

NOAA | NOS | National Centers for Coastal Ocean Science
Center for Coastal Monitoring and Assessment

Coastal Ocean Assessment Status and Trends

Project Plan

Contaminants and Coral Health in Southwest Puerto Rico

Lead: Anthony S. Pait
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Plan Period: FY2007-2008

Start Year: 2005

End Year: 2009

Location: Southwest Puerto Rico

Stressor: Pollution

Ecosystem: Coral Reefs

I. PROJECT ABSTRACT

Pollution is one of the major threats to coral habitat, contributing a variety of contaminants including petroleum hydrocarbons, metals, pesticides, nutrients and sediments, all of which can impact coral reef organisms. While pollution is frequently cited as a cause of reef degradation, the concentration of pollutants present in and around coral reefs is not well characterized, and even less is known regarding linkages that may exist between pollutant concentrations and overall coral health. To investigate contaminants in coral reefs and impacts on coral health, a project is being conducted in southwest Puerto Rico. The project will result in a characterization of chemical contamination in the reefs, and will also provide a "proof of concept" for integrating information on coral pathogens land use, and biogeography as a way of identifying linkages between anthropogenic stressors and coral health. Once this project is completed, the framework developed will be applied in other areas in the U.S. Caribbean.

II. OBJECTIVES

This study directly addresses the Puerto Rico Local Action Strategy (LAS) developed by Puerto Rico's Coastal Zone Management. The LAS contains a series of recommended actions to conserve and enhance Puerto Rico's coral reefs, and land-based sources of pollution are identified as a focus area for priority action. The objectives of this study are to: 1) characterize chemical contamination in sediments and coral tissues; 2) characterize a series of bacterial pathogens; 3) assess existing information on coral cover (biogeography) and land use; 4) determine if linkages exist between contaminants and coral health; and 5) develop a framework that can be applied to other coral reef ecosystems. The study site for this project is a marine managed area (MMA) and is one of three Coral Reef Ecosystem Study (CRES) sites in the Caribbean. Data generated from this pilot project will enhance the overall characterization and management of the area.

III. CUSTOMERS

- Puerto Rico Department of Natural and Environmental Resources
 - Natural Reserves Division
 - Marine Resources Division
- University of Puerto Rico - Mayaguez Campus and Magueyes Laboratories
- USVI Department of Planning and Natural Resources
 - Coastal Zone Management
 - Department of Environmental Protection
- EPA – Caribbean Environmental Protection Division
- USGS - Florida Integrated Science Center
- National Park Service - Division of Resource Management
- NOAA – Coral Reef Conservation Program, National Marine Sanctuaries Program, and National Estuarine Research Reserves (NERRs)

IV. PRODUCT DISTRIBUTION PLAN

Products generated from this project will be made available in reports, both hardcopy and on the web via the NS&T, and the Biogeography data portals, and through journal articles and presentations at professional meetings.

V. PARTNERS

- University of Puerto Rico, Mayaguez Campus, Magueyes Laboratories
- University of Hawaii, Kewalo Marine Laboratory
- NOAA/NCCOS Center for Coastal Environmental Health and Biomolecular Research
- Haereticus Environmental Laboratory

VI. PROJECT TASKS

1. Product Development: Tech Memo – Complete the analysis of the contaminant data and develop a draft of the report of chemical contaminants in sediments in southwest Puerto Rico by February 2007.
2. Product Development: Journal Articles – Draft two journal articles on the results from the analysis of contaminants in the sediments by August 2007.
3. Preparation of Coral Tissues for Analysis - Work with the Center for Coastal Environmental Health and Biomolecular Research (CCEHBR) to prepare the coral tissues for contaminant analysis. Ensure that the ground tissues are sent to the University of Hawaii by April 2007.
4. Coral Contaminant Analysis – Work with CCEHBR, University of Hawaii and Haereticus Environmental Laboratory to ensure that the coral tissue samples are analyzed for contaminants by June 2007.
5. Tech Memo on Coral Contaminants – Draft report on contaminants in coral tissues by September 2007.

VII. Milestone Charts

	Fiscal Year 2007											
	October	November	December	January	February	March	April	May	June	July	August	September
1. Product Development - Tech Memo	●	●	●	●	●	●	●					
2. Product Development - Journal Articles						●	●	●	●	●	●	
3. Preparation of Coral Tissues for Analysis					●	●	●					
4. Coral Contaminant Analysis							●	●	●			
5. Draft Tech Memo on Coral Contaminants											●	●

VIII. Products (FY 2007)

1. Draft report on chemical contaminants in sediments (February 2007)
2. Final report on chemical contaminants in sediments (May 2007)
3. Two draft journal articles on chemical contaminants in sediments (August 2007)
4. Draft tech memo on chemical contaminants in corals (September 2007)

IX. Resources

Budget

	Contract Labor	Federal Travel	Supplies and Equipment	Printing Costs	Totals
1. Product Development - Tech Memo	-	-	-	\$15,000	\$15,000
2. Product Development - Journal Articles	-	-	-	\$2,000	-
3. Preparation of Coral Tissues for Analysis	-	\$2,000	\$1,000	-	\$3,000
4. Coral Contaminant Analysis	-	-	-	-	\$0
5. Draft Tech Memo on Coral Contaminants	-	-	-	-	\$0
TOTAL					\$18,000

Personnel

	Pait	Whitall	Christensen	Jeffrey	Caldow	Lauenstein	Hartwell	Mason	NCCOS CCEHBR	University of Hawaii	Haereticus Environmental
1. Product Development - Tech Memo	●	●	●	●	●	●	●	●			
2. Product Development - Journal Articles	●	●	●	●	●	●	●	●			
3. Preparation of Coral Tissues for Analysis	●								●		
4. Coral Contaminant Analysis	●								●	●	●
5. Draft Tech Memo on Coral Contaminants	●	●	●	●	●	●	●	●			

X. LINKAGES

CCMA Collaborations

Contribution to the Biogeographic Assessment of the La Parguera CRES site

NCCOS Goals

(2.2) NCCOS will determine the social, economic and biologic effects of human activities on specific coastal systems

(2.3) Coastal managers' capacities will be strengthened with the transfer of knowledge and tools from NCCOS research projects

(4.4) NCCOS will expand reliance on effective partnerships

NOAA Ocean Service Core Capabilities

(Research) The Ocean Service provides rigorous and balanced research in support of operational and resource management responsibilities, including short-term research focused on current issues and needs, long-term research focused on emerging problems and opportunities, and technology development to improve program efficiency and effectiveness

(Observations) The Ocean Service supports a suite of coastal, ocean, and Great Lakes observing systems for operational and resource management needs, and leads implementation of national and regional components of the Integrated Ocean Observing System

(Forecasts and Assessments) The Ocean Service uses research, models, and observing systems to accurately and reliably forecast and assess environmental changes, both natural and human-induced

NOAA Goals

(Goal 1) Protect, restore, and manage the use of coastal and ocean resources through ecosystem-based management

(Goal 3) Serve society's needs for weather and water information

XI. RESULTS

To date, a draft report of chemical contaminants in sediments has been completed. Next steps will be to finalize and publish this document, and to draft one or 2 journal articles on the results.

XII. TEAM

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