

2012 Summer Florida Coral Reef Disturbance Response Monitoring

Quick Look Report

Introduction

The summer of 2012 was a mild bleaching year. Moderate bleaching occurred within one zone of each of the Dry Tortugas, Lower Keys, and Martin County sub-regions.

The Florida Reef Resilience Program (FRRP) is a collaborative effort among managers, scientists, conservation organizations and reef users to develop resilience-based management strategies for coping with climate change and other stresses on Florida's coral reefs. With projected increases in coral bleaching due to climate change, the FRRP Disturbance Response Monitoring (DRM) was developed for monitoring shallow coral reefs from the Florida Keys to Martin County. The DRM consists of a probabilistic sampling design and a stony coral condition monitoring protocol implemented during the annual period of peak thermal stress. Each year, survey teams from federal, state, and local government agencies, universities and non-governmental organizations cooperate to complete surveys across the south Florida Reef Tract within a six to eight week period. In 2012 surveyors included: The Nature Conservancy, Mote Marine Laboratory, University of Miami, Nova Southeastern University, Miami-Dade County, Broward County, Palm Beach County, Florida Fish and Wildlife Conservation Commission, Florida Department of Environmental Protection, National Park Service, and National Oceanic and Atmospheric Administration.

Methodology

The DRM consists of a probabilistic sampling design that focuses on sampling the coral population based on how corals are distributed spatially within and across different sub-regions and zones of the overall reef tract. For the 2012 DRM season 252 sample sites were allocated across 24 discrete reef zones in 8 subregions. Thirteen survey teams of scientific divers conducted the monitoring in 2012.

Two independent 1x10m belt transects were randomly placed within each 200x200m sampling site. Indicators were then recorded for all stony corals greater than 4cm including: 1) hard coral size and 2) hard coral condition as determined by the presence of bleaching and paling, the precursor to bleaching, presence of disease, and percent mortality.

Results

A total of 238 DRM surveys were completed from August 15th - October 15th, 2012. For the second time since surveys began in 2005, surveys were also completed in Dry Tortugas National

Park. The prevalence of bleaching and paling in each zone was determined and broken into three categories: mild (0-20%), moderate (21-50%) and severe (>50%) (Figure 1 and Table 1).

Moderate bleaching and paling, which is defined as 21-50% of all hard corals over 4cm surveyed showing signs of bleaching or paling, occurred within zones of the Dry Tortugas, Lower Keys and Martin County sub-regions. This was mainly due to high percentages of paling prevalence, except in Martin County (Table 1). Although water temperatures began rising in early August, Hurricane Isaac significantly influenced water temperatures in late August and they remained low for the remainder of the bleaching season. Anecdotal reports of mild bleaching throughout the duration of the surveys were confirmed in almost all sub-regions.

Figure 1: Percent bleaching and paling prevalence of surveyed hard coral colonies.

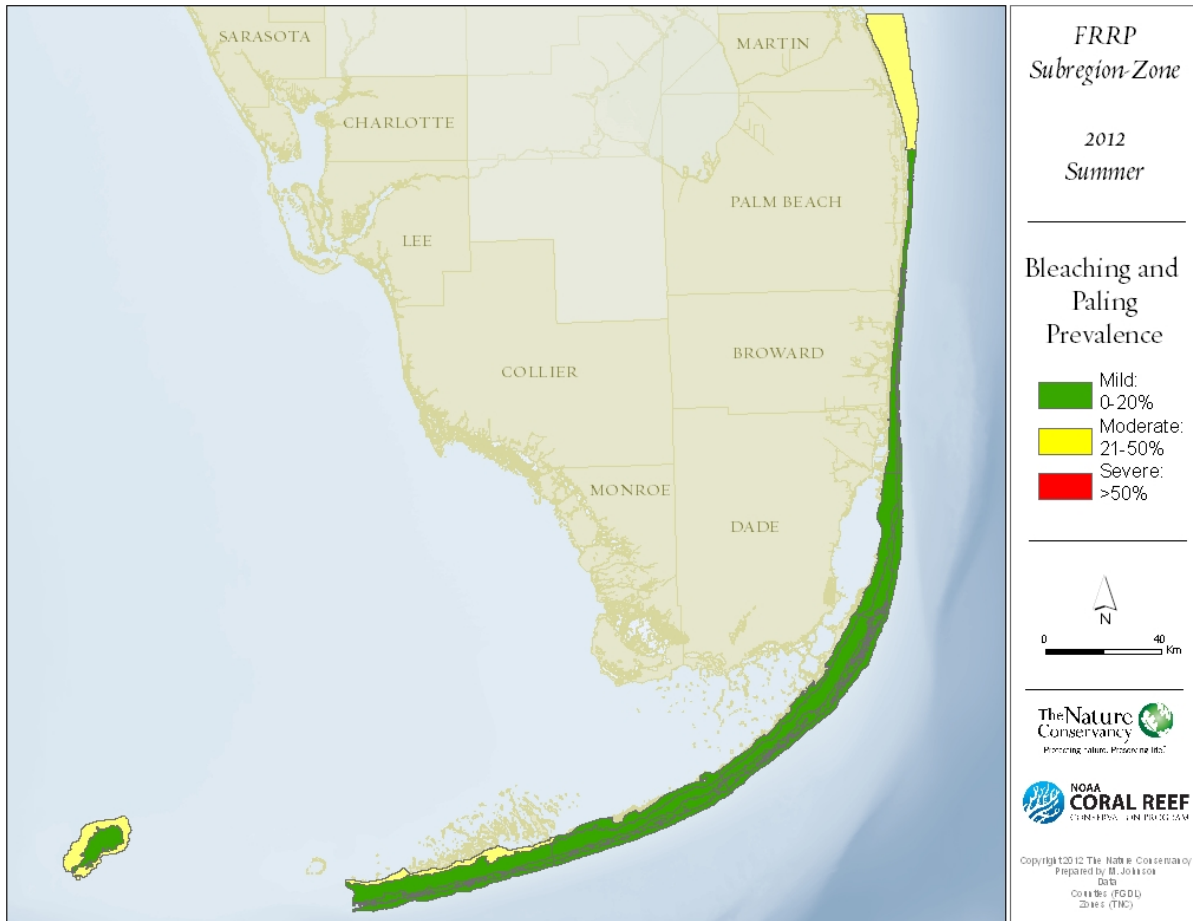


Table 1: Bleaching and paling prevalence of hard coral colonies surveyed by sub-region and zone. Red indicates severe (>50%), yellow indicates moderate (21-50%) and green indicates mild (0-20%) bleaching and paling prevalence.

Sub-Region	Zone	% Paling Prevalence	% Bleaching and Paling Prevalence	# of Sites
Dry Tortugas	Forereef	18.00	21.47	39
Dry Tortugas	Lagoon	4.79	5.76	2
Lower Keys	Inshore	23.53	25.00	3
Lower Keys	Mid-Channel	6.32	6.74	5
Lower Keys	Offshore Patch	3.30	4.19	4
Lower Keys	Forereef	2.36	2.92	21
Middle Keys	Inshore	13.13	13.21	3
Middle Keys	Mid-Channel	1.24	2.63	6
Middle Keys	Offshore Patch	5.90	10.26	2
Middle Keys	Forereef	5.04	8.78	17
Upper Keys	Inshore	0.00	0.00	5
Upper Keys	Mid-Channel	5.91	12.39	9
Upper Keys	Offshore Patch	14.65	15.42	11
Upper Keys	Forereef	12.47	13.54	33
Biscayne	Inshore	3.13	6.88	3
Biscayne	Mid-Channel	3.10	6.55	13
Biscayne	Offshore Patch	13.64	15.91	1
Biscayne	Forereef	5.58	13.76	14
Broward	Inshore	4.61	7.04	17
Broward	Inner Reef	5.26	7.72	9
Broward	Outer Reef	5.85	7.98	8
Palm Beach	Inshore	0.00	0.00	2
Palm Beach	Reef Ridge	2.27	10.80	3
Martin	Undetermined	4.60	40.23	6

For more information about the Florida Reef Resilience Program and its Disturbance Response Monitoring effort see the website www.frrp.org. For more information about the 2012 Disturbance Response Monitoring results contact The Nature Conservancy at (305) 872- 7071 or email Meaghan Johnson, Marine Science Coordinator, at meaghan_johnson@tnc.org.