



***Balssia antipodarum* sp. nov., the first occurrence of the genus *Balssia* Kemp in the Indo-West Pacific region (Crustacea: Decapoda: Pontoniinae)**

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Abstract: A third species of the pontoniine shrimp genus *Balssia* Kemp, 1922, *B. antipodarum* sp. nov., is described and illustrated. The single specimen was collected from the northern Tasman Sea, near Norfolk Island, at a depth of 111-115 m. This is the first occurrence of the genus in the Indo-Pacific region, a maximal range extension as the genus is previously known from the Atlantic Ocean and Mediterranean Sea only.

Résumé : *Balssia antipodarum* sp. nov., première espèce du genre *Balssia* Kemp dans la région indo-pacifique ouest (Crustacea : Decapoda : Pontoniinae). Une troisième espèce de crevette Pontoniinae du genre *Balssia* Kemp, 1922, *B. antipodarum* sp. nov., est décrite et illustrée, d'après un spécimen unique. Ce dernier a été recolté dans le nord de la Mer de Tasman, près de Norfolk Island, à une profondeur de 111-115 mètres. C'est le premier signalement du genre *Balssia* dans l'Indo-Pacifique car, à ce jour, celui-ci n'était connu que dans l'Atlantique orientale et la Méditerranée.

Keywords: *Balssia antipodarum* sp. nov., Decapoda, Pontoniinae, Tasman Sea, Systematics, Morphology, Zoogeography.

Introduction

In the subfamily Pontoniinae there is comparatively little overlap between the numerous genera occurring in the Indo-West Pacific region and the smaller number found in the Atlantic-Mediterranean region. At present 70 genera are known from the former region and 15 from the latter. Only 5 genera are definitely represented in both regions, *Palaemonella* Dana, *Periclimenaeus* Borradaile, *Periclimenes* Costa, *Tuleariocaris* Hipeau-Jacquotte, *Typton* Costa and, possibly, *Pontoniopsis* Borradaile. To this small number, the genus *Balssia* may now be added.

The genus *Balssia* was created by Kemp (1922) for the reception of a pontoniine shrimp, *Amphipalaemon gasti*

Balss, 1921, then referred to the Anchistoididae. The only other species so far referred to this genus is *B. noeli* Bruce, 1998. Both these species occur in the western Mediterranean Sea and *B. gasti* in the eastern North Atlantic Ocean. The discovery of a third species of this genus in the Tasman Sea is thus a surprising extension of the known range of this genus.

The single specimen was collected by the NORFANZ 2003 Expedition which explored the deep sea habitats of the Tasman Sea, particularly of sea mounts and the abyssal plain around Lord Howe and Norfolk Islands. The expedition was carried out aboard the NIWA research vessel *Tangeroa*.

Abbreviations used: CL, postorbital carapace length. NIWA, National Institute of Water & Atmospheric Research, Wellington; NORFANZ, Norfolk Island, France, Australia and New Zealand.

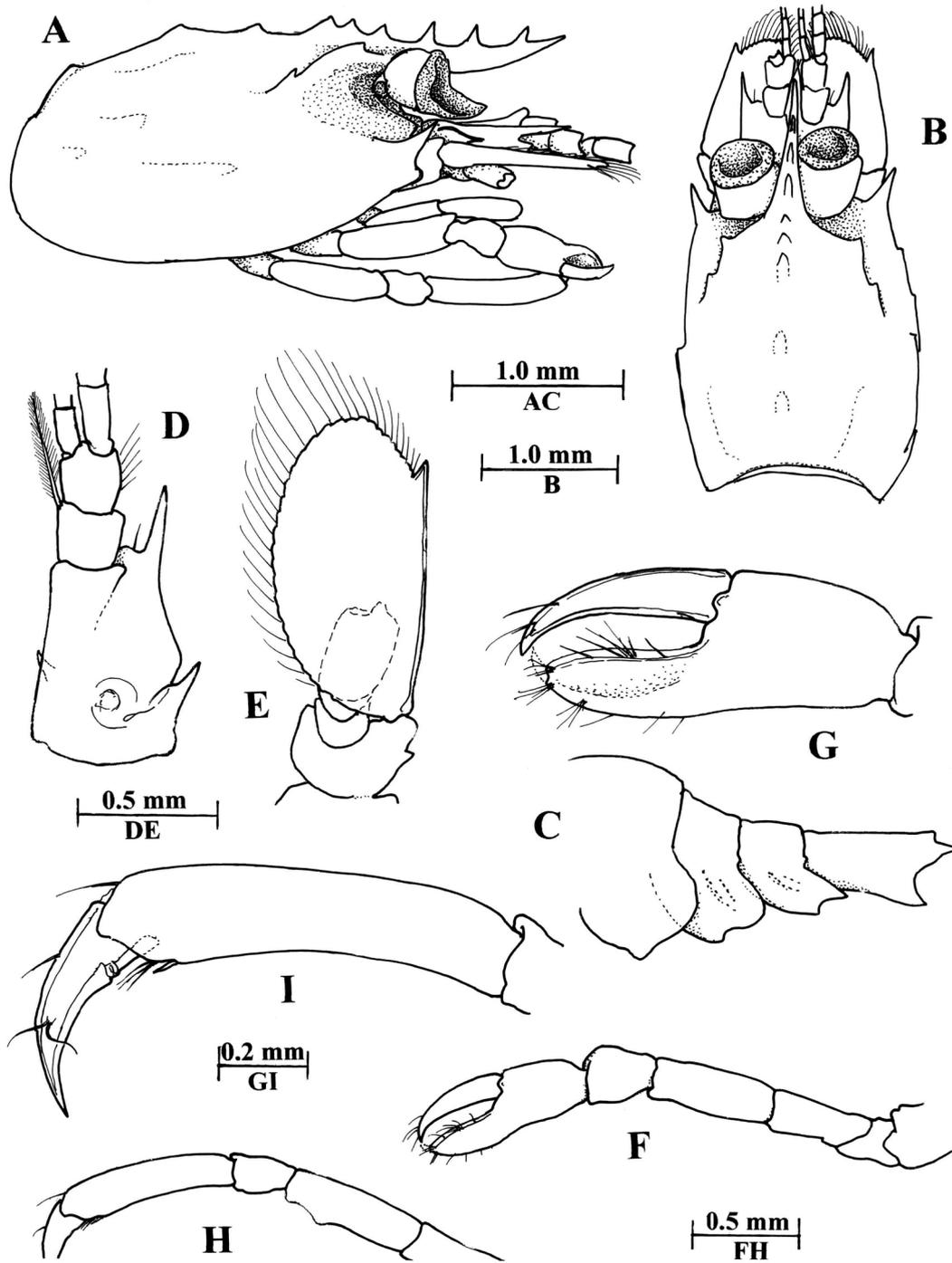


Figure 1. *Balssia antipodarum* sp. nov., holotype, Tasman Sea. **A.** Carapace and appendages, lateral. **B.** Same, dorsal. **C.** Posterior abdomen, lateral. **D.** Antennule, peduncle. **E.** Antenna. **F.** Second pereopod. **G.** Same, chela, lateral. **H.** Third pereopod. **I.** Same, propod and dactyl.

Figure 1. *Balssia antipodarum* sp. nov., holotype, Mer de Tasman. **A.** Carapace et appendices, vue latérale. **B.** Idem, vue dorsale. **C.** Partie postérieure de l'abdomen, vue latérale. **D.** Pédoncule de l'antennule. **E.** Antenne. **F.** Second péréiopode. **G.** Pince du second péréiopode, vue latérale. **H.** Troisième péréiopode. **I.** Idem, propode et dactyle.

The holotype specimen is deposited in the collection of Te Papa Museum, Wellington, New Zealand.

Systematics

Crustacea Decapoda

Family PALAEMONIDAE Rafinesque, 1815

Sub-family Pontoniinae Kingsley, 1878

Genus *Balssia* Kemp, 1922

Diagnosis

Small pontoniine shrimps of subcylindrical, slightly depressed body form. Rostrum well developed, subcylindrical, dorsally dentate, ventrally unarmed. Carapace with orbit deeply developed, with large dentate supraorbital carina, epigastric and cardiac teeth or tubercles present, hepatic spine absent, antennal spine large, inferior orbital angle distinct, pterygostomial angle with or without distinct sinus. Antennule with very strong distolateral tooth on proximal peduncular segment. Antenna normal, robust, scaphocerite well developed. Eye with well developed globular cornea. Epistome unarmed. Mandible without palp, molar and incisor processes normal. Maxilla with endite bilobed. Maxillipeds with flagella of exopods obsolescent. Third maxilliped with ischiomerus and basis fused, with arthrobranch (or without ?). Fourth thoracic sternite without finger-like median process. First pereopods slender, fingers simple. Second pereopods similar, subequal, palm not strongly compressed, smooth, fingers without molar process and fossa, fixed finger expanded, scaphoid. Ambulatory dactyls simple, robust, strongly curved. Posterior margin of fifth pleuron acute. Telson with two pairs of small dorsal spines, posterior margin with three pairs of spines. Exopod of uropod with acute tooth and mobile spinule only.

Balssia antipodarum sp. nov.
(Figs 1-3)

Material

1 ♀, holotype, North Norfolk Ridge, north of Norfolk Island, NORFANZ stn 024, 28°54.39'S 167°41.05'E, 111-115 m, beam trawl, 15 May 2003. (NMNZ CR.9998).

Diagnosis

A *Balssia* with rostrum not exceeding antennular peduncle, a rostral dentition of 4/0, with acute erect teeth, with two small acute supraorbital postrostral teeth, with two obsolescent cardiac teeth; second pereopods well developed, fixed finger strongly laterally expanded; third ambulatory propod with small distoventral spine.

Description

Small pontoniine shrimp of slightly depressed body form.

Rostrum (Figs. 1A-B, 3A). Well developed, slender, slightly up-curved, reaching to just beyond intermediate segment of antennular peduncle, dorsal margin slightly concave, with four acute erect teeth, interdental spaces non-setose, without distinct lateral carinae, ventral margin convex, unarmed, non-setose

Carapace (Fig. 1A-B). Generally smooth, glabrous; post-rostral carina short, with two small subequal erect acute teeth; orbit well developed, deep, supraorbital margin broadly expanded, covering peduncles of eyestalks, convex, with larger acute anterior lateral tooth and smaller subacute posterolateral tooth, cardiac region feebly subcarinate with two low subacute teeth; hepatic spine absent; inferior orbital angle (Fig. 3B) broadly convex, not produced, antennal spine large, acute, marginal, directed dorsally, anterolateral margin of branchiostegite rounded; branchial region with indistinct asymmetrical carinae present, without distinct pterygostomial sinus,

Abdomen (Fig. 1C). Smooth, glabrous; first tergite without medial dorsal tooth; pleura of first and second segments rounded, third with small ventral lobule, fourth feebly bilobed, anterior lobe subacute, fifth bilobed, anterior lobe acute, posterior lobe enlarged posteriorly, very acute, sixth segment 2.0 times length of fifth, depressed, 2.0 times broader posteriorly than anterior width, posterodorsal angle slender, acute, posterolateral angle broadly expanded, acute.

Telson. Incomplete, mostly missing, anterior portion with single small submarginal dorsal spine present.

Antennule (Fig. 1D). Short, proximal segment of peduncle about 1.4 times longer than broad, medial margin straight, with strong slender ventromedial tooth, lateral border obtusely angular, distal lateral margin feebly produced medially, with very strong tooth laterally, reaching to middle of distal segment of peduncle, stylocerite acute, slender, reaching to about half segment length, statocyst normally developed, with circular statolith; intermediate segment about 1.2 times broader than long, with long plumose seta at distomedial angle, distal segment about 1.2 times longer than wide, 1.2 times intermediate segment length; upper flagellum biramous, proximal five segments fused, shorter ramus with single segment, longer ramus damaged, aesthetascs mainly missing, lower flagellum slender short, distally missing.

Antenna (Fig. 1E). Basicerite robust, laterally unarmed; carapocerite short, about 1.75 times longer than wide, reaching to about 0.4 of scaphocerite length, flagella missing; scaphocerite well developed, 2.0 times longer than central width, lateral margin straight, with small acute tooth at 0.9 of lamellar length, not exceeding distal margin of broadly rounded lamella.

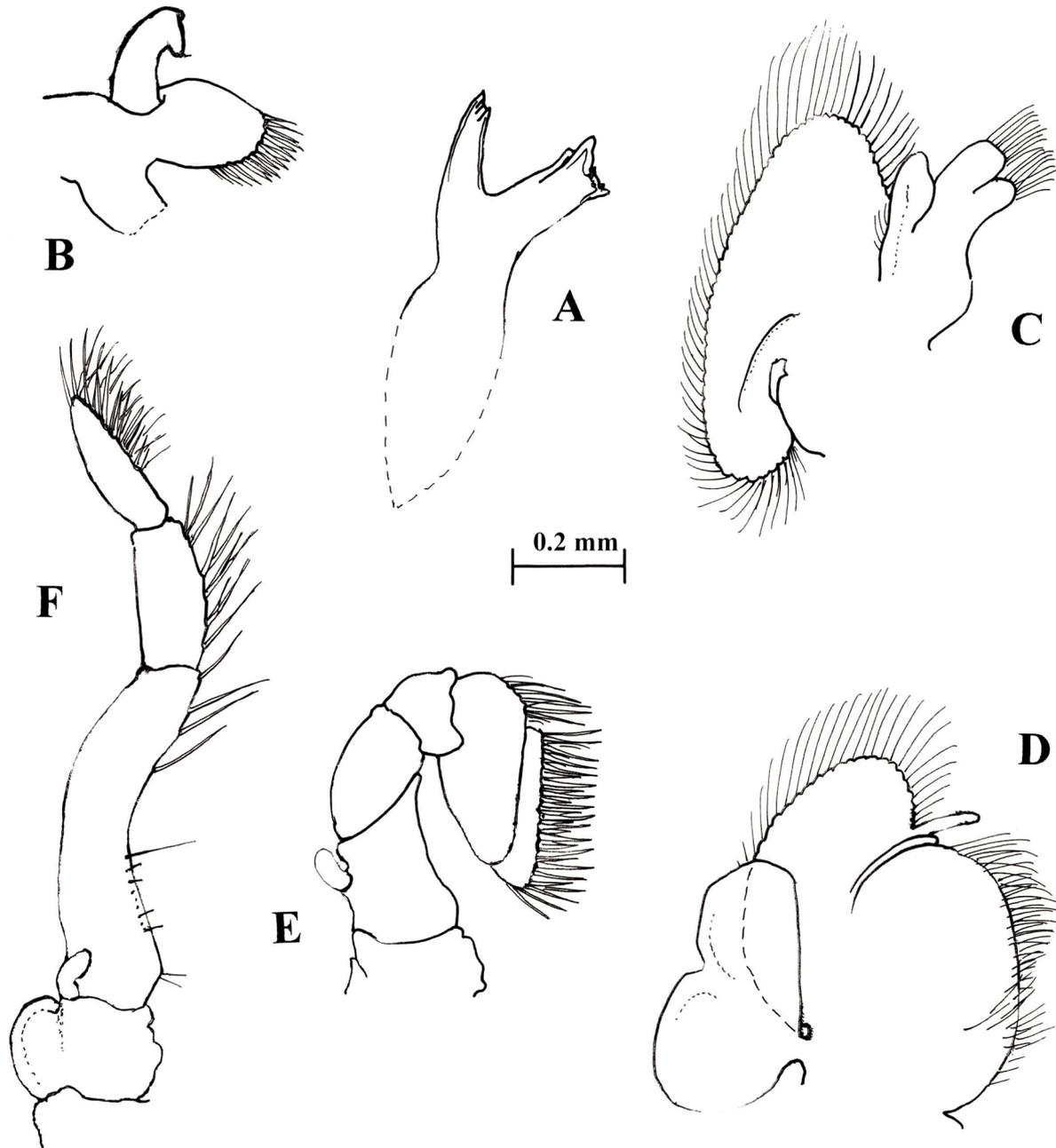


Figure 2. *Balssia antipodarum* sp. nov., holotype, Tasman Sea. **A.** Mandible. **B.** Maxillula. **C.** Maxilla. **D.** First maxilliped. **E.** Second maxilliped. **F.** Third maxilliped.

Figure 2. *Balssia antipodarum* sp. nov., holotype, Mer de Tasman. **A.** Mandibule. **B.** Maxillule. **C.** Maxille. **D.** Premier maxillipède. **E.** Second maxillipède. **F.** Troisième maxillipède.

Eye (Fig. 1A). Cornea imploded [artifact], large, globular well pigmented, about 0.2 of CL, stalk short, without dorsal tubercle.

Mandible (Fig. 2A). Slender, corpus without palp; molar process (Fig. 3C) slender, distally truncate, with one large and two smaller blunt teeth, with sparse short setae; incisor process (Fig. 3D) slender, tapering distally, obliquely truncate distally with four small acute teeth.

Maxillula (Fig. 2B). Palp (Fig. 3E) feebly bilobed, upper lobe non-setose, lower lobe with small tubercle with small short simple seta; upper lacinia (Fig. 3F) short, broad, sub-oval, distally rounded with about 15 short stout feebly serrulate spines and scattered setae; lower lacinia damaged in dissection.

Maxilla (Fig. 2C). Palp short, broad, medial margin sinuous, non-setose; basal endite feebly bilobed, lobes short, distal lobe broader than proximal, coxal lobe obsolete, medial margin convex; scaphognathite short, broad, about 2.5 times longer than width.

First maxilliped (Fig. 2D). Palp short, lamellar, non-setose; basal endite broad, distally rounded, medial margin confluent with convex margin of coxal endite, basal endite margin with numerous slender setae, coxal margin sparsely setose; exopod with large suboval caridean lobe, flagellum reduced, short, non-setose; epipod large, bilobed.

Second maxilliped (Fig. 2E). Endopod of normal form, dactylar segment narrow, with numerous strong denticulate spines medially, propodal segment anteromedial margin rounded, not strongly produced, spinulate; carpus, merus and ischiobasis without special features; exopod obsolescent, small oval lobe; coxa not medially produced, without epipod.

Third maxilliped (Fig. 2F). Endopod with ischiomerus fully fused to basis; combined segment bowed, about 5.0 times longer than central width, subuniform, slightly expanded medially in basal region, convex, few spiniform setae distomedially, short row of submarginal simple setae on proximal ischial region (mainly broken); exopod obsolescent, small rudimentary lobe; coxal segment not produced medially, convex lateral plate, without arthrobranch.

Thoracic sternites. Broad, unarmed.

First pereopods. Missing.

Second pereopod (right) (Fig. 1F). Small, reaching to about distal margin of scaphocerite; chela (Figs. 1G, 3G) about 0.5 of CL, palm smooth, glabrous, oval in section, about 1.5 times longer than distal depth, slightly narrowed proximally, fingers about 1.2 times palm length, dactylus 4.4 times longer than basal width, curved, tapering, with acute curved tip with adjacent small acute tooth, dorsal margin convex, ventral margin stout, carinate, unarmed; fixed finger slightly exceeded by dactylus, tip missing, broadly expanded medially, about twice as long as width at half length, medial margin convex, laminar, entire, with

submarginal setae on outer aspect; carpus stout, about 0.8 of palm length, 1.1 times longer than distal width, tapered proximally, unarmed; merus 1.5 times palm length, 2.5 times longer than central width, slightly swollen centrally, unarmed; ischium about 1.2 times palm length, 0.8 of meral length, robust 2.2 times longer than distal width, tapering slightly proximally, unarmed, obliquely articulated with basis; basis and coxa robust, short, without special features. **Third pereopod** (Figs. 1H-I). Robust, exceeding carapocerite by distal third of propod and dactyl; dactylus (Fig. 3H) simple, stout, strongly curved, acute, about 0.45 of propod length, about 2.8 times longer than basal width, dorsal margin convex, ventral margin concave, sharp, entire, unarmed, with well marked articulation with proximal flexor plate, corpus with paired distolateral sensory setae, unguis feebly demarkated from corpus; propod about 0.45 of CL, robust curved, 5.0 times longer than wide, with single small distoventral spinule only, carpus short, about 0.33 of propod length, of similar width, unarmed; merus about 0.8 of propod length, 3.0 times longer than central depth, ventral margin with low, obtusely angular protuberance at about 0.6 of length; ischium unarmed, about 0.65 of meral length; basis and coxa without special features. Fourth and fifth pereopods similar to third.

Pleopods. Without special features. Endopod of second pleopod without appendix masculina.

Uropods. Missing.

Measurements (mm)

Postorbital carapace length, 2.0 mm; carapace and rostrum length, 3.3 mm; total body length (approx.) excluding telson, 7.5 mm; second pereopod chela, 0.8 mm.

Colour pattern

Unknown.

Host/Habitat

Unknown.

Etymology

From *antipodes* (Latin), from (Greek) *anti*, opposite and *pous, podos*, foot, pertaining to the opposite side of the world. The name is a genitive.

Systematic Position

The three nominal species of *Balssia* are closely related and morphologically similar. *Balssia antipodarum* is most easily distinguished from the two other species, *B. gasti* and *B. noeli*, by the erect dorsal rostral teeth, in contrast to the anteriorly directed teeth in those species. As only a single specimen is known, any possible range of variation is uncertain. *Balssia noeli* was described on the basis of nine

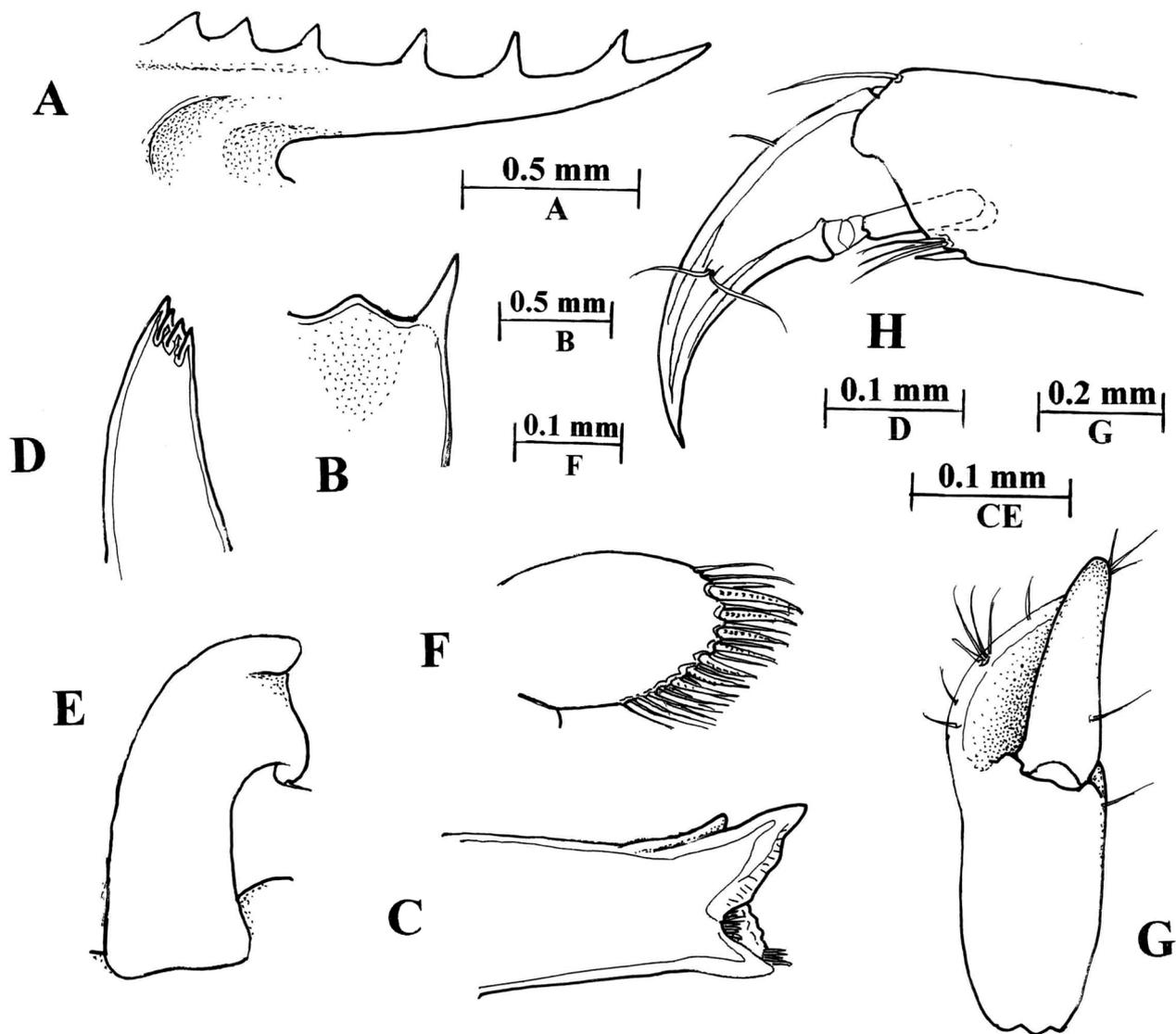


Figure 3. *Balssia antipodarum* sp. nov., holotype, Tasman Sea. **A.** Rostrum. **B.** Inferior orbital angle. **C.** Mandible, molar process. **D.** Same, incisor process. **E.** Maxillula, palp. **F.** Same, upper lacinia. **G.** Second pereopod chela, dorsal. **H.** Third pereopod, dactyl and distal propod.

Figure 3. *Balssia antipodarum* sp. nov., holotype, Mer de Tasman. **A.** Rostre. **B.** Angle orbital inférieur. **C.** Mandibule, protubérance molaire. **D.** Idem, protubérance incisive. **E.** Maxillule, palpe. **F.** Idem, partie supérieure laciniée. **G.** Pince du second périopode, vue dorsale. **H.** Troisième périopode, dactyle et partie distale du propode.

females from the region of Banyuls, from a variety of gorgonacean (*Eunicella*, *Paramuricella* spp.), zoantharian (*Gerardia* sp.) and antipatharian hosts (*Corallium* sp). The specimens did not show major variations in morphology, despite being from different hosts. However, recently d'Udekem d'Acoz (2001b), has shown that considerable variation can occur in *B. gasti*, in this case clearly due to intra-specific variability as most specimens (19 specimens),

from the Azores, were associated with the antipatharian host, *Antipathes wollastoni* Grey, although one specimen was also collected from the hydroid *Aglaophenia tubulifera* Hincks. d'Udekem d'Acoz (2001b) also pointed out that, in his material, the pterygostomial angle bears a sinuosity, a feature not noted in *B. noeli* or *B. antipodarum* and that a lateral longitudinal carina is present on each side of the carapace. The rostral length is also clearly variable in *B.*

gasti from the Azores and 2 or 3 small teeth may be present on the supraorbital carina.

The second pereiopod chela is well developed in *B. antipodarum*, as in *B. gasti*, but is particularly small in *B. noeli*. The merus of the third pereiopod in *B. antipodarum* has a preterminal ventral protuberance, not reported in the other species of the genus.

Balssia antipodarum may also be distinguished from *B. noeli* by the two acute teeth over the orbital region, and the distoventral spine on the third pereiopod propod, characters lacking in that species.

The wide variety of host associations and colour patterns noted in *Balssia* species suggests the existence of a complex of closely related species distinguished by small morphological differences and host preferences. To clarify the relationships more detailed study of carefully collected specimens from fully identified hosts, rather than from commercial coral collectors catches, together with the re-examination of the material present in museum collections will be necessary.

Key for the provisional identification of *Balssia* species.

- 1- Dorsal rostral teeth erect, not anteroverted, pterygostomial angle without sinus, ambulatory propods with distoventral spine*Balssia antipodarum* sp.nov.
 - Dorsal rostral teeth anteroverted, not erect, ambulatory propods without distoventral spine2.
 2 - Carapace with longitudinal lateral carina, pterygostomial angle with sinus*Balssia gasti* Kemp
 - Carapace without longitudinal lateral carina, pterygostomial angle without sinus*Balssia noeli* Bruce

Remarks

The single small specimen, unfortunately lacks both first pereiopods, the left second pereiopod, the right fourth and fifth pereiopods, both uropods and most of the telson. The appendages were also covered with a film of inspissated mucus, rendering dissection difficult. The absence of an epipod on the second maxilliped and an arthrobranch on the third maxilliped may be due to this factor. The second pleopod endopod bears only an appendix interna. The specimen is therefore possibly a juvenile male.

Balssia gasti is known to occur extensively in the eastern North Atlantic region, including Guinea, Madeira and the Canary Islands, (d'Udekem d'Acoz, 1999) and the Azores (d'Udekem d'Acoz, 2001b) and the western Mediterranean Sea (d'Udekem d'Acoz, 1999). *Balssia noeli* is known only from the type material, from the vicinity of Banyuls, Western Mediterranean. The present occurrence of this genus in the Tasman Sea is therefore about as

far removed from its previously known distribution as it is possible to be, hence the specific epithet. The distribution of the species of this genus now suggests the possibility of a Tethyan origin.

Balssia gasti has been long known as an associate of the gorgonian precious red coral, *Corallium rubrum* (L.) and more recently with other gorgonians, antipatharians and hydroids (d'Udekem d'Acoz, 2001b). The species has also been reported in association with sponges. Manconi and Mori (1990) reported one specimen, collected by commercial divers, "in the presence" of *Axinella cannabina* (Esper), but the exact circumstances of collection in these cases are not clear and the association may have been accidental. In the Pontoniinae trans-phylar host associations are unusual but not unknown. The species seems primarily associated with coelenterate hosts. *Balssia noeli* has been reported in association with the gorgonian genera *Eunicella*, *Paramuricella* and zooantharian *Gerardia* as well as with *Corallium rubrum*. It is possible that *B. antipodarum* will have similar gorgonian associations.

The genus *Balssia* is characterized, among other features, by a unique chela on the second pereiopods. This is well developed in *B. gasti* and particularly *B. antipodarum*, but less well and much smaller in *B. noeli*. The fingers are conspicuously different, with the dactylus oval in section, with a sharp unarmed cutting edge, the fixed finger is broadly expanded medially, also unarmed and markedly scaphoid in shape.

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