

A Project Proposal For Research To Be Conducted
Within The Hawaiian Islands National Wildlife Refuge

SUBMITTED TO

The United States Department of Interior, Bureau of Sport
Fisheries and Wildlife

TITLE

A Preliminary Investigation of the Marine Turtle Nesting
Population at East Island, French Frigate Shoals

PRINCIPAL INVESTIGATOR

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DURATION

6 weeks (May 31 to July 12, 1973 or as agreeable to the
Bureau of Sport Fisheries and Wildlife)

MOTIVATION

The continuing decline in marine turtle populations throughout
the world has made it imperative that research be carried out which
will ultimately assist in formulating long range programs for the pro-
tection and perpetuation of these salt water reptiles. The tagging
and measuring of females on the nesting beaches has thus far provided
the most valuable contributions to man's knowledge of marine turtle bio-
logy. In addition, such projects have formed the basis for the census-
ing of individual colonies. The importance of population ecology

studies involving the tagging of nesting turtles has been recently emphasized by the International Union for the Conservation of Nature (IUCN), Survival Service Commission's Marine Turtle Specialists Group. Their recommendations call for this area of investigation to be given one of the highest levels of priority (14).

Tagging programs designed to collect data on breeding colonies are presently underway on nesting beaches in Africa (11), Malaysia (7), Australia (2), Galapagos Islands (13), and Costa Rica (6), to name a few. Dr. Archie Carr, the world's foremost authority on the green turtle (Chelonia sp.), has for 17 years directed an intensive tagging study at the now famous Tortuguero nesting beach in Costa Rica (4, 5).

Conducting research on, and affording protection to marine turtles has been complicated by the animal's migratory habits, that is periodically traveling long distances across international boundaries for breeding and nesting. Although it has been suggested that no colony of marine turtles except the Australian flatback (Chelonia depressa) can be assured survival by protection within the boundaries of a single country (5), available data seem to indicate that members of Hawaii's green turtle population might carry out their entire life cycle within the Hawaiian Archipelago (12). To gain information on this aspect alone, would be of paramount importance to the State. In addition, Hawaii's colony could well comprise the largest remaining marine turtle nesting population of any left under United States control, with the possible exception of Rose Atoll in American Samoa.

Although warranting in-depth research, studying Hawaii's turtle colony in order to devise sound management practices has been given little regard by the local community (1). Marine turtle research around the major Hawaiian Islands is virtually non-existent. This is due, in part, to the fact that: 1) nesting sites no longer exist in the main islands, 2) funds have not been appropriated for research and 3) studying a grazing population is difficult and time consuming because it involves the capture and tagging of individuals in the open ocean. Although turtle research has been conducted by Bureau of Sport Fisheries and Wildlife Administrators in the Northwestern Hawaiian Islands, this work has been limited by a lack of available manpower and necessary involvement with other threatened species and duties. Although more than 700 turtles have been tagged in the Northwestern Islands over the past 8 years, only a few of these were nesting females. Most of the turtles tagged were found as "basking" animals, i.e., resting on the beach during the daytime (12). This basking habit is presently only reported among Hawaii's turtles, thus it is unknown what correlation, if any, can be made between basking and nesting.

The importance of conducting tagging studies on Hawaii's nesting turtles has been pointed out by Dr. Harold Hirth (10), Dr. John Hendrickson (8, 9), and Dr. Archie Carr (3). All three of these authorities are members of the IUCN Marine Turtle Specialist Group and have at one time or another reviewed the marine turtle situation in the Hawaiian Islands.

OBJECTIVES

1. To initiate an intensive tagging study on nesting turtles at a select site (East Island) in the Northwestern Islands. This study would be conducted for a 6-week period during what is thought to be the peak of the breeding season. East Island is believed to have the largest number of nesting turtles of any location in the Northwestern Islands (12), and would thus provide valuable information on the entire colony.

2. To obtain a sampling of the actual number of animals nesting during the peak of the breeding season. This would allow for an estimation to be made of the size of the breeding population and would lay the groundwork for more comprehensive investigations to be conducted throughout entire nesting seasons. Included in this phase would be the collection of length-width frequencies as well as data on reoccurrence of nesting within the same season.

3. To collect preliminary data on the relationships between nesting and basking animals. This would be accomplished by analyzing the number and location of animals observed nesting which had been previously tagged during former years by the Bureau, while basking.

4. To make a determination of the percentage of nestings occurring on East Island in relationship to the other islets at French Frigate Shoals which support nesting turtles.

5. To publish all findings of the preliminary investigation so that data relating to Hawaii's little studied Central Pacific green turtle colony could be disseminated to the scientific community and other interested parties.

PROCEDURE

The close proximity of East Island (6 miles) to the Tern Island Loran Station, makes this site particularly appropriate as it is one of the most easily accessible nesting locations in the Northwestern Islands. All tagging would be carried out at night as this is the period of greatest turtle nesting activity. Workers would sleep on Tern Island during the day and commute by launch to East Island in the late afternoon. At any one time during the study, only two researchers would be at French Frigate Shoals. No one person would spend more than two consecutive weeks in the area. Rotation of duty in this manner would allow for rest periods for each individual and would lessen the chances of fatigue. Nesting activity would thus be monitored and animals tagged on East Island each night for the entire 6 weeks of the investigation.

At least once every 4 days a survey would be made of other islets to record the incidence of recent tracks and pits. Temporary marks would be made in the sand so as to readily identify nesting signs noted on previous days. All tagging and carapace length-width measurements would be carried out only after completion of nesting. Each of the animal's front flippers would be tagged, one tag bearing the inscription of the Hawaii Institute of Marine Biology, the other tag that of the U. S. Bureau of Sport Fisheries and Wildlife. All tagging data would be made available to both organizations. In addition, temporary numbers, using spray paint, would be placed on each carapace to visually identify animals re-nesting within that season or basking at other locations during the course of the study. This would reduce to a minimum the need to rehandle animals.

A small camp site would be temporarily set up on East Island consisting of a tent, radio, food and first-aid supplies. This would only occasionally be used and could serve as an emergency facility in the event that high winds prevented a return to Tern Island. All rubbish would be removed to Tern Island for disposal. Recognizing the fact that other threatened wildlife use East Island, all necessary precautions would be taken in order to keep exterior disturbances to the island's environment at an absolute minimum. Tagging and survey activity would be confined as much as possible to the beach areas of each islet.

In addition to directing and coordinating the project, the principal investigator would take an active role in the tagging and survey work. Close contact would be maintained at all times with Refuge personnel in order to take full advantage of their knowledge of the area and to conform to applicable Refuge regulations. The Refuge manager would have the authority to impose conditions or terminate the study to insure that there would not be any undue adverse effects on Refuge resources. Upon completion of the field work, a report on the study would be prepared and furnished to the Bureau. Any resulting publications using significant amounts of data previously collected by Refuge personnel would be co-authored by the principal investigator and Refuge personnel.

SUPPORT

The Hawaii Institute of Marine Biology is well aware of the importance of marine turtles and the need to implement programs of conservation and research that will ensure the continued viable existence of

this valuable resource. As the principal organization for marine research in Hawaii, it is the Institute's desire to take an active role in marine turtle research in the Pacific Basin. This, however, must be within the limits of its financial capabilities. Because the proposed investigation would make significant contributions to the knowledge of Hawaii's turtle colony which would be of direct benefit to the Bureau's efforts to conserve, enhance and understand the Wildlife Refuge, it is requested that the following support and assistance be provided.

1. Provide or arrange for the transportation necessary between Honolulu and Tern Island.
2. Provide or arrange for the use of a launch, motor and fuel for the transportation necessary between Tern Island and the other islets.
3. Provide or arrange for the use of facilities while on Tern Island.

Among other expenses involved in the project, the Hawaii Institute of Marine Biology will donate the principal investigator's full salary for the duration of the study, the salaries of the assistant researchers, and the per diem charge while on Tern Island. The entire research facilities of the Institute would be available to the principal investigator for use in the project.

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