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AN UNCOMMON DEEP-SEA SHRIMP *EUGONATONOTUS CRASSUS* (A. MILNE EDWARDS, 1881) (CRUSTACEA: DECAPODA: EUGONATONOTIDAE) FROM TAIWAN[1]

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Tin-Yam Chan and Hsiang-Ping Yu (1988) An uncommon deep-sea shrimp *Eugonatonotus crassus* (A. Milne Edwards, 1881) (Crustacea: Decapoda: Eugonatonotidae) from Taiwan. *Bull. Inst. Zool., Academia Sinica* **27**(4): 259-263. The sole species of eugonatonotid shrimp is reported for the first time from Taiwanese waters. *Eugonatonotus crassus* (A. Milne Edwards, 1881) is an uncommon deep-sea species (150-350 m depth) which is occasionally found within the catch of "bady" shrimp trawlers from the north-eastern and south-western coasts. This report briefly describes this species with color illustration. The morphological differences at ventral abdomen between the sexes is also discussed.

Key words: New record, Eugonatonotidae, Taiwan, Shrimp sexual differences.

The caridean family Eugonatonotidae contains a single genus and which is represented by the sole extant species *Eugonatonotus crassus* (A. Milne Edwards, 1881). Several specimens of this species were obtained during the last four years of decapod crustacean survey in Taiwan. This report adds this decapod crustacean family to the marine fauna list of Taiwan. The morphological characteristics of this species is briefly described and its coloration is illustrated. Following up with our previous works on caridean shrimps (Chan and Yu 1985, 1986, 1987), the differences at the abdominal pleura and sternites between the sexes in this species are discussed.

MATERIALS AND METHODS

The specimens were obtained at fish markets. They were caught by "baby" shrimp trawlers off the north-eastern and south-western coasts at the depth of 150 to 350 m on sand and mud bottoms. All the specimens are deposited at the Fisheries Department of National Taiwan College of Marine Science and Technology (NTCMST). The stated measurements are body length which was taken from the post-orbital margin to the distal margin of the telson when fully stretched.

SYSTEMATIC ACCOUNT

Eugonatonotus crassus (A. Milne Edwards, 1881)

(Pl. I, Figs. 1 and 2)

Gonatonotus crassus A. Milne Edwards, 1881: 10 (not seen, type locality: Grenada, Antilles); Boone, 1927: 106; Kubo 1937: 94.

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Eugonatonotus crassus—Holthuis, 1955: 39; Thompson, 1966: 131; Miyake, 1982: 25; Burukovskii, 1983: 82; Hayashi, 1986: 99.

Material examined: 2 males 83 and 84.6 mm, 2 December 1984; 1 female 72.4 mm, 23 March 1985, Tong-Kang, Ping-Tong County. 1 female 62 mm, 17 March 1985; 1 female 66.4 mm, 20 April 1985; 1 male 67.3 mm, 2 May 1985, Su-Ao, I-Lan County. 1 female 106.3 mm, 16 April 1988; 2 males 70 and 71.9 mm, 1 female 74.3 mm, 14 May 1988, Ta-Chi, I-Lan County.

Diagnosis: Body robust and shell hard. Eyes large. Broad rostrum abruptly curved upwards extending far beyond scaphocerite, armed with 7-9 dorsal teeth (one may just above post-orbital margin) and 7-8 ventral teeth. Post-rostral carina bearing 1 large fixed tooth and 10-12 small movable teeth. Rostral carina formed a crest at region above orbit. Antennal and branchiostegal spines well-developed extending backwards as two strong longitudinal carinae on lateral carapace. Dorsal midline of abdominal tergite III strongly elevated at anterior 2/3 of non-articulated surface and terminated in small tooth. Posterior margins of abdominal tergites III to V provided with pair of submedian spines, that of IV also armed with larger median spine. Telson with 2 pairs of spines dorso-laterally, terminated in pointed spine and provided with two pairs

Plate I. *Eugonatonotus crassus* (A. Milne Edwards, 1881), female 106.3 mm with lateral carapace slightly broken.

of movable spines at postero-lateral angle (outer pair small and easily shed off, inner pair very large).

Coloration: Body rose-lilac with pale bluish white dots and patches. Margins and carinae on body dull vermilion. Eyes black with golden reflections. Tip of rostrum, thoracic and abdominal appendages scarlet-vermilion. Tips of chelae and dactyli black. Antennal and antennular flagella orange-red.

Distribution: South-western North Atlantic, Japan and Taiwan. Depth 100–480 m.

Remarks: The characters of our specimens agree closely with the extensive descriptions of *E. crassus* given by Boone (1927) and Thompson (1966). In all of our specimens except the largest female, a pair of smaller but conspicuous dorso-lateral spines is present at the posterior margin of the abdominal tergite V adjacent to the submedian spines; ie. altogether 4 spines are present at the posterior margin above the notch (Fig. 1). In the largest female, such dorso-lateral spine is only present on the left side but is completely missing on the right side (Fig. 2). However, this pair of dorso-lateral spines was not mentioned in the texts and was entirely lacking in the figures provided by Boone (1927) and Thompson (1966). Yet the specimens described from Japan bear this pair of spines (Kubo 1937, Miyake 1982, Hayashi 1986). It will be of interest to know whether the specimens from Atlantic are really lacking such pair of spines.

A well-developed appendix masculina is present at the endopod of the pleopod II in males. However, the features at ventral abdomen are almost the same between our males and females *E. crassus* except the largest female. A pair of minute but distinct submedian spines is provided at the abdominal sternites II and III, with those at III smaller. The middles of the abdominal sternites IV and V are bluntly protuberated, while that of V with a posteriorly arched spine. However, these spines at abdominal sternum are wanting in the largest female. Furthermore, the protopodites of pleopods II and III are relatively much longer in the largest female (they are extremely short in other specimens).

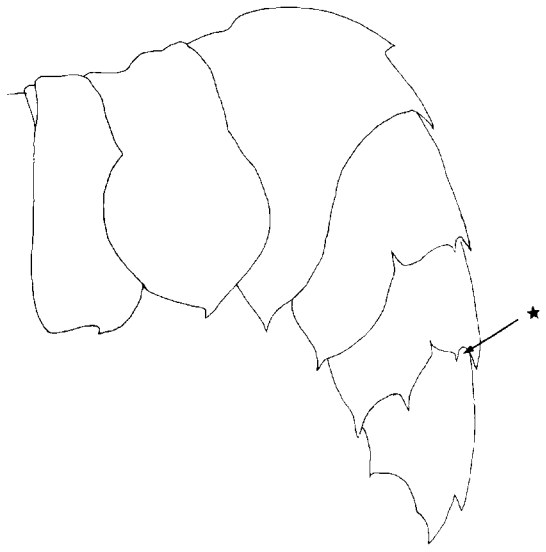

Fig. 1. *Eugonatonotus crassus* (A. Milne Edwards, 1881), lateral view of the abdomen of a 84.6 mm male. *The additional dorso-lateral spine at the abdominal tergite V.

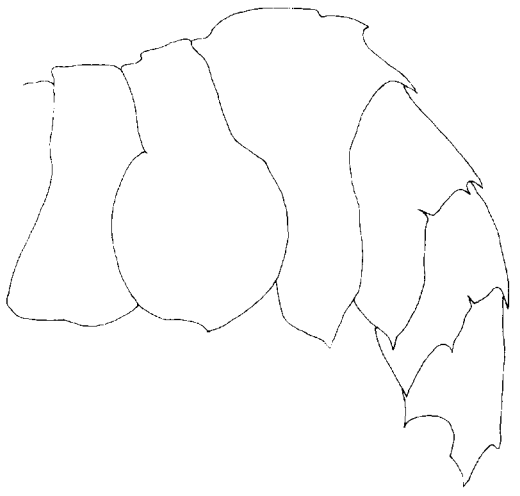

Fig. 2. *Eugonatonotus crassus* (A. Milne Edwards, 1881), lateral view of the abdomen of the largest female (106.3 mm). The additional dorso-lateral spine at the abdominal tergite V is absent on this side (left) but present on the other side.

The shape of the abdominal pleura I and II is also different in the largest female (Figs. 1 and 2). The lateral margin of abdominal pleuron I is almost horizontal in the largest female and in two other females, whereas this margin is concave at the anterior half and with a sharp angle near the middle in other specimens. The antero-lateral margin of abdominal pleuron II is remarkably convex in the largest female while in other specimens it is constricted and less convex. The median spines at the abdominal pleura II and III are also markedly elongated in other specimens. Although male of similar size to the largest female is not obtained in our collection, it is believed that the "neutral" features at ventral abdomen would probably be retained in mature males, and can be used to sexing mature specimens. Kubo (1937) pointed out that the pair of submedian anteriorly pointed processes at the last thoracic sternite are closely juxtaposed in males but are widely separated in females. This is also true for our specimens except in the largest female where the submedian process are touchinges with each other as in males.

This uncommon species is occasionally found in one or two individuals within the commercial catch of *Heterocarpus* shrimps. *E. crassus* can be easily recognized by its "coral reef" coloration from the other associated red-colored deep-sea shrimps. Morphologically, it is also unmistakable by its "knee" (=Gonatonotus) and the spination at the abdomen.

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臺灣海域駝背蝦科之報告

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本報告報導臺灣海域駝背蝦科 (Eugonatonotidae) 之唯一種類粗厚駝背蝦 *Eugonatonotus crassus* (A. Milne Edwards, 1881)。此蝦爲臺灣東北及西南部近海蝦拖網漁船漁獲物中不常見之蝦。體長在6～11 公分之間，棲息於 150～350 公尺水深之沙泥底質海域。

本文係討論此蝦之外部形態、雌雄形態特徵差異及體色，並附彩色圖片供爲參考。