

## 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

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### Abstract

Two species of *Moguai* Tan & Ng, 1999 (Camptandriidae) are recorded from the Ryukyu Islands, Japan, one of which is new to science. *Moguai pyriforme*, sp. nov. is distinguished from other two congeners by its narrower front and the anterolateral margin being located inside the branchial region. *Moguai elongatum* is recorded from Japan for the first time, and its geographical distribution extended east from Fukien Province, China. A key to the species of *Moguai* is provided.

**Key words:** *Moguai pyriforme*, sp. nov., *M. elongatum* (Rathbun, 1931), Camptandriidae, taxonomy, Ryukyu Islands

### Introduction

The family Camptandriidae contains 20 genera 39 species from West Africa, South Africa, and Madagascar to Sakhalin and New Caledonia, all species occur in marine to estuarine and mangrove habitats. (Barnard, 1955; Guinot & Crosnier, 1963; Manning & Holthuis, 1981; Tan & Ng, 1999; Labai, 2004). The family has long been a subfamily of Ocypodidae or even part of the Macrophthalminae, but it has now been recognised as a distinct family (Harminto & Ng, 1991; Ng, 1998).

The camptandriid genus *Moguai* Tan and Ng, 1999, was described on the basis of only two species, *M. aloutos* Tan & Ng, 1999, from Singapore and Bintan Island (Indonesia), and *M. elongatum* (Rathbun, 1931), from Liuwutien (Fukien Province), Hong Kong and Hainan, China (Tan & Ng 1999, Rathbun 1931, Shen 1940). Two species of *Moguai* were

recently collected from Okinawa, Amami-Oshima, and Ishigaki islands, Japan, one of which is new to science.

### Materials and Methods

Specimens are deposited in the Osaka Museum of Natural History, Osaka, Japan (OMNH), Ryukyu University Museum, Fujukan, Okinawa, Japan (RUMF), and Zoological Reference Collection, Raffles Museum of Biodiversity Research, National University of Singapore, Singapore (ZRC). Specimens were measured using a stereomicroscope (Nikon SMZ-10) provided with an eye-piece micrometer or using a digital slide-caliper (Mitsutoyo CD-20PM) to the nearest 0.1mm. The abbreviation CL is used for the carapace length. The terminology follows Tan & Ng (1999).

### Taxonomy

#### Camptandriidae Stimpson, 1858

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

#### *Moguai pyriforme* sp. nov.

(Figs. 1a, 2)

*Moguai elongatum* — Kishino *et al.*, 2001a: 21, pl. 2 (6); 2001b: 129.

*Moguai* sp. — Naruse, 2005 (in press): 207, pl. (Crustacea: lower left).

**Material examined.** Female holotype. CL 5.0 mm, RUMF-ZC-31, Tima River, Okinawa I., coll. T. Naruse, 8 Dec. 2004.

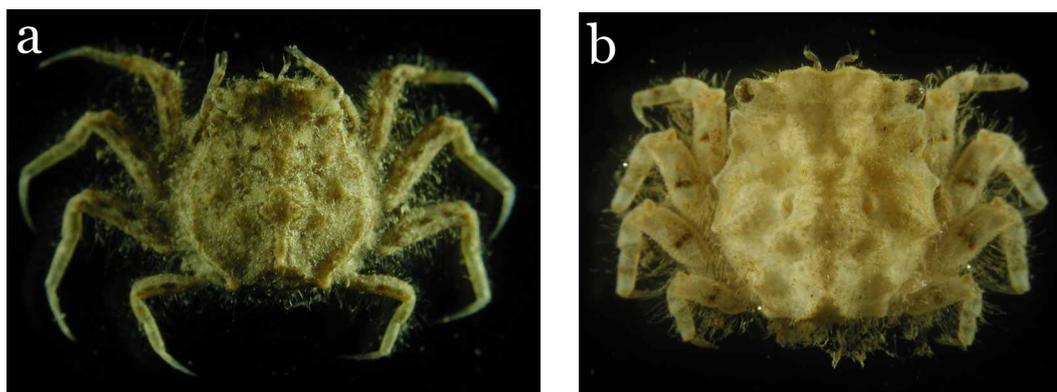
Paratypes. 1 female, CL 4.1 mm, ZRC 2005.0111, Tima River, Okinawa, coll. T. Naruse, 25 Dec. 2004; 1 ovigerous female, CL 5.5 mm, OMNH-Ar. 4910, Nakaganeku River, Konase, Amami-Oshima I., coll. T. Kishino, 1 May 2000.

**Comparative material.** *Moguai aloutos* Tan & Ng, 1999: male paratype, ZRC 1965.7.9.21, Kuantan, Pahang, Peninsular Malaysia, coll. R. Serène; female paratype, ZRC 1997.0357, Lim Chu Kang mangroves, Singapore, coll. C. G. S. Tan, 6 Mar. 1996; 1 male, 13 females, ZRC 1965.7.15.35–44, Kuantan Pahang, Sep. 1935; 5 males, 5 females, ZRC 2003.0339, mangrove, Pulau Bintan, Indonesia, coll. P. K. L. Ng.

#### Description of female holotype.

Carapace (Figs. 1a, 2a, b) pear-shaped, 1.05–1.12 times longer than broad, dorsal surface uneven, with ridges, protuberances marginally covered with dark, stiff setae, other areas on carapace with fine, soft setae. Epigastric crista present, each mesogastric, cardiac region with a cross-shaped protuberance, mesobranchial region with anterior outer, median protuberances. Frontal region sloped toward midline, outer margin, frontal margin bilobed in dorsal view, frontal width about third fronto-orbital width; supraorbital margin

rimmed; infraorbital margin with rounded deep excavation, inner edge of excavation fused with suborbital crista, forming infraorbital cup (Fig. 2b); epistome with concave median portion. External orbital angle acute, anterolateral margin without epibranchial tooth, slightly concave, reaching posteriorly about anterior third of carapace, inside lateral wall of epibranchial region; branchial region swollen laterally, posterolateral margin rimmed, rough, continuing from below anterolateral margins to posteriorly produced posterolateral angle.



**FIGURE 1** *Moguai pyriforme*, sp. nov. and *M. elongatum* (Rathbun, 1931). a, *M. pyriforme*, Holotype, female, RUMF-ZC-31, CL 5.0 mm; b, *M. elongatum*, female, RUMF-ZC-33, CL 5.1 mm

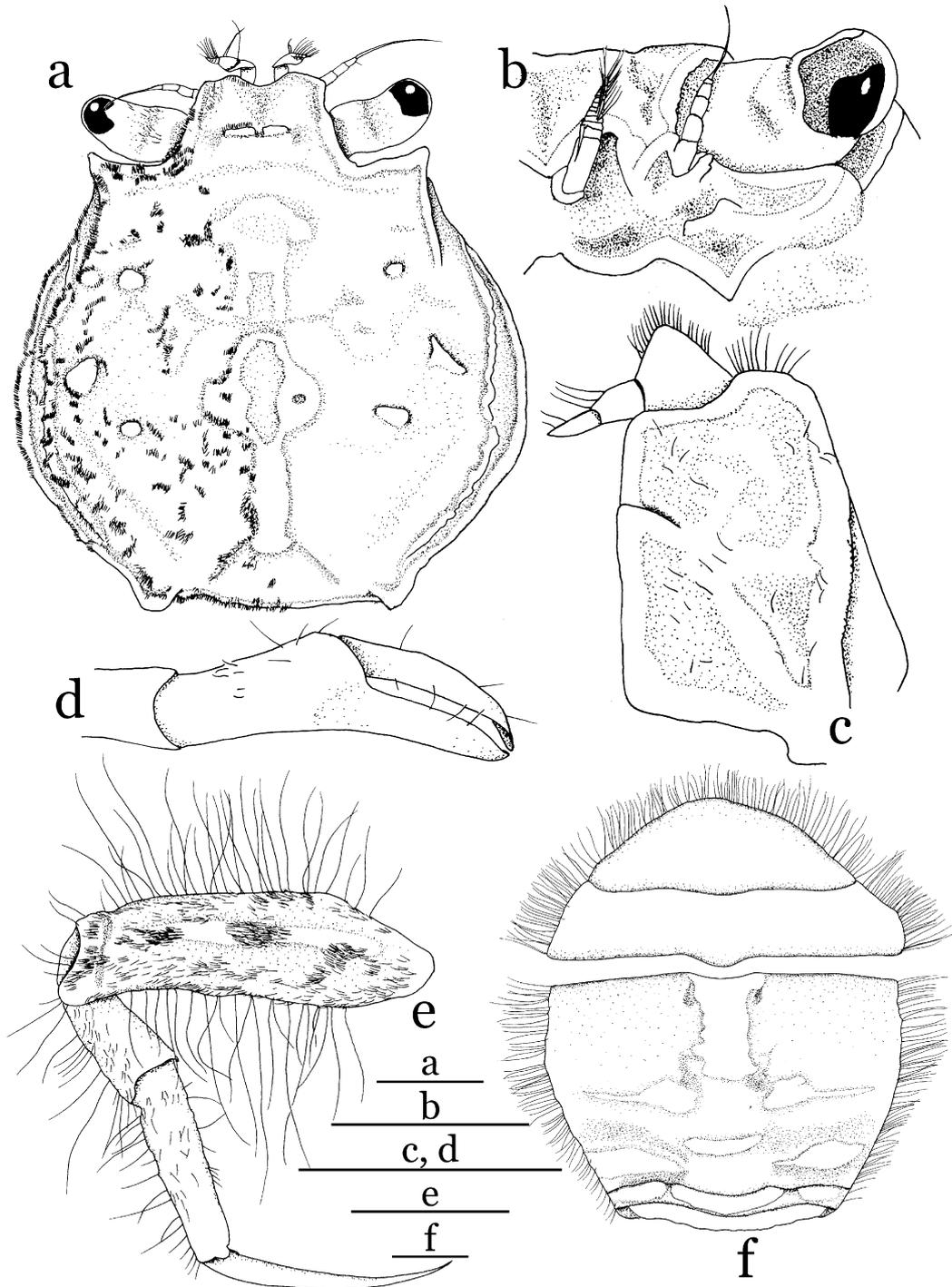
Third maxilliped (Fig. 2c) rectangular, without median hiatus between inner margins when closed; exopod tapered distally, reaching distal outer angle of merus, with distinct flagellum; ischium and merus fused, with suture discernible only along the inner third; carpus triangular, anterior apex positioned (*in situ*) below inner anterior angle of merus. Chelipeds (Fig. 2d) feeble, symmetrical, fingers of chela flat, incurved distally.

Ambulatory legs (Fig. 2e) short; meri slightly bent posteriorly, distal posterior angle with blunt projection, dorsal surface with few patches of black, short setae along midline; anterior, posterior margins with long plumose setae; carpi, propodi, dactyli, feeble, dactyli simple, incurved, tip acute, as long as or longer than propodi.

Abdomen (Fig. 2f) wide, third to fifth segments fused; first, second segments with transverse ridges along distal margins, fused segments with a medial, pair of lateral transverse ridges on proximal third portion, pair of transverse, one longitudinal ridge on distal half.

Male unknown.

**Variations.** A female paratype (ZRC 2005.0111) has one small epibranchial tooth behind the external orbital angle and a mesobranchial region that is relatively narrow than in holotype.



**FIGURE 2** *Moguai pyriforme*, sp. nov. Holotype, female, RUMF-ZC-31, CL 5.0 mm. a, carapace, dorsal view (setae were removed at right half); b, carapace, frontal view; c, third maxilliped, left; d, chela, right; e, third ambulatory leg, left; f, abdomen and telson. Scales, 1 mm.

**Habitat.** *Moguai pyriforme* was collected from brackish water on a pebbly-muddy substratum in riverbeds.

**Distribution.** Okinawa and Amami-Oshima islands, central Ryukyu Islands, Japan.

**Etymology.** From the Latin *pyriforme* meaning “pear-shaped”, alluding to the shape of the carapace. The name is used as a noun.

**Remarks.** In their revision of *Camptandrium* Stimpson, 1858, Tan & Ng (1999) established the genus *Moguai* for a new species, *M. aloutos* (type species), and *Camptandrium elongatum* Rathbun, 1931. *Moguai* was distinguished from *Camptandrium* by the shape of the carapace being longer than broad, the frontal width being a third the fronto-orbital breadth, the presence of an infraorbital cup (a cup-like protuberance on the infraorbital margin), the distal part of the G1 being bifurcated, the ischium of the third maxilliped not fused with the merus, and the inner distal angle of the ischium of the third maxilliped being acutely produced. *Moguai pyriforme* differs from the diagnoses provided by Tan & Ng (1999) in that it has a relatively broader front, and the merus and ischium of the third maxilliped are fused. *Moguai pyriforme*, however, possesses all the other characters that are diagnostic of *Moguai*, there is no doubt about its generic placement even though no males are available for a description of the G1 structure. The generic definition of the genus *Moguai*, however, will need to be slightly amended to accommodate the characters of *M. pyriforme*.

*Moguai pyriforme* can be easily distinguished from *M. aloutos* and *M. elongatum* by the proportionately narrower front which is about a third the fronto-orbital breadth (vs. about a half the fronto-orbital breadth), the fusion of the merus and ischium of the third maxilliped (vs. free), and the branchial region being laterally swollen such that the one or two anterolateral teeth are clearly dorsal in position (vs. the branchial region is not distinctly swollen such that the three anterolateral teeth are clearly marginal in position) [cf. Fig. 1b; Tan & Ng 1999: 203, figs. 3, 4; Rathbun 1931: 95, pl. 13(40–43); Shen 1935: 33, figs. 8C, 10]. The degree of swelling of the mesobranchial region is probably a sexually dimorphic character. A large female of *M. aloutos* (CL 6.2 mm, ZRC 1965.7.15.35–44), has a relatively more swollen mesobranchial region than males, although this is still much less distinct than that observed on *M. pyriforme*.

Kishino *et al.* (2001a, b) recorded *M. elongatum* from Amami-Oshima. Their specimen (OMNH-Ar. 4910), however, possesses all the diagnostic characters of *M. pyriforme* [Kishino, *et al.*, 2001a: pl. 2(6)]; the specimen from Amami-Oshima is not *M. elongatum* but *M. pyriforme*.

### ***Moguai elongatum* (Rathbun, 1931)**

(Fig. 1b)

*Camptandrium elongatum* — Rathbun 1931: 95, pl. 13, figs. 40–43; Shen 1935: 33, fig. 10A–C; 1940a: 73, 93; 1940b: 234; Shen & Dai 1964: 115; Manning & Holthuis 1981: 199; Dai *et al.*

1986: 439, fig. 246; Dai & Yang 1991: 482, pl. 61(3), fig. 246(1).  
*Moguai elongatum* — Tan & Ng 1999: 205, figs. 3C, D, G, 4D, E.

**Material examined.** 1 male, CL 2.8 mm, 2 females, CL 2.3, 3.2 mm, RUMF-ZC-32, Motonagura, Ishigaki I., coll. T. Naruse & T. Nagai, 21 Dec. 2004; 1 female, CL 5.1 mm, RUMF-ZC-33, Motonagura, Ishigaki I., coll. T. Naruse & T. Nagai, 20 Mar. 2005.

**Remarks.** The specimens from Ishigaki Island agree well with the description of *M. elongatum* by Rathbun (1931) and Tan & Ng (1999). The range of this species is extended east from Fukien Province, China.

Shokita (1990) had recorded *M. elongatum* from Iriomote I., which is located less than 20 km west of Ishigaki I., but he did not provide a description or figure. Shokita's (1990) material is almost certainly lost (S. Shokita, pers. comm.), and as such, the identity of his specimens cannot be determined.

Specimens from Ishigaki I. were collected from riverbeds of river mouths, with a pebbly-sandy substratum. The locality is exposed by seawater at high tide.

#### Key to species of *Moguai*

- 1 Front narrower, width ca. one- third of fronto-orbital breadth.....  
 .....*Moguai pyriforme*, sp. nov.
- Front wider, width ca. half of fronto-orbital breadth..... 2
- 2 Supraorbital margin produced dorsally to forming "eave" in frontal view; posterolateral angle of carapace distinctly produced posteriorly...*M. aloutos* Tan & Ng, 1999
- Supraorbital margin not produced dorsally in frontal view; posterolateral angle of carapace obtuse, being barely produced.....*M. elongatum* (Rathbun, 1931)

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