

Emerging Issues

Program Review

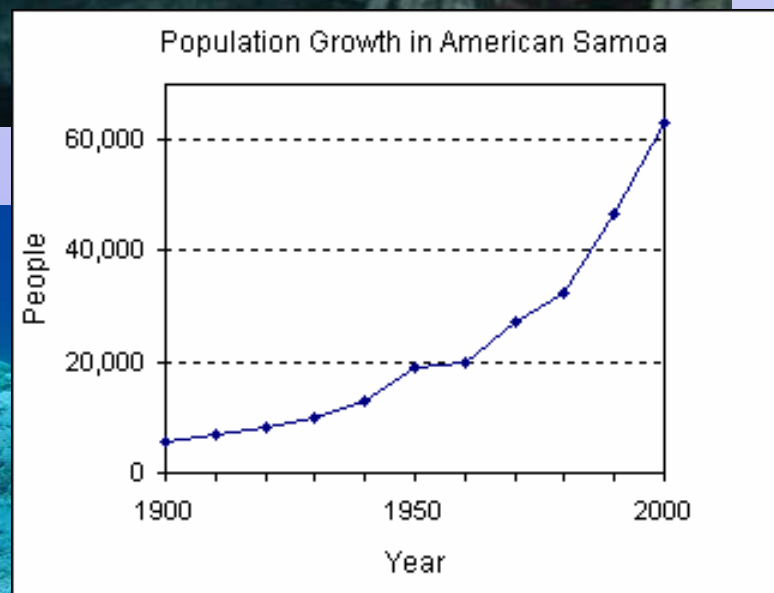
NOAA Coral Reef Conservation Program

September 25th, 2007

Overview

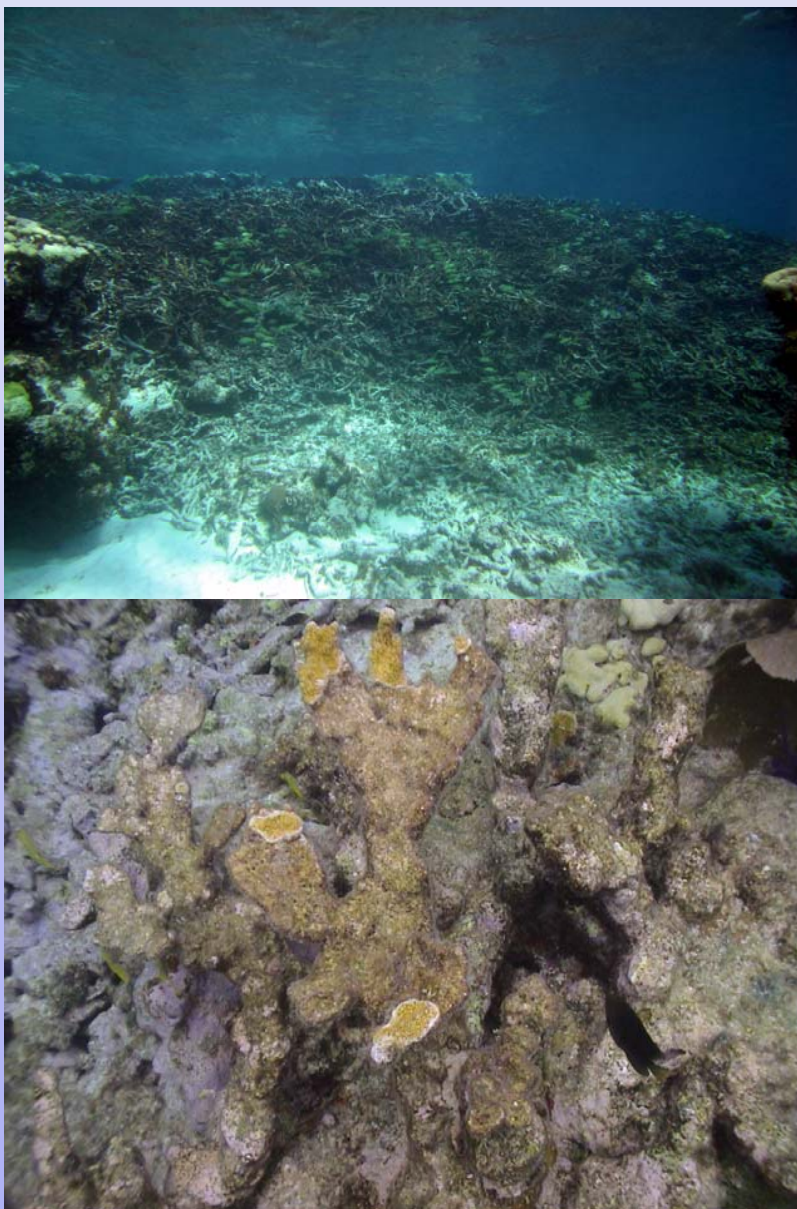
- Caribbean *Acropora* spp.
- Other components
 - Human population in American Samoa
 - Pest species
 - Invasive soft coral, *Carijoa* in Hawaii
 - Crown-of-thorns starfish in Guam

1.3% of projects
0.7% of total funding





- Caribbean *Acropora* spp. corals are key reef builders; ubiquitous
- Rampant and ongoing decline throughout the region since early '80s
 - **Disease**
 - Bleaching, hurricanes, sedimentation, breakage
- Unusual population biology
 - Fragmentation
 - Thickets
 - Ambiguous clonal diversity
 - Partial mortality



- Proactive management concern
 - ‘Candidate Spp.’ designation
- CRCP supported Caribbean *Acropora* spp. assessment and research prior to ‘Emergence’
 - ESA Listing petition, March 2004
 - ESA listing (threatened), May 2006

**Proceedings of the Caribbean
Acropora Workshop:
Potential Application of the U.S.
Endangered Species Act as a
Conservation Strategy**

Andrew W. Bruckner



U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service

NOAA Technical Memorandum NMFS-OPR-24
December 2002

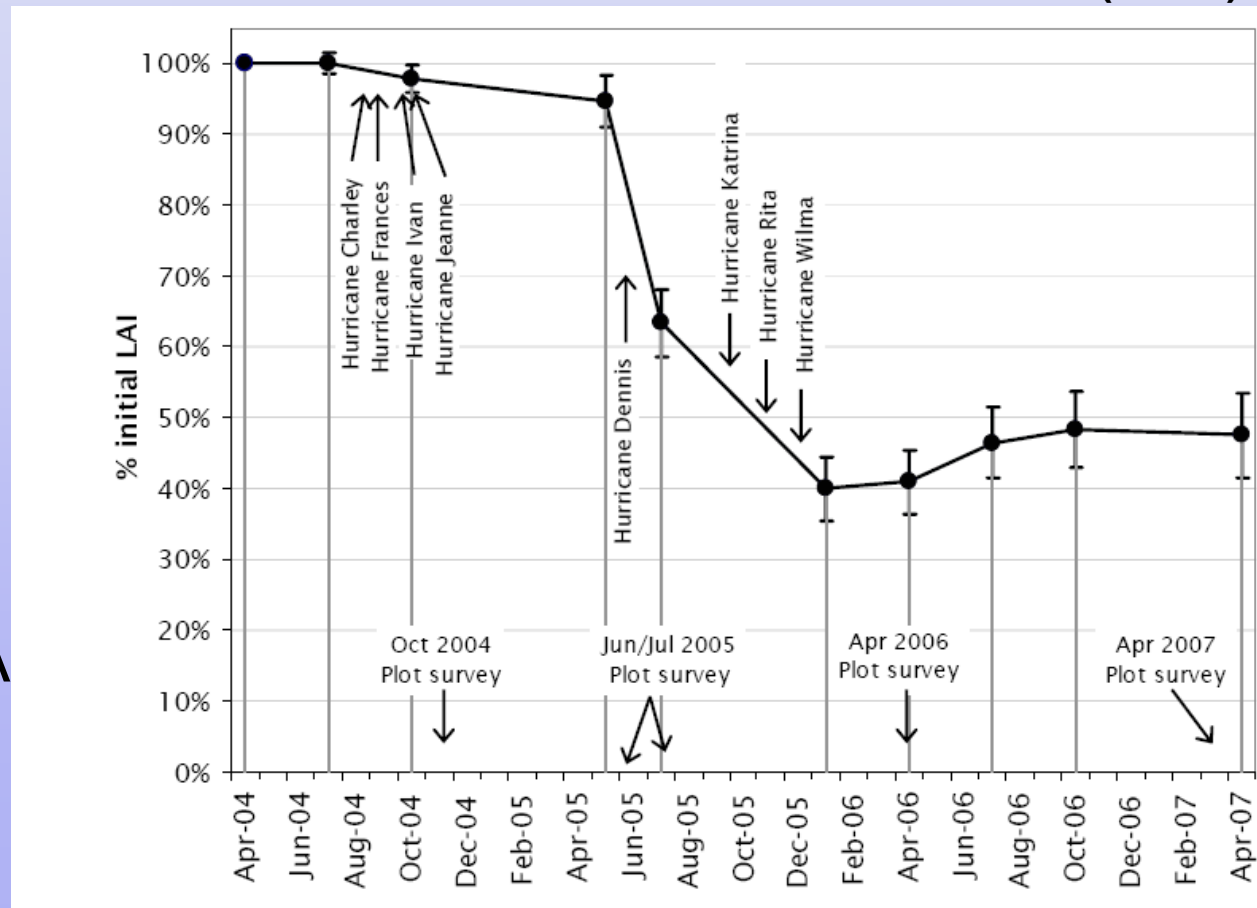
- Workshop of experts from throughout Caribbean region Apr 2002
- Crucially important resource for subsequent Biological Review Team

'Candidate Species' project

(funded since 2002)

- Developed targeted demographic monitoring approach for *A. palmata*
 - Colony- and plot-based
 - Documented protocol (NOAA Tech Memo NMFS-SEFSC-543)

Williams et al (subm)

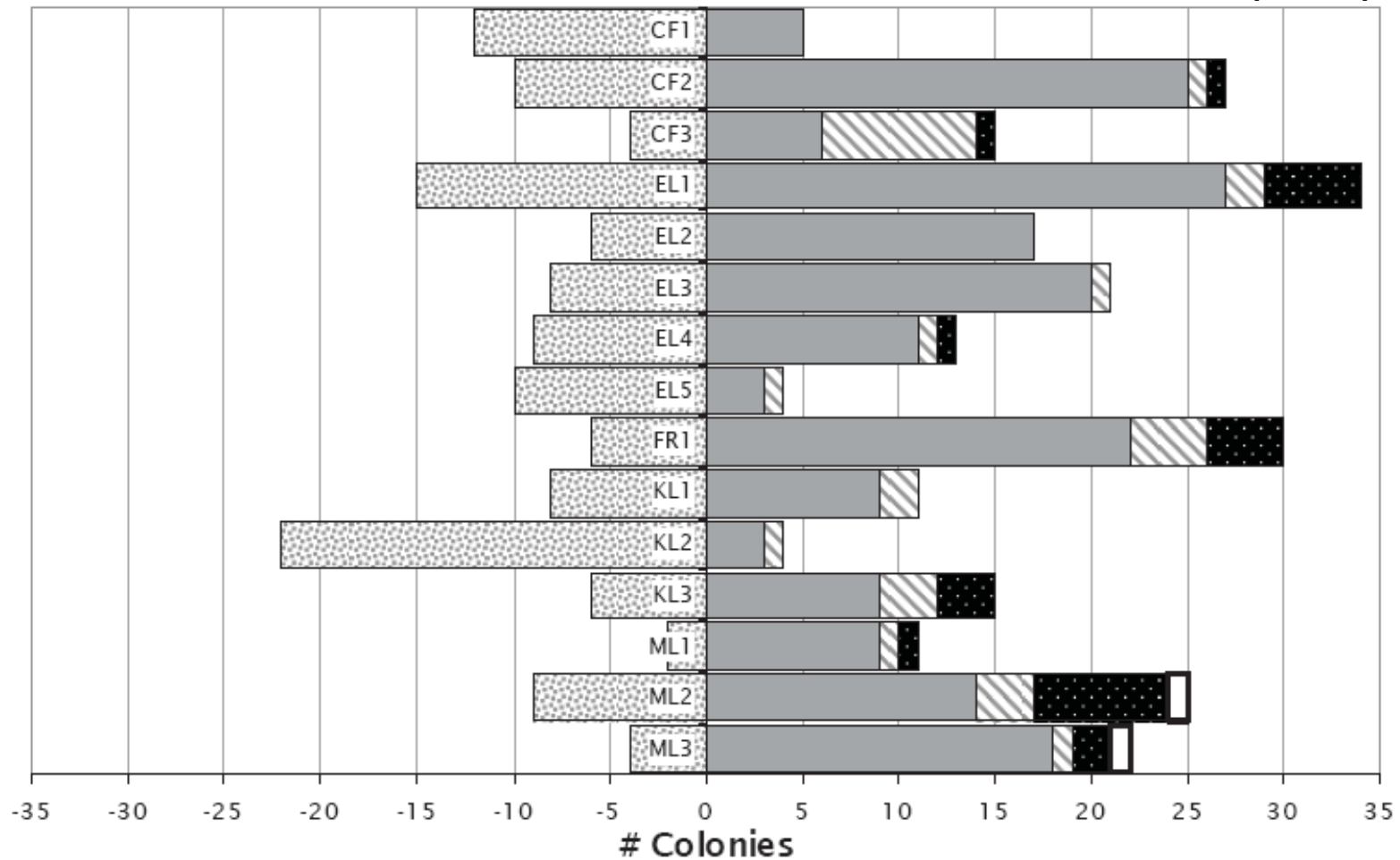


Florida Keys Ap colony turnover

Surviving Colonies
 Colony Vestiges
 New Attached Fragments

Likely Sexual Recruits
 Gone

Williams et al (subm)

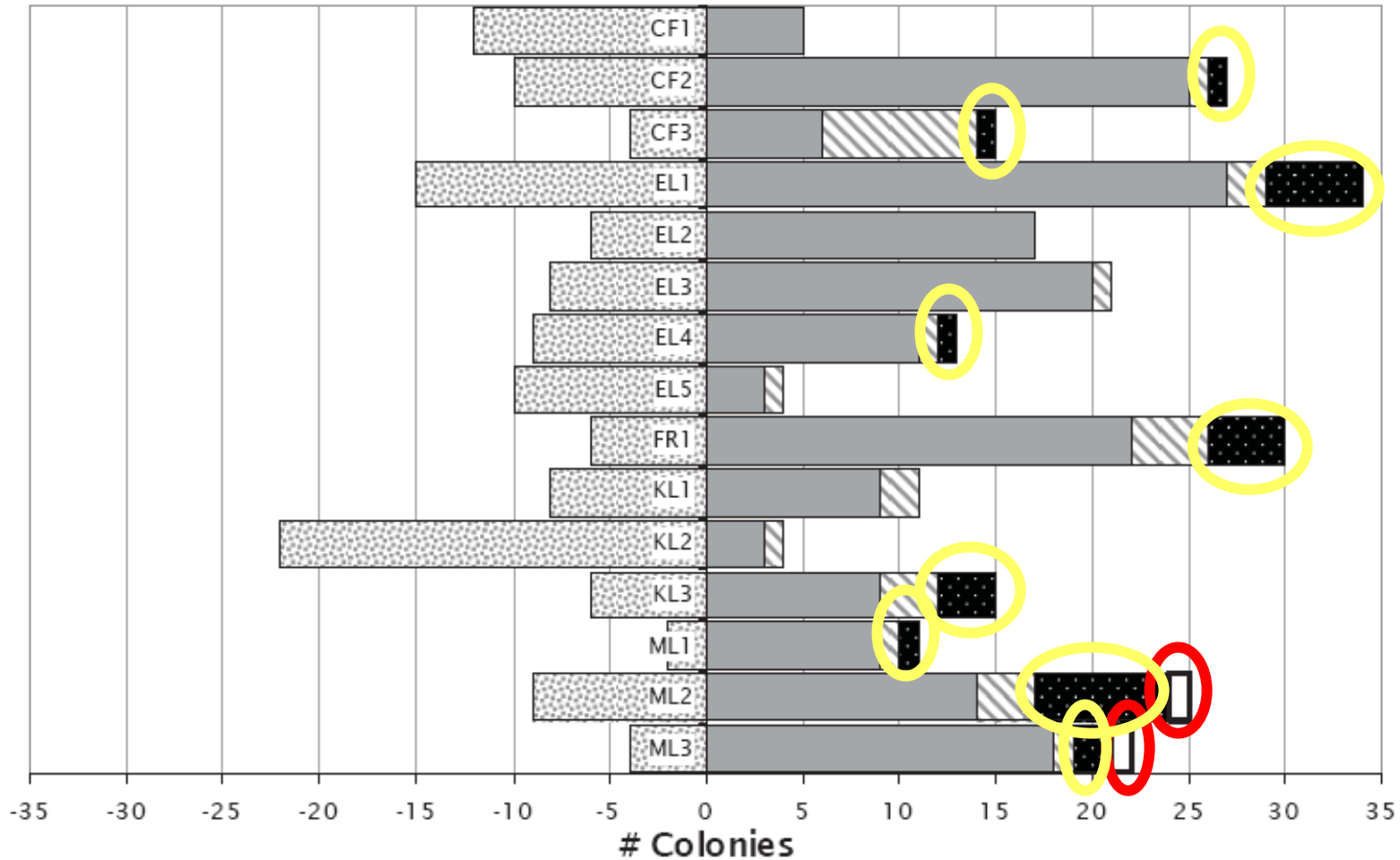




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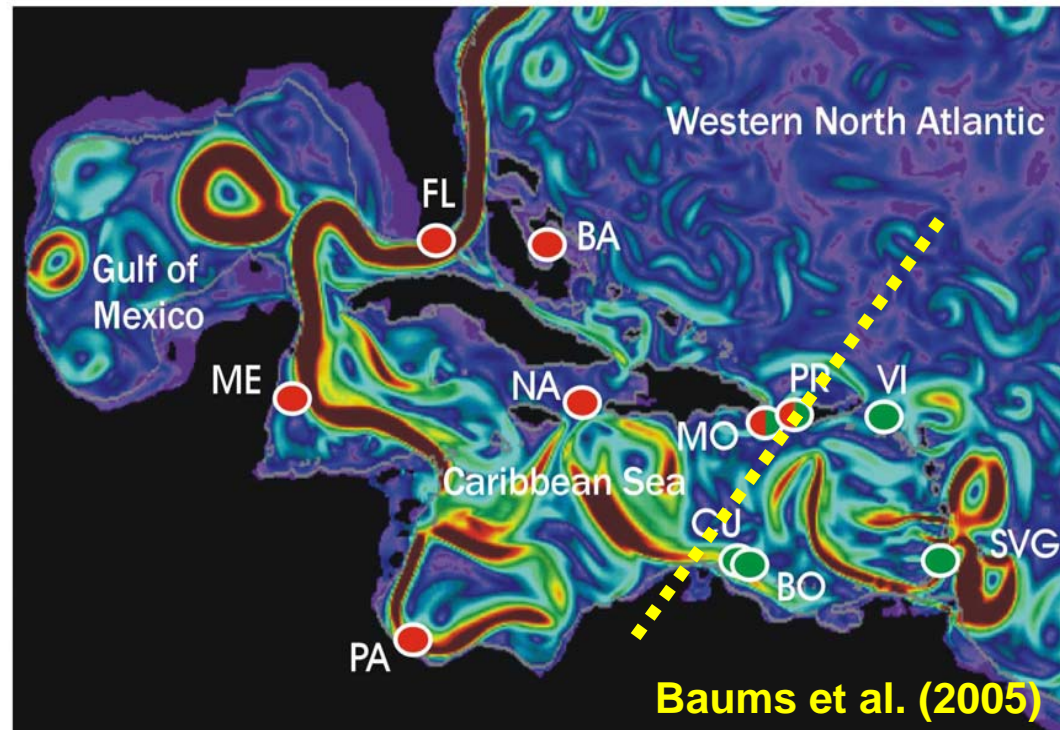
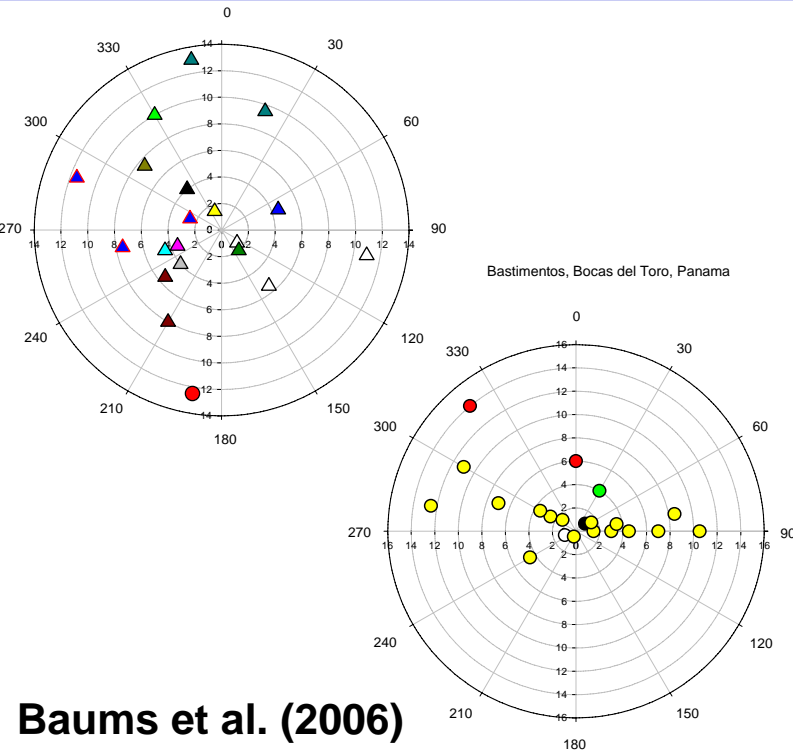
- Surviving Colonies
- ▨ Colony Vestiges
- New Attached Fragments
- Likely Sexual Recruits
- ▤ Gone

Williams et al (subm)



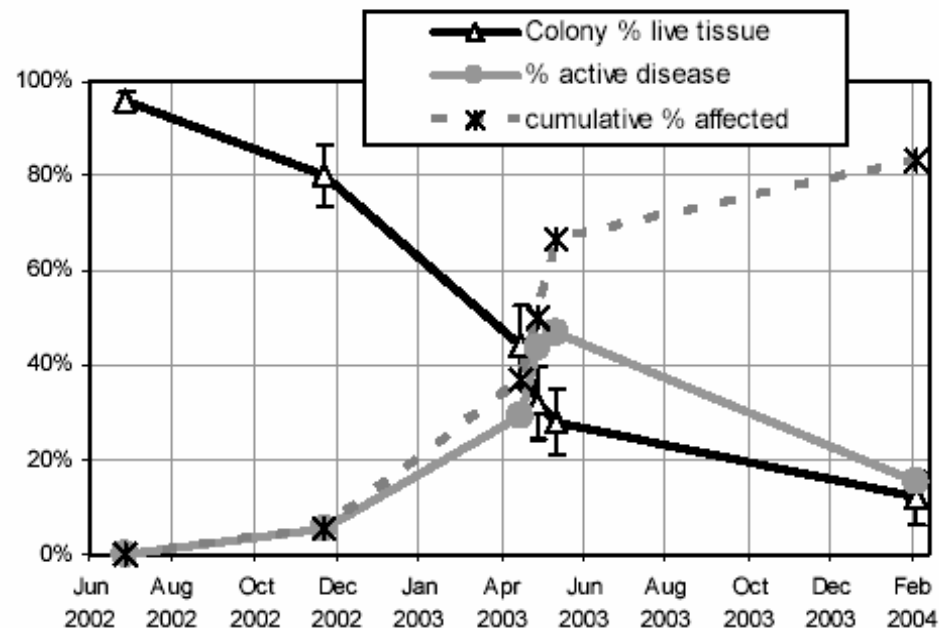
Population Genetics Research ('02-'04)

- Developed microsatellite markers for *A. palmata*
- Applied in Caribbean-wide study of connectivity and clonal structure
 - Two differentiated populations (East and West)
 - ~ 50% of colonies sampled represent distinct genotypes; greater in East, less in West. Clonal structure extremely variable.
 - Incorporated genotyping into demographic assessment/monitoring



Disease Research

- *A. cervicornis* disease outbreak/response (2003)
 - Detected via targeted monitoring efforts
 - Direct notice to and action by FKNMS managers (temporary site closure)
 - Coordinated field sampling (SEFSC, CDHC, BNP, DTNP, FKNMS) and laboratory analyses
 - Pilot for developing coral disease response network
 - Transmission experiments first to demonstrate vectoring of coral disease by predators in the field





Management Process/Actions

- Petition to list Caribbean *Acropora* spp. received in March 2004
- Formal Status Review (2004- 2005)
 - conducted by Biological Review Team
 - ‘Best Available Science’
 - Limited guidance available from precedents due to unusual biology
- *A.palmata* and *A.cervicornis* listed as Threatened under ESA- May 2006

Management Actions

- Stakeholder Conservation Workshops held in Florida (4), USVI (2), Puerto Rico (1) – May 2006
 - Built contact database of stakeholders
 - Received input on appropriate conservation measures, restrictions for 4(d) rule, and critical habitat designation
- Outreach/reference materials available

<http://sero.nmfs.noaa.gov/pr/protr es.htm#acropora>



NOAA Fisheries Service

Public Workshops:

Information Gathering for *Acropora* spp. Conservation

Based on the proposed rule to list elkhorn (*Acropora palmata*) and staghorn (*Acropora cervicornis*) corals as threatened species under the Endangered Species Act, NOAA Fisheries Service seeks input from resource users and resource managers to identify programs and activities that may affect the species. Additionally, NOAA Fisheries is collecting information pertinent to identifying the physical and biological features essential for conserving the species and identifying possible areas to designate as critical habitat. The information gathered during these workshops will be considered in the development of any future conservation measures.

We need YOUR HELP if you:

- **CONDUCT** activities or programs that involve interaction with elkhorn and staghorn corals
- **PARTICIPATE** in activities or programs that involve interaction with elkhorn and staghorn corals
- Have information pertinent to **IDENTIFYING ACTIVITIES or PROGRAMS** that involve interaction with elkhorn and staghorn corals
- Have information pertinent to **IDENTIFYING** possible areas of **CRITICAL HABITAT**

Workshop Schedule

Date	Time	Location
Mon. May 8, 2006	6 – 8 pm	International Game Fish Association 300 Gulf Stream Way Dania Beach, FL
Tues. May 9, 2006	6 – 8 pm	Holiday Inn – Ramada – Marina Del Mar 99701 Overseas Hwy Key Largo, FL
Wed. May 10, 2006	6 – 8 pm	Marathon Government Center 2798 Overseas Hwy Mile Marker 50 Marathon, FL
Thurs. May 11, 2006	6 – 8 pm	Harvey Government Center 1200 Truman Avenue Key West, FL

AGENDA

Sign-In

Welcome/Overview (20 minutes)

Break-out Groups (1 hour, 10 minutes)

- Fishing, Diving, & Recreational Uses
- Research & Recovery
- Coastal and Nearshore Construction and Related Activities

Summary and Wrap-Up (20 minutes)

**** If you are unable to attend a scheduled workshop, relevant information may be submitted via**

MAIL: NMFS Southeast Regional Office
Protected Resources Division
263 13th Ave S, St. Petersburg, FL
33701

FAX: (727) 824-5309

EMAIL: Acropora.Info@noaa.gov

**** Deadline to submit is Friday, June 2, 2006**

For more information, go to
<http://sero.nmfs.noaa.gov/pr/protres.htm>
or contact: Sarah Heberling or Jennifer Moore
(727) 824-5312
Sarah.Heberling@noaa.gov
Jennifer.Moore@noaa.gov



Management Actions-Under Way

- Convened Recovery Team (July 2007)
 - Charged with developing effective plan to recover the species
- 4(d) rule (Proposed Rule early FY08)
- Critical Habitat designation (Proposed Rule Jan 31, 2008)
- Compilation of management information
 - Comprehensive GIS of species' distribution (NCCOS)
 - Permit and research project database



Conclusion

- 'Pre-emptive' assessment and research activities under CRCP greatly enhanced NOAA's ability to respond appropriately and effectively to subsequent listing petition.
- Subsequent CRCP support of legally mandated management actions filled critical gap enabling NOAA to meet its legal obligations

Challenges

- Primary challenge remains devising an effective Recovery Plan in situation where primary threats are not directly ‘manageable’
 - **Disease research** to elucidate ‘causal web’ and effective management/mitigation measures is **crucial and urgent** need
- Clonal biology
 - Accurate assessment is complicated
 - Practical ESA implementation (e.g., ‘unit take’)
- ESA requires ongoing population status assessment throughout species’ range
 - Broad scale partnerships required, including multilateral international areas
 - Support required for on-the-ground data collection and coordination