

Coral Reef Evaluation and Monitoring Project

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The Coral Reef Monitoring Project (CRMP) documented a significant decline in stony coral percent cover at 63.9% of sampling stations throughout the Florida Keys National Marine Sanctuary (FKNMS) from 1996 to 2000. In addition, species richness declined at 66.9% of stations for the same period. Analysis of the CRMP disease data showed a significant increase in the number of stony coral species affected by disease as well as the number of sampling stations where disease is present. This is consistent with the catastrophic and systematic declines detected throughout the Caribbean basin in the past two decades. The Comprehensive Everglades Restoration Plan (CERP) will inevitably alter biological communities and water quality in Florida Bay. Downstream of Florida Bay, the Florida Keys reef tract provides the last opportunity to quantify downstream CERP induced changes.

The Coral Reef Evaluation and Monitoring Project (CREMP) proposes to continue annual non-consumptive sampling at 40 established sites from Key Largo to Tortugas Banks to document status and trends in the coral reef ecosystem. Inventories of stony coral species richness and presence of disease and bleaching will be conducted. Underwater video will be statistically analyzed to determine percent cover of stony coral and other benthic components (octocorallia, zoanthidea, macroalgae, etc.). Hypothesis testing and multivariate change analyses will be performed to quantify significant changes in these indicators.

The CREMP will expand its sampling strategy at 11 of the established 40 sites. Fate of individual coral colonies will be followed to provide better understanding of coral community dynamics and mortality rates associated with individual stressors. Density and size of bioeroding sponges of the genus *Cliona* (an indicator of organic enrichment in the water column) will be recorded. Coral mucus will be analyzed to detect human enteroviruses to distinguish possible sources of nutrient input (human vs. other). Temperature (implicated in bleaching and disease pathogenicity) will be continually recorded. Sedimentation (associated with coastal development and an impediment to larval recruitment) will be measured from sediment trap collections.

The comprehensive CREMP project data set on stony coral cover, species richness, bleaching, disease, bioeroders, temperature, fate tracking, human enteroviruses, recruitment and sedimentation will assist COP development of landscape-seascape program models to characterize physical, chemical and biological stressors. Not only will these data assist managers in determining if the fully protected Tortugas Ecological

Reserve is functioning to protect biological diversity, it will also provide definitive feedback on the downstream effects of CERP on the Florida Keys reef tract.