

## Species Diversity of Mushroom Corals (Family Fungiidae) in the Inner Gulf of Thailand

LALITA PUTCHIM, SUCHANA CHAVANICH\* AND VORANOP VIYAKARN

Department of Marine Science, Faculty of Science, Chulalongkorn University, Bangkok 10330, THAILAND

Mushroom coral (Family Fungiidae) is one of the most conspicuous groups in the tropical Indo-Pacific reefs. These corals usually aggregate in large clumps that are able to create the reef formation (Pichon, 1974; Littler et al., 1997). In the tropical Indo-Pacific region, 41 species of fungiid corals have been found (Hoeksema, 1989). However, their biogeography is yet still unclear. In the Gulf of Thailand, little is known about the species diversity of fungiids and their distribution. Seven species were recorded by field survey at the Sichang Islands, Chon Buri Province (Sakai et al., 1986; Sarasas, 1994), and 14 species were found in the coral collections at the institutes and museums around the country (Jiravat, 1985). In this study, species diversity of fungiid corals were investigated at two military islands: Ko Khram and Ko Kham in Chon Buri Province, the Inner Gulf of Thailand where fungiids had not been assessed before. The study was conducted during June 2001 to January 2002. A measuring tape (50 m) was laid over the reefs perpendicular to the shore, and a belt transect 3 m wide (1.5 m each side of the tape) was established. At least 4 replicate lines were laid in each period of observation at each study site. All fungiid corals found within the 3-m wide band were identified to species level by following Veron (2000).

The results showed that a total of 6 species of fungiid corals were found at the two study

islands (Fig. 1, Table 1). These species included *Ctenactis crassa* (Dana, 1846), *C. echinata* (Pallas, 1766), *Fungia fungites* (Linnaeus, 1758), *Lithophyllon undulatum* Rehberg, 1892, *Podabacia crustacea* (Pallas, 1766), and *Polyphyllia talpina* (Lamarck, 1801) (Fig. 1). Each study site had four species of fungiids, but only two species overlapped between the two sites. *F. fungites*, *C. echinata*, *L. undulatum*, and *P. crustacea* were found at Ko Kham while *F. fungites*, *C. crassa*, *C. echinata*, and *P. talpina* were found at Ko Khram.

From observations at Ko Khram and Ko Kham, it is interesting to note that more than 50% of live corals found in the study areas were fungiids, particular at Ko Kham while other types of corals were sparse or died. *F. fungites* was the most abundant species in the reef flat (average 0.59 individual/m<sup>2</sup>: range from 0.01-2.32 individual/m<sup>2</sup>), followed by *C. echinata* (average 0.01 individual/m<sup>2</sup>: range from 0.001-0.06 individual/m<sup>2</sup>). Their distributions were in clumps, and their densities showed no significant difference throughout the months of study (Kruskal-Wallis,  $P > 0.05$ ). Sizes of *F. fungites* ranged between 1 cm to 32 cm in diameter, and small juveniles (less than 6 cm) were found throughout the months of study. Other species, only a few specimens were found during diving surveys, and they were not in the belt transects. Those species included *C. crassa* (2 individuals), *L. undulatum* (4 individuals), *P. crustacea* (3 individuals), *P. talpina* (8 individuals). Since little information is known about mushroom corals in Thailand, additional survey and further study on the factors influenc-

---

\* Corresponding author.

Tel: (662) 218-5394

Fax: (662) 255-0780

E-mail: csuchana@sc.chula.ac.th

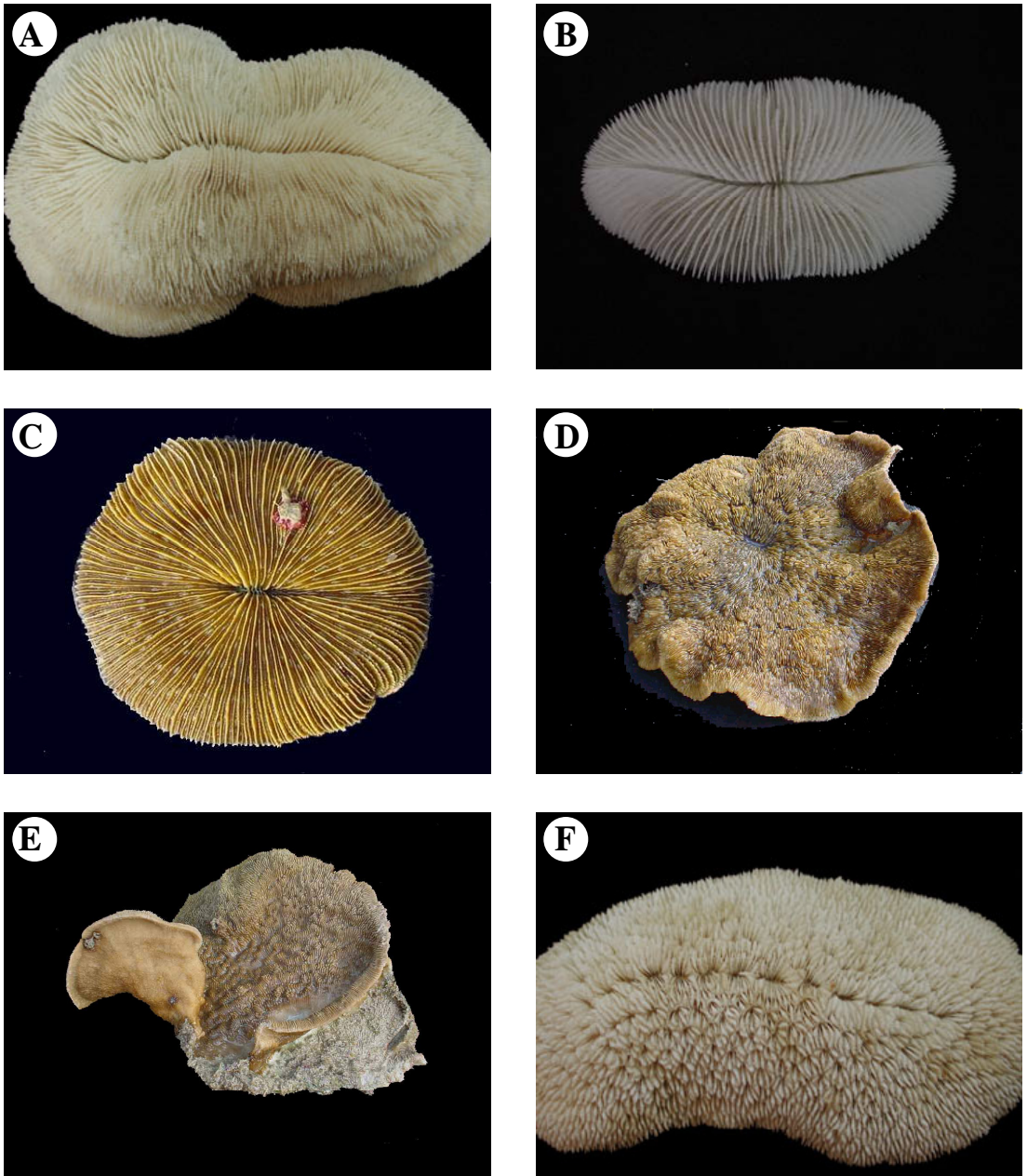


FIGURE 1. Six species of fungiid corals found at Ko Khram and Ko Kham: (A) *Ctenactis crassa* (Dana, 1846), (B) *Ctenactis echinata* (Pallas, 1766), (C) *Fungia fungites* (Linnaeus, 1758), (D) *Lithophyllum undulatum* Rehberg, 1892 (E) *Podabacia crustacea* (Pallas, 1766), and (F) *Polyphyllia talpina* (Lamarck, 1801).

TABLE 1. List of fungiid species found in the Gulf of Thailand from the institute and museum collections, the Sichang Islands, and in this study.

Species	Collection at Institutes and Museums (Jiravat, 1985)	Sichang Islands (Sakai et al., 1986 and Sarasas, 1994)	Ko Khram and Ko Kham (in this study)
<i>Ctenactis crassa</i> (Dana, 1846) (Former: <i>Herpetoglossa simplex</i> )	X		X
<i>Ctenactis echinata</i> (Pallas, 1766) (Former: <i>Fungia echinata</i> )	X	X	X
<i>Diaseris distorta</i> (Michelin, 1843)	X	X	
<i>Diaseris fragilis</i> Alcock, 1893		X	
<i>Fungia corona</i> Döderlein, 1901	X		
<i>Fungia fungites</i> (Linnaeus, 1758)	X	X	X
<i>Fungia granulosa</i> Klunzinger, 1879	X		
<i>Fungia moluccensis</i> Horst, 1919	X		
<i>Fungia paumotensis</i> Stutchbury, 1833	X		
<i>Fungia scabra</i> Döderlein, 1901	X		
<i>Herpolitha limax</i> (Houttuyn, 1772)	X		
<i>Herpolitha weberi</i> Horst, 1921	X		
<i>Lithophyllon undulatum</i> Rehberg, 1892 (Former: <i>Lithophyllon edwardsi</i> )		X	X
<i>Podabacia crustacea</i> (Pallas, 1766)	X		X
<i>Polyphyllia talpina</i> (Lamarck, 1801)	X	X	X
<i>Sandalolitha robusta</i> Quelch, 1886	X	X	

ing distribution and habitat ecology of each fungiid species are needed.

ACKNOWLEDGMENTS

This work was supported by Plant Genetics Conservation Project Under the Royal Initiative of Her Royal Highness Princess Mahachakri Sirindhorn and Chulalongkorn Student Research Grant. We also thank the Royal Thai Navy for assistance in the field.

LITERATURE CITED

Hoeksema, B. W. 1989. Taxonomy, phylogeny and biogeography of mushroom corals (Scleractinia: Fungiidae). Zool. Verh. Rijksmus. Nat. Hist., Leiden. 254: 1-295.  
 Jiravat, V. 1985. Taxonomic Study of Stony Corals Collected from the Gulf of Thailand. Master's Thesis, Chulalongkorn University, Bangkok, Thailand.

Littler, M. M., D. S. Littler, B. L. Brooks and J. F. Koven. 1997. A unique coral formation discovered on the Great Astrolabe Reef, Fiji. Coral Reefs. 16: 51-54.  
 Pichon, M. 1974. Free living scleractinian coral communities in the coral reefs of Madagascar. In: Cameron, A. M. et al. (eds.), Proc. 2<sup>nd</sup> Int. Coral Reef Symp., pp. 173-181. Courier-Mail Printing Service, Brisbane, Australia.  
 Sakai, K., T. Yeemin, A. Snidvongs, K. Yamamoto and M. Nishihira. 1986. Distribution and community structure of hermatypic corals in the Si Chang Islands, Inner Part of the Gulf of Thailand. Galaxea. 5: 27-74.  
 Sarasas, P. 1994. A Study on Distribution and Growth of the Corals in Family Fungiidae at Khang Khao Island, Chon Buri Province. Senior Project, Chulalongkorn University.  
 Veron, J. 2000. Corals of the World. Vol. 2. Australian Institute of Marine Science, Townsville, Australia.

Accepted: 28 August 2002