



NOAA Coral Reef Ecosystems Research Plan



NOAA Research

- Identifies where and what kind of intervention is needed – mapping & assessment.
- Expands management options – tool & technology development.
- Guides implementation of these management programs – socioeconomics.
- Tracks and evaluates our success – monitoring.

Why are we doing this plan?

**This plan is to support the
NOAA Programs
that conduct
coral activities**

- The **Research Plan** will be used to guide all NOAA Coral Programs that conduct research
- **Improve the link between science and management.**



The goal of

NOAA Coral Reef Ecosystems Research

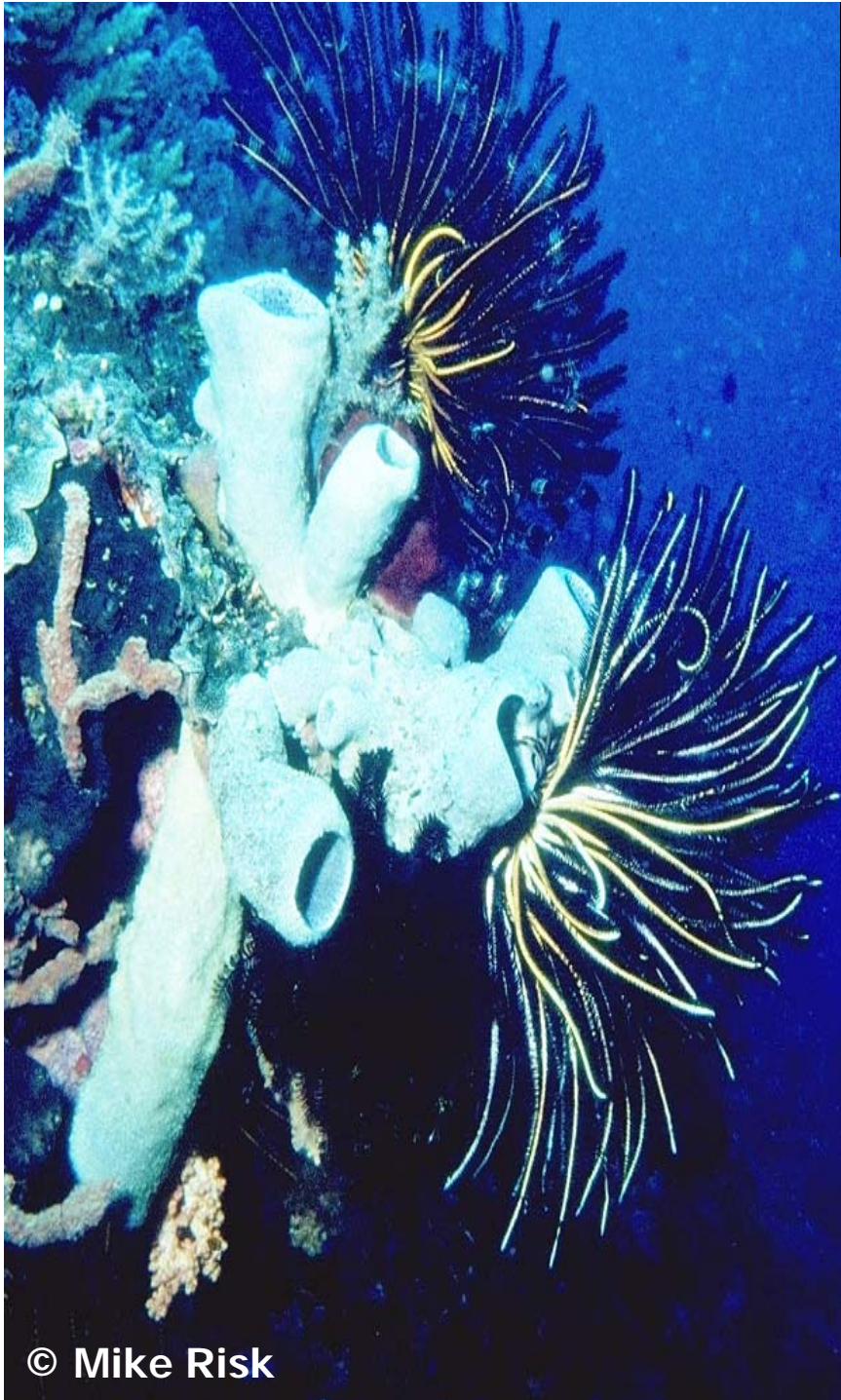
is to provide managers with scientific understanding and tools to protect and manage coral reef ecosystems.

NOAA CRE Research Plan

- **What actions need to taken?**
- **What are the information needs of managers to support and evaluate their actions?**

Scope of Research Plan

- Covers FY2005-2010
- Audience = NOAA
- Covers **ALL** NOAA's coral reef research activities, including:
 - Strategic Research
 - Mapping
 - Monitoring
 - Assessment
 - Socioeconomic Research



NOAA CRE Research Plan

- ITMEMS1 and ITMEMS2
- *Implications for Coral Reef Management and Policy*, 9th ICRS
- NOAA's State of the Coral Reef Ecosystems
- NOAA offices – ie. NOAA Fisheries and Sanctuaries
- NCRI and NCORE conferences
- International – i.e. AIMS National Research Priorities

Coral Reef Research Priorities will be driven by...

1. The *Coral Reef Conservation Act of 2000*:
 - *National Coral Reef Action Strategy (2002)*
 - *The State of Coral Reef Ecosystems of the United States and Pacific Freely Associated States*
2. U.S. Coral Reef Task Force
 - *The National Action Plan to Conserve Coral Reefs (2000)*
 - Improved Prioritization of needs in Oct. 2002 to a threat-based focus:
 - Land-based sources of pollution
 - Overfishing
 - Climate change, Coral bleaching, and Coral Disease
 - *Local Action Strategies*
 - Regional Research Priorities
 - *Atlantic vs. Pacific*

Regional High Priority Threats

ATLANTIC

- Climate Change and Coral Bleaching
- Coral Diseases
- Coastal development and runoff
- Coastal pollution
- Fishing
- Ships, boats, and groundings

PACIFIC

- Coastal development and runoff
- Coastal pollution
- Tourism and Recreation Fishing
- Ships, boats, and groundings
- Invasive Species
- Marine Debris

Coral Reef Regions

ATLANTIC

- Puerto Rico
- U.S. Virgin Islands
- Florida Keys, SE Florida, W. Florida Shelf
- Flower Garden Banks
- Navassa Island

PACIFIC

- Main Hawaiian Islands
- NWHI
- American Samoa
- Guam
- Commonwealth of the Northern Mariana Islands
- Pacific Freely Associated States
- Pacific Remote Island Areas

Who is in the Process?

1. Steering Group

- Co-Chaired by OAR and NOS
- Consists of Coral Matrix representatives from NESDIS, NOS, NMFS, and OAR

2. Writing Team

- NOAA + partners

3. Review Group A

- Consists of Individuals or Groups within NOAA

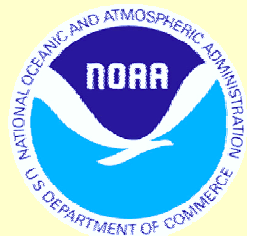
4. Review Group B

- Consists of Individuals or Groups outside of NOAA, including the USCRTF, Fishery Management Councils, etc.

NOAA Coral Reef Ecosystems Research Plan

STRUCTURED ON:

- NOAA's Legislative Mandates
 - Coral Reef Conservation Act of 2000
 - Executive Order 13089
 - Magnuson-Stevens Fishery Conservation and Management Act
 - Endangered Species Act
 - National Marine Sanctuaries Act
 - Coastal Zone Management Act
 - Government Performance and Results Act
- NOAA's MISSION
 - NOAA Strategic Plan FY2003-FY2008



NMS Model

- 13 NMS protect over 18,000 m² of U.S. waters.
- Sanctuary science goal: *to learn how environmental systems function so we can recognize, understand, forecast, and respond to natural and human-caused env. change.*

NMS Model

- NMS facilitates and conducts research and monitoring on a site-by-site basis.
- Degree of success varies greatly
- Staffing, site size, accessibility, & partnerships influence a sanctuary's access to the scientific info. required to inform management actions.
- Want to improve utility of site-based info at local, regional, and national scales, and leverage and benefit from other activities.

NMS Model

Problem: Need to implement nationally-coordinated and site-specific planning, monitoring, and research programs.

→ Develop plans to complement and enhance on-going site efforts and implement ecosystem-based, issue-driven, and Program-wide efforts.

NMS Model

- 1999 Science Plan prioritizes
 - Infrastructure for staffing, planning, partnerships, info management & dissemination.
 - Understanding the status and trends of sanctuary resources on local, regional, and national scales.
 - Conducting a management-based science program that emphasizes capacity-building and focuses on information needs for management (e.g. zoning effectiveness, fisheries impact, human use).

NMS Model

- Initiated a process to strengthen links btwn science & management
 - Assess existing activities
 - Implement new strategies
- Inventory of recent, current, and planned research & monitoring activities in 11 NMS → database w/ management applications for each science activity.
- Identified highest priority management issues, confirmed with interviews, checked with agency priorities.

Management Issues

- Habitat delineation
- Zoning
- Assessment of living marine resources
- Water quality protection
- Fishing/harvest effects
- Wildlife disturbance
- Event response
- Restoration/rehabilitation
- Event response
- Industrial uses
- Wildlife disturbance

Workshop & Survey

- Hosted workshop to identify science objectives addressing information needs related to management issues.
- Compared endpoints to ongoing activities to assess how well science activities in NMS contribute to management information needs.

Workshop & Survey

Management issue – general topic of concern for which effective management requires specific information (i.e. zoning)

Information need – areas of investigation critical to the understanding required for effective management.

Endpoint – science objectives to address an information need.

Endpoints

- **Biological resources**
 - Factors controlling the success of year classes for species: competition btwn species.
 - Information on key species & communities: community dynamics
 - Pertinent info on species of special interest: non-indigenous species
- **Habitat**
 - Geological characterization
 - Sediment characterization within areas of concern

Workshop & Survey

- NMS staff rated endpoints for
 - Relevance
 - Current scientific activity level
 - State of knowledge
- Recommended appropriate levels of activity.
- Compared recommended activity level to actual activity level.

CRE Information Needs

- **Biological Resources**
 - Habitat use at various life stages
 - Keystone species (e.g. apex predators)
- **Event Response**
 - Linkages between causes of events
 - Risk assessment, probability of future events
- **Water Quality**
 - Incidental contaminants from vessels
 - Levels & mechanisms of contaminants causing mortality
 - Levels and mechanisms of sublethal stressors

CRE Information Needs

- Water Quality
 - Temporal changes in levels of pathogens & pathogenic indicators
- Zone performance
 - Effectiveness of zoning regime
 - Impact of unrestricted human activities w/in zoned areas
 - Intensity
 - Spatial distribution
 - Types of impacts

NMS Model

- Phase 2: Develop targeted implementation plans that continue, adjust, or initiate science activities that address priority endpoints identified in phase 1.



Could the NMS process
work for us?

Could it work for us?

NOAA CORAL REEF ECOSYSTEMS RESEARCH PLAN

Draft Process Chart

