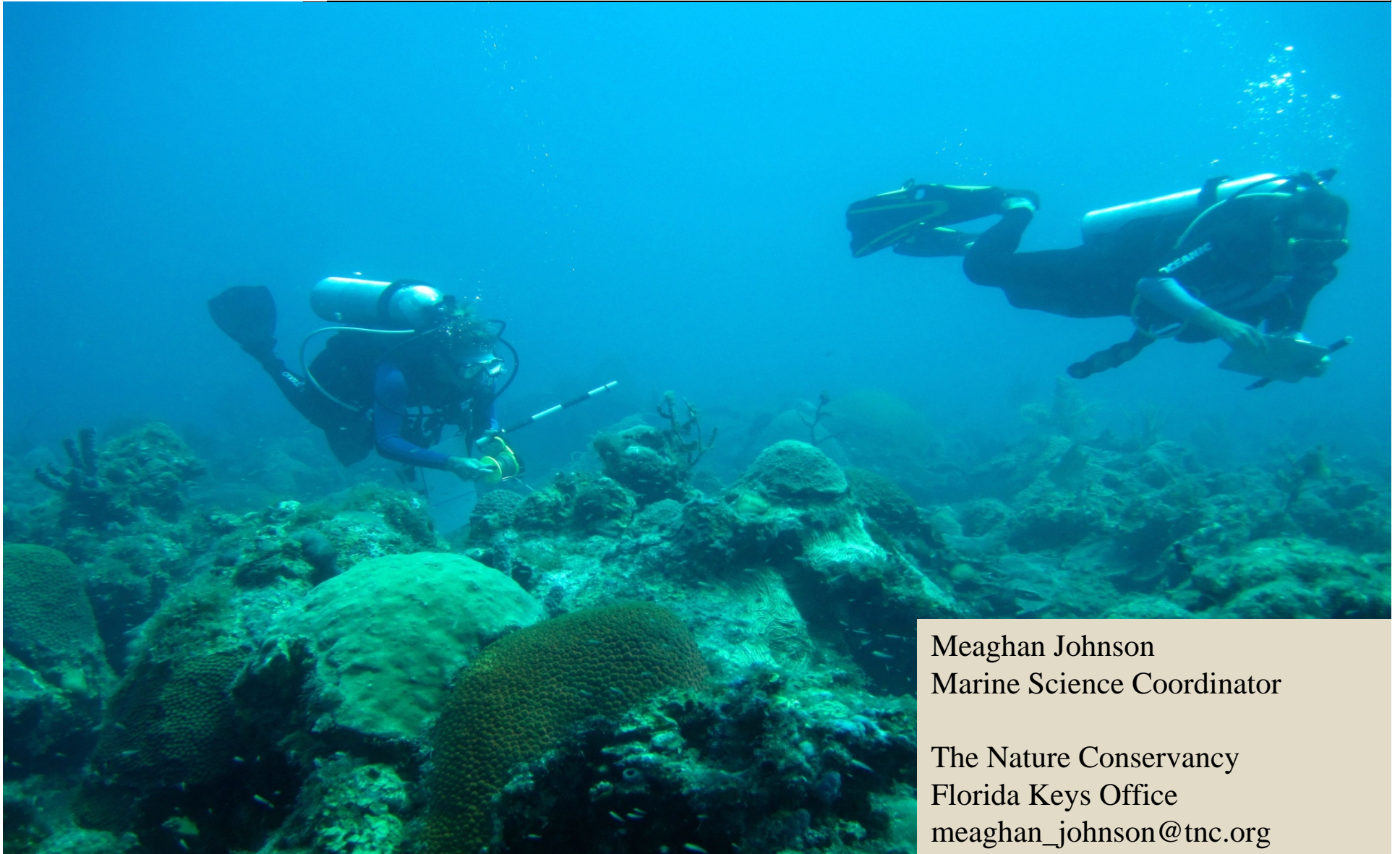


An Assessment of Five Years of Large Scale Coral Bleaching Monitoring Across the South Florida Reef Tract



Meaghan Johnson
Marine Science Coordinator

The Nature Conservancy
Florida Keys Office
meaghan_johnson@tnc.org



Florida Reef Resilience Program (FRRP)

FRRP

- Collaborative effort among managers, scientists, conservation organizations and reef users
- Resilience based management concept
- Goals
 - 1) Identify resilient reef areas along the south Florida reef tract
 - 2) Guide the protection and management of those reef areas

A Public and Private Partnership





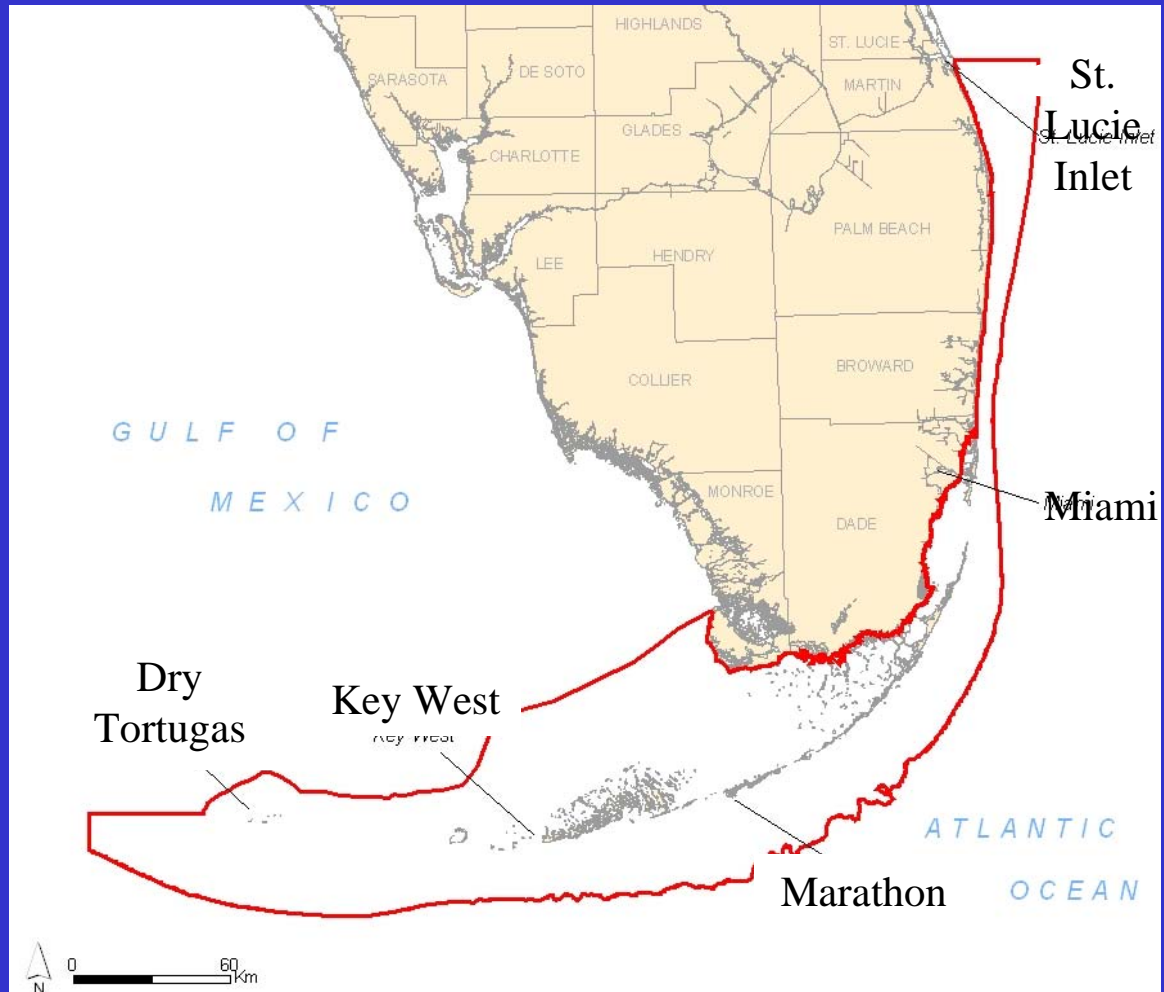
FRRP Disturbance Response Monitoring (DRM)

- Monitor coral reef health after disturbances
- 2005-10 focused on coral bleaching
- Trained experts survey stony corals on FL reef tract during peak annual temperatures (6-8 weeks)
- Follow-up surveys after moderate/severe bleaching years (e.g. 2005)
- Can be used for other disturbances (e.g. hurricanes, cold water)

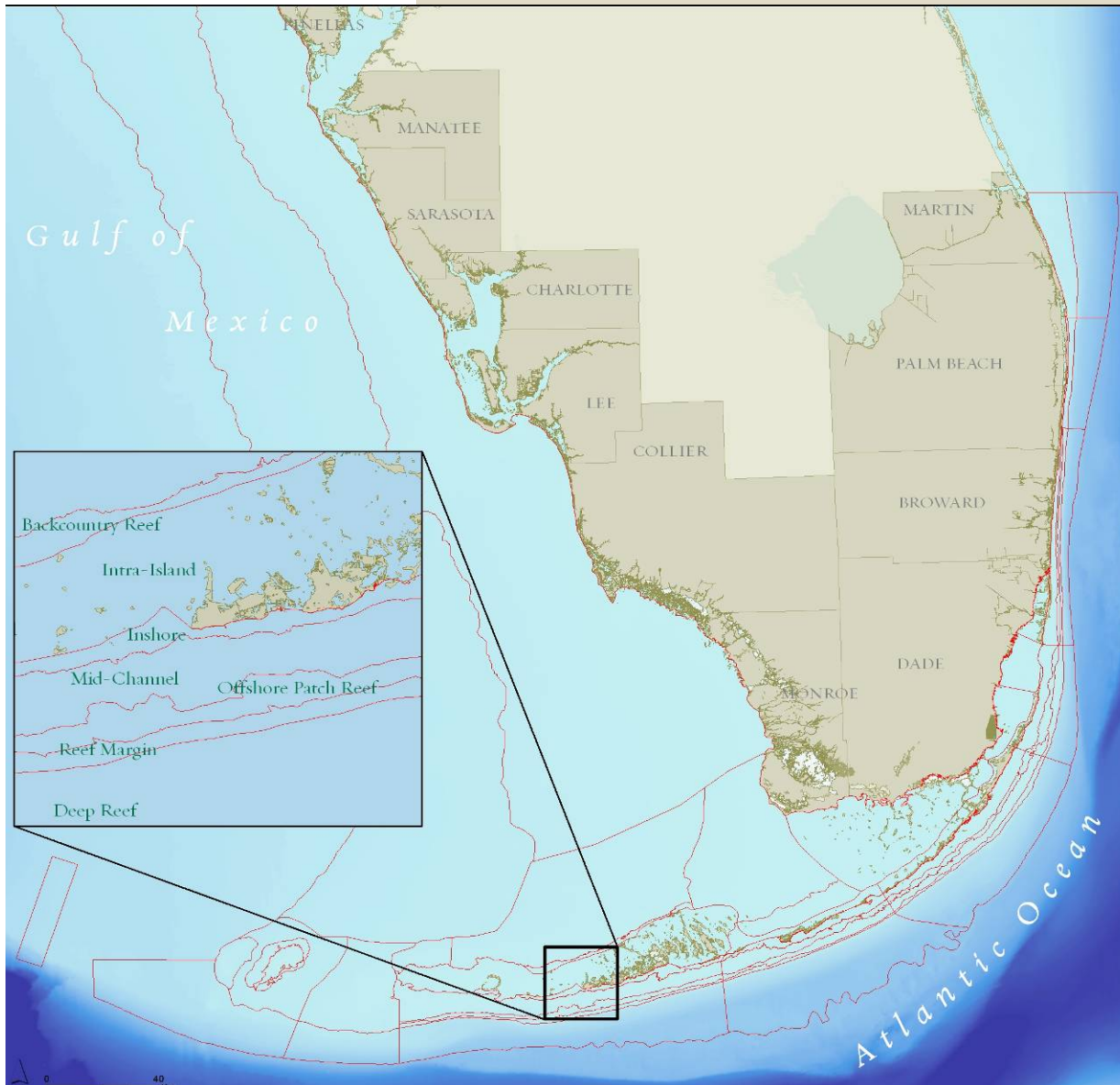


Where is FRRP?

The FRRP spans the reefs from St. Lucie Inlet to the Dry Tortugas



Spatial Framework



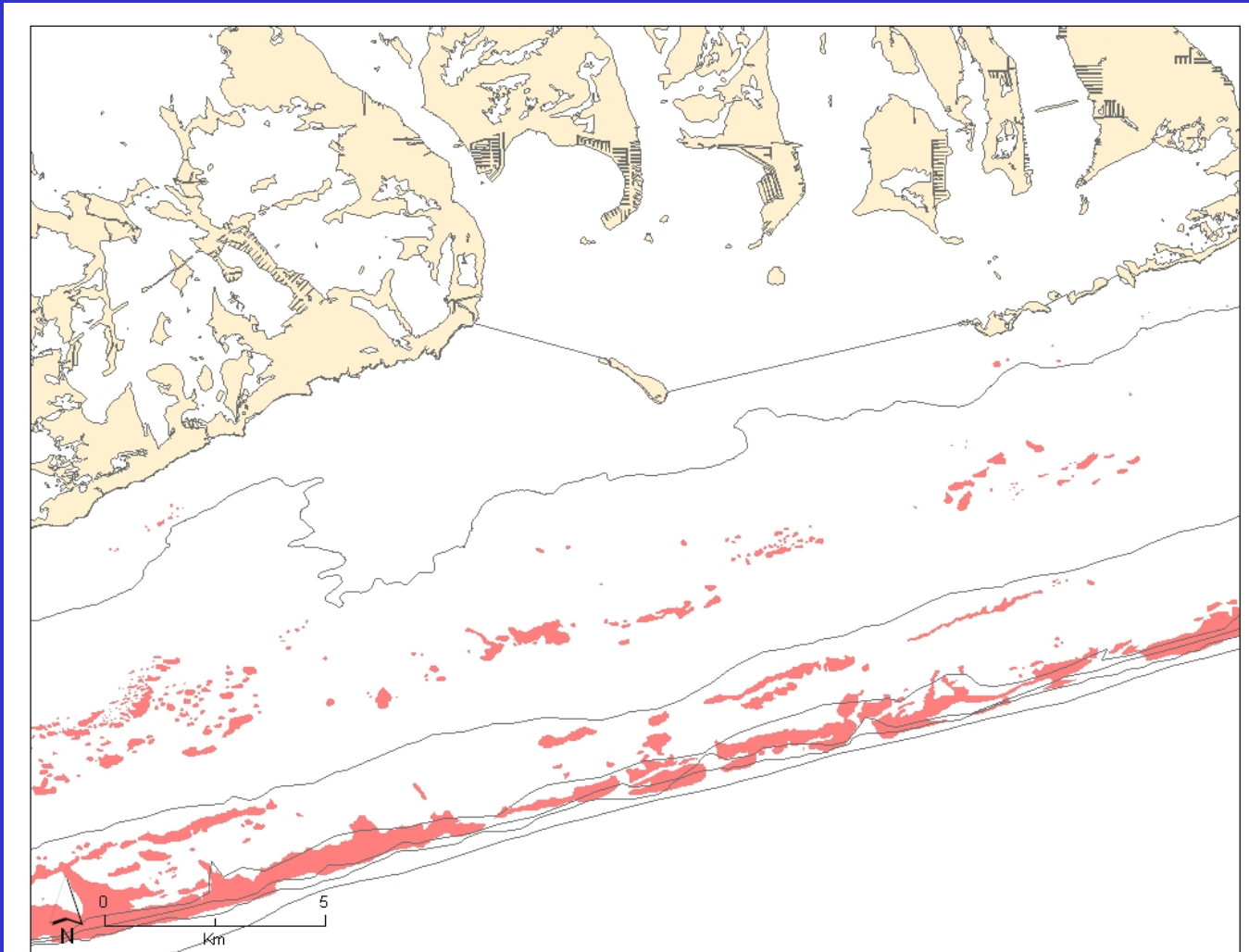
- Provides a unified method of dividing up and looking at the reef tract

- Created by reviewing existing maps, data, and biophysical info

- Currently made up of 9 sub-regions and 59 zones

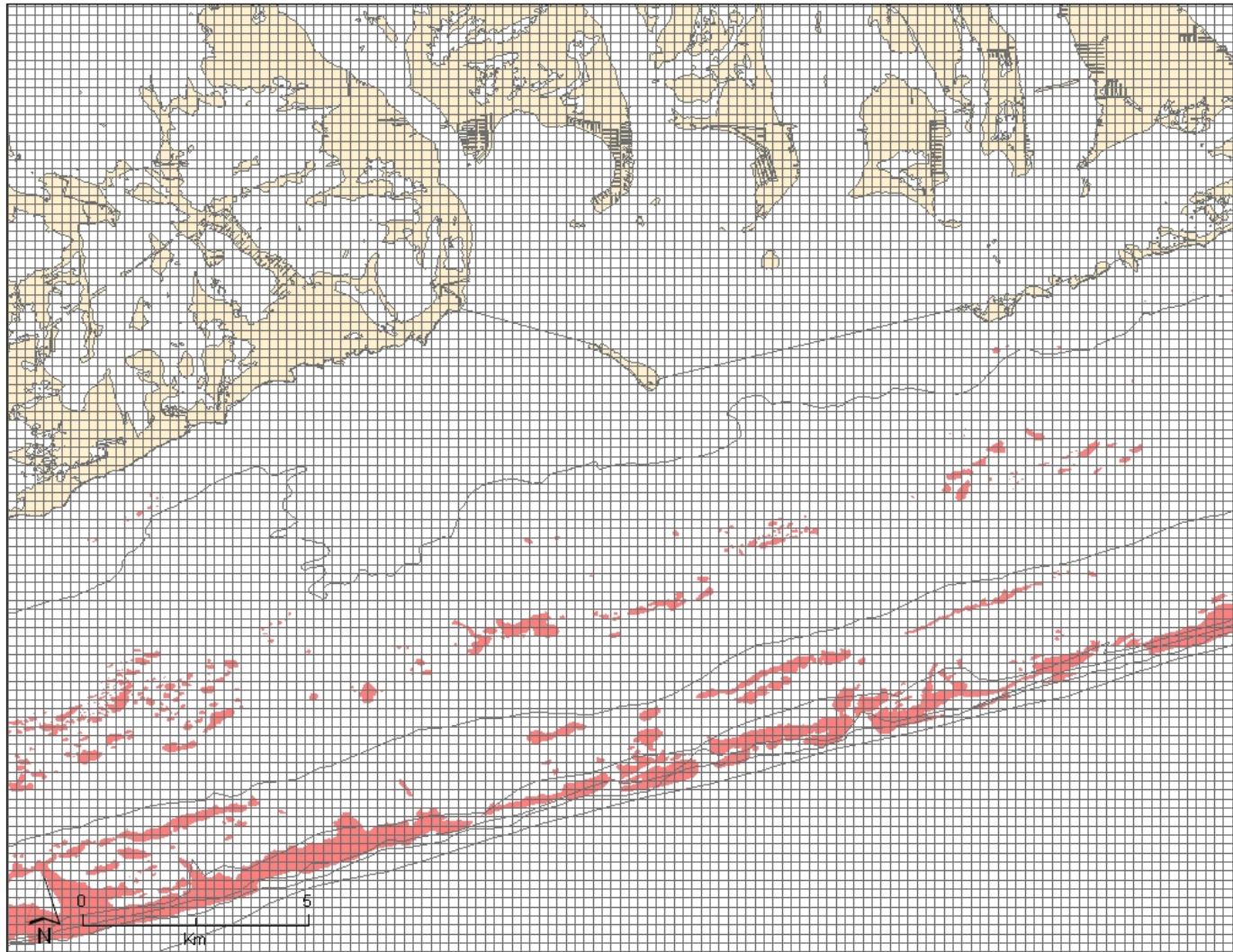
Sampling Design

FWRI/NOAA, RSMAS, NCRI (NOVA)



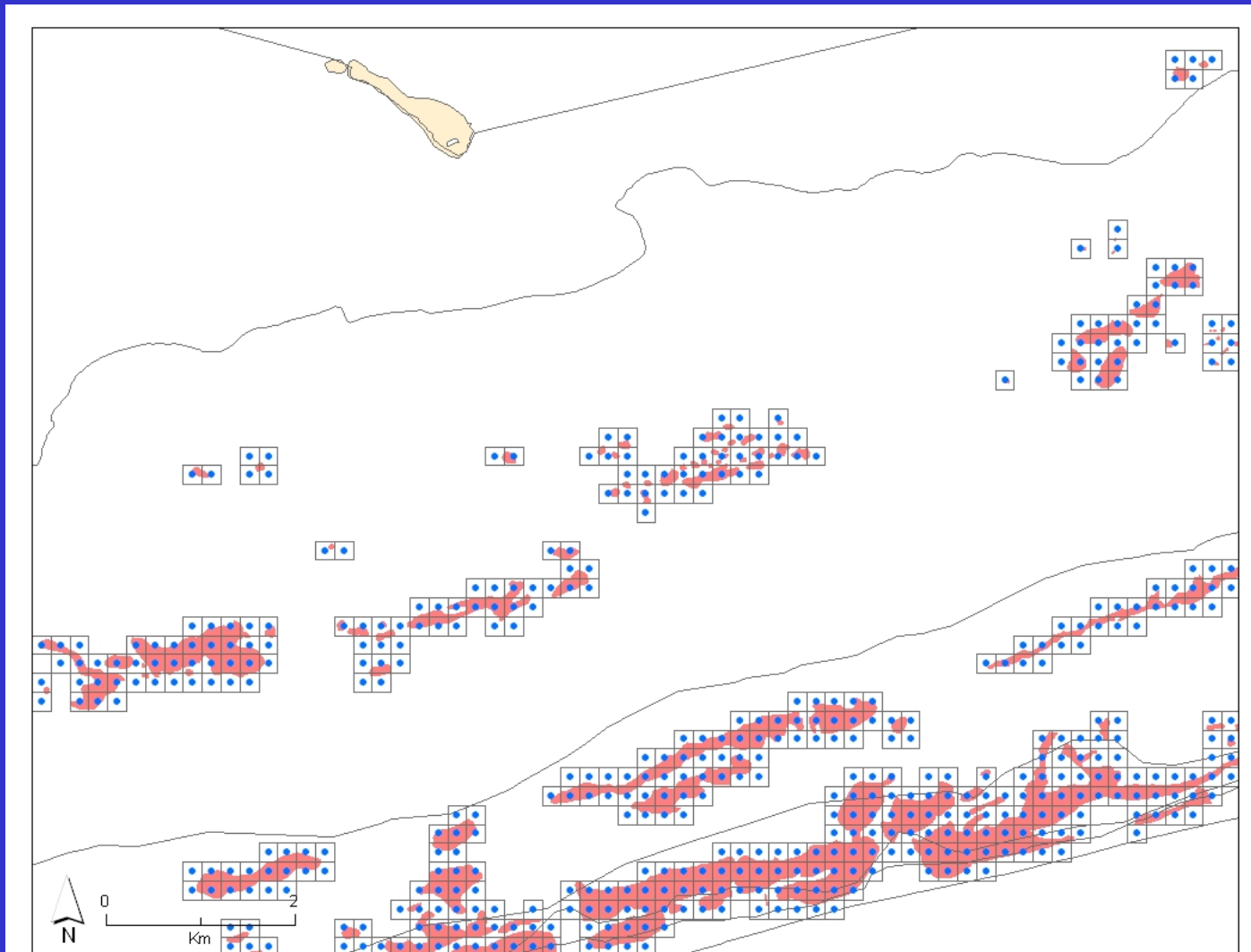
Sampling Design

200m x 200m over entire study area



Sampling Design

Reef Primary Unit (RPU)- center point



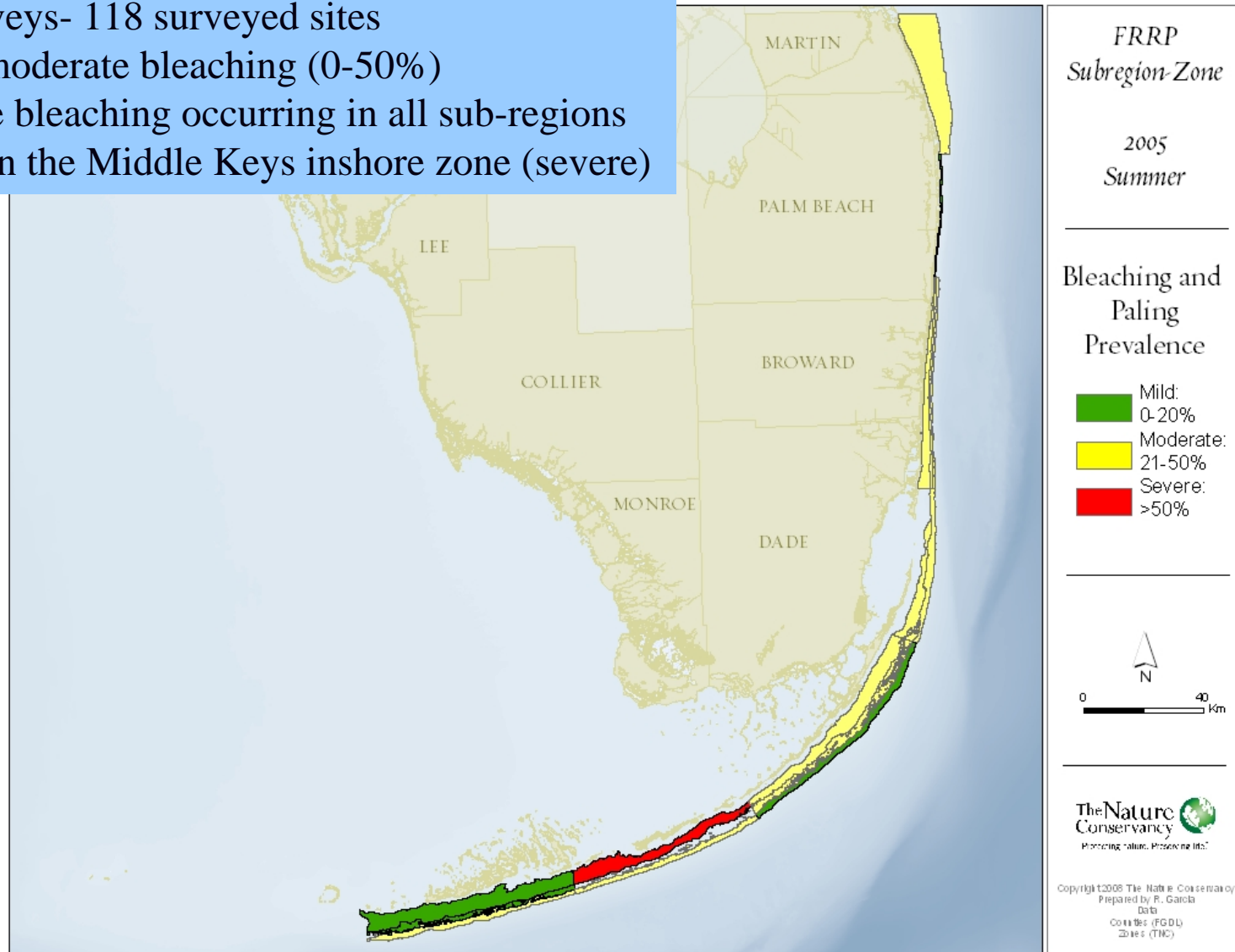
DRM Field Methods

- Random sites generated and assigned to teams
- 1 x 10m belt transects (2/site)
- Measure/assess all corals (≥ 4 cm)
- Species level identification
- Bleaching and disease (visually)
- Data entered online
- Database queried for results



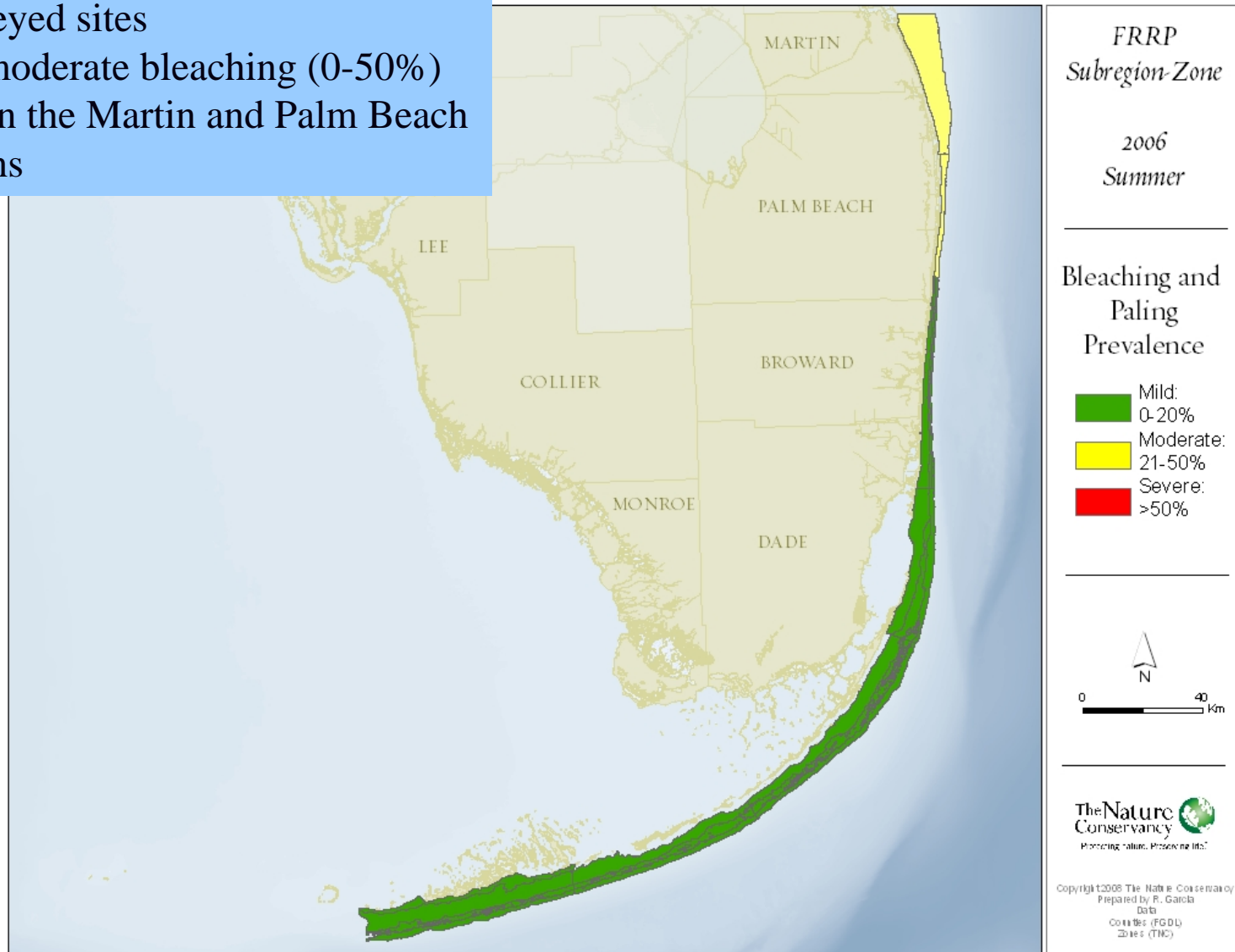
2005 Bleaching Extent By Zone

- Pilot surveys- 118 surveyed sites
- Mild to moderate bleaching (0-50%)
- Moderate bleaching occurring in all sub-regions
- Highest in the Middle Keys inshore zone (severe)



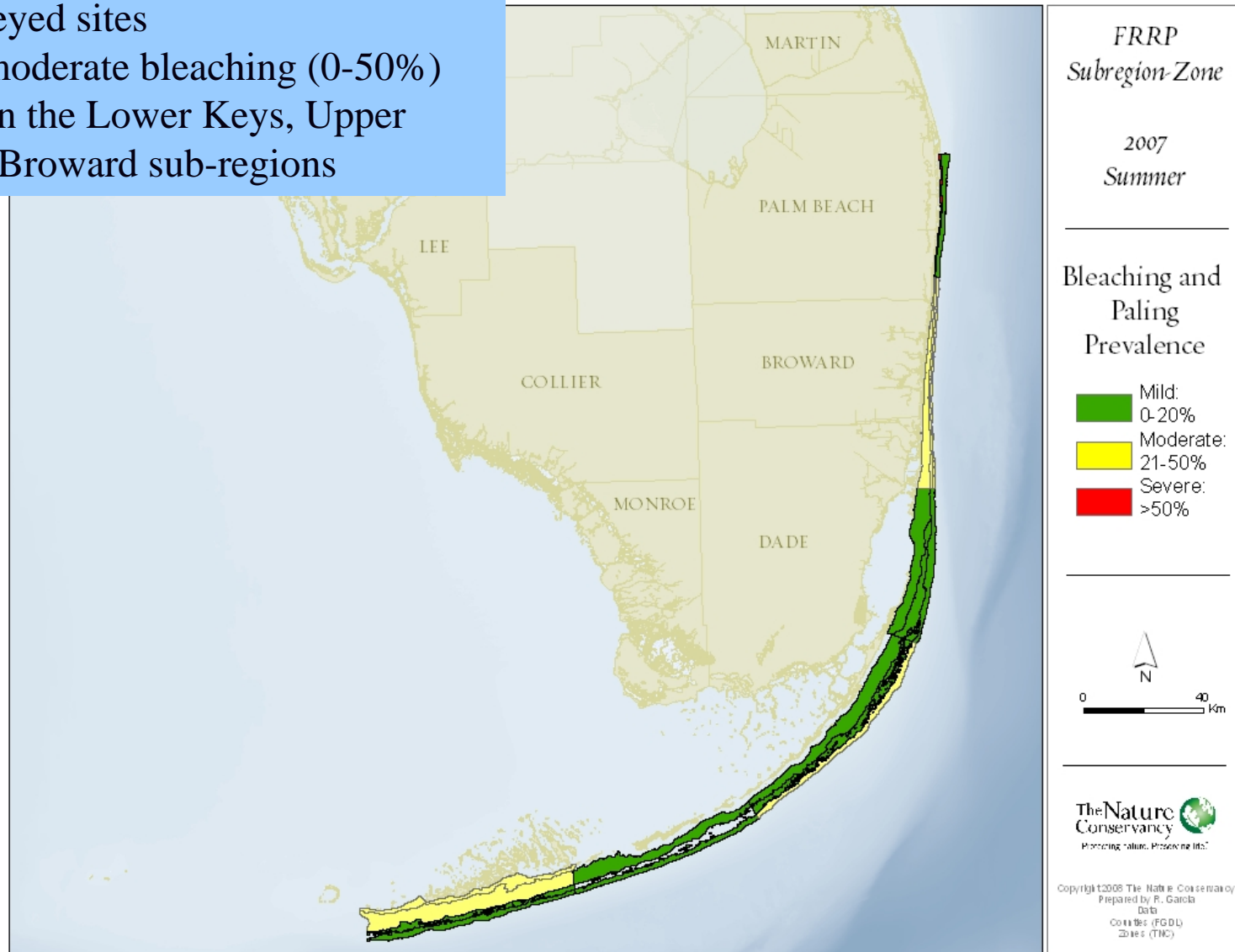
2006 Bleaching Extent By Zone

- 126 surveyed sites
- Mild to moderate bleaching (0-50%)
- Highest in the Martin and Palm Beach sub-regions



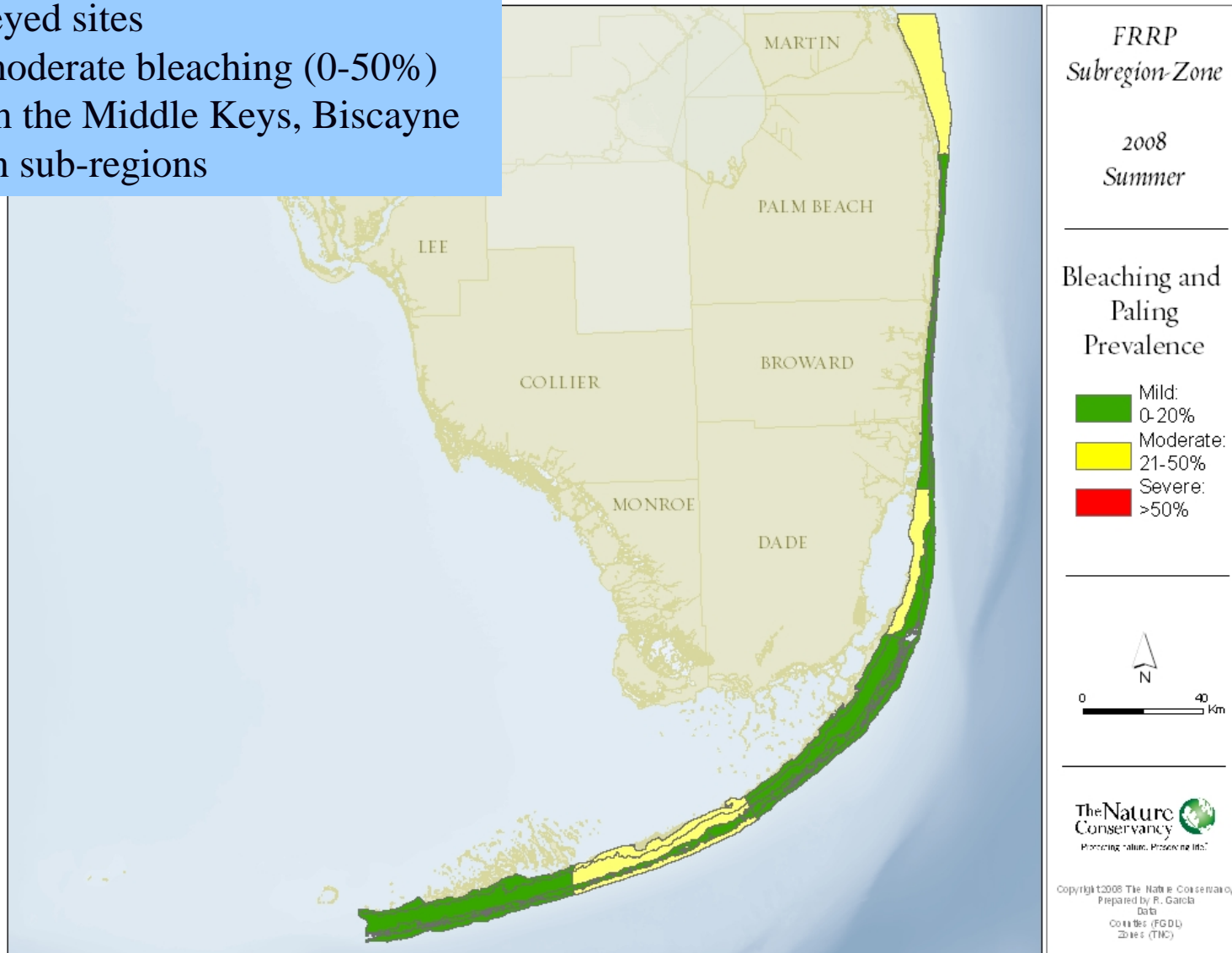
2007 Bleaching Extent by Zone

- 161 surveyed sites
- Mild to moderate bleaching (0-50%)
- Highest in the Lower Keys, Upper Keys and Broward sub-regions



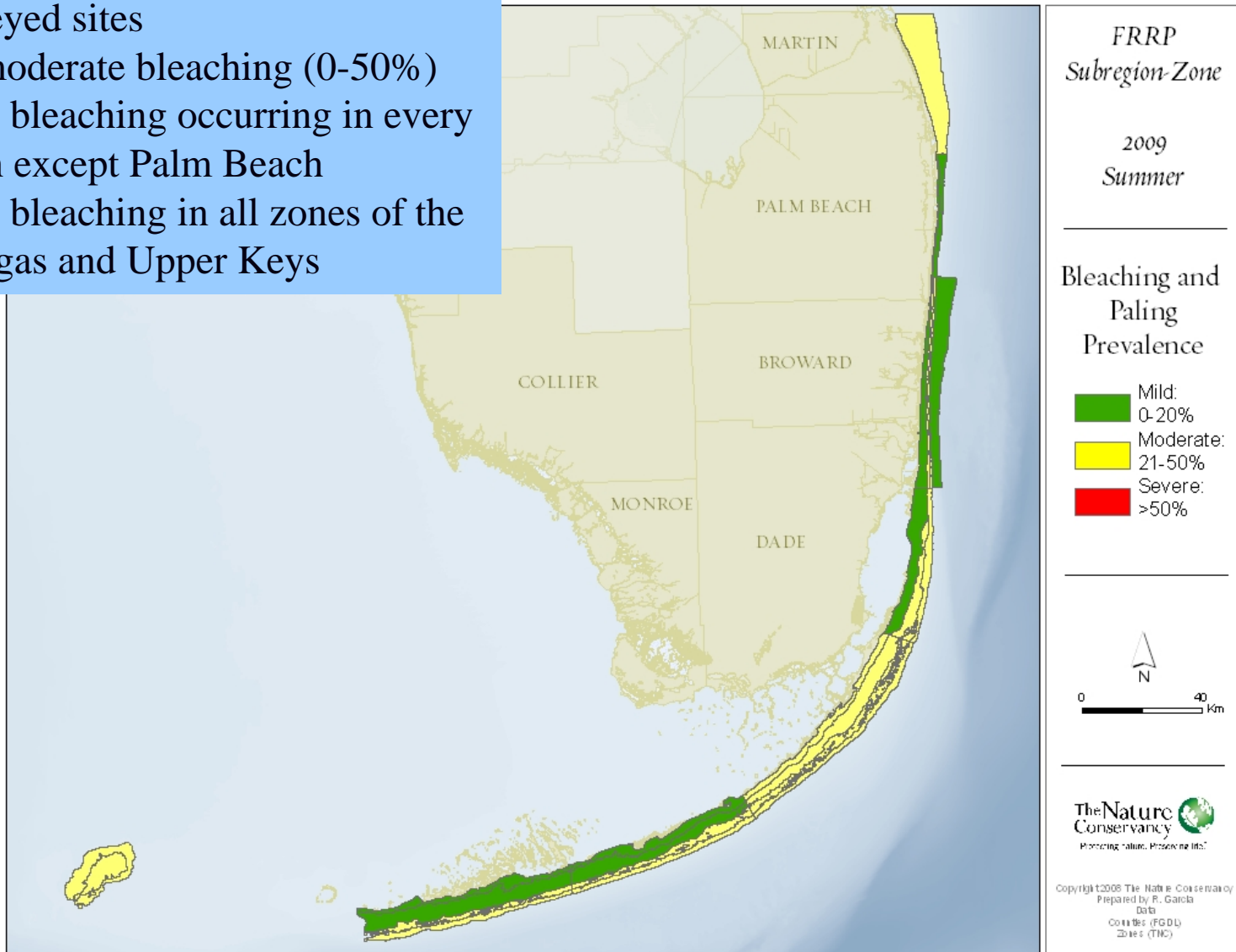
2008 Bleaching Extent by Zone

- 205 surveyed sites
- Mild to moderate bleaching (0-50%)
- Highest in the Middle Keys, Biscayne and Martin sub-regions



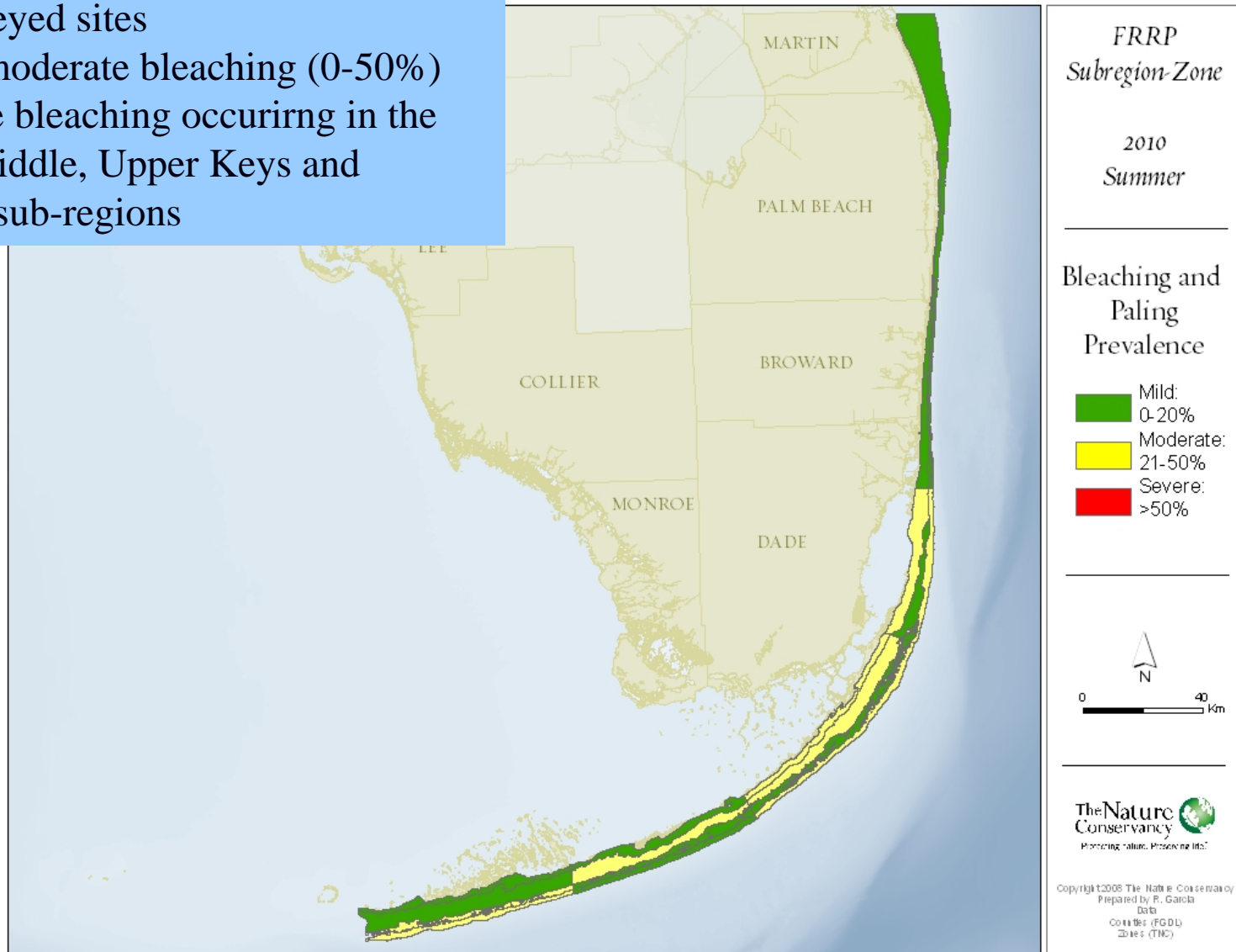
2009 Bleaching Extent by Zone

- 258 surveyed sites
- Mild to moderate bleaching (0-50%)
- Moderate bleaching occurring in every sub-region except Palm Beach
- Moderate bleaching in all zones of the Dry Tortugas and Upper Keys



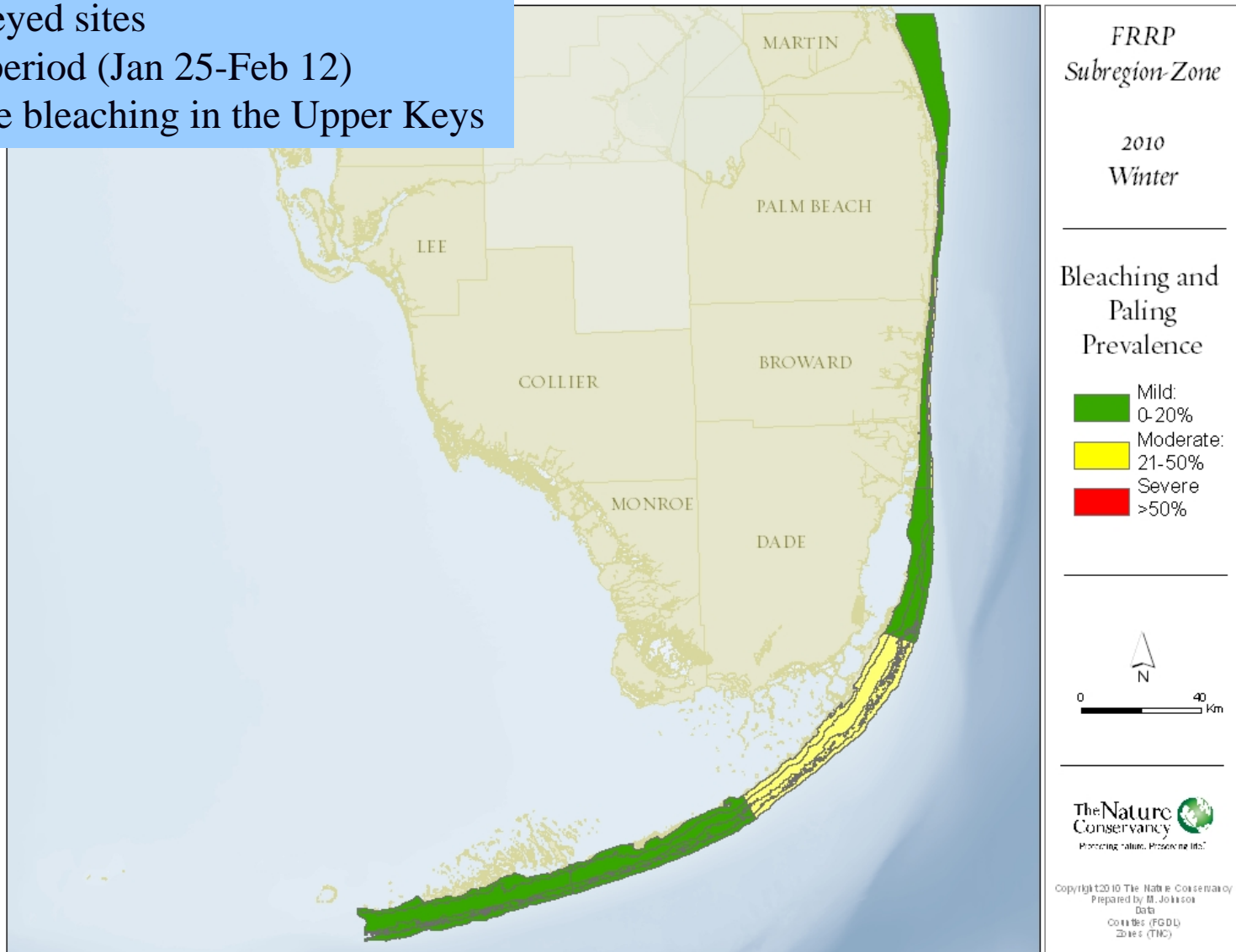
2010 Bleaching Extent by Zone

- 202 surveyed sites
- Mild to moderate bleaching (0-50%)
- Moderate bleaching occurring in the Lower, Middle, Upper Keys and Biscayne sub-regions



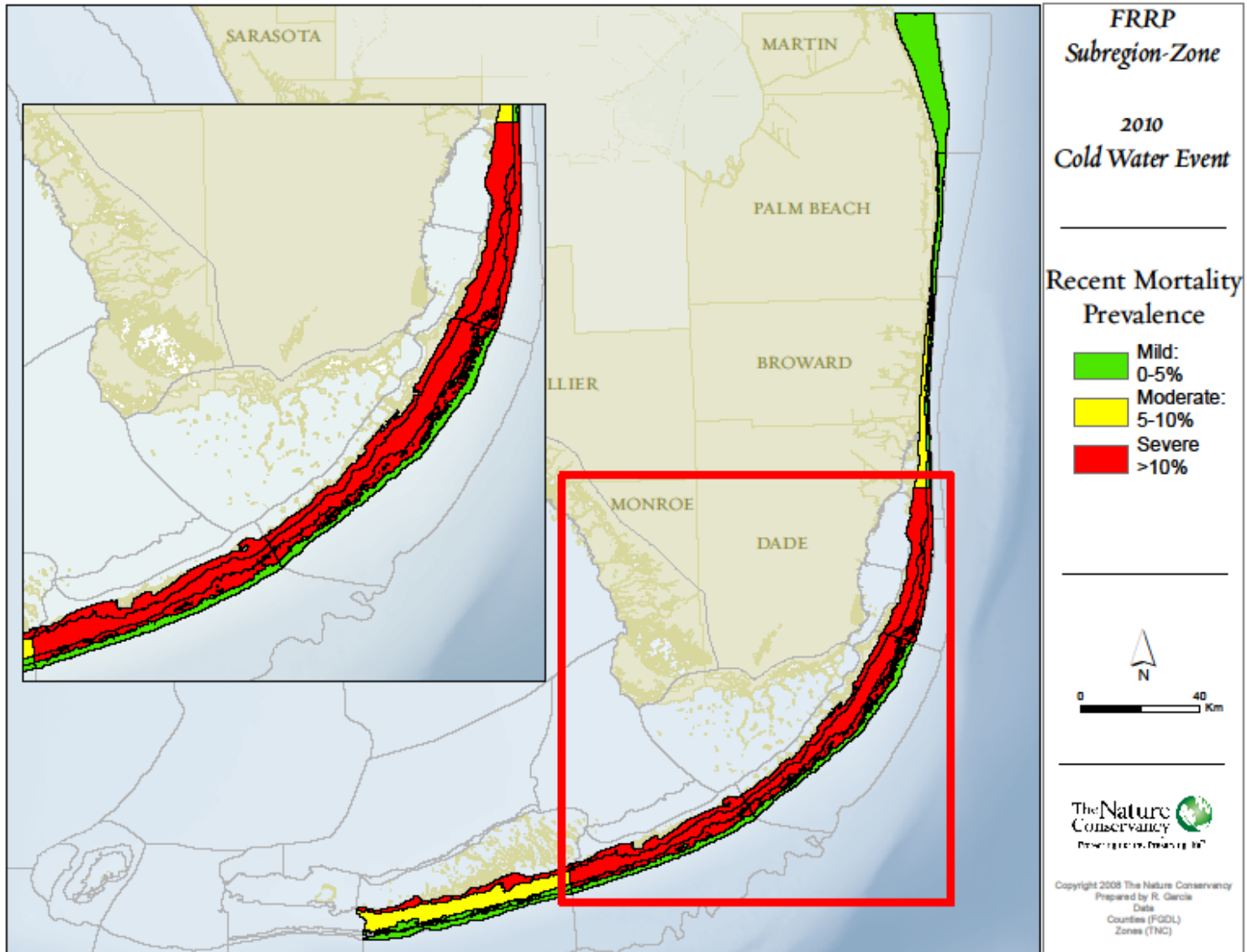
2010 Cold Water Event

- 78 surveyed sites
- 3 week period (Jan 25-Feb 12)
- Moderate bleaching in the Upper Keys





2010 Cold Water Event



Summary

- Large-scale monitoring program is in place to respond to disturbances and document coral condition across the south Florida reef tract (e.g. 2010 cold water event)
- Six years of coral bleaching monitoring has shown noticeable spatial and temporal variation in bleaching intensity which can be correlated to thermal stress.
- Provides baseline data for future bleaching events and informs reef managers and the public about what we are seeing.

Thank You!



UNIVERSITY OF MIAMI
ROSENSTIEL
SCHOOL of MARINE &
ATMOSPHERIC SCIENCE

