

SHORT NOTE

TWO ADDITIONAL LOBSTER SPECIES (CRUSTACEA: MECRURA REPTANTIA) IN TAIWAN

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Tin-Yam Chan, Ding-An Lee and Hsiang-Ping Yu (1991) Two additional lobster species (Crustacea: Macrura Reptantia) in Taiwan. *Bull. Inst. Zool., Academia Sinica* 30(3): 247-253. Two more lobster species are found along the eastern coast of Taiwan. They are *Metanephrops sagamiensis* (Parisi, 1917) and *Justitia longimanus* (H. Milne Edwards, 1837). The genus *Justitia* is also a new record in Taiwan. The morphology of these two lobsters are briefly described and their coloration are also illustrated.

Key words: New records, *Metanephrops*, *Justitia*, Lobsters.

During the course of an extensive investigation on the Taiwanese lobster fauna in recent years (see Chan and Yu, 1989), two newly recorded lobster species, one clawed (Nephropidae) and one spiny (Palinuridae), are found along the eastern coast. They are *Metanephrops sagamiensis* (Parisi, 1917) and *Justitia longimanus* (H. Milne Edwards, 1837). The genus *Justitia* is also a new record from Taiwan. The only specimen of *J. longimanus* was collected by bottom gill nets at a depth of 60 m. *M. sagamiensis*, which is seldom seen, was found only recently in the catches of deep-water *Metanephrops* lobsters. The present report briefly describes these two species. Due to the large differences in the general morphology between nephropid and palinu-

rid lobsters, the carapace and the body lengths were measured from the tip of the median spine in *J. longimanus*, and from the orbital margin in *M. sagamiensis*. Specimens of *M. sagamiensis* and *J. longimanus* are deposited at the National Taiwan Ocean University and the Taiwan Fisheries Research Institute, Keelung, respectively.

SYSTEMATIC ACCOUNTS

Metanephrops sagamiensis (Parisi, 1917)

(Pl. Ia, b)

Nephrops japonicus: Balss, 1914: 84, pl. 1-fig. 2;
Kubo, 1970: 98, pl. 49-fig. 2, 1971: 629, fig. 1029;
Takeda, 1982: 46, fig. 136 [nec Tapparone-
Canefri, 1873].

Nephrops sagamiensis Parisi, 1917: 15 [type-locality:
Sagami Bay]; Yaldwyn, 1954: 730.



Plate I. *Metanephrops sagamiensis* (Parisi, 1917), 48.5 mm cl male: (a) dorsal view. (b) lateral view. *Justitia longimanus* (H. Milne-Edwards, 1837), 51.5 mm cl male: (c) dorsal view. (d) lateral view.

Nephrops intermedius Balss, 1921: 176; Yaldwyn, 1954: 730.

Metanephrops sagamiensis: Jenkins, 1972: 163, figs. 2-4; Phillips *et al.*, 1980: 65, Miyake, 1982: 77, pl. 26-fig. 4; Baba, 1986: 151, color photo 101; Chan & Yu, 1987: 184 (key).

? *Nephrops sagamiensis*: Burukovskii, 1983: 156 (key).

Nephrops intermedium: Burukovskii, 1983: 156 (key).

[*Nec*] *Nephrops sagamiensis*: Bruce, 1966: 535 [= *M. andamanicus* (Wood-Mason, 1892)].

Materials Examined: Su-Ao, I-Lan County, baby shrimp trawler, fish market, 9 March 1990: 2 males 48.5 & 59 mm cl and 143 & 170 mm bl, 2 ovigerous female 47.5 & 48 mm cl and 135 & 136 mm bl, 1 female 43 mm cl and 117 mm bl.

Diagnosis: Post-rostral carinae each armed with 3-5 teeth but mostly 4 and usually at least with one side more than 3. Carapace with 3 post-orbital spines. Eyes large and kidney shaped. Big chelae prominently ridged and covered with short but stout spines, outer base of movable finger sometimes with a tubercle. Abdomen with marked dorsal carina and sharp sculpture, tergite V without lateral spines and median ridge at tergite VI smooth on dorsal side. Posteriorly directed spines at lateral lobes of tergite VI strong and long, almost reaching postero-lateral grooves.

Coloration: Body generally orange-red. Eyes black-brown with golden reflections. Distal half of supraorbital horns, tip of rostrum, orbital margin, area immediately below posteriormost post-orbital spine and ventral parts of cervical groove white. Big chelipeds somewhat banded with paler colors (sometimes indistinct) and distal parts of fingers whitish. Hinges at abdomen white. Ventral surface pink-white to pink. Eggs blue, becoming white and blue when approaching hatching.

Distribution: Japan and northern Taiwan, from Sagami Bay to north-eastern

Taiwan at depths of 300-400 m (mostly around 350 m).

Remarks: Together with *M. sagamiensis*, there are now 2 genera and 5 species of clawed lobsters found in Taiwan (Chan and Yu, 1988). *M. sagamiensis* can be readily distinguished from the other local *Metanephrops* lobsters by its more reddish color and having a marked dorsal carina at the abdomen, but the lateral borders of the tergite V and the dorsal surface of the median ridge at the tergite VI are not armed with spines. *M. sagamiensis* has only been collected along the north-eastern coast of Taiwan and is seldom seen. In Japan, this highly valued lobster species is fished commercially during the cold seasons (Miyake, 1982). Although *M. sagamiensis* is seldom collected at present, it is the largest *Metanephrops* lobster species recorded in Taiwan and always a fair amount is obtained whenever it is taken. With the improvements of deep-sea fishing gears and having more data on its habitats, *M. sagamiensis* may be of great commercial potential in local waters.

Justitia longimanus

(H. Milne Edwards, 1837)

(Pl. Ic, d)

Palinurus longimanus H. Milne Edwards, 1837: 294 [type-locality: Antilles]; Heller, 1865: 94 (in key); Ortmann, 1891: 20; Bouvier, 1925: 442, pl. 8-fig. 1.

Justitia longimana: Holthuis, 1946: 115; Edmondson, 1951: 194, figs. 5-6; Kubo, 1955: 185; George & Main, 1967: 811; Monod & Postel, 1968: 178; figs. 1-9, pl. 1; Crosnier, 1976: 237, fig. 5d-f; Sekiguchi & Okubo, 1986: 19.

Justitia longimanus: Manning, 1978: PALIN Just 1, unnumbered figs.; Phillips *et al.*, 1980: 68.

Justitia longimanus longimanus: Johnson & Robertson, 1970: table 1.

Palinurus longimanus mauritianus Miers, 1882: 540, pl. 36-fig. 1 [type-locality: Mauritius]; Bouvier, 1915: 187.

Justitia longimana mauritiana: Holthuis, 1946: 115; Gordon, 1960: 301, figs. 7-9.

Justitia longimanus mauritiana: Johnson & Robertson, 1970: 286, figs. 1-13.

Justitia longimana mauritiana: Sekiguchi & Okubo, 1986: 19.

Justitia mauritiana: George & Main, 1967: 811; Phillips *et al.*, 1980: 68; Holthuis, 1984: PALIN Just 1, unnumbered figs.

Material Examined: Taitung County, bottom gill net, 60 m, January 1990: 1 male 51.5 mm cl and 145 mm bl.

Diagnosis: Carapace rounded and covered with squamae, anterior margin with a long and sharp median spine (not true rostrum) flanked by 2 or 3 pairs of smaller spines (inner two usually joined at base). Supraorbital horns very large and with 2 spines on dorsal margin. Eyes large and subpherical, laterally just overreaching antennal spine. Antennular flagella very short. Anterior carapace scattered with well-developed spines and posterior margin of cervical groove armed with 8 large spines as well as some small spines. Pereiopod I in males extremely long, robust and subchelate. Abdomen without squamae but distinctly striated, with 5 transverse grooves at each of tergites II to V. Uniramous pleopods present at abdominal somites II to V in the male.

Coloration: Carapace red, with postero-dorsal region somewhat purplish and lateral surface having deep red lines. Eyes black. Antennal flagella alternated with red and orange while antennular flagella orange and distributed with white spots. Pereiopod I dark red with orange patches, dactylus white. Posterior pereiopods and maxilliped III orange and scattered with white spots. Abdomen orange-red with white hinges. Non-calcified part of tail-fan and pleopods red, with margins white.

Distribution: World-wide: Western Atlantic (Antilles, Florida Keys and Bermuda), Indian Ocean (La Réunion,

Mauritius) and Western Pacific (Hawaii and Taiwan, ? Okinawa [figure in page 1 of Hirata, 1988], possible larvae in Philippines and Tahiti). At depths of 23 to 454 m (rarely 1 m in certain areas of upwelling) but mostly between 50-150 m near outer parts of reef slopes.

Remarks: The Taiwanese specimen agrees well with the descriptions and figures of the present species given by other authors (Miers, 1882; Edmondson, 1951; Gordon, 1960; Monod and Postel, 1968; Crosnier, 1976; Manning, 1978; Holthuis, 1984). Only slight differences, such as the arrangements of some small spines on the carapace, are found in our specimens as well as among those from the other localities (Miers, 1882; Edmondson, 1951). Holthuis (1984) stated that the transverse grooves on the abdomen of the Indian Ocean materials are not interrupted at the midline. However, some of these grooves in the type of *J. longimanus mauritiana* are medially interrupted (Miers, 1882: 540, pl. 36-fig. 1; Gordon, 1960: 303, figs. 8-9). The abdominal grooves of the Taiwanese specimen closely resemble those of Miers' type and with the posteriormost one medially interrupted at the abdominal tergites I to IV, while the anteriormost groove at the tergites IV and V is interrupted at 3 sites.

J. longimanus was originally described from the Eastern Atlantic and many authors considered the Indo-West-Pacific material as a subspecies or a species with the name of *mauritiana* (see synonymy, George and Main, 1967 even considered that the Hawaiian form is also distinct). However, no convincing character has ever been proposed to separate the two forms (Bouvier, 1915; Holthuis, 1946; Edmondson, 1951; Monod and Postel, 1968) and even Miers (1882) expressed doubts on his separation. Only Johnson and Robertson (1970) claimed that their larvae are somewhat different. An examination by the first author of 7

males and 1 female (largest 70 mm cl, a size much larger than previously supposed for the Atlantic population) from the Western Atlantic deposited at the National Museum of Natural History, Washington, D.C. showed that they are almost identical with our Taiwanese specimen. Only the spines on the dorsal border of the merus of the big cheliped tend to be weaker and there are always 4 instead of 5 distinct transverse grooves at the abdominal tergites IV and V in the Atlantic materials. Thus, the different geographical populations are considered to be a single species as stated by Monod and Postel (1968) and Crosnier (1976).

Although *J. longimanus* is very widely distributed, it is rarely found (Monod and Postel, 1968) due to the fact that *Justita* species inhabit reef slopes usually inaccessible to trawlers and too deep for normal diving operations. It is believed that the other species of the genus, *J. japonica* (Kubo, 1955) which has a distribution from Madagascar to Japan (Crosnier, 1976; Sekiguchi and Okubo, 1986), will also be found in the Taiwanese waters if more collections in deep-water reef areas are attempted. Anyhow, the addition of *J. longimanus* brings the number of spiny lobsters recorded in Taiwan to 4 genera and 12 species. *J. longimanus* can be readily distinguished from the other local spiny lobsters by the extremely long and subchelate pereopod I in males, and the abdomen striated with numerous transverse grooves.

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ric name has been transferred from a masculine gender (*Palinurus*) to a feminine gender (*Justitia*); Dr. A. Crosnier of the Muséum national d'Histoire naturelle, France for sending us some of the references and discussing with us the taxonomic status of the subspecies of *J. longimanus*; the Smithsonian Institution, Washington, D.C. for providing the first author a research grant to study at the National Museum of National History, Washington, D.C.

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臺灣海域新記錄之兩種爬行蝦類

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本篇記述臺灣海域新記錄的一種屬於龍蝦科的長臂正龍蝦 *Justitia longimanus* (H. Milne Edwards, 1837) 及海螯蝦科的相模後海螯蝦 *Metanephrops sagamiensis* (Parisi, 1917)。正龍蝦屬種類在全世界只有兩種，且長臂正龍蝦過去沒有在太平洋西部發現過，相模後海螯蝦則只分佈於日本。本報告除簡述此二種爬行蝦的外部形態特徵和體色外，同時討論其分佈情形並附彩色圖片以供參考。

