

THE SUBFAMILY NEOGEBICULINAE (DECAPODA, GEBIIDEA,
UPOGEBIIDAE) IN THE SOUTH CHINA SEA

BY

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ABSTRACT

Three species of the subfamily Neogebiculinae Sakai, 2006 are recorded from the Beibu Gulf (Tonkin Gulf), northern South China Sea. The first species, *Neogebicula wistari* Ngoc-Ho, 1995 is recorded for the first time from Chinese waters. The other two are described as new to science in this paper. The present authors take great pleasure to name them as *Paragebicula bijdeleyi* sp. nov. and *Neogebicula holthuisi* sp. nov. to honor the great carcinologist, the late Dr. Lipke Bijdeley Holthuis. *Neogebicula holthuisi* is closely allied to *N. monochela* (Sakai, 1967) but differs markedly in having an elongate rostrum. *Paragebicula bijdeleyi* sp. nov. is closely related to *P. edentata* (Lin, Ngoc-Ho & Chan, 2001) but differs markedly in the rostrum bearing marginal denticles.

RÉSUMÉ

Trois espèces de la sous-famille des Neogebiculinae Sakai, 2006 sont signalées dans le Golfe de Beibu (Golfe de Tonkin), nord de la mer de Chine du Sud. Le première espèce, *Neogebicula wistari* Ngoc-Ho, 1995 est signalée pour la première fois dans les eaux chinoises. Les deux autres sont décrites dans cet article comme nouvelles pour la science. C'est avec un grand plaisir que les auteurs les dédient à la mémoire du grand carcinologiste Dr. Lipke Bijdeley Holthuis, en les nommant *Paragebicula bijdeleyi* sp. nov. et *Neogebicula holthuisi* sp. nov. *Neogebicula holthuisi* est étroitement apparentée à *N. monochela* (Sakai, 1967) mais en diffère significativement par son rostre allongé. *Paragebicula bijdeleyi* sp. nov. est proche de *P. edentata* (Lin, Ngoc-Ho & Chan, 2001) mais s'en distingue nettement par son rostre orné de denticules marginaux.

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INTRODUCTION

While working on a systematic study of the gebiidean fauna of the China Sea, two new species and one new record of the subfamily Neogebiculinae Sakai, 2006 were encountered in samples from the Beibu Gulf, northern South China Sea. The subfamily Neogebiculinae currently includes two genera, *Neogebicula* Sakai, 1982 and *Paragebicula* Sakai, 2006, both characterized by the uropodal endopod and exopod being narrow, leaf-like. In *Neogebicula* the uropodal exopod is slender and simply rounded distally, and the lateral ridges of the gastric region are widely diverging anteriorly, whereas in *Paragebicula* the uropodal exopod is also slender, but truncated distally, and the lateral ridges of the gastric region are only narrowly diverging anteriorly. Three species had been described in *Neogebicula*, viz. *N. alaini* Sakai, 1982, *N. monochela* (Sakai, 1967) and *N. wistari* Ngoc-Ho, 1995; whilst five species are known in *Paragebicula*, viz. *P. contigua* (Božić & de Saint Laurent, 1972), *P. edentata* (Lin, Ngoc-Ho & Chan, 2001), *P. fallax* (de Man, 1905), *P. gracilis* (Ngoc-Ho, 1990) and *P. leptomorpha* Sakai, 2006.

In the current contribution we describe and illustrate two new species, *N. holthuisi* sp. nov. and *P. bijdeleyi* sp. nov. from the Beibu Gulf, as well as record *N. wistari* Ngoc-Ho, 1995, for the first time from the South China Sea.

Material for this study were collected in the Beibu Gulf (Gulf of Tonkin) (1959-1960, 1962). All material examined is deposited in the Institute of Oceanology, Chinese Academy of Sciences, Qingdao, China (IOCAS). The drawings were made with the aid of drawing tube mounted on a Zeiss Stemi Sv11 compound microscope. The following abbreviation is used throughout the text: cl, length of carapace.

TAXONOMY

Family UPOGEBIIDAE Borradaile, 1903

Subfamily NEOGEBICULINAE Sakai, 2006

Neogebicula Sakai, 1982

***Neogebicula holthuisi* sp. nov.**

(figs. 1-3)

Material examined. — Holotype female (cl 3.4 mm), X161A-12, Beibu Gulf 19°75'N, 107.5°00'E, 58 m, coarse silt, Fuzeng Sun coll., 14 January 1962.



Fig. 1. *Neogebicula holthuisi* sp. nov. Holotype female, X161A-12, entire animal, lateral view. Scale = 1 mm.

Description. — Rostrum (figs. 1A, 2A, B) triangular with angular tip, distinctly longer than eyestalk, extending to the penultimate article of antennular peduncle; dorsal surface unarmed but setose, with a median shallow groove; lateral margin unarmed. Lateral ridges of gastric region anteriorly diverging slightly widely, tip rounded, and separated from median gastric region by longitudinal grooves; median gastric region setose and spineless. Anterolateral border of carapace with 2 spines; cervical groove long and deep, bearing 3 subdistal spines.

Eyestalks stout, unarmed, cornea fully pigmented, pink (in alcohol). Antennular peduncle distinctly shorter than antennal peduncle, unarmed. Antennal peduncle thick, article 2 with 1 lower spine; article 3 with ovate scale pointed at tip on upper surface; article 4 unarmed.

Maxilliped 3 (fig. 2C) with exopod present, proximal segment of exopod reaching to distal part of ischium, and flagellum reaching to distal part of merus.

Pereopod 1 subchelate (fig. 3A, B). Ischium unarmed; merus about 3.5 times as long as high, unarmed; carpus triangular, about 0.5 length of merus, with 1 broad dorsal subdistal spine; propodus 3.5 times as long as high, 1.5 length of carpus, unarmed; fixed finger triangular, cutting edge curved and smooth; dactylus obtuse with corneous tip, about 0.7 length of palm, lower margin

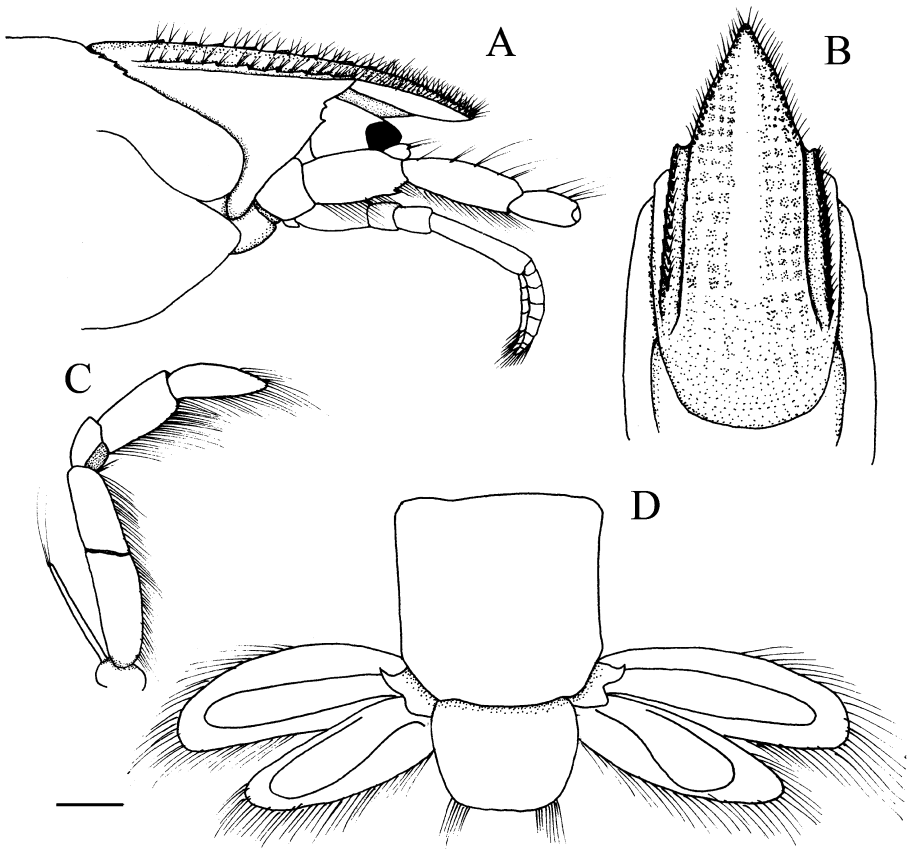


Fig. 2. *Neogebicula holthuisi* sp. nov. Holotype female, X161A-12. A, anterior carapace, lateral view; B, anterior carapace, dorsal view; C, maxilliped 3, outer view; D, abdominal somite 6, telson and uropods, dorsal view. Scale = 1 mm for A-C; 0.8 mm for D.

slightly concave, unarmed, lateral surface carinate medially, upper surface smooth.

Pereopod 2 (fig. 3C) with ischium unarmed; merus about 4.3 times as long as high, unarmed; carpus triangular, about 0.5 length of merus, with 1 dorsal subdistal and 1 lower subdistal spines; propodus 2.0 times as long as high, slightly shorter than carpus, unarmed; dactylus almost as long as propodus, pointed at tip.

Pereopod 3 missing.

Pereopod 4 (fig. 3D) unarmed; dactylus elongate, as long as propodus.

Pereopod 5 (fig. 3E) subchelate, unarmed, dactylus slender and curve.

Pleopod 1 present, uniramous; pleopod 2-5 biramous, with exopods larger than endopods.

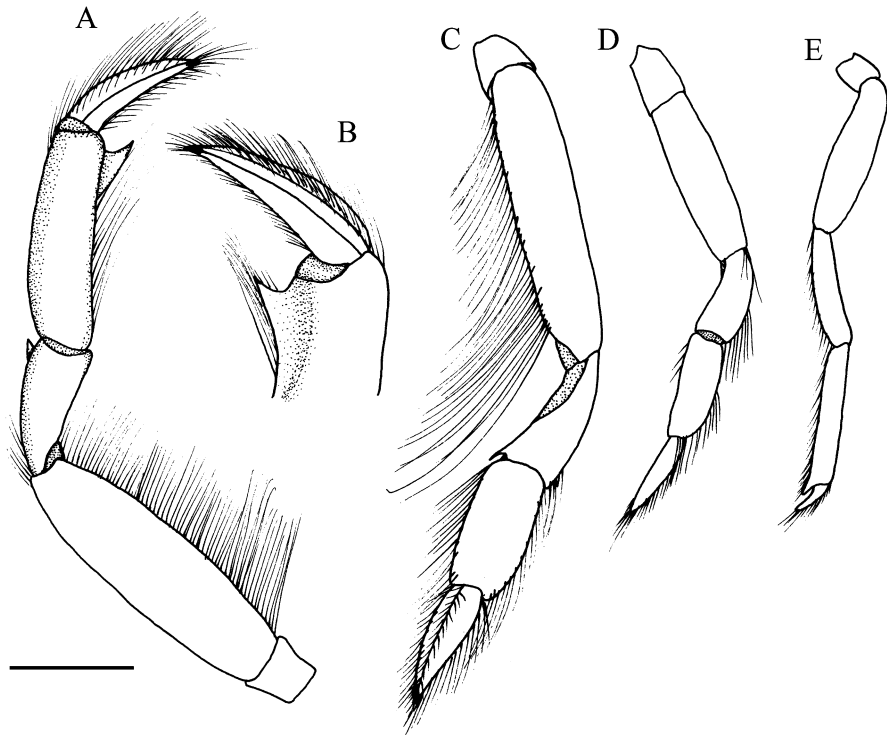


Fig. 3. *Neogebicula holthuisi* sp. nov. Holotype female, X161A-12. A, pereopod 1, outer view; B, pereopod 1, mesial view; C, pereopod 2, outer view; D, pereopod 4, outer view; E, pereopod 5, outer view. Scale = 1 mm for A, C, D, E; 0.6 mm for B.

Abdominal sternites smooth. Telson (fig. 2D) trapezoid, 1.4 times as wide as long and about 0.5 length of abdominal somite 6; distal margin truncate and without median spine. Uropodal protopod bearing strong anterolateral spine; exopod sub-rectangular, about 3.0 times as long as wide, rounded on distal margin; endopod shorter than exopod, about 2.5 times as long as wide.

Remarks. — The new species is the fourth species of the genus. It is distinguished from the other three species as the rostrum is distinctly longer than eyestalk (vs. slightly longer than eyestalk) and a narrow lateral ridge. It is similar to *N. monochela* from Japan, in pereopod 1 being subchelate, but differs in the merus of pereopod 1 being unarmed (vs. with 7 lower and 1 upper spines); the carpus with an upper spine (vs. unarmed) and the ischium and merus of maxilliped 3 being unarmed (vs. with lower spines).

Etymology. — The species is named in honour of the late Dr. Lipke Bijdeley Holthuis for his great contribution to the world carcinology.

Distribution and habitat. — Presently only known from the type locality, at a depth of 58 m on a coarse silt bottom.

***Neogebicula wistari* Ngoc-Ho, 1995**

(figs. 4-6)

Neogebicula wistari Ngoc-Ho, 1995: 81, figs. 1-2; Davie, 2002: 482.

Material examined. — male (cl, 3.4 mm, pereopod 1 broken), X52A-3, Beibu Gulf, 19.75°N, 107.5°E, 47 m, muddy sand, Fuzeng Sun coll., 14 January 1962.

Previous records. — Australia: Wistari Reef, Queensland, 23°29'S 151°53'E, in soft sand.

Remarks. — Ngoc-Ho (1995) only described two female specimens. Our male specimen almost completely agrees with the original description, but differs in the anterolateral border of the carapace being unarmed (vs. with 4-5 spinules); carpus of pereopod 1 shorter, about 1.5 times as long as wide (vs. about 2.6 times); telson being a little longer, about 1.3 times as wide as long (vs. about 1.4 times).

Dworschak (2009) reported three very small specimens as *N. cf. wistari* from Persian-Arabian Gulf, lacking all legs. These are similar to our specimen in the anterolateral border of carapace being unarmed, but differ in the rostrum being a little shorter and the antennal scale terminating in 1 spine.

Paragebicula Sakai, 2006

***Paragebicula bijdeleyi* sp. nov.**

(figs. 7-9)

Material examined. — Holotype female (cl, 9.0 mm), Y31B-20, Beibu Gulf 18.5°N 106.5°E, 41.5 m, muddy sand, Xiutong Ma coll., 14 January 1962.

Description. — Rostrum (figs. 7A, 8A, B) triangular with pointed tip, extending to the penultimate article of antennular peduncle; upper surface unarmed but setose, with a median shallow groove; each lateral margin bearing 5 unequally distributed teeth. Lateral ridges of gastric region anteriorly diverging narrowly, tip small and rounded, and separated from median gastric region by longitudinal grooves; median gastric region setose and spineless. Anterolateral border of carapace with 1 spine; cervical groove long and deep, bearing 6 spines.

Eyestalks stout, unarmed, cornea fully pigmented, pink (in alcohol). Antennular peduncle distinctly shorter than antennal peduncle, first article with 1 ventrodiscal spine. Antennal peduncle thick, article 2 with 2 lower spines;

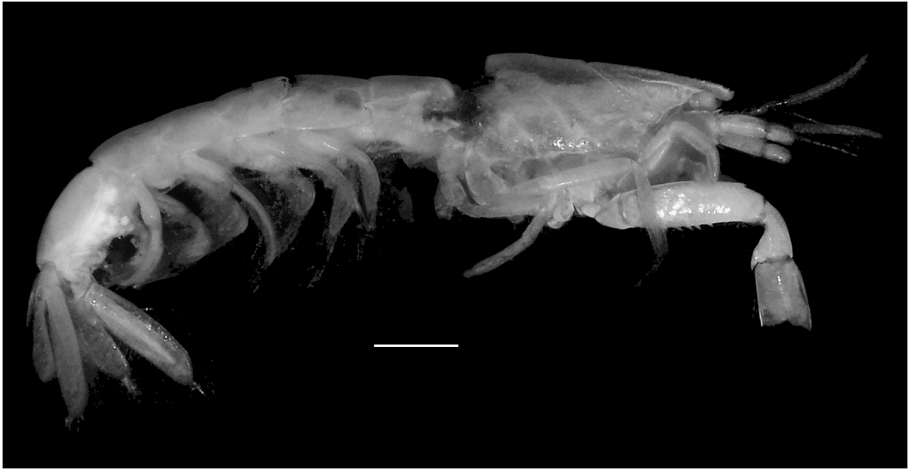


Fig. 4. *Neogebicula wistari* Ngoc-Ho, 1995. Male, X52A-3. Entire animal, lateral view. Scale = 1 mm.

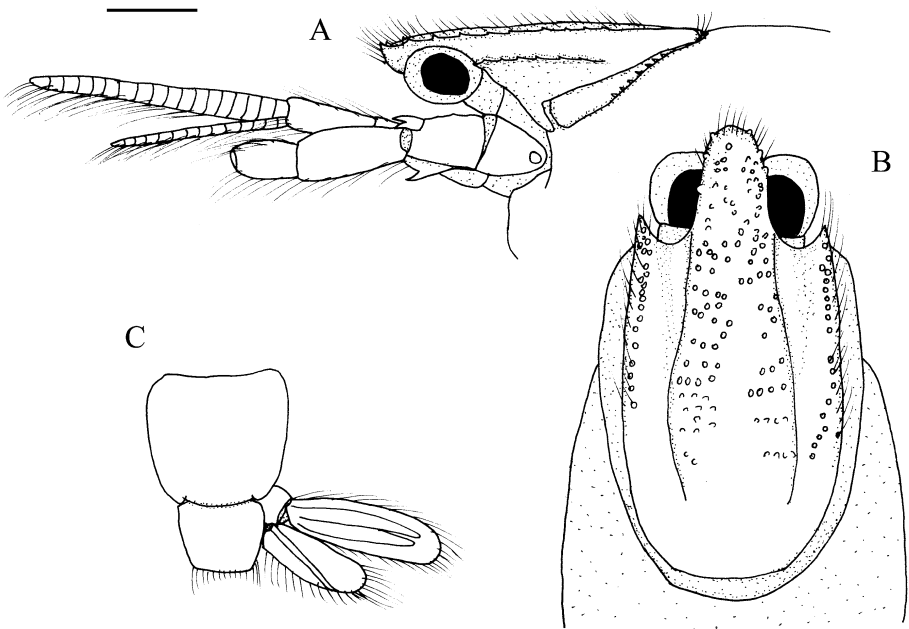


Fig. 5. *Neogebicula wistari* Ngoc-Ho, 1995. Male, X52A-3. A, anterior carapace, lateral view; B, anterior carapace, dorsal view; C, abdominal somite 6, telson and right uropod, dorsal view. Scale = 1.6 mm for A; 2.64 mm for B; 1 mm for C.

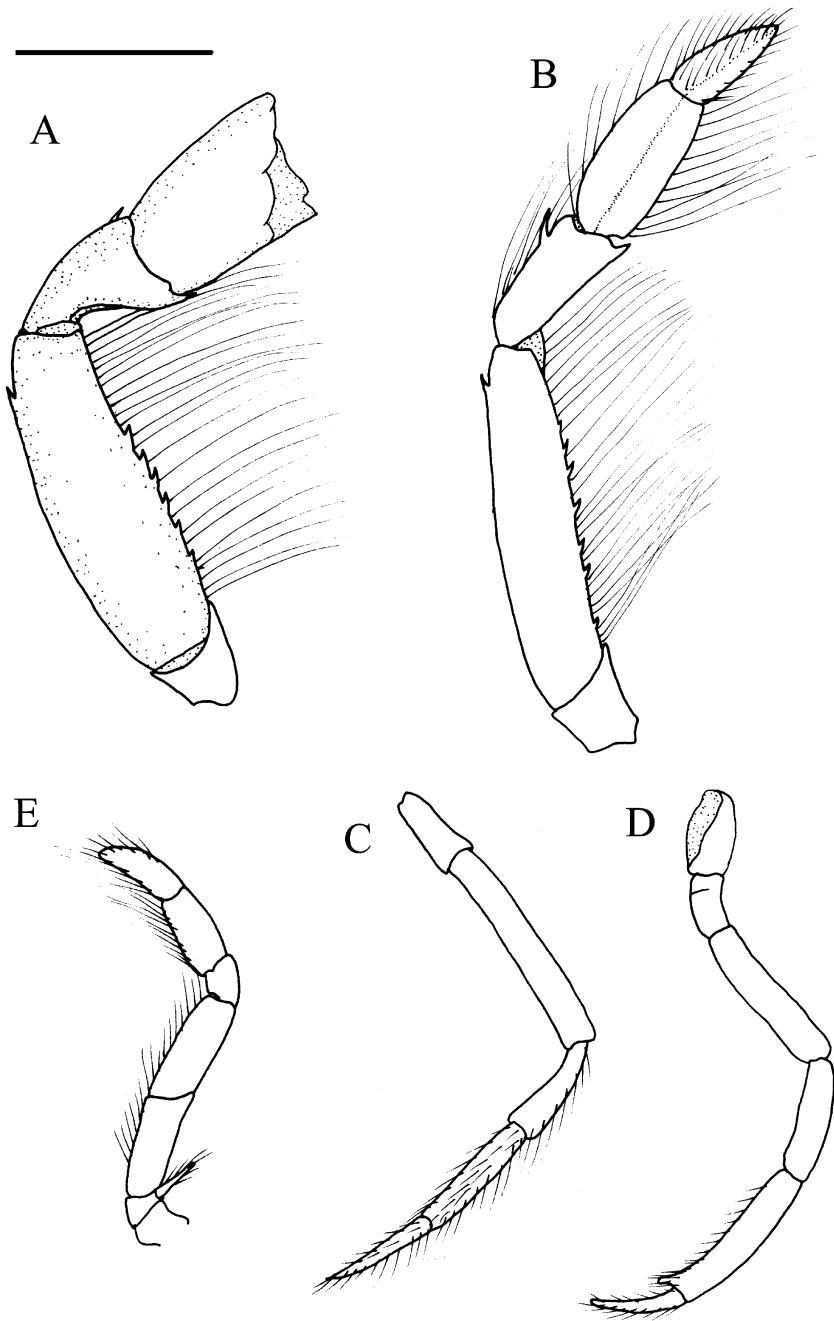


Fig. 6. *Neogebicula wistari* Ngoc-Ho, 1995. Male, X52A-3. A, pereopod 1, outer view; B, pereopod 2; C, pereopod 4, outer view; D, pereopod 5, outer view; E, maxilliped 3, outer view. Scale = 1 mm.



Fig. 7. *Paragebicula bijdeleyi* sp. nov. Holotype female, Y31B-20. Entire animal, lateral view. Scale = 1 mm.

article 3 with ovate scale pointed at tip on upper surface; article 4 with 3 lower spines near basal half.

Maxilliped 3 (fig. 8C) exopod present, proximal segment of exopod reaching to distal part of ischium, and flagellum reaching to distal part of merus.

Pereopod 1 subchelate (fig. 9A-C). Ischium with 3 lower spine; merus about 3.7 times as long as high, with 6 lower spines and 1 subterminal spine on upper margin; carpus triangular, about 0.5 length of merus, with 2 (1 broken in holotype) dorsal subdistal and 1 lower subdistal spines, 1 spine on middle lower margin and 1 spine (broken in holotype) on mesodistal margin; propodus 3.5 times as long as high, 1.5 length of carpus, with row of 5 spines on upper margin and 2 proximal spines on lower margin; fixed finger triangular and distally sharp, cutting edge slightly curved and with a small proximal denticles; dactylus obtuse with corneous tip, about 0.7 length of palm, lower margin arched, smooth, with 3 small proximal denticles, lateral surface carinate medially, upper surface carinate and with a row of fine translucent granules to whole extent except basal 1/4.

Pereopod 2 (fig. 9D) ischium unarmed; merus with 3 lower and 1 curved upper subdistal spines; carpus with 4 dorsal subdistal and 1 lower subdistal spines; propodus about 2.1 times as long as high, unarmed; dactylus pointed at tip, about 0.6 length of propodus.

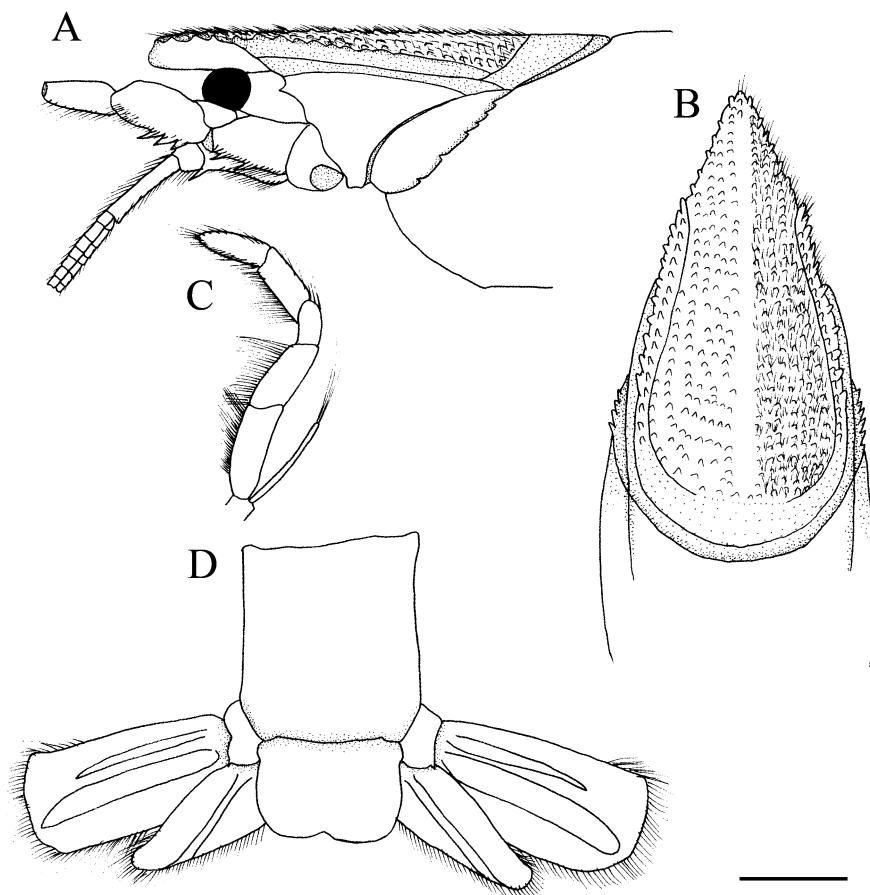


Fig. 8. *Paragebicula bijdeleyi* sp. nov. Holotype female, Y31B-20. A, anterior carapace, lateral view; B, anterior carapace, dorsal view; C, maxilliped 3, outer view; D, abdominal somite 6, telson and uropods, dorsal view. Scale = 1 mm for A, B; 0.64 mm for C, D.

Pereopod 3 (fig. 9E) ischium unarmed; merus with 4 lower spines; carpus with 1 curve lower subdistal spine; propodus about 1.8 times as long as high, unarmed, mesial surface with a longitudinal carina; dactylus slender, about 0.7 length of propodus.

Pereopod 4 (fig. 9F) unarmed; dactylus elongate, slightly longer than propodus.

Pereopod 5 (fig. 9G) subchelate, unarmed; dactylus elongate and curve.

Pleopod 1 present, uniramous; pleopod 2-5 biramous, with exopods larger than endopods.

Abdominal sternites smooth. Telson (fig. 8D) broad, 1.5 times as wide as long and about 0.5 length of abdominal somite 6; distal margin concave and

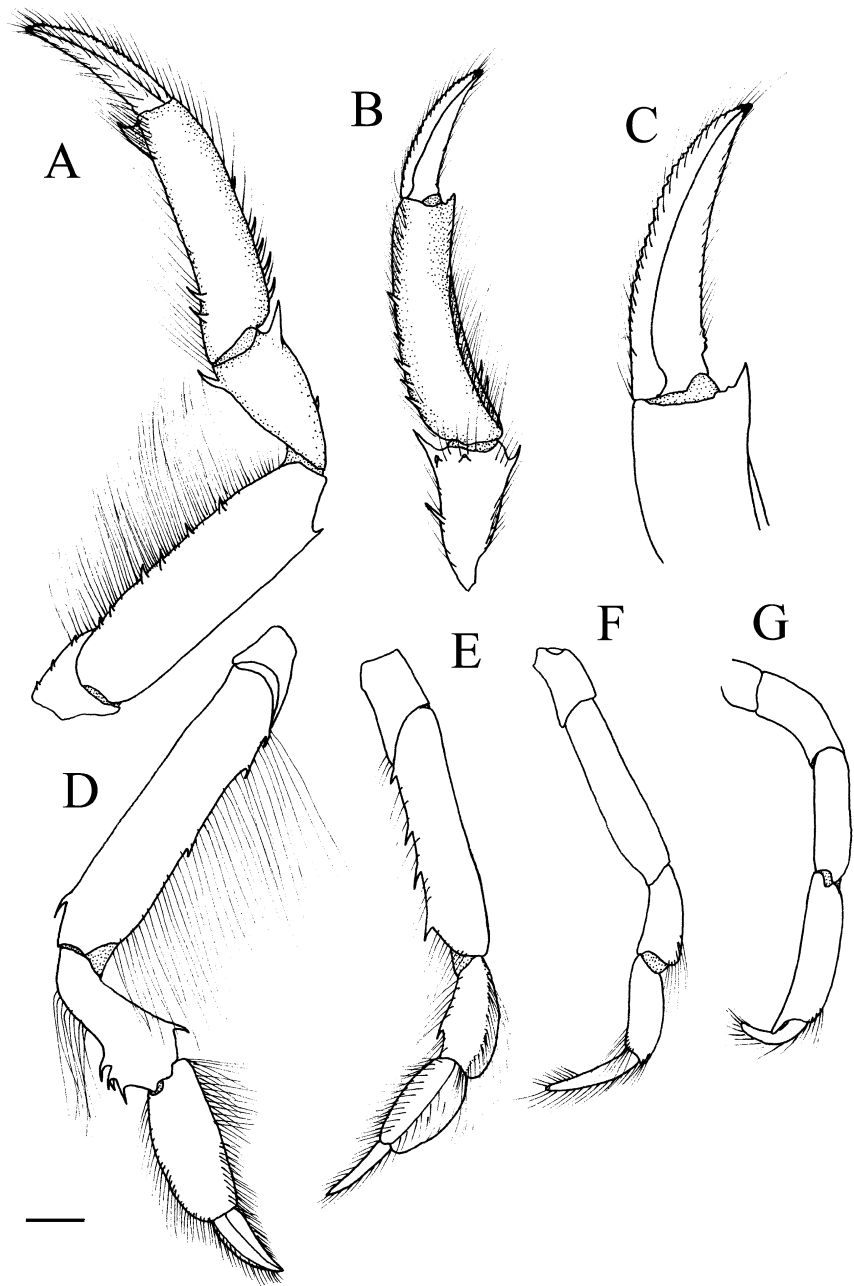


Fig. 9. *Paragebicula bijdeleyi* sp. nov. Holotype female, Y31B-20. A, pereopod 1, outer view; B, pereopod 1, mesial view; C, subchela, mesial view; D, pereopod 2, outer view; E, pereopod 3, outer view; F, pereopod 4, outer view; G, pereopod 5, outer view. Scale = 1 mm for A, B, D, E, F, G; 0.5 mm for C.

without median spine. Uropodal protopod bearing posterolateral spine; exopod rectangle, about 2.0 times as long as wide, truncate on distal margin; endopod shorter than exopod, about 2.1 times as long as wide.

Remarks. — The new species is the sixth species in the genus. It is similar to *P. edentata* from Taiwan, in the rostrum tip being obtuse and the lateral ridges of the gastric region being very narrow; the upper margin of pereopod 1 propodus with spines and a distally concave telson. The new species can be easily distinguished by the rostrum bearing marginal denticles (vs. lacking); a cervical groove with 6 spines (vs. unarmed); abdominal somite 6 being distinctly longer than wide (vs. almost equal) and the telson being short, about 1.5 times as wide as long (vs. 1.3 times as long as wide).

Etymology. — The species is named in honour of the late Dr. Lipke Bijdeley Holthuis for his great contribution to the world of carcinology.

Distribution and habitat. — Presently only known from the type locality, at a depth of 41.5 m on a muddy sand bottom.

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