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SHRIMPS OF THE FAMILY STYLODACTYLIDAE (CRUSTACEA: DECAPODA) FROM TAIWAN*

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Tin-Yam Chan and Hsiang-Ping Yu (1985) Shrimps of the family Stylodactylidae (Crustacea: Decapoda) from Taiwan. *Bull. Inst. Zool., Academia Sinica* **24**(2): 289-294. Shrimps of the family Stylodactylidae are first reported from Taiwan. This report describes two species *Parastylodactylus bimaxillaris* (Bate, 1888) and *Stylodactylus multidentatus* Kubo, 1942 of this family collected off northern and southern Taiwan, the later is noticed to have a great variation in coloration. The sexual difference in these shrimps is also described.

Recently, the family Stylodactylidae has been seriously studied by Chace (1983). Two stylodactylid shrimps of different genera have been found from Taiwan, namely *Parastylodactylus bimaxillaris* (Bate, 1888) and *Stylodactylus multidentatus* Kubo, 1942. Both are new records for Taiwan, while *S. multidentatus* has only been reported from Japan and Philippines before. The later species in this study shows a great variation in coloration from pink-red to white. Besides the usual description of species characters, this report also describes the distinctive characteristics at the abdominal sternites and pleopods in different sex.

Material and Methods: All the speciemens were obtained from fish markets, collected by baby shrimp trawlers at 150-450 m depth of sandy and muddy bottoms off north east and southern Taiwan, and are deposited in the Fisheries Department at National Taiwan College of Marine Science and Technology. The measurements are body length that measured from the thick post-orbital margin to the distal margin of telson with the specimen outstretched.

SYSTEMATIC ACCOUNT

Parastylodactylus bimaxillaris
(Bate, 1888)
(Pl. I A, B, C, D)

Stylodactylus bimaxillaris—Bate, 1888: 855, pl. 138, fig. 3 (in part); Kemp, 1925: 257 (in part); Hayashi and Miyake, 1968: 599, fig. 5.

? *Stylodactylus bimaxillaris*—Balss, 1914: 27; Balss, 1925: 239; Yokoya, 1933: 15; Calman, 1939: 188.

non *Stylodactylus bimaxillaris*—Barnard, 1950: 652, fig. 122f-h; Calman, 1925: 16 (=*S. stebbingi* Hayashi and Miyake, 1968).

non *Stylodactylus bimaxillaris*—Miyake, 1982: 25, pl. 9, fig. 4 (=*S. multidentatus* Kubo, 1942).

Parastylodactylus bimaxillaris—Chace, 1983: 8, fig. 4.

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Materials: 2 ovigerous ♀♀ 29 and 32 mm, 9 September 1984; 6 ovigerous ♀♀ 26–33 mm, 31 December 1984; 3 ovigerous ♀♀ 26–30 mm, 1 ♀ 29 mm; 10 March 1985; 1 ♂ 29 mm, 26 March 1985; 3 ovigerous ♀♀ 31–33 mm, 4 April 1985; 1 ♂ 21 mm, 7 ovigerous ♀♀ 26–31 mm, 5 ♀♀ 24–31 mm; May 8 1985. Ta-Chi, I-Lan County.

1 ovigerous ♀ 29 mm, 23 March 1985, Tong-Kang, Ping-Tong County.

Diagnosis: Body small, 26–33 mm. Rostrum extending beyond tip of scpahocerite and markedly recurved upwards at distal half, armed with 14–20 articulated dorsal teeth and 3–6 articulated ventral teeth. Post-rostral carina provided with 5–7 (mostly 6) articulated teeth. Supraorbital spine rudimentary. Stylocerite not reached distal end of basal segment of antennular peduncle. Only branchiostegal spine present at antero-lateral angle of carapace. Dactylus stout, about two times as long as broad basically in posterior three pereiopods. Posterior margin of third abdominal somite produced posteriorly. Postero-lateral angle of fifth and sixth abdominal segments produced into spine. Telson slender, about three times as long as broad basically excluding distal spines). Eggs numerous and spherical, about 0.5 mm in diameter.

Color: Generally pink-red with scattered muddy yellow dots. Eyes black-brown. Two distincitve red spots on anterior dorsum of first abdominal tergite. Two other different coloration also noticed; some specimens also with pink-red color but splotched with patches of muddy yellow, others with cephelothroax and tail fan red while abdominal segments distinctively white. Eggs orange and becomed white when near hatching.

Distribution: Southern Japan, East China Sea, Philippines, Bismarck Archipelago, Admiralty Island, E. and S. Africa.

Remarks: All the specimens in this study are with markedly upturned rostrum, which differs from the figure given by Hayashi and Miyake (1968) but fully agreed with that of Chace (1983), he has given detail figures of this species. Besides bearing the well-developed appendix masculina on the endopod of the second pleopod in the male specimens, two well-developed strong submedial projections are present at the anterior three abdominal sternites and are progressively smaller and closer posteriorly. These submedial projections are absent in females. Moreover, the coxa of the anterior three pleopods are short, less than half the length of the basis in males but are long, more than half the length of the basis in females. Among the three different color patterns, the pink-red pattern is the commonnest while the white and red pattern is the rarest. This shrimp is occasionally caugth at about 150–450 m depth off northern and southern Taiwan.

Stylodactylus multidentatus (Kubo, 1942)

(Pl. I D, E)

Stylodactylus multidentatus—Kubo, 1942: 34, figs. 4, 5; Hayashi and Miyake: 1968: 568, fig. 1; Miyake, 1982: 26, pl. 9 fig. 5; Chace, 1983: 20, fig. 8.

Stylodactylus bimaxillaris non Bate, 1888—Miyake: 1982: 25, pl. 9, fig. 4.

Materials: 1 ovigerous ♀ 53.5 mm, 31 October 1984; 1 ♂ 52 mm, 1 ovigerous ♀ 50 mm, 2 ♀♀ 62 and 62.5 mm, 2 December 1984; 2 ♂♂ 53.5 and 59 mm, 2 ovigerous ♀♀ 61 and 69 mm, 1 ♀ 46 mm, 23 March 1985, Tong-Kang, Ping-Tong County.

5 ♂♂ 51–57 mm, 3 ovigerous ♀♀ 50–71 mm, 2 ♀♀ 60 and 63 mm, 29 November 1984; 1 ♂ 54 mm, 4 April 1985, Ta-Chi, I-Lan County.

2 ♂♂ 54 and 57 mm, 20 April 1985, Su-Ao, I-Lan County.

Diagnosis: Body robust and large, from 50 to 71 mm. Rostum more or less horizontal and extending beyond tip of scaphocerite, with 27–41 articulated dorsal teeth and 12–19 articulated ventral teeth. Carapace with 11–13 articulated post-rostral teeth. Supraorbital spine large and well-developed. Antero-lateral angle of carapace with marked branchiostegal spine and always with 1–2 secondary spines below, asymmetrically. Some specimens with

ventral denticles on antero-ventral margin of carapace. Stylocerite overreaching distal end of basal segment of antennular peduncle. Some specimens with small spines on outer margin of scaphocerite, ranging from 1-9, (mostly 3-4) and asymmetrical. Dactylus slender, more than three times as long as broad basically in posterior three pereiopods. Posterior margin of third abdominal somite not produced posteriorly. Postero-lateral angle of fifth abdominal segment smooth. Telson broad, two times as long as broad basically (excluding distal spines). Eggs numerous and spherical, with diameter 0.8-1 mm.

Color: Body Pink-red with apparent red stripes consistng of two subparalleld broad red stripes run from tip of rostrum along dorsal carpapace but diverged subposteriorly and terminating at lateral margin of carapace; cervical regions with subtransverse short red stripes; outer surface of eye stalk red; first abdominal somite with wide transverse red stripes that interrupted at middle; lateral abdomen with broad longitudinal red stripes, which joined with each other at posterior but not continued with transverse stripes at first abdominal somite; two obscure submedial red stripes on dorsum of each abdominal segment; telson with two submedial red stripes that joined together at posterior; margins of red stripes on abdomen and telson white, produced into continued white lines circulating abdominal tergites whereas dorsal midline of abdomen and telson promiently white. Eyes black-brown. Thoracic appendages with red circular bands. Tips of chelae white. Antennal flagellum crossed with red and white bands. Some specimens with paler color and with red stripes not apparent. One male specimen without trace of red stripes on body. Eggs orange.

Distribution: Only recorded from southern Japan and Philippines.

Remarks: Extensive descriptions and figures of the present species have been given by Kubo (1942), Hayashi and Miyake (1968) and Chace (1983). Hayashi and, Miyake (1968) ponited out that "The basicerite bears no spiniform process,....." but in Chace's (1983) figure 8a, a prominent spine is present near the ventral surface of the basicerite. All the specimens of this study are armed with a small acute spine near the ventral surface of the basicerite, though not as marked as that in the figure given by Chace (1983). Apart from the bearing of a well-developed appendix masculina on the endopod of the second pleopod, the sex of the present species can be determined by the structure of the first and second abdominal sternites and the length of the coxa at the anterior three pleopods. In males, two well-developed strong but blunt submedial projections are present on the I and II abdominal sternites and the coxa of the anterior three pleopods are short, less than half the length of the basis. However, in females, no tendency of elevation is noticed near the middle of the anterior two abdominal sternites and the coxa of the anteior three pleopods are long, more than half the length of the basis. *S. multidentatus* is rather common in Taiwan waters and usually occurs as by-caught among coastal shrimp fisheries at about 150-250 m depth off north-east and southern Taiwan. This shrimp, together with other deep-sea shrimps, are always used by local fishermen as part of the natural food for fish and prawn cutlures.

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記臺灣產兩種新記錄之筷指蝦類

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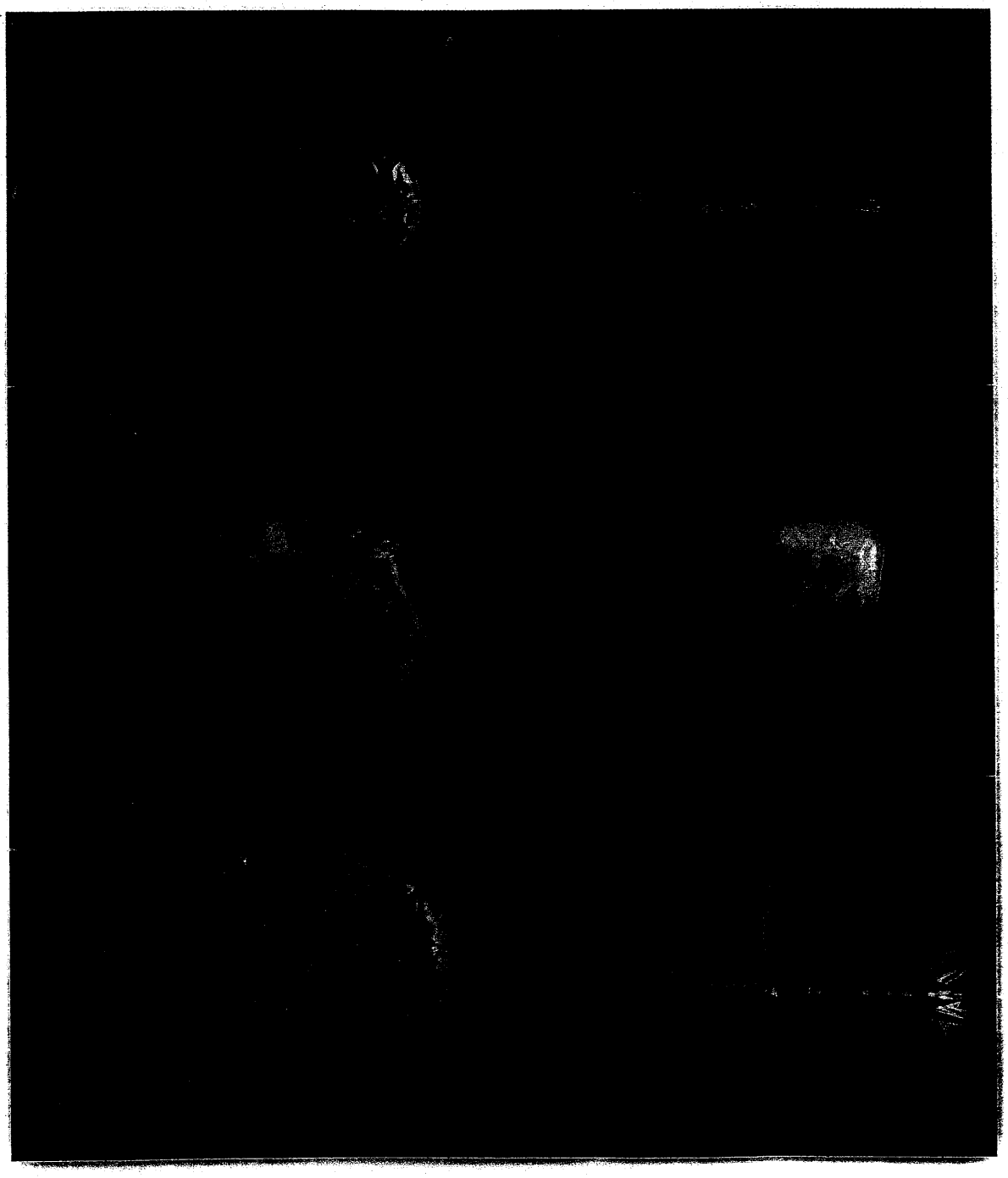
筷指蝦類，過去在臺灣海域未曾有報導。本報告記述二屬二種此科之蝦類，分別爲：揚額筷指蝦 ***Parastylodactylus bimaxillaris*** (Bate, 1888) 和多齒筷指蝦 *Stylodactylus multidentatus* Kubo, 1942，前者分佈於印度～西太平洋各海域，而後者僅發現於日本及菲律賓海域。此二種蝦類棲息於 200 公尺上下之海域，經常混在臺灣近海小型蝦拖網船之漁獲物中。

本報告除提及此二種蝦之主要外部形態特徵外，同時，對兩性所呈現之性徵異同點及體色變化亦予敍。



Explanation of Plate I

A. lateral view of common pink-red pattern *Parastylodactylus bimaxillaris*, 33 mm ovigerous female.
B. dorsal view of same specimen, showing two red spots at anterior dorsum of first abdominal tergite
C. lateral view of splotched pattern *P. bimaxillaris*, 31 mm ovigerous female.
D. lateral view of red and white pattern *P. bimaxillaris*, 31 mm ovigerous female.
E. lateral view of *Stylodactylus mutidentatus*, 54 mm male.
F. dorsal view of same specimen.