

Connectivity in A Caribbean Octocoral: A Tale Of Three Datasets.

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Characterizations of connectivity vary with the spatial and temporal scales inherent in the techniques used to assess connectivity. The Caribbean octocoral, *Pseudopterogorgia elisabethae* has been harvested on the Little Bahama Bank for over 10 years. The harvest, which involves cropping colonies, leaves areas with reduced numbers of reproductive colonies. This reduction in reproductive colonies should reduce local recruitment, since *P. elisabethae* surface broods and has negatively buoyant planulae. We examined connectivity among populations on the Little Bahama Bank and throughout the northern Bahamas on differing spatial and temporal scales by comparing recruitment before and after harvesting, comparing the population size/age structure between harvested and unharvested areas and examining population genetic structure. Recruitment at sites in 2004 and 2005 varied with local population density, but changes in recruitment due to harvesting were no greater than inter-annual variation in recruitment at all sites. However, the size structure of populations that were subjected to up to 3 episodes of harvesting had depressed proportions of small colonies suggesting that local recruitment and the extended depression of local recruitment affected population demographics. Microsatellite analyses of populations on the Little Bahama Bank detected minimal population clustering but did identify significant F_{ST} values. We found high levels of structure on larger scales. The data suggest that in any single year recruits readily move over scales >10 -1 km. However, over the scale of a decade and summed across harvesting encompassing several kilometers a substantial portion of recruitment is local. Over scales of decades and 10 to >100 km there is sufficient migration to reduce but not eliminate population genetic structure. There is limited migration across oceanographic barriers.