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TWO NEW SPECIES OF ANOMURAN CRUSTACEANS (DECAPODA: CHIROSTYLIDAE AND GALATHEIDAE) FROM THE ANDAMAN SEA

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ABSTRACT

Two new species of anomuran crustaceans, *Gastroptychus chacei* (family Chirostylidae) and *Munida sentai* (family Galatheidae), are described from specimens taken in the Andaman Sea off southern Thailand.

Three galatheids collected from the Andaman Sea off southern Thailand in 267–283 m by the TV *Nagasaki-maru* were made available by Dr. Tetsushi Senta of Nagasaki University. They proved to represent two new species. *Gastroptychus chacei,* a chirostylid, is unique among the previously known members of the genus, in some respects indicating an affinity with *Uroptychus. Munida sentai* is one of the rare galatheids having few spines on the branchial margin of the carapace.

The type material will be deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C.

Family Chirostylidae
Gastroptychus chacei, new species
Figs. 1, 2

Type Material.—Holotype, 1 ♂, from Andaman Sea off southern Thailand, 07°08.0'N, 98°05.1'E–07°05.7'N, 98°04.7'E, 267–283 m, 9 November 1981, T. Senta coll.

Description of Holotype.—Body and legs strongly spinose. Carapace (Fig. 1) excluding rostrum and spines wider than long, dorsally moderately convex, with rather deep depressions on gastrocardiac and gastrobranchial boundaries. Cardiac region distinct. Dorsal surface glabrous, provided with spines of variable sizes as figured; 3 anterior gastric spines much pronounced, also 2 prominent spines on branchial region subparallel to 2 similar spines on midline of posterior carapace; line of spinules along entire posterior margin. Lateral margins convex, armed with 8 spines on either side, hindmost small, remainder stout and depressed, fifth, sixth, and seventh prominent; 1 or 2 spinules between second and third spines; greatest breadth measured between sixth spines. Orbit deep, outer angle produced, ending in tiny but distinct spine.

Rostrum narrowly triangular, ending in sharp point, dorsally flattish, ventrally moderately convex, length less than half that of remaining carapace.

Abdominal segments glabrous, smooth, first segment with strong middorsal spine; sixth segment with 7 small spines on posterior margin. Telson divided into 2 segments by transverse fissure, posterior segment slightly longer.

Eyestalks short, not dilated distally, falling short of midlength of rostrum. Ultimate segment of antennular peduncle with 2 or 3 dorsal spinules. Distal 2 segments of antennal peduncle (Fig. 2a) with terminal spine, ultimate segment twice as long as penultimate, antennal scale barely reaching end of ultimate peduncular segment.

Third maxilliped (Fig. 2b) slender, rather elongate. Coxa with strong outer terminal spine. Ischium with prominent mesial terminal spine directed inward,

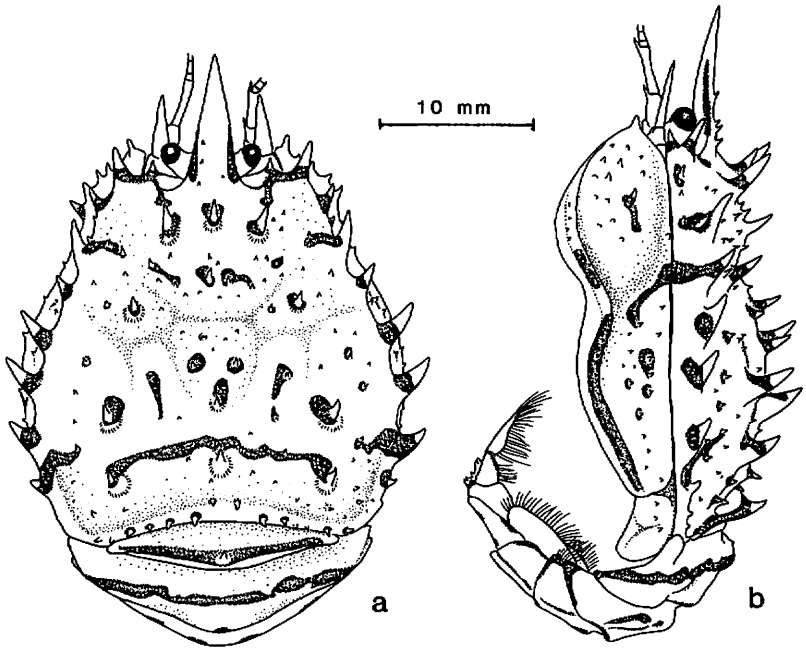

Fig. 1. *Uroptychus chacei*, new species, male holotype: a, carapace and abdomen, dorsal view; b, same, lateral view.

inner toothed ridge with very fine, numerous denticles. Merus with 2 or 3 mesial marginal and 3 lateral spines. Carpus also with 3 lateral spines: 2 distal, 1 proximal.

Third thoracic sternum (Fig. 2c) strongly depressed below level of following sternum, anterior margin with broadly V-shaped median notch; following 2 sterna with strong lateral spine on each side; surface of fourth thoracic sternum with tubercular processes and pair of smaller spines flanked by median groove near anterior depressed area.

Chelipeds similar, rather massive, more or less depressed distally, spinous, 4.5 times as long as carapace including rostrum. Merus with 7 rows of spines extended onto carpus: 1 inner, 2 outer, 2 dorsal, 2 ventral. Carpus as long as palm. Palm (Fig. 2d) 5.5 times as long as wide, lateral margins subparallel; bearing 8 rows of pronounced spines: 2 inner, 2 outer, 2 dorsal, and 2 ventral; 2 additional rows of dorsal spinules along inner margin, also another group of accompanying spinules roughly in row along outer margin. Fingers (Fig. 2d) slightly gaping, tips spiniform, directed inward; one-third as long as palm, rather depressed, provided with coarse setae, proximal dorsal surface with spinules; lateral margins also armed with small spines; opposable margin of movable finger concave, finely tuberculate, with prominent median process fitting between 2 lower processes on opposing margin.

Walking legs (Fig. 2e) slender, first walking leg reaching midlength of carpus of cheliped. Merus of first leg fully 1.5 times as long as carpus, armed with 5 rows of spines, dorsal and ventral marginals much pronounced. Carpus about as long as propodus, bearing 4 rows of spines: 1 dorsal, 1 ventral, 1 on outer face, and 1 on inner face near dorsal margin. Propodus widened distally by remarkable convexity on ventral margin, armed with 3 or 4 dorsal spines proximally, 12–14 ventral marginal spinelets on distal two-fifths of length and 2 spinules on proximal inner face near dorsal margin; also sparsely provided with long coarse setae.

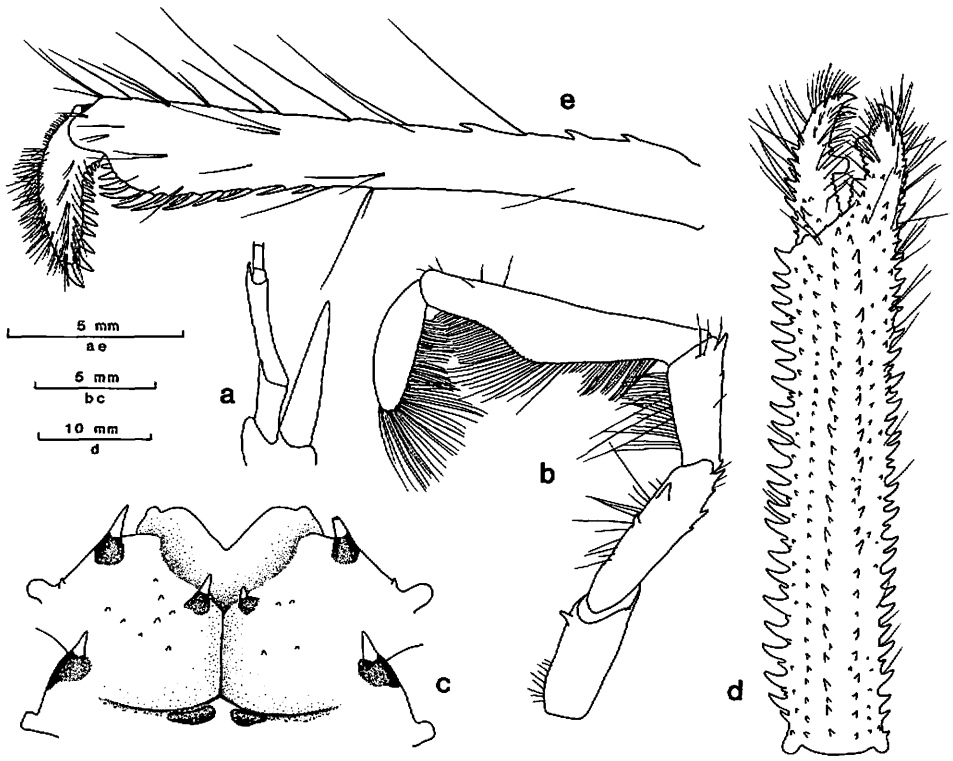

Fig. 2. *Uroptychus chacei*, new species, male holotype: a, left antennal peduncle; b, endopod of left third maxilliped; c, anterior part of sternal segments; d, right chela; e, distal two segments of left second walking leg.

Dactylus one-fifth as long as propodus, thickly setose, ventral margin with 12 spinelets decreasing in size toward base of segment. Second walking leg similar to first walking leg; third walking leg shorter, but spination more pronounced, carpus with additional row of spines on lateral face.

Color (in Formalin).—Totally pale pink; reddish marks on carapace and abdomen as figured (Fig. 1); also on bases of spines on chelipeds and walking legs, as well as on sternal segments (Fig. 2c).

Measurements.—Holotype, male: length of carapace including rostrum, 30.2 mm; width of carapace excluding spines, 23.7 mm; length of right cheliped, 138.2 mm.

Remarks.—The relatively wide carapace, the flattish, narrowly triangular rostrum, the well-defined outer orbital angle, the third thoracic sternum with a widely V-shaped anterior margin, and the comparatively massive chelipeds, are characteristic of this new species. The outer orbital angle is ill defined in nearly all species of *Gastroptychus* reported, for instance, in the Indo-West Pacific *G. investigatoris, G. hendersoni,* and *G. hawaiiensis* (see Alcock and Anderson, 1899; Baba, 1977a), the eastern Pacific *G. perarmatus* and *G. cavimurus* (see Haig, 1968; Baba, 1977b), and the western Atlantic *G. spinifer* and *G. affinis* (see Chace, 1942). Only one exception seems to be *G. ciliatus* from the Kei Islands (van Dam, 1933) to which this new species is closely related.

The thoracic sternal segments in the new species are unique; the strong spination

is typical of the genus, but the third thoracic sternum is relatively wide and strongly depressed below the level of the following sternum, with its anterior margin V-shaped. The third thoracic sternum in *Gastroptychus* can be classified into one of three types. Type 1 is as shown by *G. perarmatus, G. hawaiiensis, G. cavimurus,* etc. (see Haig, 1968; Baba, 1977a, 1977b); the narrow sternum protrudes medially on the anterior margin, usually with a pair of spines on the anterior surface. Type 2 is as in *G. sternoornatus, G. novaezelandiae,* etc. (see van Dam, 1933; Baba, 1974b); the anterior margin is feebly concave or nearly transverse, with a line of spines. Type 3 is as represented by this new species, as well as by *G. ciliatus* and *G. affinis*; but the anterior margin bears a pair of spines medially in *G. ciliatus,* a line of spines in *G. affinis* (see van Dam, 1933; Chace, 1942).

The massive chelipeds and flattish, triangular rostrum also unite this species and *G. ciliatus*; in all other known species the rostrum is spiniform, as mentioned by Alcock (1901).

All of the above-mentioned characters displayed by both *G. chacei* and *G. ciliatus* suggest an affinity with *Uroptychus.* However, we follow the key to chirostylid genera adopted by Pequegnat and Pequegnat (1970) [originally Chace (1942)].

The new species differs from *G. ciliatus* in the third thoracic sternum being simply V-shaped on the anterior margin, the following sternum having a strong distolateral spine on each side, and the second through fifth abdominal segments lacking dorsal spines.

Dedication.—It is a pleasure to dedicate this species to Dr. Fenner A. Chace, Jr. This animal group is one of his favorites, and his 1942 publication is indispensable for those who study the western Atlantic galatheideans. Personally, I have received his many helpful suggestions including scientific approach and content during my current study of galatheid crustaceans.

Family Galatheidae
Munida sentai, new species
Figs. 3, 4

Type Material.—Holotype, 1 ♂, paratype, 1 ♂ (smaller of these 2 ♂♂), Andaman Sea off southern Thailand, 07°08.0′N, 98°05.1′E–07°05.7′N, 98°04.7′E, 267–283 m, 9 November 1981; T. Senta coll.

Description of Holotype.—Carapace (Fig. 3) excluding rostrum distinctly longer than wide, moderately convex dorsally. Dorsal surface with numerous transverse ridges, all interrupted, those on metagastric region strongly convex anteriorly; cervical groove distinct; anterior and posterior branchial regions also separated by distinct groove; 3 pairs of epigastric spines, inner pair prominent, outer much smaller; lateral protogastric spine on each side near hepatic region; hepatic region with several very tiny spines; anterior branchial region lacking transverse ridges, covered with tubercles; median transverse ridge with 1 or 2 tiny spines at lateral end; postcervical spine prominent on each side; cardiac transverse ridge moderately elevated. Front margin slightly oblique. Lateral margin somewhat diverging posteriorly, armed with 7 spines including anterolateral: 3 in front of cervical groove and 4 behind it, anterolateral (first) spine prominent, second tiny.

Rostrum slenderly spiniform, feebly recurved, dorsally tuberculate, feebly ridged laterally, 0.36 as long as remaining carapace. Supraocular spines subparallel, barely reaching midlength of rostrum, base of both rostrum and supraoculars relatively narrow.

Abdominal segments spineless.

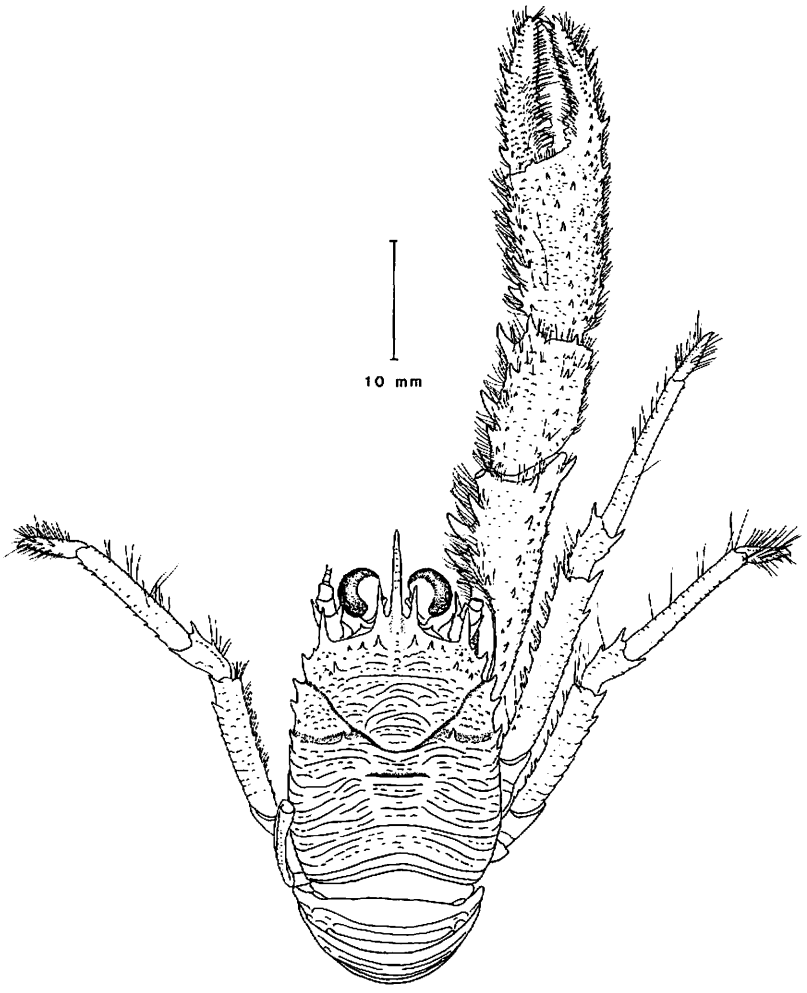

Fig. 3. *Munida sentai*, new species, male holotype.

Eyes dilated distally and depressed, eyelashes short.

Basal segment of antennule (Fig. 4a) typical, sparsely setose, 2 terminal spines subequal in size, 2 lateral marginal spines normal, distal one larger, extending far beyond both terminals. First segment of antennal peduncle (Fig. 4b) with inner terminal spine reaching end of second segment; second segment with well-developed inner and outer terminal spines; third segment spineless.

Endopod of third maxilliped (Fig. 4c) moderately setose. Ischium armed with strong mesial marginal spine terminally, inner toothed ridge with 33–37 denticles. Merus with 3 spines on mesial margin, proximal at midlength prominent, distal smaller, median tiny and tubercle-like on left side, absent on right side; distolateral margin produced but not spiniform.

Anterior part of sternal segments as illustrated (Fig. 4d); third thoracic sternum laterally expanded, anterior margin somewhat concave, with minute tubercles, posterior margin convex; following sternum anteriorly narrowed, roughly triangular.

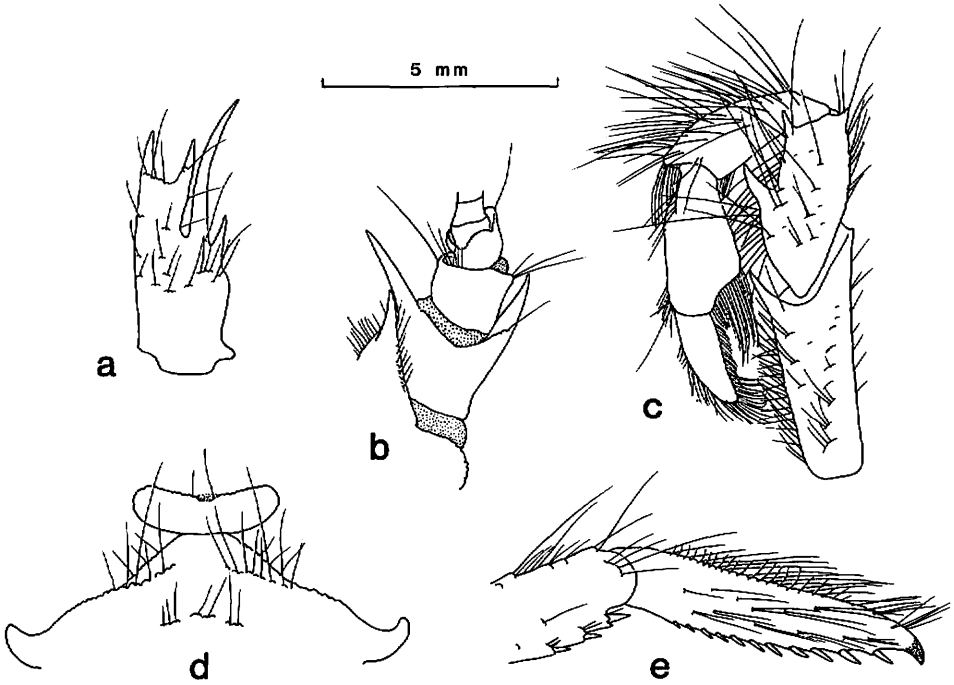

Fig. 4. *Munida sentai*, new species, male holotype: a, basal segment of left antennule; b, left antennal peduncle; c, endopod of left third maxilliped; d, anterior part of sternal segments; e, distal part of right first walking leg.

Left cheliped detached and missing. Right cheliped (Fig. 3) about twice as long as carapace including rostrum, massive, moderately depressed distally, provided with relatively short fine setae especially thick along inner margin; ventral surface granulate. Spination of merus as figured, but line of 5 spines ventral to inner margin invisible in dorsal view. Carpus four-fifths as long as palm, armed with 5 rows of spines: inner marginal row of 4 prominent spines, 2 dorsal rows and 1 outer marginal row, both of small spines, and 1 ventral row of 3 spines near inner margin. Palm twice as long as wide, distally wider, dorsally finely tuberculate, marginally and dorsally with spines as figured; inner marginal spines and line of accompanying spines directly dorsal to them somewhat larger. Fingers nearly as long as palm, moderately gaping, dorsally with spinules and tubercles, laterally with distinct spines on entire length, distally curving inward and crossing; opposable margins setose, lined with tubercular teeth, each provided proximally with 2 larger teeth.

Walking legs (Fig. 3) moderately depressed, with short sparse setae, but dactylus thickly setose, first walking leg overreaching end of carpus of cheliped. Merus of first leg with 9 or 10 dorsal marginal and 2 distoventral marginal spines, both terminal spines prominent; 3 spinules on outer face near proximal dorsal margin. Carpus with 3 dorsal marginals in addition to 2 strong terminal spines. Propodus 8 times as long as wide, ventral margin with 13 movable spinelets. Dactylus (Fig. 4e) about half as long as propodus, proportionately wide, tip corneous, curving, ventral margin with 11 minute serrations, spinelet arising from each serration. Second walking leg similar to first, but slightly shorter. Third walking leg much

shorter than 2 preceding legs, merus lacking dorsal terminal marginal spine, carpus with single middorsal spine, 2 terminals usual.

Measurements.—Holotype, ♂: length of carapace, 26.5 mm; width of carapace, 16.7 mm; length of right cheliped, 60.4 mm. Paratype, ♂: length of carapace, 23.6 mm; length of right cheliped, 56.0 mm.

Description of Paratype.—Very similar to holotype. Anterior branchial region with distinct spine dorsally between last 2 marginal spines. Cheliped with more pronounced spination on palm and carpus.

Etymology.—This species is named for Dr. T. Senta who collected the specimens.

Remarks.—The spineless abdominal segments and the lateral margin of the carapace with four or fewer spines are shared by *Munida brucei* from West Africa (Baba, 1974a), *M. rufiantennulata* from Japan (Baba, 1969), *M. tuberculata* from the Fiji and Tonga Islands (Henderson, 1885), and the present new species. In *M. brucei,* the carapace is dorsally more spinose in front of the cervical groove, and the chelipeds are strongly depressed, with the fingers 2.5 times as long as the palm. In *M. tuberculata,* the striae on the carapace are granulate; the merus of the third maxilliped bears four or five irregularly sized spines on the mesial margin. *M. rufiantennulata* has a very oblique front margin and the outer terminal spine of the antennular basal segment is larger than the inner terminal.

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