

HERMIT CRABS OF THE GENUS *CALCINUS* DANA, 1851 FROM JAPAN
AND ADJACENT WATERS (DECAPODA, ANOMURA, DIOGENIDAE):
A COLOUR VARIANT OF *C. HAZLETTI* HAIG & MCLAUGHLIN

BY

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ABSTRACT

Calcinus hazletti Haig & McLaughlin, originally described from Hawaii, was recently collected from Japanese waters. One individual from Kushimoto, Kii Peninsula, showed an unusual colour variation.

RÉSUMÉ

Calcinus hazletti Haig & McLaughlin, décrite de Hawaii, a été récemment récoltée dans les eaux japonaises. Un individu de Kushimoto, péninsule de Kii, a montré une variation de couleur inhabituelle.

INTRODUCTION

Calcinus hazletti Haig & McLaughlin, 1984, originally described from Hawaii, remained unknown from elsewhere until recently collected from shallow waters around the Ogasawara (Bonin) Islands, Japan (Asakura & Tachikawa, 2003). This collection represented a major range extension of the species to the northwest.

Haig & McLaughlin's (1984) account of the species from Hawaii described the colouration (based on a colour illustration provided by J. Forest and M. de Saint Laurent), as "shield pink or pale orange, tip of rostrum and anterolateral corners dark orange-red". Hoover's (1998) recent photograph of the species from Hawaii shows part of the dorsal surface of the shield. The colour of the photographed specimen agrees well with that described by Haig & McLaughlin (1984) and the more recent description given by Asakura & Tachikawa (2003). Asakura

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& Tachikawa's (2003) colour description was based on colour photographs of live individuals from the Ogasawara Islands, Japan, and it included "shield with anterior margin white, subdistal area violet, paler posteriorly, darker areas present near anterolateral angles and posterior margin; gastric pits dark purple-brown; in small individuals (SL < 3.0 mm), shield generally white except for anterior and anterolateral margins".

Through the courtesy of Keiichi Nomura, Kushimoto Marine Park Center, one unusually coloured specimen of *Calcinus*, recently collected by Mr. Hiroshi Misaki from Kushimoto, Kii Peninsula, Japan, was made available to the author. After careful examination, the specimen was identified as an abnormal colour variant of *C. hazletti* and is reported here. This paper is the seventh of an ongoing series developed for the purpose of clarifying the identity of each *Calcinus* species from Japan and adjacent waters.

The specimen (CBM-ZC) is deposited in the Natural History Museum and Institute, Chiba, Japan. Type material of the species, housed in the Bernice P. Bishop Museum, Honolulu (BPBM), was also examined. Shield length (SL), measured from the tip of the rostrum to the posterior end of the shield, is used as an indicator of size

SYSTEMATIC ACCOUNT

***Calcinus hazletti* Haig & McLaughlin, 1984 (fig. 1)**

[See synonymy in Asakura & Tachikawa, 2003.]

Material examined. — 1 female, SL = 3.70 mm, 3 m, Tago, Kushimoto-cho, Wakayama-ken, Kii Peninsula, Japan, 11 March 2003. Coll. H. Misaki, CBM-ZC 7367.

Remarks. — Morphologically, the specimen agrees well with the paratype specimens examined (BPBM-S 10539, 10543: 4 males, 4 females, SL = 2.30-4.10 mm, Oahu, Hawaii), and other Japanese specimens (CBM-ZC 6809-6811: 7 males, 4 females, SL = 2.90-5.50 mm, Chichijima, Ogasawara). However, the shield of the first-mentioned specimen is mostly dark brown, except for the posterior area (fig. 1A, B), as opposed to the mostly pale coloured shield (except for the anterolateral corner) normally seen in the species (fig. 1C). The colouration of other surfaces is very similar to that of normally coloured specimens.

DISCUSSION

The taxonomy of hermit crabs of the genus *Calcinus* is sometimes made difficult by the very close morphological similarity of different species, whereas

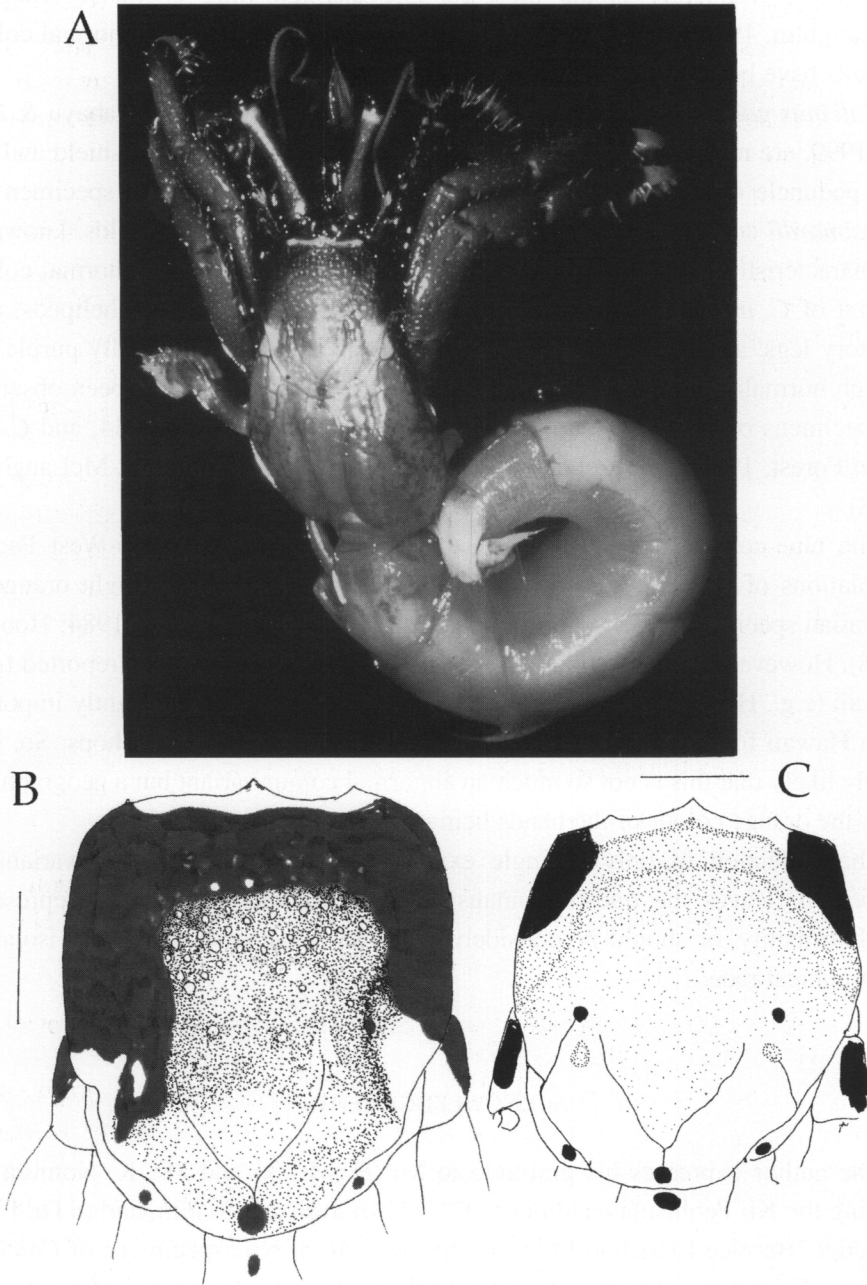


Fig. 1. *Calcinus hazletti* Haig & McLaughlin, 1984. A, B, colour variant, female, SL = 3.70 mm, Kushimoto-cho, Kii Peninsula, CBM-ZC 7367; C, normally coloured specimen, ovigerous female, SL = 5.50 mm, Chichijima, Ogasawara, CBM-ZC 6809. A, whole animal; B, C, colour pattern on dorsal face of shield. Scales equal 1 mm.

colouration frequently is the most reliable distinguishing character (Haig & McLaughlin, 1984; Poupin & McLaughlin, 1998). Nevertheless, abnormal colour variants have been reported in many species.

Calcinus gaimardii (H. Milne Edwards, 1848) and *C. morgani* Rahayu & Forest, 1999, are morphologically indistinguishable, but have different shield and ocular peduncle colourations. However, Asakura et al. (2002) found specimens of *C. gaimardii* collected from Kushimoto, Japan, to have whitish shields, known to be characteristic of *C. morgani*. Asakura (2002) also reported an abnormal colour variant of *C. morgani* collected from Boso Peninsula, Japan; the chelipeds, ambulatory legs, and cephalic appendages of that specimen are generally purple, although normally brown. Abnormal pigmentation deficiencies have been observed in specimens of *C. gouti* Poupin, 1997, *C. guamensis* Wooster, 1984, and *C. vachoni* Forest, 1958 from French Polynesia (Poupin, 1997; Poupin & McLaughlin, 1998).

The blue-coloured bands seen on the ambulatory legs of Indo-West Pacific populations of *Calcinus elegans* (H. Milne Edwards, 1836) are bright orange in Hawaiian specimens referred to that species (Haig & McLaughlin, 1984; Hoover, 1998). However, the orange banded specimens have frequently been reported from Hawaii (e.g., Hoover, 1998), and many individuals have been constantly imported from Hawaii for sale in Tokyo (Japan) department stores and pet shops. So, it is highly likely that this is not so much an abnormal colour variant but a geographical race, the orange colour of the bands being genetically determined.

The collection of only a single example of the unusual colour variant of *C. hazletti* leaves the question unanswered of whether this simply represents an abnormality, or should be considered representative of a genetically-isolated, geographical race.

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