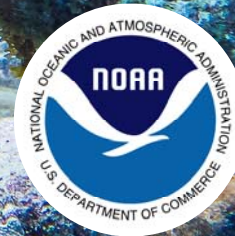




RESTORING RESILIENCE OF FLORIDA'S CORAL REEF



FLORIDA'S CORAL REEF

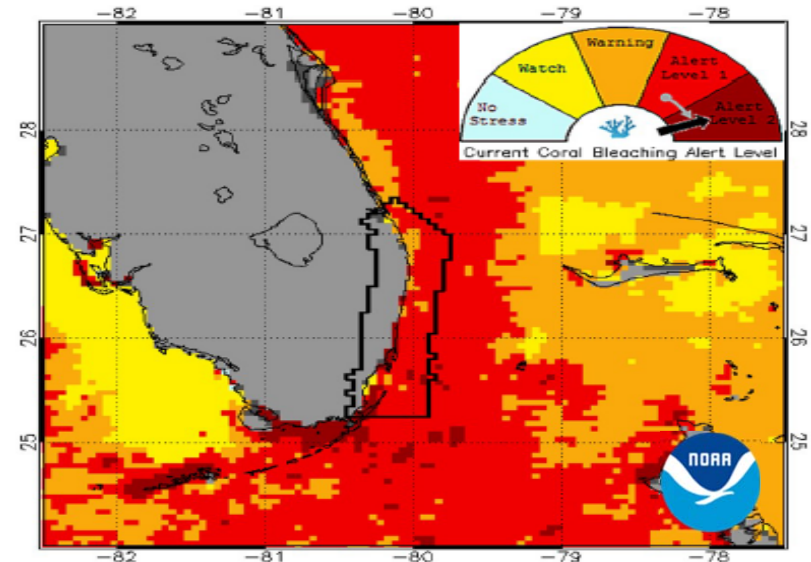


Images: DEP, D. Gilliam, NOAA

GLOBAL STRESSORS

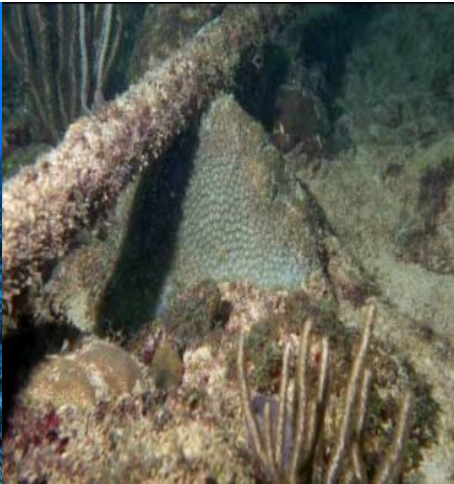


Increased frequency
and severity of extreme
thermal events
(hot & cold)



Ocean (& coastal)
acidification

LOCAL STRESSORS



STONY CORAL TISSUE LOSS DISEASE



PROGRESSES RAPIDLY
HIGH LIKELIHOOD OF COMPLETE MORTALITY



SIGNIFICANT SUSCEPTIBILITY OF REEF-BUILDING CORAL SPECIES
LONG RESIDENCE TIME

DISEASE RESPONSE PARTNERS



FloridaDEP.Gov/RCP/CoralDisease

FloridaKeys.Noaa.Gov/Coral-Disease

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 Management & Response Capacity

SCTLD RESPONSE MILESTONES



- ✓ **Funded ~\$20 million worth of SCTLD projects.**
- ✓ **~100 research projects specific to SCTLD completed, from >30 partner institutions.**
- ✓ **5,000 priority colonies treated across Florida's Coral Reef with ~90% success rate at the lesion level.**
- ✓ **Approximately 2,000 rescued colonies in holding, including those collected from the 'endemic zone'. The Florida Coral Rescue Center in Orlando holds ~800 corals.**
- ✓ **Initiated a large-scale, replicated restoration trial involving ~6,000 corals outplanted across the entire reef.**

SCTLD KEY RESEARCH FINDINGS



- While bacteria play an important role in SCTLD progression, **there is some evidence that viruses may also be involved.**
- **Algal symbionts may be key!** The symbionts appear to be the initial target of the disease and **different species of algae confer different levels of resistance to the disease.**
- While transmission from reef-to-reef may be explained by currents, **transmission at larger scales is better explained by human activity.**
- Different environmental factors appear to be at play in different areas – **temperature** appears important to disease processes in the Keys while **land-based sources of pollution** appear more important to disease processes in SE Florida.

SCTLD KEY RESEARCH FINDINGS



NOVA SOUTHEASTERN UNIVERSITY AND SYMBIOSEAS

Advanced statistical modeling approaches to analyze data and identify possible environmental correlates to new lesions and hot spot coral disease clustering.

Temporal variations (49.7% of overall variation):

- Higher SCTLD incidence where higher water flow rates from inlets over previous 7 days (>5000 cubic feet/second).

Spatial variations (52.7% of the overall variation):

- Septic tanks within 21km (35.1% of the total variation), percentage live coral (11.2%), Depth (6.4%).
- Higher SCTLD incidence where: >7000 septic tanks within 21km, on colonies with <60% live tissue, and in shallower depths.



RESTORING RESILIENCE



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

FLORIDA REEF RESILIENCE PROGRAM

PATH FORWARD, LONG TERM



RESILIENCE ACTION PLAN FOR FLORIDA'S CORAL REEF GOALS

GOAL 1 - Enable resilience-based management of Florida's Coral Reef.

GOAL 2 - Support public policy that creates the enabling conditions for reef recovery.

GOAL 3 - Enable stakeholders to support the future of the reef and those who depend on it.

www.FRRP.org



REEF RESILIENCE ACTION PLAN

PATH FORWARD, LONG TERM



GOAL 1 - Enable resilience-based management of Florida's Coral Reef.

OBJECTIVE 1 - Abate threats to coral reefs.

REDUCE WATER QUALITY IMPACTS:

- **Apply a Watershed Approach.**
- **Support Everglades Restoration.**
- **Unify Network of Reef WQ Monitoring Programs.**
- **Reduce Direct Impacts to Reef Habitat and Species.**
- **Reduce Climate Change and Ocean Acidification Impacts.**

REEF RESILIENCE ACTION PLAN

PATH FORWARD, LONG TERM



GOAL 1 - Enable resilience-based management of Florida's Coral Reef.

OBJECTIVE 2 - Enhance reef ecosystem condition with disease interventions and restoration.

CORAL DISEASE INTERVENTION

CORAL PROPAGATION AND RESTORATION ACTIONS

- **Restoration Strategy for Florida's Coral Reef.**

REEF RESILIENCE ACTION PLAN

PATH FORWARD, LONG TERM



GOAL 1 - Enable resilience-based management of Florida's Coral Reef.

OBJECTIVE 3 - Conduct Research to Support Threat Abatement and Reef Restoration.

- **Gene Banking.**
- **Propagation and Rearing.**
- **Restoration Planning and Site Selection.**
- **Direct Restoration Activities.**
- **Restoration of Coral Reef Ecosystem Functions.**
- **Monitoring and Forecasting.**

REEF RESILIENCE ACTION PLAN

PATH FORWARD, LONG TERM



GOAL 2 - Support public policy that creates the enabling conditions for reef recovery.

OBJECTIVE 1 - Incorporate the Economic Values of Florida's Coral Reef into decision making.

- Refine and communicate ecosystem service information.
- Incorporate spatially explicit economic data into regulatory decisions.
- Federal Emergency Management Agency (FEMA) should classify coral reefs as “natural infrastructure.”
- U.S. Army Corps of Engineers should use updated reef ecosystem service values.

REEF RESILIENCE ACTION PLAN

PATH FORWARD, LONG TERM



GOAL 2 - Support public policy that creates the enabling conditions for reef recovery.

OBJECTIVE 2 - Educate Florida's leaders on coral reef-related issues.

- **Annual water quality infrastructure expenditures.**
- **Water quality regulations.**
- **Water quality improvement projects.**
- **Regulation of biosolid application.**
- **Florida Keys National Marine Sanctuary regulations.**
- **Reauthorize the Coral Reef Conservation Act of 2000 or a similar new authority.**

REEF RESILIENCE ACTION PLAN

PATH FORWARD, LONG TERM



GOAL 2 - Support public policy that creates the enabling conditions for reef recovery.

OBJECTIVE 3 - Enhance sustainable funding for coral reef management.

- **Public-private partnerships.**
- **Stony Coral Tissue Loss Disease.**
- **Coral gene banking and propagation needs.**
- **Water quality infrastructure.**

REEF RESILIENCE ACTION PLAN

PATH FORWARD, LONG TERM



GOAL 3 - Enable stakeholders to support the future of the reef and those who depend on it.

OBJECTIVE 1 - Support individual reef users in becoming champions for reefs.

OBJECTIVE 2 - Promote businesses and institution's efforts to protect, restore and sustainably use Florida's Coral Reef.

FLORIDA'S CORAL REEF CAMPAIGN



Take the pledge and join the Florida Coral Crew

We need your support to rescue and restore Florida's
Coral Reef and share the wonders of our waters with
generations to come.

FloridasCoralReef.org

THANK YOU!



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