Stoloniferous octocorals of the north-western Pacific : taxonomy, diversity and phylogenetics

Form 3

Abstract

Title

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Octocorals (Anthozoa: Octocorallia) are diverse and important members of coral reef communities, where they contribute in fostering reef biodiversity. However, several aspects, such as octocoral host-symbiont associations, diversity of the smallest and cryptic species and even basic taxonomy remain poorly known. The studies compiled in this thesis are focussed on the subordinal group, Stolonifera, from the north-western Pacific. This research represents a small piece of the puzzle in the work laid out towards a revision of polyphyletic clades of stoloniferous species within the Octocorallia and utilises a multidisciplinary approach, including morphological and molecular data, microscopy and phylogenetic analyses.

Small-scale (Okinawa and Iriomote Islands) distribution of zooxanthellae hosted by stoloniferous octocorals and morphological variation are explored, as little information on stoloniferous octocoral-symbiont associations is available. This is especially true for understudied environments such as mesophotic coral reefs (MCEs) and the first zooxanthellate stoloniferous octocoral is described from MCEs around the southern Ryukyu Islands.

The diversity of stoloniferous octocorals from four regions in the north-western Pacific (Palau, Japan, western Malaysia and Dongsha Atoll) is investigated. Five genera and nine stoloniferous species new to science have been described and at least two genera and seven species await official description, and are an indication of how much basic work in alpha-taxonomy remains for Stolonifera and emphasizes the need for continued diversity research.

The polyphyletic Clavulariidae is in urgent need of systematic reconstruction. However, in the process towards a full understanding of the morphological and molecular distinctions amongst clades of Stolonifera, more missing pieces of the puzzle are needed and this research is a small step forward towards reaching this goal.

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