

CLAWED LOBSTERS
(CRUSTACEA : DECAPODA : NEPHROPIDAE)
OF TAIWAN¹

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Tin-Yam Chan and Hsiang-Ping Yu (1988) Clawed lobsters (Crustacea : Decapoda : Nephropidae) of Taiwan. *Bull. Inst. Zool., Academia Sinica* 27(1): 7-12. This report describes and illustrates two genera and four species of clawed lobsters (Nephropidae) found in the waters of Taiwan. They are *Nephrosis stewarti* Wood-Mason, 1872, *Metanephrops japonicus* (Tapparone-Canefri, 1873), *M. thomsoni* (Bate, 1888) and *M. formosanus* Chan and Yu, 1987. The previous record of *M. japonicus* by Chang (1965) was actually a misidentification of the newly described species *M. formosanus*. Therefore, the distribution of *M. japonicus*, as well as *N. stewarti*, in Taiwan are confirmed here. A key is also provided for their easy identification.

Key words: Taiwan, Nephropidae, *Nephrosis*, *Metanephros*.

Members of the family Nephropidae are marine lobsters with big claws. Four species of these clawed lobsters are found in deeper waters along the coast of Taiwan. They are *Nephrosis stewarti* Wood-Mason, 1872, *Metanephrops japonicus* (Tapparone-Canefri, 1873), *M. thomsoni* (Bate, 1888) and *M. formosanus* Chan and Yu, 1987. *M. thomsoni* has long been known in Taiwan (Bals 1914, Chang 1965, Bruce 1966a). *M. formosanus* was previously misidentified by Chang (1965) as *M. japonicus* (not Tapparone-

Canefri, 1873), which is recently described as a new species by the present authors (Chan and Yu 1987). These two species are regularly fished by local "baby" shrimp trawlers but their catches are not stable. *M. japonicus* and *N. stewarti* inhabit deeper waters and are less common. These two species are new records in Taiwan and living in association with *M. formosanus* (Chan and Yu 1987). All of these lobsters are generally called "Te-Chia Shia" (鐵甲蝦), meaning armoured prawn, by local fishermen. *Metanephrops* lobsters are internationally known as

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a high priced sea-food (Carter *et al.* 1983; Bremner 1985; Williams 1986) with commercial catches from the east coast of South Africa (Berry 1969), north-west coast of Australia (Anon. 1983; Carter *et al.* 1983; Davis and Wards 1984; Bremner 1985), Japan (Miyake 1982), North and South America (Williams 1986). Its commercial exploitation potential in Taiwan, however, needs further extensive studies on their distribution and biology. Preliminary investigation on other members of this genus indicates their vulnerability to high fishing pressure (Carter *et al.* 1983, Davis and Ward 1984). This report presents a taxonomic account of these local clawed lobster species necessary for their future study. A key to their identification and color illustrations are provided in this paper,

MATERIALS AND METHODS

All the specimens were obtained from local fish markets. They are deposited at the Fisheries Department of National Taiwan College of Marine Science and Technology and with their specimen code number corresponding to its labeled species name and collection date, eg. *Metanephrops japonicus* NTCMST 1984 10 21-01, *Metanephrops japonicus* NTCMST 1984 10 21-02, etc. These lobsters were caught by "baby" shrimp trawlers at the depth of 100 to 450 m on sandy and muddy bottoms off north-east and south coast of Taiwan. The measurements are body length and was taken from the post-orbital margin to the posterior margin of the telson when the specimen fully stretched.

RESULTS AND REMARKS

Key to the Taiwanese species of Nephropidae:

1. Eye minute, body whitish and covered with fur *Nephropsis stewarti*
Eye large, body orange-pink and not covered with fur 2 (*Metanephrops*)

2. Movable finger of chela without strong spine at outer edge; cheliped with distinctive red patches; abdominal tergite I without furrow *M. thomsoni*
Movable finger of chela with prominent basal spine at outer edge; abdominal tergite I with distinct furrow 3
3. 4-6 pairs of post-rostral teeth; transverse furrow at abdominal tergite II interrupted medially by thick longitudinal ridge; pair of submedian spines armed at subanterior of abdominal tergite VI...
..... *M. japonicus*
3 pairs of post-rostral teeth; transverse furrow at abdominal tergite II not markedly interrupted medially; no submedian spines at subanterior of abdominal tergite VI..... *M. formosanus*

SYSTEMATIC ACCOUNT

Nephropsis stewarti Wood-Mason, 1872 (Pl. IA)

Nephropsis stewarti—Wood-Mason, 1872: 40 (not seen); Alcock, 1901: 159; De Man, 112; Balss, 1925: 208; Barnard, 1950: 531; Miyake, 1982: 77.

Materials: 2 ovigerous ♀♀ 105 and 133 mm, 22 Sept 1984, Ta-Chi, I-Lan County.

Diagnosis: Eye minute and without pigment. Body robust and covered with thick fur. Cheliped asymmetrical; with right one conspicuously larger. One pair of teeth present near middle of upper rostrum while two other pairs armed at anterior carapace near base of rostrum. Eggs spherical, with diameter of about 3 mm.

Coloration: Body and cheliped whitish, covered with grey fur. Ventral surface, mouth parts and tail fan pink-red. Pereiopods generally orange-pink except reddish dactyli. Flagella orange. Teeth on carapace and rostrum red except whitish tisp. Eggs whitish.

Distribution: Andaman Sea, eastern coast of South Africa, Bay of Bengal, Arabian Sea, Kei Islands, Taiwan and Japan.

Remark: *N. stewati* is rather rare in local waters. It is only found in north-east coast at the depth of 300–450 m and is caught in association with *M. japonicus* and *M. formosanus*.

***Metanephrops japonicus* (Tapparone-Canefri, 1873)**

(Pl. IB)

Nephrops japonicus—Tapparone-Canefri, 1873: 325 (not seen); De Man, 1916: 98; Parisi, 1917: 15; Yoshida, 1941: 34.

Metanephrops japonicus—Jenkins, 1972: 162; Miyake, 1982: 77.

(not) *Nephrops japonicus*—Balss, 1914: 84 (= *Metanephrops sagamiensis* (Parisi, 1917)); Chang, 1965: 47 (= *Metanephrops formosanus* Chan and Yu, 1987).

Materials: 2 ♂♂ 103 and 133 mm, 4 ovigerous ♀♀ 114–130 mm, 1 ♀ 113 mm, 21 Oct 1984, Ta-Chi, I-Lan County.

Diagnosis: Cheliped heavily ridged and spinulose. 4–6 pairs of teeth present on post-rostral carinae (usually 4 pairs in juveniles). Three spines present on gastric area; area which bounded by post-orbital margin, post-rostral carina, cervical groove and antennal spine. Movable figure of chela with row of dense setae at outer edge. Abdominal tergites deeply sculptured, with transverse furrows of abdominal tergites I to V interrupted medially by thick dorsal ridge. Lateral margin of abdominal tergite V armed with posteriorly directed spine. Longitudinal midline of abdominal tergite VI elevated and armed with pair of posteriorly directed spines at subanterior. Eggse spherical of about 2–2.5 mm diameter, becoming oval of about 2.5×3.5 mm in size when near hatching

Coloration: Body generally orange-pink, much paler on ventral surface. Antennal flagella orange-red at inner surface and orange-pink at outer surface, Tail fan and pleopods orangered. Mouth parts, ventral carapace and posterior four pereopods pink. Post-orbital region, area behind antennal spine, area below largest post-orbital spine,

finger tips of chelae, margins of abdominal pleura and hinges between abdominal somites white. Setae of light grey color. Eyes black and with golden reflections. Eggs deep sky blue, becoming milky white when having eye spot.

Distribution: Confined to Japan and Taiwan.

Remarks: The previous report of *M. japonicus* in Taiwan by Chang (1965) was a misidentification of the unique local species *M. formosanus*. *M. japonicus* is sometimes caught with *M. formosanus* at the waters of deeper than 300 m along the north-east coast. The general size of this species is larger than that of other *Metanephrops* lobsters and its price is the same as that of *M. formosanus*. A high frequency of ovigerous females are found around late Autumn, this is the same as in other Nephropidae species. *M. japonicus* can be readily separated from the other local species by its deeply sculptured abdominal tergites and spinulose chelipedes.

***Metanephrops thomsoni* (Bate, 1888)**
(Pl. IC)

Nephrops thomsoni—Bate, 1888: 191 (in part); Balss, 1914: 84; De Man, 1916: 99; Yoshida, 1941: 34; Yaldwyn, 1954: 721; Chang, 1965: 48; Bruce, 1966b: 162; Kim, 1977: 346.

Nephrops thomsoni var. *andamanicus*—Alcock, 1901: 153.

Metanephrops thomsoni—Jenkins, 1972: 162; Miyake, 1982: 77.

Materials: 1 ♂ 53 mm, 1 ovigerous ♀ 110 mm, 3 Fed 1983, 3 ♂♂ 61–110 mm, 2 ovigerous ♀♀ 109 and 115 mm, Oct 1984, Ta-I-Lan County.

3 ♀♀ 44–70 mm, 3 Oct 1984, Tong-Kang, Ping-Tong County.

Diagnosis: Post-rostral carinae constantly armed with 3 pairs of teeth. Only 2 spines present on gastric area. Cheliped weakly ridged and no setae on outer edge of movable figer. Abdominal somites weakly sulptured. Neither furrow nor ridge present at abdominal tergite I. Transverse furrows

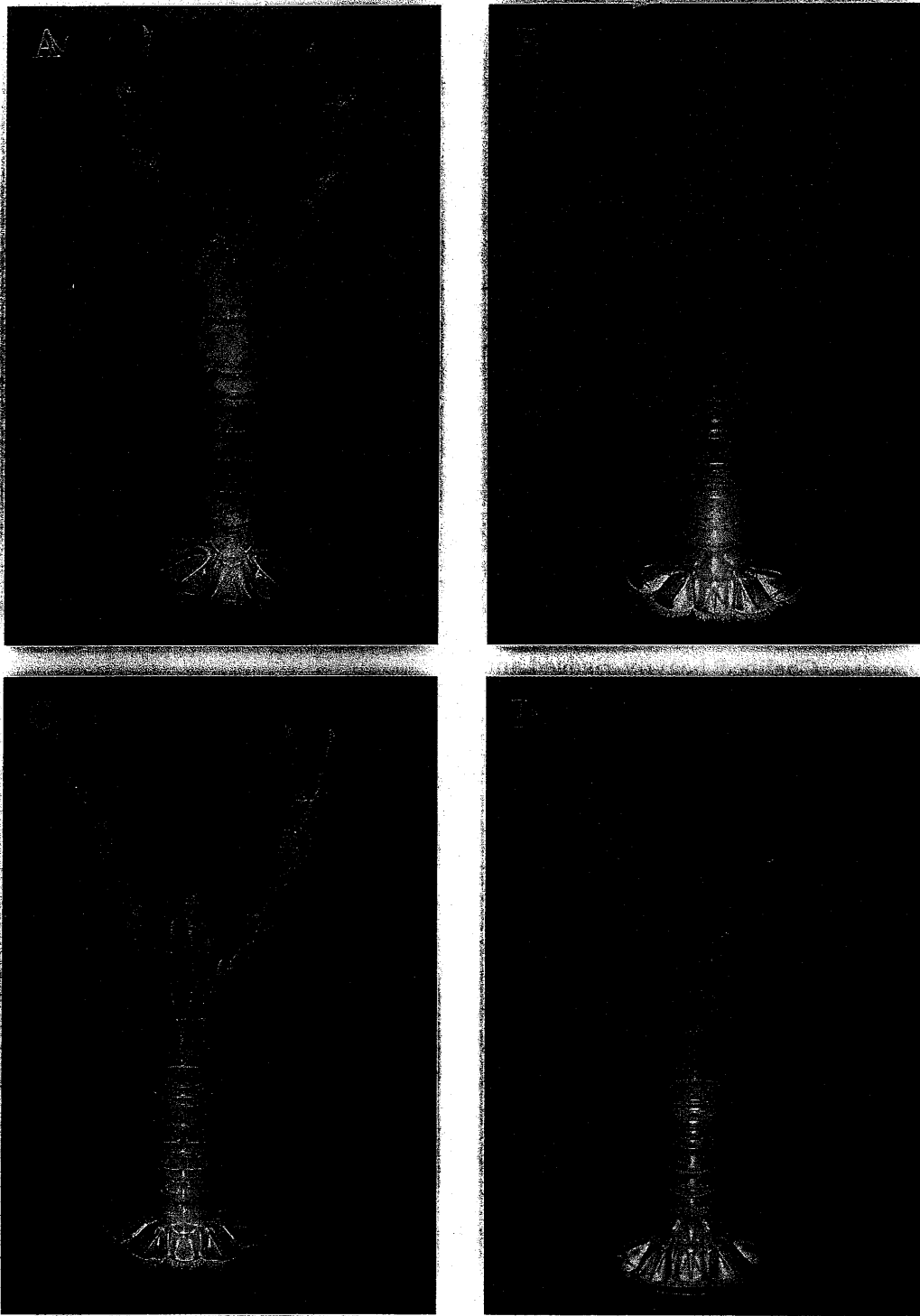


Plate I

- A. *Nephropsis stewarti* Wood-Mason, 1872.
- B. *Metanephrops japonicus* (Tapparone-Canefri, 1873)
- C. *Metanephrops thomsoni* (Bate, 1888)
- D. *Metanephrops formosanus* Chan et Yu, 1987.

at abdominal tergites II to V disconnected, but not interrupted, medially. Lateral surfaces of abdominal tergites rather free of sculpturation. Mid-dorsum of abdominal tergite VI smooth. Eggs spherical, with diameter of about 2 mm.

Coloration: Body fresh-pink, paler on ventral surfaces. Colors on tail fan and pleopods darker. Mouth parts and ventral carapace pink. Post-orbital region, area behind antennal spine, area below largest post-orbital spine, finger tips of chelae, margins of pleura and posterior margin of tail fan white. Cheliped dorsally covered with four distinct pairs of red patches: at middle of fingers, palm and merus, and at posterior half of carpus. Pereiopods pink, with red bands. Color of antennal flagella and eyes similar to those of *M. japonicus*. Eggs deep sky blue.

Distribution: Widely distributed in West-Pacific regions: Japan, Korea, Taiwan, Philippines and Malay Archipelago.

Remarks: Bate's original description of *M. thomsoni* was confused with *M. challegeri* (Balss 1914) (see Yaldwyn 1954). The earliest record of *M. thomsoni* in Taiwan was by Balss in 1914. *M. thomsoni* distributes in shallower water and is mostly caught at the depth of about 120–200 m from both north and south coasts. The price of this species the highest among local *Metanephrops* lobsters because of its "smoother" outline. *M. thomsoni* is distinctive by its special coloration on the cheliped.

***Metanephrops formosanus* Chan and Yu, 1987**
(Pl. ID)

Metanephrops formosanus—Chan and Yu, 1987: 172.
Nephrops japonicus (not Tapparone-Canefri, 1873)—
Chang, 1965: 47.

Materials: 3 ♂♂ 57–96 mm, 2 ♀♀ 66 and 76 mm, 3 Feb 1983 1 ♂ 83 mm (holotype), 1 ovigerous ♀ 85 mm, 2 ♀♀ 49 and 55 mm, 4 Oct 1984; 6 ♂♂ 56–82 mm, 4 ♀♀ 66–80 mm, 14 Oct 1984; 4 ♂♂ 95–119 mm, 2 ♀♀ 45 and 95 mm, 21 Oct 1984; Ta-Chi, I-Lan County.

8 ♂♂ 5270.5 mm, 31 Oct 1984, Tong-Kang,

Ping-Tong County.

Diagnosis: Similar to *M. japonicus* but less spinulose and sculptured. 3–4 (mostly 3) pairs of teeth at post-rostral carinae. Longitudinal mid-line of abdominal tergites not elevated. Transverse furrow at abdominal tergite II generally not interrupted medially (or only weakly disconnected). No lateral spine at abdominal tergite V and no central spine at subanterior of abdominal tergite VI. Movable finger of chela armed with prominent white basal spine at outer edge.

Coloration: Body generally orange-pink, paler on ventral surfaces. Color pattern similar to that of *M. japonicus* except hinges between abdominal somites not in whitish. All strong spines on cheliped conspicuously white, especially basal spine at outer edge of movable finger.

Distribution: The type locality Taiwan only.

Remarks: The characters of *M. formosanus* is intermediate between that of *M. japonicus* and *M. thomsoni*, a more detail information on this species refers to Chan and Yu (1987). *M. formosanus* is the commonest clawed lobsters in Taiwan and is found from the depth of 180–450 m (mostly 300 m) off both northeast and south coasts.

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臺灣近海產海螯蝦科蝦類之研究

陳 天 任 游 祥 平

本報告報導二屬四種臺灣近海產海螯蝦科 (Nephropsidae) 之蝦類。分別為：史氏擬海螯蝦 *Nephropsis stewarti* Wood-Mason, 1872、日本後海螯蝦 *Metanephrops japonicus* (Tapparone-Canefri, 1873)、紅斑後海螯蝦 *M. thomsoni* (Bate, 1888) 及臺灣後海螯蝦 *M. formosanus* Chan and Yu, 1987。此四種海螯蝦均為臺灣近海蝦拖網漁船漁獲物中常見之蝦類，漁民稱之為鐵甲蝦，體長在 7~15 公分之間，產量雖不多，但頗具經濟價值。棲息於 100~450 公尺水深之沙泥底質海域。

本文係討論此四種蝦之外部形態、體色等特徵外，並附彩色圖片及檢索表供為查定種之依據。