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Scyllaridae) of Taiwan

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摘 要

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本報告報導二種棲息於臺灣沿岸岩礁之岩礁扇蝦。分別為南極岩礁扇蝦 *Parribacus antarcticus* (Lund, 1793) 和日本岩礁扇蝦 *P. japonicus* (Holthuis, 1960)。此兩種岩礁扇蝦均具經濟價值。前者主要分佈在本省南部沿岸，而後者則以北部沿岸為多。

本文除比較兩種蝦之外部形態特徵、體色外，同時附上檢索表及彩色圖片以供參考。

關鍵詞： 蟬蝦科，岩礁扇蝦，新記錄，臺灣。

Abstract

In addition to the long recorded *Parribacus antarcticus* (Lund, 1793), one more *Parribacus* species, *P. japonicus* Holthuis, 1960, is found in Taiwan. Both species inhabit rocky and coral reefs, but with *P. japonicus* appeared to be mainly distributed off the northern coast while *P. antarcticus* mostly in the south. These slipper lobsters are taken incidental to fisheries for spiny lobsters and are highly valued sea-food. A key to their identification and color illustrations of these two *Parribacus* lobsters are provided.

Key words: Slipper lobsters, *Parribacus*. new record, Taiwan.

Introduction

Slipper lobsters of the genus *Parribacus* are characterized by the carapace being strongly dorso-ventrally compressed and bearing large teeth along the lateral margins, and the dorsal surfaces of the body being entirely covered

with squamiform tubercles and short hairs. Six extant species of this genus are known at present and all are inhabitants of rocky and coral reefs in shallow tropical and sub-tropical seas (Holthuis 1985). Only the widely distributed *Parribacus antarcticus* (Lund, 1793) has been reported to occur in Taiwan (eg. Oo

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** Graduate School of Fisheries, National Taiwan College of Marine Science and Technology, Keelung, Taiwan, Republic of China.

1937; Hwang and Yu 1980, 1983; Holthuis 1985). *Parribacus* lobsters are accidentally caught as by-catch of spiny lobster fishery and can be sporadically seen in the market. They are usually sold live in sea-food restaurants at a rather high price (about NT\$1,000/kg) with a common name "Flapping-Shrimp-Auntie" (蝦姑拍仔). Recently, when the authors examined the slipper lobsters displayed in the aquaria at sea-food restaurants, we discovered that the Taiwanese *Parribacus* lobsters contain one more species. It is found that the species reported as *P. antarcticus* by Hwang and Yu (1983) is actually a misidentification of *P. japonicus* Holthuis, 1960, a species which is thought to occur in Japan only (Phillips *et al.* 1980; Holthuis 1985). With the addition of *P. japonicus*, the list of Taiwanese scyllarid lobsters becomes 5 genera and 14 species (see Hwang and Yu 1983; Chan and Yu 1986). This report briefly describes the two *Parribacus* species, together with a key and colour illustrations for their identification.

Materials and Methods

The specimens were brought from sea-food restaurants in north-eastern Taiwan. They are deposited at the Department of Fisheries in National Taiwan College of Marine Science and Technology (NTCMST). As to the measurements, carapace length (cl.) and body length (bl.) were measured from the apex of rostrum to the posterior margin of the carapace and to the distal telson margin of fully stretched specimen respectively. The terms used in describing the various parts of scyllarid lobsters follow Holthuis (1985) and Chan and Yu (1986).

Key to the *Parribacus* lobsters of Taiwan:

- 1a. Rostral tooth distinct; antennal segment IV with 6 large outer teeth (excluding apical tooth); median carina at abdominal somites II and III markedly elevated; body yellowish; green bands on pereopods becoming fainter at ventral surfaces
 *P. antarcticus*
- 1b. Rostral tooth absent; antennal segment IV with 5 large outer teeth (excluding apical tooth); median carina at abdominal somites II and III almost leveled; body reddish and pereopods with conspicuous deep-blue rings *P. japonicus*
- Parribacus antarcticus* (Lund, 1793)**
 (Plate I a and b)
- Scyllarus antarcticus* Lund, 1793: 22 (not seen, type locality: Amboina, Moluccas).
Ibacus antarctius – White, 1847: 68; Haswell, 1882: 169.
Parribacus antarcticus – Dana, 1852: 517; Rathbun, 1906: 896; Holthuis, 1946: 102 (*p.p.*); Forest, 1954: 345; Harada, 1965: 37; Kubo, 1971: 627; Phillips, Cobb and George, 1980: 71; Hwang and Yu, 1980: 152; Burukovsky, 1983: 144; Holthuis, 1985: 73; Williams, 1986: 27.
Paribacus antarcticus – Ortmann, 1891: 45 (*p.p.* ?).
Paribaccus antarcticus – Balss, 1914: 81 (*p.p.* ?).
Parribacus Parrae – Dana, 1852: 517; De Man, 1916: 66.
Paribaccus parra – Balss, 1914: 81.
Parribacus papyraceus – Rathbun, 1906: 897.
Parribacus ursus – Stebbing, 1915: 63.
Parribacus ursus major – De Man, 1916: 66; Barnard, 1950: 565; Kensley, 1981: 30.
Parribacus ursus major carinata – De Man, 1916: 66.
Paribacus ursus major – Parisi, 1917: 13 (*p.p.*).
Parribacus ursus-major – Boone, 1935: 54; Oo, 1937: 30.
 [?] *Scyllarus carinatus* – Holthuis, 1946: 89.
 [not] *Parribacus antarcticus* – Utinomi, 1967: 62; Kubo, 1970: 98; Hwang and Yu, 1983: 263. (= *Parribacus japonicus* Holthuis, 1960)
Parribacus japonicus [non] Holthuis, 1960 – Miyake, 1982: 89.
- Material Examined:
 1 ♂ cl. 65 mm, bl. 144 mm, 26 May 1988;

1 ♂ cl. 48 mm, bl. 106 mm, 8 June 1988, Fu-Long, I-Lan County.

Diagnosis:

Rostrum bearing well-marked rostral tooth. Posterior antero-lateral tooth only slightly smaller than anterior one. Antennal segment VI with 7 large anterior teeth and 1 large inner tooth. Antennal segment IV bearing 6 large outer teeth, an apical tooth and 2 large anterior teeth. Abdominal tergite I covered with flattened tubercles, provided with a distinct row of scallop groove submedially (joining lateral deep grooves) and many short oblique grooves near posterior border. Articulated surfaces of abdominal tergites II to V marked with rounded tubercles. Transverse groove between articulated and non-articulated surfaces at abdominal tergites wide, naked and well-exposed, especially at II and III but with some small tubercles at middle. Median carina on abdominal tergites II and III high and markedly elevated at anterior end.

Colour:

Body dorsally yellowish with deep-brown and black patches. Rostrum purple while rostral tooth light purple with purplish tip. Orbital ridge entirely purple. Large teeth on lateral carapace and margins of antennal segments with yellow tips, followed orderly by trace of orange, narrow band of light purple (sometimes very confined), band of deep-brown, patch of light purple and then black with light purple and yellow dots. Abdominal somites yellowish with two thick lateral black lines. Mid-area of abdominal tergite I yellow with some small brown patches and a median deep-brown spot at posterior border. Articulated surfaces of abdominal tergites II and III yellow with three black spots while those of IV and V dark colored. Ventral surface of body greenish yellow and distributed with faint green spots. Pereiopods greenish yellow and marked with green bands, but color at bands becoming fainter at ventral surface. Tail-fan light brown with scattered deep-blue dots. Freshly ejected spermatophore white.

Distribution:

World wide tropical and subtropical seas: Caribbean Sea, Indo-West-Pacific. Coral and rocky reefs at depths of usually less than 20 m.

Remarks:

P. antarcticus is unmistakable by the median carina of abdominal somites II and III being highly elevated at anterior end and the antennal segment IV usually bearing six large outer teeth (sometimes these teeth and the apical tooth may be bifurcated or trifurcated). The transverse grooves at abdominal tergites in this species are always wider than those in *P. japonicus*. *P. antarcticus* can also be easily separated from *P. japonicus* by its special colouration.

The specimens examined were bought live from sea-food restaurants in north-eastern Taiwan. They were said to be transported from the south by wholesalers but the exact origin was not clear. Commercial lobster divers in the northern region also said that this "yellowish" species was not found in their fishing area. An examination of their *Parribacus* catch (about 50 individuals) were all *P. japonicus*. The records of *P. antarcticus* in Taiwan are all in the southern regions (Oo 1937; Hwang and Yu 1980; Holthuis 1985 p. 76). The *P. antarcticus* reported from Keelung (northern Taiwan) by Hwang and Yu (1983), after re-examined by the authors, was actually a misidentification of *P. japonicus*. Therefore, it is highly likely that *P. antarcticus* is mainly distributed in southern Taiwan.

Although Holthuis (1985) was doubtful on the distribution of *P. antarcticus* in Japan, it appears that this species does occur in southern Japan. The illustration of *P. japonicus* from Ishigaki Island (south of Ryukyu Islands) provided by Miyake (1982) is almost identical in colour with our *P. antarcticus*. Furthermore, the figure of *P. antarcticus* provided by Kubo (1971, fig. 1022) bears six outer teeth at the antennal segment IV, a character typical to *P. antarcticus*.

Parribacus japonicus Holthuis, 1960
(Plate I c and d)

Parribacus antarcticus [not *Parribacus antarcticus* (Lund, 1793)] – Ortmann, 1891: 45 (*p.p.* ?).

Parribacus antarcticus [not *Parribacus antarcticus* (Lund, 1793)] – Balss, 1914: 81 (*p.p.* ?).

Parribacus ursus major [not *Parribacus antarcticus* (Lund, 1793)] – Parisi, 1917: 13 (*p.p.*).

Parribacus antarcticus ([*non*] Lund, 1793) – Holthuis, 1946: 102 (*p.p.*); Utinomi, 1967: 62; Kubo, 1970: 98; Hwang and Yu, 1983: 263.

Parribacus japonicus Holthuis, 1960: 148 (type locality: Japan); Harada, 1965: 37; Phillips, Cobb and George, 1980: 71; Burukovsky, 1983: 144; Holthuis, 1985: 106; Hirata, Nakasone and Shokita, 1988: 60. [not] *Parribacus japonicus* – Miyake, 1982: 89. [= *Parribacus antarcticus* (Lund 1793)]

Material Examined:

1 ♂ cl. 59 mm, bl. 127 mm, 10 July 1973, Su-Ao, I-Lan County.

1 ♀ cl. 53 mm, bl. 120 mm, 26 May 1988, Fu-Long, I-Lan County.

Diagnosis:

Rostrum smooth dorsally, lacking rostral tooth. Posterior antero-lateral tooth conspicuously smaller than anterior one. Antennal segment VI with 7 large anterior teeth and 1 or 2 large inner teeth. Antennal segment IV bearing 5 large outer teeth, an apical tooth and 2 or 3 large anterior teeth. Mid-area of abdominal tergite I appeared smooth, with inconspicuous and very shallow reticular grooves. Round and flattened tubercles on articulated surfaces of abdominal tergites II to V smooth to touch. Transverse groove between articulated and non-articulated surfaces of abdominal somites narrow; with short hairs from two surfaces touching each other and mid-area of II and III entirely filled with large hairy tubercles. Median carinae at abdominal somites II and III low and almost non-elevated at anterior.

Colour:

Dorsal surface of carapace red-brown with yellow-brown patches. Orbital ridge and rostrum mainly red-brown. Antennal segment VI dark blue with yellowish white dots. Large teeth at lateral carapace and margins of antennal segments red with yellowish tips. Anterior half of abdominal tergite I laterally black and centrally white while posterior half somewhat whitish or greenish with 5 dark spots. Abdominal tergite II light purple medially and red-brown laterally, with 3 black spots at articulated surface and 5 red-brown spots at posterior border of non-articulated surface. Articulated surface of abdominal tergite III light purple with 5 red-brown spots. Transverse groove separating articulated and non-articulated surfaces at abdominal somites II and III yellow. From non-articulated surface of abdominal somite III to abdominal somite VI red-brown with grooves deep-green. Ventral surface of body orange-yellow and covered with prominent deep-blue spots, except at carapace anterior to cervical incision. Ventral surface of teeth at antennal segment VI dark blue with white dots. Pereiopods orange-yellow with conspicuous deep-blue rings. Tail-fan and pleopods light brown with deep-blue spots. Eggs light orange.

Distribution:

Japan and Taiwan only. Rocky reefs at depths of less than 30 m.

Remarks:

The number of outer teeth at the antennal segment IV in this species is rather constant. A random sampling of 10 specimens (of various sizes) amongst a catch of *P. japonicus* at a fish market showed that they all had 5 outer teeth at the antennal segment IV, although these teeth and the apical tooth were quite often bifurcated or trifurcated. The colour of this species is also very constant and can be a useful guide to separate it from *P. antarcticus*. However, its reddish body may sometimes be covered with a layer of brown or dark green algae, and the conspicuous white patch at the

middle of abdominal tergite I can be changed to pink-red or green in live animals. In such cases, the easiest way to distinguish *P. japonicus* from *P. antarcticus* is by the height of the median carina at the abdominal somites II and III.

Hitherto *P. japonicus* has only been known from Japan (Phillips *et.al* 1980; Holthuis 1985). The present report extends its distribution to Taiwan. *P. japonicus* is rather common in the rocky reefs at northern Taiwan. As *P. antarcticus*, this slipper lobster is caught incidentally by commercial spiny lobster divers and is a delicacy in restaurants with a price about half of that of spiny lobsters.

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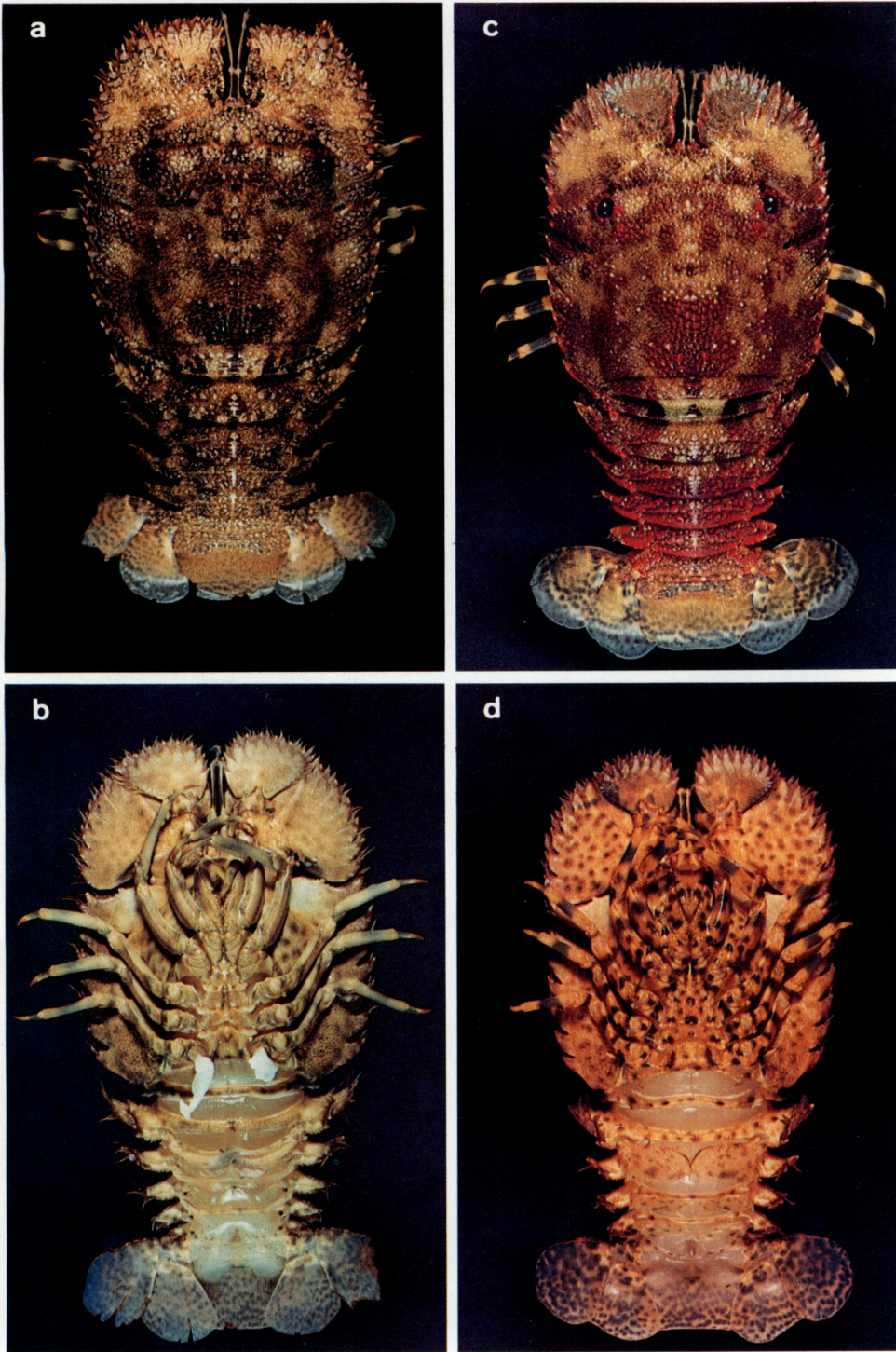


Plate I. *Parribacus antarcticus* (Lund, 1793) ♂ cl. 65 mm: a. Dorsal view. b. Ventral view, showing white spermatophore freshly ejected from genital opening at coxa of pereopod V. *Parribacus japonicus* Holthuis, 1960 ♀ cl. 53 mm: c. Dorsal view. d. Ventral view, showing conspicuous deep-blue spots and bands.