

2011 Summer Florida Coral Reef Disturbance Response Monitoring

Quick Look Report

Introduction

The summer of 2011 saw the most significant coral bleaching event since the Florida Reef Resilience Program began in 2005. Almost the entire Florida Reef Tract, from the Lower Keys to Martin County, was impacted in 2011.

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 2011 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 subregions and zones of the overall reef tract. For the 2011 DRM season 234 sample sites were allocated across 23 discrete reef zones in 7 subregions. Thirteen survey teams of scientific divers conducted the monitoring in 2011.

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 234 DRM surveys were completed from August 8th - October 14th, 2011. 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, 21-50% of all hard corals over 4cm, occurred within zones of the Lower, Middle and Upper Keys, Biscayne, Broward and Martin County sub-regions. Surveys were completed in early August in the Palm Beach and northern Biscayne sub-regions where only mild bleaching was recorded. Anecdotal reports of higher levels of bleaching were received in September and October, indicating that the surveys in these regions may not have been completed during peak temperatures within these areas.

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

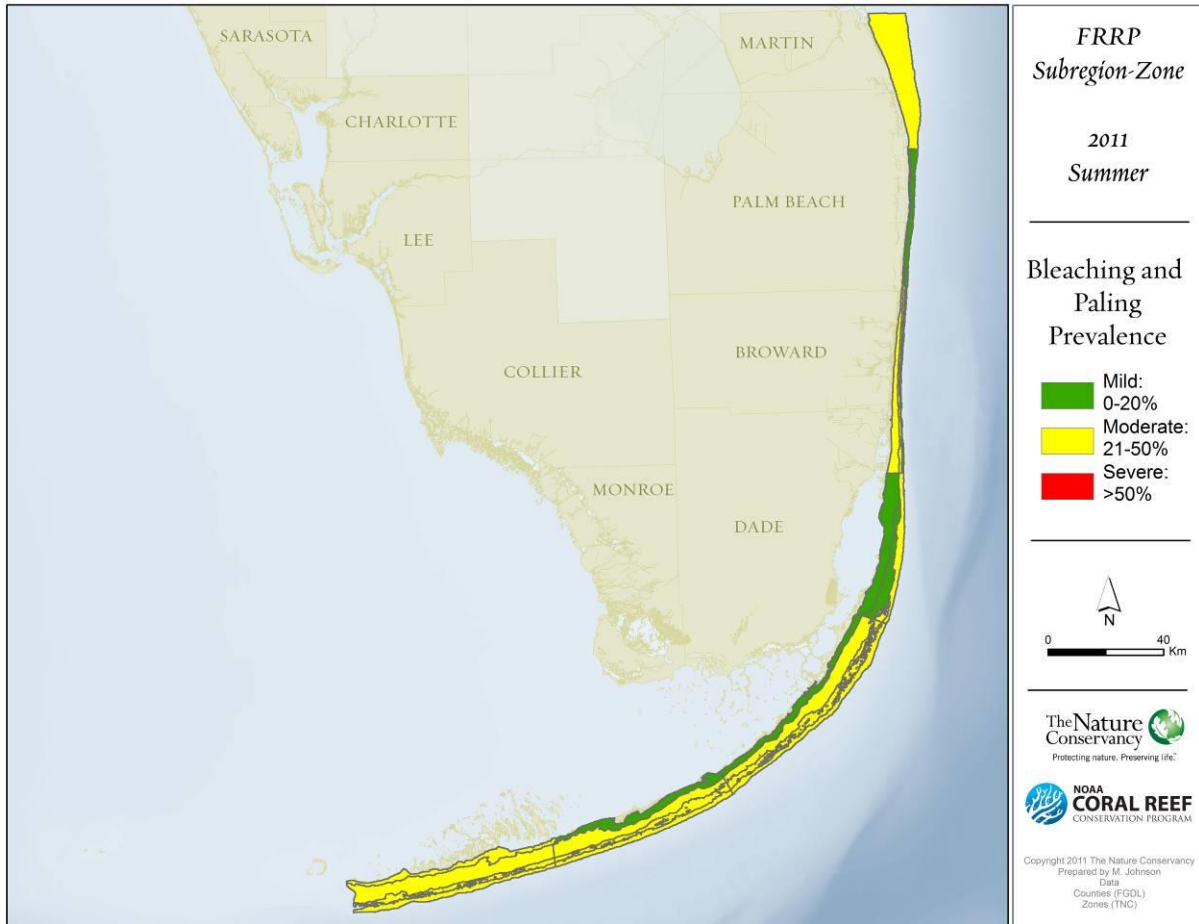


Table 1: Bleaching and paling prevalence of hard coral colonies surveyed by sub-region and zone. Red indicates severe (>50%), yellow indicates moderate (21-50%) and green indicates mild (0-20%) bleaching and paling prevalence.

Sub-Region	Zone	% Bleaching/Paling	# of Sites
Lower Keys	Inshore	44.62	5
Lower Keys	Mid-Channel	29.04	12
Lower Keys	Offshore Patch Reef	44.06	8
Lower Keys	Forereef	31.50	27
Lower Keys	Deepwater	41.58	1
Middle Keys	Inshore	19.53	3
Middle Keys	Mid-Channel	28.59	9
Middle Keys	Offshore Patch Reef	30.44	1
Middle Keys	Forereef	27.89	18
Upper Keys	Inshore	13.79	2
Upper Keys	Mid-Channel	32.78	8
Upper Keys	Offshore Patch Reef	36.38	12
Upper Keys	Forereef	36.07	33
Biscayne	Inshore	6.56	4
Biscayne	Mid-Channel	7.36	16
Biscayne	Offshore Patch Reef	36.46	2
Biscayne	Forereef	23.62	21
Broward	Inshore	27.99	19
Broward	Inner Reef	29.77	8
Broward	Outer Reef	19.56	10
Palm Beach	Inshore	2.86	2
Palm Beach	Reef Ridge Complex	5.85	7
Martin	Undetermined	26.37	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 2011 Disturbance Response Monitoring results contact The Nature Conservancy at (305) 745 8402 or email Meaghan Johnson, Marine Science Program Coordinator, at Meaghan_johnson@tnc.org.