

TWO NEW SPECIES OF THE FAMILY GONEPLACIDAE (DECAPODA, BRACHYURA) FROM THE WEST PACIFIC

BY

MASATSUNE TAKEDA^{1,3}) and HIRONORI KOMATSU²)

¹) Faculty of Modern Life, Teikyo Heisei University, 2-51-4 Higashi-Ikebukuro,
Toshima-ku, Tokyo, 170-8445 Japan

²) Department of Zoology, National Museum of Nature and Science, 3-23-1 Hyakunincho,
Shinjuku-ku, Tokyo, 169-0073 Japan

ABSTRACT

Two new species of the family Goneplacidae are described from Japan and Taiwan. *Singhaplax danielae* n. sp. can be distinguished from its congeners by a wider abdomen and the shape of the male gonopods. *Microgoneplax guinotae* n. sp. can be distinguished from its congeners by its robust male first gonopod.

RÉSUMÉ

Deux nouvelles espèces de la famille Goneplacidae sont décrites du Japon et Taiwan. *Singhaplax danielae* n. sp. peuvent être distinguées des congénères par l'abdomen plus large et de la forme des gonopodes masculins. *Microgoneplax guinotae* n. sp. peuvent être distinguées des congénères par le premier gonopode de mâle robuste.

INTRODUCTION

While re-examining the crabs collected by the late Mr. S. Nagai and donated to the Wakayama Prefectural Museum of Natural History, a small crab of the family Goneplacidae from Japan was noticed with a well-developed first male gonopod in spite of its small size. The specimen has long eyestalks, and it was, thus, referred to the genus *Ommatocarcinus* White, 1852 by Marumura & Kosaka (2003). A detailed examination of the specimen following the up-to-date revision by Castro (2007) revealed that it is actually a new species

³) Corresponding author; e-mail: takeda-m@thu.ac.jp

of *Singhaplax* Serène & Soh, 1976. On the way to describe the species, we received important information from Drs. P. Castro, P. K. L. Ng, and T. Naruse that a male specimen from Taiwan appears to be conspecific with the new species from Japan. In the present paper a new species, *S. danielae*, is to be described based on these two specimens.

As part of our study, we also re-examined the specimens referred to *Singhaplax* in the collections of the National Museum of Nature and Science, Tokyo. Those specimens are mostly represented by *S. styrax* Castro, 2007, but there is a small specimen from Japan having a short second gonopod in contrast to a well-developed, stout first gonopod. These characters suggest that it belongs to *Microgoneplax* Castro, 2007. Comparing with the known species listed by Castro (2007), the specimen represents a new species, *M. guinotae*, which is also described herein.

Descriptive terminology and measuring methods follow Castro (2007). The material examined is deposited in the National Museum of Nature and Science (NSMT), the Wakayama Prefectural Museum of Natural History (WMNH), and the Zoological Reference Collection, Raffles Museum of Biodiversity Research, National University of Singapore (ZRC). Other abbreviations used in the text are: cl, carapace length; cw, carapace width; G1, G2, first and second male gonopods, respectively; P1, first pair of pereopods (chelipeds); P2-P5, second to fifth pairs of pereopods (first to fourth ambulatory legs).

We take great pleasure in dedicating these two new species of crabs to Prof. Danièle Guinot. The first author, M. Takeda, especially wishes to offer his cordial thanks for her continuous guidance and encouragement over a span of 40 years.

TAXONOMY

Family GONEPLACIDAE MacLeay, 1838

***Singhaplax danielae* n. sp. (figs. 1-3)**

Ommatocarcinus sp. — Marumura & Kosaka, 2003: 47 (in list).

Material examined. — Holotype, male (cl 4.4 × cw 9.5 mm), WMNH-Na-Cr 676, off Oshima I., Kushimoto, Kii Peninsula, Japan, 90 m deep, coll. S. Nagai, 15 Mar. 1980. Paratype, male (cl 4.7 × cw 10.3 mm), ZRC 2009.0424, Taiwan.

Description. — Carapace (figs. 1A, 3) transversely rectangular, much wider than long (2.2 times as wide as long in holotype). Carapace convex, without clear indication of regions. Front almost straight. Base of front distinctly

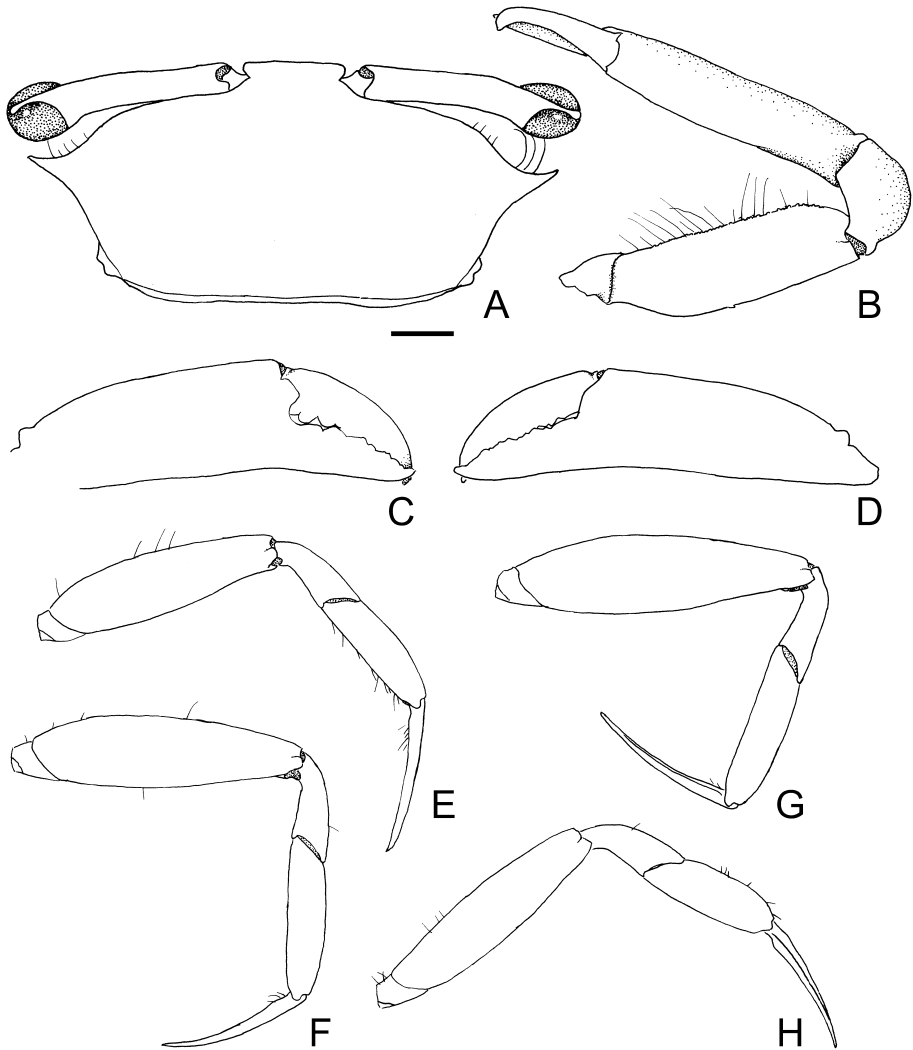


Fig. 1. *Singhaplax danielae* n. sp. Holotype, male (cl 4.4 × cw 9.5 mm), WMNH-Na-Cr 676. A, carapace, dorsal view; B, right cheliped, dorsal view; C, right chela, outer view; D, left chela, outer view; E-H, right P2-P5, respectively, dorsal view. Scale bar: 1 mm.

constricted, with notch between front and inner edge of supraorbital border. Supraorbital borders broad, conspicuously sinuous, smooth, with simple setae, setae on lateral part long. Suborbital borders sinuous, fringed with fine granules; short, wide inner tooth not visible dorsally. Outer orbital angle long, slender, slightly directed anteriorly; tooth placed on middle of carapace. Lateral borders strongly convergent posteriorly, slightly sinuous, no anterolateral

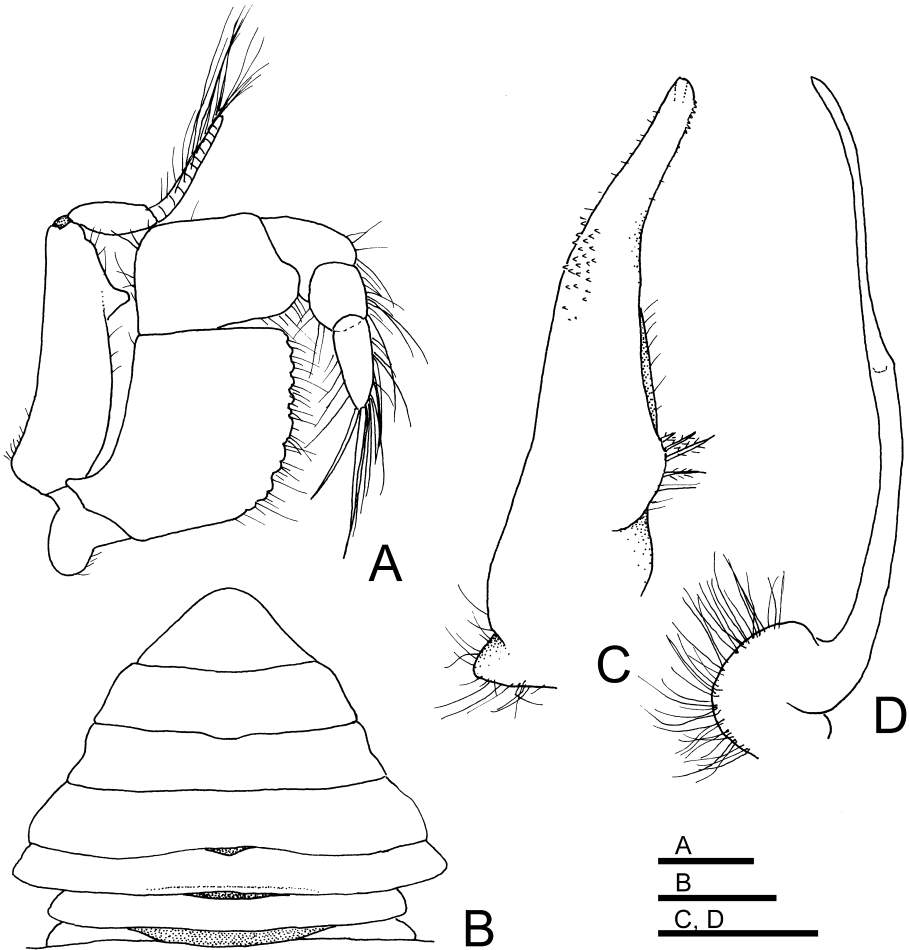


Fig. 2. *Singhaplax danielae* n. sp. Holotype, male (cl 4.4 × cw 9.5 mm), WMNH-Na-Cr 676. A, right third maxilliped, ventral view; B, abdomen, ventral view; C, right G1, ventral view; D, right G2, ventral view. Scales bars: 0.5 mm for A, C, D; 1 mm for B.

teeth. Subhepatic and pterygostomial regions smooth; pterygostomial ridge with plumose setae on lateral half.

Eye peduncles (fig. 1A) very long (1.5 front width in holotype), cornea elongated, spherical distal margin. Third maxillipeds (fig. 2A) flattened; ischium divided from basis by suture, with denticulate mesial margin; merus trapezoidal.

Chelipeds (P1) (fig. 1B-D) unequal (right slightly larger than left in holotype), 3.1 cl in right in holotype; merus triangular in cross section, flattened on dorsal surface, with fine granules and long setae on inner margin, subacute

granule on midlength of outer margin. Fingers 0.6 propodus length in holotype; dactylus curved, 2 rounded teeth on proximal part of cutting edge.

Ambulatory legs (P2-P5) (fig. 1E-H) long, slender, unarmed, varying number of setae, setae on meri of P2-P5 and propodi of P5 plumose; propodi of P5 slightly broadened; dactyli long, slender, each with 2 carinae along upper and lower sides; relative length $P4 > P3 > P2 > P5$, length of P5 merus 0.9 cl.

Male abdomen (fig. 2B) wide, triangular, with 6 freely movable somites plus telson; telson triangular, 2.1 times as wide as long. Somite 1 very short, medially concealed beneath carapace (not concealed in paratype). Somite 3 widest in abdominal somites, about 0.7 width of thoracic sternite 8. Somites 3 to 6 gradually decreasing in width.

G1 (fig. 2C) long, basal part wide, distal part curved mesially, small denticles on distal 0.4 of ventro-lateral surface and distal 0.3 of dorsal surface. G2 (fig. 2D) long, slender, slightly longer than G1, flagellum slightly shorter than proximal part (peduncle), tip pointed.

Notes on paratype. — The paratype specimen (fig. 3B) looks more mature than the holotype. The cheliped is elongate (3.9 cl in right) and the propodus of the cheliped is also elongate (fingers 0.5 propodus length). The cheliped merus does not have a distinct granule on the inner margin, and the first somite of the abdomen is not concealed beneath the carapace. The shape of the male gonopods agrees well with that of the holotype.

Remarks. — *Singhaplax danielae* n. sp. can be distinguished from its congeners by the wider male abdomen and the shape of the male gonopods. The wide carapace (>2.0 cl) associates the new species with *S. ockelmanni* (Serène, 1971) from the Andaman Sea coast of Thailand and the Philippines, and with *S. wolffi* (Serène, 1964) from New Caledonia. *Singhaplax danielae* n. sp. is distinguished from *S. ockelmanni* by the following characters: the width of somite 3 of the male abdomen is 1.4 times as long as the combination length of somite 3 to telson (fig. 2B) (as long as that in *S. ockelmanni*); the tip of the G1 is simple (fig. 2C) (bilobed and beak-like in *S. ockelmanni*) (cf. Serène & Umali, 1972; Serène & Soh, 1976). *Singhaplax danielae* n. sp. is also distinguished from *S. wolffi* by the following characters: none of the anterolateral borders of the carapace has a tubercle (figs. 1A, 3) (0-4 tubercles or prominences in *S. wolffi*); the tip of the G2 is simply acute (fig. 2D) (with a terminal spinule in *S. wolffi*) (cf. Serène, 1964; Castro, 2007).

The number of species of *Singhaplax* now known stands at eight with the addition of this new species (see Castro, 2007; Ng et al., 2008). Additional species are currently being described by T. Naruse and P. Castro (work in progress).

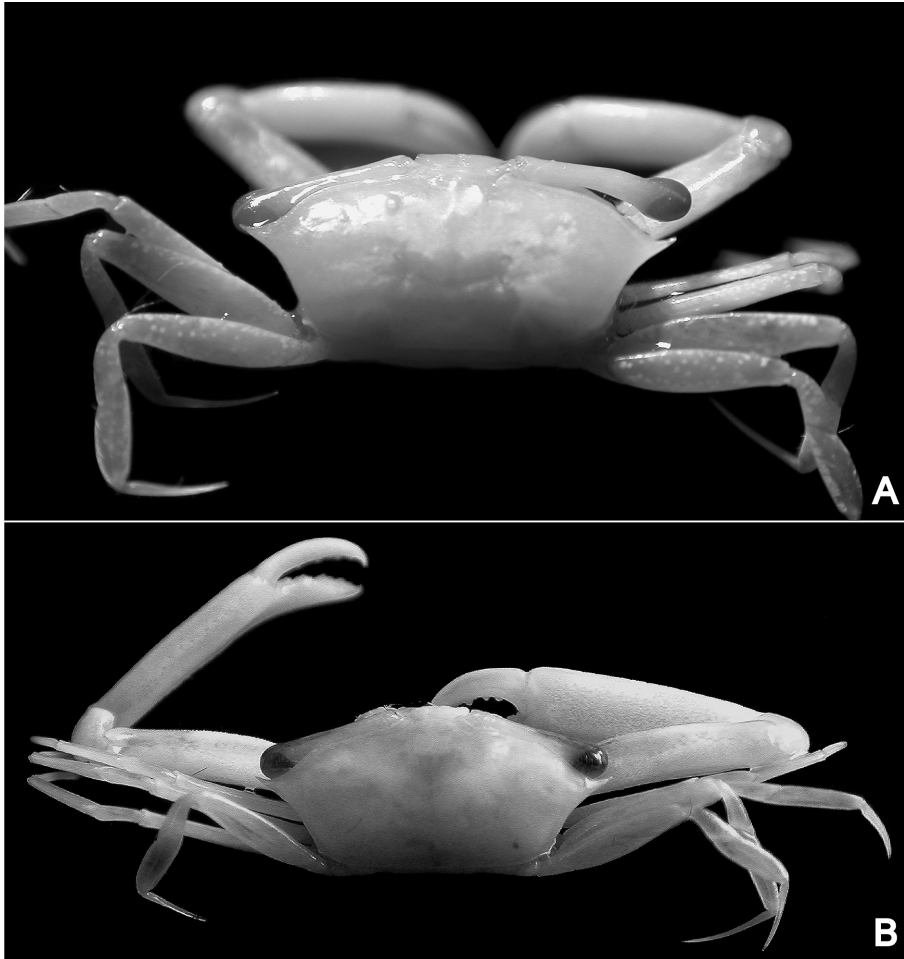


Fig. 3. *Singhaplax danielae* n. sp. A, holotype, male (cl 4.4 × cw 9.5 mm), WMNH-Na-Cr 676; B, paratype, male (cl 4.7 × cw 10.3 mm), ZRC 2009.0424.

***Microgoneplax guinotae* n. sp. (figs. 4-6)**

Material examined. — Holotype, male (cl 5.0 × cw 9.0 mm), NSMT-Cr 10017, KT-84-12 cruise, stn 12-1, off Susami, Kii Peninsula, Japan, 33°29.9'N 135°35.9'E – 33°30.0'N 135°30.7'E, 100-101 m, dredge, shell and sandy mud bottom, coll. E. Tsuchida, 31 Aug. 1984.

Description. — Carapace (figs. 4A, 6) transversely rectangular, much wider than long (1.8 times as wide as long in holotype). Carapace convex, without clear indication of regions. Front almost straight. Without distinct notch between front, inner edge of supraorbital border. Supraorbital borders broad, conspicuously sinuous, smooth, with simple setae. Suborbital borders sinuous,

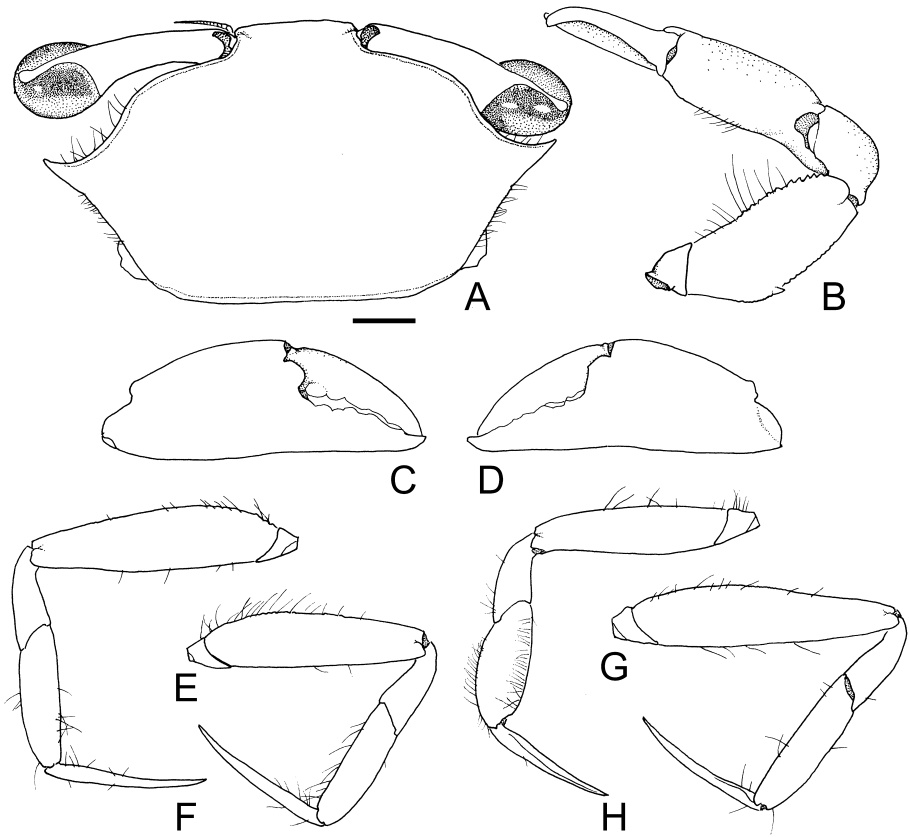


Fig. 4. *Microgoneplax guinotae* n. sp. Holotype, male (cl 5.0 × cw 9.0 mm), NSMT-Cr 10017. A, carapace, dorsal view; B, right cheliped, dorsal view; C, right chela, outer view; D, left chela, outer view; E, right P2; F, left P3; G, right P4; H, left P5, dorsal view. Scale bar: 1 mm.

fringed with fine granules; large, wide inner tooth not visible dorsally. Outer orbital angle long, slender, slightly directed anteriorly; tooth medially placed on carapace. Lateral borders beyond outer orbital teeth slightly concave, no anterolateral teeth. Subhepatic, pterygostomial regions with low, round tubercles; pterygostomial ridge granulate.

Eye peduncles (fig. 4A) long (equal to front width), cornea elongate, spherical distal margin. Third maxillipeds (fig. 5A) flattened; ischium divided from basis by suture, with denticulate mesial margin; merus trapezoidal.

Chelipeds (P1) (fig. 4B-D) unequal (right slightly larger than left in holotype), 2.1 cl in right; merus triangular in cross section, flattened on dorsal surface, with low tubercles and long setae on inner margin, subacute granule on midlength of outer margin. Fingers as long as propodus; no dark colour on

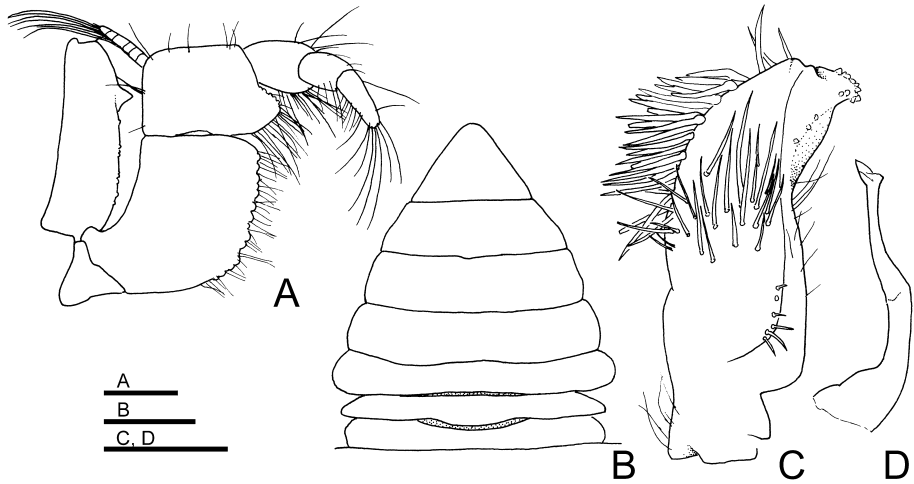


Fig. 5. *Microgoneplax guinotae* n. sp. Holotype, male (cl 5.0 × cw 9.0 mm), NSMT-Cr 10017. A, right third maxilliped, ventral view; B, abdomen, ventral view; C, right G1, ventral view; D, right G2, ventral view. Scales bars: 0.5 mm for A, C, D; 1 mm for B.



Fig. 6. *Microgoneplax guinotae* n. sp. Holotype, male (cl 5.0 × cw 9.0 mm), NSMT-Cr 10017.

fingers in preserved specimen; dactylus curved, two rounded teeth on proximal part of cutting edge in major chela.

Ambulatory legs (P2-P5) (fig. 4E-H) long, slender, unarmed, varying number of setae, setae on meri of P2-P5 and propodi of P5 plumose; propodi of P5 slightly broadened; dactyli long, slender, each with 2 carinae along upper and lower sides; relative length $P4 > P3 > P2 > P5$, length of P5 merus 0.7 cl.

Male abdomen (fig. 5B) wide, triangular, with 6 freely movable somites plus telson; telson triangular, 1.4 times as wide as long. Somites 1, 2 very short. Somite 3 widest of abdominal somites, about 0.6 width of thoracic sternite 8. Somites 3 to 6 gradually decreasing in width.

G1 (fig. 5C) robust, with dense, plumose, stout setae on distal 0.5 of lateral surface, plumose setae on mid-portion of ventral surface; tip directed mesially, denticulate. G2 (fig. 5D) short, slender, 0.7 times as long as G1, flagellum about same length as proximal part (peduncle), tip with terminal spinule.

Remarks. — *Microgoneplax guinotae* n. sp. is readily distinguished from its congeners by the characteristic, robust G1 having dense and stout setae on the distal half of its lateral surface. The holotype specimen was collected with a male specimen of *Singhaplax styrax* Castro, 2007 from the same station. They are similar in general appearance, but can be easily distinguished by the shape of the male gonopods.

ACKNOWLEDGEMENTS

The descriptions of two new species were made possible through the permission of the authorities of the Wakayama Prefectural Museum of Natural History, and the kind arrangement of Drs. Peter Castro (California State Polytechnic University, Pomona), Peter K. L. Ng (National University of Singapore), and Tohru Naruse (University of the Ryukyus). The manuscript was brushed up by P. Castro, P. K. L. Ng, and an anonymous reviewer, to whom we have to tender our sincere thanks.

REFERENCES

- CASTRO, P., 2007. A reappraisal of the family Goneplacidae MacLeay, 1838 (Crustacea, Decapoda, Brachyura) and revision of the subfamily Goneplacinae, with the description of 10 new genera and 18 new species. *Zoosystema*, **29**: 609-774.
- MACLEAY, W. S., 1838. On the brachyurous decapod Crustacea brought from the Cape by Dr. Smith. In: A. SMITH (ed.), *Illustrations of the zoology of South Africa; consisting chiefly of figures and descriptions of the objects of natural history collected during an expedition into the interior of South Africa, in the years 1834, 1835, and 1836; fitted out by 'The Cape of Good Hope Association for Exploring Central Africa'*: together with a summary

- of African zoology, and an inquiry into the geographical ranges of species in that quarter of the globe. *Invertebratae*, **4** [1849]: 53-71, pls. 2, 3. (Smith, Elder & Co., London).
- MARUMURA, M. & A. KOSAKA, 2003. Catalogue of brachyuran and anomuran crabs collection donated by the late Mr. Seiji Nagai to the Wakayama Prefectural Museum of Natural History: 1-74. (Wakayama Prefectural Museum of Natural History, Kainan).
- SERÈNE, R., 1964. Goneplacidae et Pinnotheridae récoltés par le Dr. Mortensen. Papers from Dr. Th. Mortensen's Pacific Expedition 1914-1916, part 80. *Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening i København*, **126**: 181-282, pls. 16-24.
- —, 1971 [1970]. Observations préliminaires sur des brachyours nouveaux ou mal connus du sud-est asiatique (Crustacea Decapoda). *Bulletin du Muséum national d'Histoire naturelle, Paris*, (2) **42**: 903-918.
- SERÈNE, R. & C. L. SOH, 1976. Brachyura collected during the Thai-Danish Expedition (1966). *Research Bulletin Phuket Marine Biological Center, Thailand*, **12**: 1-37, figs. 1-28, pls. 1-7.
- SERÈNE, R. & A. F. UMALI, 1972 [1970]. The family Raninidae and other new and rare species of brachyuran decapods from the Philippines and adjacent regions. *Philippine Journal of Science*, **99**: 21-105, pls. 1-9.
- WHITE, A., 1852. Descriptions of some apparently new species of Annulosa (collected by Mr. Macgillivray during the voyage of H.M.S. Rattlesnake). Appendix no. 6. In: J. MACGILLIVRAY (ed.), *Narrative of the voyage of H.M.S. Rattlesnake, commanded by the late Captain Owen Stanley, R.N., F.R.S. etc. during the years 1846-1850. Including discoveries and surveys in New Guinea, the Louisiade Archipelago, etc. to which is added the account of Mr. E. B. Kennedy's expedition for the exploration of the Cape York Peninsula*, **2**: 387-395, pls. 4, 5. (T.&W. Boone, London).