

**TWO UNRECORDED GENERA AND SPECIES OF BRACHYURAN CRABS
(DECAPODA: CAMPTANDRIIDAE, PILUMNIDAE) FROM TAIWAN,
WITH A NOTE ON *CANCER SEMICYLINDRUS* FABRICIUS, 1798**

Pan-Wen Hsueh

Department of Life Sciences, National Chung Hsing University, 250 Kuo Kuang Road, Taichung, Taiwan, Republic of China
Email: pwhsueh@dragon.nchu.edu.tw (Corresponding author)

Peter K. L. Ng

Tropical Marine Science Institute, National University of Singapore, Kent Ridge, Singapore 119260, Republic of Singapore
Email: dbsngkl@nus.edu.sg

ABSTRACT. – Two genera and species of coastal crabs, the camptandrid, *Moguai elongatum* (Rathbun, 1931) and the pilumnid, *Xenophthalmodes dolichophallus* Tesch, 1918, are reported for the first time from Taiwan. The present record of *X. dolichophallus* is not only the first from Taiwan but also the first report of it from the northern hemisphere of the Pacific.

KEY WORDS. – Crustacea, Brachyura, new records, *Moguai elongatum*, *Xenophthalmodes dolichophallus*, Taiwan.

INTRODUCTION

Two interesting brachyuran crabs, *Moguai elongatum* (Rathbun, 1931) (Camptandriidae) and *Xenophthalmodes dolichophallus* Tesch, 1918 (Pilumnidae), were collected from tidal flats and subtidal fine sediment habitats in Taiwan. The species as well as genera have not been previously reported from this area (Ng et al., 2001). The present report serves to formally record these species as well as provide notes on their ecology and distribution.

All specimens examined in this study have been deposited at the National Museum of Natural Science (NSNM), Taichung, Taiwan, Republic of China; Zoological Museum of the University of Copenhagen (ZMUC), Denmark; and Zoological Reference Collection (ZRC) of the Raffles Museum of Biodiversity Research, National University of Singapore. Synonymies provided are restricted to recent ones only. All carapace measurements are given in mm in the order of carapace width × carapace length, respectively; coll. = collected; ovig. = ovigerous.

TAXONOMY

Camptandriidae Stimpson, 1858

***Moguai* Tan & Ng, 1999**

***Moguai elongatum* (Rathbun, 1931)
(Fig. 1A)**

Camptandrium elongatum Rathbun, 1931: 95, Pl. 13, Figs. 40–43;
Takeda & Iwasaki, 1983: 89.

Moguai elongatum – Tan & Ng, 1999: 205, Figs. 3C, D, G, 4D,
E (for complete synonymy); Naruse, 2005: 61–62, Fig. 1b;
Ng et al., 2008: 233.

Material examined. – 11 males (2.3–3.9 × 2.8–5.0 mm), 11 females (3.3–6.1 × 3.9–6.6 mm) (NMNS5773-001), Yunsen (24°29.34'N 118°32.44'E), Kinmen County, in burrows at high intertidal muddy sand habitat, coll. H.-T Hung, 20 Mar.2001; 2 males (3.8 × 4.3 mm, 3.7 × 4.1 mm), 2 females (5.9 × 6.5 mm, 4.5 × 4.9 mm) (ZRC 2008.498), Yunsen (24°29.34'N 118°32.44'E), Kinmen County, in burrows at high intertidal muddy sand habitat, coll. H.-T Hung, 20 Mar.2001.

Remarks. – The genus *Moguai* is currently represented by three species, *M. aloutos* Tan & Ng, 1999, *M. elongatum* (Rathbun, 1931) and *M. pyriforme* Naruse, 2005 (Naruse, 2005; Ng et al., 2008). *Moguai aloutos* and *M. elongatum* are closest in appearance but can easily be separated by carapace ornamentation (see Tan & Ng, 1999 for details).

The collection of *M. elongatum* from the present study site, even though it is from the Kinmen part of Taiwan, is not surprising because this site is only a few kilometers from its type locality in Liuwutien, Fukien, China. *Moguai elongatum* was previously known from four males and 11 females from several parts of mainland China collected from “tidal flats” and “sandy beaches” (Tan & Ng, 1999: 206), one ovigerous female from Nakama-gawa River, Iriomote Island, Japan (Takeda & Iwasaki, 1983; T. Naruse, pers. comm.), and one male and three females obtained in intertidal areas, “... from riverbeds of river mouths, with a pebbly-muddy substratum” in Ryukyus, Japan (Naruse, 2005: 62). The large number of individuals encountered at present from high intertidal muddy sand habitats in Kinmen suggests that this is its preferred niche.

The ecology of the other species is not well known. *Moguai aloutos* is known from a large series (11 males, 49 females) collected from Southeast Asia from “under damp pieces of drift wood, around the high mangrove area, with a sandy-muddy substrate” (Tan & Ng, 1999: 205). *Moguai pyriforme*

was obtained “from brackish water on a pebbly-muddy substratum in river beds” (Naruse, 2005: 61) in Japan.

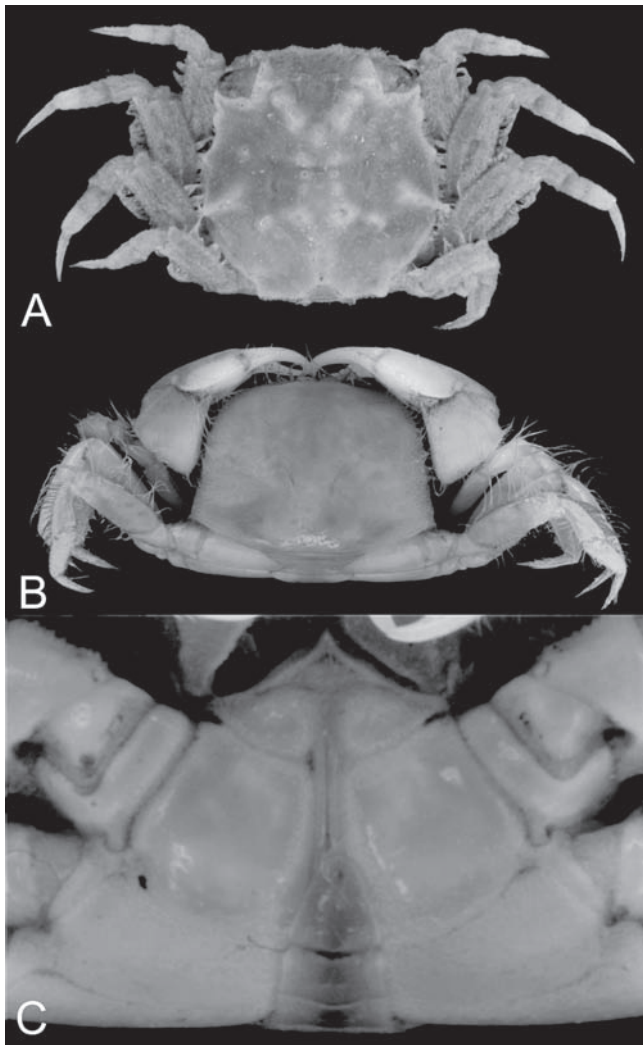


Fig. 1. A. *Moguai elongatum* (Rathbun, 1931), male (3.9×5.0 mm) (NMNS000-001); B, C, *Xenophthalmodes dolichophallus* Tesch, 1918, male (9.4×7.7 mm) (ZRC 2008.540). A, C, dorsal view; C, ventral view.



Fig. 2. *Xenophthalmodes semicylindrus* (Fabricius, 1798). Lectotype male 11.3×9.2 mm (ZMUC Cru 123). Dried specimen mounted on card.

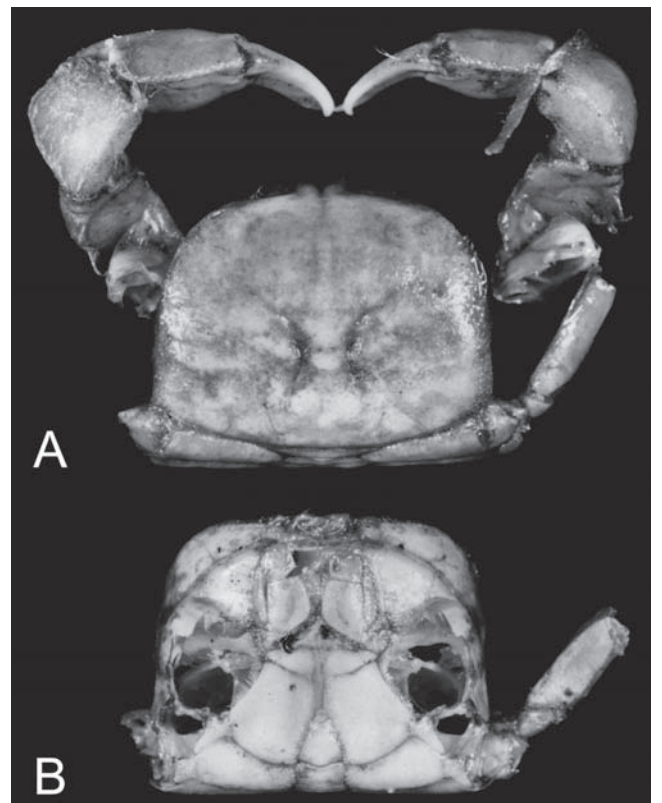


Fig. 3. *Xenophthalmodes semicylindrus* (Fabricius, 1798). Lectotype male 11.3×9.2 mm (ZMUC Cru 123). Rehydrated specimen. A, dorsal view; B, ventral view.

Pilumnidae Samouelle, 1819***Xenophthalmodes* Richters, 1880**

Remarks. – *Xenophthalmodes* Richters, 1880, was formerly placed in the family Goneplacidae (Tesch, 1918; Serène, 1968; Griffin & Campbell, 1969) but was subsequently moved to the Pilumnidae (see Ng, 1987; Takeda, 1989; Ng et al., 2008). Serène (1968) listed four species *X. brachyphallus* Barnard, 1955, *X. dolichophallus* Tesch, 1918, *X. moebii* Richters, 1880, and *X. morsei* Rathbun, 1932, with Ng et al. (2008) adding *X. semicylindrus* (Fabricius, 1798).

The genus was originally established for one new species from Mauritius, *X. moebii*, by Richters (1880: 155, 156, Pl. 16 Fig. 29, Pl. 17 Figs. 1–5), and was redescribed by Türkay (1981). Tesch (1918) discussed the type species in some detail and added a new species, *X. dolichophallus*, which he distinguished from *X. moebii* by numerous characters of the carapace, third maxillipeds and most prominently, by its exceedingly long G1 which protrudes well beyond the telson. Griffin & Campbell (1969: 144) elaborated on the taxonomy of these two species and figured the chelae

of both species (Griffin & Campbell, 1969: Fig. 2D, E) and the G1 of *X. dolichophallus* (see Griffin & Campbell, 1969: Fig. 6C). Rathbun (1932) described *X. morsei* from Japan and Barnard (1955) described *X. brachyphallus* from East Africa. With regards to *X. semicylindrus* (Fabricius, 1798), it is poorly known; Ng et al. (2008: 145) commented “*Cancer semicylindrus* Fabricius, 1798, has been referred to various genera and families, but P. K. L. Ng has examined a syntype specimen in the Copenhagen Museum, and it is clearly a member of the genus *Xenophthalmodes*. It may be a senior synonym of a better known species, but until the genus is revised, it is here regarded as a distinct species.”

The type specimen of *X. semicylindrus* in question is a male 11.3 × 9.2 mm (ZMUC Cru 123) collected from “Oceano Dom. Daldorff” (Fabricius, 1798: 344), probably the Indian Ocean. Zimsen (1964: 650) listed this specimen in her catalogue of the Fabricius material but since Fabricius (1798) did not indicate how many specimens he had, the specimen is here designated as the lectotype of *Cancer semicylindrus*. This lectotype male is figured here (Figs. 2–4). The original specimen was mounted as a dried specimen (Fig. 2) but the material was rehydrated in the 1980s (Wolff, 1999). The G1

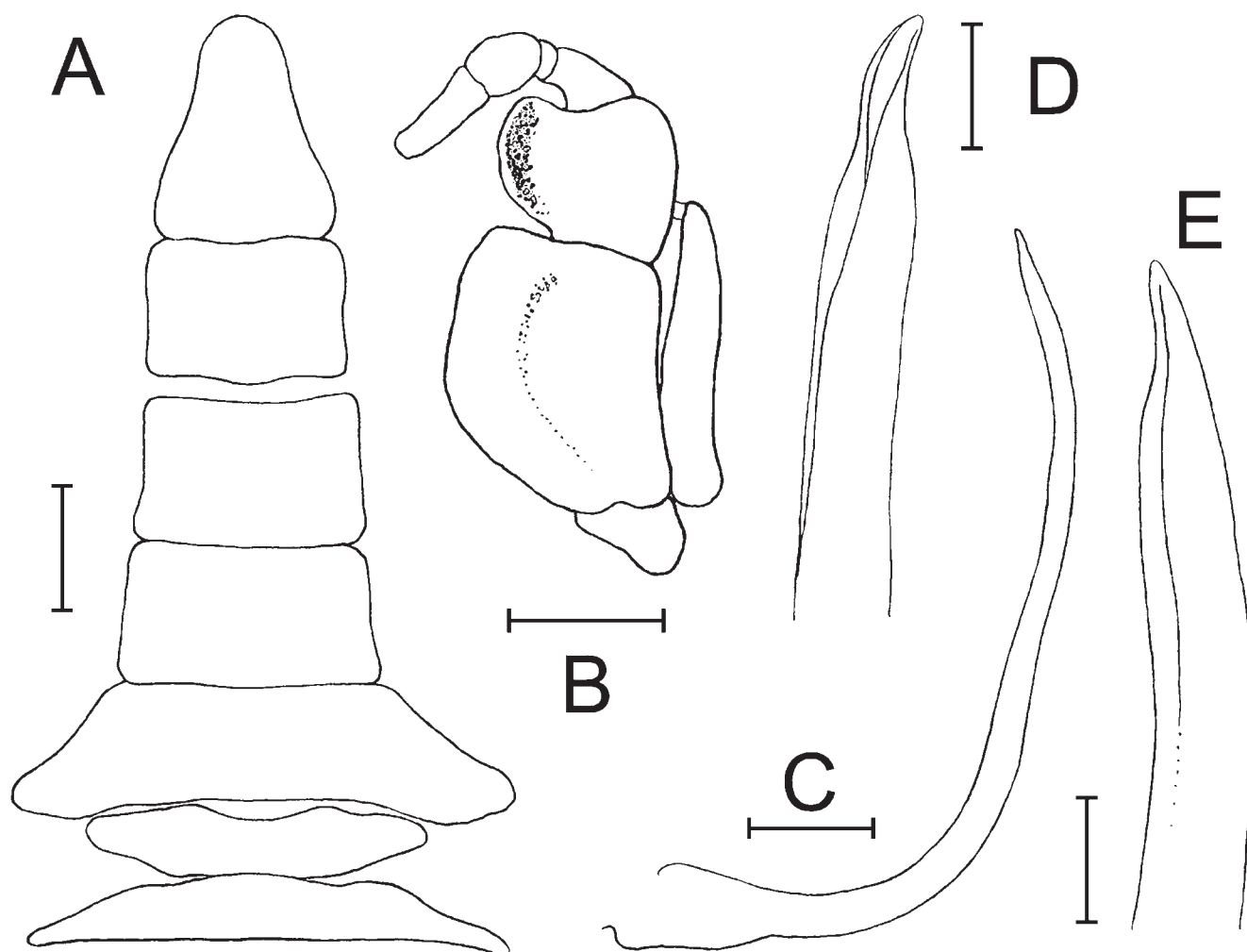


Fig. 4. *Xenophthalmodes semicylindrus* (Fabricius, 1798). Lectotype male 11.3 × 9.2 mm (ZMUC Cru 123). A, abdomen; B, left third maxilliped (denuded); C, left G1; D, E, distal part of left G1. Scale bars: A–C = 1.0 mm, D, E = 0.25 mm.

of the specimen is still intact, although many of the setae appear to have fallen off (Fig. 4C–E). Weber (1795) had used the new name *Alpheus semicylindrus* for this taxon but as there was no diagnosis or indication, it is a nomen nudum. *Xenophthalmodes semicylindrus* is close to *X. dolichophallus*, especially with regards to the form of the G1s (Fig. 3B versus Fig. 1C). The carapace of *X. semicylindrus*, however, has the lateral margins somewhat less divergent (Figs. 2, 3A) than those of *X. dolichophallus* (Fig. 1B), and the fingers of the cheliped are relatively longer (Figs. 2, 3A versus Fig. 1B). These differences appear to be minor and may be associated with size or variation. As such the two species are retained until the genus is revised and all the material of the various species directly compared. Serène & Soh (1976: 20) also commented on the similarity of *X. dolichophallus* to *X. morsei* from Japan, and suggested that the two species may be synonymous.

***Xenophthalmodes dolichophallus* Tesch, 1918**
(Fig. 1B, C)

Xenophthalmodes dolichophallus Tesch, 1918: 216–217, Pl. 14, Figs. 1, 1a, 1b; Ng et al., 2008: 144.
Xenophthalmodes moebii - Barnard, 1950: 297–299, Figs. 56 a–c (not *Xenophthalmodes moebii* Richters, 1880).

Material examined. – 2 males (9.4 × 7.7 mm, 7.2 × 4.8 mm), 1 ovig. female (11.7 × 8.9 mm) (ZRC 2008.540), Bali (25°19.09'N 121°35.85'E), Taipei County, coll. H.-J. Chen, 1 Apr.2008.

Remarks. – The unique straight and prolonged G1 of *X. dolichophallus* which extends far beyond the telson (see Tesch, 1918: 217, Pl. 14 Fig. 1b; present study Fig. 1C) distinguishes the species. But as has been discussed earlier, it is likely that *X. dolichophallus* Tesch, 1918, is a junior subjective synonym of *X. semicylindrus* (Fabricius, 1798). All previously known specimens of *X. dolichophallus* were collected from the Indian Ocean or southern part of the West Pacific – Djangkar, east coast of Java; Modura Bay, west coast of Flores; Lohio Bay, Buton Strait, south of Sulawesi (= Celebes); Moreton Bay, Queensland, Australia; Delagoa Bay, South Africa (see Tesch, 1918; Griffin & Campbell, 1969); and off Phuket, western Thailand (Serène & Soh, 1976: 20, Fig. 19). The present distribution record for the species is not only the first in Taiwan waters, but also from the northern hemisphere of the Pacific.

ACKNOWLEDGEMENTS

This study has been supported by grants (NSC96-2621-B-005-003) to PWH from the National Science Council, R.O.C., and a grant to PKLN from the National University of Singapore. We thank H.-T. Hung and H.-J. Chen for the assistance in field collections, and C.-M. Kuo for photographs of the Taiwanese material. We are grateful to Torben Wolff for his help with the ZMUC material. Tohru Naruse highlighted some additional publications relevant to this paper, while S. K. Tan and S. H. Tan helped with the specimens.

LITREATURE CITED

- Barnard, K. H., 1950. Descriptive catalogue of South Africa decapod Crustacea (crabs and shrimps). *Annals of the South African Museum*, **38**: 1–837.
- Barnard, K. H., 1955. Additions to fauna-list of South African Crustacea and Pycnogonida. *Annals of the South African Museum*, **43**(1):1–107.
- Fabricius, J. C., 1798. *Supplementum Entomologiae systematicae*. Proft et Storch, Hafniae. 573 pp.
- Griffin, D. J. G. & B. M. Campbell, 1969. The sub-littoral Goneplacidae and Pinnotheridae (Crustacea: Brachyura) of Moreton Bay. *Memoirs of the Queensland Museum*, **15**(3): 141–164.
- Naruse, T., 2005. Species of *Moguai* Tan and Ng, 1999 (Decapoda: Brachyura: Camptandriidae) from brackish waters in the Ryukyu Islands, Japan, with the description of a new species. *Zootaxa*, **1044**: 57–64.
- Ng, P. K. L., 1987. The Indo-Pacific Pilumnidae II. A revision of the genus *Rhizopa* Stimpson, 1858 and the status of the Rhizopinae Stimpson, 1858 (Crustacea: Decapoda: Brachyura). *Indo-Malayan Zoology*, **4**(1): 69–111, Pl. 1.
- Ng, P. K. L., D. Guinot & P. J. F. Davie, 2008. Systema Brachyurorum: Part I. An annotated checklist of extant brachyuran crabs of the world. *Raffles Bulletin of Zoology*, Supplement **17**: 1–286.
- Ng, P. K. L., C.-H. Wang, P.-H. Ho & H.-T. Shih, 2001. An annotated checklist of brachyuran crabs from Taiwan (Crustacea: Decapoda). *National Taiwan Museum Special Publication Series*, Taipei, Number **11**: 1–86, 8 colour pls.
- Rathbun, M. J., 1931. New and rare Chinese crabs. *Lingnan Science Journal*, **8** (1929): 75–125, Pls. 5–15.
- Rathbun, M. J., 1932. Preliminary descriptions of new species of Japanese crabs. *Proceedings of the Biological Society of Washington*, **45**: 29–38.
- Richters, F., 1880. Decapoda. In: K. Möbius, *Beiträge zur Meeresfauna der Insel Mauritius und der Seychellen, bearbeitet von K. Möbius, F. Richters und E. von Martens nach sammlungen, angelegt auf einer Reise nach Mauritius von K. Möbius*, Berlin: 139–178, Pls. 15–18.
- Samouelle G., 1819. *The Entomologist's Useful Compendium, or an Introduction to the Knowledge of the British Insects*. 496 pp., London, Thomas Boys.
- Serène, R., 1968. The Brachyura of the Indo Pacific Region. In: *Prodromus for a Check List of the Non-planctonic Marine Fauna of South East Asia. Special Publication of the Singapore National Academy of Science*, No. **1**: 33–120.
- 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.
- Takeda, M. & K. Iwasaki, 1983. Remarkable crabs from the Ryukyu Islands (1). *Bulletin of the Biogeographical Society of Japan*, **38**(9): 87–91.
- Tan, C. G. S. & P. K. L. Ng, 1999. A revision of the genus *Camptandrium* Stimpson, 1858 (Crustacea: Decapoda: Brachyura: Camptandriidae). *Raffles Bulletin of Zoology*, **47**(1): 193–219.
- Tesch, J. J., 1918. The Decapoda Brachyura of the Siboga Expedition. II. Goneplacidae and Pinnotheridae. *Siboga-Expeditie*, **39c**: 149–295, Pls. VII–XVIII.

- Türkay, M., 1981. Die Expedition von K. Mobius nach Mauritius und den Seychellen (1874-75) und die dort gesammelten Decapoda Reptantia. I. Brachyura excl. Dromiacea, mit Beschreibung von *Menaethiops moebii*. *Mitteilungen aus dem Zoologischen Museum der Universität zu Kiel*, 1(7): 35–64.
- Weber, F., 1795. *Nomenclator entomologicus secundum Entomologiam systematicam ill. Fabricii adjectis speciebus recens detectis et varietatibus*. Chilonii & Hamburgi. viii + 171 pp.
- Wolff, T., 1999. The Crustacean collections of the Zoological Museum, University of Copenhagen, Denmark. *Proceedings of the Fourth International Crustacean Congress, 1998. Crustaceans and the Biodiversity Crisis*, Schram, F. R. & J. C. von Vaupel Klein (Eds.). Volume 1: 61–72.
- Zimsen, E., 1964. *The type material of I. C. Fabricius*. Pp. 1–656, 1 text-fig., 2 pls.