The Last Genotypes: Elkhorn Coral Demography, Genotypic Diversity, and Restoration in Florida

Dana E Williams [1], Allan J Bright[1] Kathryn Grazioso[1], Colin Murphy[1] and ***Mark C Ladd***[2]

[1]Cooperative Institute for Marine and Atmospheric Studies University of Miami, Miami, FL, USA

[2]NOAA Fisheries Southeast Fisheries Science Center, Miami, FL USA

The Elkhorn coral (*Acropora palmata*) population in the Florida Keys has suffered devastating losses in recent years. Since 2004, our ongoing demographic monitoring has documented losses not only in abundance and spatial distribution but also in genotypic diversity, over 90% in the past two decades. Sexual reproduction in this species requires distinct neighboring genets with ramets that are large enough to spawn. However, based on the size distribution of the remaining population we estimate that only half of the remaining genotypes have a viable chance to sexually reproduce. In the 20-year duration of this study, no recruitment of new genotypes (larval recruitment) has been observed in our monitoring plots which underscores the urgency for intensive intervention to preserve *A. palmata* in the Florida Keys. Restoration efforts need to address the sparse distribution, low genotypic diversity, and increasingly frequent thermal stress events impacting this species.