

On a New record of *Cellana sandwicensis* (Pease, 1861) (Mollusca: Gastropoda) from Taiwan

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Abstract. *Cellana sandwicensis*, an intertidal limpet commonly found in the Hawaiian Islands, is reported for the first time from the Taiwanese coast. Morphological variations of the present specimen with previous descriptions of the species are noted.

Key words: *Cellana sandwicensis*, new record, Taiwan.

INTRODUCTION

Surveys on marine shells of Taiwan in the past few decades have yielded a total of seven species for the genus *Cellana* (Family Nacellidae) (Kuroda, 1941; Kaneko, 1948; Lin, 1974; Wu, 1978; Lai, 1981; Chan *et al.*, 1983; Tan *et al.*, 1986; Jung, 2001; Chao and Lee, 2002; Lee and Chao, 2003, 2004): *Cellana grata* (Gould, 1859), *C. nigrolineata* (Reeve, 1854), *C. radiata* (Born, 1778), *C. radiata enneagona* (Reeve, 1854), *C. radiata orientalis* (Pilsbry, 1891), *C. testudinaria* (Linnaeus, 1758), and *C. toreuma* (Reeve, 1855). Other species such as *C. eucosmia*, *C. stearnsii* (Pilsbry, 1891), and *C. toreuma f. amussitata* (Reeve, 1855) or *C. amussitata* (Reeve, 1855), have been noted by some authors (Kuroda, 1941; Lin, 1974; Wu, 1978), however, Lai (1981) suggested that these are synonyms for *C. grata* and *C. toreuma* on the basis of Powell's (1973) work. The present study adds one more species to the list by reporting an interesting species, *C. sandwicensis* (Pease, 1861), which is presumably endemic to the Hawaiian Islands (Kay, 1979). The taxonomic scheme of this study follows T. Sasaki (1998), and the specimen is deposited at the National Museum of Natural Science, Taichung, Taiwan. Abbreviations used include SL, shell length; SW, shell width; and SH, shell height.

TAXONOMY

Cellana sandwicensis (Pease, 1861) (Fig. 1A-E)
Cellana sandwicensis (Pease, 1861) Pease, 1861: 437; Kay, 1979: 46, fig. 12D-F.
Helcioniscus exaratus Dall, 1871.
Patella sandwichensis Tinker, 1958.
Cellana exaratus Powell, 1973.

Materials examined: 1 specimen (SL x SW x SH: 41.6 x 30.0 x 5.0 mm) (NMNS5176-001), Linshenbi (25°17.12'N, 121°30.33'E), Taipei County, low intertidal on basaltic rock, Coll. P.-W. Hsueh, 20 Nov. 2003.

Brief Description: Shell suboval, with slightly broader posterior end, apex subcentral and low, radiating ribs strong and subcarinate, extending beyond margin of shell (Fig. 1A, C); shell dark green on outer surface, shiny silvery white internally (Fig. 1A, B). Animal mantle margin with black-pigmented circumpallial tentacles, a wide black circular band present on skirt of mantle; shell muscle horseshoe-shaped, constricted into 16 bundles (Fig. 1D); head short, stout, and white; a pair of non-papillate cephalic tentacles dark pigmented dorsally (Fig. 1D); circumpallial gills interrupted anteriorly (Fig. 1E); foot large, gray on ventral margin and whitish-yellow in ventral center, dark gray on side of foot (Fig. 1E).

Remarks: The shell of the present specimen resembles those of *C. sandwicensis* and *C. exarata* (Reeve, 1854). These two species live in the same

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type of habitat (basal shoreline with strong wave action) in the Hawaiian Islands, with the latter species occupying higher intertidal areas (Kay, 1979). Despite small differences in shell morphology, they are readily distinguished by the former species having a slightly broader shell posteriorly, ribs extending beyond the margin of the shell, and iridescent white on the internal surface of the shell, in contrast to the oval-shaped shell, ribs not projecting beyond shell margin, and blue-white on the internal surface of the shell in the latter species (Kay, 1979). The shell morphology of the present specimen fits the descriptions of *C. sandwicensis* (Fig. 1A, B). However, there are discrepancies in shell height and foot color between the present specimen and its counterpart in Hawaii. A lower shell height (Fig. 1C, Kay, 1979: 45, fig. 12D) and a non-uniform yellow foot were observed for the present specimen. This can possibly be attributed to geographic variation, a notable phenomenon found

in limpets (Balaparameswara and Ganapati, 1971; Byers, 1989; Hobday, 1995).

The finding of the Hawaiian endemic limpet, *C. sandwicensis*, in Taiwanese coastal waters is quite unusual. It is difficult to explain the presence of this species in the Taiwanese region solely by the natural larval dispersal via oceanic currents. Alternatively, the larvae may have reached Taiwanese coastal waters by ships which often take up local water as ballast and dump it when they arrive at their designated port. Many types of marine fauna have been introduced worldwide by means of ship transportation (Carlton, 1987; Ruiz *et al.*, 1997).

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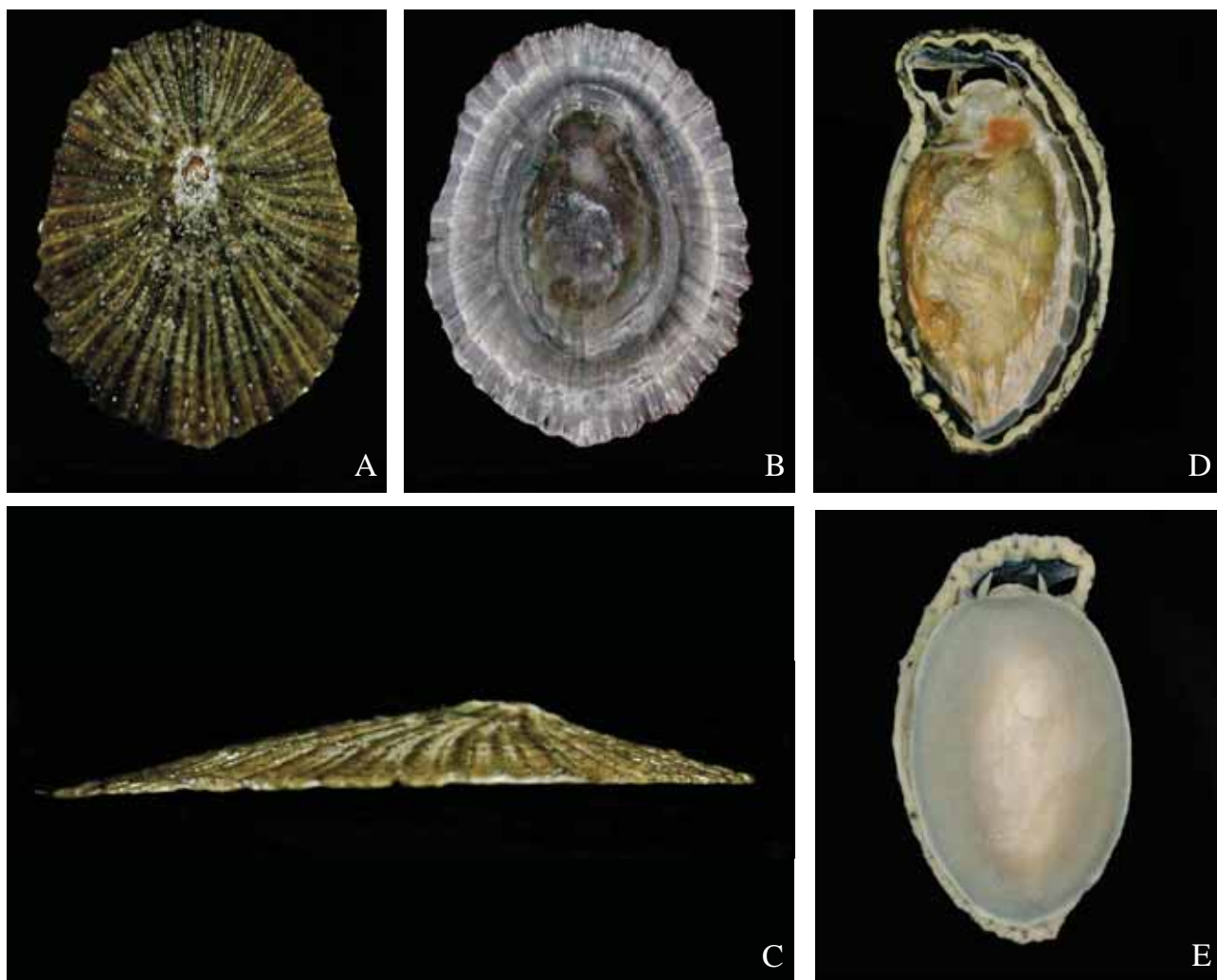
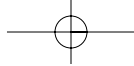


Fig. 1. *Cellana sandwicensis* (Pease, 1861), 41.6 x 30.0 x 5.0 mm, NMNS5176-001; A-C, dorsal, ventral and lateral view of the shell; D-E, dorsal and ventral view of the animal's body.

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臺灣新紀錄之三明治笠螺

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本文報導一種夏威夷島常見之三明治笠螺的臺灣新紀錄，這種笠螺之本文檢視標本與前人描述間之形態差異，亦於文中敘述。

關鍵詞：三明治笠螺，新紀錄種，臺灣。

