

Distribution and Sexual Reproduction of a Seagrass-bed-inhabiting Actiniarian, *Phymanthus strandesi* (Cnidaria: Anthozoa: Actiniaria: Phymanthidae), at Hsiao-Liuchiu Island, Taiwan

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(Accepted May 6, 2001)

Ming-Doun Lin, Chaolun Allen Chen and Lee-Sing Fang (2001) Distribution and sexual reproduction of a seagrass-bed-inhabiting actiniarian, *Phymanthus strandesi* (Cnidaria: Anthozoa: Actiniaria: Phymanthidae), at Hsiao-Liuchiu Island, Taiwan. *Zoological Studies* 40(3): 254-261. Distribution and sexual reproduction of the seagrass-inhabiting actiniarian, *Phymanthus strandesi*, was investigated at Gerban, Hsiao-Liuchiu, Taiwan from July 1997 to June 1998. *P. strandesi* was distributed in the shallow intertidal zone of the reef flats with a mean density of 511 individuals/m². The distribution pattern of *P. strandesi* was contagious, and was significantly correlated with the presence of the seagrasses, *Thalassia hemprichii* and *Halodule uninervis*. *P. strandesi* is a small dioecious actiniarian with a mean pedal disc diameter of 0.32 cm. A high proportion of the anemones were sexually indeterminate, whose sizes were significantly smaller than those of both males and females. The mean fecundity of females was 294 eggs/individual. The released eggs were 500 to 560 µm in diameter. Gametogenesis examined by paraffin section showed no distinct developmental pattern among monthly samples, suggesting that *P. strandesi* might reproduce continuously throughout the year. Although with a small body size and low fecundity, the large eggs, continual gametogenesis, and contagious aggregation in the seagrass bed might ensure the successful sexual reproduction of *P. strandesi*. <http://www.sinica.edu.tw/zool/zoolstud/40.3/254.pdf>

Key words: Actiniarian, Sexual reproduction, Distribution, Gametogenesis, Seagrass bed.

Actinarians (sea anemones), which usually attach themselves to substrata by pedal discs, are one of the abundant sessile marine invertebrates in temperate and tropical benthic communities (for a review, see Shick 1991). Quantitative studies on benthic faunal communities have shown that availability of suitable substrata might affect the distribution pattern of actinarians. Distribution of *Zaolutus actius* on soft-bottom substrates is contagious and is correlated with patches containing solid objects, mostly tubes of polychaetes, as attachment surfaces (Fager 1968). Similarly, the distribution of the deep-sea actiniarian, *Phelliactis robusta*, in soft sediment habitats was significantly associated with hard substrates (Vanpraët et al. 1990). In seagrass beds of

the Garden Island shore of Careening Bay, Western Australia, surface counts and core samples revealed relatively high abundance of *Heteractis malu*, and 3 rarer infaunal sea anemones (Peterson and Black 1986). Samples taken from 5 substrata showed that *H. malu* did not vary significantly with the presence or absence of seagrass, but was less abundant in shallow sand than in other substrata, whereas the average individual size of *H. malu* was smaller in areas with seagrass. This implies that larger *H. malu* tend not to occur in the substratum where seagrass is present.

Actiniarian reproduction has primarily been studied in temperate regions (for a review, see Shick 1991). Most temperate sea anemones are dioecious

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