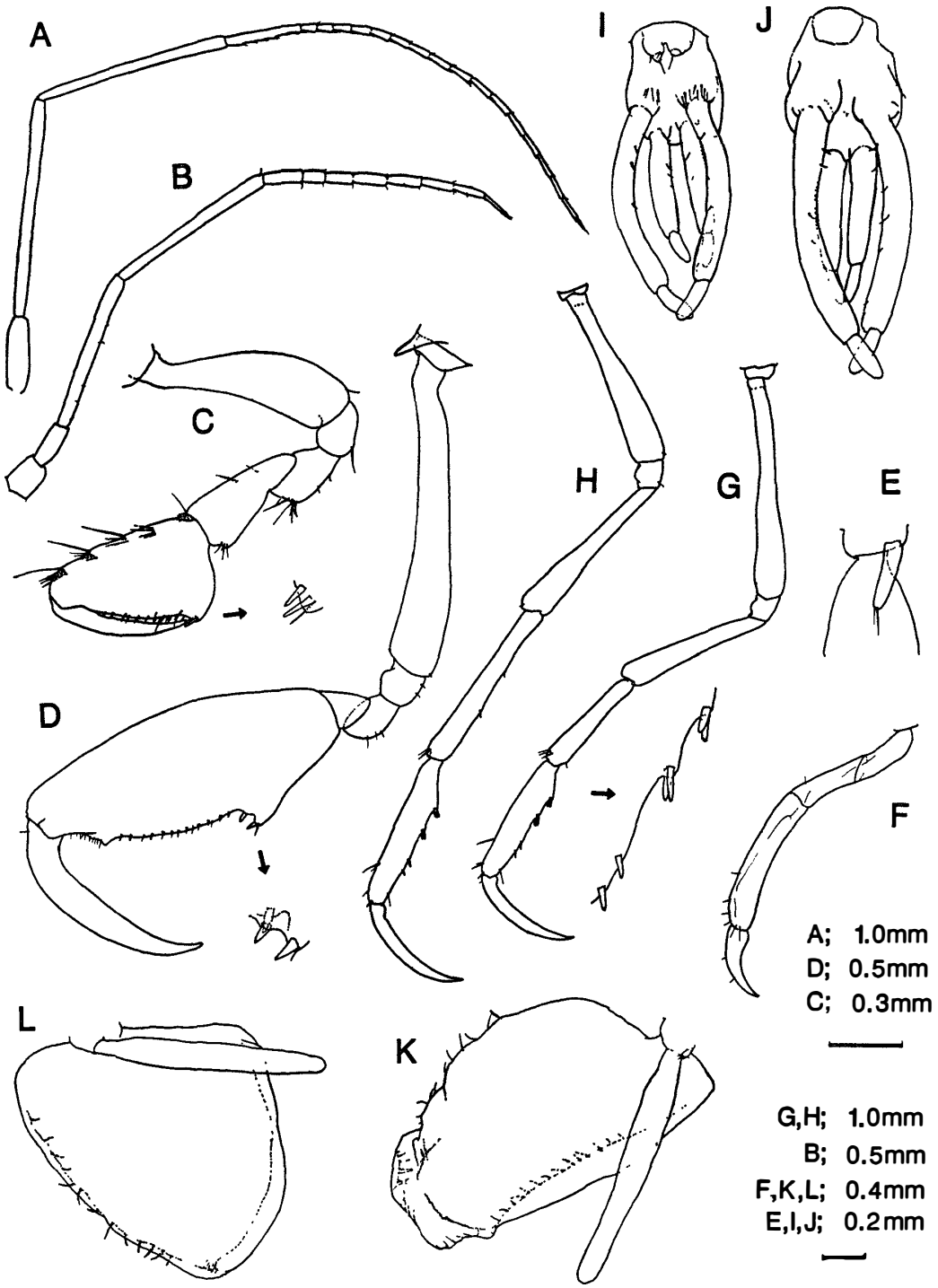

Fig. 2. Aeginoides gaussi SCHELLENBERG, 1926. *Male (A–I) and female (J–L) from Breid Bay, Antarctica. A, antenna I; B, antenna II; C, gnathopod I; D, gnathopod II; E, pereopod III; F, pereopod V; G, pereopod VI; H, pereopod VII; I and J, abdomen K, oostegite on pereonite III with pereopod III and gill; L, oostegite on pereonite IV with gill.*

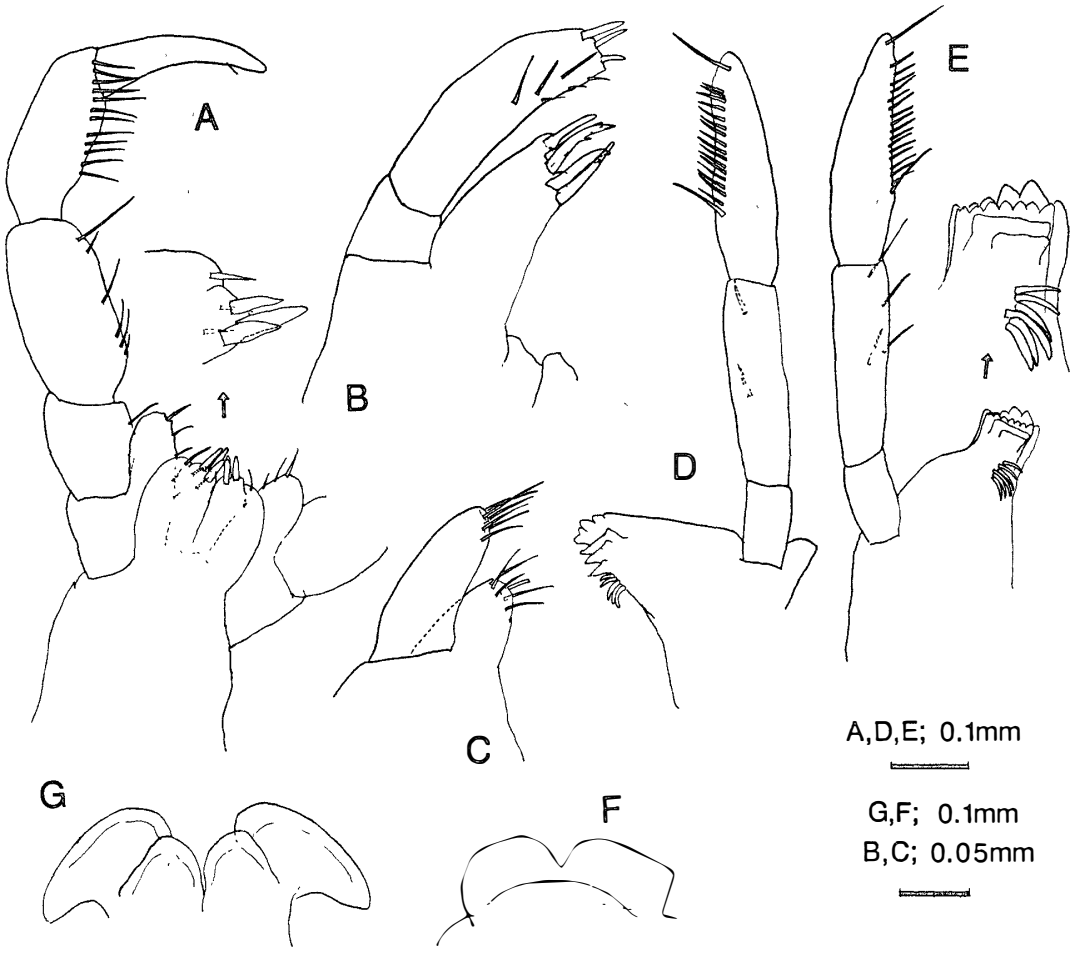

Fig. 3. Aeginoides gaussi *SCHELLENBERG, 1926. Male from Breid Bay, Antarctica. A, maxilliped; B, maxilla I; C, maxilla II; D, right mandible; E, left mandible; F, upper lip; G, lower lip.*

Pleopod dwarf, right and left pleopods may be fused at basal parts; ramus unsegmented, minute and cone-shaped; distal segment bearing a long apical seta. Uropod I cylindrical and curved inwards; ramus about 1/5 of peduncular length. Uropod II weakly curved, shorter than uropod I.

Mouthparts, inner plate of maxilliped round-pentagonal, with 3 short spiniform setae on inner half of apical margin and a seta on outer half; outer plate oval, smaller than inner plate; 3 long and 2 short setae on distal to inner margin; segment II of palp sparsely setose on inner margin; segment III carrying lateral setae in a row on lateral surface; segment IV falcate. Outer plate of maxilla I with 5 stout apical teeth; distal segment of palp with 3 marginal spiniform setae and 3 setae on distal to inner margin and 3 long setae arranged in an oblique row. Outer plate of maxilla II oblong, setose on distal inner edge; inner plate oval, setose on apical edge. Upper lip symmetrically notched, forming shallow rectangular projections. Inner lobe of lower lip symmetrically separated. Palp segments of left mandible longer in order of II, III and I; setal formula of segment III 1-16-1; incisor divided into 6 teeth, *lacinia mobilis* carrying 8 teeth, followed by 2 reverse-trapezoid accessory plates and 6 setal rows. Right mandible with incisor divided into 5 teeth, and a large reverse-trapezoid

plate, instead of *lacinia mobilis*, followed by 2 small reverse-trapezoid accessory plates and 5 setal rows.

Female: No. 12 from St. 9 (Figs. 1B and 2J, K, L). Body length 26.9 mm. Length of head and pereonite I combined 2.5 mm and each length of pereonites II–VII, 2.5, 3.3, 3.8, 4.2, 6.8, 5.3 and 1.0 mm, respectively. Pereonite II carrying a pair of anteriorly pointed mid-dorsal, triangular anterolateral, and small distrodorsal projections. Pereonites III, IV and V each with a pair of small triangular mid-dorsal projections. Left and right pleopods fused with each other.

Remarks: McCain and Gray (1971) mentioned that the body spination of this species varies remarkably in their specimens. Our specimens correspond to the most spinose type shown by them.

Genus *Dodecasella* K. H. Barnard, 1931

Diagnosis: Flagella of antennae I and II more than 3-segmented. Mandibular palp 3-segmented; setal formula of segment III 1-x-1. Upper lip symmetrically forming a pair of shallowly rectangular projection. Head fused with pereonite I. Gills on pereonites III and IV. Vestigial coxae on gnathopod II, pereopods III, VI and VII. Pereopod III 6-segmented. Pereopod IV absent. Pereopod V 4-segmented. Male abdomen reduced to a segment, bearing a pair of coalescent pleopods and 2 pairs of uropods (or only 2 pairs of uropods).

Remarks: Only two species of this genus have been so far reported from the vicinity of South Georgia Island, *i. e.*, *Dodecasella elegans* K. H. Barnard, 1931 and *D. georgiana* (Schellenberg, 1931) (McCain and Gray, 1971). In the original and supplemental descriptions of *D. elegans*, K. H. Barnard (1931, 1932) stated as one of the generic diagnosis that the abdomen bears two pairs of slender two-segmented appendages. The male specimens at hand, however, have a pair of dwarfish form of probable two-segmented appendages anterior to two pairs of elongate two-segmented appendages (Fig. 5I). As mentioned in the remarks on the genus *Aeginoides*, the anterior pair of appendages corresponds to pleopods, and the posterior two pairs to uropods. Close examination of the type materials, which are composed of two males, a mature female and fragments and deposited at the Natural History Museum, London, revealed the presence of these tiny pleopods in the males.

The present study suggests that *Dodecasella* differs from the closest related genus *Dodecas* Stebbing, 1883 in carrying two pairs of gills on pereonites III and IV, instead of three pairs on pereonites II to IV. According to McCain and Gray (1971), three species of *Dodecas* have been so far recorded from the Antarctic and Subantarctic Seas; *D. elongata* Stebbing, 1883, *D. reducta* K. H. Barnard, 1932 and *D. eltaninae* McCain and Gray, 1971.

Dodecasella elegans K. H. Barnard, 1931

(Figs. 4–7)

Dodecasella elegans K. H. Barnard, 1931, 430; K. H. Barnard, 1932, 304–305; McCain and Steinberg, 1970, 50; McCain and Gray, 1971, 121.

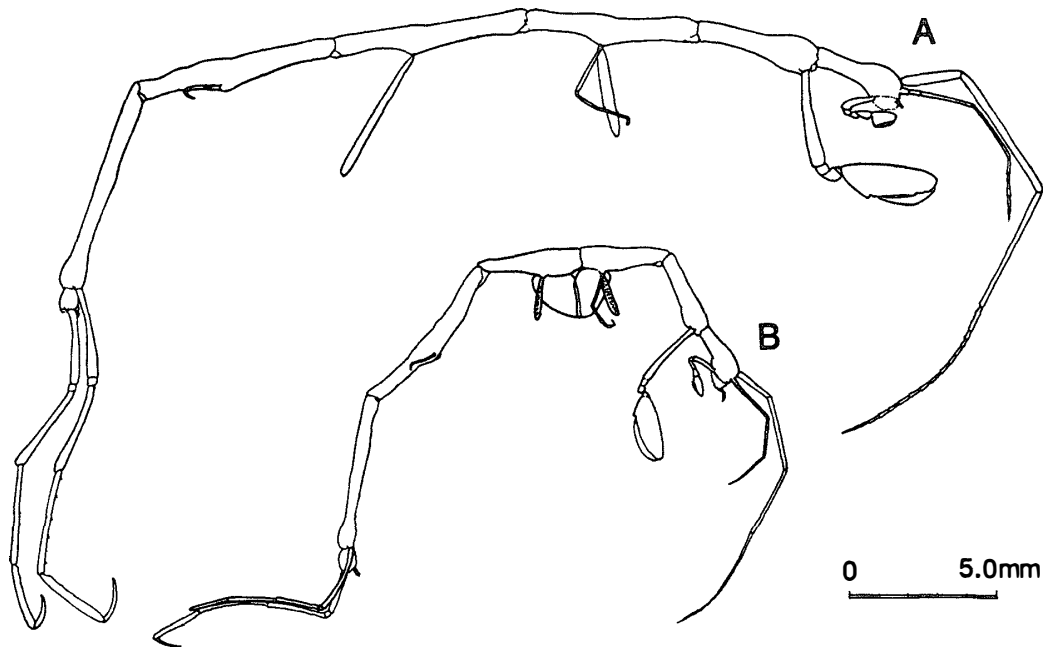

Fig. 4. Dodecasella elegans *K. H. BARNARD, 1931. Male (A) and female (B) from Breid Bay, Antarctica.*

Material examined: Breid Bay—St. 5, 13 males, 9 mature and 4 immature females, and 3 juveniles (Nos. 1–29), Feb. 8, 1985; St. 9, 1 male and 1 juvenile (Nos. 30, 31), Dec. 27, 1984; St. 8, 6 males, 9 mature and 4 immature females, and 2 juveniles (Nos. 32–52), Dec. 29, 1984. Günnerus Bank—1 mature female (No. 53), Feb. 25, 1985.

Distribution: Type locality: South Georgia Island. Other localities: Breid Bay and Günnerus Bank at the entrance of Lützow-Holm Bay, Antarctica.

Diagnosis: Eye indistinct; gills on pereonite IV longer than those on pereonite III in large males; basis of pereopod III shorter than remaining articles combined.

Description. Male, No. 1 from St. 5 (Figs. 4A, 5A–I and 6). Body length 33.4 mm; head and pereonite somites slender. Length of head and pereonite I combined 3.0 mm, and each length of pereonites II–VII, 4.1, 5.8, 5.4, 6.9, 7.0 and 0.9 mm, respectively. Head round dorsally, completely fused with pereonite I. Eye indistinct.

Gnathopod I without coxa. Propodus triangular; proximal knob of palm carrying a grasping and several accessory spines; palm weakly convex, with 2 rows of short stout setae.

Gnathopod II situated near anterior end of pereonite II; coxa vestigial; basis slightly shorter than pereonite II. Propodus elliptical, subequal to 2.5 times of its width; a small knob with a grasping spine situated at 2/5 from proximal end of palm, followed by 2 accessory knobs each with a seta; a small triangular projection with several setae near distal end separated by a shallow "U"-shaped notch from a distal shallowly triangular projection (poison tooth?).

Gills cylindrical; that on pereonite III subequal to 1/2 length of pereonite, and that on pereonite IV subequal to 2/3 as long as pereonite.

Pereopod III feeble, with vestigial coxae; basis longest, but shorter than other

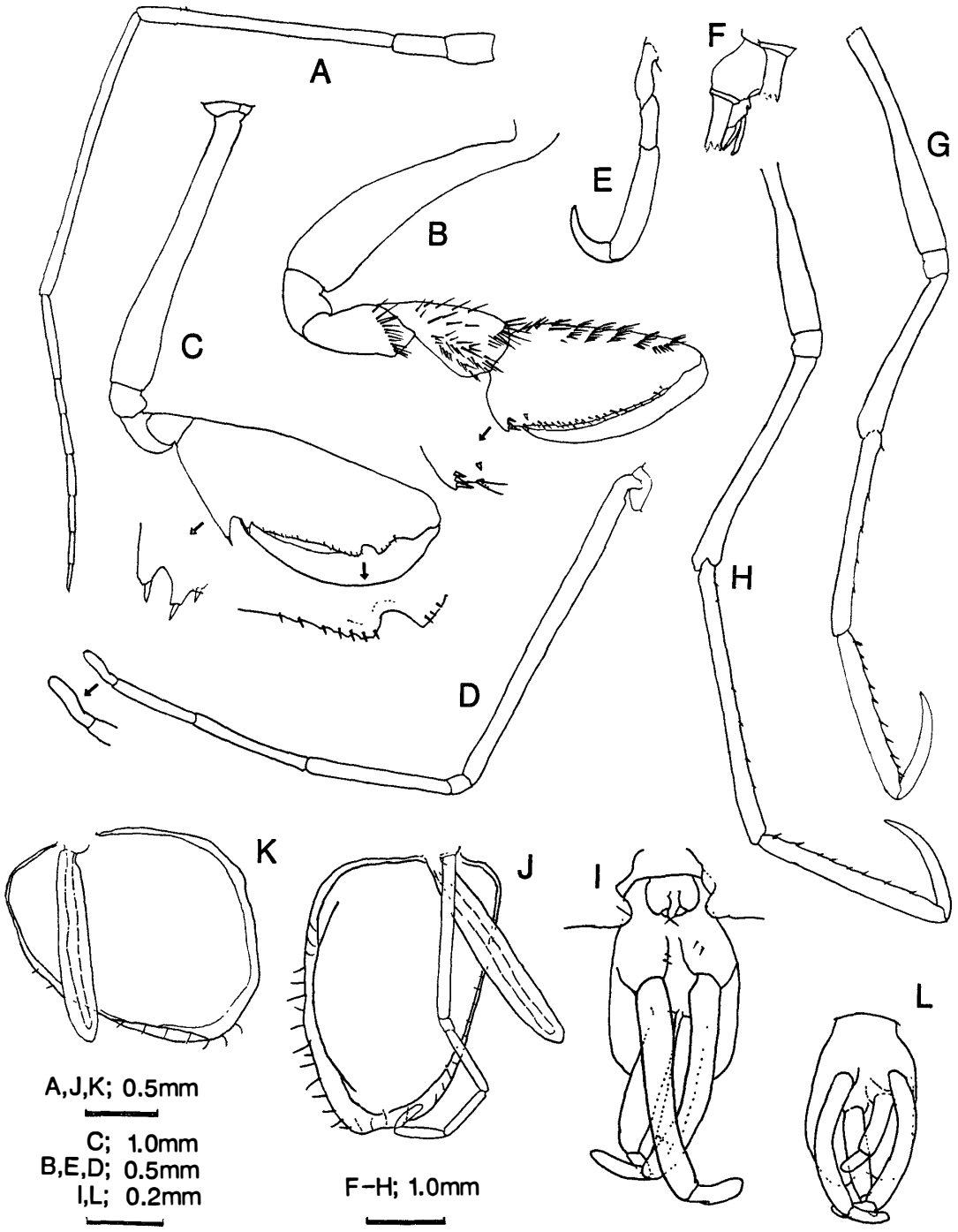

Fig. 5. Dodecasella elegans *K. H. BARNARD, 1931. Male (A–I) and female (J–L) from Breid Bay, Antarctica. A, antenna II; B, gnathopod I; C, gnathopod II; D, pereopod III; E, pereopod V; F, coxae on pereonites VI and VII; G, pereopod VI; H, pereopod VII. I and L, abdomen; J, oostegite on pereonite III with pereopod III and gill; K, oostegite on pereonite IV with gill.*

5 articles combined. Basis to propodus cylindrical, without setae; dactylus spatulate in shape.

Pereopod V without vestigial coxa, articulation between segments I and II in-

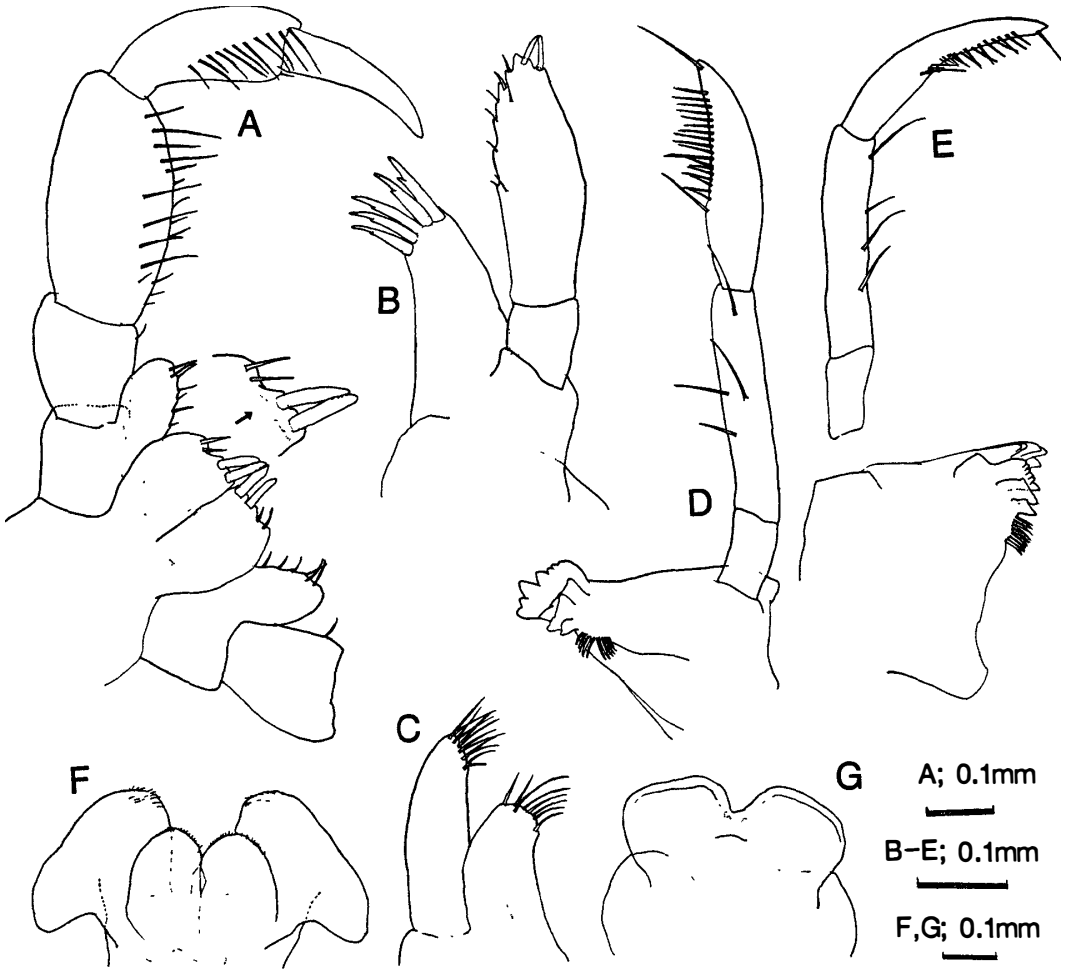

Fig. 6. Dodecasella elegans *K. H. BARNARD, 1931. Male from Breid Bay, Antarctica. A, maxilliped; B, maxilla I; C, maxilla II; D, right mandible; E, left mandible; F, lower lip; G, upper lip.*

complete and oblique; segment III, probable propodus, cylindrical and shallowly curved; dactylus falcate.

Pereopods VI and VII with vestigial coxa. Pereopod V with basis longest; merus posterolaterally expanded to form a round projection; propodus with straight palm, carrying a pair of grasping spines near base followed by 7 spines on inner margin to distal end; dactylus falcate. Pereopod VII longer than pereopod VI; carpus longest.

Pleopod dwarf, right and left ones may be fused at basal part. Ramus unsegmented, short cone-shape, and bearing a long terminal seta. Uropod I cylindrical, curved inwards; ramus about 1/5 of peduncular length. Uropod II weakly curved, about 1/4 of uropod I.

Mouthparts. Inner plate of maxilliped round-pentagonal, with 2 stout teeth on expanded inner half of distal margin and 2 setae on outer half; outer plate digitiform, smaller than inner plate, with 6–7 setae on inner margin; segment II of palp setose on inner margin; segment III carrying an oblique row of setae on lateral surface; segment IV falcate. Outer plate of maxilla I with 5 apical spiniform setae; distal segment of palp with 2 spiniform setae and about 6 setae arranged on the inner margin.

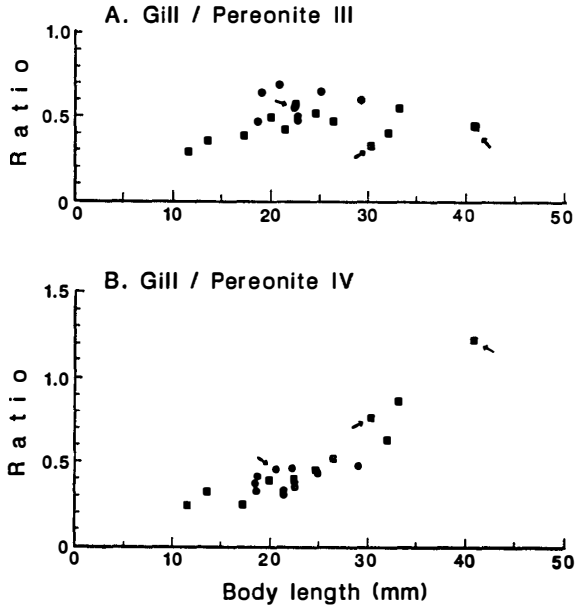

Fig. 7. Dodecasella elegans *K. H. BARNARD, 1931. Ratio of gill length to corresponding pereonite. Squares show males, and circles show females. Arrows indicate the type specimens from South Georgia Island. The other specimens were collected from Breid Bay and the Günnerus Bank at the entrance of Lützow-Holm Bay.*

Outer plate of maxilla II oblong, with several distal setae; inner plate digitiform, with several setae on inner edge. Upper lip symmetrically separated into rectangular-oval projections. Inner lobes of lower lip symmetrically round. Palp segments of right mandible longer in order of II, III and I; setal formula of segment III 1-17-1; incisor divided into 5 teeth; *lacinia mobilis* divided into 6 teeth, followed closely by 2 reverse-trapezoid accessory plates and 9 setal rows. Palp segment III of right mandible bears setal formula 1-18-1; incisor divided into 7 teeth; a large reverse-trapezoid plate instead of *lacinia mobilis* followed by a reverse-trapezoid and a small rectangular plates and 10 setal rows.

Female, No. 38 from St. 8 (Figs. 4B and 5J–L). Body length 22.7 mm. Length of head and pereonite I 1.8 mm; each length of pereonites II–VII, 2.7, 3.1, 3.5, 5.7, 5.1 and 0.8 mm, respectively. Oostegite on pereonite III oblong with a row of marginal setae. Oostegite on pereonite IV rather compressed, with a row of marginal setae on distal part. Abdomen lacking pleopods.

Remarks: The specimens at hand well agree with the type specimens and also with the diagnosis by MCCAIN and GRAY (1971). According to them, *Dodecasella elegans* differs from *D. georgiana* in the following two characters; 1) In *D. elegans* gills on pereonite IV are longer than those on pereonite III, whereas in *D. georgiana*, gills on pereonite IV are shorter than gills on pereonite III; and 2) In males of *D. elegans* basis of pereopod III is shorter than the remaining segments combined, while in *D. georgiana* the ratio is reverse.

Moreover, K. H. BARNARD (1931) noted that male gills on pereonite IV of *Dodecasella elegans* enlarged during growth. Measurements of the proportion of gill length in the present materials and type specimens confirmed that the ratio of gill

length to pereonite IV increases during growth in males, whereas that of gill length to pereonite III is rather stable in both sexes (Fig. 7). The ratio of gill to pereonite IV increases especially after 30 mm in body length, and all the specimens exceeding 30 mm are males. These facts seem to show the sexual dimorphism in the ratio of gill length to pereonite IV. Such sexual dimorphism of the gills has not yet been reported in other species of the Caprellidea, except for the protrusion of basal part of gill on pereonite IV in males of two species of *Heterocaprella* (ARIMOTO, 1976; SWARUPA and RADHAKRISHNA, 1983).

Suborder GAMMARIDEA

Family Podoceridae

Genus *Neoxenodice* SCHELLENBERG, 1926

Remarks: The family Podoceridae had been reviewed and revised by LAUBITZ (1977, 1979, 1983), who recognized 11 genera and subdivided the family into four subfamilies, i. e., Podocerinae, Xenodicinae, Neoxenodicinae and Dulichiinae. The genus *Neoxenodice* SCHELLENBERG, 1926 is the sole representative of the Neoxenodicinae. The generic diagnosis is referred to LABITZ (1983).

Neoxenodice hoshiaii n. sp.

(Figs. 8–11)

Material examined: Breid Bay—St. 5, 1 mature female and 1 male? (paratypes nos. 1, 2), Feb. 8, 1985; St. 8, 1 male? (paratype no. 3), Dec. 29, 1984; St. 9, 1 ma-

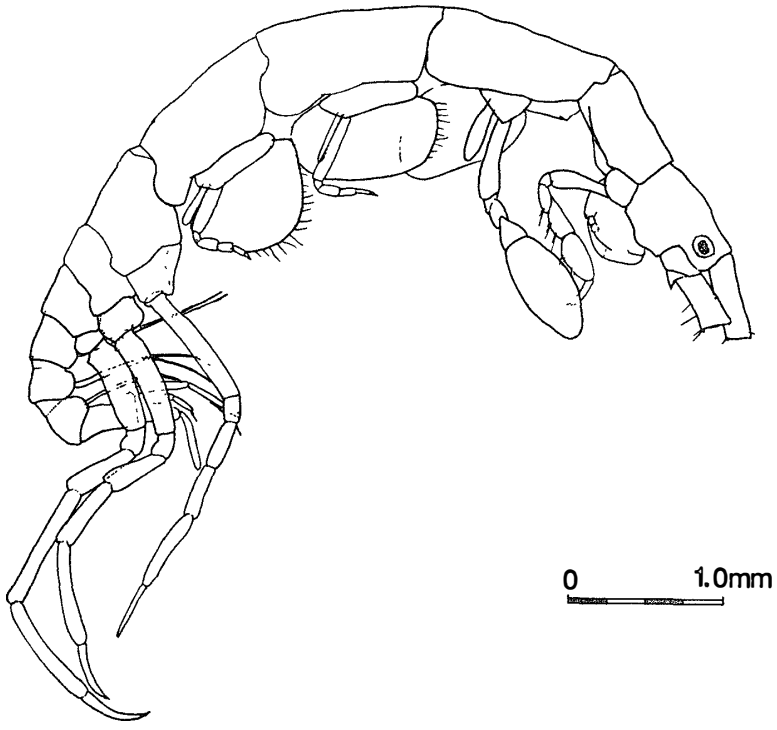

Fig. 8. Neoxenodice hoshiaii *n. sp. Holotype, female, from Breid Bay, Antarctica.*

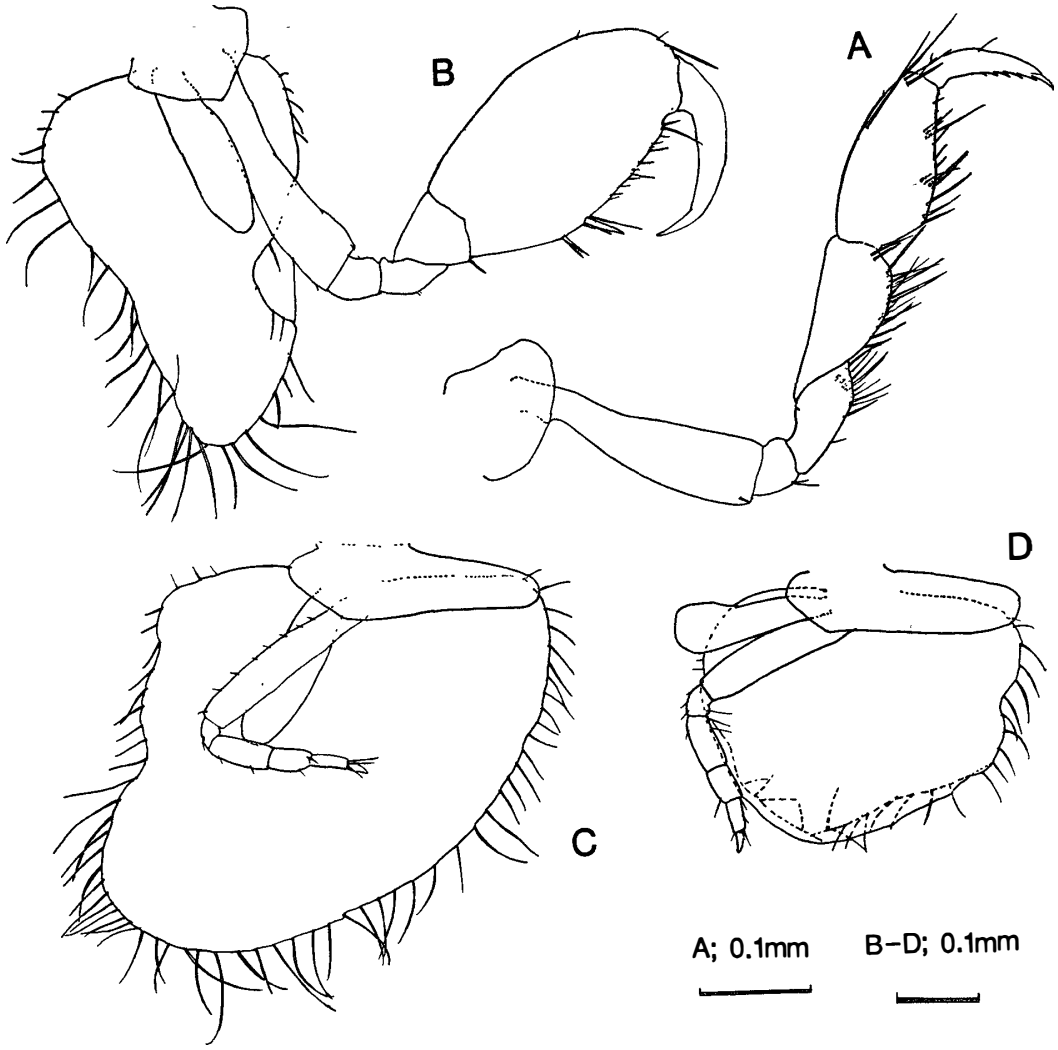

Fig. 9. Neoxenodice hoshiaii *n. sp. Holotype, female, from Breid Bay, Antarctica. A, gnathopod I; B, gnathopod II with oostegite and gill; C, pereopod III with oostegite and gill; D, pereopod IV with oostegite and gill.*

ture female (holotype), and 1 mature and 3 premature females, and 3 males (paratypes nos. 4–10), Feb. 10, 1985. Günnerus Bank—1 mature and 1 premature females (paratypes nos. 11, 12), Feb. 25, 1985.

Etymology: The new species, *Neoxenodice hoshiaii*, is named in honor of Prof. T. HOSHIAI, National Institute of Polar Research, who has greatly contributed to the development of the Polar Biology in Japan.

Distribution: Known only from Breid Bay and Günnerus Bank at the entrance of Lützow-Holm Bay, Antarctica.

Diagnosis: Eye distinct. Basis of gnathopod II subequal to propodus. Palm of propodus convex. Coxa on pereonite III round-pentagonal. Coxae on pereonites IV and V expanded anteriorly. Basis of gnathopod II as long as propodus; palm convex, setose. Propodus of pereopods V to VII shallowly curved. Peduncle of uropod II subequal to telson in length; rami sparsely spinose.

Description of holotype (*Figs. 8–11*): Female, 7.37 mm in body length. Body

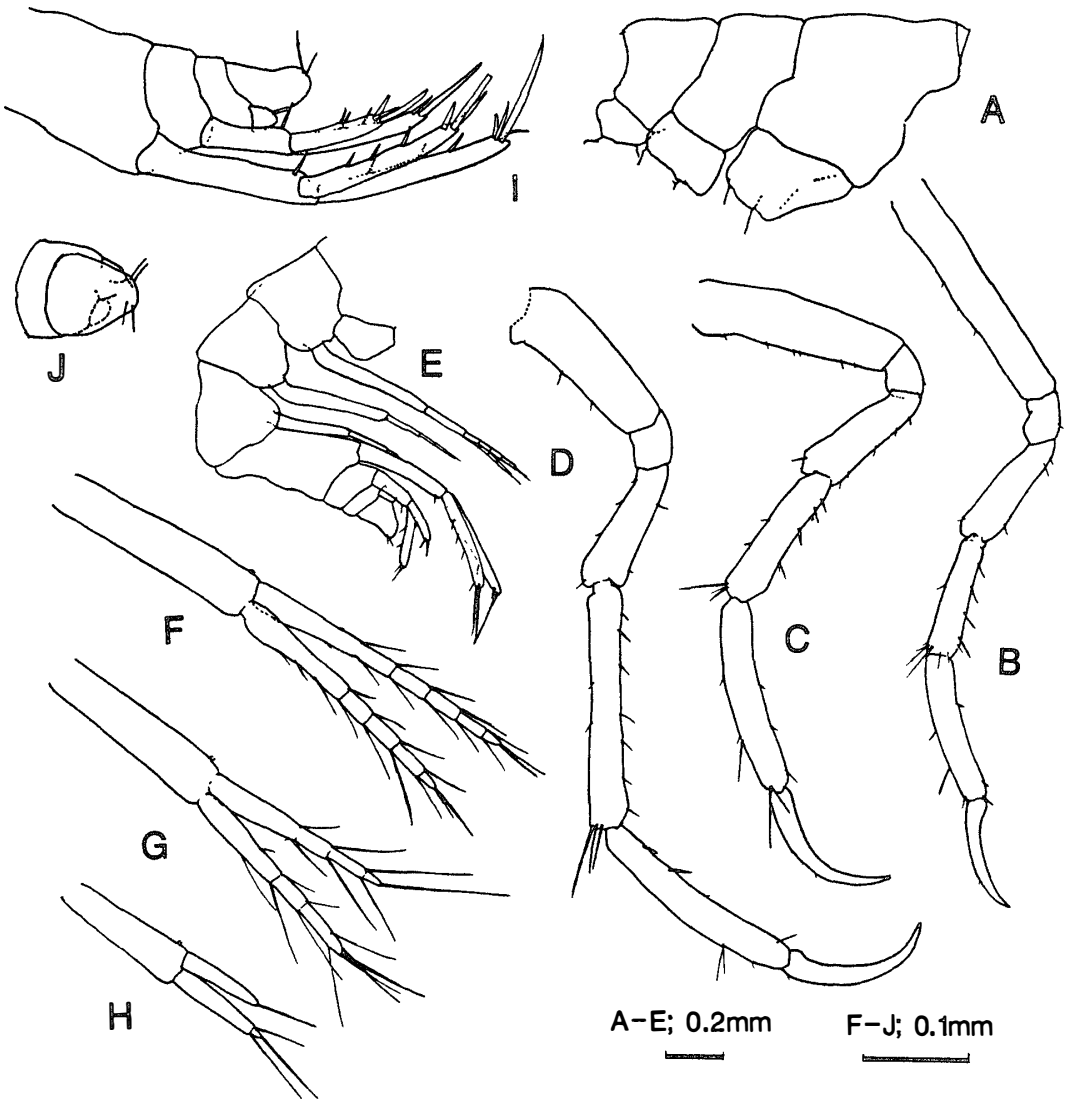

Fig. 10. Neoxenodice hoshiaii *n. sp. Holotype, female, Breid Bay, Antarctica. A, pereonites V–VII; B, pereopod V; C, pereopod VI; D, pereopod VII; E, pleonites I–III with urosome; F, pleopod I; G, pleopod II, H, pleopod III; I, urosome; J, telson.*

cylindrical. Head square; eye distinct, round. Dorsal length of head, pereon, and abdomen 0.67, 5.41 and 1.29 mm, respectively. Pereonites II and III subequal and longer than other pereon segments. Urosome subequal to 1/2 of pleon; ratio of urosomites I–III 21 : 4 : 3.

Antennae I and II, except for peduncular segment(s) I, and I to II, respectively missing.

Gnathopod I smaller than gnathopod II; coxa situated on anterior end of pereonite I, small and square with round posterior corner; posterior margin of merus to propodus setose; carpus as long as propodus; propodus oblong-triangular, with palm convex.

Gnathopod II with coxa small and almost triangular with pointed apex; combination of carpus and propodus oval; palm of propodus convex with a stout spine

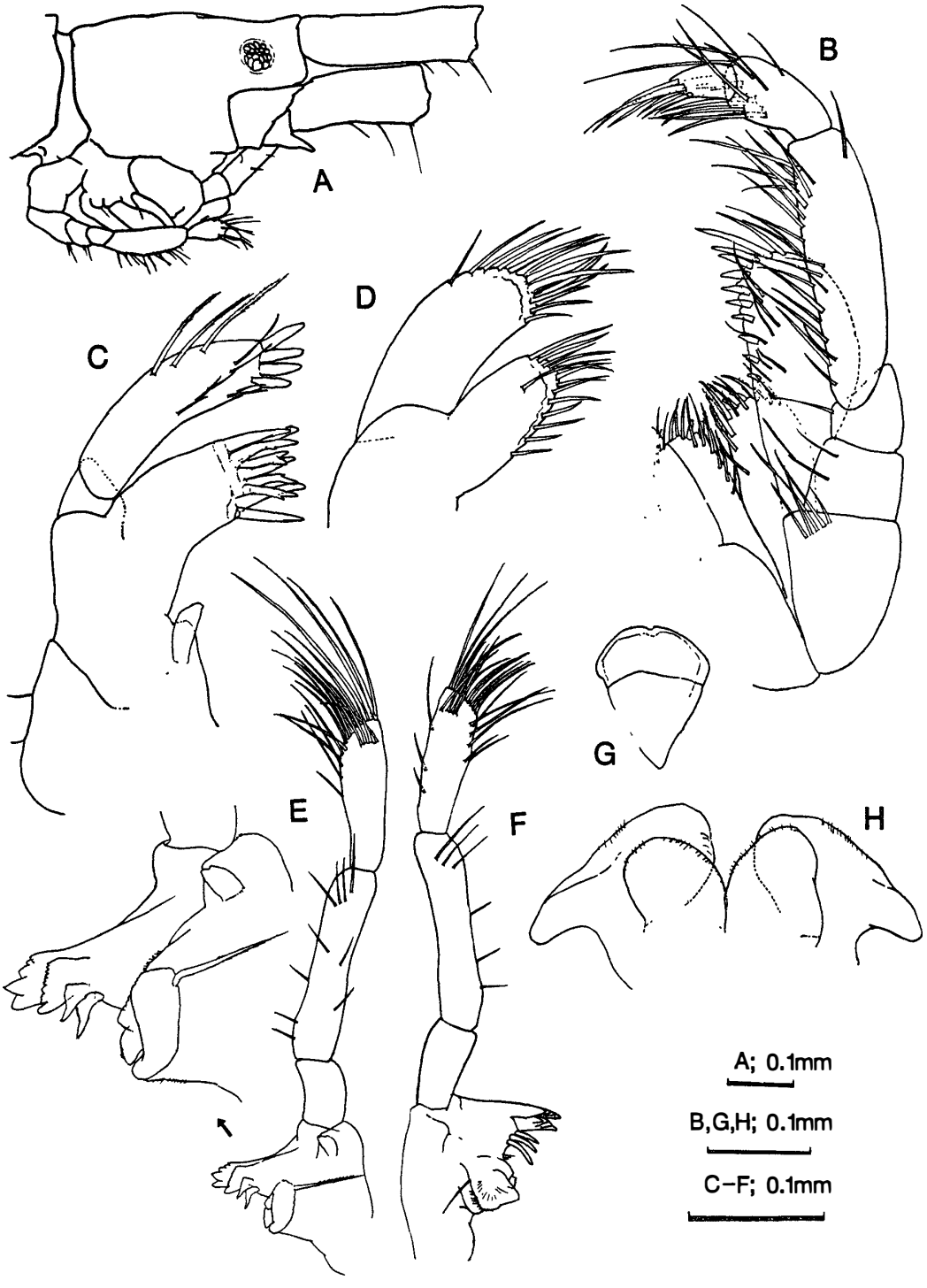

Fig. 11. Neoxenodice hoshiaii *n. sp. Holotype, female, from Breid Bay, Antarctica. A, lateral view of head with mouthparts; B, maxilliped; C, maxilla I; D, maxilla II; E, right mandible; F, left mandible; G, upper lip; H, lower lip.*

at 2/5 from carpal attachment, and setose between the spine and distal end; dactylus falcate.

Pereopods III and IV very short, subequal to 1/3 of pereopods V–VII; coxae compressed, expanded forwards to anterior end of respective pereonites; basis longer

than ischium and dactylus combined; propodus cylindrical; dactylus short.

Gills on pereonites II–IV elliptical.

Oostegites on pereonites II–IV each with a row of marginal setae.

Pereopods V–VII slender and longer towards the rear. Pereopods V and VI with basis longest; merus as long as carpus; propodus rectangular, curved weakly inwards; dactylus falcate. Pereopod VII similar to pereopods V and VI, except for carpus longer than merus and basis combined.

Pleopods longer in order of I to III; peduncle with retinacula of 2 short hooked spines; rami 5-segmented in pleopod I, 3-segmented in II and 1- to 2-segmented in III; basal segment of rami consists of fused 3–4 segments in pleopod I and 2 segments in II.

Uropod I biramous; peduncle extending almost to tip of telson, with a spine on outer distal corner; outer ramus subequal to peduncle, armed with 3 dorsal, a long, and 2 short apical spines. Inner ramus slightly longer than outer ramus which bears 3 dorsal, a long apical, and 3 subapical spines. Uropod II biramous, about 3/5 of uropod I. Peduncle with a spine on distal dorsal surface; outer ramus, subequal to peduncle, with a dorsal, an apical, and 2 subapical spines; inner ramus 3/2 as long as outer ramus, with 2 dorsal, an apical, and a subapical spines. Uropod III small, knob-like in shape, about 1/3 of pedunclar length of uropod II; rami absent.

Telson hemispherical, as long as wide; 2 setae on each side of apex.

Mouthparts: Maxilliped well developed; inner plate extending to 2/5 of outer plate, with 2 short spiniform setae on inner half of apex and about 8 plumose setae on apical and inner margins; outer plate oblong, with 10 spiniform setae on distal inner margin; segment II of palp elliptical, setose on inner margin; segment III expanded distally, with long setae arranged in an oblique row on distal surface; segment IV triangular and shallowly curved, with several apical setae. Outer plate of maxilla I with 9 spiniform setae; inner plate reduced to an elongate vestige; distal segment of palp with 4 wide marginal spines, 3 plumose setae near middle of lateral margin, and 5 setae arranged in an oblique row. Inner and outer plates of maxilla II subequal in length, both setose on the distal margins. Palp segments of right mandible longer in order of II, III, and I; segment II sparsely setose; segment III weakly expanded distally, densely setose near distal part; incisor divided into 5 teeth, *lacinia mobilis* divided into about 10 shallow teeth followed by 2 distally expanded setal rows; molar with a plumose seta on inner margin. Left mandible similar to right mandible, except for *lacinia mobilis* divided into 5 teeth followed by 3 setal rows. Upper lip slightly notched distally. Inner plate of lower lip round; outer plate expanded outwards.

Remarks: Prior to the present study, two species of the genus *Neoxenodice* have been reported, i. e., *N. caprellinoides* SCHELLENBERG, 1926 from abyssal depths near Antarctica (SCHELLENBERG, 1926; J. L. BARNARD, 1962; LEDOYER, 1986), and *N. cryophile* LOWRY, 1976 from Cape Bird and Cape Hallett, 30–250 m deep in the Ross Sea (LOWRY, 1976).

The new species is close to *Neoxenodice cryophile* in having definitive eye and oostegites on pereonites II to IV, but differentiated from *N. cryophile* by the following characteristics: 1) Coxa of gnathopod II, expanding the anterior margin of the pereonite, is almost triangular with acute corner, while that of *N. cryophile* is small pen-

tagonal with round corner; 2) Coxa of pereopod III is largely expanded and more than 2/3 length of pereonite III, while in *N. cryophile* it is less than 1/2 and very small; 3) Coxa of pereopod IV is a little smaller than that of pereopod III in the new species, but larger than that of pereopod III in *N. cryophile*; 4) Basis of gnathopod II is subequal to propodus, while that of *N. cryophile* is about 2/3 length of propodus; and 5) The new species carries two setal rows on the right mandible and three rows on the left one, while *N. cryophile* has four setal rows on at least one of mandibles.

Further, the present new species is well distinguished from *N. caprellinoides* by the following characteristics: 1) Eye is distinctive (lacking in *N. caprellinoides*); 2) Basis of gnathopod II is subequal to propodus in length (less than 2/3 length of the propodus in *N. caprellinoides*); 3) Palm of gnathopod II is convex and sparsely setose (concave and moderately setose in *N. caprellinoides*); and 4) Peduncle of uropod II extends just beyond tip of telson, and rami are sparsely spinose (extends twice as long as telson, with spinose rami in *N. caprellinoides*).

Acknowledgments

The authors express their thanks to Mrs. D. R. LAUBITZ, Canadian Museum of Nature, and Prof. S. GAMÔ, Yokohama National University, for critical reading of the manuscript, to Dr. Y. FUKUDA, Kyushu Jogakuin Junior College, and the crew and scientists of the icebreaker Shirase for collecting and preservation of the specimens, and to Drs. T. HOSHIAI and Y. NAITO, National Institute of Polar Research, for their generous offering of interesting materials for our study. Dr. A. J. BANNER, Natural History Museum, London, kindly loaned the type specimens of *Dodecasella elegans* K. H. BARNARD, 1931 for our study. Dr. A. HIRAYAMA, Asia University, Tokyo, was kind enough to bring our attention to several papers referred in this study.

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(Received April 12, 1991; Revised manuscript received October 9, 1991)