Restoring Resilience
Update on Florida Reef Tract
Coral Disease Outbreak Response Efforts

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Florida’s Coral Reefs

Florida Reef Tract

Southeast Florida Coral Reef Ecosystem Conservation Area (ECA)

Images: DEP, D. Gilliam, NOAA
Florida’s National Treasures
The Everglades and the Florida Reef Tract

Historic
Florida’s National Treasures

The Everglades and the Florida Reef Tract

Current
Florida’s National Treasures
The Everglades and the Florida Reef Tract
Florida’s National Treasure

Ecologically Diverse

Images: J. Marino, D. Gilliam 2011 & 2017 Reef Calendar winners
Coastal Resilience
Economically Essential
Economically Essential

Coastal Protection, Fishing, Tourism

Images from: Mapping Ocean Wealth
Global Stressors

Increased frequency & severity of extreme thermal events
(hot & cold)

Ocean (& coastal) acidification
Local Stressors
Florida’s Coral Disease Outbreak

Coral Disease Outbreak Extent Across the Florida Reef Tract

- 2014 Reports of Disease Outbreak
  - Coral Reef and Hardbottom
  - Not Reported

Key Areas:
- Martin County
- Palm Beach County
- Broward County
- Miami-Dade County
- Monroe County
- Dry Tortugas National Park
- Southeast Florida
- Biscayne National Park
- Upper Keys
- Middle Keys
- Lower Keys
- Key West

Legend:
- Black: Coral Reef and Hardbottom
- Red: Reported
- Green: Not Reported
- N 50 Miles

Map Source: Florida Department of Environmental Protection

[Extensive Map of Florida Reef Tract with Coral Disease Outbreak Notations]
Florida’s Coral Disease Outbreak

Coral Disease Outbreak Extent Across the Florida Reef Tract

2015

- Coral Reef and Hardbottom
- Reports of Disease Outbreak
  - Reported
  - Not Reported

N

50 Miles

- Dry Tortugas National Park
- Key West
- Lower Keys
- Middle Keys
- Upper Keys
- Biscayne National Park
- Key West
- Lower Keys
- Middle Keys
- Upper Keys
Florida’s Coral Disease Outbreak
Florida’s Coral Disease Outbreak
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Florida’s Coral Disease Outbreak

Coral Disease Outbreak Extent Across the Florida Reef Tract

2019

- Coral Reef and Hardbottom
- Reports of Disease Outbreak
  - Red: Reported
  - Green: Not Reported

N
0 50 Miles

- Dry Tortugas National Park
- Key West
- Lower Keys
- Middle Keys
- Upper Keys
- Key Largo
- Biscayne National Park
- Southeast Florida
- Palm Beach County
- Broward County
- Miami-Dade County
- Monroe County
- Martin County
Stony Coral Tissue Loss Disease
More than half of Florida’s reef-building coral species are susceptible.
Levels of Disease Within Species

Florida’s “Normal” = 2% to 3%
Levels of Disease Within Species

Very High

= 66% to 100%

(in certain species)
Florida’s Coral Disease Outbreak Progresses Rapidly
Florida’s Coral Disease Outbreak
Florida’s Coral Disease Outbreak

Reported effectively dead (<5% alive) in December 2015
Disease Response Partners

Coordinated Multi-Faceted Response Effort
Disease Response Structure
Since July 2018

Executive Coordination Team (DEP, FWC, NOAA, NPS)

Disease Advisory Committee

Disease Response Coordinator

Reconnaissance and Intervention

Coral Rescue

Restoration Trials

Epidemiology and Research

Citizen Engagement

Data Management

Management

Communications

Regulatory

Caribbean Cooperation

Leadership
Legislative Funding – FY 17/18

DEP-funded $1 million+ in coral disease projects:

- Surveillance and monitoring
- Spatial modeling
- Lab-based treatment trials
- Sample collection
- Pathogen isolation experiments
- Water quality monitoring for new coral reef Ecosystem Conservation Area (ECA)

FloridaDEP.gov/rcp/coraldisease
Disease Identification Training
Disease Surveys & Monitoring

Distribution, Prevalence, Severity, and Associated Impacts

Date: April 19, 2018
- No Disease
- <5 Diseased Colonies
- 5-10 Diseased Colonies
- >10 Diseased Colonies
Search for the Pathogen

Identify Potential Pathogen(s) and Characterize the Disease(s)
Technical Expert Workshops
November 2017 and July 2018

3-Day Coral Disease Technical Workshops

• Intervention action framework
• Coral rescue
• Restoration trials
• Community engagement
• Recommendations for response capacity and restoring ecosystem resilience

July Workshop Participants.
Photo: FDEP
Coral Rescue

Rescue Healthy Corals to Preserve Genetic Stock
Innovative Disease Intervention
Treating Lesions on Priority Corals

Labroatory trials (Research & Development) → Small-scale field trials
Legislative Funding – FY 18/19

DEP is funding $2+ million in additional coral disease response projects:

**Coming Soon:**

- Land-based infrastructure support for rescued wild corals
- Locating and propagating survivors
- Restoration Trials
- Intervention and coral rescue “Strike Teams”
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Restoration Trials
Restoring Resilience
Coral Reef Water Quality Monitoring

Sampling began September 2017 at inlets, wastewater outfalls, and reef sites

- 115 sites monitored monthly from Miami to Stuart
- 9 inlets in four counties and 105 miles of coastline
- 132,000+ data points will be generated annually

Match technical and funding support from NOAA
Restoring Resilience
Coral Reef Water Quality Monitoring

Pilot Project is looking for:
• Potentially harmful levels of nutrients
• Indicators of freshwater sources
• Sedimentation/turbidity

Samples will be analyzed for:
• Total phosphorus, nitrogen, and ammonium
• Turbidity and total solids
Restoring Resilience

Short Term:
Enhance Disease Response Capacity = Triage

Long-term:
Reduce Local Stressors & Restore Environmental Conditions = Resilient Reefs
Thank you!

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