1976-77 INCOMING & OUTGOING CORRESPONDEN
G.H. BALAZS

John Tullis 254-2423 Ray Rounds Kailua High School Phyllis 488-5700 565-6071 Ron's Home. Lanai

HAWAIIAN MALACOLOGICAL SOCIETY

October Meeting Notice

Date: Wednesday, October 6, 1976 Time: 7:30 PM

Place: First United Methodist Church, Victoria & Beretania Sts.

"HAWAIIAN GREEN SEA TURTLES"

George Balazs, Junior Marine Biologist with the Hawaii Institute of Marine Biology, will present this interesting program.

Please bring a shell for the auction to the meeting.

REMINDER--the HMS Shell Auction will be held on Saturday, October 16, with over-the-counter sales to begin about 12:30 PM.

HMS PICNIC--shell collecting dive/picnic at Magic Island, Ala Moana Park, Saturday, October 2, at 10:30 AM. Boats available for divers at a $1.00 charge. Two Scuba dives. Skin diving also.

Bring your own picnic basket and drinks. Ribbons to be awarded for best shell and best endemic shell. Special award for the most unusual "artifact" found by divers. All shells (with a few exceptions) are to be donated to the HMS Auction.

Any questions?--call Ski at 941-1317 or Andy at 734-2994.

Hawaiian Malacological Society
P.O. Box 10391 Honolulu, Hawaii 96816

Nonprofit Organization
U. S. POSTAGE
PAID
Honolulu, Hawaii
PERMIT NO. 780

GEORGE BALAZS
HAWAII ~~INSTITUTE~~ OF MARINE BIOLOGY
BOX 1346
KANEOHE,
96744

SEAFDEC
AQUACULTURE DEPARTMENT
SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER
Tigbauan, Iloilo
Philippines, 5529
P.O. Box 256
Iloilo City, Philippines

28 April, 1976

Dear George,

Thank you so much for sending me those materials on turtles. Looks like the turtles of French Frigate Shoals are in good hands. I cannot say the same for the turtles here. They are still being fished -- both green and hawksbill. When you go to the curio shops you will find a lot of whole turtle shells of different sizes all polished.

I am right now working on mussels, mainly basic life history for the moment and farming using off-bottom methods later on. The big projects here are those on Penaeus monodon and milkfish. On the second week of May right before the Kyoto Mariculture conference, SEAFDEC is going to sponsor a workshop on milkfish. I understand Bob May and Dr. Bardach are going to be here for that. Wish you could be here with them.

Phil Helfrich and Zehadeh are here today. I haven't seen them yet. I believe they are here to assess certain institutions for possible ICLARM grant.

I should tell you that I changed job last June 1975. Dory and the kids were left in Cagayan de Oro where the kids were going to school. They are joining me here in Iloilo shortly soon as the house I found will be vacated by the present occupant sometime in May.

Are you still leaving in the boat? I hope you no longer have any hassles with the authorities there on the use of holding tanks, etc.

Lastly, extend my best regards to Linda. Noel and Ivy still remember the two of you fondly through those cute cuddly turtles.

Sincerely,

Fred

UNIVERSITY OF FLORIDA
GAINESVILLE, 32611

COLLEGE OF ARTS AND SCIENCES
DEPARTMENT OF ZOOLOGY

March 15, 1976

Dr. George H. Balazs
Hawaii Institute of Marine Biology
University of Hawaii at Manoa
P.O. Box 1346 Coconut Island
Kaneohe, Hawaii 96744

Dear George:

Almost nothing has been done toward reconstituting the sea turtle committee since our adhoc session on Mariculture, Ltd. in Miami. I don't know whether Dr. Uchida has been appointed to the committee. Morges is slowly beginning to make a few appointments, but the main issue has been what to do to fill Tom Harrisson's job as Co-Chairman with somebody who could show up more often in the Old World than I am able to do. At the moment the committee is in abeyance.

As you would expect, there was a lot of loose talk at the recent public hearing in Washington, but perhaps a few ideas got put across. I think the worst U.S. turtle troubles now are going to be the incidental catch regulations.

Sincerely yours,

Archie

Archie Carr
Graduate Research Professor

AC:gs

Enclosures

UNIVERSITY OF FLORIDA
GAINESVILLE, 326

March 15, 197

Sir Peter Scott
The New Ground
Slimbridge
Gloucester GL2 7BT
England

Dear Peter:

When your letter proposing Nicholas Mrosovsky as Co-Chairman of the Marine Turtle group arrived I had just heard from Nicholas that the post he was being considered for had been described to him as "coordinator." Whichever title is decided on it will be all right with me.

As I told Nicholas over the telephone recently, I was somewhat surprised to learn of what appears to be a change in the nature of the news letter that he will edit. This will evidently not be the restricted, intra-group communication that we had originally proposed as a means of coordinating the thinking of a committee scattered world-wide and raggedly represented at occasional meetings, but rather a publication for wide circulation among people interested in sea turtles. The latter is obviously a most worthwhile endeavor, but it doesn't address the need for some means of shaping an effective IUCN-SSC sea turtle committee. What I would hope is that once the aims of a revised sea turtle group have been clearly defined, and new members selected (on grounds of their concern for species-preservation), the group would than be integrated by means of a short, frequently-issued newsletter that would identify problems and crises, or tell of research or management advances directly related to the aim of saving the world's sea turtles. I should emphasize that I approve of the more wide-ranging publication that Nicholas proposes, but I considered an additional, intra-group circular to be absolutely essential if the new committee is to be an improvement over the old one.

I hope that when the new group takes shape it will not be called on to spend more time on the moribund issue of Mariculture, Ltd. Unless someone can explain where the reasoning in my recent memo to you on the subject of turtle farming is faulty, I must in the future abide by it as my attitude toward commerce in endangered species.

I believe I wrote to tell you how gratified we are over here that the IUCN and WWF are taking prompt, vigorous action in regard to the Baja Chelonia crisis, which now turns out to involve the hawksbill population there, as well as that of the black turtle.

Sincerely yours,

Archie Carr
Graduate Research Professor

AC:gs
cc: Mence
Fitter

send a few photos of wild greens
Hawk

(12) Sent 5/18

received — 3/23/76

J. Frick
P.O. Box 293
Lincoln
Mass. 01773

Mr. George Balazs
Hawaii Institute of Marine Biology
P.O. Box 1346
Coconut Island
Raneohe
Hawaii 96744

letter sent March 31

Dear Mr. Balazs,

Wayne King suggested I write to you concerning obtaining a 35mm photographic slide in horizontal format of all the sea turtle products now marketed (meat, [illegible] soup, skins, shells, etc.). The slide would go into a slide loop on sea turtle conservation for the Bermuda School system. For a number of years I have been working on a small green sea turtle restocking experiment on Bermuda in cooperation with the government there and with Dr. Archie Carr of Gainsville Florida. In order for this project to be successful, the islanders must be aware and sympathetic to our efforts to conserve all sea turtles in the local waters. The slide show would help this to eventually occur. The Education Department has requested this slide and so far I have not been able to find it.

Wayne also has told me of your remarkable research on basking turtles on French Frigate Shoals and your active participation in sea turtle conservation. I would also be interested in anything you have published or written on your project.

Sincerely,

Jane Frick

Jane Frick

oil

stuffed Turtle < Green hawksbill
Jewelry — combs, brackets
leather — ~~belt (?)~~ purse
calipee — canned soup
Meat —
Shell — whole polished shell
Boots

MAY 25 1976

DEPARTMENT OF THE ARMY
HEADQUARTERS UNITED STATES ARMY SUPPORT COMMAND, HAWAII
APO SAN FRANCISCO 96558

AFZV-SG-EC

20 May 1976

Mr. Doak C. Cox
Director, Environmental Center
University of Hawaii at Manoa
Crawford 317
2550 Campus Road
Honolulu, Hawaii 96822

Dear Mr. Cox:

This is in reference to your letter of 3 May 76 regarding the Environmental Impact Assessment (EIA) for Nap-of-the-Earth Flying on the Island of Kauai.

Original plans for NOE Flying on the Island of Kauai included live firing into waters approximately 1,000 meters off of the Pacific Missile Range Facility. These plans were reviewed by the State's Department of Land and Natural Resources, the National Marine Fisheries, and the U.S. Fish and Wildlife Service. Their comments were well considered in the initial EIA.

However, the initial EIA was reviewed by the USASCH Environmental Working Committee on 23 Apr 76 and the firing operations at the Pacific Missile Range Facility were not approved. Therefore, the actions will not impact on any marine mammals and turtles in the coastal waters.

Thank you for your concern.

Sincerely,

Lee C. Herwig Jr.

LEE C. HERWIG, JR.
Colonel, MSC
Chairman, Environmental Working
Committee

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

SINCE NINETEEN-HUNDRED "THE VOICE OF CONSERVATION"

Mr. George Balazs
Hawaii Institute of Marine Biology
Coconut Island
P.O.Box 1346
Kaneohe
Hawaii 96744

4 June 1976

Dear George:

This is just a brief note to thank you for your kindness in keeping me up to date so conscientiously with publications and information on turtles in Micronesia and Hawaii. The Atoll Research Bulletin just arrived with the Namoluk biology paper.

I am following up your report regarding the cessation of confiscation of hawksbill materials coming in from the Trust Territory through Honolulu. It seems they really want to eat their cake and have it - when it comes to obeying U.S. law (e.g. regarding protection of endangered species), they say they have a legislature of their own to take care of such matters; yet when they want to send the stuff to the U.S., they consider themselves to be just a state engaging in interstate commerce. Both ways the turtles lose. However, Charlie Fuss (Head of the NMFS enforcement branch for the south-eastern region) tells me that it might be possible to publish a notice in the federal register to the effect that hawksbill and related material coming into the U.S. from the Trust Territory will be assumed to be post-Act material in the absence of proof that it was obtain ed and fabricated before the endangered species act was passed (or before the hawksbill was put on the list). Don Ekburg (who is working with Larry Ogren on dispensing $70,000 of marine turtle conservation funds for NMFS at the moment) has promised to follow this up.

I am working on my Micronesia report at the moment; it looks like it is going to be pretty long. Once I have had it looked over by interested parties, I shall revise it appropriately and send it to Chelonia (the turtle journal) for publication; they have promised to get it out very quickly (a few weeks).

Sincerely,

Peter C.H.Pritchard Ph.D.

FLORIDA AUDUBON SOCIETY
921 Lake Sybelia Drive • P. O. Drawer 7 • Maitland, Florida 32751
(305) 647-2615

FRIENDS FOR PATSY MINK FOR U.S. SENATE COMMITTEE
P.O. BOX 36, HONOLULU, HAWAII 96810

Acknowledges receipt for the nomination or election of Patsy T. Mink, candidate for the U.S. Senate during 1976 the sum of $ 25.00

From George H. Balazs

Address 1651 Ala Moana Blvd.
Honolulu, HI 96815

Occupation

Principal Place of Business

and declares that Internal Revenue Service Form 4909 has been properly filed.

The Friends for Patsy Mink for U.S. Senate Committee

3/8/76 By Matsuleo Kawahara
Date Treasurer

Thank you very much for your generous contribution towards my bid for the U.S. Senate! Your confidence in my efforts is truly appreciated.

Please know that your friendship and support are sincerely valued and cherished.

With warm personal regards,

Very truly yours,

Patsy T. Mink

PATSY T. MINK
Member of Congress

PATSY T. MINK
SECOND DISTRICT
HAWAII

COMMITTEE ON EDUCATION AND LABOR
SELECT SUBCOMMITTEE ON EDUCATION
GENERAL SUBCOMMITTEE ON EDUCATION
SUBCOMMITTEE ON EQUAL OPPORTUNITIES

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
SUBCOMMITTEE ON TERRITORIAL AND INSULAR AFFAIRS
SUBCOMMITTEE ON NATIONAL PARKS AND RECREATION
SUBCOMMITTEE ON MINES AND MINING, CARIBBEAN

Congress of the United States
House of Representatives
Washington, D.C. 20515

OFFICES:
WASHINGTON, D.C.
2338 RAYBURN BUILDING
PHONE: 225-4906

HONOLULU, HAWAII
343-349 FEDERAL BUILDING
PHONE: 531-4622

WAIPAHU, HAWAII
94-806 FARRINGTON HIGHWAY
PHONE: 671-0170

March 8, 1976

Mr. George H. Balazs
1651 Ala Moana Boulevard
Honolulu, Hawaii 96815

Dear Mr. Balazs:

Thank you very much for your generous contribution towards my bid for the U.S. Senate! Your confidence in my efforts is truly appreciated.

Please know that your friendship and support are sincerely valued and cherished.

With warm personal regards,

Very truly yours,

Patsy T. Mink

PATSY T. MINK
Member of Congress

TINP/23/1/23.

Office of the Park Warden,
Sabah National Park Trustees,
P.O. Box 768,
Sandakan,
Sabah, East Malaysia.

20th September, 1976.

received Sept 28

Mr. George H. Balazs,
University of Hawaii at Manoa,
Hawaii Institute of Marine Biology,
P.O. Box 1346,
Coconut Island,
Kaneohe,
Hawaii 96744.

Dear George,

Many thanks for your letter of 13th September and the information contained therein. We have now submitted our report to Government and if their comments are favourable, I will certainly get in touch with you and the persons mentioned in your letter.

I am still continuing my turtle work and have just returned after visiting some remote islands north of Sandakan. These islands appear to be infrequently visited by turtles and most of the nesting occurs near high water mark. The odd nest escapes attention but most of them are harvested by fishermen.

I trust that you and Linda are doing well.

With all good wishes and kindest regards.

Yours sincerely,

Stanley.

G.S. de Silva.
Park Warden, Sandakan.

← To open cut here

Sender's name and address: Park Warden,
P.O. Box 768,
Sandakan, Sabah,
East Malaysia.

AN AIR LETTER SHOULD NOT CONTAIN ANY ENCLOSURE; IF IT DOES IT WILL BE SURCHARGED OR SENT BY ORDINARY MAIL.

TULIP Air Letter
33 RB

← Second fold here →

← First fold here →

BY AIR MAIL
PAR AVION
AIR LETTER
AEROGRAMME

Mr. George H. Balazs,
University of Hawaii at Manoa,
Hawaii Institute of Marine Biology,
P.O. Box 1346,
Coconut Island,
Kaneohe,
Hawaii 96744.

U.S.A.

COMMANDER, 14TH COAST GUARD DISTRICT
HONOLULU, HAWAII

23 July 1976

Mr. George H. Balazs
Hawaii Institute of Marine Biology
P. O. Box 1346
Coconut Island
Kaneohe, Hawaii 96744

Dear George:

Just a note of thanks for the photographs of French Frigate Shoals you had thoughtfully sent me.

They are very interesting and I especially like the shot of the "Walk Softly" sign.

I'm taking the liberty of forwarding the photographs to our Coast Guard Headquarters for possible publication in the Coast Guard Bulletin.

Sincerely,

JAMES W. MOREAU
Rear Admiral, U. S. Coast Guard

I. UCHIDA
HIMEJI City Agu.
TOGARAYAMA, HIMEJI City
JAPAN.

]-□□

MR. GEORGE H. BALAZS
C/O HAWAII INSTITUTE OF MARINE BIOL.
P.O. BOX 1346. COCONUT IS.
KANEOHE, HAWAII 96744
U.S.A

AIR MAIL

大原美術館

DEAR MR & MRS GEORGE H. BALAZS
I HAVE RECEIVED YOUR SCIENTIFIC REPORT. THANK YOU VERY MUCH FOR REMEMBERING US. SINCE I AM AGAIN GOING TO U.S.A AND CANADA FOR STUDY OF HUSEOLOGY FOR OVER ONE MONTH ON SEPTEMBER 2TH. IF POSSIBLE, I WANT TO MEET YOU IN HAWAII AGAIN. MAY BE. I WILL GOING TO HONOLULU AT SEP 26~28 TH. I WILL CALL UP YOU AGAIN. JUST A WORD "THANKING YOU" AH,
YOURS VERY GRATEFULLY. I. UCHIDA

棟方志功
1903—
板画 風待記の椅

SINCE NINETEEN-HUNDRED "THE VOICE OF CONSERVATION"

Mr. George Balazs
Hawaii Institute of Marine Biology
P.O.Box 1346
Coconut Island
Kaneohe
Hawaii 96744

July 19 1976

Dear George:

Many thanks for your most helpful letter of July 15. Your comments on the width ratios of Hawaiian green turtles were most useful, and I shall incorporate them. I still do not believe that Hawaiian green turtles are the same as East Pacific ones, but both your comments and Archie Carr's suggest to me that I should not jump to any quick conclusions.

I'll be happy to mention your full affiliation in the report, and apologize for not having cited you as the source of my information on the hawksbill importation problem. We have been following this up with Nat Reed, and the enclosed copies of correspondence may interest you.

Sorry you won't be at the conference this weekend; but since you would have to travel almost half way round the world, I understand your position. The enclosed agenda has one or two points of interest, not least of which is Hendrickson's listed affiliation or address. Is he working full time for the Cayman Turtle Farm now?

Sincerely,

Peter C.H.Pritchard Ph.D.

FLORIDA AUDUBON SOCIETY

921 Lake Sybelia Drive • P. O. Drawer 7 • Maitland, Florida 32751
(305) 647-2615

JOHN CRAVEN
U.S. HOUSE (D)

a commitment to HAWAII and the SEA

August 6, 1976

Mr. and Mrs. George H. Balazs
P. O. Box 8195
Honolulu, Hawaii 96815

Dear Mr. and Mrs. Balazs:

A campaign depends on contributions. Your donation will help keep our campaign moving, but it means much more than that. It gives us encouragement and support and reflects your commitment to Hawaii's future.

Our success will be your success.

On behalf of all those who support my candidacy, I wish to extend a sincere mahalo for your generosity and kokua.

With kind regards.

Sincerely,

John P. Craven

P.S. Hooray for the green turtles

CULTURAL PLAZA
100 N. BERETANIA STREET, ROOM 150
P.O. BOX 27378
HONOLULU, HAWAII 96827

Paid by Citizens for JOHN P. CRAVEN, HAWAII and the SEA
Co-chairmen: Bob Oshiro & Jim Kirchhofer
Treasurer: Jerry Kimoto

GEORGE R. ARIYOSHI
GOVERNOR

JOHN P. CRAVEN, PH. D., J.D.
MARINE AFFAIRS COORDINATOR

STATE OF HAWAII
MARINE AFFAIRS COORDINATOR
OFFICE OF THE GOVERNOR
P. O. BOX 2840
HONOLULU, HAWAII 96803

August 13, 1976

Mr Kenji Nishioka, Research Scientist
User Applications Branch
Ames Research Center -- NASA
Moffett Field, CA 94035

Dear Mr. Nishioka:

Mr. Richard Poirier, of the State of Hawaii's Department of Planning and Economic Development, suggested that I write to you in regard to a possible use of the U-2 when it returns to Hawaii in October.

The State of Hawaii, working in close cooperation with the National Marine Fisheries Service and the Interior Department's Fish and Wildlife Service, is planning a marine resource survey of the Northwestern (or Leeward) Hawaiian Islands, the area that begins northwest of Kauai and extends beyond Midway to Kure Island.

At an organizational meeting this week, scientists from both Federal and State agencies suggested that high-altitude, heat sensitive photographs such as those taken by your program might prove of considerable value in detecting populations of Hawaiian Monk Seals and green sea turtles, as well as of other living (and possibly non-living) resources of the Northwestern Hawaiian Islands.

Is there any possibility that we might be able to incorporate the U-2 into this important State-Federal program? Basically, what I am suggesting is a U-2 photo flight, to take heat sensitive photographs, of the area of the Hawaiian chain that begins northwest of Kauai and extends on up to Kure Island; roughly this goes from about 161 degrees, 30 minutes, west longitude, to about 178 degrees, 30 minutes, west.

Any help that you can give us in this matter would be greatly appreciated by all parties concerned.

Aloha and mahalo,

Howard Pennington

HOWARD PENNINGTON
Acting Marine Affairs Coordinator

HP:ht

cc: Hon. Christopher Cobb, Chairman
Dept. Land & Natural Resources

Hon. Hideto Kono, Director
Dept. Planning & Economic Development

Dr. Albert Miyasato
Administrative Assistant

Dr. R. Skillman
National Marine Fisheries Service

bcc: Mr. George Balazs
Marine Biologist

COPY

University of Hawaii at Manoa

Hawaii Institute of Marine Biology
P.O.Box 1346 • Coconut Island • Kaneohe, Hawaii 96744
Cable Address: UNIHAW

January 12, 1977

MEMORANDUM

To: Michio Takata, Director
Division of Fish and Game

From: George H. Balazs
Jr. Marine Biologist, HIMB

One of the early important findings of my green turtle surveys around the major islands is the identification of an aggregation of subadults in waters adjacent to the new reef runway. In view of the relatively small area involved, this could very well turn out to be the densest concentration of turtles around the Island of Oahu. The discovery was originally made by aerial spotting, however, I am now in the process of initiating underwater surveys of the area in order to obtain information of a more detailed nature. Questions that immediately arise in this interesting case are: 1) has the landfill construction of the runway destroyed valuable turtle feeding habitat, or has the construction somehow actually created environmental conditions attractive to turtles? In other words, were turtles previously concentrated in this area, and 2) what effects, if any, will aircraft have on the turtles when the new runway is placed in service about one year from now? Hopefully we will eventually be able to answer these important questions.

My purpose in communicating this information to you at such an early date is twofold. First, I thought you would find it quite interesting. Normally there is a tendency to think of turtle aggregations today being principally located in remote areas, rather than virtually at our backdoor. Second, I thought you might want to alert your enforcement division of this finding so as to guard against any possible abuses.

I will pass on further information to your division as it becomes available.

GHB:ec

REPORT ON THE EXPERIMENTAL USE OF LARGE MESH NETS AS A LIVE-CAPTURE TECHNIQUE IN THE RESEARCH OF HAWAIIAN GREEN TURTLES

prepared for

Mr. Michio Takata, Director

Division of Fish and Game

by

George H. Balazs

Hawaii Institute of Marine Biology

P.O. Box 1346

Kaneohe, Hawaii 96744

CONTENTS

INTRODUCTION

With the exception of ongoing studies in the Hawaiian chain, world-wide research of the life history of marine turtles has thus far focused principally on adult females at their colonial breeding sites. This can be attributed to the importance placed on the reproductive aspect, and to the high level of research efficiency obtainable at such sites where comparatively large numbers of turtles are terrestrially available for tagging and observation.

Although monitoring of the Hawaiian green turtle breeding assemblage at French Frigate Shoals continues to be essential, the major focus of my State (and pending Sea Grant) supported research is on immature turtles occurring in the ocean environment throughout the Archipelago. Objectives of this work include the determination of rates of natural growth, ages at sexual maturity, longevity, and geographical areas of developmental migrations. Such data are basic to understanding the dynamics of a population, however, they are nevertheless virtually nonexistent for any population of marine turtles.

The live-capture of turtles directly from the sea for tagging and observation purposes imposes a number of difficulties and constraints. However, work that I have thus far conducted indicates that problems can be reduced substantially by careful selection of the capturing sites and techniques used. Three basic live-capture methods have been utilized and are listed as follows:

(1) Capture with specially designed long-handled scoops nets, used both from shore and from a small outboard powered boat. This technique has proven most successful at select sites within French Frigate Shoals and Kure Atoll.

(2) Capture by hand, both while free driving and with the use of SCUBA. This is a low efficiency, but nevertheless effective, long term method for tagging immature turtles. To date, it has been used with varying levels of success at select sites around Midway (in cooperation with the Koral Kings Diving Club), Kure, Oahu, Lanai, and Hawaii. Assessments of additional locations in the Hawaiian chain are now in progress.

(3) Capture with modified large mesh nets set vertically in shallow coastal waters. The use of this method as a research tool had been examined in May 1973 (at N. Kona, Hawaii) prior to adoption of Division of Fish and Game Regulation 36 (Protection of Marine Turtles). Results of the test suggested considerable potential, provided suitable precautions were exercised to avert drowning or physical injury to the turtles. Further evaluation was warranted and necessary, thereby resulting in the field trial experiment upon which this present report is based.

In December, 1976 written application was made to Mr. Michio Takata, Director, Division of Fish and Game, for permission to conduct a five day test on the live-capture of green turtles with large mesh nets. I requested that this trial be carried out with the assistance of a consultant fisherman, Mr. Arnold L. Howard of Punalu'u, Island of Hawaii. Mr. Howard has considerable knowledge of turtles and I have found it beneficial to confer with him on several occassions since making his acquaintance in June, 1974. Authorization for the conduction of the field trial

experiment was subsequently granted by the Department of Land and Natural Resources, Division of Fish and Game, through the issuance of Ammendment No. 1 to my Scientific Collecting (Research) Permit No. 7744. One of the conditions of this authorization was that a report on the test be submitted to the Director of the Division for evaluation prior to continued use of the nets.

EQUIPMENT AND METHODS

The test was conducted using four comparatively short sections of net. Two of these nets were made of cotton and measured 62' by 14' with a 26" mesh, and two were made of nylon and measured 73' by 12' with an 18" mesh. On the nylon nets, a three foot wide section of netting adjacent to the leadlines had been soaked in varathane varnish in order to reduce snagging on the ocean bottom. A large inflated tire innertube fitted with a plywood bottom was used to float the nets during the setting process.

Joined sections of net were laid out once daily over a four day period from May 4-7, 1977. Three of these settings were made at Kaalualu Bay (May 4, 5 and 7) and one was made at Punaluʻu Bay (May 6). In each instance, one end of the net was anchored close to shore, with the set being made nearly perpendicular to the shoreline. At the specific sites selected, the depth of the water did not exceed the width of the nets and, in most cases, was considerably less. After the nets were laid out, the leadlines were examined (using mask and fins) and positioned in such a manner so as to reduce the possibility of snagging on the ocean bottom. The nets were set at approximately 1600 hours of each day and retrieved between 0530 and 0630 hours of the following day.

RESULTS

A total of 16 captures were made involving 15 green turtles, *Chelonia* (Table 1). Although considerably entangled in the netting, all were recovered alive, tagged and released with no indications of serious injury. Most of the turtles, however, appeared to be moderately fatigued from struggling in the nets, and all had minor signs of net abrasion on their front flippers. Observations made from shore of the nets' floatlines revealed that turtles did not become entangled before sunset (1900 h), and probably not before 2200 hours.

The size distribution of the turtles captured (Figure 1) suggests that the nets, both 18" and 26" mesh, were not selective for any particular size category. None of the animals could be identified as being males.

A turtle measuring 31¼" in straight carapace length that was captured on May 4-5 was recovered on May 7-8 in nets set at the original capture site within Kaalualu Bay. The turtle was released for a second time and appeared to be vigorous and uninjured.

On May 19 an unsigned letter (postmarked Volcano, Hawaii) was received which briefly stated that an 18" turtle had been taken at Kaalualu on May 14. An enclosed tag identified the turtle as having been originally captured and released during the test at Kaalualu on May 5-6.

CONCLUSIONS

Results of this test indicate that the carefully controlled use of large mesh nets is a viable research technique for the capture of marine turtles. This is in agreement with the findings of earlier experimentation with nets conducted in May of 1973. The significant advantage of this capture method is the apparent non-selectivity for any particular size category, thereby permitting uniform sampling of an aggregation of turtles. Such sampling does not appear to be possible by the other capture methods discussed in the Introduction of this report. Another favorable factor in the use of nets is the comparatively high level of efficiency obtained for the research time and effort expended. This may, however, be expected to vary with the locations sampled as well as other variables such as time of year.

The recapture made after an interval of three days suggests that the turtles' experience of being entangled in nets did not stress them to the point of abandoning the area. A similar recapture was made in May of 1973 after an interval of only one day. Such findings also tend to indicate that the turtles did not develop an ability to detect and/or avoid nets.

The precautions that have been identified in this test as being necessary to minimize the possibility of drowning or injury to turtles are listed and discussed as follows:

(1) use of optimal nets - Nets must have a light leadline with the adjacent netting treated with a varnishing agent in order to lessen snagging. The use of small sections of net joined together with quick release knots is particularly favorable for the rapid and efficient retrieval of captured turtles.

(2) careful selection of capture sites - Nets must be laid at sites that are generally free of bottom obstructions (particularly coral), and in water of considerably less depth than the width of the nets.

(3) examination and adjustment of leadlines - After the nets are laid, the leadlines must be visually inspected underwater and adjusted accordingly to reduce the possibility of snagging. In certain cases, potential obstructions must be removed from the area.

(4) monitoring and removal of turtles - Nets must be examined at regular intervals and any captured turtles removed at the earliest feasible time. Turtles which become entangled during the nighttime hours should be removed at first light. Retrieving turtles during darkness imposes serious difficulties as well as dangers to the researchers from biting turtles and self-entanglement in the nets.

Even by observing these precautions, there is still the distinct possibility for an occasional turtle mortality or injury to result. However, the risk of such an occurrence is presently considered to be acceptable when compared to the scope and quality of the information that can be obtained.

The use of nets as a research tool in areas frequented by the public can be expected to attract interest and curiosity. In such cases, it would be essential to explain in practical terms the activity that is taking place and to maintain good public relations by whatever means

appropriate.

It should be noted that the use of large mesh nets for capturing turtles in the Northwestern Hawaiian chain is not considered to be feasible due to the probability of accidentally entangling monk seals.

REQUEST

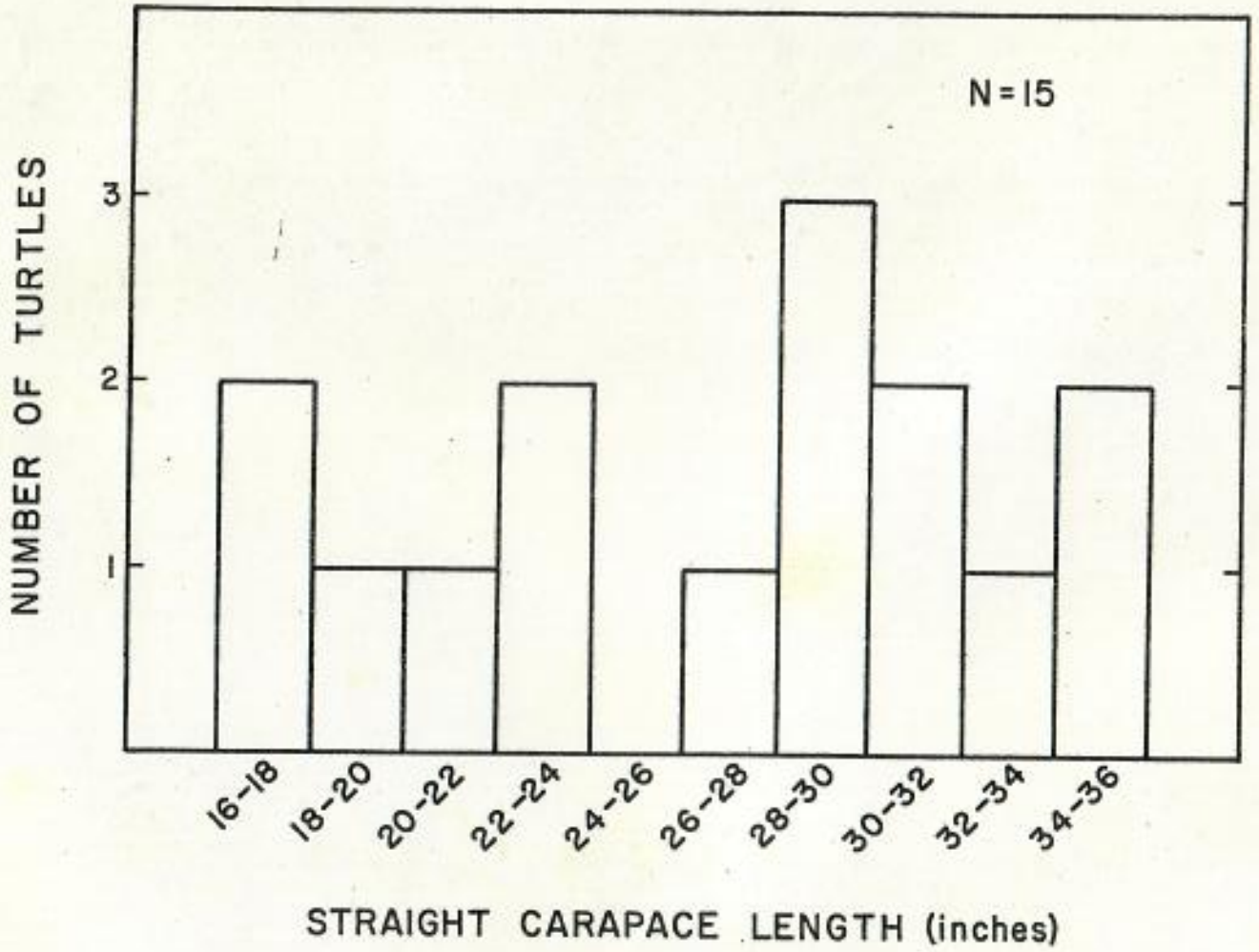
The results and conclusions from this test support the further use of nets in a research capacity for capturing and tagging turtles. It is therefore requested that permission be granted to conduct additional and longer term capture activities around the major Hawaiian Islands. Such work would be carried out at as yet undetermined sites that are found to be consistent with the criteria set forth in this report. Notification of the specific sites selected would be made to the Division of Fish and Game well in advance of the actual work.

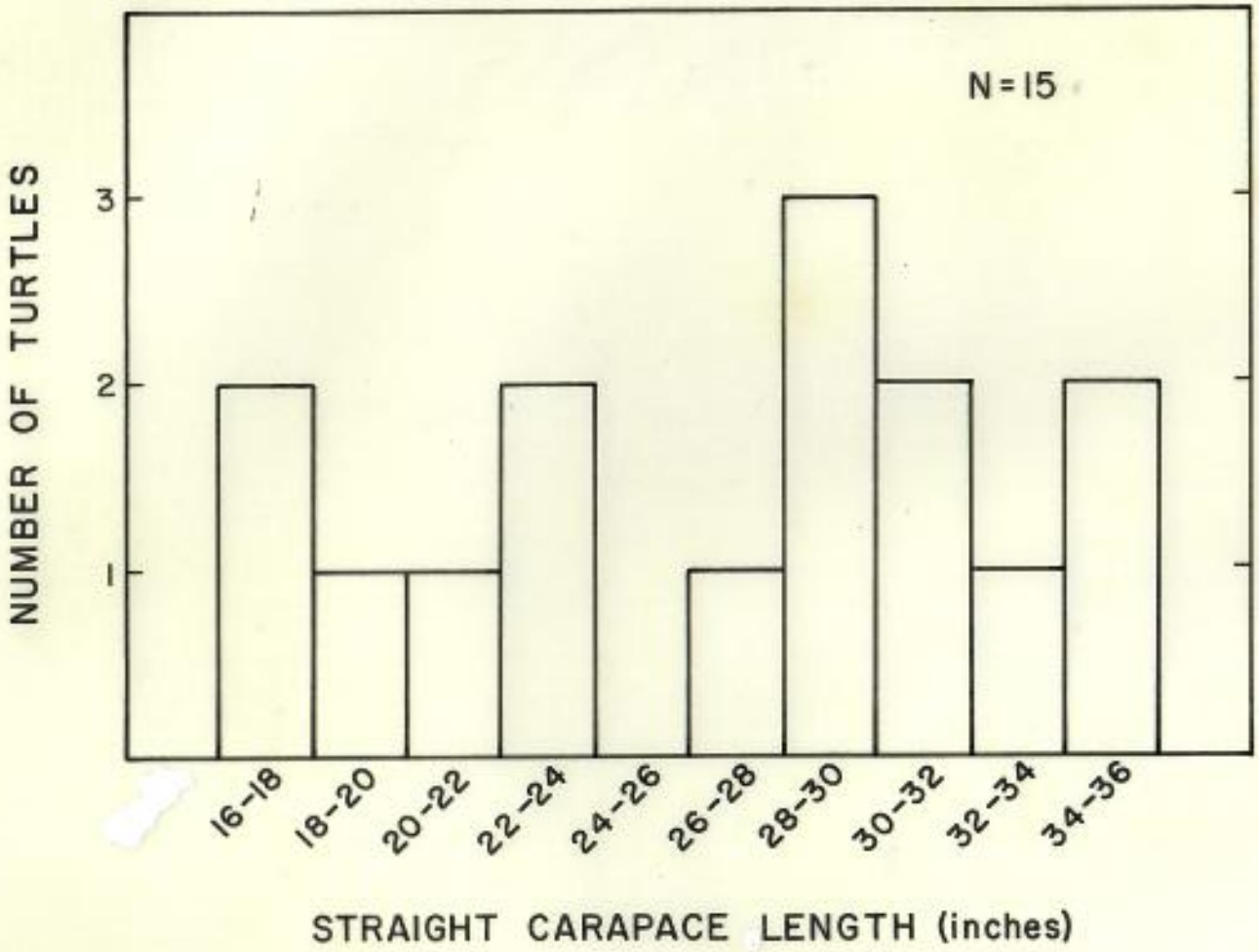
Authorization would also be needed for a research employee, Mr. Alan K. H. Kam, to provide me with assistance in the conduction of additional capture work with nets.

Table 1. Results of test using large mesh nets at Kaalualu and Punalu'u, Island of Hawaii

Date	Location	Settings	No. turtles captured, tagged and released
4-5 May 1977	Kaalualu	2 nylon nets joined	2
"	"	2 cotton nets joined	1
5-6 May	Kaalualu	2 nylon nets joined	3
"	"	2 cotton nets joined	2
6-7 May	Punalu'u	2 nylon nets joined	3
7-8 May	Kaalualu	all 4 nets joined	5 (1 recapture)
Total Captures			16

Figure 1. Size distribution of turtles captured in large mesh nets at Kaalualu and Punalu'u, Island of Hawaii




N=15
NUMBER OF TURTLES
3
2
1
16-18
18-20
20-22
22-24
24-26
26-28
28-30
30-32
32-34
34-36
STRAIGHT CARAPACE LENGTH (inches)