



2012 HAWAII UNIVERSITY INTERNATIONAL CONFERENCES  
EDUCATION, MATH & ENGINEERING TECHNOLOGY  
JULY 31<sup>ST</sup> TO AUGUST 2<sup>ND</sup>  
WAIKIKI BEACH MARRIOTT RESORT & SPA  
HONOLULU, HAWAII

# SUSTAINABILITY OF ENDANGERED SPECIES: QUEEN CONCH RESEARCH REFUGE RANCH

**JODY TERRELL, PHD**

HEALTH STUDIES

TEXAS WOMAN'S UNIVERSITY

DENTON, TX

**BETTY BOWLES, PHD**

**MARTY GIBSON, PHD**

*WILSON SCHOOL OF NURSING*

*MIDWESTERN STATE UNIVERSITY*

*WICHITA FALLS, TX*

## Abstract

Students taking an Environmental Health class study abroad in Belize each summer to participate in conservation research to increase the declining population of the endangered Queen Conch (*Strombus gigas*). This action research project studies the Belize culture and economy, its reliance on the Queen Conch and the impact of that reliance on the environment, and collaborates with the Belize Department of Fisheries in marine conservation initiatives.

The Queen Conch (*Strombus gigas*) is on the Convention on International Trade of Endangered Species (CITES) endangered species list. It is vital to the culture and economy of Belize as its meat is a dietary protein staple, fishing is a major industry, and conch meat and shells are a major export. This pilot study explores the issue of sustainability of the Queen Conch and incorporates fisheries management, education, and natural recovery together as an effective strategy to help conserve the Queen Conch and positively contribute to the socioeconomics of this Caribbean region. The purpose of the project is to give students taking an Environmental Health class the opportunity to study abroad in Belize each summer, and to participate in conservation research to increase the declining population of this endangered species by developing and maintaining a research refuge ranch for Queen Conch and studying their habits and developing life span.

The recovery of the conch populations is a continuing challenge to the Department of Fisheries. The species are vulnerable to numerous predators, including humans, do not reproduce in the early years, rarely reach sexual maturity, and must aggregate to reproduce. Due to the popularity of the conch for their meat and shells, the

global demand is high and critically impacts the reproduction and sustainability of the conch.

Survival of the Queen Conch has been studied by harvesting the eggs, incubating them and returning the juveniles to the environment. However, the juvenile conch has a 1 in 10,000 chance of surviving over the next year after their release. The current project focuses on aggregating adult Queen Conch in a secluded natural environment on a private island protected from predators during reproduction and development. It enables student researchers to collect, photograph, weigh, measure, tag, and record G.I.S./GPS data on the Queen Conch, observe their reproduction, productivity and development through several reproductive cycles, and ultimately return the adults to their original natural environment. This pilot study is being viewed with interest by the Belize Department of Fisheries to determine if this method is more successful than previous efforts in promoting the sustainability of the species. This presentation will describe this ongoing research project and report on its progress.