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A new species of *Opecarcinus* Kropp & Manning, 1987 (Crustacea: Brachyura: Cryptochiridae) associated with the stony corals *Pavona clavus* (Dana, 1846) and *P. bipartita* Nemenzo, 1980 (Scleractinia: Agariciidae)

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Abstract

A new species of *Opecarcinus* Kropp & Manning, 1987, is described from Indonesia and Malaysia. *Opecarcinus cathyae* sp. nov. is associated with the scleractinian corals *Pavona clavus* (Dana, 1846) and *P. bipartita* Nemenzo, 1980, inhabiting crescent-shaped cavities or tunnels on the coral surface. The new species is the ninth assigned to the genus. It can be separated from congeners by the anterolateral orientation of the cornea, the carapace with shallow transverse depressions, lacking longitudinal depressions, and the smooth dorsal margin of the fifth female pereopod carpus. The distinctive colour pattern can be used as a diagnostic character in live specimens.

Key words: DNA barcoding, gall crabs, host-specificity, Indonesia, Malaysia, taxonomy

Introduction

Colonies of the scleractinian coral *Pavona clavus* (Dana, 1846), belonging to the Agariciidae, can occur in huge monospecific stands, covering large areas of reef flats and slopes (Veron & Pichon 1980). Gall crabs belonging to the genus *Opecarcinus* Kropp & Manning, 1987, have been found to inhabit these large colonies in high densities (Hoeksema & van der Meij 2013) and eight species are now recognised in the genus (cf. Ng *et al.* 2008). *Opecarcinus* was established by Kropp & Manning (1987) to accommodate the Atlantic *Pseudocryptochirus hypostegus* Shaw & Hopkins, 1977, and *Cryptochirus crescentus* Edmonson, 1925, from the Pacific. An additional five species of *Opecarcinus* were described by Kropp (1989), who also removed *O. granulatus* from the synonymy of *O. crescentus*.

The Indo-Pacific species of *Opecarcinus* occur from the Red Sea to the Pacific coast of Central America (Kropp 1989; pers. obs.), and have been recorded from corals belonging to several genera of the scleractinian family Agariciidae (Kropp 1989). In the western Atlantic, Scott (1985, 1987) and Johnsson *et al.* (2006) recorded *O. hypostegus* from the genera *Agaricia* (family Agariciidae) and *Siderastrea* (family Siderastreidae), in contrast to Kropp & Manning (1987) and Van der Meij (2014) who recorded *O. hypostegus* only from *Agaricia*.

Based on the observations by Hoeksema & van der Meij (2013), gall crabs collected from the Indo-Pacific agariciid *P. clavus* were studied in more detail, resulting in the identification of the present new species. This species, described herein, is the ninth assigned to the genus.

Methodology

Gall crabs were collected in eastern Indonesia (Lembah Strait, northern Sulawesi; Gura Ici, Halmahera) and Malaysian Borneo (Kudat, north Sabah; Semporna, east Sabah) from 2009 to 2012. Corals were searched for galls, cavities and pits, photographed, and subsequently split with hammer and chisel. Crab specimens were preserved in 80% ethanol after being photographed with a digital SLR camera equipped with a 50 mm macro-lens. All material is deposited in the collections of Naturalis Biodiversity Center in Leiden (formerly Rijksmuseum van Natuurlijke

Distribution. So far known from Indonesia and Malaysian Borneo. The holotype of *P. clavus*, illustrated by Veron & Pichon (1980), appears to have a dwelling of a cryptochirid. This coral species was described by Dana (1846) from Fiji, which is therefore a possible distribution record for *O. cathyae* **sp. nov.** *Pavona clavus* is widespread, occurring from the Red Sea and East Africa to the eastern Pacific (Veron & Pichon 1980; Veron 2000). *Pavona bipartita* also shows a wide range, occurring from the Red Sea and East Africa to the Central Pacific (Veron 2000). It is thus possible that *O. cathyae* has a wider distribution based on the distribution ranges of its host corals. *Opeccarcinus cathyae* **sp. nov.** can be very abundant locally, with estimated densities up to 200 per m² because its coral host can form large monospecific stands (Veron & Pichon 1980; Hoeksema & van der Meij 2013).

Etymology. This species is named after Cathy [Catherine] DeGeorge to celebrate 15 years of Trans-Atlantic friendship.

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