

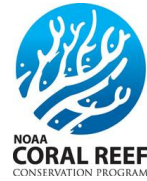
# Florida Reef Resilience Program

## Disturbance Response Monitoring



### Quick Look Report:

Winter 2015



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## **Introduction**

The summer of 2014 was the worst severe bleaching year since the FRRP DRM surveys began in 2005. Severe bleaching occurred within zones of the Broward-Miami, Biscayne, Upper Keys, Middle Keys, Lower Keys and Dry Tortugas sub-regions. Due to the severity of the bleaching, the FRRP Steering Committee determined that post-bleaching surveys were necessary to determine the impacts of the bleaching.

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 Dry Tortugas 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 2015, surveyors included: Mote Marine Laboratory, Nova Southeastern University, Florida Fish and Wildlife Conservation Commission, and National Oceanic and Atmospheric Administration.

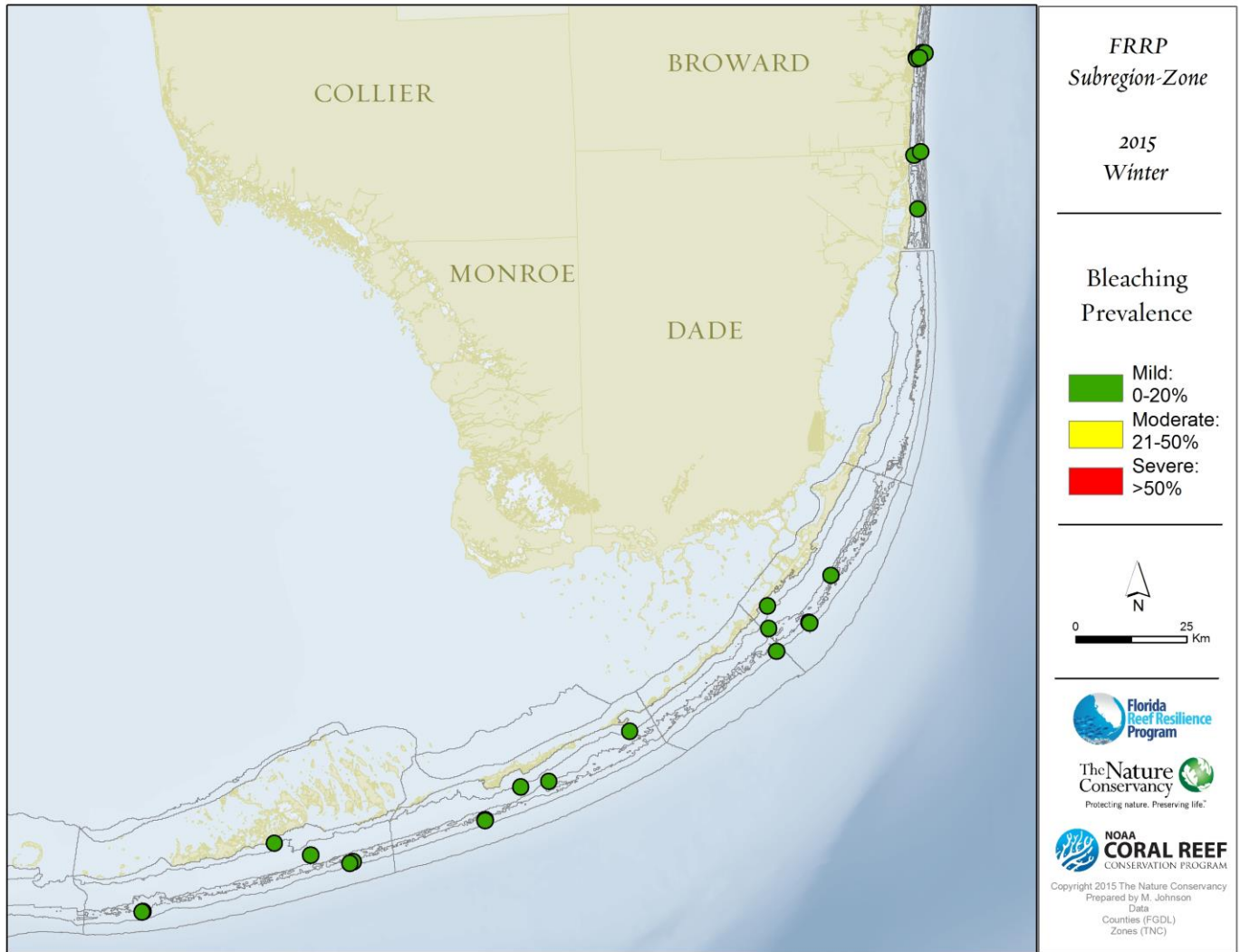
## **Methodology**

For the 2015 DRM post-bleaching surveys, 25 fixed CREMP and SECREMP sites were chosen based on region, zone, and FWC input.

At each site, a 1x10m belt transect was completed at plots 1 and 2. Transect tapes were run from the offshore to inshore stake within each plot, and chain was laid beneath the tape. Surveyors then completed the 1x10m belt transect starting from the offshore stake, working inshore. 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 25 surveys were completed from January 12<sup>th</sup> – February 27<sup>th</sup>, 2015. The prevalence of bleaching in each zone was determined and broken into three categories: mild (0-20%), moderate (21-50%) and severe (>50%) (Figure 1; Table 1). Mild bleaching (0-20%) occurred within all regions surveyed (Broward-Miami, Upper Keys, Middle Keys and Lower Keys).

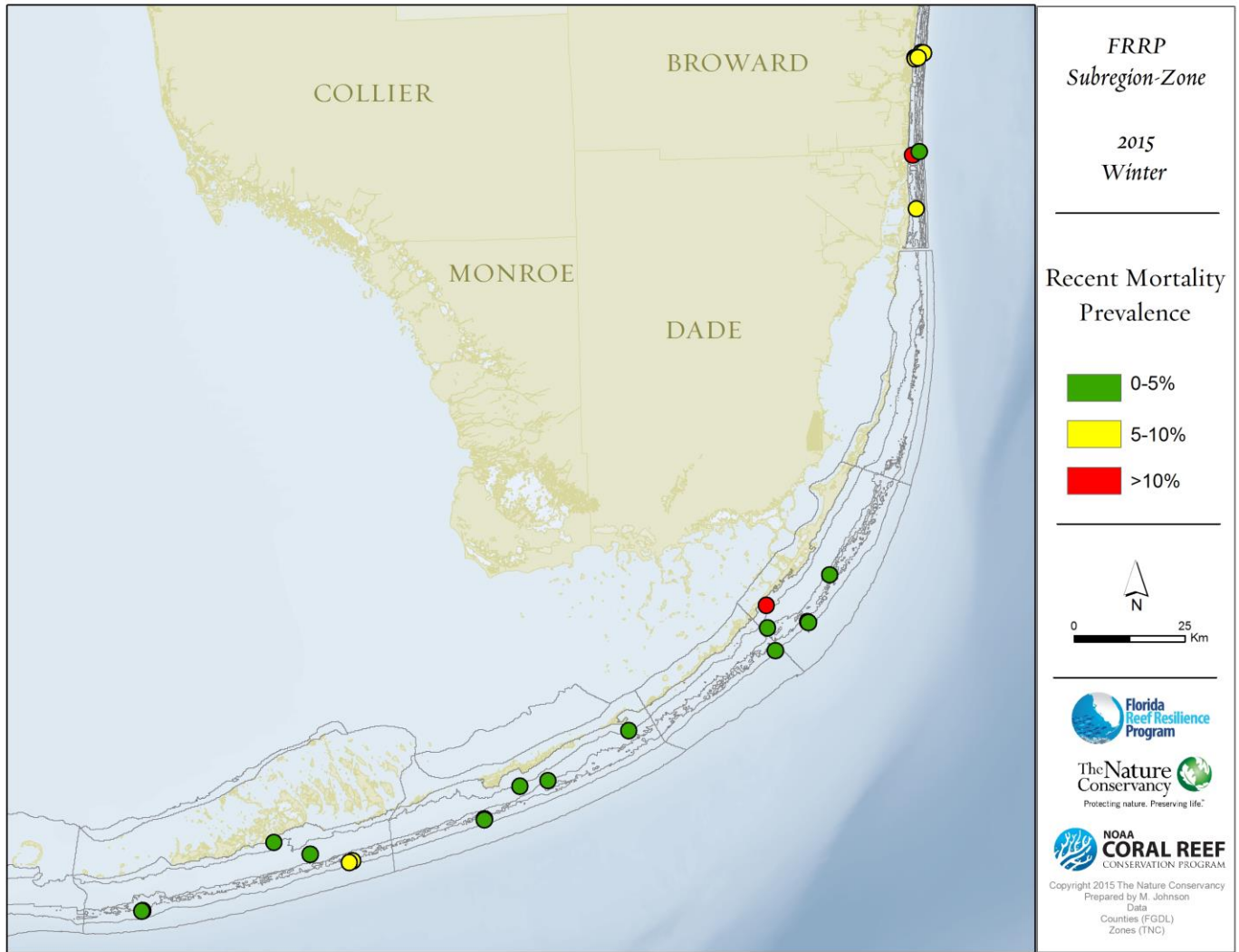


**Figure 1:** Percent bleaching prevalence of surveyed hard coral colonies.

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

Site	Sub-Region	Zone	% Bleaching Prevalence	% Bleaching and Paling Prevalence
N1001	Lower Keys	Inshore	0.00	0.00
N1002	Lower Keys	Mid-Channel	0.86	11.11
N1003	Lower Keys	Forereef	6.09	20.87
N1004	Lower Keys	Forereef	8.38	22.16
N1005	Lower Keys	Forereef	1.82	1.82
N2003	Lower Keys	Forereef	0.00	0.00
N1006	Middle Keys	Mid-Channel	2.44	3.05
N1007	Middle Keys	Mid-Channel	1.21	5.46
N1008	Middle Keys	Offshore Patch	1.47	17.65
N1009	Middle Keys	Forereef	3.85	9.23
N1010	Middle Keys	Forereef	0.00	33.33
N1016	Mid-Upper Keys Transition	Forereef	4.83	26.21
N1011	Upper Keys	Inshore	1.55	33.33
N1012	Upper Keys	Mid-Channel	5.10	18.88
N1013	Upper Keys	Forereef	4.94	14.07
N1014	Upper Keys	Forereef	8.21	22.02
N1015	Upper Keys	Forereef	3.33	4.44
N2023	Broward-Miami	Inner Reef	3.20	5.60
N2028	Broward-Miami	Inshore	0.99	3.96
N2029	Broward-Miami	Undetermined	0.00	2.86
N2031	Broward-Miami	Inshore	0.00	5.88
N2032	Broward-Miami	Inshore	0.00	2.38
N2033	Broward-Miami	Middle Reef	0.00	11.11
N2034	Broward-Miami	Outer Reef	2.04	2.04
N2035	Broward-Miami	Inner Reef	1.09	5.98

The prevalence of recent mortality at each site was determined and broken into three categories: mild (0-5%), moderate (5-10%) and severe (>10%) (Figure 2; Table 2). Severe recent mortality (>10%) occurred within the inshore zones of the Upper Keys and Broward-Miami sub-regions.



**Figure 2:** Percent recent mortality prevalence of surveyed hard coral colonies.

**Table 2:** Recent mortality prevalence of hard coral colonies surveyed by site. Red indicates severe (>10%), yellow indicates moderate (5-10%) and green indicates mild (0-5%) recent mortality prevalence.

Site	Sub-Region	Zone	% Recent Mortality Prevalence
N1001	Lower Keys	Inshore	0.00
N1002	Lower Keys	Mid-Channel	2.56
N1003	Lower Keys	Forereef	7.83
N1004	Lower Keys	Forereef	9.58
N1005	Lower Keys	Forereef	0.00
N2003	Lower Keys	Forereef	1.11
N1006	Middle Keys	Mid-Channel	0.00
N1007	Middle Keys	Mid-Channel	1.83
N1008	Middle Keys	Offshore Patch	3.33
N1009	Middle Keys	Forereef	5.88
N1010	Middle Keys	Forereef	3.08
N1016	Mid-Upper Keys Transition	Forereef	1.49
N1011	Upper Keys	Inshore	33.33
N1012	Upper Keys	Mid-Channel	2.07
N1013	Upper Keys	Forereef	3.10
N1014	Upper Keys	Forereef	5.10
N1015	Upper Keys	Forereef	5.32
N2023	Broward-Miami	Inner Reef	10.40
N2028	Broward-Miami	Inshore	13.86
N2029	Broward-Miami	Undetermined	2.86
N2031	Broward-Miami	Inshore	17.65
N2032	Broward-Miami	Inshore	5.56
N2033	Broward-Miami	Middle Reef	1.85
N2034	Broward-Miami	Outer Reef	8.16
N2035	Broward-Miami	Inner Reef	9.78

For more information about the Florida Reef Resilience Program and its Disturbance Response Monitoring effort see the website [www.frrp.org](http://www.frrp.org). For more information about the 2015 Winter Disturbance Response Monitoring results contact The Nature Conservancy at (305) 872- 7071 or email Meaghan Johnson, Marine Science Coordinator, at [meaghan\\_johnson@tnc.org](mailto:meaghan_johnson@tnc.org).