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A new squat lobster, *Munida rupicola* (Crustacea: Decapoda: Galatheidae), from Taiwan

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Abstract.—A new squat lobster of the genus *Munida* was collected during on-going deep-sea expeditions around Taiwan. The new species, *Munida rupicola,* belongs to the group containing *M. microps* Alcock, 1894, *M. africana* Balss, 1913, *M. profunda* Macpherson & de Saint Laurent, 1991, *M. rubella* Macpherson & de Saint Laurent, 1991, and *M. rubrovata* Macpherson & de Saint Laurent, 1991, but is distinct in the combination of the following characters: carapace lacking secondary striae, supraocular spines subparallel, distomesial spine of the second antennal segment not overreaching antennal peduncle, merus of third maxilliped with three marginal spines on flexor margin, and the carpus of cheliped slightly more than 2.5 times as long as wide. The coloration of this new species is illustrated.

Taiwan has the entire eastern and southern coasts adjacent to deep seas. Previous studies on the deep-sea fauna of Taiwan were mainly from the catches of commercial trawlers restricted to depths less than 600 m and trawlerable bottoms. A rich galatheid fauna has already been reported from Taiwan with 34 species recorded (Baba & Yu 1987, Wu et al. 1998, Wu & Chan 2000, Chan et al. 2000). Since 2000, the second author has initiated joint deep-sea expeditions amongst Taiwan institutions, Muséum national d'Historie naturelle, Paris (MNHN) and the Institut de Recherche pour le Développement, France (IRD), to explore the deep-sea benthic fauna around Taiwan. In one of the stations worked by the cruise TAIWAN 2000, the net of the beam trawl was heavily damaged by a rocky bottom and only several big rocks were retrieved. Nevertheless, from a deep hole in one of these rocks a bright colored galatheid was found. Careful examination of this specimen showed that it is new to science. The present report describes the new species and illustrates its coloration. The specimen is deposited at the National Taiwan Ocean University, Keelung (NTOU). The measurement (cl.) is the carapace length excluding rostrum.

Munida rupicola, sp. nov.
Figs. 1–3

Material examined.—Holotype male 13.2 mm cl., Taiwan SW coast, TAIWAN 2000, R/V "Fisheries Research 1", stn CP 31, 22°06.0′N, 120°11.8′E, 30 July 2000, beam trawl, 673–768 m (NTOU H-2000-31).

Description.—Carapace excluding rostrum distinctly longer than broad, transverse ridges few and mostly interrupted, secondary striae absent. Gastric region bearing 3 pairs of epigastric spines, those behind supraocular spines largest. One parahepatic, one branchial anterior, and one postcervical spine on each side. Cervical groove weak. Frontal margins oblique. Lateral margins subparallel. Anterolateral spine strong, overreaching sinus between rostrum and supraocular spines; anterior

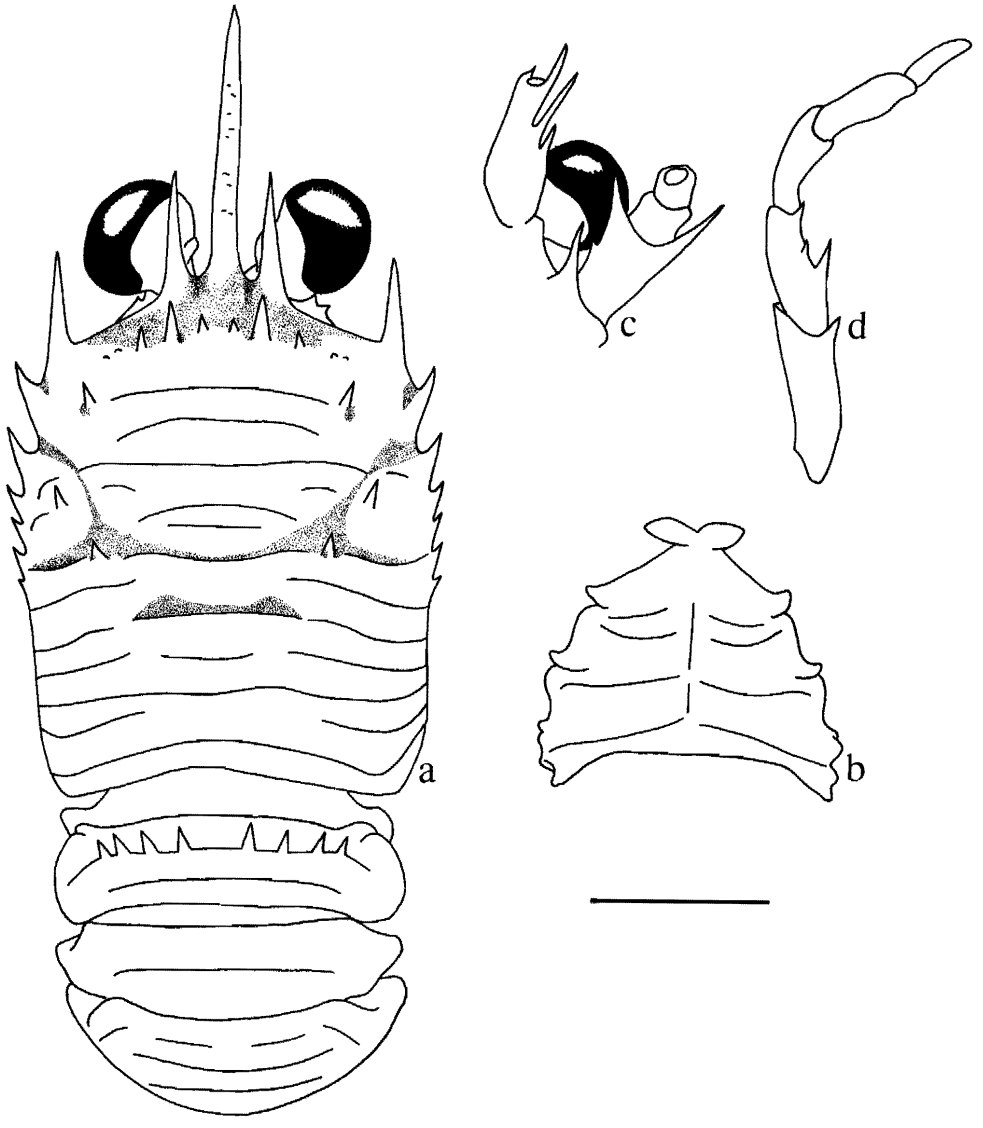

Fig. 1. *Munida rupicola,* male holotype. (a) carapace and abdomen, dorsal view; (b) sternal plastron; (c) ventral view of cephalic region, showing antennular and antennal peduncles; (d) right third maxilliped, lateral view. Scale = 5 mm.

second much smaller but distinct, situated at halfway between anterolateral spine and end of anterior cervical groove; 5 branchial spines behind cervical groove, decreasing in size posteriorly.

Rostrum long and spiniform, slightly bent downward, length more than half that of carapace. Supraocular spines subparallel and rather close to rostrum, just overreaching cornea but slightly falling short of midlength of rostrum.

Sternal plastron with surface smooth, without granules or crests. Anterior part of fourth thoracic sternite narrower than third sternite.

Abdomen nearly naked, without long setae; second somite bearing 2 transverse ridges and with anterior ridge armed with

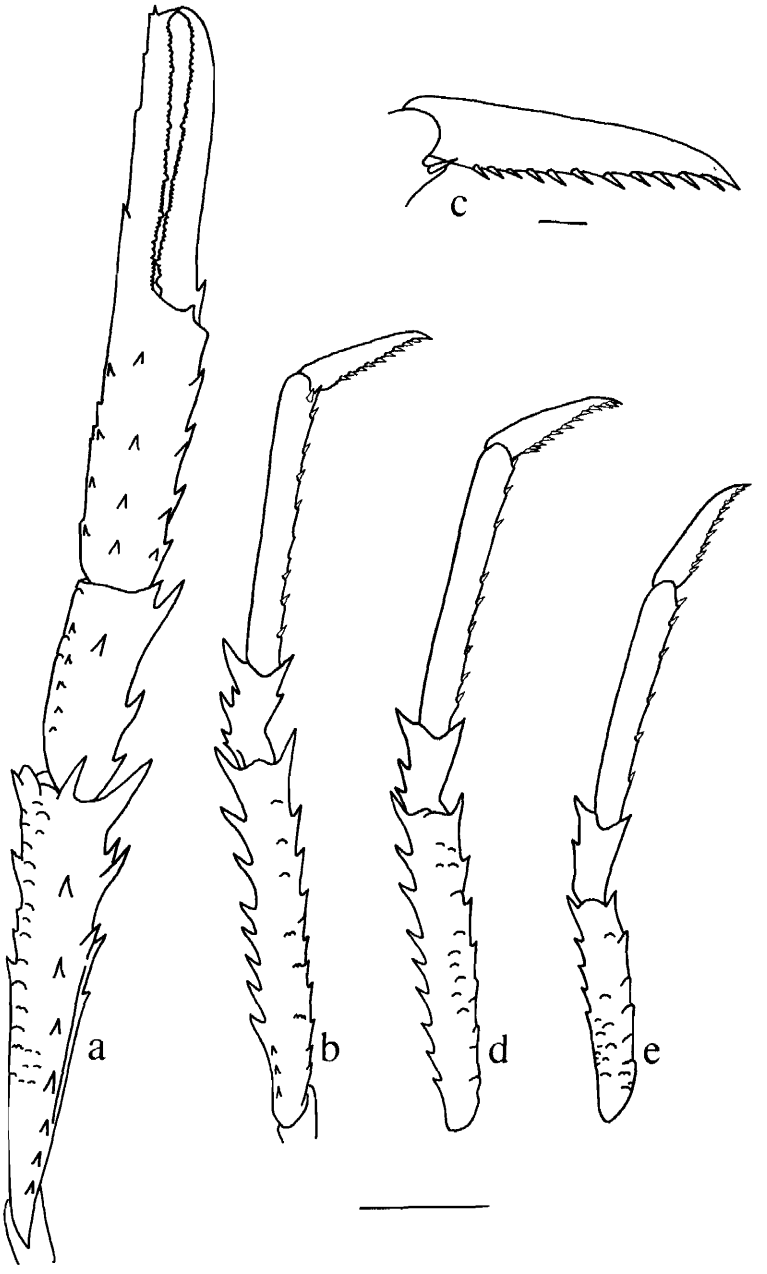

Fig. 2. *Munida rupicola,* male holotype. (a) left cheliped, lateral view; (b) right first walking leg, lateral view; (c) dactylus of right first walking leg; (d) right second walking leg, lateral view; (e) right third walking leg, lateral view. Setae omitted. Scales: a–b, d–e = 5 mm, c = 1 mm.

row of 8 spines; third somite only with 1 unarmed transverse stria.

Eyes large and globular, maximum corneal diameter 0.4 length of anterior border of carapace between bases of anterolateral carapace spines.

Basal segment of antennular peduncle elongated and overreaching cornea, with 2

Fig. 3. *Munida rupicola,* male holotype.

distal spines, distomesial spine small and much shorter than distolateral spine; 2 spines on lateral margin, proximal one short, median one long, almost reaching tip of distolateral spine. Antennal peduncle with first (basal) segment bearing short distomesial spine overreaching midlength of second segment; second segment bearing one small spine at middle of mesial margin and 2 well developed distal spines both overreaching third antennal segment, distolateral one slightly longer than distomesial and nearly reaching end of fourth (distal) segment; third and fourth segments unarmed.

Ischium of third maxilliped with well developed distomesial spine; merus with flexor margin bearing 3 spines (proximal one largest), extensor margin unarmed.

Chelipeds 2.7 times longer than carapace. Merus bearing 4 rows of spines: 3 dorsal, 3 dorsolateral, 8 lateral and 5 ventral; distodorsolateral spine prominent. Carpus slightly more than 2.5 times as long as wide, bearing 4 dorsal marginal spines, penultimate one largest. Palm 3.3 times longer than wide and equally long as fingers. Fingers with tips strongly curved and crossing; movable finger only armed with one basal spine on mesial margin; fixed finger bearing one small spine at proximal third and 2 small subterminal spines on lateral margin; cutting edges of fingers rather straight.

Second to fourth pereiopods (=first to third walking legs) compressed and somewhat squamous, bearing dense, short plumose setae along dorsal margins of merus and carpus. Second pereiopod 2.1 times longer than carapace; merus dorsally armed with 8 spines, ventrally bearing 4 spines and 8 acute scales, and another 3 small spines lateral to proximal part of dorsal crest, two distal spines subequal in length; carpus with 5 dorsal and 2 ventral spines; propodus 8.2 times longer than wide, bearing 10 movable spinules on ventral margin, distoventral angle produced into slender spine; dactylus 0.49 of propodus length, ending in corneous claw, flexor margin straight and bearing 11 movable spinules along entire length. Third pereiopod similar to second; merus bearing 9 dorsal spines; carpus with 3 dorsal spines; propodus having 8 movable ventral spinules; dactylus 0.49 of propodus length. Merus of fourth pereiopod shorter than those of second and third, bearing 5 dorsal spines, ventral spines reduced but distal one distinct; carpus with

2 dorsal spines; propodus with 6 movable ventral spinules; dactylus half of propodus length, merocarpal articulation extending to base of anterolateral spine of carapace.

Coloration.—Body including chelipeds orange. Carapace with 3 transverse white bands; one directly behind rostrum extending across anterior 3 lateral marginal spines, one on mid-carapace and another one on posterior quarter of carapace. Walking legs orange but distal parts of propodi and entire dactyli whitish. Posterior abdomen and tailfan paler in color.

Remarks.—Although there are about 137 species of *Munida* already known in the Indo-West Pacific (cf. Baba 1988, 1994; Macpherson 1993, 1994, 1996, 1997, 1999a, 1999b, 1999c; Macpherson & de Saint Laurent 1991, 2002), this Taiwan species possesses the following characters that can readily separate it from most species of the genus: abdomen bearing row of spines on second tergite but unarmed in other parts; five spines on branchial margin behind anterior cervical groove; distomesial spine of basal antennular segment much smaller than distolateral spine; thoracic sternites without granules on posterolateral parts; chelipeds having relatively long carpi (length-breadth ratio 2 times or more); absence of spines on extensor margin of third maxilliped merus; walking legs dactyli with spines along entire length of flexor margin. The above characters align this new species with the group containing *M. microps* Alcock, 1894 (Indo-West-Pacific), *M. africana* Balss, 1913 (Indian Ocean), *M. profunda* Macpherson & de Saint Laurent, 1991, *M. rubella* Macpherson & de Saint Laurent, 1991 and *M. rubrovata* Macpherson & de Saint Laurent, 1991 (last three species all from French Polynesia). *Munida profunda* has only one pair of epigastric spines and one anterior branchial spine, the distomesial spine of the second antennal segment overreaching the antennal peduncle, the merus of the third maxilliped bearing one marginal spine on the flexor margin, and the chelipeds more massive (length-breadth ratio of carpus 2.0). On the other hand, *M. rubella* and *M. rubrovata* bear many small squammae between the main striae of the carapace and their meri of the third maxillipeds have two marginal spines on the flexor margin. Moreover, *M. rubella* has a heavier cheliped with length-breadth ratio of carpus about 2.0, fewer spines on the carpus of the first walking leg and a much smaller flexor distal marginal spine on the ischium of the third maxilliped. For *M. rubrovata,* it is further distinct from both *M. rebulla* and *M. rupicola* in the distomesial spine of the second antennal segment extending well beyond the antennal peduncle. The differences between *M. rupicola* and *M. africana* are rather obvious. *Munida africana* has a much more slender cheliped (length-breadth ratio of carpus 3.3), the anterolateral spine on the carapace not reaching the sinus between the rostrum and the supraocular spines, the distomesial spine of the second antennal segment extending beyond the antennal peduncle, the merus of the third maxilliped only bearing two marginal spines on the flexor margin, and the much longer dactylus of the first walking leg (about ⅔ the length of propodus).

Munida rupicola is probably most similar to *M. microps.* Two specimens of *M. microps* identified by Baba (1994) from N.E. Australia were compared (Coral Sea, NE Queensland, CIDARIS I, stn 1-3, 18°7.9′S, 147°35.7′E, 6 May 1986, epibenthic sledge, 956–969 m, 1 female 5.6 mm cl., QMW 19723; stn 14-1, 17°49.5′S, 148°39.5′E, 8 May 1986, trawl, 990–1006 m, 1 male 14.9 mm, QMW19724); both specimens were borrowed from the Queensland Museum, Brisbane. In these two *M. microps* specimens, the chelipeds are much more slender (length-breadth ratio of carpus 4.3–5.0) and the supraocular spines are distinctly diverging. Moreover, the distomesial process at the ischium of the third maxilliped is greatly reduced in *M. microps* but it is well developed and spine-like in the new species. The second antennal segment has

the distomesial spine reaching only the end of third antennal segment in *M. rupicola,* whereas this spine clearly overreaches the antennal peduncle in *M. microps.* Lastly, the eyes are relatively larger in *M. rupicola* than in *M. microps* (maximum corneal diameter 0.26–0.33 length of anterior border of carapace between bases of anterolateral carapace spines). The above differences are also observed in the published figures of *M. microps* (Alcock & Anderson 1895, Haig 1974, Macpherson 1994). Furthermore, the coloration of *M. microps* is reported as milky pink (Alcock 1894, 1901) or light pinkish, darker in the gastric region and tips of the fingers of chelipeds and dactylus of walking legs (Macpherson 1994). This color is very different from that of *M. rupicola* (see Fig. 3).

Distribution.—At present only known from the type-locality Taiwan, southwestern coast at 673–768 m deep.

Etymology.—The Latin *rupicola,* with a preference of rocks, refers to this new species being found within a big rock; probably because of this difficult terrain it has not been collected before.

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