

# *Notonyx angulatus*, a New Species of Goneplacid Crab (Crustacea, Decapoda, Brachyura) from Amami-Oshima, the Ryukyu Islands, Japan

Tohru Naruse<sup>1</sup> and Masatsune Takeda<sup>2</sup>

<sup>1</sup>Transdisciplinary Research Organization for Subtropical and Island Studies, University of the Ryukyus,  
870 Uehara, Taketomi, Okinawa, 907–1541 Japan

E-mail: naruse@lab.u-ryukyu.ac.jp

<sup>2</sup>Faculty of Modern Life, Teikyo Heisei University,  
2–51–4 Higashi-Ikebukuro, Toshima-ku, Tokyo, 170–8445 Japan

E-mail: takeda-m@thu.ac.jp

(Received 1 June 2010; accepted 23 June 2010)

**Abstract** A new species of the genus *Notonyx* A. Milne-Edwards, 1873, is described from Amami-Oshima Island, the Ryukyu Islands, Japan. The new species named *N. angulatus* can be distinguished from the congeners by its diagnostic shape of the G1 and the strong and produced anterolateral angle of the carapace. This paper brings the number of *Notonyx* species to nine.

**Key words:** Decapoda, Brachyura, Goneplacidae, *Notonyx*, new species, Ryukyu Islands, Japan.

## Introduction

The goneplacid genus *Notonyx* A. Milne-Edwards, 1873, currently contains eight species from the Indo-West Pacific: *N. nitidus* A. Milne-Edwards, 1873, *N. vitreus* Alcock, 1900, *N. gigacarcinicus* Clark et Ng, 2006, *N. latus* Ng et Clark, 2008, *N. kumi* Naruse et Maenosono, 2009, *N. sagittifer* Ng et Clark, 2010, *N. rayneri* Ng et Clark, 2010, and *N. guinotae* Rahayu et Ng, 2010. Among them, two species with old names (*N. nitidus* and *N. vitreus*) have been recorded from several localities, but Clark and Ng (2006) spotted that those that have been identified as *N. nitidus* and *N. vitreus* contain more than two species, each. Indeed, *N. latus*, *N. kumi*, *N. sagittifer* and *N. rayneri* have formerly been identified as *N. nitidus* by Tesch (1918) and Stephensen (1946). Clark and Ng (2006) already noted that the G1s of “*N. vitreus*”, shown by Serène and Soh (1976: Fig. 16) from the Andaman Sea and by Takeda (1989: Fig. 15F, G) from Amami-Oshima Island in the Ryukyu Islands, differ remarkably from each other. In the

present paper, we describe the Ryukyuan crab as a new species.

The holotype of the new species is deposited in the National Museum of Nature and Science, Tokyo (NSMT).

Abbreviations, CL, CW, G1 and G2, indicate the carapace length, carapace width, male first gonopod, and male second gonopod, respectively.

## Taxonomy

Family Goneplacidae

Genus *Notonyx* A. Milne-Edwards, 1873

*Notonyx angulatus* sp. nov.

[New Japanese name: Amami-kaku-enkou-gani]

(Figs. 1–2)

*Notonyx vitreus*: Takeda, 1989, p. 170, fig. 15; Clark and Ng, 2006, p. 550 (part); Naruse and Maenosono, 2009, p. 183 (part).

*Material examined.* Holotype: male, CL 3.9 mm, CW 4.8 mm, NSMT-Cr 9742, west side of Nominoura, Oshima Passage, Amami-Oshima, Ryukyu Islands, Japan, st. 20, 45 m depth, coarse

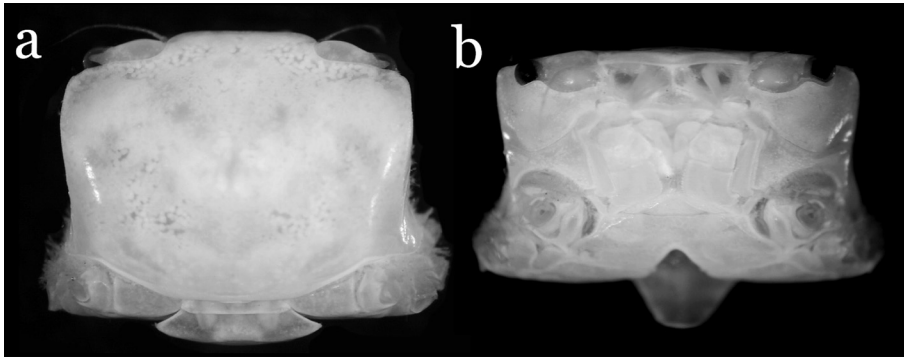


Fig. 1. *Notonyx angulatus* sp. nov., holotype, male (NSMT-Cr 9742; CL 3.9 mm, CW 4.8 mm). a, Dorsal view; b, ventral view.

sand and shells, coll. M. Takeda, 6 Aug. 1988.

**Diagnosis.** Carapace rectangular, CW 1.23 times CL; dorsal surface smooth, glabrous, region ill-defined; front gently sloping ventrally, external orbital angle rounded, lateral margin very slightly convergent posteriorly. Ocular peduncle proximally wider, lower margin subdistally concave, eye closely fit into orbit. Third maxilliped rectangular, merus slightly shorter than ischium, not expanded distolaterally. Male abdominal somites all free; first somite concealed under posterior margin of carapace, second somite narrower than third somite, third somite laterally produced, distal half of third somite to telson triangular in outline. Left cheliped larger in holotype; merus with subdistal tooth on dorsal margin; carpus with sharp tooth on inner margin; palm smooth, keel present along ventral margin of outer surface from proximal one-third of palm to distal tip of immovable finger; fingers pointed, no gap left when chela closed; ventral keel of palm present on minor chela. Ambulatory legs slender, dactylus only slightly shorter than respective propodus. G1 straight, claviform, slightly narrowed subdistally, opening distolaterally, proximolateral angle with distally rounded lobe. G2 longer than G1, small but strong spines aliened in V-shape at proximal two-fifths of slender part of G2, distal one-fifth with lateral margins upcurved, eaves trough-like, distal end bent mesially.

**Etymology.** The name of the new species de-

rives from the Latin *angulatus* (angular), alluding to its angular external orbital angle of the carapace.

**Remarks.** Alcock (1900: 319) described *N. vitreus* based on a single specimen (CL 5 mm, CW 6 mm) collected from Andaman Sea. Later Alcock and McArdle (1903: Pl. 61, fig. 3) showed a dorsal view of habitus. This drawing clearly shows the rounded anterolateral angle of the carapace and an obtuse inner angle of the cheliped carpus. Serène and Soh (1976) recorded *N. vitreus* from the western coast of Thailand. He also observed that it lacks acute inner angle from cheliped carpus (Serène and Soh, 1976: 18). Considering morphological similarity as well as close localities, the Thai specimen of Serène and Soh (1976: Fig. 16A–D) can be identified as *N. vitreus* s.s.

The holotype of *N. angulatus* from Amami-Ohima Island, Ryukyu Islands, Japan, was first identified as *N. vitreus* with hesitation (Takeda, 1989: 170). Detailed description of *N. angulatus* (as *N. vitreus*) by Takeda (1989) and our reexamination of the specimen allowed us to confirm that *N. angulatus* is different from *N. vitreus* s.s. in the following characters. *Notonyx angulatus* possesses an acute tooth on the inner margin of the cheliped carpus (Fig. 2a), while that of *N. vitreus* is rounded (Alcock and McArdle, 1903: Pl. 61, fig. 3). The G1 of *N. angulatus* is straight and claviform (Fig. 2b), while that of *N. vitreus* is incurved subdistally (Serène and Soh, 1976: Fig.

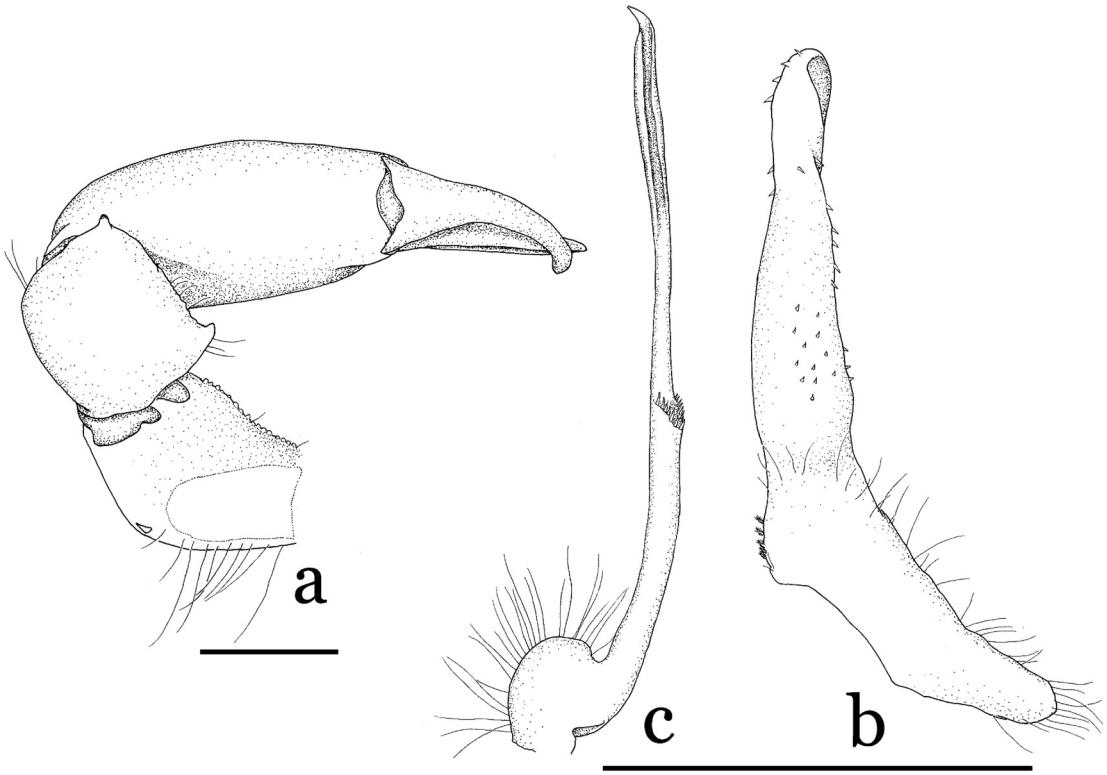


Fig. 2. *Notonyx angulatus* sp. nov., holotype, male (NSMT-Cr 9742). a, Left cheliped, dorsal view; b, right G1, ventral view; c, right G2, sternal view. Scales=1 mm.

16A, B). Furthermore the G2 of *N. angulatus* (Fig. 2c) appears to be proportionally shorter than that of *N. vitreus* (Serène and Soh, 1976: Fig. 16C). The row of the spines is placed on the proximal two-fifths of the slender part of the G2 in *N. angulatus* (Fig. 2c), while those of *N. vitreus* is placed at distal to the proximal half of the slender part (Serène and Soh, 1976: Fig. 16C). *Notonyx angulatus* differs from *N. vitreus* specimen in the angular anterolateral angle of the carapace (Fig. 1a) (vs. rounded in *N. vitreus*, Serène and Soh, 1976: Fig. 16D) and longer ocular peduncle (vs. shorter in *N. vitreus*, Serène and Soh, 1976: Fig. 16D) too.

The new species can be also differentiated from the other congeners by its diagnostic shape of the G1 as well as strong and produced anterolateral angle of the carapace.

### Acknowledgements

We thank Peter K. L. Ng (National University of Singapore) for his suggestion to start this project, and Hironori Komatsu (National Museum of Nature and Science, Tokyo) for lending the specimen used for this study (the holotype of *N. angulatus* sp. nov.). This study was partially supported by the Rising Star Program for Subtropical Island Sciences of the University of the Ryukyus.

### References

- Alcock, A. 1900. Materials for a carcinological fauna of India. No. 6. The Brachyura Catometopa, or Grapsoidea. Journal of the Asiatic Society of Bengal, 69: 279–456.
- Alcock, A. and A. F. McArdle 1903. Illustrations of the zoology of the Royal Indian Marine Survey ship Investigator, under the command of commander T. H. Hem-

- ing, R. N. Crustacea: Part 10, pls. 56–67. (dated 1902, published 1903; for publication dates see Clark and Crosnier (1992)).
- Balss, H. 1938. Die Dekapoda Brachyura von Dr. Sixten Bocks Pazifik-Expedition 1917–1918. Göteborgs Kungl. Vetenskaps- och Vitterhets-Samhälles Handlingar, (B) 5 (7): 1–85, pls. 1–2.
- Clark, P. F. and A. Crosnier 1992. Illustrations of the Zoology of the R.I.M.S. *Investigator*: Authors, dates, issues, plates and titles. Archives of Natural History, 19: 365–374.
- Clark, P. F. and P. K. L. Ng 2006. A new species of *Notonyx* A. Milne-Edwards, 1873 (Crustacea, Brachyura, Goneplacidae) from the intertidal zone of Phuket, Thailand. Zoosystema, 28: 539–551.
- Milne-Edwards, A. 1873. Recherches sur la faune carcinologique de la Nouvelle-Calédonie, deuxième partie. Nouvelles Archives du Muséum d'Histoire Naturelle, Paris, 9: 155–332, pls. 4–18.
- Naruse, T. and T. Maenosono 2009. *Notonyx kumi*, a new species of goneplacid crab (Decapoda, Brachyura) from the Ryukyu Islands, Japan. Bulletin of the National Museum of Nature and Science, (A), Supplement 3: 183–189.
- Ng, P. K. L. and P. F. Clark 2008. A new species of *Notonyx* A. Milne-Edwards, 1873 (Crustacea: Decapoda: Brachyura: Goneplacidae) from Indonesia. Zootaxa, 1897: 20–26.
- Ng, P. K. L. and P. F. Clark 2010. Two new species of *Notonyx* A. Milne-Edwards, 1873 (Crustacea: Decapoda: Brachyura: Goneplacidae) from the Philippines and Fiji. Zootaxa, 2509: 30–38.
- Rahayu, D. L. and P. K. L. Ng 2010. *Notonyx guinotae*, a new species of goneplacid crab (Brachyura, Goneplacidae) from Lombok Island, Indonesia. Castro, P., P. J. F. Davie, P. K. L. Ng and B. Richer de Forges (Eds.), Studies on Brachyura: a Homage to Danièle Guinot. Crustaceana Monographs, 11: 269–278.
- Serène, R. and C. L. Soh 1976. Brachyura collected during the Thai-Danish Expedition (1966). Phuket Marine Biological Center Research Bulletin, 12: 1–57, pls. 1–7.
- Serène, R. and A. Umali 1972. 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.
- Stephensen, K. 1946. The Brachyura of the Iranian Gulf with an appendix: the male pleopods of the Brachyura. Danish Scientific Investigations in Iran, 4: 57–237. (dated 1945, published 1946).
- Takeda, M. 1989. Shallow-water crabs from the Oshima Passage between Amami-Oshima and Kakeroma-jima Islands, the northern Ryukyu Islands. Memoirs of the National Science Museum, Tokyo, 22: 135–184, pl. 4.
- Tesch, J. J. 1918. The Decapoda Brachyura of the Siboga-Expedition. II. Goneplacidae and Pinnotheridae. Siboga-Expedition, 39c<sup>1</sup>: 149–295, pls. 7–18.