

**TITLE:** Determine Status, Health, and Habitat Use of Green Sea Turtles at Kaloko-Honokohau NHP

**PARK:** Kaloko-Honokohau National Historical Park

**RECOMMENDED FUNDING SOURCE:** SMALL PARK NRPP

**ABSTRACT:**

Juvenile green sea turtles are increasingly abundant within Kaloko-Honokohau NHP (KAHO). The purpose of this project is to assess the status, health and habitat requirements of the recovering population of green turtles within the park. The project will be coordinated with Dr. David Duffy of the Research Corporation of the University of Hawaii and the Department of Botany. This project is part of a larger program of turtle inventory and monitoring begun in 1999 in conjunction with National Marine Fisheries and Hawaii Preparatory Academy.

**DESCRIPTION OF THE PROBLEM:**

**Introduction**

KAHO fronts over one mile of marine shoreline and contains approximately 550 acres of submerged lands within its legislated boundary. The park is one of a few areas along the West Hawaii coastline where juvenile green turtles can be found at a higher density than surrounding areas. The park waters provide the turtles a natural protected area for feeding, resting, and basking. The park also provides an accessible venue for visitors to observe the sea turtles. These turtles are a threatened species and are protected by the Endangered Species Act.

**Problem Statement**

Local informants believe that the number of turtles within the park has increased substantially during the past few years. KAHO needs to better understand the population structure, habitat requirements, and general health of this important, threatened resource. In 2000, six turtles were found dead within the park. Prior to 2000 only one dead turtle had been reported. The six were found in late spring, when growth of grazing beds may be at its lowest. No conclusive cause of death was determined from necropsies on four of the turtles. All four individuals showed signs of emaciation, in some cases extreme. It is likely that the increased mortality is a function of an increased population competing for limited food resources. However, KAHO needs to identify these food resources and determine whether they are stable or are being affected by other factors. Identification and monitoring of turtle habitat requirements is critical to managing the marine resources in the park for several reasons: 1) Turtle foraging affects habitat structure and consequently affects other animals using that habitat. 2) Identification of quality and quantity of foraging habitat is important to safeguard against potential degradation of these areas from human activities such as anchor damage, reef walking, run-off and siltation. 3) West Hawaii, including KAHO, is currently free of the disease known as green turtle fibropapillomatosis (GTFP). The disease was reported on Oahu in 1958 and has increased rapidly since the 1980's. It is most commonly found in juvenile turtles

living nearshore adjacent to large human populations. Careful monitoring of the health of the KAHO turtles and their habitat will provide important baseline data.

## **RECOMMENDED ACTIONS**

### **Objectives**

The objectives of this project are to:

1. Quantify the population abundance and density in KAHO.
2. Identify available green turtle foraging habitat, use patterns, and nutritional quality of forage.
3. Identify the health status of turtles within the park.

### **Methodology**

Standard mark re-capture of live turtles will be used to assess population size. All work with living turtles will be carried out under the supervision of George Balazs, head of turtle research for National Marine Fisheries Service. Habitat identification will be made via SCUBA and snorkeling surveys. Foraging habitat areas will be mapped and entered in to the park GIS database. Foraging areas will be inventoried and monitored monthly for changes in composition and availability of forage. Nutritional analyses will be made of forage and of food contents found in the mouths of captured turtles and an in-depth analysis of food and digestive processes from material found in the gut of dead turtles.

Habitat use will be monitored by attachment of 15 ultrasonic pingers and 4 time depth recorders to track habitat use and feeding patterns of 19 turtles. Three underwater "listening" stations with a range of 500 meters will be placed in identified foraging habitat and will remotely monitor the arrival and departure of the turtles bearing ultrasonic tags.

The health of captured live turtles and stranded turtles will be assessed by body measurements and examination, blood samples, oral swabs and tissue samples from necropsied turtles. Blood sample and oral swab data will be compared to samples taken in 2000.

### **Products**

This project will produce several sets of data and reports from the different analyses of turtle population, habitat use, health and nutrition. A GIS database of turtle foraging habitat will be created along with baseline data for turtle habitat use within the park. Ultimately this data will be pulled together with previously collected information for a report on turtle health and nutrition in KAHO.

### **Evaluation**

This project will be an important start to understanding turtle habitat use, health, and nutritional needs in KAHO. Data collected during this project will help the park better manage sea turtles and underwater resources.

## **BUDGET**

### **In Kind Services**

This project is being carried out through the cooperation of several agencies and institutions with KAHO. This cooperative arrangement keeps cost low and makes this project more efficient and effective.

**KAHO Staff**

Stanley Bond- Resource Manager

Sallie Beavers- Marine Ecologist

Other Support Staff as needed

National Marine Fisheries

George Balazs

Support Staff

USGS-BRD

Dr. Theiry Work- Veterinarian

Support Staff

Hawaii Preparatory Academy

Mark Rice- Turtle Program Coordinator

HPA Students and Staff

**Costs**

3 VR2 monitors @ \$1000 each \$3000

15 Sonic Tags @ \$265 \$3975

Computer Download Program \$135

4 TDR \$6000

Receiver \$1000

1 Hydrophone @250 \$250

Blood and Swab and Gut Analysis \$2500

Identification and Analysis of Food Sources \$2000

And Nutrition Potential

Travel and Expendables for Marine Fisheries \$1000

And BRD Staff

**TOTAL \$19860**

**Future Funding**

The intent of this project is to gather baseline data on the status, health and habitat requirements of the recovering population of green turtles within the park. Project findings should point the way towards additional studies if they are required.

