TEMPORAL REPRODUCTIVE ISOLATION AND GAMETIC COMPATIBILITY ARE EVOLUTIONARY MECHANISMS IN THE *ACROPORA HUMILIS* SPECIES GROUP

Jacqueline K. Wolstenholme
School of Marine Biology and Aquaculture, James Cook University, QLD 4811 Australia
Jackie.Wolstenholme@jcu.edu.au

Patterns of interbreeding between individuals are fundamental to the structure and maintenance of evolutionary boundaries between species. In corals, both hybridization and reproductive isolation appear to be important evolutionary mechanisms. I examined evolutionary boundaries within the *Acropora humilis* species group at Lizard Island on the GBR. Five species and seven morphs are recognized on the basis of morphological characters. Molecular phylogenetic analysis of the mtDNA putative control region, timing of gamete maturity and spawning and fertilization potential are used to interpret evolutionary relationships of these species and morphs. Extremely low or zero fertilization potential between the five species indicate that they are valid species. Based on the combined assessment of morphological, molecular and reproductive criteria, *A. humilis* and *A. gemmifera* appear to be the most closely related species, which are most closely related to the remaining species in the following order: *A. samoensis*, *A. monticulosa* and *A. digitifera*. Evidence derived from one or more of these criteria suggest that the morphs (i) are at various stages of divergence from the species with which they share morphological characters, and (ii) may indicate possible zones of speciation and hybridization. Identification of morphs avoided the possibility of taxonomic error and was essential for accurate interpretation of evolutionary boundaries. Confirmation of morphology as an informative character of evolutionary boundaries is of great significance because most coral research projects rely on morphology as the primary tool for identification of species.