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National Library of Australia card number
ISSN 0079-8835

A Guide to Authors is displayed at the Queensland Museum web site

A Queensland Government Project
Typeset at the Queensland Museum

FURTHER INFORMATION ON TWO PONTONIINE SHRIMPS FROM ASCIDEAN HOSTS, *DASELLA BRUCEI* BERGGREN, 1990 AND *PSEUDOPONTONIA MINUTA* (BAKER, 1907) (CRUSTACEA: DECAPODA: PALAEMONIDAE)

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Bruce, A.J. 2003 06 30: Further information on two pontoniine shrimps from ascidian hosts, *Dasella brucei* Berggren, 1990 and *Pseudopontonia minuta* (Baker, 1907) (Crustacea: Decapoda: Palaemonidae). *Memoirs of the Queensland Museum* **49**(1): 111-114. Brisbane. ISSN 0079-8835.

Further records of two rare and little known pontoniine shrimps, *Dasella brucei* Berggren, and *Pseudopontonia minuta* (Baker) are reported from Queensland and South Australia respectively. *Dasella brucei* is previously known only from its lost holotype specimen and *Pseudopontonia minuta* has been reported on only three previous occasions. A new host record is reported for *Dasella brucei* and the host of *Pseudopontonia minuta,* the ascidian *Polycarpa flava* Kott, is identified for the first time. ❐ *Natantia, Pontoniinae, Dasella brucei, Pseudopontonia minuta, new ascidian host records, Queensland, South Australia.*

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Pontoniine shrimps of the genus *Dasella* Lebour, 1945, are associates of some Indo-West Pacific ascidian hosts (Bruce, 1993). Only three species have been described, two from Australia and one from the western Indian Ocean.

In 1981, Bruce reported a male specimen of *Dasella herdmaniae* from *Herdmania momus* (Savigny) from Heron Island, Queensland. At that time *D. herdmaniae* was the only species of the genus and otherwise previously known only from the type material from Tuticorin, India. *Dasella ansoni* was described by Bruce (1983a) from the Arafura Sea in association with *Phallusia depressiuscula* Heller. Berggren (1990) reported on further specimens of *D. herdmaniae* from Moçambique and demonstrated the specimen from Heron Island was not conspecific and designated the single specimen as a new species, *D. brucei.* This specimen, which would have become the holotype of *D. brucei* was dispatched from Heron Island to the Australian Museum on 10 August 1979 but was never received and cannot now be located in the Australian Museum collections (P. Berents, 23 May 2000, pers. comm.) or elsewhere. It is therefore presumed lost. There have been no subsequent reports of this species in the literature. Recently further specimens have become available for study, considerably extending the range of this species which is still known only from Queensland waters.

Pseudopontonia minuta (Baker), was one of the earliest Australian pontoniine shrimps described and until now was one of the rarest and least known, with only the type specimens from 'South Australia' and two other specimens, both from New South Wales (Baker, 1907; Bruce, 1972, 1983b). The host animal also remained unidentified. Further material has been collected in the MAFRI Benthic Laboratory Survey of Port Adelaide harbour, which enabled the host to be identified for the first time.

The specimens are deposited in the collections of the Queensland Museum, (QMW). CL refers to the post orbital carapace length. QMGH numbers refer to the host catalogue numbers. Full details of *D. brucei* and *P. minuta* and synonymies are to be found in Li (2000) and Davie (2002)

SYSTEMATICS

Sub-phylum CRUSTACEA
Order DECAPODA Latreille, 1802
Family PALAEMONIDAE Rafinesque, 1815
Sub-family PONTONIINAE Kingsley, 1878

Dasella brucei Berggren, 1990
(Fig. 1)

Dasella herdmaniae Bruce, 1981: 50-54, figs 1-2.
Dasella brucei Berggren, 1990: 558. Chace & Bruce, 1993: 78 (key). Müller, 1993: 23, (full synonymy). Li, 2000: 42, fig. 42, (full synonymy). Davie, 2002: 309.

MATERIAL . Queensland: 1 ♀ off Murdock Point, North Queensland, 2 September 1977, 5m, QMW25502. 1 ov. ♀, Mooloolaba, 4 September 1977, 2.9-22.9m, coll. A. Rozenfelds. 1 ov. ♀, Curtin Artificial Reef, Moreton Bay, stn. 22, 27.07°S 153.22°E, 22m, 4 April 1995, coll. J. Short, QMW20466.

HOSTS. (QMW25502) in branchial sac of *Herdmania grandis* (Heller), QMGH768. (Rozenfelds

specimen and QMW20466) *Herdmania momus* (Savigny), QMGH2200, (Ascidiacea).

TYPES. As the original specimen of *D. brucei* is lost, the intact female specimen (#1, CL 2.6mm, W25502) is now designated as a neotype. Type locality: 14°36'S, 144°54'E.

REMARKS. The Murdock Point specimen is in good condition, intact, with all pereiopods. The Mooloolaba specimen is rather incomplete and in an extremely fragile condition, but agrees well with the previously published information. A single pereiopod, probably the third, with the diagnostic propod and dactyl is preserved.

Dasella brucei is distinguished from *D. herdmaniae* by the pair of normal slender tapering acute distoventral spines on the third ambulatory propod (Fig. 1B), with similar spines along the ventral border, whereas *D. herdmaniae* has a pair of small blunt distally swollen club-shaped spines distoventrally, with similar spines ventrally in these positions (Berggren, 1990).

Berggren (1990) commented on the marked ridge below the level of the mobile hepatic spine in *D. herdmaniae*. It may be noted that a similar horizontal angulation is also present in the Mooloolaba specimen of *D. brucei* (Fig. 1A) but inconspicuous in the Murdock Point specimen. The carapace in the former is therefore rather depressed, with a concavity above the lateral ridge. The Moreton Bay specimen is the largest, CL 3.25mm. In all specimens the ventral rostral tooth is obsolescent.

The fifth thoracic sternite bears a transverse carina, posterior to the second pereiopod coxae, with a small median notch. Length of undeveloped ovum, 0.5mm.

The hosts of these shrimps both belong to *Herdmania*. The Murdock Point specimen was found in *Herdmania grandis* (Heller), an endemic Australian species, and the Mooloolaba and Moreton Bay specimens in *H. momus* (Savigny), a species of widespread Indo-West Pacific distribution. *Dasella* has been found in association with three genera of ascidian host, *Herdmania* (*D. brucei*, *D. herdmaniae*), *Pyura* (*D. herdmaniae*) and *Phallusia* (*D. ansoni*).

Dasella brucei is known from three localities in Queensland waters and has not been reported from outside Queensland. *Dasella herdmaniae* has been reported from Moçambique (Berggren, 1990), southern India (Lebour, 1939) and the Philippines (Chace & Bruce, 1993). It is possible that the original Heron Island specimen of *D. brucei*, reported in association with *H. momus* (Bruce, 1981) was associated with *H. grandis*, which was considered a synonym of *H. momus* at that time, but both species of *Herdmania* occur on Heron Island.

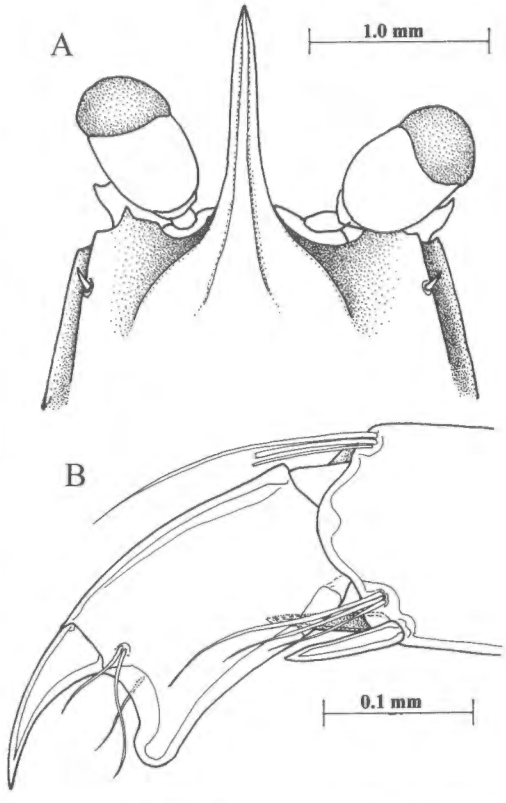

FIG. 1. *Dasella brucei* Berggren, ovigerous ♀, off Mooloolaba. A, anterior carapace and rostrum, dorsal; B, distal propod and dactyl of (?) third pereiopod.

DISTRIBUTION. The type locality at Heron Is., Murdock Point, Mooloolaba and Moreton Bay.

Pseudopontonia minuta (Baker, 1907)
(Fig. 2)

Pontonia minuta Baker, 1907; 189-190, pl. 24, figs 9-12. Hale, 1927: 57, fig. 51. Bruce, 1972: 65-74, figs 1-5. Chace & Bruce, 1993: 62.
Pseudopontonia minuta Bruce, 1992: 1274. Müller, 1993: 128. Li, 2000: 280-281. Davie, 2002: 337-338.

MATERIAL. South Australia: ♀, CL 4.0mm, Port Adelaide, MAFRI Benthic Laboratory Survey, stn 7, 20 December 2002, from pile scrapings, in branchial sac; ♂, CL ca. 4mm, idem, in branchial sac. QMW26553.

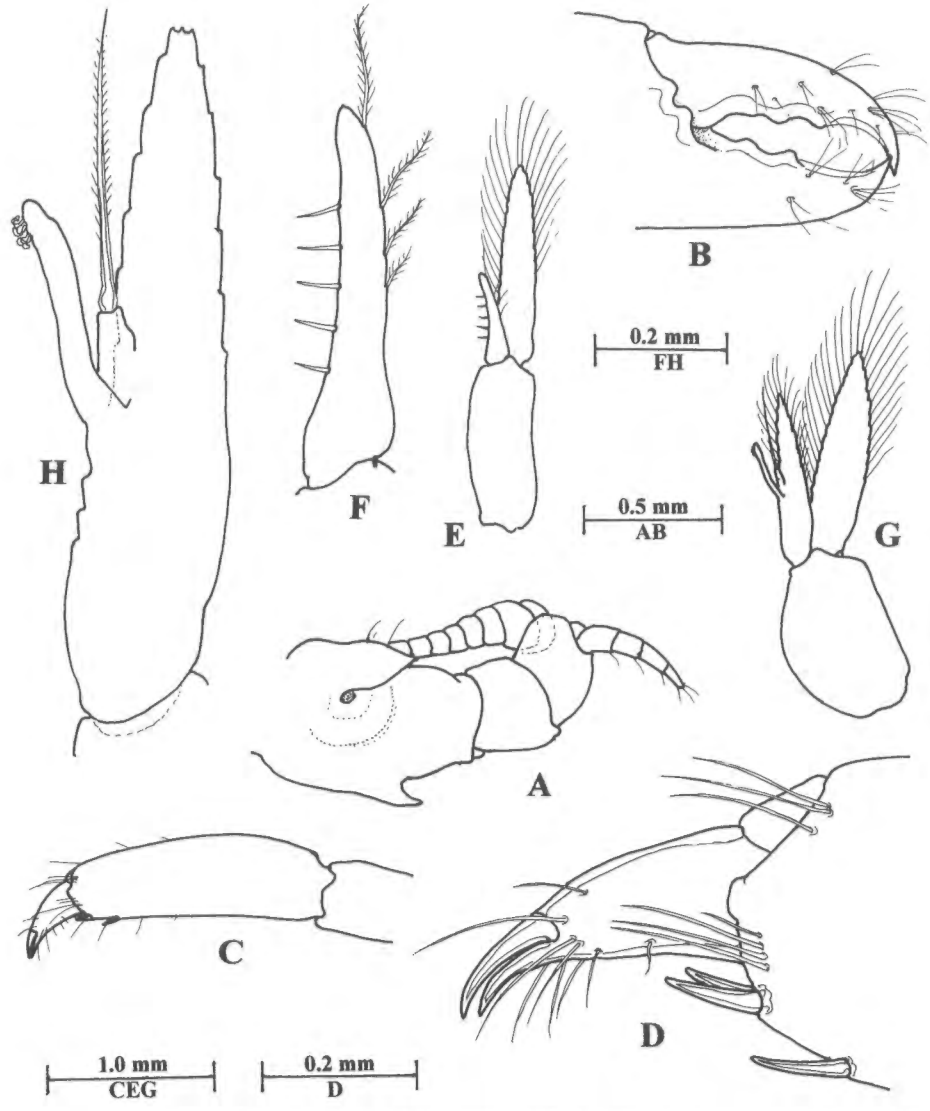

Fig. 2. *Pseudopontonia minuta* (Baker), Port Adelaide, W26553. A, antennule, ventrolateral aspect; B, second pereiopod chela, fingers; C, third pereiopod, propod and dactyl; D, same, distal propod and dactyl; E, first pleopod; F, same, endopod;G, second pleopod; H, same endopod. (A-B, ♀; C-H, ♂).

HOST. *Polycarpa flava* Kott, 1985, (Ascidiacea).

REMARKS. These specimens agree well with earlier descriptions and little further description is necessary. The male has the carapace badly damaged and largely detached, together with the eyes and antennae. The antennular peduncle (Fig. 2A) is robust, the proximal segment stout with a large acute ventromedial tooth. The lower flagellum is short, with only four segments; the upper flagellum is reflexed as in many *Pontonia* species. The fingers of the second pereiopod chelae (Fig. 2B) have strongly curved acute tips, the cutting edges with two low teeth proximally, the distal edge sharp. The third pereiopod propod (Fig. 2C) and dactyl (Fig. 2D) are as previously described. The male first pleopod (Fig. 2E) has the protopodite slender, about 2.4 × longer than wide. The exopod is of subequal length, with

numerous plumose marginal setae. The endopod (Fig. 2F) is about 0.5 of exopod length, slender, tapering, about 4.0 × longer than its basal width, with five short similar simple spines on the central two fourths of the medial margin, three short feebly plumose setae laterally with a further preterminal plumose seta. The second pleopod protopodite (Fig. 2G) is broader, about 1.5 × longer than wide, of similar length to the first, The exopod is similar to the first pleopod. The endopod (Fig. 2H) is about 0.8 of the exopod length, with appendices at about 0.5 of the medial margin length. The appendix interna is long and slender, about 0.3 of the endopod length, with only 4-5 terminal cincinnuli. The appendix masculina is very short and stout, about 0.12 of the endopod length, 2.0 × longer than wide, with a single long feebly plumose terminal spiniform seta, 3.5 × longer than the corpus, reaching to beyond the tip of the endopod.

Pseudopontonia minuta is remarkable amongst pontoniine shrimps, as it is the only species known with abbreviated larval development (Bruce, 1972). All previous specimens have been females. The isolated male and female within the ascidian branchial sac is also surprising as pontoniine associates of ascidians, and other hosts, are usually found as heterosexual pairs. In the case of *Paranchistus armatus* (H. Milne Edwards, 1837) it has been suggested that the high rate of host infestation with heterosexual pairs of shrimps is related to an ample source of larvae (Bruce, 2000). The reverse might apply to the populations of *Pseudopontonia minuta*.

The establishment of the identity of the host for this species removes one obscurity but raises another. A possible association with nereid worms, possibly *Eunice aphrodite,* was suggested by Bruce (1983b). This was based on a colour slide which showed a pair of small red pontoniine shrimps on this host, from Long Reef, Sydney, New South Wales. The identity of these shrimps has not yet been established and would be of special interest as no pontoniine shrimps are presently known to associate with any annelids.

DISTRIBUTION. The type locality 'South Australia', Port Adelaide, South Australia, and Meroo Point and Long Reef, New South Wales.

ACKNOWLEDGEMENTS

I am most grateful to Dr P. Mather for the opportunity to report on these specimens and for information on the hosts. The preparation of this study was facilitated by the support of the Australian Biological Resources Study.

LITERATURE CITED

BAKER, 1907. Notes on South Australian Decapoda Crustacea. Part V. Transactions of the Royal Society of South Australia 31: 173-191.

BERGGREN, M. 1990. *Dasella herdmaniae* (Lebour) (Decapoda: Natantia: Pontoniinae) from Moçambique and establishment of a new species, *Dasella brucei*. Journal Crustacean Biology 10(3): 554-559.

BRUCE, 1972. Notes on some Indo-Pacific Pontoniinae, XXIII. A re-description of *Pontonia minuta* Baker, 1907, and the occurrence of abbreviated development in the Pontoniinae (Decapoda Natantia, Palaemonidae). Crustaceana 23(1): 65-75.

1981. Notes on some Indo-Pacific Pontoniinae, XXXVII. Additional information on *Dasella herdmaniae* (Lebour) (Decapoda Natantia). Crustaceana 40(1): 50-56.

1983a. A second species of the genus *Dasella* Lebour, *D. ansoni* sp. nov., from the Arafura Sea. The Beagle, Occasional Papers of the Northern territory Museum of Arts and Sciences 1(3): 21-29.

1983b. The pontoniine shrimp fauna of Australia. Australian Museum Memoir 18: 195-218. (1982).

1992. Designation of two new pontoniine shrimp genera (Decapoda: Palaemonidae). Journal of Natural History 26: 1273-1282.

1995. A Synopsis of the Indo-West Pacific Genera of the Pontoniinae (Crustacea: Decapoda: Palaemonidae). Theses Zoologicae 25(1994): 1-172.

2000. Biological observations on the commensal shrimp, *Paranchistus armatus* (H. Milne Edwards), (Crustacea: Decapoda: Pontoniinae). The Beagle, Records of the Museums and Art Galleries of the Northern Territory 16: 91-96.

CHACE, F.A., Jr, & BRUCE, A.J. 1993. The Caridean Shrimps (Crustacea: Decapoda) of the *Albatross* Philippine Expedition 1907-1910, Part 6: Superfamily Palaemonoidea. Smithsonian Contributions to Zoology 543: i-vii, 1-252.

DAVIE, P.J.F. 2002. Crustacea: Malacostraca: Phyllocarida, Hoplocarida, Eucarida (Part 1). Pp. xii, 551. In Wells, A. & Houston, W.W.K. (eds) Zoological Catalogue of Australia, 19.3A. (CSIRO Publishing: Melbourne).

HALE, H.M. 1927. The Crustacea of South Australia 1: pp. 201. (Government Printer: Adelaide).

LEBOUR, M.V. 1939. Decapod Crustacea associated with the ascidian *Herdmania*. Proceedings of the Zoological Society of London 108B: 649-653.

LI, XINZHENG 2000. Catalog of the genera and species of Pontoniinae Kingsley, 1878.Pp. i-iv, 1-319. (Xueyuan Press: Beijing).

MÜLLER, H.-G. 1993. Catalogue of the Indo-Pacific Pontoniine Shrimps. P. 148. (Wetzlar).