Identity of two hermit crabs, *Calcinus vachoni* Forest, 1958, and *Calcinus seurati* Forest, 1951, from the coral reefs of Taiwan (Crustacea: Decapoda: Anomura)

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摘 要

施習德　李信徹　兩種臺灣珊瑚礁產之硬殼寄居蟹類，瓦氏硬殼寄居蟹和塞氏硬殼寄居蟹(甲殼綱：十足目：異尾類)　臺灣省立博物館半年刊　50(1)：21-31

本報告描述兩種臺灣海域珊瑚礁產的硬殼寄居蟹，分別是瓦式硬殼寄居蟹*Calcinus vachoni* Forest, 1958和塞氏硬殼寄居蟹*Calcinus seurati* Forest, 1951。這兩種寄居蟹都具有顯著的體色，很容易和其他種寄居蟹區分。瓦氏硬殼寄居蟹爲臺灣新記錄種的寄居蟹，分布在低潮間帶岩石下方至深達3公尺的淺亞潮帶珊瑚枝上，全身爲乳白或淡青色，無特殊斑紋，唯近眼柄基部有不同大小的黑色斑塊，但亦有無黑斑的個體。塞氏硬殼寄居蟹棲息在高潮間帶石灰岩潮池中，目前在臺灣海域的分布僅限於蘭嶼島上，大螯足乳白或灰青色，步足有棕綠色條紋，步足腕節有單一縱向條紋，長節則有斜向條紋；而近似種光螯硬殼寄居蟹*Calcinus laevimanus* (Randall, 1839)的步足腕節和長節均有數條縱向條紋。瓦氏硬殼寄居蟹常被誤認爲塞氏硬殼寄居蟹，本報告除比較這兩種寄居蟹的外部形態特徵、體色和棲息場所之外，並討論其在動物地理學上的分布。

關鍵詞：甲殼類，異尾類，新記錄，分類，生態。

Abstract

Two *Calcinus* hermit crab species were collected from the coral reefs of Taiwan. *Calcinus vachoni* Forest, 1958, new to Taiwan, was collected under large rocks or on the branches of corals at about 0 to 3 m depth, while *C. seurati* Forest, 1951, was found on the high intertidal pool of the coral reefs. These two species are easily recognized by their apparent coloration (shown on the living color plates). Further discussion is made of the color variation of eyestalks of *C. vachoni*. Since the nomenclature of these two species adopted in some previous publications is misleading, we define their taxonomic status and delimit their distributions correctly.

Key words: Crustacea, Anomura, new record, taxonomy, zoogeography.

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Introduction

Two hermit crabs, *Calcinus vachoni* Forest, 1958, and *C. seurati* Forest, 1951, from Taiwanese waters are revised. *C. vachoni* is new to Taiwan. There are a total of ten *Calcinus* species currently recorded from Taiwan: *C. laevimanus*, *C. elegans*, *C. gaimardii*, *C. latens*, *C. minutus*, *C. seurati*, *C. guamensis*, *C. lineapropodus*, *C. pulcher* and *C. vachoni* (Terao, 1913; Lee, 1969; Yu, 1987; Foo, 1989; Yu and Foo, 1991; Shih and Yu, 1995; this study). *C. vachoni* lives in the low intertidal and shallow subtidal areas of reefs and has been misidentified as *C. seurati* by many authors (Miyake, 1963; Minei, 1973; Utinomi, 1975; Miyake, 1978; Miyake and Imafuku, 1980; Miyake, 1982; Kamezaki *et al.*, 1988; Murata *et al.*, 1991; Chang and Chen, 1992), although their color patterns differ distinctly from each other. In Taiwan, the distribution of *C. seurati* is confined to the high intertidal area of limestone pools in Lanyu Island (Foo, 1989; Yu and Foo, 1991; this study). The above mentioned information will contribute to the updating of our knowledge regarding the distributional limits of the above two species. This issue is also discussed in the present paper.

Calcinus vachoni shows variable color pattern on eyestalks, which as previously adopted as a main species-diagnostic feature in *C. vachoni* (Morgan, 1991).

In this paper, the morphological characters including color patterns are discussed in comparison with other closely-related *Calcinus* species. The living coloration of the above two species is described in detail with color plates provided to help species identification in the field. Shield length (SL) measurements were made from the tip of the rostrum to the posterior edge of the shield. The color pattern on eyestalks in *C. vachoni* was illustrated with the help of a drawing tube attached to a Carl Zeiss Jena stereo microscope. Specimens are now deposited in the Institute of Marine Biology, National Sun Yat-sen University (NSYSU).

Calcinus vachoni Forest, 1958 (Figs. 1, 2, 3)

Calcinus vachoni Forest, 1958: 285, figs. 2, 3, 9, 10, 15, 19 – Wooster, 1984: 137; Morgan 1990: 11, fig. 2; Morgan, 1991: 905, figs. 60–62; Gherardi and McLaughlin, 1994: 624.

Calcinus seurati – Miyake, 1963: 63; Minei, 1973; 53, fig. 19; Utinomi, 1975: 113; Miyake, 1978; 54; Miyake and Imafuku, 1980: 5; Miyake, 1982: 217; Kamezaki *et al.*, 1988: 113; Murata *et al.*, 1991: 23, fig. 1D, E; Chang and Chen, 1992: 108, 109 [not *C. seurati* Forest, misidentification].

Material examined:

Houwan, Pingtung County, 10♂♂ (SL 2.0–4.0 mm), 5♀♀ (SL 1.7–3.6 mm) (incl. 2 ovig. ♀♀), Aug. 12, 1992, NSYSU 920812; 13♂♂ (SL 2.0–3.5 mm), 5♀♀ (SL 1.9–4.2 mm), Mar. 27, 1993, NSYSU 930327; 12♂♂ (SL 1.4–3.6 mm), 8♀♀ (SL 1.4–3.4 mm) (incl. 1 ovig. ♀), Mar. 28, 1993, NSYSU 930328; 7♂♂ (SL 1.4–4.1 mm), 6♀♀ (SL 1.6–3.0 mm), Feb. 18, 1997, NSYSU 970218.

Diagnosis:

Ocular acicles with 2 to 5 spines at distal margin. Antennal flagella short, not exceeding 2nd pereiopod. Left cheliped slightly larger than right; palm and fingers minutely tuberculate; carpus tuberculate, with 1 large submedian tubercle on lateral surface. Right cheliped more spinous and hirsute; palm and carpus with spines on dorsal margin. Second and 3rd pereiopods smooth, with setae on dactyl and propodus of 3rd pereiopods more densely distributed than those on 2nd; dactyls shorter than propodi, with 5–7 small spines along ventral margin; carpus with 1–3 spines on distodorsal margin; merus with 1 small spine at lateral distoventral angle. Telson with several short spines and long hairs on terminal margin of both lobes.

Color in life:

Shield cream, with 2 small black spots

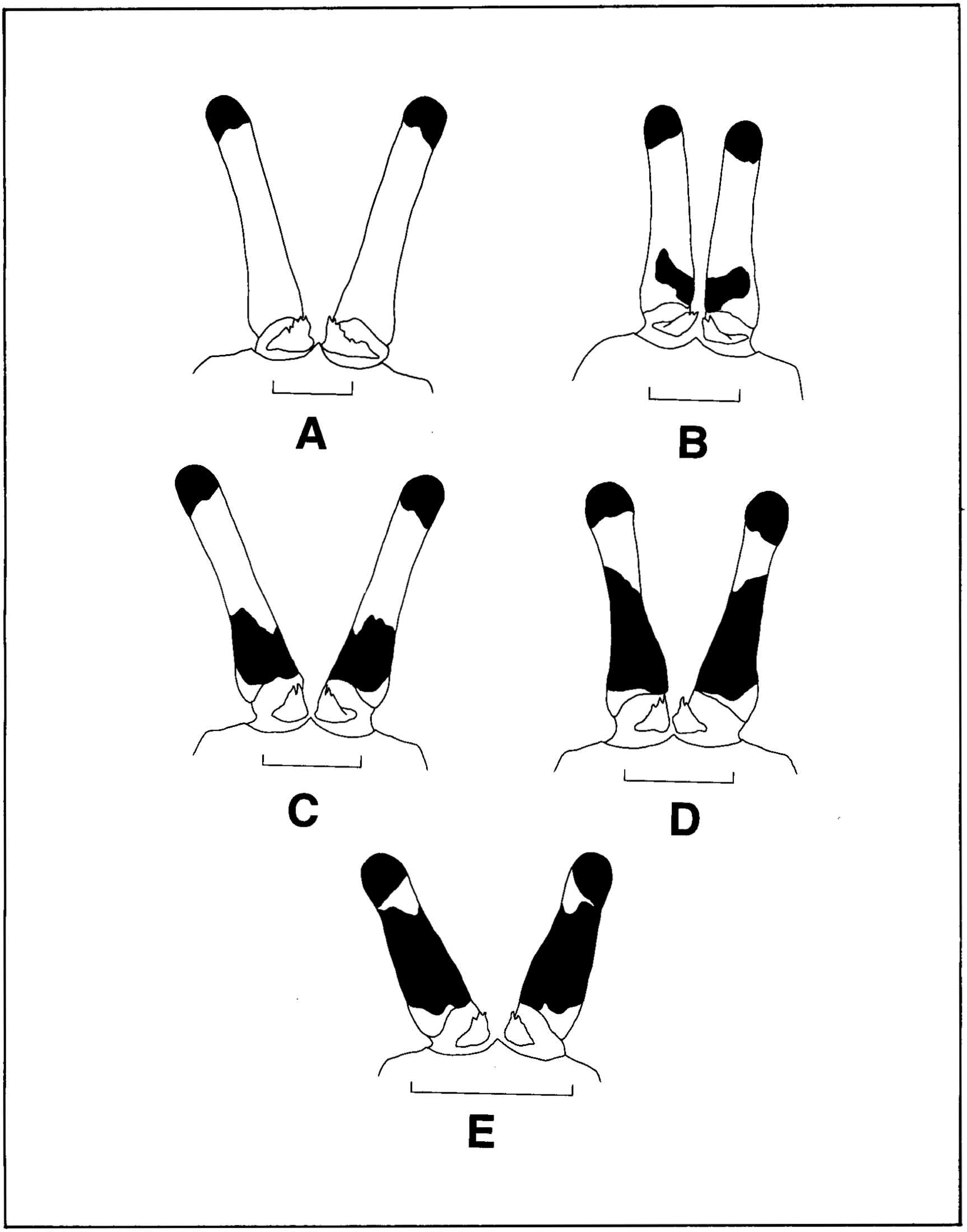

Fig. 1. Color patterns of eyestalks in *Calcinus vachoni* Forest. A, ♂, SL 4.1 mm, NSYSU 970218; B, ♂, SL 3.2 mm, NSYSU 930327; C, ♂, SL 2.8 mm, NSYSU 970218; D, ♂, SL 2.7 mm, NSYSU 970218; E, ♂, SL 1.4 mm, NSYSU 970218. Scale = 1 mm. See text for explanation.