Zootaxa 2294: 39–46 (2009)
www.mapress.com/zootaxa/

Article

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

Michaelcallianassa sinica sp. nov. (Crusacea, Decapoda, Thalassinidea, Callianassidae) from the South China Sea

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Abstract

A new species, *Michaelcallianassa sinica*, from the Beibu Gulf (Tonkin Gulf), northern South China Sea, is described and illustrated. The new species is readily distinguished from *M. indica* Sakai, 2002, the type species of the genus, by its short uropodal endopod and exopod, and elongated carpus of the minor cheliped.

Key words: Callianassidae, *Michaelcallianassa***,** new species, northern South China Sea

Introduction

While working on a systematic study of the thalassinidean fauna of the China Sea, a second species of the genus *Michaelcallianassa* Sakai, 2002 has been found from the Beibu Gulf, northern South China Sea.

Michaelcallianassa of the family Callianassidae, subfamily Callichirinae, was established with only its type species *Michaelcallianassa indica* Sakai, 2002 from the Persian Gulf and the Andaman Sea.

Michaelcallianassa is characterized by abdominal somites 3–5 bearing a pair of longitudinal, anteriorly convergent grooves on terga, male and female pleopods 2 being uniramous, a small appendix interna on the female pleopod 2, and pleopods 3–5 bearing fused appendices internae.

In this paper a second species, *Michaelcallianassa sinica* sp. nov., from the Beibu Gulf, northern South China Sea is described.

Materials and methods

Materials for this study were collected from the northern South China Sea including Beibu Gulf (Gulf of Tonkin) (1959–1960, 1962) and the northern South China Sea. All materials examined are deposited in the Institute of Oceanology, Chinese Academy of Sciences, Qingdao, China (IOCAS).

The drawings were made with the aid of a drawing tube mounted on a Zeiss Stemi Sv11 microscope.

The following abbreviations are used: cl, length of carapace; tl, total length of body.

Systematics

Family Callianassidae Dana, 1852

Subfamily Callichirinae Manning & Felder, 1991

Accepted by J. Goy: 16 Oct. 2009; published: 20 Nov. 2009

Genus *Michaelcallianassa* Sakai, 2002

Michaelcallianasssa Sakai, 2002: 480–481. — Sakai, 2005: 156–157.

Remarks. Sakai (2002) diagnosed the genus and described the type species, *M. indica*, in detail. Later, he (Sakai, 2005) rediagnosed the genus and added more information and figures of *M. indica*. His description of the male pleopods 1 and 2 (Sakai, 2002: 485) could equally apply to those of the new species described below and gave us confidence in its generic placement. Sakai's (2002) figures 14E and 14F are mislabelled (reversed) and his 2005 generic rediagnosis and species redescription of female pleopods are contradictory.

***Michaelcallianassa sinica* sp. nov. (Figs 1–5)**

Material examined. **Holotype:** ♀, X286A-19, Beibu Gulf Stn. 7402, 19.87°N, 106.96°E, 33 m, Kh, coll., 13 October 1962. **Paratypes:** ♂, X101A-4, Beibu Gulf Stn. 6269, 19.72°N, 106.68°E, 30.7 m, Zhengang Fan, coll., 19 September 1960; ♂, Y213-19, Beibu Gulf Stn. 6285, 19°N, 106.67°E, 30.7 m, Zhengang Fan, coll., 19 September 1960; ♀, Q136A-24, Beibu Gulf Stn. 6259, 20.21°N, 107.19°E, 31 m, Fuzeng Sun, coll., 10 February 1960; ♀, X54A-18, Beibu Gulf Stn. 6269, 19.72°N, 106.68°E, 33 m, Zhengang Fan, coll., 8 February 1960; ♂, X215A-16, Beibu Gulf Stn. 7104, 20.15°N, 109.81°E, 32m,Qian, coll., 22 April 1962.

Non-type material: juvenile**,** Q199A-15, Beibu Gulf Stn. 6234, 21.00°N, 108.00°E, 30 m, Fuzeng Sun, coll., 21 September 1960; juvenile, X276A-19, Beibu Gulf Stn. 7602, 19.00°N, 106.00°E, 30.7 m, Th, coll., 11 October 1962; ♀, Q258A-11, Beibu Gulf Stn. 6212, 21.20°N, 108.68°E, 23m,Fuzeng Sun, coll., 18 July 1962; juvenile, X304A-10, Beibu Gulf Stn. 7202, 20.89°N, 108.25°E, 31m,Qian, coll., 24 October 1962; ♂, South China Sea, Stn. D13-6, 20.60°N, 112.06°E, 50m ,October 2007.

Diagnosis. Abdominal terga 3–5 each with a pair of longitudinal, anteriorly convergent grooves, without a transverse row of setae. Telson 0.9 times as long as maximum width. Eyestalks tapering distally. Maxilliped 3 merus-ischium 3.7 times as long as wide at suture. Major cheliped merus 2.1 times as long as deep, carpus 0.95 times as long as deep in male and 1.4 times in female, dactylus 0.96 times as long as upper palm margin. Minor cheliped merus 2.3 times as long as deep, carpus 1.5 times as long as deep, dactylus 1.6 times as long as upper palm margin. Uropodal endopod short, 1.4 times as long as wide and 1.2 times as long as telson; uropodal exopod broad, 1.3 times as long as wide and 1.6 times as long as telson. Pleopods 3–5 appendices internae emerge from margin.

Description. Rostrum (Fig. 1A) sharply triangular reaches middle of eyestalks, lateral projections obsolete. Carapace smooth (Fig. 1A), 0.27 of total body length; dorsal oval well defined 0.63 as long as carapace. Cervical groove located at posterior quarter; linea thalassinica complete.

Eyestalks (Fig. 1A) elongate, sub-triangular in dorsal view and tapering distally in lateral view, with a sharp distomedian tip; extending to middle of first article of antennular peduncle; cornea located at distal third, with scarce brown pigments, cornea less than 1/3 of peduncle in width.

Antennular peduncle (Fig. 1A) distinctly longer than antennal peduncle; the third article 1.7 times as long as the second; rami of flagella subequal in length to peduncle. Antennal peduncle with rudimentary scale on article 3; the fifth article about as long as the fourth article.

Maxilliped 3 (Fig. 3A, B) without exopod; length of merus–ischium 3.7 times as long as width at suture, with dense setae on lower margin; ischium subquadrate, 1.8 times as long as wide, inner surface with crista dentata consisting of a curved row of small and sharp denticles; merus subtriangular, slightly broader than long, slanting on distal margin; carpus narrow proximally, broad distally and 1.9 times as long as wide, 1.6 times as long as merus; propodus sub-ovate, broadened lower margin, smooth on upper margin, about as long as wide and slightly shorter than carpus; dactylus small and narrow, digitiform, half as long as propodus.

Branchial formula summarized in Table 1; maxilliped 2 with a rudimentary arthrobranch, maxilliped 3 to pereopod 4 each with two arthrobranchs.

TABLE 1. Branchial formula of *Michaelcallianassa sinica*, new species, r=rudimentary.

	Maxillipeds			Pereopods				
	1	2	3	1	2	3	4	5
Exopods								
Epipods	1	-	-	-	-	-	-	-
Podobranchs	-	-	-	-	-	-	-	-
Arthrobranchs	-	r	2	2	2	2	2	-
Pleurobranches	-	-	-	-	-	-	-	-

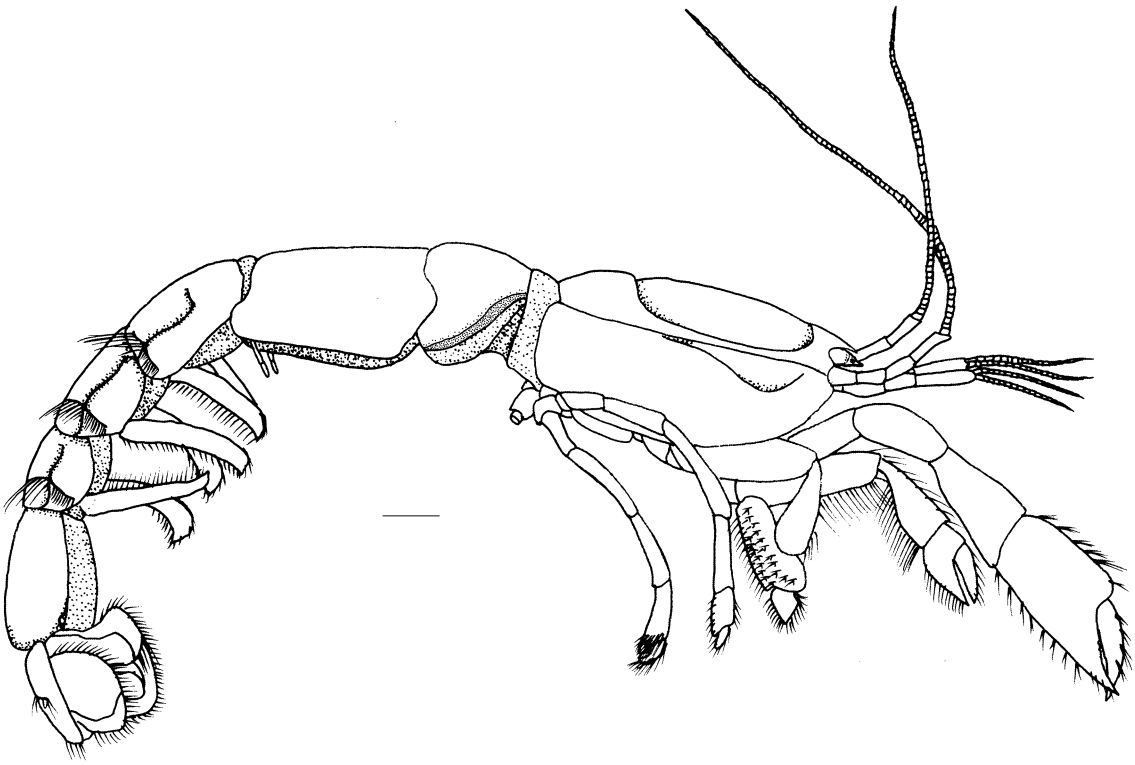

FIGURE 1. *Michaelcallianassa sinica* sp. nov. Holotype female, X286A-19, entire animal, laterral view. Scale= 1mm.

Pereopods 1 unequal. Male major cheliped (Fig. 4A, B) with ischium three times as long as high, upper margin slightly sinuous and unarmed, lower margin straight, armed with a small tooth near distal end and followed by inconspicuous denticles. Merus slightly longer than ischium, and about twice as long as high, upper margin slightly convex, lower margin lacking distinct enlarged lobe, armed with inconspicuous denticles. Carpus 0.8 times as long as high, 0.8 times as long as merus, shorter than palm; upper margin almost straight, and lower margin proximal broadly rounded and smooth. Chela heavy, about 1.8 times as long as high; fixed finger slightly shorter than plam, cutting edge with a big triangular tooth one third way along and a row of low denticles extending to the distal end; dactylus slender and slightly longer than fixed finger, cutting edge sinuate and armed with a row of denticles in middle. Tips of dactylus and fixed finger corneous. Ratio of upper lengths- ischium: merus: carpus: propod- 1:1:0.9:1.2.

Male minor cheliped (Fig. 3C) with ischium 3.5 times as long as high, unarmed on both lateral margins. Merus shorter than ischium, about 2.4 times as long as high, upper margin slightly convex, lower margin almost straight, smooth without an enlarged lobe; outer surface medially swollen; carpus 1.5 times as long as high, slightly longer than merus, 1.3 length of palm; upper margin almost straight, proximolower margin gradually tapering to the base. Chela gapped between slender dactylus and fixed finger; palm nearly as long as high, distal margin largely descending toward the tip of fixed finger; fixed finger reduced in breadth toward

the tip, bearing several inconspicuous teeth on cutting edge; dactylus 1.6 as long as palm, slender , concave and unarmed on cutting edge. Tips of dactylus and fixed finger corneous. Ratio of upper lengths- ischium: merus: carpus: propod- 1:0.9:1:0.75.

Female major cheliped (Fig. 2D) similar to male but carpus narrow, 1.4 times as long as deep. Minor cheliped (Fig. 4C) similar to male.

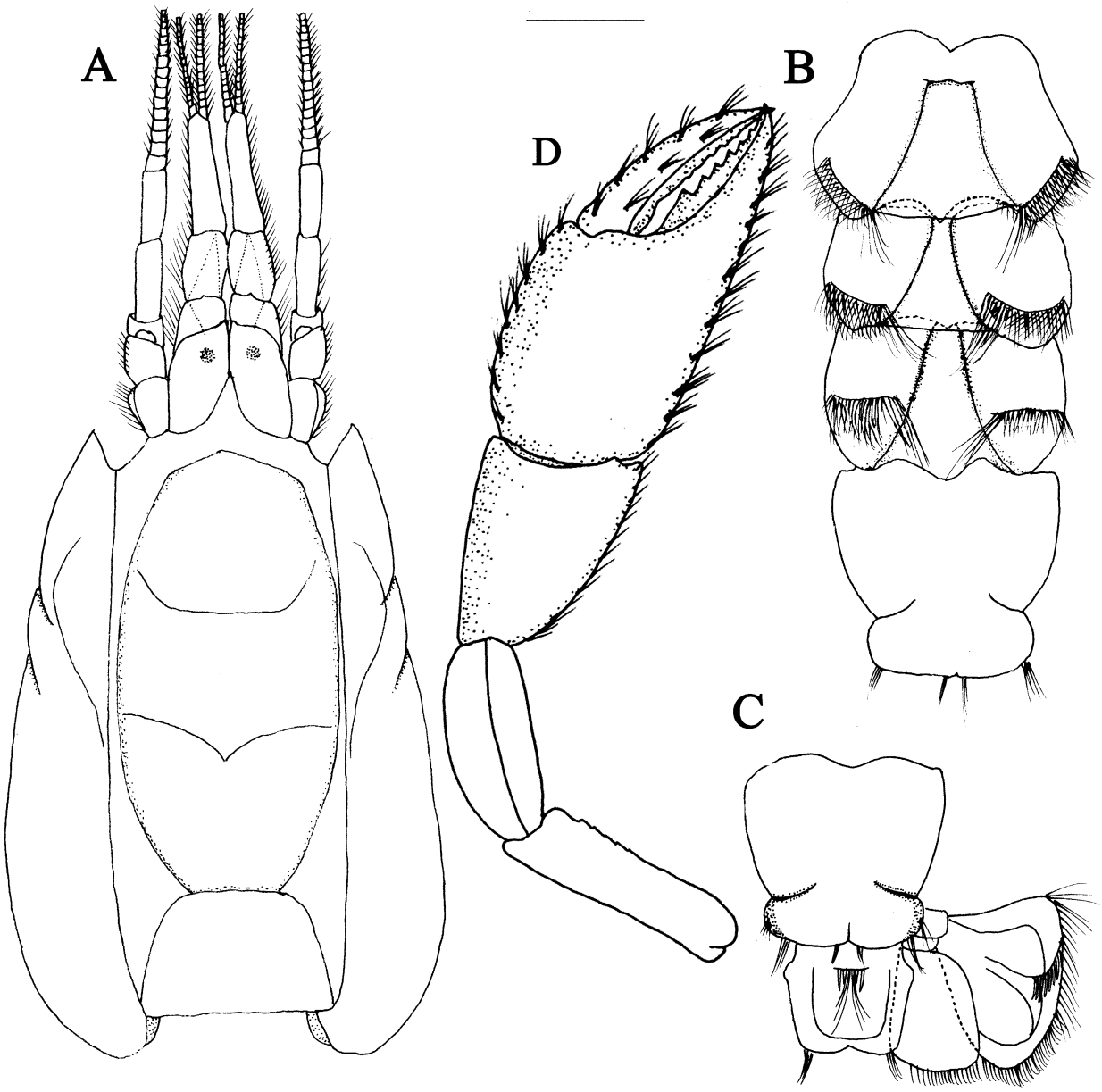

FIGURE 2. *Michaelcallianassa sinica* sp. nov. Holotype female, X286A-19. A. carapace, dorsal view; B. abdominal somites 3–6, dorsal view; C. telson and right uropods, dorsal view; D. right major cheliped, outer view. Scale= 1.6mm for A; 1mm for B, C.

Pereopod 2 (Fig. 3D) chelate. Ischium about as long as high; merus about 3 times as long as high, upper margin smooth, lower margin protruding and with row of dense long setae; carpus subtriangular, shorter than merus; chela slightly shorter than carpus, beset with dense setae on lower and upper margins; palm shorter than fingers, upper margin conves; dactylus 4.0 times as long as upper margin of palm; carpus and chela fringed with short to long setae along margins; tips of dactylus and fixed finger corneous.

Pereopod 3 (Fig. 3E) hammer-shaped. Ischium broadened, square; merus about 3.2 times as long as high;

carpus subtriangular, shorter and narrower than merus, broadest subdistally, more than twice as long as high; propodus subrectangular, lower margin roundly swollen posteriorly in height, upper margin protruded and 1/3 length of carpus, with numerous tufts of setae on lateral surface and row of thick setae along upper and lower margin; dactylus subtriangular, upper and lower margin convex; external surface densely setose, terminating in corneous tip.

Pereopod 4 (Fig. 3F) subchelate, all articles unarmed. Ischium rectangular; merus 2.0 length of ischium; carpus shorter than merus; propodus 0.6 length of carpus, lateral surface densely setose, lower distal corner projecting forward to form a subchela with dactylus; dactylus tapering distally, setose on lateral margin.

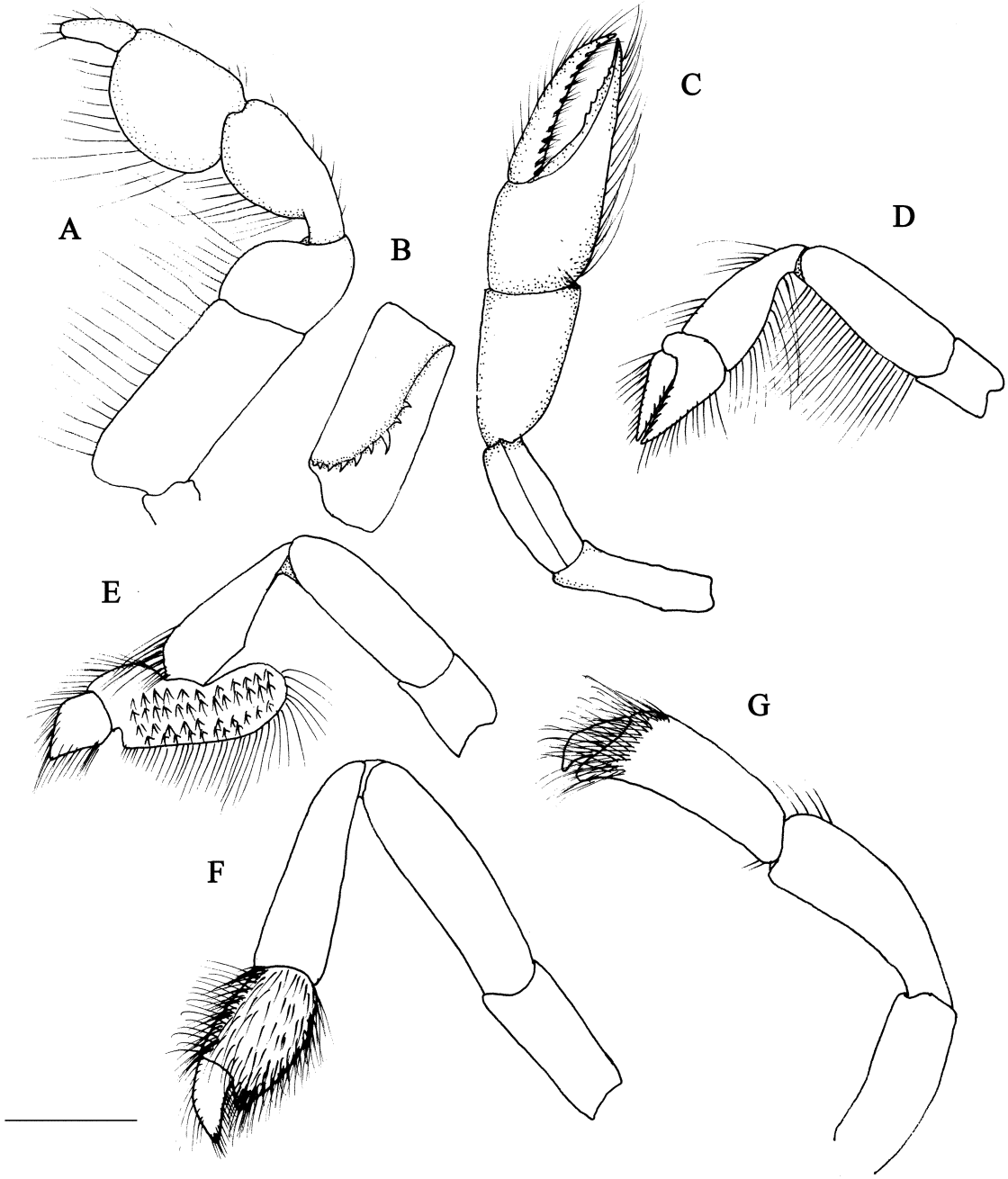

FIGURE 3. *Michaelcallianassa sinica*, new species. Paratype male, X101A-4. A. left maxilliped 3, outer view; B. ischium of left maxilliped 3, inner view; C. right minor cheliped, lateral view; D. pereopod 2, lateral view; E. pereopod 3, lateral view; F. pereopod 4, lateral view; G. pereopod 5, lateral view. Scale= 1mm for A, B; 2mm for C, D; 1.2mm for E, F, G.

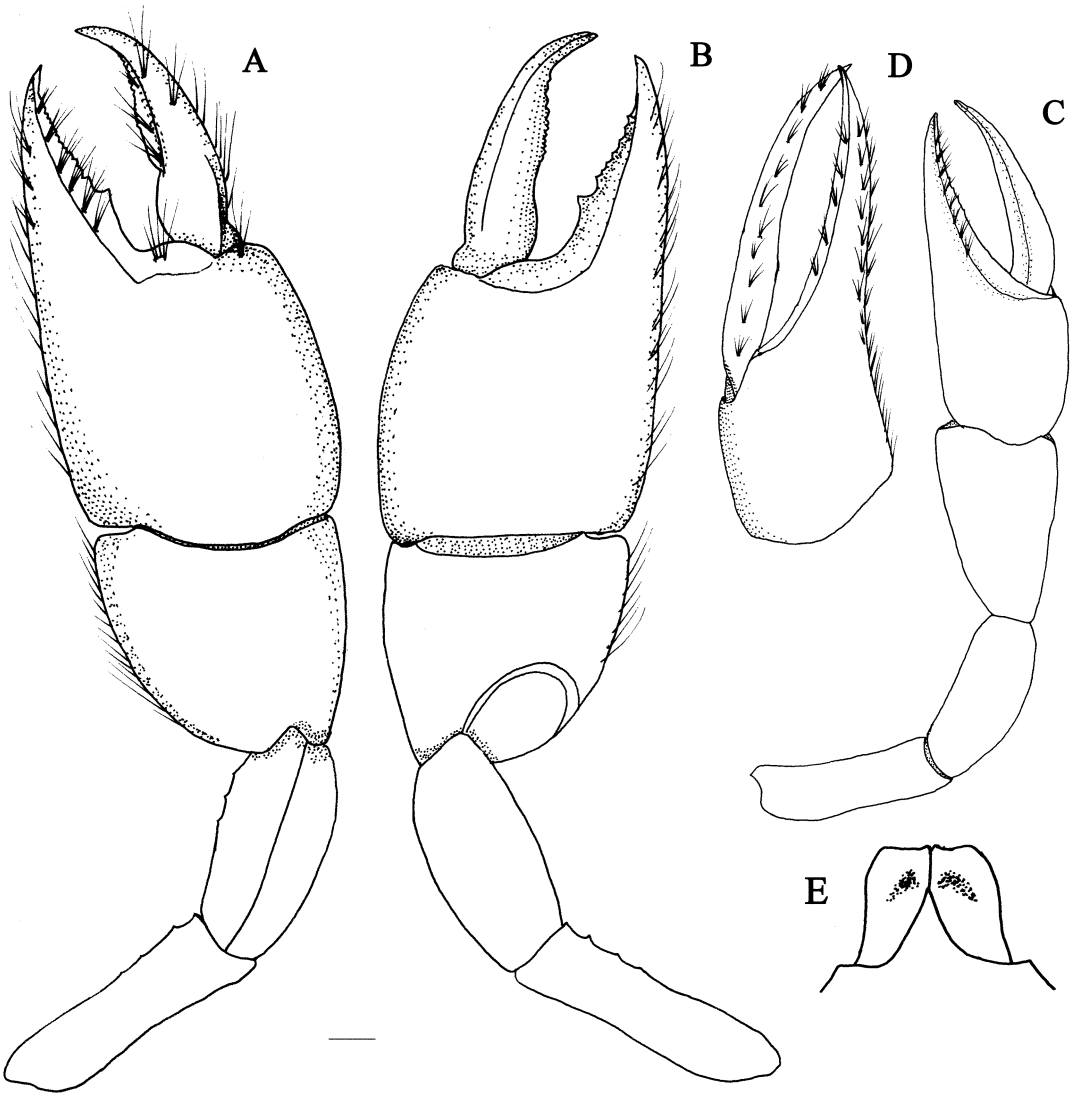

FIGURE 4. *Michaelcallianassa sinica*, new species. A–B, paratype male, X101A-4; C, holotype female, X286A-19; D, paratype male, Y213-19; E, paratype male X215A-16. A. left major cheliped, outer view; B. left major cheliped, inner view; C. left minor cheliped, outer view; D. dactylus and propodus of right minor cheliped, outer view; E. eyestalk, dorsal view. Scale= 1mm for A, B and E; 0.625mm for C, D.

Pereopod 5 (Fig. 3G) subchelate. merus elongate; carpus shorter than merus, upper margin largely swollen; propodus shorter than carpus, lower distal corner projecting to form a chela with dactylus, lateral surface beset distally with dense setae; dactylus hooked toward external side of fixed finger. Tips of dactylus and fixed finger obtuse.

Abdominal somites smooth dorsally; somite 1 dorsally sclerified, laterally with an oblique sclerite separated from the tergite by flexible cuticle; somite 2 glabrous dorsally; abdominal terga 3–5 (Fig. 1B) each bearing a pair of longitudinal, anteriorly convergent grooves on terga; and laterally with a transverse or oblique row of plumose setae, the inner most several of which quite long; terga 4–5 without a transverse row of setae; abdominal somite 6 about as long as wide, and convex laterally in posterior third.

Male pleopod 1 (Fig. 5A) uniramous, 2-articled; distal article concave distally and with long distal setae. Male pleopod 2 (Fig. 5B) uniramous, 2-articled, terminal article about as long as proximal, and terminated by rounded margin.

Female pleopod 1 (Fig. 5C) uniramous, 2-articled distal article short and broad. Female pleopod 2 (Fig.

5D) uniramous, 2 segmented; distal article longer than second, bearing a small appendix interna distally; pleopod 3 (Fig. 5E) biramous, foliaceous, and endopod bearing small, fused, narrow appendix interna (Fig. 5F) on mesial margin of endopod.

Telson (Fig. 1C) tapering from widest point, 0.9 times as long as wide; lateral margins largely concave proximally, then protruding to triangular point, directed to a broadly rounded posterior angles; posterior margin largely concave; dorsal surface convex with a transverse row of setae and 4 strong movable spines medially. Uropodal endopod slightly longer than telson, broadly triangular, 1.4 times as long as wide; posterior margin slightly convex; uropodal exopod broadened and fan-shaped, 1.3 times as long as wide; with a distinct submedian carina on dorsal surface.

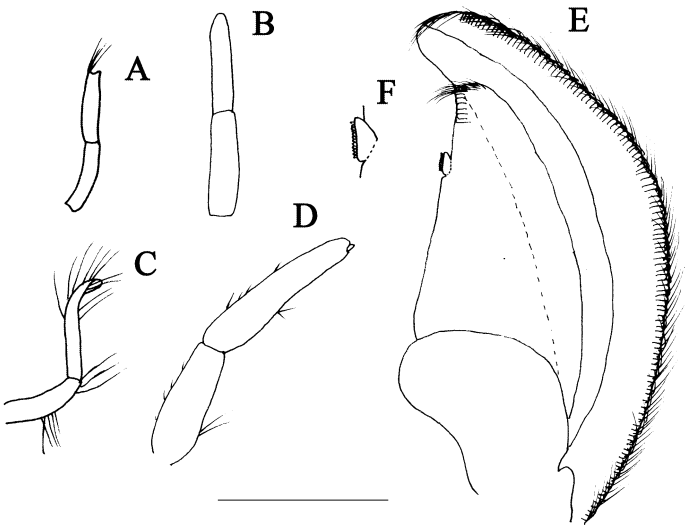

FIGURE 5. *Michaelcallianassa sinica*, new species. A–B, paratype male, Y213-19; C-F, paratype female, Q136A-24. A. male pleopod 1, posterior view; B. male pleopod 2, posterior view; C. female pleopod 1, posterior view; D. female pleopod 2, posterior view; E. female pleopod 3, posterior view; F. appendix interna of pleopod, posterior view. Scale= 1mm for A, B, C; 0.8mm for D; 1.25mm for E; 0.6mm for F.

Size. Holotype (female) cl 4.0mm, tl 14.9mm; largest male cl 5.9 mm, tl 24.0 mm; largest female cl 6.6 mm, tl 25.9 mm.

Variation.

1. In X286A-19, X276A-19 and X101A-4 dorsal surface of telson with 2 strong spines, and in others (X54A-28, Q136A-24, Q258A-11) with 4.

2. The minor chelipeds exhibit some variation: in X286A-19, armature of cutting edge of the fixed finger armed with several inconspicuous teeth (Fig. 4C); in X101A-4, it consisting of several well-defined teeth (Fig. 3C); while in Y213-19 it is unarmed (Fig. 4D). In one male (Y213-19), the dactylus is strongly elongated and with wide gapes between slender fingers (Fig. 4D).

3. In X215A-16 distal end of eyestalk truncate, without the remarkable pointed tip (Fig. 4E).

Remarks. The new species is similar to *Michaelcallianassa indica* Sakai, 2002 (the only recorded species of the genus), in the longitudinal grooves of abdominal somites 3–5 and also in the shape of rostrum, maxilliped 3 and major cheliped. But it differs from the latter in: 1. abdominal terga 4-5 without a transverse row of setae; 2. minor cheliped: carpus 1.5 times as long as deep (versus 0.8 times), dactylus 1.6 length of palm (versus 2.0 times); 3. Uropodal endopod 1.4 times as long as wide (versus 1.5 times), extending 0.12 length of telson (versus 0.44); 4. Uropodal exopod 1.3 as long as wide (versus 1.5 times), extending 0.10 length of telson (versus 0.27).

Etymology. The species name is derived from China Sea.

Distribution and habitat. Presently only known from the type locality. At depths of 16–33 m; bottom: sandy mud, muddy sand, or fine sand.

Acknowledgments

This work was supported by the Ministry of Science and Technology of the Peoples's Republic of China (MOST grant no. 2006FY110500-4). We thank Dr. Gary C. B. Poore for reviewing the manuscript and Dr. Qingxi Han (Institute of Oceanology, Chinese Academy of Sciences) for his support.

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