



## A new species of *Cantellius* and a redescription of *C. sextus* (Hiro, 1938) (Cirripedia, Balanomorpha Pyrgomatidae) from the elephant skin coral, *Pachyseris speciosa* (Dana, 1846) (Scleractinia, Agariciidae) from Taiwan

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### Abstract

Two species of *Cantellius* from Taiwan were identified from the elephant skin coral, *Pachyseris speciosa* Dana, 1846. *Cantellius sextus* was found on the underside of the coral plate and a new species, *C. hoegi* sp. nov., on the upper surface. The microdistribution indicates the different requirements of the two species. In the present study, both arthropodal and opercular plate characters of these two species were investigated using SEM techniques. Morphologically, *C. hoegi* is close to *C. pallidus*. However, the tergal scutal margins of *C. pallidus* are curved, whilst those of *C. hoegi* are straight, and its spur is narrower than that of *C. pallidus*. The apex of the scutum and tergum of *C. hoegi* forms a honeycomb-like surface, most probably the 'imprint' of the chitinous primordial valves. The separation of *C. hoegi* from *C. pallidus* is also supported by molecular analyses of three mitochondrial gene sequences (COI, 16S, and 12S rRNA). *Cantellius hoegi* differs from *C. pallidus* and *C. sextus* by >5% in all three mitochondrial genes (COI, 16S, and 12S rRNA) sequenced. The values of sequence divergence in 12S are comparable to the inter-specific divergence reported for other *Cantellius* and *Savignium* species. Interestingly, *C. hoegi* is not the sister group of *C. pallidus*, a morphologically similar species, in the present study. Further studies should focus on molecular phylogenetic analysis of *Cantellius* species.

**Key words:** Coral barnacles, *Cantellius*, corals, *Pachyseris*, taxonomy

### Introduction

The pyrgomatid (Crustacea, Cirripedia, Thoracica) genus *Cantellius* is the most speciose genus of its family, with 22 nominal species presently known (Ross & Newman 2000). *Cantellius* shows the most plesiomorphic characteristics within the coral-inhabiting barnacles, four shell wall plates and unmodified balanoid-type opercular valves. *Cantellius* occupies the largest number of host corals (Ogawa & Matsuzaki 1992). Some *Cantellius* species are widely distributed among different corals, while a few are restricted to a single host coral. Due to their modest appearance, commonly overgrown with sclerosept, and their small size, coral barnacles tend to be overlooked. Careful examination of the opercular plates and soft parts often reveals unrecognized species and genera (Achituv & Hoeksema 2003; Achituv & Newman 2002; Chan *et al.* 2007a, b; 2008a, b).

While examining corals collected in Taiwan, we encountered two species of *Cantellius* on the agariciide coral *Pachyseris speciosa* Dana, 1846, commonly known as elephant skin coral. The colonies of the coral are primarily laminar, unifacial and usually growing in horizontal directions (Veron 2000). One of the barnacle species was found mainly on the upper surface of the coral, facing the light; the second mainly on the side facing the substratum, which is less exposed to radiation. The barnacles found on the underside were