

## Habitat expansion strategies of corals on reef slope and flat inferring from spatial patterns of coral colonies

# Takashi Nakamura[1]; Toru Nakamori[2]

[1] IGPS, Tohoku Univ.; [2] Tohoku Univ.

Spatial patterns of coral colonies were investigated at 2 observation sites on reef flat and reef slope of the Shiraho coral reef, Ishigaki Island, Japan in 2002 to clarify habitat expansion strategies of hermatypic corals. The spatial patterns of twelve dominant species in both environments were analyzed using the Ripley's  $K$  function. Spatial patterns of the most dominant species on reef slope indicate random distribution in large scale. Therefore, it is considered that the patterns were caused by random larval settlement by sexual broadcast spawning. Some of the patterns were, however, detected slight but significant clustering patterns. This reason is considered two cases; colony separation by partial death; and short-distance planulae dispersal by asexual brooding. On the other hand, the spatial patterns of all dominant species on reef flat were significant clustering, and were no significant difference with the pattern by Neyman-Scott process. It is considered that the clustering patterns were caused by coral broken and scattered fragments (asexually) by wave motion. Therefore, it is considered that fragmentation and scattering are the most important strategy for habitat expansion of reef flat corals. Moreover, the estimated parameters of Neyman-Scott process were well agreement with ecological features of each coral species.