

TAGGING AND ASSESSMENT OF GREEN TURTLES AT NEARSHORE FORAGING
PASTURES IN THE HAWAIIAN ISLANDS

A study proposal to complement investigations of the Hawaiian green turtle population currently underway by the National Marine Fisheries Service.

SUBMITTED TO: National Marine Fisheries Service
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BACKGROUND AND JUSTIFICATION

Green turtles (*Chelonia mydas*) in the Hawaiian Islands constitute one of the few populations of sea turtles in which tag and recapture studies have been initiated at the colonial nesting site as well as in the nearshore foraging pastures (Balazs, 1976, 1979a, 1979b & in press). Most tagging programs have focused attention exclusively on the nesting beaches due to the greater difficulties of capturing turtles in the sea. This terrestrial work has produced considerable information on the reproductive ecology, behavior and migrations of the adult female, three important but nevertheless limited aspects of the life history. In contrast with nesting beaches, all size classes from approximately 35 cm in carapace length to mature adults can be found at the nearshore foraging area where turtles reside for the greater portion of their lives. Tagging at these locations with durable individual identification tags provides access to little-known but essential life history data such as growth rates, ages at maturity, developmental migrations and survival rates of immature individuals. Sampling techniques also make it possible to identify the food sources utilized at each foraging pasture (Balazs, 1980).

In the 2,450 km long Hawaiian Archipelago, colonial nesting by green turtles takes place at the central location of French Frigate Shoals (23°45'N, 166°10'W). Long-distance reproductive migrations to this site are periodically undertaken by adults residing at foraging pastures in both the northwestern and southeastern segments of the archipelago. Immature turtles also live and feed in these nearshore areas which encompass a total of 1,200 km of island coastline. Tagging studies have thus far been directed principally at eight discreet foraging pastures, with a total of 660 turtles tagged and 75

recaptured. A need exists for this work to be continued as well as expanded to include tagging at other potentially important coastal areas that are presently unsurveyed. Such a plan is consistent with the conclusions reached at a workshop convened by the National Marine Fisheries Service to establish priorities for research of Hawaiian and other Pacific sea turtle populations (Shomura, 1979). Both Carr (1980) and Meyland (in press) have also recently emphasized the necessity for long-term and intensive tagging to be carried out in sea turtle populations if optimum results are to be achieved.

OVERALL OBJECTIVE

The overall objective of this study proposal is to capture, tag, measure and record food sources of green turtles at the eight foraging pastures, Kau, Kiholo (Island of Hawaii), Bellows (Oahu), Necker, French Frigate Shoals, Lisianski, Midway and Kure, as well as at other coastal areas of the Hawaiian Islands determined in collaboration with personnel of the National Marine Fisheries Service.

METHODS

The three basic noninjurious capture methods that have been used at foraging pastures in the Hawaiian Islands include:

- 1) Scoop nets - Scoop nets measuring 1 m in diameter with 3.5 m long handle are used to catch turtles, both from a small boat and by walking out into shallow foraging areas.

- 2) Tangle nets - Large-mesh nets made of 2 mm diameter line are set vertically through the water column at key locations where turtles feed or

or transit. These nets are not used at foraging pastures in the northwestern segment of the archipelago due to the possibility of entangling Hawaiian monk seals.

3) Diving - Turtles are captured by hand while diving, both with and without the aid of scuba.

All turtles will continue to be double tagged with corrosion-resistant Inconel 625 alloy tags specially manufactured by the National Band and Tag Company of Newport, Kentucky (Balazs, 1977, 1979b).

REPORTING SCHEDULE

Progress reports covering the results of this work will be submitted at four month intervals or as specified by the National Marine Fisheries Service.

BUDGET

Salaries and Wages	
Field Technician, 12 months @ \$5.50 hour	10,560
Fringe Benefits (RCUH-9.8%)	1,035
Expendable Supplies and Equipment	
Inconel tags (2,000)	1,800
Nets, other capture supplies	950
Travel	
Interisland air fare, 4-wheel drive vehicle rental, food	2,200
Other Costs	
HIMB laboratory usage fee	600
Algae and invertebrate ID (consultant's fees)	350
Total Direct Costs	17,495
Indirect Costs (off-campus research 31.7% of 10,560)	3,348
	3,062
TOTAL COSTS	\$ 20,843
	20,557

F-81-237-5-582-B-105

LITERATURE CITED

- Balazs, G. H. 1976. Green turtle migrations in the Hawaiian Archipelago. *Biological Conservation*, 9: 125-140.
- Balazs, G. H. 1977. Comments of Inconel tags. *IUCN/SSC Marine Turtle Newsletter*, 2: 7-8.
- Balazs, G. H. 1979a. Growth, food sources and migrations of immature Hawaiian *Chelonia*. *IUCN/SSC Marine Turtle Newsletter*, 10: 1-3.
- Balazs, G. H. 1979b. Synopsis of biological data on the green turtle in the Hawaiian Islands. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Report No. 79-ABA-02422, 180 pp.
- Balazs, G. H. 1980. Field methods for sampling the dietary components of green turtles, *Chelonia mydas*. *Herpetological Review*, 11(1): 5-6.
- Balazs, G. in press. Growth rates of immature green turtles in the Hawaiian Archipelago. *Proceedings of the World Conference on Sea Turtle Conservation*.
- Balazs, G. H. in press. A review of basic biological data on the green turtle in the Northwestern Hawaiian Islands. *Proceedings of the Symposium on the Status of Resource Investigations in the Northwestern Hawaiian Islands*.
- Carr, A. 1980. Survey and preliminary census of marine turtle populations in the Western Atlantic. Caribbean Conservation Corporation, Final Report to National Marine Fisheries Service, contract 03-79-D08-0025, 88 pp. + 31 pp.
- Shomura, R. 1979. Summary report of the planning workshop for NMFS research on marine turtles in the Central and Western Pacific. Honolulu Laboratory, Southwest Fisheries Center, 18 pp.

UNIVERSITY OF HAWAII REQUEST FOR ACCOUNT CODE

TO BE FILLED IN BY REQUESTING AGENCY (See Reverse Side for Instructions)

DESCRIPTION OF PROJECT OR ACCOUNT CODE:

HAWAIIAN GREEN TURTLE POPULATION

(Federal, T-XX-902, and G-XX-200)
PROJECT PERIOD: 08-01-80 to 07-31-81
CONTRACT/GRANT NO.: 80-ABH-00058
COST SHARING: NO YES

FINDING AGENCY/SOURCE OF FUNDS:

Check one: Local Donor Out-of-State Donor

REQUEST FOR ADVANCE ACCOUNT CODE: (For Informal Notices)
Estimated Award \$ 20,557.00
Amount of Advance \$ _____
Reason for Request:
TO START UP PROJECT

EXPENDITURE FUNCTIONAL CODE:
A ___ Instruction F ___ Institutional Support
B B Research H ___ Scholarship/Fellowship
C ___ Public Services J ___ Auxiliary Enterprises
D ___ Academic Support _____ Hospitals
E ___ Student Services T ___ Independent Operations
G ___ Plant Operation and Maintenance

ACCOUNT CODE REQUESTED BY:
G.C. Whitlow _____ Date
Requestor/Principal Investigator's Signature

HIMB _____ 247-6622 Phone
Requestor/Principal Investigator's Department
[Signature] _____ 038 9-19-80
Fiscal Officer's Signature Code Date

TO BE FILLED IN BY CONTRACTS & GRANTS ACCOUNTING OFFICE/MANOA BUDGET OFFICE

METHOD OF FUNDING: (Federal, T-XX-902, and G-XX-200)
Check one:
 1 - Cost Reimbursable - No Advance Funding
 2 - Advance - Letter of Credit (Grants)
 4 - Advance - Letter of Credit/Request (Contracts)
 5 - Advance - Request (Grants)
 6 - Advance - Lump Sum
 7 - Advance - Predetermined Installment
 8 - Administrative Account
 9 - Other

CONTRACTS & GRANTS ACCOUNTING OFFICE REVIEW:
(Federal, T-XX-902, and G-XX-200)
 Check if Training/ESA Project
By: [Signature] _____ 9/22/80 Date

MANOA BUDGET OFFICE REVIEW:
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By: _____ Date

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FILE ID (1-2)	ACCOUNT CODE (3-16)	ACCOUNT TITLE (Maximum of 30 Spaces) (17-46)
AM	F-81-237-F-582-B-105	80-ABH-00058 Green Turtle Pop GREEN TURTLE POPULATION

PRINCIPAL INVESTIGATOR/PERSON AUTHORIZED TO EXPEND FUNDS (47-66) Maximum of 20 Spaces	DATE OF ENTRY (to be filled in by CAO) (73-78)	CARD (79)	FO (80)
<u>G.C. Whitlow</u> WHITLOW/BALAZS <u>[Signature]</u>	9/22/80 LP	1	A

TO BE FILLED IN BY CENTRAL ACCOUNTING OFFICE

Keypunch: Duplicate Col (1-16) of Card 1	FUND		FUNCTIONAL CODE		Fiscal Officer (76-78)	Cost Sharing (79)	Keypunch: Duplicate Col (73-78) of Card 1	CODE	
	Sub (17)	Group (18-19)	Rev (20-22)	Exp (23-25)				CARD (79)	FO (80)
	1	12	151	08B	038			2	A

ISSUED BY: B. Hanover 9/22/80
PREPARED BY: [Signature]
REVIEWED BY: _____
VERIFIED BY: _____