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2000, 11th Annual JWP Conference

Apr 15th, 11:00 AM - 12:30 PM

Effect of Natural Barriers in a Marine Reserve on Queen Conch *Strombus Gigas*, "Spillover" to Surrounding Fished Areas, East Harbour Lobster and Conch Reserve, Turks and Caicos Islands, British West Indies

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Grabowski, Robert C. and Tewfik, Faculty Advisor, Alex, "Effect of Natural Barriers in a Marine Reserve on Queen Conch *Strombus Gigas*, "Spillover" to Surrounding Fished Areas, East Harbour Lobster and Conch Reserve, Turks and Caicos Islands, British West Indies" (2000). *John Wesley Powell Student Research Conference*. 4.
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Oral Presentation 3.2

**EFFECT OF NATURAL BARRIERS IN A MARINE RESERVE ON QUEEN CONCH,
STROMBUS GIGAS, "SPILLOVER" TO SURROUNDING FISHED AREAS, EAST
HARBOUR LOBSTER AND CONCH RESERVE, TURKS AND CAICOS ISLANDS,
BRITISH WEST INDIES**

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The functions of Marine Protected Areas (MPA's) are to preserve the habitat, natural community structure and genetic diversity of the area. With respect to the fishery, MPA's are believed to increase larval input and adult density by spillover into a fished area. The purpose of this study was to determine the distribution of queen conch, *Strombus gigas* L., within the East Harbour Lobster and Conch Reserve (EHLCR), specifically addressing spillover of adult conch into the adjacent fished areas. The specific objectives of the study were to collect habitat and conch density data for the reserve and surrounding areas.

With this information, recommendations were to be made regarding the alteration of the reserve to enhance the fishing grounds. A total of 23 sites were surveyed using both snorkel and SCUBA divers. A total of 1,361 conch were found in 70 belt transects covering a total area of 42,300 m². Data from this study was combined with data from previous seasons to provide a more accurate representation of the reserve and fished area.

The combined data determined that adult conch outside the reserve (149 conch/ha) was lower than adults inside (575 conch/ha) and both juveniles inside (414 conch/ha) and outside the reserve (483 conch/ha). High density values were obtained for two areas, one within the reserve and one outside. Overall conch densities decreased outward from these core areas. Habitat data concluded that the core areas had prime habitat of algal and seagrass plain, whereas most of the reserve and its boundaries had poor habitat of sand plain or gorgonian/sponge plain. Density and habitat data support that spillover from the core in the reserve is limited. To increase the effectiveness of the reserve, recommendations were made to extend the park boundaries by 2 km to cover the core area currently located outside the reserve. This extension would protect a large spawning stock, creating the benefits of both increased adult spillover and larval dispersal to the fished area.