

The correlation between bleaching and morphological condition and population dynamics of symbiotic algae with *Acropora downingi* Wallace, 1999 in Qeshm Island

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Abstract

The present study investigates the correlation between bleaching event and morphological condition and population dynamics of the symbiotic algae (zooxanthellae) residing within the hermatypic coral *Acropora downingi* in Qeshm Island, Persian Gulf. Fragments of normal and bleached coral colonies were collected by SCUBA diving from southeastern coastal waters of Qeshm Island in the fall of 2015. Healthy, bleached, degraded and dividing zooxanthellae were observed and appraised with a light microscope using a haemocytometer. Spectrophotometric method was used for the measurement of pigment content of zooxanthellae. Comparisons of the mentioned characteristics between normal and bleached coral colonies showed a 50 percent population decline of zooxanthellae in bleached colonies. While density of normal zooxanthellae decreased by 25 percent in bleached colonies, number of bleached and degraded zooxanthellae along with mitotic index had a significant rise in the mentioned colonies. There was no significant difference between pigment content of the studied corals. Our results may reveal that corals in Qeshm Island are probably suffering from severe environmental conditions and it is likely that many of the healthy looking colonies are already half way through bleaching.

Keywords: Zooxanthellae, Bleaching, Mitotic Index, Pigment, Persian Gulf, Qeshm Island.