RESTORING RESILIENCE OF FLORIDA’S CORAL REEF

EESI - Coastal Resilience in the Southeast

March 13, 2020
FLORIDA’S CORAL REEF

Southeast Florida Coral Reef Ecosystem Conservation Area (ECA)

Images: DEP, D. Gilliam, NOAA
ECOLOGICALLY DIVERSE

Images: J. Marino, D. Gilliam 2011 & 2017
Reef Calendar winners
COASTAL RESILIENCE
First Line of Defense – Coastal Protection

Illustration by Dawn Witherington
ECONOMICALLY ESSENTIAL

Shoreline Protection

Healthy Coral Reef

Degraded Coral Reef

Image: TNC
Florida’s Reefs annually provide $355 million in flood protection benefits to buildings and protect nearly $320 million in economic activity.

Over $1 billion in protection during extreme storm events
ECONOMICALLY ESSENTIAL
Commercial and Recreational Fishing

Fisheries Habitat
ECONOMICALLY ESSENTIAL

Biomedical Exploration

MARINE BIOMEDICAL & BIOTECHNOLOGY RESEARCH
ECONOMICALLY ESSENTIAL
Tourism

Estimated to annually support 71,000 jobs and generate $6.3 billion in sales and income in Monroe, Miami-Dade, Broward, Palm Beach, & Martin counties

(Johns et al, 2001 & 2004)
GLOBAL STRESSORS

Increased frequency & severity of: extreme thermal events (hot & cold) and virulent pathogens

Ocean (& coastal) acidification
LOCAL STRESSORS
FLORIDA’S CORAL DISEASE OUTBREAK

Stony Coral Tissue Loss Disease Occurrence Across the Florida Reef Tract

2014

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

Scale: 50 Miles

Locations:
- Martin County
- Palm Beach County
- Broward County
- Miami-Dade County
- Monroe County
- Key Largo
- Key West
- Marathon
- Middle Keys
- Lower Keys
- Upper Keys
- Biscayne National Park
- Dry Tortugas National Park
- Southeast Florida
FLORIDA’S CORAL DISEASE OUTBREAK

Stony Coral Tissue Loss Disease Occurrence Across the Florida Reef Tract

2015

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

- 50 Miles

Dry Tortugas National Park

Key West

Key Largo

Miami

Miami-Dade County

Broward County

Palm Beach County

Martin County

Southeast Florida

Upper Keys

Middle Keys

Lower Keys

Biscayne National Park

Marathon

Florida Department of Environmental Protection
FLORIDA’S CORAL DISEASE OUTBREAK

Stony Coral Tissue Loss Disease Occurrence Across the Florida Reef Tract

2017

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

N

50 Miles

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

Florida Department of Environmental Protection

(Florida Department of Environmental Protection logo)
FLORIDA'S CORAL DISEASE OUTBREAK

Stony Coral Tissue Loss Disease Occurrence Across the Florida Reef Tract

2019

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

- North
- 50 Miles

- Martin County
- Palm Beach County
- Broward County
- Miami-Dade County
- Monroe County
- Southeast Florida
- Biscayne National Park
- Upper Keys
- Lower Keys
- Middle Keys
- Key West
- Key Largo
- Marathon
- Dry Tortugas National Park
FLORIDA’S CORAL DISEASE OUTBREAK

Stony Coral Tissue Loss Disease Occurrence Across the Florida Reef Tract

2020
- **Coral Reef & Hardbottom**
- **Reports of Disease Outbreak**
  - **Reported**
  - **Not Reported**

Legend:
- **N**
- **50 Miles**

Map showing the occurrence of coral disease outbreak across different counties in Florida.
STONY CORAL TISSUE LOSS DISEASE
STONY CORAL TISSUE LOSS DISEASE

• Highly infectious, waterborne disease
• Long residence time of pathogen(s) – 6+ years
• Affects 22+ species of stony coral – more than 50% of primary reef builders
• Prevalence rates of 66%-95% in some susceptible species
• Mortality rates of nearly 100% of affected colonies – including oldest known colonies (330+ years)
• Globally unprecedented
RESTORING RESILIENCE

SHORT TERM
Enhance Management & Response Capacity

LONG TERM
Reduce Local Stressors & Restore Environmental Conditions to Improve Reef Resilience
RESTORING RESILIENCE

SHORT TERM
Enhance Disease Response Capacity
IDENTIFY PATHOGEN(S), CHARACTERIZE THE DISEASE(S) AND TRANSMISSION

DETERMINE IF ENVIRONMENTAL FACTORS (Nutrients, Temperature, Salinity, etc.) DRIVE DISEASE
RECONNAISSANCE & INTERVENTION

TREAT PRIORITY CORALS TO MAINTAIN A WILD POPULATION

Laboratory Trials
Small-Scale Field Trials
CORAL RESCUE

RESCUE HEALTHY & SURVIOR CORALS TO PRESERVE GENETIC STOCK
CORAL PROPAGATION

BUILD INFRASTRUCTURE & CAPACITY TO GROW CORALS FOR LARGE-SCALE REEF RESTORATION
RESTORATION TRIALS & OUTPLANTING

DETERMINE WHAT, WHERE, AND WHEN TO RESTORE
RESTORING RESILIENCE

LONG TERM
Reduce Local Stressors & Restore Environmental Conditions to Improve Reef Resilience
MANAGING FOR RESILIENCE  Path Forward, Long Term

BOLD VISION FOR A BRIGHTER FUTURE

RESTORE WATER QUALITY

ESTABLISH CORAL REEF SPECIFIC NUMERIC NUTRIENT CRITERIA
BUILD PUBLIC PRIVATE PARTNERSHIPS TO IMPLEMENT ECOSYSTEM RESTORATION

MISSION: ICONIC REEFS

RESTORING 7 ICONIC REEFS IN THE FLORIDA KEYS
MANAGING FOR RESILIENCE  Path Forward, Long Term

BUILD PUBLIC PRIVATE PARTNERSHIPS TO IMPLEMENT ECOSYSTEM RESTORATION

ONE HUNDRED YARDS OF HOPE
A REEF RESTORATION PROJECT HONORING THE NFL CENTENNIAL, SUPER BOWL LIV AND AMERICA’S MILITARY VETERANS
MANAGING FOR RESILIENCE

Path Forward, Long Term

FEASIBILITY STUDY: CORAL REEF INSURANCE IN FL & HI

Protecting Reefs for Enhanced Coastal Resilience
MANAGING FOR RESILIENCE
Path Forward, Long Term

STAKEHOLDER ENGAGEMENT

Southeast Florida Coral Reef Initiative

OUR FLORIDA REEFS
YOUR VOICE, OUR FUTURE

Florida Keys National Marine Sanctuary Restoration Blueprint
THANK YOU!

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