



INVESTIGATOR'S ANNUAL REPORT

United States Department of the Interior
National Park Service

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All or some of the information you provide may become available to the public.

Reporting Year: 2010	Park: Virgin Islands NP	Select the type of permit this report addresses: Scientific Study	
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Name: Dr. Thomas J. Minello		Phone: 409-766-3506	Email: tom.minello@noaa.gov
Project Title (maximum 300 characters): Recovery of conch populations in the U.S. Virgin Islands			
Park-assigned Study or Activity #: VIIS-09005	Park-assigned Permit #: VIIS-2010-SCI-0013	Permit Start Date: Feb 01, 2010	Permit Expiration Date: Dec 31, 2010
Scientific Study Starting Date: May 01, 2005		Estimated Scientific Study Ending Date: Dec 31, 2011	
For either a Scientific Study or a Science Education Activity, the status is: Completed		For a Scientific Study that is completed, please check each of the following that applies: <input checked="" type="checkbox"/> A final report has been provided to the park or will be provided to the park within the next two years <input type="checkbox"/> Copies of field notes, data files, photos, or other study records, as agreed, have been provided to the park <input type="checkbox"/> All collected and retained specimens have been cataloged into the NPS catalog system and NPS has processed loan agreements as needed	
Activity Type: Research			
Subject/Discipline: Invertebrates (Insects, Other)			

Purpose of Scientific Study or Science Education Activity during the reporting year (maximum 4000 characters):

Throughout the Caribbean, queen conch (*Strombus gigas*) are considered a species of concern under the Convention on International Trade of Endangered Species (CITES) due to basin-wide stock depletions. Research suggests that a variety of factors may be responsible, although few of these studies have addressed issues specific to the ecology of shallow water habitats surrounding the U.S. Virgin Islands. Historically, queen conch populations in these areas have been slated to be overfished. Although regulatory cut-backs in fishing have been instituted, populations show little sign of recovery. The goal of this project is to examine a suite of factors reflecting habitat quality and juvenile distributions to develop information necessary to guide management decisions regarding queen conch populations in the U.S. Virgin Islands and its surrounding waters.

We plan to examine possible factors inhibiting recovery of queen conch populations, particularly juvenile populations around St. John. Tagging and tracking studies will be conducted in bays within and outside of the boundaries of the Virgin Islands National Park and Coral Reef National Monument. Data collected will be used to examine the distribution, movement, and habitat use of juvenile conch while measuring and visually classifying important habitat characteristics. By examining habitat quality (from the conch's perspective) and delivery patterns we hope to contrast likely explanations for the lack of recovery of local populations.

Simultaneous research will continue the previous work of Tom Minello and Ron Hill in characterizing essential fish habitat through comparative analyses of adjacent marine habitats. During this project we will use snorkeling to collect visual census data (point counts and transects) with in situ mapping in shallow water habitats to document the distribution and habitat use of reef fish and fishery species, including lobster. Past study sites were inside and outside the boundaries of the Virgin Islands National Park and Coral Reef National Monument and will supply information on the changes occurring in fish, conch, and lobster populations as the new regulations take effect.

Findings and status of Scientific Study or accomplishments of Science Education Activity during the reporting year (maximum 4000 characters):

Research activities this reporting year were conducted during three field expeditions to St. John, USVI, in April, June, and September 2010.

During tag-and-recapture studies this year, 2868 queen conch, *Strombus gigas*, were located, measured, and tagged using Floy T-bar tags (1223 in Brown Bay, 272 in Princess Bay, 745 in Otter Creek, and 628 in Water Creek). Throughout the past six years of this project we have tagged 7154 conch in six different bays around the island of St. John. Shell length and lip thickness were measured for all conch tagged, as were environmental parameters at each site. Tagged conch included juveniles and adults ranging from 5 to 29 cm in length. Benthic composition, expressed as percent cover, was quantified by centering a 1-m² quadrat directly over the individual, and visually quantifying each organism or substrate. Benthic habitats were also classified and quantified in randomly selected sites where no queen conch were found. Quantification of benthic habitats showed that queen conch in Brown Bay utilized mainly seagrass beds of *Syringodium filiforme*, *Thalassia testudinum*, and *Halodule wrightii*. Queen conch in Princess Bay, Water Creek, and Otter Creek were predominantly found in shallow reef habitats (rubble, *Porites* spp., *Millepora* spp., sponges) with sparse macroalgae (*Penicillus* spp., *Caulerpa* spp., *Dictyota* spp.) and bordered by mangroves.

Recapture rates for tagged conch between April and September were 24% for Brown Bay, 35% for Princess Bay, 36% for Otter Creek, and 32% for Water Creek. Many of these conch have been recaptured on multiple occasions over the duration of this project, providing valuable data on long-term movements and shifts in habitat utilization patterns over time. Size-class comparisons between new and previously tagged conch suggest Brown Bay's lower recapture rate may be due to strong recruitment of small conch coupled with fishing activity. Higher recapture rates, mostly of larger juveniles and adults in Princess Bay and Otter and Water Creeks (within the Coral Reef National Monument), suggest stable resident populations with lower fishing activity. Discovery of areas with very high densities of young conch indicates a very high recruitment year for the queen conch population within the National Monument.

Unlike previous years where fished shells were consistently found on the shores of our study areas, we did not discover any piles of discarded shells during research trips. From anecdotal reports that fishing activity remains heavy in several of our study sites, it seems unlikely that poaching of under-sized conch has ceased, but rather that the shells are being disposed of in alternate locations.

The hydrophone arrays in all study areas remained in their original locations as established in previous years. During each field expedition we downloaded ultrasonic data collected from conch bearing acoustic tags. The data showed movements of individuals in specific habitats in the bays, as well as several that migrated out into deeper waters. Bottom and surface temperature data was also downloaded from deployed temperature loggers, which were replaced in their original locations on each hydrophone and at various surface sites throughout each bay. During field work this year, we attached a total of 24 coded acoustic tags to randomly-selected tagged individuals in our study locations.

For Scientific Studies (not Science Education Activities), were any specimens collected and removed from the park but not destroyed during analysis?

No

Funding specifically used in this park this reporting year that was provided by NPS (enter dollar amount):
\$0

Funding specifically used in this park this reporting year that was provided by all other sources (enter dollar amount):
\$60000

List any other U.S. Government Agencies supporting this study or activity and the funding each provided this reporting year:

NOAA Coral Reef Conservation Program [\$60000]

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