

Recommendations to CRTF Acropora/Montastreae

Submitted by Speaker and Public
Attending the Workshop 10/31/09

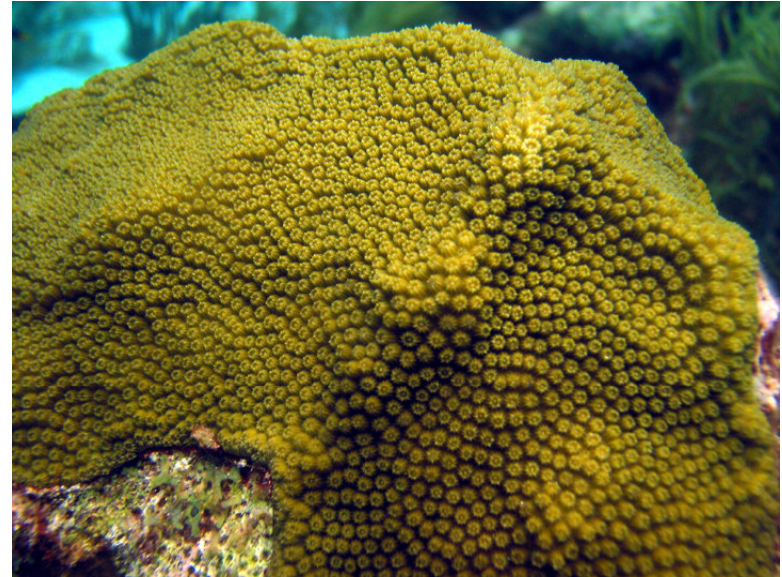
Update 31-year old Coral Reef Inventory

- **Revisit** original sites.
- **Also** include:
 - Adjacent islands and keys.
 - Shelf-edge reefs.
 - Mesophotic reefs.
- Develop a **GIS-based model** regarding spatial distribution and actual conditions of coral colonies.



Go back to *Montastraea* Biology 101

- Study **basic biology** of coral physiological fragments:
 - Survival rates*.
 - Growth rates*.
 - Tissue regeneration*.
 - Competition effects*.
 - Gametogenesis*.
 - Reproduction*.
 - Population genetics.
 - Impacts of environmental gradients.
 - Geographic and bathymetric distribution.
 - Microbiology.



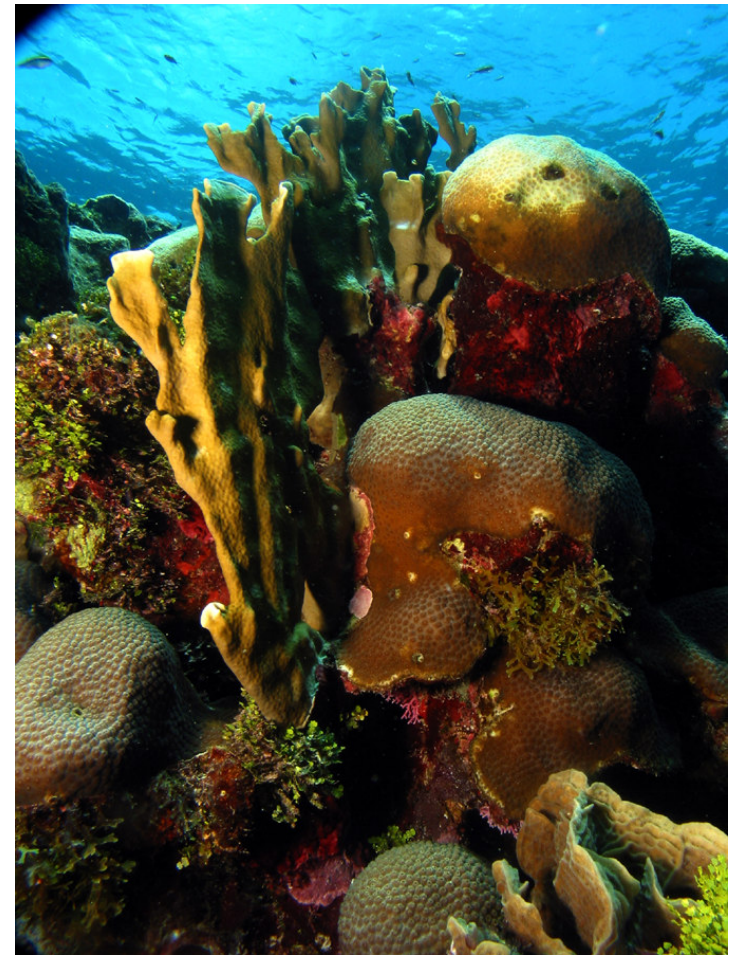
Population collapse? Hierarchical approach: From regional to coral colony scale

- Develop a protocol to monitor individual tagged **coral colonies**.
- Modification of existing long-term ecological monitoring programs to address **water quality** issues.
- Develop “**early warning** signals”.
- Sediment-water **toxicity** assessments.



Applied research

- Develop studies regarding **bioerosion** rates under different environmental conditions, in particular, now that we are having the challenge of climate change & ocean acidification.
- Document coral **recruitment** rates.
- Expand existing experiments regarding **larval culture** and **reintroduction** of coral spat to natural reefs under various temperature & water quality regimes.



The past is still the key to the present!

- Develop large scale sclerochronological studies to:
 - Address historical rates of ecological change across **large spatial scales**.
 - Determine historical patterns of change in coral reefs across **anthropogenic gradients**.
 - Discriminate between historical trends of **localized human impacts** and **climate change**.



Recommendations

- **Monitoring deep reefs**
- **Determine whether *Montastraea annularis* on deep reefs is same species and whether it could serve as source for recovery of shallow water populations**
- **Consortia with municipalities and local organizations for monitoring and recovery actions**
- **Qualification process for groups interested in assisting in monitoring activities**
- **Experimental removal of competing species, such as snails to measure impact and effectiveness (*Acropora*)**

Recommendations

- **Experimental removal of competing species, such as snails to measure impact and effectiveness (Acropora)**
- **Interventions to recover and stabilize fragments impacted by groundings (Acropora)**
- **Marine debris assessment and removal (Acropora)**
- **Continue long-term monitoring of PR reefs in natural reserve system through monitoring program**
- **Interconnection between coastal wetlands, seagrass beds, coral reefs very important in defining management strategies**

Recommendations

- **Determine whether recovery is regrowth or recruitment**
- **Establish protocol for community groups so everyone can use the same methodology for comparability – training of interested persons**
- **Any kind of restoration effort probably needs to include a propagation component because sexual reproduction is key; fragmentation for some species is also useful (nurseries can be land-based or in situ)**
- **Restoration and recovery need to be a combination of methods not just one**
- **Measure effectiveness of no-take zone regulations in terms of health of corals and fish to determine if no-take restrictions help coral respond to other stressors**

Recommendations

- **Focus attention on reefs with resilient colonies of Montastraea/resistant to bleaching events**
- **Include more acroporid reef sites in characterization and monitoring program**
- **Launch an island-wide survey of acroporid and Montatreae corals**
- **Fund research to study anti-cyclonic eddies**