

Cryptic species of *Acropora digitifera*

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The genus *Acropora* consists of the largest number of species and is the most abundant group of the Indo-Pacific reef corals. Particularly, *Acropora digitifera* (Dana 1864) is one of the most common species in the Ryukyu Archipelago, Japan. Here, we report a cryptic species of *A. digitifera*, which is distinguishable both morphologically and reproductively.

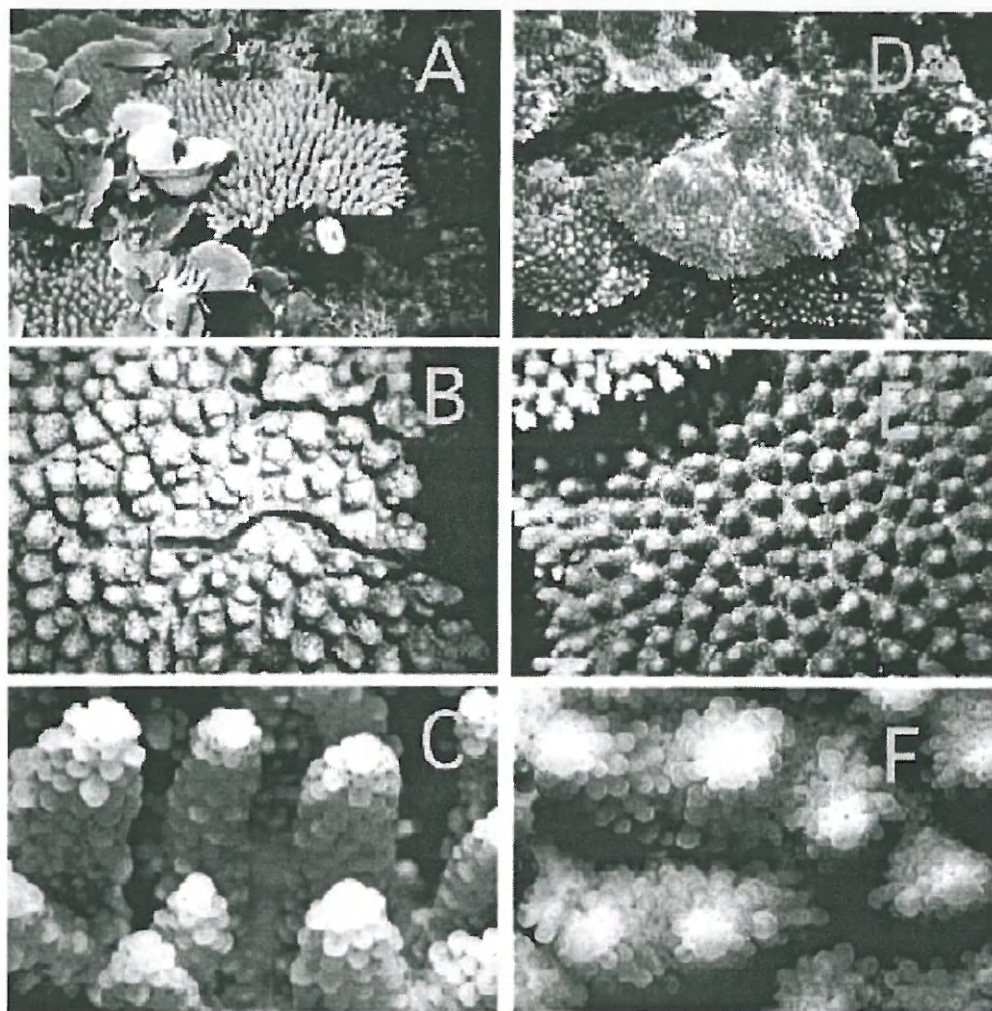


Fig. 1. Morphologies of *Acropora digitifera* (A–C) and its cryptic species, *A. sp. I* aff. *digitifera* (D–F). **A** A typical corymbos-shaped colony of *A. digitifera*; **B** *A. digitifera* colony grown in a high-wave energy location; **C** close-up of vertical branches of *A. digitifera*; **D** digitate colony shape of the cryptic species; **E** vertical branches of the cryptic species are shorter and conical; **F** close-up of the branches of the cryptic species

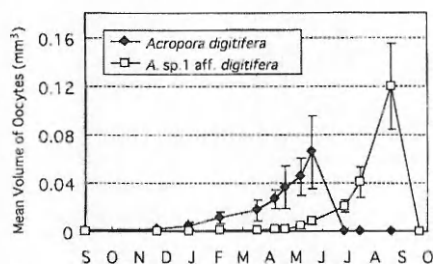


Fig. 2. Changes of the mean volume of oocytes of *A. digitifera* and the cryptic species *A. sp.1 aff. digitifera* from September 1993 to August 1994. Oocyte volume (V) was approximated using the following formula, $V = (4\pi/3)(a/2)(b/2)^2$, where a is the maximum diameter and b is the minimum diameter of the oocyte. Vertical bars indicate standard deviation. Synchronous spawning of these two species was observed in situ on 31 May and 25 August 1994, respectively

differ (Fig. 2). Hayashibara et al. (1993) also reported that the spawning of each morph (designated as *A. digitifera* and *A. sp.1*) apparently occurred in different seasons. These results indicate that there is reproductive isolation between the two morphs. Hence we judge that these two morphs are two distinctive species. The differences in spawning season were always reproducible through our 10 years of observations. In addition to their morphological similarity, they are genetically related (Fukami 1999). Therefore, the second morph fits the criteria of cryptic species. Consequently, we designate this cryptic species as *A. sp.1 aff. digitifera* provisionally. As a future task, it will be necessary to assess the type specimen of *A. digitifera* and its synonyms in order to assign a correct scientific name to this cryptic species.

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Representatives of two morphs are shown in Fig. 1, and they have previously been recognized as a single species. The colony shape of the first is corymbose or digitate with terete vertical branches, while the second is exclusively digitate with short conical branches from a solid base. However, corallites of both morphs are indistinguishable. The photograph of the neotype specimen of *A. digitifera* in Wallace (1999) seems to correspond to the first morph.

On a reef around Akajima Island, Okinawa, Japan, we sampled a branch from three to four colonies of two sympatric morphs approximately every month for 1 year and measured 15 oocytes per colony at random. The data indicate that sexual reproduction of both morphs occurs once a year; however, the gonad maturation periods