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PROJECT PROGRESS REPORT

March 31, 1980

Task Order No. 173

HAWAIIAN GREEN SEA TURTLE MANAGEMENT STUDY

PRINCIPAL INVESTIGATOR: George H. Balazs

OPERATING AGENCY: Hawaii Institute of Marine Biology

FUNDING: MAC 1978-80 - \$29,237
UH Sea Grant College Program 1979-80 - \$21,853
IUCN/WWF/NYZS/UH-ORA/NMFS (International Scientific Meetings)
1979-80 - \$4,200

MAC FUND EXPENDED TO DATE: \$23,560

I. OBJECTIVES

The overall objective of this study is to develop basic biological and ecological information relevant to the wise, long-term management and conservation of the unique Hawaiian green turtle population. Specific objectives include: 1) locating and censusing aggregations of turtles in their nearshore feeding pastures; 2) ascertaining productivity and population trends at the sole colonial breeding site of French Frigate Shoals; 3) determining the developmental migrations of immature turtles; 4) gaining information on natural growth rates and ages at sexual maturity; 5) determining the food sources used by each size category; and 6) determining the factors that limit the population. Life history information of this nature will be of direct use and benefit to the State of Hawaii in developing compatible programs of fisheries

resource utilization, particularly in waters of the Northwestern Hawaiian Islands. The 1978 designation of all U. S. populations of sea turtles as either "threatened" or "endangered" increases the need to gather this management-oriented information.

II. METHODS

Intensive land based and underwater field studies are periodically conducted at locations throughout both the major and Northwestern Hawaiian Islands. Research activities are focuses on population sampling through live capture and tagging as well as direct observations of feeding, basking and breeding activities. In addition, an extensive network of informants comprised of the general public and cooperating military agencies has been organized to gather information on the whereabouts and activities of turtles.

III. RESULTS

A. A series of lengthy and comprehensive field studies has provided basic life history data on turtle aggregations occurring at Necker, French Frigate Shoals, Laysan, Lisianski, Pearl and Hermes Reef, Midway, Kure, Oahu, Lanai and Hawaii.

B. The mean natural growth rates of immature turtles have been determined as follows: Necker - .14 cm per month; French Frigate Shoals - .08 cm per month; Lisianski - .13 cm per month; Midway - .09 cm per month; Kure - .08 cm per month; Oahu - .20 cm per month; Hawaii - .44 cm per month.

C. Comprehensive food studies involving samplings of stomach contents have identified the following major dietary components: Necker - *Caulerpa racemosa*; French Frigate Shoals - *Codium arabicum*, *Codium phasmaticum*, *Codium edule*, *Caulerpa racemosa*, *Ulva fasciata*, *Turbinaria ornata*, *Spyridia filamentosa*; Lisianski - *Caulerpa racemosa*, *Turbinaria ornata*; Midway - *Codium edule*; Oahu -

Codium arabicum, *Codium phasmaticum*, *Ulva fasciata*, *Ulva reticulata*, *Pterocladia capillacea*, *Amansia glomerata*, *Ahnfeltia concinna*; Lanai - *Amansia glomerata*, *Acanthophora spicifera*; *Sargassum polyphyllum*; Hawaii - *Pterocladia capillacea*.

D. The projected number of years to sexual maturity for 35 cm turtles newly recruited to resident pastures are as follows: Necker - 34 years; French Frigate Shoals - 59 years; Lisianski - 37 years; Midway - 53 years; Kure - 59 years; Oahu - 24 years; Hawaii - 11 years.

E. Monitoring of the breeding assemblage at French Frigate Shoals has indicated that approximately 180 adult females were present during the 1979 reproductive season.

IV. DISCUSSION

A. Significant Events and Accomplishments

1. Two papers resulting from this research program were presented at the World Conference on Sea Turtle Conservation held in Washington, D.C. during November 1979 ("Growth rates of immature green turtles in the Hawaiian Islands" and "Status of sea turtles in the Central Pacific Ocean"). Both of these papers will be published in the Conference Proceedings.

2. Two other papers resulting from this research program were presented at the joint SPC/NMFS workshop on sea turtles held in Noumea, New Caledonia during December 1979 ("Status of marine turtles in U. S. territories of the Central Pacific Ocean" and "Synopsis of biological data on green turtles in the Hawaiian Islands").

3. The Principal Investigator was appointed Deputy Chairman of the IUCN/SSC Marine Turtle Specialist Group.

4. A sea turtle research and management program for Hawaii and the Pacific region is being developed in collaboration with the Honolulu Laboratory of the National Marine Fisheries Service.

B. Setbacks or Problems Encountered

No setbacks or problems are being encountered at the present time.

C. Project Schedule

Research being conducted under Task Order No. 173 (1978-80) is on schedule, with significant contributions being made to our knowledge of the biology and ecology of the Hawaiian green turtle population (i.e. see attached correspondence from Dr. F. W. King).

V. SUMMARY/CONCLUSIONS

A. Conclusions Based on Research Performed

Research results and conclusions to date are contained in the numerous publications and reports that have been authored by the Principal Investigator and regularly forwarded to the Marine Affairs Coordinator.

B. Expected Completion of Project

The project is on schedule and the completion date remains June 1980.

C. Pertinent Comments

Support of this project by the MAC office had made it possible to develop within the State of Hawaii an authoritative source of information on sea turtles. This will benefit both Hawaiian sea turtles, and turtle populations throughout the Pacific region.