

Meekan, MG, ADL Steven, MJ Fortin. 1995. Spatial patterns in the distribution of damselfishes on a fringing coral reef. *Coral Reefs* 14:3:151-161.

Abstract: Damselfishes are an important element of the fauna of coral reefs. This study describes spatial patterns in the distribution of 15 species of damselfishes at Lizard Island, northern Great Barrier Reef (GBR). The aim of the work was to identify the spatial scales at which major changes in the composition and abundance of the fauna occurred. These patterns were then compared with previous studies in an attempt to determine if distributions followed general patterns at a range of localities. The assemblage found at Lizard Island was similar to that of reefs in the central GBR. The most important changes in the composition of the fauna occurred among reef zones. Shallow zones (the reef flat and crest) were dominated by herbivorous species while planktivorous and omnivorous species were most abundant in deeper zones (the reef slope). Densities of herbivorous damselfishes in shallow reef zones at Lizard Island averaged 45.5 individuals per 80 m², a value comparable to densities found in similar zones on reefs in the central and southern GBR and at one locality in the Caribbean. Comparisons of relative distributions suggested that abundant species tend to be widely distributed among zones and habitats, while rare species have restricted distributions at Lizard Island. However, computer simulation of the sampling program suggested that the ability of our study to describe the distribution patterns of rare species was limited, despite intensive sampling. Correlations between breadth of distribution and abundance may have occurred simply because rare species were less likely to be recorded within a transect. Our results suggest that it will be difficult to compare the distribution patterns of species among studies. Furthermore, the interpretation of relative patterns of distribution at a single locality in terms of ecological specialization or partitioning may first require an assessment of the ability of the sampling program to accurately record spatial patterns.