A new species of spider crab of the genus *Sakaija* (Brachyura: Majidae) from New Caledonia

Peter K. L. Ng, Bertrand Richer De Forges

**Abstract.**— A new species of majid crab, *Sakaija amicitiae* n. sp., is described from New Caledonia Exclusive Economic Zone, Vauban seamount and the Chesterfield Atolls. The species is superficially similar to *S. japonica* (Rathbun, 1932) and *S. santo* Ng & Richer de Forges, 2015, from Vanuatu. Specimens from New Caladonia previously referred to *S. santo* are now referred to the new species. *Sakaija amicitiae* n. sp. can be distinguished from congeners by features of the carapace spines, proportions of the ambulatory legs and structure of the male first gonopod.

**Key words:** Majoidea, spider crab, taxonomy, description, new species, western Pacific

**Introduction**

Ng & Richer de Forges (2015) revised the spider crab species which have been previously classified in *Maja* Lamarck, 1801, recognizing seven new genera and 17 new species. *Sakaija* was established for one group of species and characterized by their pyriform carapaces, short carapace spines and a distinctive male first gonopod which has the distal part covered with long plumose setae. Six species were recognised: *S. japonica* (Rathbun, 1932) (type species) from Japan and Taiwan, *S. sakaii* (Takeda & Miyake, 1969) from Japan, *S. serenei* Ng & Richer de Forges, 2015, from the Philippines, *S. santo* Ng & Richer de Forges, 2015, from Vanuatu, *S. africana* (Griffin & Tranter, 1986) from South Africa, and *S. longispinosa* Ng & Richer de Forges, 2015 from Western Australia. We here add a new species from the New Caledonia Exclusive Economic Zone (EEZ), Vauban Seamount and Chesterfield Atolls.

The terminology used here follows that used by Griffin (1966), Griffin & Tranter (1986), Davie et al. (2015) and Ng & Richer de Forges (2015). All measurements are provided in millimetres. The following measurements are used—cl: maximum carapace length measured between the tips of the pseudorostral and intestinal spines, cw: maximum carapace width measured between the tips of the longest branchial spines; pcl: the post-pseudorostral carapace length measured from the base of the pseudorostral spines to the posterior margin of the carapace; and bcw: the carapace width measured between the bases of the longest branchial spines. Other abbreviations used are as follow: coll. = collected by; G1 = male first gonopod; G2 = male second gonopod; P2–P5 = pereopods 2–5 (first to fourth ambulatory legs), respectively; stn = station. Specimens examined are deposited in the Musèum national d’Histoire naturelle (MNHN), Paris, France; and Zoological Reference Collection (ZRC), Lee Kong Chian Natural History Museum, National University of Singapore, Singapore.
Taxonomy

Superfamily Majoidea Samouelle, 1819
Family Majidae Samouelle, 1819
Sakaija Ng & Richer de Forges, 2015

Type species
Maja japonica Rathbun, 1932, by original designation.

Sakaija amicitiae n. sp.
(Figs. 1–4)
LSID urn:lsid:zoobank.org:act:6C1FB402-09C0-4D2B-A07E-D9504E2854FF

Sakaija santo—Ng & Richer de Forges, 2015: 174 (part) (not Sakaija santo Ng & Richer de Forges, 2015).

Material examined
Holotype: male (cl 15.1 mm, pcl 12.6 mm, cw 20.2 mm, bcw 16.0 mm) (MNHN-IU-2011-6257), station CP3882, Volcan-Mount Vauban seamount, New Caledonia, 22°21′S 171°40′E, 288–361 m, EXBODI Expedition, coll. B. Richer de Forges, N.O. Alis, 8 September 2011. Paratypes: 1 male (cl 12.0 mm, pcl 9.1 mm, cw 14.8 mm, bcw 12.7 mm) (ZRC 2021.0340), 1 ovigerous female (cl 14.6 mm, pcl 12.3 mm, cw 18.7 mm, bcw 15.9 mm), 1 juvenile female (cl 5.9 mm, pcl 5.4 mm, cw 8.3 mm, bcw 7.3 mm) (MNHN-IU-2011-6257), same data as holotype; 1 male (cl 22.2 mm, pcl 18.4 mm, cw 17.8 mm, bcw 16.1 mm) (MNHN-IU-2013-1762), station CP3884, Volcan-Mount Vauban seamount, New Caledonia, 22°22′S 171°38′E, 521–567 m, EXBODI Expedition, coll. B. Richer de Forges, N.O. Alis, 18 September 2011; 1 female (cl 20.1 mm, pcl 17.7 mm, cw 15.8 mm, bcw 14.3 mm) (MNHN-IU-2014-4010), station DW2491, 24°44′S 159°40′E, Chesterfield Atolls, coll. EBISCO Expedition, 6 October 2010.

Diagnosis
Carapace branchial area strongly inflated, rounded; with relatively short lateral and branchial spines (Fig. 2A, B). Pseudorostral spines relatively short, gently diverging (Figs. 2, 3A). Supraorbital eave strongly curved; antorbital spine short, triangular, sharp; intercalated spine triangular, separated from adjacent spines by distinct gaps; postorbital spine longest, triangular, pointed obliquely anteriorly; hepatic spine

Fig. 1. Colour in life. Sakaija amicitiae n. sp., holotype male (cl 15.1 mm) (MNHN-IU-2011-6257), New Caledonia. A, in trawl; B, overall dorsal view.
A NEW SPECIES OF SPIDER CRAB OF THE GENUS *Sakaija*

Fig. 2. Overall dorsal view. *Sakaija amicitiae* n. sp. A, holotype male (cl 15.1 mm) (MNHN-IU-2011-6257), New Caledonia; B, paratype ovigerous female (cl 14.6 mm) (MNHN-IU-2011-6257), New Caledonia.
relatively short, pointed laterally outwards (Figs. 2, 3A). Lateral margin with 3 short spines, posterior one largest; branchial region with 1 low spine; median row with 4 low spines or tubercles: 2 gastric (posterior one larger), 1 low cardiac, 1 low intestinal (some-
A NEW SPECIES OF SPIDER CRAB OF THE GENUS *SAKAIJA*

...sometimes undiscernible) (Fig. 3F, G); 2 short spini-form granules on posterior carapace margin (Fig. 2). Basal antennal article relatively long with several granules on outer margin, 2 strong distal spines (Fig. 3B). Ischium of third maxilliped weakly granulated (Fig. 3D). Ambulatory legs relatively long (Fig. 2). G1 distinctly curved, distal part long, tapering with very long plumose setae (Fig. 4A–C).

**Variation**

The strength of the median and lateral spines varies in their length. Those in smaller specimens tend to be more elongate, with the cardia...
ac, intestinal and branchial spines especially distinct (Fig. 3G). In larger specimens (e.g., holotype male), the cardiac spine is short and the intestinal spine cannot be easily differentiated from the surrounding granules (Fig. 3F).

**Colour**

The carapace is bright orange on the dorsal surfaces with the ambulatory legs and chelipeds pale orange (Fig. 1).

**Etymology**

The Latin name *amicitiae* (Latin for “old friends”) remembers the wonderful friendship the authors have had over the decades with the recently departed Alain Crosnier. We will miss his company, boundless energy and his sharp mind. The name is used as a noun in apposition.

**Remarks**

In the form of the postorbital and hepatic teeth and structure of the G1, *S. amicitiae* n. sp. closely resembles *S. japonica* from Japan, Korea and Taiwan (Ng & Richer de Forges, 2015; Lee et al., 2020). *Sakaija amicitiae*, however, can easily be separated from *S. japonica* by its ambulatory legs being proportionately much longer (Fig. 2) (versus ambulatory legs, especially the meri, are shorter and stouter, cf. Ng & Richer de Forges, 2015: fig. 28A–C) and the G1 having the distal part (where the long plumose setae are positioned) proportionately longer (Fig. 4A–C) (versus distal G1 part is shorter, cf. Ng & Richer de Forges, 2015: fig. 33A–F).

*Sakaija amicitiae* also closely resembles *S. santo*, which occurs in the nearby Vanuatu Islands and has been reported from New Caledonia. *Sakaija amicitiae*, however, differs in that the cleft between the postorbital tooth and hepatic tooth is relatively shallower, with the fusion at the base slightly more extensive (Figs. 2, 3A) (versus the cleft between the postorbital tooth and hepatic tooth is relatively deeper, with the teeth appearing more separate in *S. santo*, cf. Ng & Richer de Forges, 2015: fig. 32C, D), the lateral carapace margin has three distinct spines (Fig. 2) (versus with two clear spines in *S. santo*, with the third one very small, cf. Ng & Richer de Forges, 2015: fig. 32C, D), and most significantly, the G1 is curved and slender (Fig. 4A–C) (versus proportionately shorter, stouter and gently sinuous in *S. santo*, cf. Ng & Richer de Forges, 2015: fig. 33S–U). A re-examination of the two specimens from New Caledonia referred to *S. santo* by Ng & Richer de Forges (2015) showed that they are actually *S. amicitiae* instead.

The known distribution of *S. santo* Ng & Richer de Forges, 2015, is now restricted to Espiritu Santo Island in northern Vanuatu, with *S. amicitiae* known only from New Caledonia, Mount Vauban seamount and Chesterfield Atolls. It is likely that both species can be found together when more surveys are done in the region in the future. The same situation is observed in northeastern Asia, with *S. japonica* occurring with *S. sakaii* (cf. Ng & Richer de Forges, 2015).

One of the missions of the EXBODI cruise was to survey a gigantic submarine volcano, Mount Vauban, which is situated in the New Hebrida Arc, a volcanic chain south of Vanuatu which rises to 200 m under the surface. In station CP3882, where the holotype was collected, the sediment was composed of broken shells, plenty of Brachiopoda, free-living scleractinians, ophiurids, cuttlefish, and the fish *Hoplichthys citrinus* (Hoplichthyidae). The two stations, CP3882 and CP3884 are situated on the border of a crater of nearly 10 km wide, between the two actives volcanoes islands, Matthews and Hunter. The female specimen collected during the EBISCO cruise (station DW2491) was from the Chesterfield Atolls, on the other wide of New Caledonia EEZ, about 800 km west of Mount Vauban.
Acknowledgements

The authors are grateful to Paula Martin-Lefèvre (MNHN) for loans, checking specimens and other curatorial help; and to Sébastien Soubzmaigne (MNHN) for photographs of some important material. We also thank Laure Corbari (cruise leader of EXBODI) and Philippe Bouchet (cruise leader on EBISCO) for allowing us to study this material. Thanks are also due to Tohru Naruse for his many important suggestions.

Literature cited

Griffin, D. J. G., 1966. A review of the Australian majid spider crabs (Crustacea, Brachyura). Australian Zoologist, 13(3): 259–298, 6 text-figs, pls. 15–17.

Griffin, D. J. G., & Tranter, H. A., 1986. The Decapoda Brachyura of the Siboga Expedition. Part VIII. Majidae. Siboga-Expeditie, 39C4: 1–335, 22 pls.

Lee, S.-H., Lee, S.-K., Kim, J.-N., & Kim, W., 2020. New records of two spider crabs (Decapoda, Brachyura, Majidae) from Korea. Crustaceana, 93(2): 215–223.

Ng, P. K. L., & Richer De Forges, B., 2015. Revision of the spider crab genus Maja Lamarck, 1801 (Crustacea: Brachyura: Majoidea: Majidae), with descriptions of seven new genera and 17 new species from the Atlantic and Indo-West Pacific. Raffles Bulletin of Zoology, 63: 110–225.

Rathbun, M. J., 1932. Preliminary descriptions of new species of Japanese crabs. Proceedings of the Biological Society of Washington, 45: 29–38.

Takeda, M., & Miyake, S., 1969. Crabs from the East China Sea. III. Brachynatha Oxyrhynch. Journal of the Faculty of Agriculture, Kyushu University, 15(4): 469–521, figs. 1–12, pls. 17, 18.

Addresses

(PKLN) Lee Kong Chian Natural History Museum, National University of Singapore, 2 Conservatory Drive, Singapore 117377, Republic of Singapore; (BRF) 5, rue Félix Franchette, 98800 Nouméa, New Caledonia.

E-mail addresses

(PKLN)* E-mail: peterng@nus.edu.sg
(BRF) E-mail: b.richerdeforges@gmail.com
*Corresponding author