

NOAA Coral Reef Conservation Program

Contaminants in Marine Resources of Vieques, PR

A Cooperative Investigation by NOS' National Centers for Coastal Ocean Science, Office of Coastal Management, Office of Response and Restoration, and Puerto Rico Department of Natural and Environmental Resources

Mission Report: August 10th to August 16th, 2014

Purpose

Land based sources of pollution, such as heavy metals and pesticides, can have adverse effects on marine ecosystems, including fisheries. In Vieques, local concerns persist about the potential for land based sources of pollution to affect fish populations on the south shore of island.

The objective of this study is to evaluate the contaminant body burdens in marine species important to the Vieques fishery. Contaminant data will be compared ecological thresholds and other previously published values. We will also explore spatial patterns in tissue contaminant concentrations and compare the fish tissue contaminant data with existing sediment and coral tissue contaminant information for the area (NCCOS 2009 study).

The goal of this field work was to collect samples from three target species from three different areas of the island (see details below).

Outreach to Local Fishers

In April, 2014, project scientists and representatives from the Puerto Rico Department of Natural and Environmental Resources met with local fishermen to discuss the project.



NOAA divers entering water.

The fishers expressed their appreciation that they were consulted. They suggested a number of species that were important to them. This list was reduced to three species based on species characteristics (e.g. likelihood to bioaccumulate, home range of organisms) and sampling logistics. The three species selected were: queen conch, spiny lobster and red hind. Grasby grouper was selected as an alternate species in case red hind could not be collected.

The fishers also identified a geographic area of concern on the south shore (Bahia Salinas del Sur) and an area on the north shore that they felt was in good condition (See Figure 1). The latter, near Mosquito Pier, was used as a quasi-control site. Additionally, project scientists met with local representatives from USEPA and USFWS who identified another important fishing area on the south shore (Ensenada Honda).

Summary of Contaminant Sampling

From August 11th to August 14th, a team of NOS scientists visited the three areas identified by local fishers. The two larger areas on the south shore were divided into three sub-strata. This ensured that fishing effort took place across the entire area. A scientific dive team attempted to collect queen conch (*Strombus gigas*) and spiny lobster (*Panulirus argus*) from each area. Four days of hook and line fishing was attempted, targeting grouper (red hind and grasby). Fishing techniques were dictated by local safety concerns (e.g. no fish traps due to the presence of unexploded ordnance). A



Figure 1: Sampling locations

DNER Ranger boat was used as the sampling platform. The spatial distribution of the sampling effort is shown in Figure 1. No target species were found in the control area, so the sampling was re-located closer to shore, where conch and lobster were successfully sampled.

A total of 15 conch and 2 lobsters were sampled. Hook and line fishing failed to capture any target species.

Conch tissues were extracted from the shell using a freeze/thaw cycle, which eliminates the potential for contamination from the traditional removal method (punching a hole in the top of the conch). Lobsters were stored whole. These samples were stored frozen until analysis for contaminants can be conducted in the lab. Samples will be analyzed for energetic compounds (2,4-Diamino-6-nitrotoluene, 2,4-Dinitrotoluene, 2,6-Diamino-4-nitrotoluene, 2,6-Dinitrotoluene, 2-Nitrotoluene, 3-Nitrotoluene, 4-Nitrotoluene, 4-Hydroxylamino-2,6-dinitrotoluene, 2,2',6,6'-Tetranitro-4,4'-azoxytoluene, 2-Amino-4,6-dinitrotoluene, 4-Amino-2,6-dinitrotoluene, HMX, PETN, RDX, Tetryl, TNT), organochlorine pesticides (e.g. DDT), metals and PCBs at the NCCOS' Center for Coastal Environmental Health and Biomolecular Research in Charleston, SC.



Spiny Lobster

Field Survey Participants

NCCOS-CCMA

Andrew Mason

Dave Whitall (Chief Scientist)



Queen conch

NCCOS-CCEHBR

Blaine West

OCM-CRCP

Antares Ramos

U.S. Navy

Mike Green

Boat Captain/Boat Support

Cesar Beltran (DNER)

Omar Collazo (DNER)

Future Activities

Laboratory Analysis (Target completion date: December 2014)

Data analysis (Target completion date: June 2015)

Integration into final report (Target completion date: December 2015)

For more information, please contact Dr. Dave Whitall (dave.whitall@noaa.gov)

