The reef environment and competitive success in the Corallimorpharia
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Abstract

Competitive success within coral reef communities is controlled by various factors. In addition to competitive abilities in direct interactions with a contestant, external influences such as disturbance caused by nutrient input may determine the outcome of antagonistic interactions. We examined the competitive success of corallimorpharians on coral reefs by investigating their distribution patterns within reefs and how well they perform in interference competition with staghorn corals in different environments. Substrate composition and corallimorpharian growth were examined on three reefs in Tanzania under different disturbance regimes using the line-intercept transect and point techniques. A transplant experiment was conducted in which staghorn corals (Acropora formosa) were exposed to the polyps of Rhodactis rhodostoma to establish how competition between corals and corallimorpharians affects their respective distributions. Within reefs corallimorpharians seemed to be more competitive in shallow waters. This could be due to both environmental factors as well as varied competitive abilities depending on surrounding benthos that changed with depth. Reef environment also seemed to influence corallimorpharian growth among reefs as they had the highest densities in the areas with the highest nutrient loads. The transplant experiment revealed that the corallimorpharians had a competitive advantage over the corals, and in comparisons of reefs influenced by different degrees of disturbance, corallimorpharians were most competitive in the area with the highest nutrient content. Hence, stress on coral reefs in the form of raised nutrient loads may favour the competitive success of corallimorpharians.

Keywords: corallimorpharians competitive success, distribution and abundance, polluted reef environment