

# Coral Reef Ecosystem Studies

## Integrating Science & Management in the Caribbean



Funding: NOAA Center for Sponsored Coastal Ocean Research

# Institutional Partners

- University of Puerto Rico
- University of Miami
- Island Resources Foundation
- University of South Carolina
- NOS – Centers for Coastal Monitoring and Assessment
- NMFS – Galveston Laboratory
- USGS – Biological Resources Division

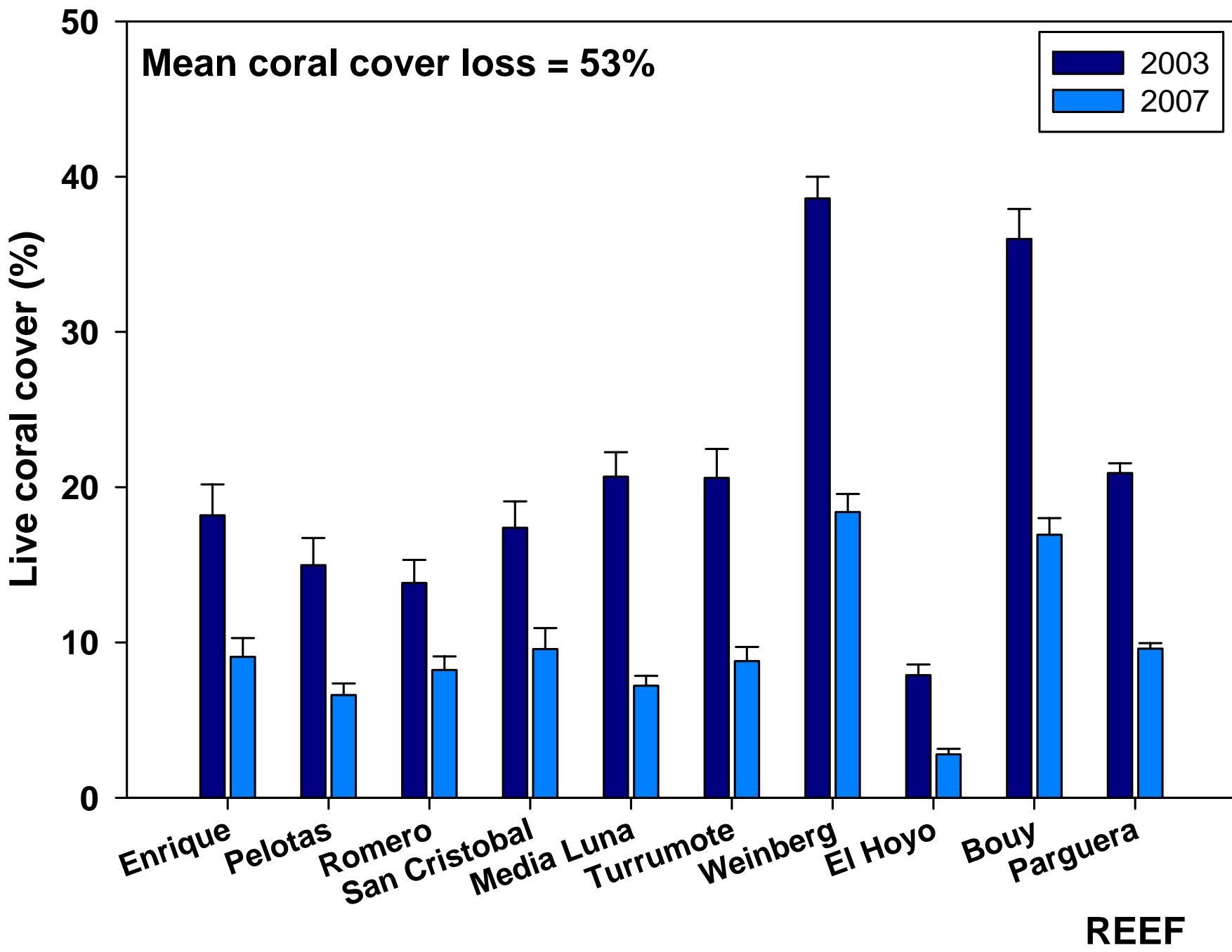
# Purpose

- Study processes responsible for decline in coral reefs
- Study feasibility of alternative management strategies
- Offer practical management advice and tools

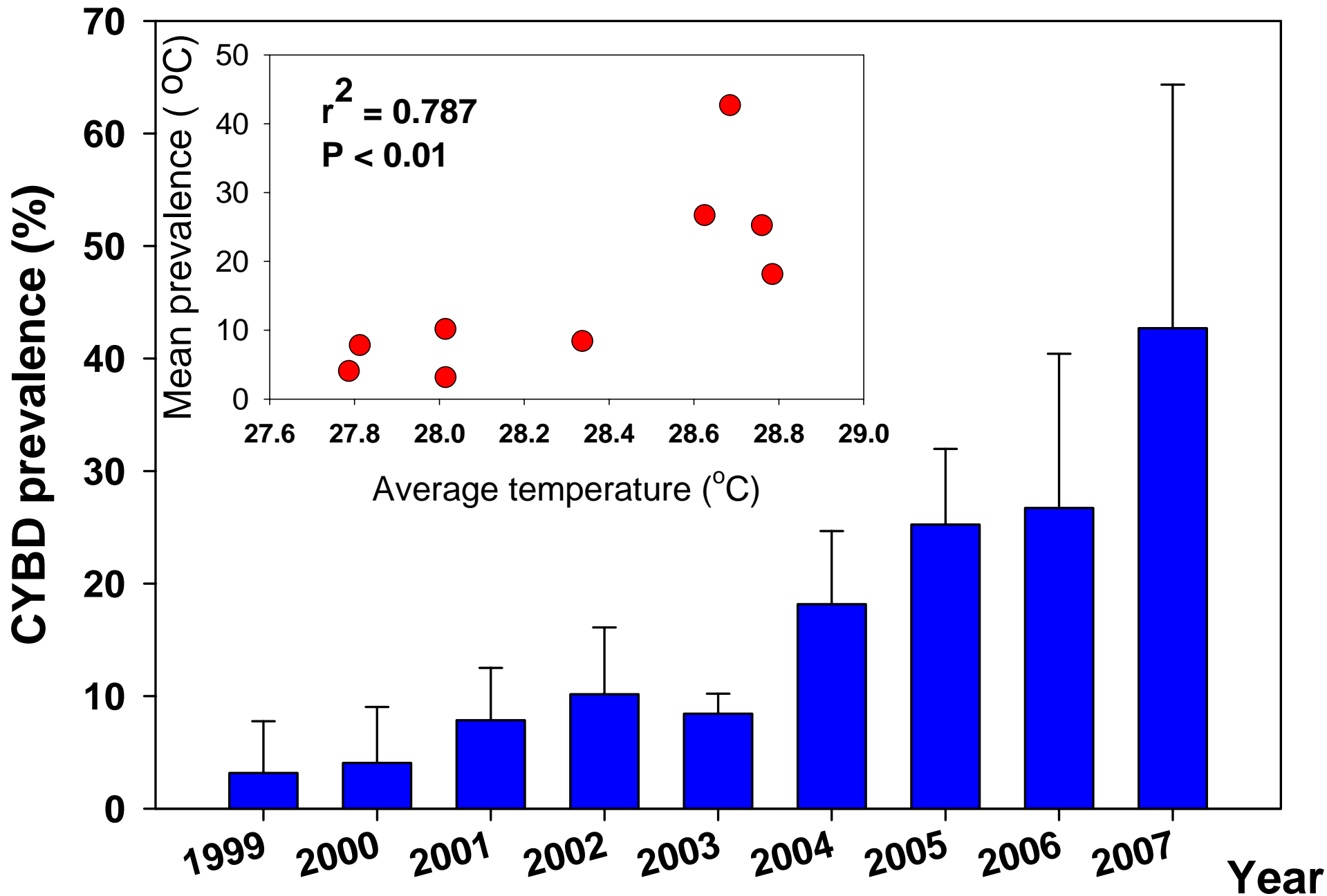
# What did we learn from CRES?

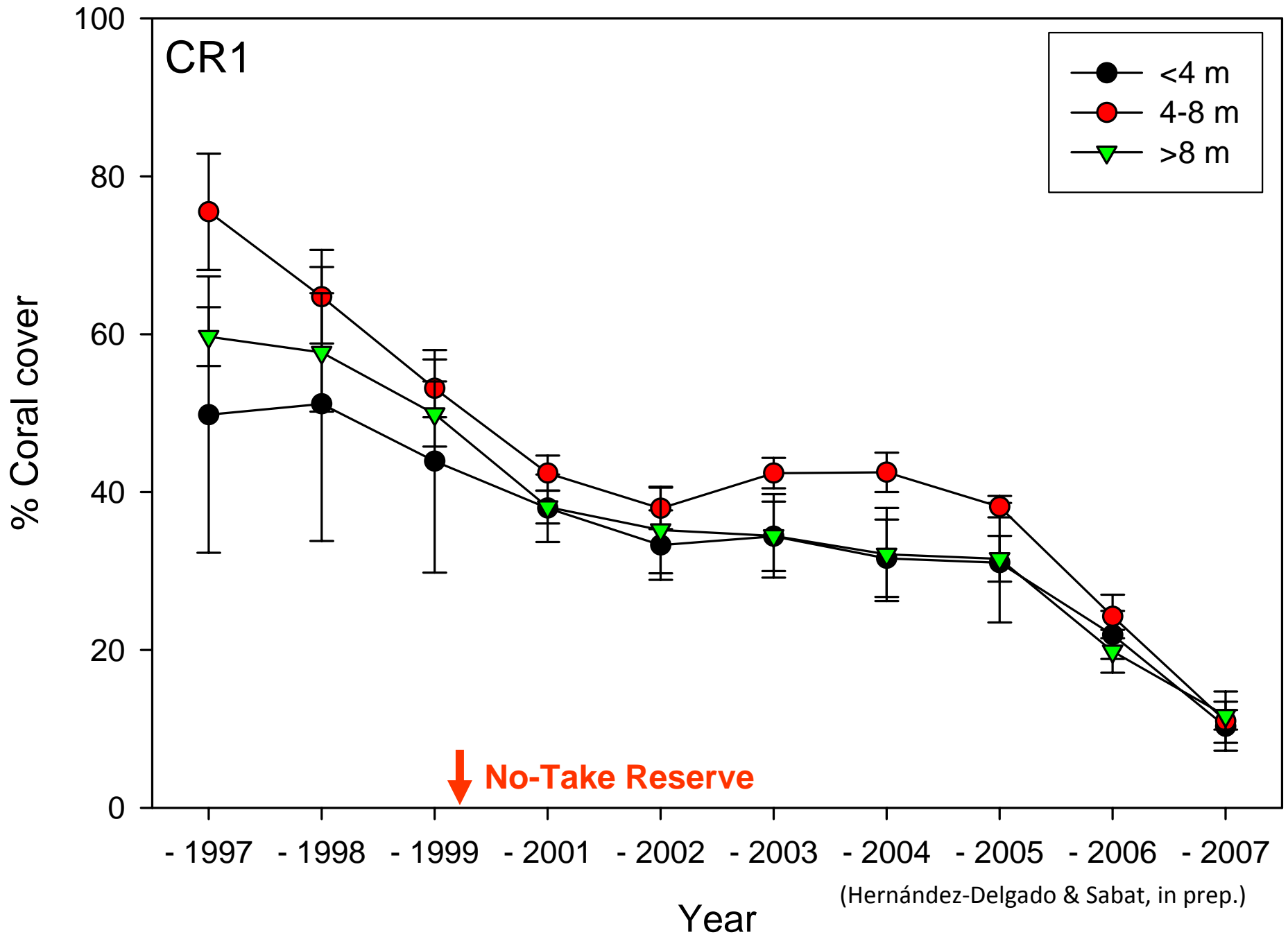


# Coral Loss Continues



# Impacts of Global Warming







Species  
groups  
respond  
differently  
in space  
and time





# Know your watershed?



# Local Threats

- Sediments
  - Increasing over time
- Turbidity
  - Light levels higher at shelf edge
  - Resistant species left inshore
  - Inverse relation with & coral cover, fish diversity
- Contaminants
  - e.g Estrogen mimics
- Loss of Herbivory
  - Algae are harmful (space, allelopathy)
  - Highly altered by ecological overfishing

# Marine Reserves

- Restore Predator Communities
- Provide Baseline Information
- Importance of Science
  - Design criteria, location
- Importance of Governance
  - How support management goals
  - Structured approach & management plan
    - Protection from external stresses
    - Stakeholder engagement
    - Enforcement & compliance

# What we don't know

- Life histories & ecology of important taxa
  - Invertebrates, herbivores, algae.....
- Ecological processes & interactions, e.g.,
  - Coral settlement, survival, adult densities
  - Stress, microbial communities, disease
- Much, much more.....

# Management Tools

- Decision Support System
- MPA Trophic Model
- Waterflow model
- Sedimentation model

## CRES as a Seed

- Management Plans for MPAs
- Altered Zoning for Mona Island MPA
- Monitoring of Fish Spawning Aggregations



