

ITS Ribosomal DNA Distinctions and the Genetic Structures of Populations of Two Sympatric Species of *Pavona* (Cnidaria: Scleractinia) from Mauritius

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(Accepted October 6, 2005)

Kamla Ruby Moothien Pillay, Takashi Asahida, Chaolun Allen Chen, Hiroaki Terashima, and Hitoshi Ida (2006) ITS ribosomal DNA distinctions and the genetic structures of populations of two sympatric species of *Pavona* (Cnidaria: Scleractinia) from Mauritius. *Zoological Studies* 45(1): 132-144. In this study, we examined the genetic differences between *Pavona cactus* and *P. decussata*, two of the major components of the shallow reef flat coral communities in Mauritius, which not only occur in sympatry but are often intricately associated. Using sequences of ribosomal internal transcribed spacers (ITSs), we conducted phylogenetic, population, and nested clade analyses (NCA) on both species sampled from Bambous Virieux on the southeastern coast and Trou aux Biches on the northwestern coast of the island. The phylogenetic analysis of ITS sequence types supported the distinct species status of *P. cactus* and *P. decussata*. The significant difference detected by the NCA indicated that both *P. cactus* and *P. decussata* in Mauritius constitute statistically distinguishable lineages. No population structure was detected between the two geographic locations. We conclude that *P. cactus* and *P. decussata* remain distinct evolutionary units despite their ecological uniqueness in Mauritius.
<http://zoolstud.sinica.edu.tw/Journals/45.1/132.pdf>

Key words: Species boundaries, Internal transcribed spacer (ITS), Hybridization, Reproductive barriers, Population structure.

In Mauritius, *Pavona cactus* (Forskål, 1775) and *P. decussata* (Dana, 1846) constitute two of the major components of the shallow reef flat coral communities (Moothien Pillay et al. 2002a), are ecologically important as they contribute to reef building, and are among the few species that are less susceptible to bleaching (Moothien Pillay et al. 2002b, McClanahan et al. 2005). Both species occur sympatrically and form distinct zones (Montaggioni and Faure 1997, Moothien Pillay et al. 2002a). They may be found as isolated colonies or may form large monospecific stands, especially on channel slopes and in near-surf zones. *P. cactus* dominates the deeper channel

slopes and *P. decussata* the shallowest parts of channel slopes and reef flats. *P. decussata* is variable in macro-morphology, having large upright plates in relatively deeper waters and short stunted plates in shallower environments; such morphological variations are most probably related to environmental variations. *P. cactus* usually has thin upright fronds, but tends to develop thicker fronds in shallow, high-energy environments, hence superficially resembling *P. decussata* at the macro-morphological level in such habitats. Although most species of *Pavona* are well defined, they are still known to show wide environmental variations in morphology (Veron 2000). For exam-

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