U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Fisheries Center
Honolulu Laboratory
P. O. Box 3830
Honolulu, Hawaii 96812

September 9, 1983

F/SWC2:GHB

Mr. Alika Cooper
163 Kaiulani Street
Hilo, HI 96720

Dear Mr. Cooper:

During the coming months a small research project will be undertaken on the Big Island to tag and study green turtles in their marine habitat. This work will be a cooperative effort involving mainly the Southwest Fisheries Center Honolulu Laboratory, National Marine Fisheries Service, the University of Hawaii at Hilo Marine Option Program, and the Sea Grant College Program. I would like to ask for your cooperation with any information you may be able to provide on the following points.

1. At which specific coastal sites on the Big Island should we direct our efforts in order to catch the greatest number of turtles?

2. At which specific coastal sites would we be most likely to catch large turtles, 200 pounds and greater?

3. What capture techniques would you recommend for the above locations?

4. Which beach sites on the Big Island were previously used (or are now used) by turtles to nest and lay eggs?

Any help that you can offer on these important subjects will be greatly appreciated. We will be requesting similar assistance from a number of individuals on the Big Island as listed below. If you know of others who might be of assistance, please send us their name and address.

Sincerely,

George H. Balazs
Wildlife Biologist

Big Island People Contacted

1. Douglas Blake
2. Dexter Cate
3. Alika Cooper
4. Ken Ellingwood
5. Dave Harrington
6. Ken Hupp
7. Moses Kahumoku
8. Bill Kalei
9. Gerald Kang
10. Robert Kim
11. Alfred Long
12. Ruby McDonald
13. Tom Nahiwa
14. Robert Nishimoto
15. Howard Takata

Identical letters, September 9, 1983, by George H. Balazs

Big Island People Contacted

1. Mr. Alika Cooper
   163 Kaiulani Street
   Hilo, HI 96720

2. Mr. Douglas Blake
   P. O. Box 307
   Kailua, HI 96740

3. Mr. Dexter Cate
   167 Lahaina Street
   Hilo, HI 96720

4. Mr. Ken Ellingwood
   110 Huaalani Drive
   Hilo, HI 96720

5. Mr. Dave Harrington
   P. O. Box 4840
   Kailua, HI 96740

6. Mr. Ken Hupp
   913 Kaneolehua
   Hilo, HI 96720

7. Mr. Moses Kahumoku
   358 Eulani Street, #104A
   Hilo, HI 96720

8. Mr. Bill Kalei
   688 Kinoole Street
   Hilo, HI 96720

9. Mr. Gerald Kang
   2848 Pulima Drive
   Hilo, HI 96720

10. Mr. Robert Kim
    236 Kanoelani Street
    Hilo, HI 96720

11. Mr. Alfred Long
    104 Alae Street
    Hilo, HI 96720

12. Mrs. Ruby McDonald
    75-5744 Alii Drive, #281
    Kailua, HI 96740

13. Mr. Tom Nahiwa
    2476-A Kinoole Street
    Hilo, HI 96720

14. Mr. Robert Nishimoto
    P. O. Box 936
    Hilo, HI 96720

15. Mr. Howard Takata
    2349 Kalanianaole Street
    Hilo, HI 96720

Inasmuch as we all enjoy eating delicious turtle meat, opihi's etc, we do not depend on it for sustenance and harvesting cannot be kept at a sustenance limit except for the Hawaiians as Niihau. Keep the ban on green turtle catching, tag them, watch for them at sunset and night. Free them from the nets. I dont know where the large ones are and they aren't around the like before.

U. S. DEPARTMENT OF COMMERCE
OCEANIC AND ATMOSPHERIC ADMINISTRATION
TIONAL MARINE FISHERIES SERVICE F/SWC2
P. O. BOX 3830
HONOLULU, HAWAII 96812

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WEDNESDAY, MAY 18, 1983

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Meeting tomorrow

Are turtles needed for food?

by Julia Neal

The public meeting tomorrow to discuss whether to allow Hawai'i residents to take green sea turtles for subsistence will be held in the wake of two arrests on Kaua'i for illegally killing the turtles.

State Conservation and Resources enforcement officer Tony Nakamura said an anonymous phone call brought police to the bluff overlooking the waters off Princeville last Saturday. Joined by conservation enforcement officers, they arrested John Klodes, 21, and Grant Olson, 19, of Hanalei for allegedly taking a mature green sea turtle with a shell length of 30 inches.

Nakamura said the pair caught the turtle while free diving from the shore, and butchered it before enforcement officers arrived.

The meeting will begin at 7 p.m. in the Lihu'e Library Conference Room. It is sponsored by the National Marine Fisheries Service, which is reviewing turtle protection laws for Guam, American Samoa, Palau, the Northern Marianas, Micronesia, the Marshall Islands and Hawai'i.

Natives of islands further south have requested permission to take the turtles, and in some cases gained it, claiming they need turtle meat for survival. And individuals in Hawai'i have also made a request, claiming the ban on turtle hunting, intereferes with "native Hawaiian rights."

But the federal government allowed other Polynesians living in U.S. territories to take the turtle because there was little other protein available, federal officials said.

The questions facing the decisionmakers concerning Hawai'i, is whether native Hawaiians have other available sources of protein and whether the sea turtles, which have been protected since 1978, are now plentiful enough to allow limited taking.

CSIRO
MARINE LABORATORIES

Division of Fisheries Research
Division of Oceanography

Leach Street, Marmion, W.A.

A Division of the Institute of Animal and Food Sciences
A Division of the Institute of Physical Sciences

PO Box 20, North Beach, W.A. 6020
Telephone (09) 447 1388 Telex 93368

27th October 1983

Your Ref: F/SWR1:ETN

Dr. E.T. Nitta,
Marine Mammal Coordinator,
U.S. Department of Commerce,
Southwest Region,
Western Pacific Program Office,
P.O. Box 3830,
HONOLULU, HAWAII 96812

Dear Dr. Nitta,

I'm enclosing two copies of a rough draft of the subsistence use of turtles review. Keep one for your own perusal, give one to George Balazs.

You'll find, I'm afraid, that the amount of space devoted to a particular island group is inversely proportional to your immediate problems with it. Sorry it worked out that way, but there just isn't much available on Guam and Hawaii. On the accompanying page I have listed a few references that I still need. I'd be grateful if you could have someone chase them up for me.

I'll probably phone you on the morning of Monday, November 21 in order to get together later that day or the next day to discuss the manuscript. I'll then revise it on the plane on the way back to Perth and have the final version back to you soon thereafter.

Some people treat outside consultants as people who should be left strictly alone to bring in independent opinions. I don't like to work this way - I'd rather work with the people who ask for the work, so as to arrive at an end product as useful to them as possible - with the proviso, of course, that I won't say anything I don't fully believe in or agree with. Anyway let me have your ideas on how to improve the manuscript. As I mentioned earlier, George is really much better qualified than I am to do this job, so I anticipate criticisms and suggestions.

Yours sincerely,

R.E. Johannes
PRINCIPAL RESEARCH SCIENTIST

REFERENCES NEEDED BY JOHANNES

Matthews, L.B. 1982. Turtles and tradition. Glimpses (of Micronesia and the Western Pacific). 22(1): 56-59.

Force, Maryanne. 1976. The persistence of precolonial exchange patterns in Palau: a study of cultural continuities. Ph.D. thesis, Walden University. This reference is in the Pacific Reading Room at the U.H. Library. Call No. Pac. GN 671 P3 F6. I think it is on microfilm. She discusses a variety of social restrictions on who could catch turtles and apparently has a lot of information on the uses of turtle shell. If the relevant passages could be photocopied or summarized for me I would be grateful. I don't think I'll have time while I'm in Hawaii to do this, particularly since it is a hassle to get things out of the Pacific Reading Room without a library card and special permission etc.

Does George have anything on the use of turtle shell or turtle oil as medicine in Hawaii and on turtles as Amakua? All I've seen is vague unreferenced comments on these subjects.

In a letter from the Kaho'olawe 'Ohana to John Norton, mention is made of a description of A.D. Kahaulelio in 1902 at Poihua of Hawaiian methods of catching turtles. It doesn't sound very important, but if George has the reference handy I might as well cite it.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Fisheries Center
P.O. Box 271
La Jolla, California 92038

October 6, 1983 F/SWC:DJM

TO: Center Management Team

FROM: John Carr
Deputy Director

SUBJECT: Southwest Regional Office's Research Needs

Please review the attached April 11, 1983 memorandum and attachments concerning Southwest Region research needs which was written shortly after our Center/Region meeting last March. For the subjects and items for which you are responsible, report briefly on

1. progress made toward fulfilling the request,

2. FY 1984 work plans for working toward completion of the item, or

3. reasons you did not or are not pursuing the request during FY 1983/FY 1984.

You may use the "bullet style;" please use the same reference numbering system as used in the attachments. Please submit your report to me no later than November 14, 1983.

Attachments

the Hawaiian Archipelago) the relationships if any between stocks or populations at different islands.

d. Billfish and associated species - The short-terms need is for biological information and catch, effort, and value data for the non-billfish species, which NMFS has said the Council must include in the FMP. It is our understanding tha the Honolulu Laboratory was assembling information on mahimahi and wahoo last year, and perhaps the Tripartite Survey Symposium will include a paper(s) on these species. In addition, there is a need previously identified for a better catch monitoring system to carry out the annual release of reserves under the PMP. This should be provided as soon as possible.

A longer-term problem is to get a better understanding to stock structure and migratory patterns for the pelagic species complex. An update of the international stock assessment workshop results, with possible extension to other species would perhaps be useful.

e. Tropical tunas - There have been dramatic shifts in tuna fisheries in the central and western Pacific. Japan has reduced its longline fleet, has initiated agreements for access to a number of Micronesia and south Pacific governments' fishery zones, and has greatly expanded its albacore gillnet fishery. Korean and Taiwanese longliners appear to be relocating from their American Samoa base. U.S. purse seining has expanded a great deal. Several years data from experimental purse seining operations have been collected, plus SPC skipjack data. These events should be documented with emphasis on possible implications for the U.S. tuna industry and for the island economies. Of special interest are impacts on the canneries in American Samoa and Hawaii and on the transshipping and support industries in Guam and perhaps other micronesian entities. A report on the western Pacific tropical tuna fisheries should be completed by mid-FY 1984.

f. MFCMA Amendments - The recent amendments extended the Western Pacific Council's planning authority to all FCZ waters off the central and western Pacific. Advice is needed on the extent of the fishing in the previously uncovered areas (U.S. Possessions), and the possible need to amend FMPs to cover these waters. This report is needed by the end of FY 1983.

3. Marine Mammal/Endangered Species

a. Hawaiian Monk Seal - The Recovery Plan should be implemented according to the current schedule, with annual progress reports on the same timeframe as annual MMPA reports.

b. Sea Turtle Status Review - We anticipate the status review will not result in any delistings, so a Recovery Plan will have to be prepared in FY 1984. A planning schedule for the Recovery Plan should be completed by the end of FY 1983. The schedule must include consideration of data needs and problems in dealing with turtles in the eastern Pacific, as well as the western Pacific.

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southwest Region
300 South Ferry Street
Terminal Island, California 90731

11/2/78

WPPO	
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January 25, 1978

FSW31/ETN

Turtle File

To: William H. Stevenson, Regional Director, FSE

Attn: Dr. Donald R. Ekberg, FSE6

From: Floyd S. Anders, Jr., Acting Regional Director, FSW

Subject: Draft Turtle Recovery Plan

As requested in your December 14, 1977 memorandum, we are providing the following comments.

The program goal, as we understand it, is to remove each species of sea turtle from the endangered or threatened species list, with emphasis on development of a national management program. Although not discussed in the draft plan, it would be useful to consider a longer term management scheme to allow for incidental or directed take, and to ensure the continued viability of the affected turtle stocks should delisting be achieved.

The criterion by which the effectiveness of protection and management is to be measured is optimum sustainable population (OSP), a term defined in the Marine Mammal Protection Act of 1972, and designed for use in marine mammal management. Indicators more precise and more applicable than OSP are available and should be considered.

Reduction or elimination of incidental take of sea turtles by shrimp trawlers may be a major factor in the enhancement, protection, and management of sea turtles in the Gulf of Mexico. However, we believe the major prerequisites of the management plan are to determine more accurately the number of animals, establish whether or not there are separate stocks within species (and if so, the relationships between these stocks), identify critical habitat, and evaluate the impacts of directed and incidental take and of habitat loss on the viability of the species throughout their ranges. Accordingly, stock assessment and identification information should be developed concurrently with gear technology for incidental take, and should be given as high a priority as possible under the current and projected funding allocations.

The draft plan emphasizes activities in the southeastern U.S. and Caribbean areas. There are, however, major problems in the Western Pacific that deserve more than secondary consideration. Information available to us indicates that there is a directed native subsistence fishery for green sea turtles (Chelonia mydas) in this area. In addition to the native dependence on turtle meat as a major source of protein, sea turtles constitute a major component of their native culture (McCoy 1974, NMFS 1976). We, therefore, strongly recommend that stock identification, census, identification of nesting beaches, and an assessment of the impacts of a directed take in the Trust Territory be given Category I priority for FY78, and that a detailed research program for the Western Pacific be developed in cooperation with the Southwest Fisheries Center, Honolulu Laboratory, and this Region.

There is considerable emphasis on the need for additional enforcement capabilities. It would be helpful to include a discussion of the magnitude of the enforcement problem, e.g., number of alleged and documented instances of illegal taking and importation, number of cases investigated and closed each year, etc.

It would also be helpful to indicate how the costs of carrying out the plan were estimated, differentiating between one-time expenditures and recurring costs.

Other specific comments are as follows:

Section 2.1.3. Law Enforcement - If cooperation from citizens is the key to any management regime, consideration in a rational management plan should be given to the special needs of people in the Pacific Trust Territory and other areas who depend on sea turtles for their existence.

Section 3.2. Scheduled Funding and Personnel - Results of the studies regarding directed turtle fisheries should be presented if available.

We appreciate the opportunity to comment on the draft turtle recovery plan and hope our comments will be helpful to you. We look forward to seeing the next draft.

cc: F14, Barrett
FSW1, Gates
F33, Roe

Attachment

LITERATURE CITED

McCoy, Mike A. 1974. Man and turtle in the Central Carolines. Micronesia. 10(2): 207-221.

National Marine Fisheries Service. 1976. Draft environmental impact statement. Proposed listing of the green sea turtle (Chelonia mydas), loggerhead sea turtle (Caretta caretta), and Pacific ridley sea turtle (Lepidochelys olivacea) as threatened species under the Endangered Species Act of 1973. 96 p. plus appendices.

SINCE NINETEEN HUNDRED

"THE VOICE OF CONSERVATION"

May 3, 1983

Mr. Alan W. Ford
Regional Director
Southwest Office
National Marine Fisheries Service
300 South Ferry Street
Terminal Island, California 90731

Dear Regional Director:

This letter is written in response to the notice in the Federal Register Vo. 48 No. 77, pp. 16925-6, pertaining to the proposed rule change to permit subsistence take of marine turtles in Hawaii and Guam. I am writing on behalf of the Florida Audubon Society, an organization of approximately 30,000 member-conservationists. Among my credentials for expressing an opinion on the present petition, I wish to state that I serve as Co-Leader of the NMFS Sea Turtle Recovery Team, have published extensively in the field of marine turtles, and have conducted surveys of turtles in several Pacific territories and nations, including Micronesia, Guam, New Caledonia, and Papua New Guinea. I am not opposed on principle to subsistence take of sea turtles, and indeed recognize that in areas such as Papua New Guinea and a few parts of Micronesia capture of sea turtles is culturally important and should be permitted.

The Petition presents no justification for capture of sea turtles in Hawaii and Guam, and I know of none. NMFS was correct in its earlier ruling in determining that a complete prohibition is necessary to control commercial trade in turtle shells, meat, and other products. Subsistence use of endangered or threatened species should only be permitted when a) the take is biologically sustainable, and b) when the take is conducted by tribal or village peoples who are essentially excluded from a cash economy, who need to catch turtles to feed themselves and their families, and who belong to communities that have been partially or completely dependent on sea turtles from earliest times.

These criteria do not apply in Hawaii and Guam. In both of these territories, a cash economy prevails and, while all societies may have "drop-outs", no-one is denied participation in that economy. Food stamps are available for the unemployed, and social structures are totally unlike the tribal or village economies that prevail in certain parts of the Trust Territory. Moreover, to consider an exemption for "native Hawaiians' is rank racism - the selection

FLORIDA AUDUBON SOCIETY
1101 Audubon Way • Maitland, Florida 32751 • (305) 647-2615

of a certain group for privileges, not because of a demonstrated special need, but simply on the grounds of racial background. The native Hawaiians today have intermarried extensively with immigrants, and cannot legitimately be compared with people in islands of the Yap District, for example, who may present a genuine cultural dependency upon capture of sea turtles.

Moreover, in both Guam and Hawaii sea turtle populations are small. In the entire Hawaiian chain there appear to be only a few hundred mature female Green Turtles, almost all of which nest on French Frigate Shoal, and although immature turtles are extremely difficult to census the small adult population certainly suggests that the population as a whole should not be exposed to any type of exploitation. Similarly, Green Turtles nest rather sporadically on Guam, and although immature turtles are regularly found in waters around the island, I have seen no data to suggest that this is an exploitable population. Moreover, the Petition apparently asked for permission for 'residents of Guam', not just native Chamorros, to catch sea turtles. It appears that there is not even the pretense of 'native tradition' as a justification for the resumed fishery; rather, permission is sought for everyone on Guam to be able to catch turtles. Since humans outnumber the turtles in Guam by a ratio of hundreds to one, this is clearly a dangerous proposal.

When I was on Guam in 1976 I was informed that a few old fishermen still catch turtles by spear, but that most turtles caught nowadays were taken by non-traditional skin or scuba divers. In the seven years since then, during which time turtle capture has not been legal in Guamanian waters, it is reasonable to assume that the "old-timers" are now very old, and are unlikely to be fit enough to catch turtles by traditional means. I strongly suspect that the Petitioners are aware that the requested resumption of legal capture of sea turtles around Guam has little to do with subsistence, and I ask NMFS to make itself aware of the real consequences of relaxing the ban on the take of turtles in the Territory.

Sincerely yours,

Peter C. H. Pritchard, Ph.D.
Vice President - Science and Research

PCHP/rmp

United States Department of the Interior

FISH AND WILDLIFE SERVICE
WASHINGTON, D.C. 20240

ADDRESS ONLY THE DIRECTOR,
FISH AND WILDLIFE SERVICE

In Reply Refer To:
FWS/OES

JUN 29 1983

Mr. Alan W. Ford
Regional Director
Southwest Regional Office
National Marine Fisheries Service
300 South Ferry Street
Terminal Island, California 90731

Dear Mr. Ford:

This letter is in response to the National Marine Fisheries Service notice of April 20, 1983 (48 FR 16925-16926), regarding a review of regulations concerning the taking of sea turtles for subsistence purposes. This notice applies to the green turtle (Chelonia mydas) in areas of the Pacific not already covered by the special rule on sea turtles allowing subsistence take; as such, the rule now applies only to residents of the Trust Territory of the Pacific. In assessing whether to extend the special rules to additional areas, it is necessary to determine if a change is required both from the point of view of status of the species and the needs of native peoples within the context of 50 CFR Part 227. These regulations allow taking for personal consumption by residents of the Trust Territory of the Pacific Islands "if such taking is customary, traditional, and necessary for the sustenance of such resident and his immediate family." Commercial transactions are not allowed by this special rule.

The U.S. Fish and Wildlife Service has compiled a substantial amount of information concerning the status of the green turtle throughout the world, as well as in Hawaii and other areas of the Pacific. Much of this information was originally compiled by George Balazs, now with the National Marine Fisheries Service in Honolulu, and published as NOAA Technical Memorandum NMFS-SWFC-7 entitled, "Synopsis of Biological Data on the Green Turtle in the Hawaiian Islands." Important information concerning the status of Pacific Ocean green turtles is also contained in P. C. H. Pritchard's, "The Marine Turtles of Micronesia" (Chelonia Press, San Francisco, CA, 1977) and in a number of papers in, "The Biology and Conservation of Sea Turtles" edited by K. A. Bjorndal (Smithsonian Institution Press, Washington, D.C., 1982).

Information published since the 1978 listing of the green turtle has been reviewed as part of our continuing assessment of the status of listed species. Based on a review of these data, it is our opinion that the listing of the green turtle as a Threatened species on the U.S. list of Endangered and Threatened wildlife is appropriate and consistent with the biological data.

Certainly no information indicating that Chelonia mydas is not Endangered or Threatened in Hawaii, Guam, and other areas subject to the notice is available; without the protections afforded by the Act, the green turtle is likely to decline in status.

With regard to the issue of subsistence take, we have carefully reviewed the data concerning claims that native Hawaiians and others in the Pacific should be allowed to take turtles in accordance with 50 CFR Part 227. As you recall, this issue was addressed by our Services during the extensive review of the status of the green turtle conducted prior to listing in 1978, and in the preparation of the Environmental Impact Statement accompanying the listing. The rationale for allowing subsistence take among certain native Trust Territory islanders was that many of the native inhabitants follow a traditional way of life, living in villages on small remote islands which are limited in food resources. No comments or documentation was submitted during the listing process, or more recently, to indicate that subsistence take is justified for Hawaii and Guam within the intent of the special regulations.

We have reviewed the correspondence and testimony submitted during the public hearings held by the National Marine Fisheries Service in Hawaii. Certain individuals did claim that they were desirous of taking turtles again, but it is clear that the "subsistence" take they desire is more in line with the "home use" take advocated by the State of Hawaii. This is a take in which turtles are not taken for commercial purposes, but may be taken for personal consumption. No claim can be advanced that this take is customary, traditional, and necessary for sustenance, or indeed if it were allowed, why it should be restricted to those claiming to be native Hawaiians. Similarly, there is no justification for claims that residents of Guam should be allowed to take turtles for personal consumption under the pretense of subsistence take. The only areas not presently covered by the subsistence take regulations which may qualify for them are Swains and Tutuila Islands and in the Manua Islands of American Samoa. However, very little interest exists in exploiting these turtles by native inhabitants, and there appears little justification for extending the regulations to these areas at present.

In conclusion, our review of the subsistence take question does not reveal any basis for extending the special regulations to areas not already covered by them. We would recommend no changes in these regulations, especially with regard to the turtle populations in Hawaii and Guam. Questions concerning this review may be forwarded to Mr. John L. Spinks, Jr., Chief, Office of Endangered Species, U.S. Fish and Wildlife Service, Washington, D.C. 20240 (FTS 235-2771).

Sincerely yours,

Ronald E Lamberts on

Associate Director -
Federal Assistance

C

STATUS REVIEW: GREEN TURTLES IN THE CENTRAL AND WESTERN PACIFIC

On July 28, 1978, after 4-1/2 years of review and public comment the green turtle (Chelonia mydas) was listed (43FR32808) under the Endangered Species Act of 1973 as a threatened species throughout its range except for breeding populations in Florida and the Pacific coast of Mexico, which were listed as endangered.

There is little to add to the sources used in the original status review and listing justification for green turtles from 1978. There is a summary entitled "Marine Turtles of Micronesia" (Pritchard, 1979), a "Synopsis of Biological Information on the Green Turtle in the Hawaiian Islands" (Balazs, 1980), and reports and manuscripts by Balazs and others in Biology and Conservation of Sea Turtles (K. Bjorndahl, Ed.) that constitute most of new information since 1978 regarding the status of green turtles in the Central and Western Pacific areas. Much of the information contained in these reports is a reiteration of the qualitative observations used in the original status reviews.

Biology and Life History

The green turtle, Chelonia mydas, is distributed world-wide, and is generally found in tropical and subtropical latitudes between 35° north and south latitude. Although there is insufficient taxonomic information to differentiate between stocks of Chelonia mydas, there are likely geographically and genetically distinct populations of Chelonia. Replacement of extinct populations by transplanting individuals from another population has not succeeded, and even if it were to succeed, the animals, biologically speaking, would be different (Ehrenfeld, 1981). Thus, the treatment of the species as a single stock may be ill-advised. Nevertheless, for the purposes of this review, the cosmopolitan distribution of Chelonia mydas, the lack of data indicating discrete stocks, and the difficulties in distinguishing separate stocks, populations and subspecies necessitate the consideration of this species as a

single stock in the Indo-Pacific region.

The green turtle can be distinguished from other species of sea turtle by its four pairs of costal scutes and one pair of prefrontal scales. The carapace scutes do not overlap. The limbs are paddle shaped and normally have only one claw. The carapace coloration of adults is variable and ranges from olive brown to black. The plastron is generally yellowish to almost white (Hirth, 1971; Balazs, 1980).

Size classifications of the various age classes probably varies from rookery to rookery and between populations or races. Using Hirth's (1971) classifications, hatchlings are identified by having conspicuous umbilical scars; juveniles of up to 40 cm. carapace length; sub-adults 40 to 80 cm.; and adults, greater than 80 cm. There are no apparent external morphologically distinguishing characteristics between male and female hatchlings, juveniles and subadults. Adult males however, have long prehensile tails that reach well beyond the posterior edge of the carapace. The tails of adult females barely reach beyond the rear edge of the shell.

Chelonia are apparently long-lived but their life spans in the wild are unknown. It has been estimated that age at sexual maturity ranges from 4 to 59 years depending on the locale (Hirth, 1971; Balazs, 1980; Owens, 1980). Length at sexual maturity is about 35 inches, cm

Nesting and breeding seasons in the Indo-Pacific regions varies with the specific locations that are still relatively undisturbed by human development or harvest. Although nesting generally occurs in two or three year cycles, yearly and four year cycles have been recorded in Hawaii (Balazs 1980). Females may lay between three and seven clutches in a season with an internesting interval of ten to 18 days.

Clutch sizes also vary with the location but average about 100 eggs per nest. Hatchlings emerge in about 48 to 88 days, mostly at night. The number of

hatchlings that actually emerge from the nest is always less than 100% and in most cases averages about 50%. After erupting from the nest the hatchlings scurry to the water and swim out to sea in the so-called "swimming frenzy." At this point they probably remain in the open ocean environment for their "lost year" before they take up residence in nearshore feeding pastures and resting areas (Hirth, 1971; Balazs, 1980; IUCN, 1982).

In many cases the breeding and nesting grounds are separated by long distances from the foraging areas which require long distance migrations between these sites. For more complete accounts of the biology of the green turtle (Chelonia mydas) please refer to the list of references attached.

The following accounts of population status are separated by political division rather than biological considerations because of the varying utilization and protective regimes of different nations.

CENTRAL PACIFIC

Hawaii and Central Pacific Islands

Green turtles are distributed throughout the Hawaiian Archipelago where breeding and feeding aggregations are found in relatively shallow coastal waters. The basic distribution of Chelonia has not changed substantially from that reported in 1978.

Over 90% of the nesting and breeding activity for the Hawaiian population of Chelonia occurs at French Frigate Shoals in the Northwestern Hawaiian Islands and remains as the only major nesting population in the U.S. By extrapolating the information available from French Frigate Shoals it is possible to estimate the total mature female population for the Shoals for use as an index of total abundance.

Based on data from Balazs (1981) and analyses by Wetherall (1983) the total mature female population of Chelonia mydas associated with French Frigate Shoals is about 750 turtles. Apparent upward trends in the numbers of yearly nesters,

recruitment, and total female population, however, were statistically insignificant. Thus, the status of the Hawaiian population of Chelonia remains basically unchanged from the original listing in 1978.

Balazs (1981) notes the presence of green turtles or evidence of nesting green turtles at Johnston Atoll, Wake Island, Howland Island, and most of the Line Islands. Green turtles have also been reported from all of the Phoenix Islands except McKean. Within the Phoenix group Canton may support up to 200 nesting females annually and Enderbury has been listed one of the most important nesting sites for green turtles in the Central Pacific. Nesting also occurs in American Samoa, Western Samoa, Tokelau, Tuvalu, and the Cook Islands. Population estimates for these areas are unavailable. Balazs (1982) estimates about 120 nesting females present per nesting season for the three major islands of the Tokelaus. The populations of Chelonia there have been considerably reduced and even with modern methods of fishing fewer turtles than before are taken.

Micronesia

Pritchard (1977 and 1981a) and McCoy (1974 and 1981) cite apparent trends for green turtle stocks in specific Micronesian areas but have no quantitative information regarding these stocks. Summaries by political divisions are presented below.

Republic of Palau (Palau)

Green turtles are not often seen in the Palau Lagoon. However, significant numbers can still be found in the northern and southern extremes of the district despite some apparent substantial reductions at Ngaruange Lagoon, Merir Island and Helen's Reef.

Federated States of Micronesia

(Yap, Truk, Ponape, Kosrae)

Green turtles are distributed throughout these island groups. Most nesting

activity, however, occurs on small isolated islands such as Oroluk, Pikelot, East Fayu, West Fayu, Gaferut, Helen's Reef, and off of Ulithi Atoll which are away from the population centers. Declines in turtle numbers have been reported from Pikelot and Oroluk, while the stocks at East and West Fayu, Gaferut and Helen's Reef appear to be holding their own.

Republic of the Marshalls
(Marshall Islands)

Green turtle nesting and abundance in the Marshall Islands is, for the most part, limited. Bikar Atoll is thought to have the highest concentration of green turtles in the district and an estimate made by Hendrickson in 1971 included 711 breeding females in the Bikar population. The southernmost atoll in the district, Ebon, is reputed to have an abundance of all types of food and is considered locally as the best area for turtle fishing in the water.

Guam

Information available for Guam indicates very sporadic nesting and the presence of some foraging green turtles. Although there are no estimates of abundance, the numbers of green turtles is thought to be low (Molina, 1979).

Northern Marianas

As in Guam the level of nesting activity in these islands is apparently low. There is, however, substantial feeding habitat which may support a number of green turtles, but again, population estimates are not available for this area (Pritchard, 1977).

SOUTH PACIFIC

New Caledonia

The d'Entrecasteaux Reef system is still likely the most important turtle nesting area among all the oceanic islands in the Pacific. The stocks of Chelonia in New Caledonia are apparently in good health with no apparent serious problems. Local Melanesian traditional law is still in force and respected as

well as Territorial Ordinances which also protect Chelonia (Pritchard, 1981b).

Solomon Islands

Green turtles are more numerous in the water than numbers that nest. Nestings run from 10's to over 100 per year on various islands (Ausilala and Maifu) within the Solomons. Vaughan (1981) reports a slight general decline in the numbers of green turtles in the Solomons and that these reductions are more pronounced in areas of higher human population densities. There is little commercial demand for Chelonia in the Solomons which may explain its basically stable population.

New Hebrides (Vanuatu)

Nesting patterns appear stable and the small numbers taken annually have not placed undue pressure on the Chelonia stocks here. Legislation prohibiting the taking of nesting turtles or eggs is poorly understood and little known. Population pressure is the main threat (Pritchard, 1981b).

Fiji

Low levels of nesting still occur in Fiji but numbers are apparently now depleted. Population estimates and status information are unavailable (Pritchard, 1981b).

Papua New Guinea

As in most other areas of the South Pacific there are no population estimates of green turtles in Papua New Guinea. They are found around the entire coastline of Papua New Guinea and are the most abundant turtles and most heavily utilized by villagers for food. Most of the major nesting sites are now found in isolated or uninhabited areas or in areas under special protection. Interestingly, villages which converted to the Seventh Day Adventist religion which does not allow the consumption of meat have reported a noticeable increase in turtle populations over the past 30 to 50 years.

Chelonia in Papua New Guinea is coming under increasingly heavy pressure as

a food source. In areas where turtles are utilized as food it is becoming obvious that the green turtle populations are declining. The loss of nesting habitat, increasing human populations, loss of traditional rules, and 20th century technology are all contributing to higher levels of exploitation, and lower recruitment (Spring, 1981).

Australia

Green turtles are found throughout Australian waters. The major nesting and feeding grounds however, are distributed throughout the northern states of Queensland, Northern Territory and Western Australia. The three known major nesting areas in Queensland support an annual nesting population of usually thousands of females. Although there is an annual harvest of 10,000 or so green turtles in the Torres Strait area of which approximately half are taken by Papua New Guineans for commercial sale, subsistence use of green turtles by indigenous peoples throughout northern Australia does not appear to be a serious problem.

Only one major rookery has shown any substantial decline in nesting population levels in the past 200 years. It is not known whether extensive harvest of this population in the past or natural loss of habitat is the major cause of this decline. All other rookeries appear to be stable and in good health (Limpus, 1981; IUCN, 1982).

New Zealand

The green turtle is reported to be rare in New Zealand waters. Six or seven reports of specimens constitute the available data base for this area (Pritchard, 1981b).

Kermadec Islands

Information from the turn of the century indicates the presence of a feeding aggregation of green turtles in Kermadec Islands. No new information is apparently available (Pritchard, 1981b).

Tonga

No population estimates are available. Green turtles were probably reduced with the advent of motorized boats, nets, and increased population. Chelonia are still commonly observed, but obviously not as abundant as in former days. Virtually all nesting now occurs on uninhabited islands in Tonga (Pritchard, 1981b).

French Polynesia

French Polynesia consists of several widely separated archipelagos including the Society Islands, the Marquesas, the Tuamoku Islands, the Austral Islands and Rapa. The green is the most commonly observed sea turtle in French Polynesia.

Society Islands

The major nesting islands are uninhabited or only seasonally inhabited. One of the most important nesting sites is Scilly. Other major nesting islands include Mopelia, Bellinghausen, Tupai and some islands in the Tuamotus. According to Pritchard (1981b) green turtles are "reasonably plentiful in the Society Islands," but have suffered significant reductions in population size.

Tuamotu Archipelago

Green turtle occur throughout the Archipelago. Local residents noticed a decline in the numbers of turtles with egg harvesting which began in the 1920's and 1930's.

Austral Islands, Marquesas, and Gambier

Turtle stocks in these areas appear to be very limited. The capture of a turtle in the Marquesas is now considered a special occasion (Pritchard, 1981b).

Easter Island

Pritchard (1981b) reports the occurrence of green turtles based on personal communication from Tom Harrison and cited in Harrison (1971).

EAST ASIA

Japan

Chelonia is distributed along the southern coasts of Honshu, Kyushu and Shikoku in the main islands, Okinawa and the Bonin Islands. Sightings have also been made on the Japan Sea side of Honshu between Niigata and Akita. Nesting is limited to the southern offshore islands of Yakushima, the Nansei group and the Bonin Islands. There is no active harvest of Chelonia in Japan for food. Population estimates for Japan are unavailable (Uchida and Nishiwaki, 1981).

China seas

Green turtles are found in the coastal waters of Taiwan, Fukien, Kwangtung, Kwangsi, Chekiang, Kiangsu, and Shantung. Nesting and harvesting occur around the Xisha Islands. Market reports for 1959 to 1970 indicates sales of 38,000 to 181,000 kg. of both loggerhead and green turtle. No other data was found (Chu-Chien, 1981).

Philippines

Turtles were first recorded in the Philippines during the initial Spanish contact. Historically, green turtles have been the most abundant and most heavily utilized species in much of the country. The greatest concentrations and numbers of Chelonia are found toward the southern end of the Archipelago. Although population estimates are not available recent surveys have indicated that Chelonia populations in the Philippines have suffered significant reductions from commercial scale harvesting operations for turtle meat as well as eggs (de Celis, 1981; de Silva, 1981).

East Malaysia (Sabah, Sarawak)

There are substantial nesting populations of Chelonia in East Malaysia. However, continued intensive harvesting of eggs has led to precipitous declines of turtle populations in both Sabah and Sarawak. Turtle egg harvest data for Sarawak from 1927 to 1977 showed a decline in 1966 to below 100,000 eggs or less than 10% of the pre-1955 harvest (de Silva, 1981).

West Malaysia

Green turtles were apparently abundant on the west coast of West Malaysia as late as 1912. Today, nesting on the mainland is rare. Some sporadic nesting still occurs on the offshore islands of Pulau Pinang and Pulau Langkawi. Between 1956 and 1961 the yield of Chelonia eggs was reduced by 43%. Population estimates are unavailable (Tow and Moll, 1981).

Thailand

The major nesting site in Thailand for green turtles is found at Ko Khram Polunin (1975) estimated that approximately 1000 females nest annually in Thailand.

Indonesia

The green turtle is the most common and most commonly taken species in Indonesia, particularly in Bali and northern Sulawesi. Meat as well as eggs have been a traditional source of protein with ceremonial uses common in Bali. Information regarding Chelonia populations in Indonesia is based on nesting sites and egg harvests which has been extrapolated to an estimate of 25,000 females nesting annually in western Indonesia. Little is known of non-nesting animals. Although there is no baseline data with which to monitor trends in population, an overall downward trend is suggested by declining egg yields from nesting beaches. Overharvesting of nesting turtles, the loss of nesting habitat, and an expanding fishery for green turtles provide evidence in support of this declining trend (Suwelo, et. al., 1981; Soetrisno, 1981; Polunin and Nuitja, 1981).

INDIAN OCEAN (From Kar and Bhaskar, 1981; IUCN, 1982)

India

The green turtle is found over practically the entire coast of India and on most of the islands controlled by the Indian government. Nesting is substantial in many places particularly the states of Gujarat and Tamil Nadu, and the island systems of Andaman and Nicobar. The most common use of turtle is eggs, although

consumption of turtle meat is beginning to grow substantially.

Population estimates, harvest yields, and nesting estimates are generally unavailable for India. Scattered report of nesting activity and local accounts of numbers taken in specific years comprise the current data base.

Sri Lanka

Kar and Bhaskar (1981) report heavy exploitation and a steady decline of Chelonia in the Gulf of Mannaa.

Bangladesh

Green turtles are reported from Bangladesh. No other data are apparently available.

Burma

Turtles are exploited primarily for their eggs rather than meat in Burma. A reported egg harvest from Diamond Island was more than 1.6 million for a single year, (not specified), of which about 90,000 was likely from Chelonia. The extent of the current egg harvest on status of the population of Chelonia is not known.

ARABIAN SEA, RED SEA

The green turtle is the most common turtle in the region. Extensive feeding pastures are found in the Arabian Gulf, along the coasts of Oman, the People's Democratic Republic of Yemen (PDRY) and the Red Sea. The major nesting grounds are on Karan Island (Saudi Arabia), at Ras al Hadd (Oman) and Mukulla (PDRY). There are also numerous small nesting grounds throughout the region contributing significantly to the total population of Chelonia in the area.

Rough estimates of total population for the region are based on average counts of annual nesting females.

Country	Annual nesting female Chelonia (From Ross and Barwani, 1981)
Iran	500
Saudi Arabia	500

Same page

Oman	7,000
PDRY	10,000
Yemen	200
Total nesting females	18,200
Total population	54,600

Except for the PDRY which harvests and exports Chelonia commercially there is very little apparent pressure on the green turtle stocks in this region and most appear to be stable (Ross and Barwani, 1981).

CENTRAL WESTERN INDIAN OCEAN (From Frazier, 1981)

British Indian Ocean Territory (BIOT)

Chelonia are thought to occur at all the islands and many of the reefs within the BIOT, but documented records are scarce. Concentrated nesting occurs at YeYe Island (Peros Banhos Atoll) and at Nelson Island. Total nesting females are not likely to exceed 300 per year. Large numbers of immatures have been reported from some of the lagoons, but there is no other information regarding nonbreeding aggregations. The entire area except for Diego Garcia is now uninhabited.

Seychelles

The green and hawksbill turtles are the most common species and occur throughout the region. Chelonia nests in all of the island groups but is most numerous on the Aldabras. Of the estimated 2500 females nesting annually in the Seychelles about 1000 are found in Aldabra. Large feeding pastures are found in lagoons and shallow areas where foraging animals are common. The intensive exploitation of Chelonia in the Seychelles over the past 150 years has severely reduced reproduction and recruitment and resulted in a decline of the total population to a fraction of its pre-exploitation level. The green turtle is apparently no longer a significant resource in these islands.

Mayotte (same page)

Green turtle nesting within this island system is limited. The greatest percentage of nesting activity occurs on Saziley and Pamanzi Islands with an estimated total annual nesting population of 500 for all of Mayotte. Harvest of Chelonia concentrates almost exclusively on nesting females. Although there is no baseline for estimating population trends it is probable that with current exploitation regimes and increasing human populations the green turtle stocks of Mayotte have been reduced and remain under intense pressure.

Comores

Chelonia are recorded from all three major islands of the group but over 90% of the nesting occurs on the beaches of Moheli. Estimates of total nesting in the Comores run about 1900 females annually. Harvesting of Chelonia is concentrated on nesting females.

Tanzania

Five species of sea turtles have been recorded from Tanzania. Chelonia is common and nesting is concentrated on Mafia Island, Maziwi Island and Ras Dege on the mainland. The total annual nesting population for Tanzania is estimated at about 300 animals. Although green turtle populations have probably been reduced since prehistory no current trends have been identified.

Kenya

Green turtles are reported as common from Kenya with nesting concentrated on the islands of Lamu, Manda, and Tenewi and remote stretches of coast at Ras Biongwe and Ungwana Bay. The total annual nesting population for Kenya is estimated at 200. Foraging pastures are found along the coastal reef flats and may support migrant Chelonia from other areas.

Continuing exploitation and recent coastal development have probably reduced the numbers of Chelonia in Kenyan waters. Predation on Chelonia nests is severe and likely results in little or no recruitment.

Same pg.

Somalia

Five species of sea turtles are reported from Somalia with Chelonia apparently the most common. Nesting occurs along much of the Indian Ocean coast. Although estimates of nesting populations are unavailable it is thought that several thousand per year are likely to nest in the region. Commercial harvest for export during the past two decades may have reduced the numbers of Chelonia in Somalia.

SOUTHERN AFRICA (From Hughes, 1981; IUCN, 1982)

Republic of South Africa

Five species of sea turtle including the green are reported from South Africa but only the leatherback and loggerhead are known to nest there. Sea turtles are generally not exploited in South Africa and the populations of turtles are thought to be stable or increasing.

Mozambique

Green turtles are found along the coast of Mozambique with nesting occurring at selected sites. An estimated 200 females nest annually on Primeiras and Segundas Islands. It is suspected that there has been a decline in sea turtle populations as a whole in Mozambique.

Madagascar

Five species of sea turtles are found in the coastal waters of Madagascar, and all are exploited to some degree. It is estimated that 13,000 turtles of all species are taken annually with the exploitation of hawksbill for tortoiseshell contributing the greatest percentage. Chelonia are also taken, primarily for local consumption. There are no data indicating the extent of harvest or population status. A steady decline of all sea turtle species in Madagascar is expected with the continued uncontrolled exploitation.

Reunion (France)

Chelonia mydas is the most common species and virtually the only species that nests on Reunion and the dependent islands of Europa, Tromelin, Juan do

Nova, Les Glorieuses, and Mayotte. Adult, hatchlings and nests are protected and little harvesting occurs. Estimates of annual nesting feemales on the more important islands range from 1,500 to 18,000 for Europa and 200 to 4,400+ for Tromelin. The nesting population of Europa may comprise one of the largest remaining rookeries in the world.

Mauritius

Sea turtles no longer nest on Mauritius. A fishery for green turtles is continuing on St. Brandon Island with the catch statistics implying no precipitous decline in the harvest. Over the past 37 years an average of 295 green turtles per year have been recorded as taken. The total is likely much higher owing to local consumption which is not reported. More substantive information on Chelonia stocks in Mauritius is unavailable.

LISTING CRITERIA

The following criteria in conjunction with the preceding population information are used in determining the status of the green turtle.

1. The present or threatened destruction, modification or curtailment of its habitat or range.

The loss of green turtle nesting and foraging habitat continues in the Indo-Pacific region as coastal development keeps pace with expanding populations. Although considerable forage areas remain, the construction of harbors, shoreside development, and siltation from various sources contribute to significant losses of habitat and consequently a reduction in carrying capacity. The same can be said of potential nesting sites as prime beach areas are lost to development for housing, tourist related industries, recreation and commerce. This continuing loss of foraging and nesting habitat is not quantifiable but must have an adverse effect on the recovery of the species.

These habitat losses are not limited to developed or industrially based nations as the lesser developed nations and other political entities strive to

keep pace with the world economy and, at the same time deal with expanding human populations. Hawaii (U.S.), American Samoa (U.S.), the Trust Territory of the Pacific Islands, Indonesia and India demonstrate that habitat degradation is not dependent upon economic or political status.

With diminishing nesting and feeding habitat in the Indo-Pacific region the distribution of Chelonia mydas is being reduced as well. Further, if in fact separate breeding aggregations do exist, as is now suspected in many instances, then the loss of nesting habitats will lead to the eventual extinction of certain stocks or races of Chelonia.

2. Overutilization for commercial, scientific or educational purposes.

The use of Chelonia for scientific or educational purposes is not likely a major factor in the decline of species stocks. In the U.S. all forms of "take" as defined by the ESA, including that required for research, are controlled by regulation and/or permit. Utilization of green turtles for research and education in other countries probably does not constitute a large take and in many instances is regulated as well. Since much of the research on green turtles is intended to aid in the conservation and recovery of the species the benefits far outweigh the costs in most cases.

The major causes of declines in the stocks of Chelonia are the commercial harvests for meat, fat and eggs, particularly in cash-poor or undeveloped nations with few other natural resources to exploit for currency exchange. Meat, calipee (fat) and eggs remain prized consumer items in many areas and are no less coveted for subsistence uses in local sites where they are available. Balazs (1980), Pritchard (1981), Carrascal de Celis (1981), and Polunia and Nuitja (1981), and others describe in more detail the history and results of commercial exploitation of green turtles in various areas of the Indo-Pacific.

Despite national and local regulatory regimes, much of the commercial harvest for meat and eggs continues unabated due to lack of enforcement

capability and lack of understanding by the harvesters of the nature of the green turtle resource.

3. Disease or predation

Diseases and disease-induced mortality of green turtles in the world are poorly known. Balazs (1981) has noted the presence of apparently benign tumors ranging from small warts to masses up to 25 cm. in diameter on 5% to 10% of the green turtles observed during the breeding at French Frigate Shoals. Other organisms isolated from captive Chelonia include Salmonella weltevreden, and Mycobacterium avium. Occurrence in the wild is unknown, and the overall affect of disease on natural populations of Chelonia is poorly understood.

Predation on adults by animals other than man is not likely great. Only sharks and killer whales would be able to take adults and the larger subadults. The number of adult turtles lost to natural predation and its effect on the population is unknown.

Predation on hatchlings and eggs is usually very high. Hirth (1971) estimated that only 50% of the eggs hatch successfully and only one to three percent of the hatchlings reach sexual maturity.

Eggs and hatchlings are commonly lost to ants, crabs, cats, lizards, birds, dogs, pigs, raccoons, toads, coatis, and mongoose on the beach and groupers, snappers, barracudas and sharks in the water. Predation by domestic/feral dogs and cats is extensive in areas of human habitation and has played a large part in the extermination of many nesting populations of Chelonia. Introduced animals such as mongoose in Hawaii and pigs throughout the Pacific have caused similar problems for nesting populations.

4. Inadequacy of Existing Regulatory Mechanisms

The protective regulations for green turtles in areas under U.S. jurisdiction in the Pacific are probably adequate, and require only more rigorous enforcement. Applicable Federal Statutes include the Endangered

Species Act of 1973 (ESA), as amended, and the Convention on International Trade of Endangered Species (CITES). Complimentary State laws provide additional protection in many coastal and insular areas of the U.S.

Protective regulatory regimes and local customs vary throughout the remainder of the Indo-Pacific region, ranging from no protection at all for adults or eggs to complete bans on harvesting for any purpose. In many areas such as the Philippines and the Seychelles poaching for commercial uses as well as local consumption occur despite laws and regulations prohibiting such activities. In Australia commercial harvest is for the most part prohibited but local take for subsistence purposes is permitted and both activities are apparently controlled.

CITES is not yet universally accepted and some signatories such as Japan, Germany and France have taken exception to the ban on trade in green turtle products, importing meat, calipee, shell and leather from various sources. Despite protective regulations and conservation programs in a few nations of the region, overall, present laws and enforcement measures are inadequate to protect the green turtle from local harvest or international trade.

5. Other natural or manmade factors affecting its continued existence.

Natural factors

Adverse weather conditions such as storms can impact nests and eggs through inundation and erosion by heavy rains, runoff and high surf and wave action. Eggs that are exposed would not likely hatch and would be susceptible to predation. Depending upon the duration of immersion and stage of incubation, contact with water could reduce the percentage of viable eggs significantly. Beach erosion can also have longer term consequences by reducing available nesting habitat and conversely may also enhance nesting habitat in other areas.

Loss of foraging habitat through natural causes such as siltation, subsidence and volcanic action can adversely affect the distribution and

survival of specific populations of green turtles. Volcanic action through lava flows forming new coastal lands can also provide enhanced substrate for algal growths and provide increased feeding areas.

Human activities

The effect of human activities on turtle populations is divided into two categories: the impact on nesting success and the impact on oceanic survival (after Coston-Clements and Hoss, 1983).

Destruction or modification of nesting habitat probably has the greatest impact on the ability of turtle populations to maintain their numbers.

Artificial illumination from industrial or domestic development can result in hatchling disorientation and a reduction in the numbers of females coming ashore to nest. Offshore and nearshore construction may also deter females from utilizing preferred nesting beaches. Clearing of vegetation can reduce shade and increase nest temperatures while also reducing the structural rigidity of the nests by removing the root systems of native plants. Construction of large buildings may increase shade and lower nest temperatures. Since temperature is an important factor in hatching success and sex determination, even small changes may result in increased mortality, imbalanced sex ratios and reduced hatching success.

The impact of oil spills on nesting and hatching can be considerable. Hatchlings entering the water during a nearshore spill would suffer respiratory distress from the volatile components of the oil and perhaps suffocation and eye irritation from the heavier components. Nesting females, if undeterred from coming ashore, could suffer similar effects such as respiratory difficulty and eye irritation. Oil spill clean up activities (vehicular traffic) can destroy nests and prevent nesting by gravid females.

Factors affecting oceanic habitat include but are not limited to pollutant discharges, pesticide/herbicide spills and runoff, heavy metal/radionuclide

discharges, PCB contamination, sewage and domestic discharges, energy development, dredging/mining and fishing activities. The discharges and spills of hydrocarbons, heavy metals, biocides, and radionuclides result primarily in the degradation of the physical health and fitness of individual animals which can be manifested by direct mortality, injury, body fouling, sensory disruption, reduced reproductive success and possible unknown carcinogenic impacts. Secondary effects of these sources of contamination range from destruction of foraging habitat to disruption of breeding behavior. One possible positive result of certain types of sewage discharge is the enhancement of benthic algae utilized by Chelonia for food (Corps of Engineers, 1983).

Energy development impacts include entrainment in cooling water intakes, dispersion or attraction to thermal effluent plumes, and degradation of foraging and resting habitat by effluent. A secondary impact of energy development is the attraction of hatchlings to lighted offshore structures and the resultant increased predation.

Foraging and resting habitat degradation by mining and dredging can result from disposal of spoil, alteration of bottom topography and direct destruction.

Fishing activities not directly associated with turtle harvesting can have significant adverse effects through incidental entanglement and entrapment in gear such as trawls, set nets, pound nets and gill nets. (Tow and Moll, 1981; deSilva, 1981; Hillestad et. al., 1981; and Hopkins and Richardson, 1981). Hatchlings attracted to deck lights suffer significant mortality through enhanced predation. In areas where dynamite and chlorine bleach are used to harvest fish, significant reef habitat damage occurs as well as more than occasional harvest of green turtles killed or stunned by explosives. Miscellaneous impacts of fishing-related activities include ingestion of and entanglement in litter such as styrofoam, plastic, webbing, line, and discarded netting.

Few, if any of the activities and their effects outlined above have been quantified, thus an evaluation of their impacts, both singular as well as cumulative, cannot be made at this time.

DISCUSSION

Commercial harvest for meat, eggs, leather, and curios has been the primary cause of the decline of green turtle stocks throughout the Indo-Pacific region. Although green turtles have been harvested for hundreds of years by local inhabitants for subsistence uses, the spread of 20th century technology such as powered boats and automobiles, spear guns and scuba, has changed the nature of the hunt for food and has begun to contribute to the reduction in stocks.

Habitat loss and degradation from encroaching human populations and commercial development have reduced the carrying capacity of suitacme!habitat substantially over the past 50 years. Environmental pollution (biocides, heavy metals, hydrocarbons, and litter) and effluent discharges (sewage and thermal/cooling water) have also added to the adverse impacts that individual animals must endure.

Throughout the Pacific incidental losses to various types of fishing activities such as trawling, longlining, gill netting and trapping contribute significantly to the pressures on local populations of green turtles. Enhanced predation of hatchlings attracted to night lights of fishing vessels is also a problem in many areas such as the Philippines and Indonesia.

Local and national regulatory mechanisms are present and effective in some countries, but for the most part do not provide sufficient protection to maintain stable green turtle populations or allow a sustainable harvest of eggs or adults.

CITES attempts to control international trade in sea turtle products and is successful in some parts of the world. CITES is unable, however, to control domestic harvest and domestic consumption of turtles and turtle eggs.

The following factors must also be considered when evaluating the present status of green turtles and the prospects for sustaining or recovering the appropriate stocks or populations.

Overall, there has been little new status information developed since 1978. There is, however, information indicating that green turtles are long-lived with low recruitment rates. Thus, one would expect that recovery of the species to even levels approaching those of fifty years ago would be predicated on adequate, long term reseearch and management programs.

Despite the lack of significant new information, status reviews of listed species are required at five year intervals by the ESA. The short time elapsed since the original listing in 1978 relative to sea turtle reproductive biology and growth rates makes it unlikely that significant trends demonstrating increases in population status could be detected in five years. In considering these factors with the reduced populations of green turtles and continued pressures on these populations it is prudent to continue to be conservative in any management actions taken.

CONCLUSIONS

Using the best commercial and scientific information available since the 1978 listing of green turtles (Chelonia mydas), the NMFS has reevaluated the status of the species in the Central and Western Pacific region and the Indian Ocean. NMFS finds that the status of this species, Chelonia mydas, and all of its races, populations and proposed subspecies in the areas evaluated has not changed substantially and in many instances has likely deteriorated. Based on the criteria required for listing, Chelonia mydas in the Indo-Pacific should remain listed as threatened.

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Oct 6, 1983

5

Dear George,

I have reviewed Alika's requests and have found them off-the-wall as usual.

I don't think we have to worry about them - do you? Clearly catching + using green turtle for his first permit is not for scientific purposes. If NMFS could be convinced it was I think we'd all raise hell.

Also category 5 can not be used for intentional taking which Alika seems to be looking to do - under this category he can incidentally take or intentionally harass (scare them away).

I have enclosed these additional contacts for Mejit Island. Have you heard anything recently from this area of the world?

Best,

Emily.

Green Sea Turtle = Chelonia mydas

History of Hawaiian Green Turtle Exploitation

Update
D. Heacock

Under the Hawaiian "Kapu" system that remained in effect until 1819, turtles could only be eaten by men who were nobility or priests, and were forbidden to be eaten by women. Commercial and noncommercial harvesting of green turtles in the main Hawaiian Islands proceeded with virtually no controls from the time of the 1819 abolition of the Kapu system, until the adoption of a protective regulation by the Hawaii Division Fish and Game (HDFG) in May 1974.

No records exist for the noncommercial capture of turtles prior to May 1974. However, the director of the HDFG stated in 1969 that "I have little doubt that the sport fishery take plus possible unlicensed commercial take far exceeds the legitimate commercial take." From May 1974 to June 1977, 48 adults and 1 injured (an illegal capture) were reported in compliance with the HDFG regulation that permitted only noncommercial exploitation.

In May 1974, HDFG banned the commercial exploitation of green turtles and the use of tangle nets. Adults measuring 36 inches and larger in straight shell length could be taken for "home consumption", but only from waters around the eight main islands.

In September 1978, Hawaiian green sea turtle were listed in the Threatened category under the U.S. Endangered Species Act, by the U.S. Dept. of Commerce, National Marine Fisheries Service and U.S. Fish and Wildlife Service.

Biology and Ecology of Hawaiian Green Sea Turtles

Age to Maturity

The smallest female turtle found nesting at French Frigate Shoals (FFS) was 32 in. long (straight shell length), with 37 in. being the average size at which nesting begins. It takes between 11 to 59 years for a female turtle to reach sexual maturity or to reach a 37 in. shell length. Therefore, 11 to 59 years represents one reproductive generation in the life span of Hawaiian turtles. Since 1978, when turtles became Federally protected, only 5 years have passed and such a short time represents only about 1/10 to 1/2 of a generation. In 1981 it was estimated that there were about 200 adult female turtles nesting on French Frigate Shoals. These 225 turtles represent 90% of the entire breeding population in the Hawaiian Archipelago.

Hawaiian Chelonia form a distinct breeding population. Turtles do not migrate to Hawaii from the other areas of the Pacific. The minimum survival rate necessary to maintain the Hawaiian green turtle population at a stable level is one in which each female replaces herself with a female offspring that survives to lay fertile eggs during at least one breeding season.

The survival rates and reproduction cycles of adult females after their first breeding season are only partially known at the present time. Due to the tagging effort thus far expended at French Frigate Shoals and other locations in the Archipelago, there is an excellent potential for acquiring this information within a 5-year period (by 1985). It should be emphasized that it is unknown if the Hawaiian green turtle

population is stable at the present time (1980). The number of females nesting annually since 1973 has fluctuated substantially, and no trends can presently be detected (see Figure 1).

Nesting begins in May, peaks during late June, and declines to a very low level by early August. Female turtles have been recorded laying as many as six egg clutches within a season, however, the mean number of clutchs is only 1.8. Approximately, 40% of the turtles lay only one clutch per season. The average clutch has 104 eggs (range 38-145 eggs); larger turtles lay the most eggs. Virtually all nesting occur in the Northwestern Hawaiian Islands, 90% on French Frigate Shoals.

Egg incubation period averages 64.6 days, range 54-88 days.

Turtle eggs hatch between mid-July and early October. Hatchlings enter the sea and quickly take up a pelagic existence far offshore. Virtually nothing is known of the juvenile turtles distribution, growth rate, feeding behavior or mortatility rate until they reach a size of about 15 inches, at which time they return close to shore.

Reproductive Cycles

Reproductive cycles, as measured by remigration (of females ashore to nest) intervals, have shown that 67% displayed a 2-year cycle, 28% a 3-year cycle, and 5% (based on one turtle) were not seen again until 6 years after being tagged at the nesting site. No nesting turtles have been recorded at FFS after only a one year absence (or no turtles have been recorded nesting at FFS on two consecutive years). The low recovery rates of tagged adult females in both the Hawaiian and Caribean Chelonia populations suggest the possibility that many turtles may only be involved in a single breeding season during the course of their lifetime.

Nesting

In the Hawaiian Archipelago 90% of all green turtle nesting occurs on French Frigate Shoals, 55% of this on East Island (see Fig. 1 & 2). The average number of new turtles recruiting to the mature female population each year is estimated to be between 30 to 72 on East Island, and between 49 and 118 for the entire French Frigate Shoal area. About 750 turtles represent the total mature female population of FFS.

Mortality

Tiger sharks are virutally the only known natural predators of juvenile, sub-adult and adult Hawaiian Chelonia. The percent of captured tiger sharks containing turtles in their stomach has been found to vary considerably between locations in Hawaii, with the range extending from 6.7 to 75%. Also, pelagic drift net fishing for squid and other species in international waters around Hawaii may add to turtle mortality.

Feeding Behavior

Green sea turtles are gregarious and often feed in groups at areas where their preferred foods are abundant. This gregarious behavior can give a false impression of the abundance of sea turtles since they are not evenly distributed around any given Hawaiian Island, rather they tend to form groups.

The International Union for Conservation of Nature and Natural Resources Marine Turtle Specialist Group (1982) stated the following:

1) Sea turtle populations exposed to high levels of exploitation have, without exception, declined or become extinct. Thus, our present concern is real and immediate.
2) Each sea turtle nesting population is genetically isolated and distinct and cannot replenish other such populations. Detailed knowledge of each population is necessary, and our knowledge of nearly all populations is insufficient.
3) Nesting aggregations draw turtles from large disperse feeding ranges and thus give falsely high indications of population size.

4) Numbers of turtles nesting in any one season are difficult to estimate because of our inadequate knowledge of their biology. Nesting numbers vary by factors of 2-50 in different years so that the single season cannot be used to estimate total numbers.

5) Despite the large numbers of eggs laid by a female in a given clutch, the ability of a sea turtle population to replace individuals which die is actually very low, for the following reasons:

a. It takes a long time for them to reach sexual maturity in the wild- recent estimates include figures of from 15-50 years.

b. There is heavy mortality of hatchlings.

c. New data and re-examination of old data suggest that turtles nest less frequently than previously supposed, both re-nesting fewer times in a season and re-migrating in fewer seasons (often only nesting in one season).

Combined these factors mean:

1. Each turtle population must be treated as a discrete entity for the purposes of conservation.

2. The estimation of turtle population sizes and hence sustainable yields cannot be done with certainty at this time.

3. Turtle populations exploited on the basis of nesting aggregation size are likely to decline rapidly.

4. Turtles have a very limited ability to replace individuals lost to the population.

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SW Fish. Cntr. Honolulu, NMFS, Honolulu, HI 96812

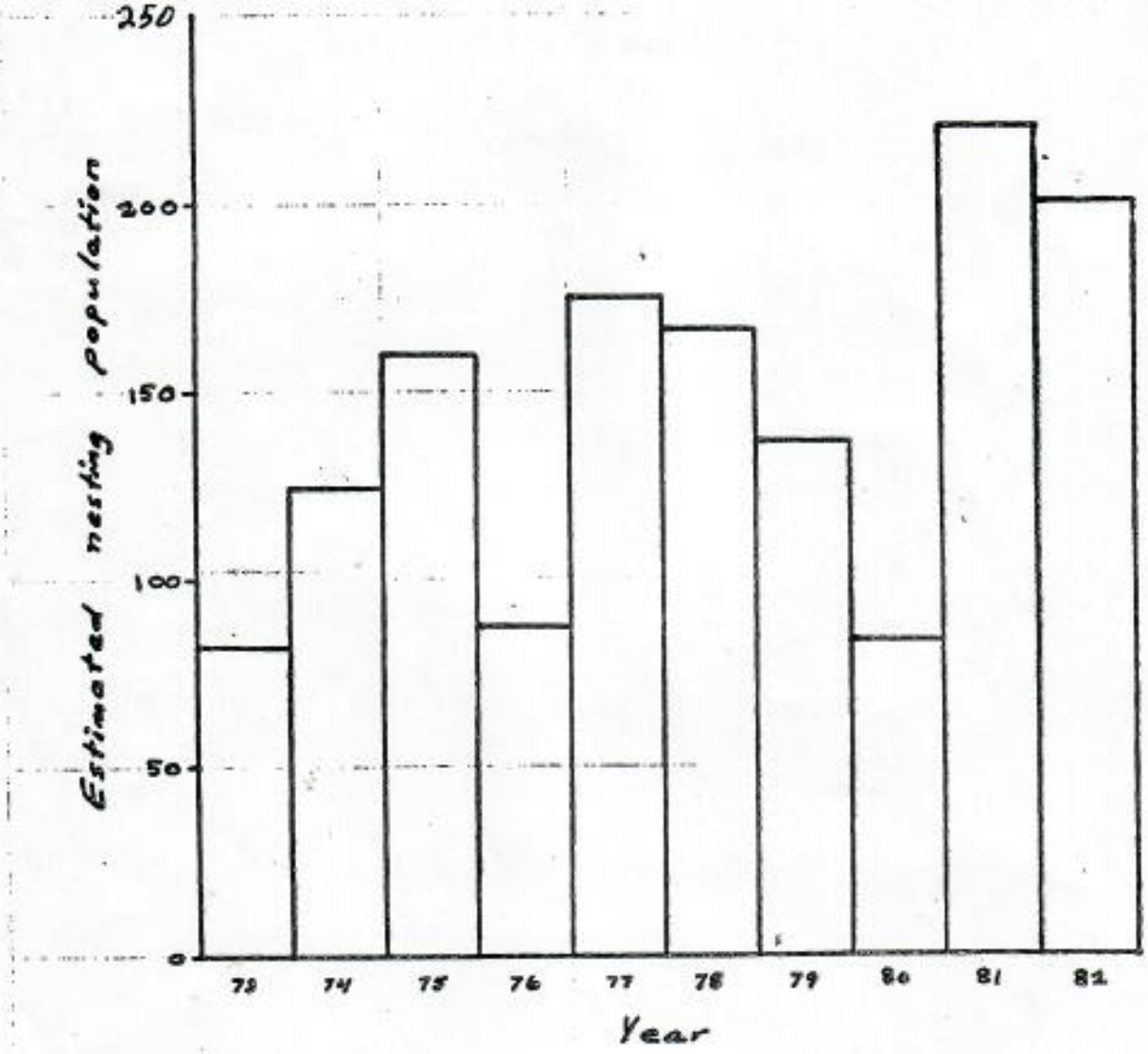
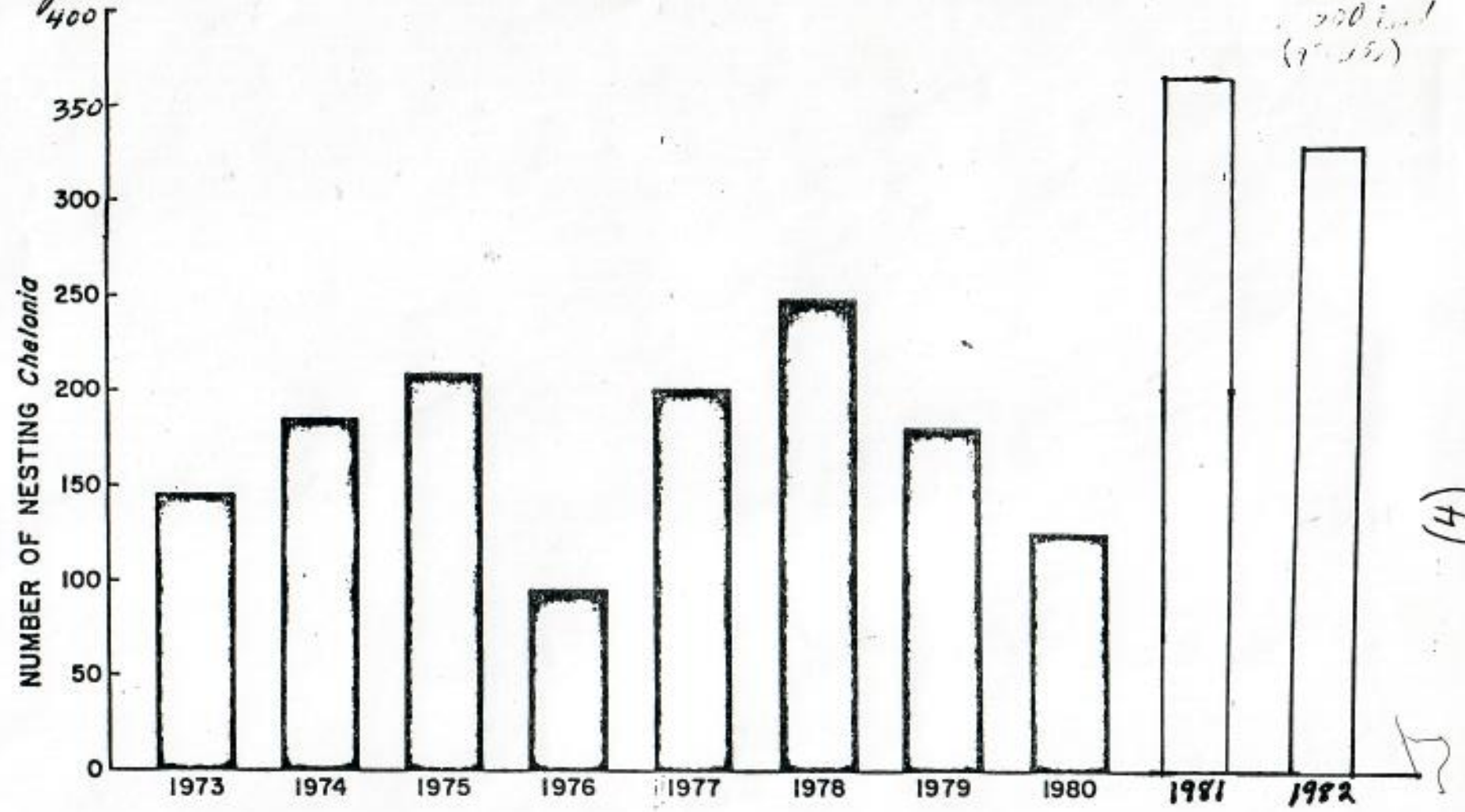


Figure 1.--Estimated nesting population at East Island, 1973-82. Based on data of G. Balazs.

Figure 2.



Estimated Number of females nesting annually at French Frigate Shoals (FFS). 90% of Hawaiian Green Sea Turtles nest at FFS.

(4)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
WASHINGTON, D.C. 20240

ADDRESS ONLY THE DIRECTOR,
FISH AND WILDLIFE SERVICE

September 13, 1983

Mr. George Balazs
992-A Awaawaanoa Place
Honolulu, Hawaii 96825

Dear George:

Thanks for sending me the article in Honolulu magazine. Since you asked for my impression, and I don't know what you thought of it, I'll give it a go. Articles of this nature are by necessity rather shallow, inasmuch as the purpose is not so much to present arguments about the merits of the subject, but to entertain while not offending anyone. As this type of article goes, my impression was that it was not too bad. Of course there were a number of the expected factual errors (i.e. allowing Samoans to take turtles) but I think the reaction of the average reader might be "Gee, here is a legitimate problem which has no real bad guys and no easy solutions." Certainly, I would doubt that you'd get the angry reaction against government picking on the native Hawaiians like he could have slanted it; by the same token, we probably won't get much support either. The average reader would, in my opinion, be motivated to do virtually nothing by reading the article.

By the same token, it is continually annoying that reporters cannot get facts straight, even when they make an effort as I think Markrich did. He (i.e. Cooper) will certainly not be able to get the green turtle exempted from the Federal list, and indeed, its listing is not really open to any kind of question. Markrich should have made this clear. And the incredible ignorance of Sakuda is typical of the pervasive biological bureaucrats who somewhere had a course in biology and suddenly become experts on everything that lives. I have no tolerance for this type of "know-nothing" who obviously has little concept of modern biology and its complexity, nor would understand it anyway; it simply interferes with his limited ability to view the oceanic world as anything apart from an exploitable resource or personal gain. His type gives me an upset stomach.

So I am totally lukewarm toward the article. It could have been better, but in my experience it could have been much worse. So there it is! By the way, do you want a copy of Fretey's book that I previously mentioned? Let me know either way. Will start reviewing that sea turtle proposal soon. Later...

Sincerely

Ken

...cial Fishing
...ale, Retail
...nographic Research
...aculture
...port & Export

ALIKA COOPER & SONS, INCORPORATED
163 Kainlani Street
Hilo, Hawaii 96720

Telephone: (808) 935 - 8...

August 10, 1983

Mr. Gary Smith
S.W. Regional Office
National Marine Fisheries Service
300 South Ferry Str., Rm. 2011
Terminal Island, CA 90731

Dear Gary,

Two weeks ago I was in Manua attending the Western Pacific Fisheries Management Council. I spoke on the continuous harassment by marine mammals; mostly stinos, bottlenose dolphins, rough-toothed dolphins, along with some false killer whales. These species have continued to harass the flagline fishermen for over thirty years. Now the ika shibi fishermen are having serious problems. For thirty years I have been talking to NMFS and nothing positive has come of it.

I want to file this application with you, (NMFS), to take these marine mammals which are bothering our commercial fishing operations as authorized by the Marine Mammal Protection Act. Alika Cooper and Sons, Inc. would like to apply for a Category 5 "Other Gear" general permit to take the above mentioned species around the islands of Hawaii. The problem is the mammals will put the commercial fishermen out of business and we cannot afford this.

Again I ask for permission to catch and use green sea turtles to keep the unedible seaweed, limu, down that the finfish can't eat in our fish ponds. This practice was done by our ancestors and to this day has been continued. I'll need about twenty animals. My request would be under scientific permit or whatever you so deem.

Aloha A Nui Loa Kakou,

Alika Cooper

Alika Cooper, President
Alika Cooper ~~and Sons~~ Inc.

mlb:AC
cc:Western Pacific Fisheries Management Council

EXECUTIVE CHAMBERS

HONOLULU

GEORGE R. ARIYOSHI
GOVERNOR

June 15, 1983

Ms. Hilde K. Cherry
1265 Palolo Avenue
Honolulu, Hawaii 96816

Dear Ms. Cherry:

Thank you for your letter of May 8, 1983, regarding special hunting or fishing privileges for particular ethnic groups.

No laws or rules have ever been adopted which grant any racial group an exemption from our fish and wildlife restrictions.

As to my feelings on adopting such exemptions, I believe that all citizens should be treated equally, regardless of racial extraction.

I appreciate your taking the time to share your thoughts with me.

With warm personal regards, I remain,

Yours very truly,

George R. Ariyoshi

Inasmuch as we all enjoy eating delicious turtle meat, opihi's etc, we do not depend on it for sustenance and harvesting cannot be kept at a sustenance limit except for the Hawaiians on Niihau. Keep the ban on green turtle catching, tag them, watch for them at sunset and night. Free them from the nets. I dont know where the large ones are and they aren't around the like before.

Sept 19, 1983

Dear George-

Greetings.

- If Bill wants the "Guds" immediately, he doesn't have to wait until he has time for a letter of praise! This is just to go on file for some future needs.
- I just wrote Tom Grooms a note about the green-monk poster - hopefully sea turtle + seal lovers will be delighted sometime in the not to distant future.
- Enclosed are the "subsistence" comments. I'll give you my comments on the "enclosed" ~~etc~~ after I do a little research about category 5.
- Enclosed is a present to your son (?) - I'm also very fond of sloths.
- Hope all is well at NMFS.

Best regards

Emily

Comments received 8/22/83 from Lecky - STRF & Pritchard.
Notice - Interior (Chamberlain's) is missing but this is allowed under rules - They consider it in house

Sept 19, 1983

Fortunately, he doesn't have to wait until he has time for a letter of praise! This is just to go on file for some future needs.

- I just wrote Tom Grooms a note about the green-monk poster - hopefully sea turtle + seal lovers will be delighted sometime in the not to distant future.
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- Enclosed is a present to your son (?) - I'm also very fond of sloths.
- Hope all is well at NMFS.

Best regards

Emily

May 10, 1983
Hilo, Hawaii
Verbatim from tape recording
of public meeting

TOM NAHIWA

I'm Tom Nahiwa. I was born and raised in Waimea. My young life was spent down by Kawaihae-Puako area. My dad was a fisherman. He and I dived together all the time. There was always an abundance of turtles, something the family would always enjoy eating. As I grew up, I always loved to dive and fish. I used to watch the turtles year after year, early in the morning, crack of dawn, when they used to make their routes inshore in the inlets, and I used to know how to set my nets to get them. So there was always many and lots of turtles. When I would dive, after I grew up and moved to Hilo, I would dive the Puna coastline, there was always turtles. We take, actually, what we need, because we know there's always turtles and can go back and harvest again if we needed any. But my family, my children, they were raised, and they know how good and ono turtle is. The turtle is plentiful. When they passed the law as far as regulating the catching of turtles, I was wondering why. It kind of make you lose faith- have no confidence in government administering the regulations governing the catching of these things. And I don't see why. I think sometimes possibly maybe they pass laws without facts. They don't understand. Just like they say, fish is wiped out. You know, you go by the moon calendar, the phase. Today you go you see menpachi in every rock. Tomorrow, when you dive, you can hardly see any menpachi. What happens? It's a change of moon phase. The same like uhu and other fish, on certain days you go it's plentiful. Like going for turtles, especially in our Puna coastline. There's lots of them. So I do hope they do allow us in our lifetime, at least, to bring back the enjoyment of having turtle on our table again. At least the children can enjoy it. That's all I have to say. Thank you.

Comment made during discussion period-

Just again, the government, it makes me wonder. The subject here is green turtles, but then our government again, you see I've hunted since I was a young boy. The government slaughters all the sheep. Gee, that's terrible, because you guys do that. I don't care about the little bird. They have a lot of islands they can go to. Slaughter everything, that's a shame. Look at our goats. I used to see 100's of goats. When we want barbecue goats when we're fishing, always had food there. What happened when they go through the national park, they slaughter almost everything, shameful. Bad sense. And a lot of people are in need of food. I understand this turtle situation population. Sure, we had more catching of these green turtles and things like that. But when it's taken for food. We had cases in the past where people used to take pot shots at them. Don't understand all of this.

EXECUTIVE CHAMBERS

HONOLULU

GEORGE R. ARIYOSHI
GOVERNOR

June 15, 1983

Ms. Hilde K. Cherry
1265 Palolo Avenue
Honolulu, Hawaii 96816

Dear Ms. Cherry:

Thank you for your letter of May 8, 1983, regarding special hunting or fishing privileges for particular ethnic groups.

No laws or rules have ever been adopted which grant any racial group an exemption from our fish and wildlife restrictions.

As to my feelings on adopting such exemptions, I believe that all citizens should be treated equally, regardless of racial extraction.

I appreciate your taking the time to share your thoughts with me.

With warm personal regards, I remain,

Yours very truly,

George R. Ariyoshi

WAIKIKI AQUARIUM

May 31, 1983

Mr. Doyle E. Gates, Administrator
Western Pacific Program Office
Southwest Region, NMFS
P.O. Box 3830
Honolulu, Hawaii 996812

Dear Mr. Gates,

I am writing in reference to the Services review of the regulations prohibiting the taking of sea turtles (other than by residents of the Trust Territory of the Pacific Islands). It appears clear from both completed and continuing scientific studies in the Hawaiian Islands that the populations of Green sea turtles are biologically threatened. Although apparently there has been a slight increase in the number of turtles sighted around the high islands, this should not be confused with an abundance of turtles tantamount to a surplus which would supply a fishery.

At the Aquarium, we have noted in our classes, programs, and by occasional informal visitor surveys that residents and visitors to Hawaii are aware of the low levels of sea turtle populations. Many people have commented on the recent thrill of seeing turtles in nearby waters "just like in the old days."

I am convinced that the protection of this species is warranted, necessary, and has strong social benefits to the people of Hawaii. Conversely, I feel that the permitting of take by a few racially defined persons who can easily substitute other protein sources in their diet would be an irresponsible act on the part of those parties charged with the protection of this species. It is indeed sad that historical fishing practices in Hawaii have reduced sea turtles to the need for protection, but the fact is that this is a biologically insecure population whose chief value to humans lies in its free presence in our waters and not as a chauvinistic gastronomic symbol.

At such time as turtle populations recover to a level which might permit very limited surplus take by "native Hawaiians," I suggest that the fishing techniques be limited to those used by the ancient Hawaiian culture, specifically: the use of nets made by hand from olana fibers and set from wooden, hand-carved, paddle- or sail-powered

canoes. It seems to me both illogical and culturally dishonest to argue for the traditional take of a species due to a person's cultural heritage while using the methods and techniques of a different, technologically-oriented, culture.

Thank you for this opportunity to comment. Please do not permit any take of Green Sea Turtles in Hawaii.

Sincerely,

Leighton Taylor

Leighton Taylor, Ph.D.
Director, Waikiki Aquarium

LT/cn

University of Hawaii at Manoa

Environmental Center
Crawford 317 • 2550 Campus Road
Honolulu, Hawaii 96822
Telephone (808) 948-7361

May 13, 1983

MEMORANDUM

TO: Phil Helfrich, George Balazs, Keith Chave, Dick Stroup, Dick Young, Tom Clarke, Steve Smith, Hank Banner, Ted Pettit, Kirk Smith, Sheila Conant

FROM: Jacquelin Miller Jacki Miller

SUBJECT: Federal Review of Regulations Concerning the Taking of Sea Turtles for Subsistence Purposes

The Environmental Center has received the attached notice, published in the Federal Register, requesting comments on a proposed change in the present regulations that would permit subsistence fishing for turtles in Hawaii and Guam. In our preliminary scan of the available information the request seems inadvisable.

The olive ridley, green and loggerhead sea turtles were listed under the U.S. endangered species act in 1978 after some 4½ years of review, including the preparation of an Environmental Impact Statement. At that time, subsistence fishing was permitted in the Trust Territory due to the modest native populations and their long term cultural and bona fide physical-social needs. All other islands, the Carribean, Guam, American Samoa and Hawaii were prohibited from taking turtles. In general the prohibition was applied because (a) the resource (turtles) is severely limited in number and (b) most of the other major islands have sufficient modern technology and food supply options to preclude the necessity to obtain turtle meat for subsistence.

At the time of the EIS review, consideration was given to the request from the Governor of Guam to permit minimal regulated harvesting. However, after review the request was denied on the basis that insufficient data existed to show any need for the "subsistence" taking of turtles. A similar request was put forth by the Governor of Hawaii and this too was reviewed and the request denied. The ruling at that time was quite straightforward, the turtle populations are facing extinction and there was no evidence of an overriding societal necessity for permitting the subsistence harvest of turtles.

While it might be argueable, if adequate background information were available, that the population could tolerate some minimal harvesting, we are unaware of any data bases of sufficient size and duration that could be used to establish those safe harvesting levels. Furthermore, enforcement of harvesting limits is virtually impossible. Permission to take turtles for subsistence purposes would instantly give every resident of Hawaii

(1×10^6) and Guam the "right" to take a turtle for "personal consumption." It would seem highly unlikely that the present population could tolerate that fishing pressure.

We have attached a first draft of a response to be sent to the National Marine Fisheries Service. We would greatly appreciate your additions, corrections, etc. and either your concurrence or opposing views, as you prefer, so that we can prepare a coordinated response. Will you please try and get a note (or telephone call) back to us by Friday, May 20. If you know of any others who would be interested in reviewing this matter and joining in a response, please provide them with a copy of the information or have them call us.

Thank you.

Attachment

cc: Lee Hannah
Mark Ingoglia

P.S. THE MEETING ON OAHU IS TOMORROW NIGHT.

May 18, 1983 — Honolulu, Oahu
Prince Jonah Kuhio Federal Building
5th Floor Cafeteria
300 Ala Moana Blvd.
7:00 p.m. - 9:00 p.m.

May 19, 1983 — Lihue, Kauai
Kauai Regional Library
4434 Hardy Street
7:00 p.m. - 9:00 p.m.

For further information please contact Mr. Doyle Gates, Administrator, Western Pacific Program Office, National Marine Fisheries Service, P. O. Box 3830, Honolulu, Hawaii, 96812. Telephone 808/955-8831. OR Jacquelin Miller and Mark Ingoglia at the Environmental Center.

May 13, 1983

National Marine Fisheries Service

Dear:

Review of Regulations
Concerning the Taking of Sea Turtles
for Subsistence Purposes

Pursuant to the request for comments on "Review of Regulations Concerning the taking of Sea Turtles for Subsistence Purposes," 48 FR 16925, the Environmental Center of the University of Hawaii would like to submit the following comments. The following members of the University of Hawaii have contributed to this statement: Lee Hannah and Jacquelin Mille, Environmental Center; _____.

Sea turtles which are presently endangered or threatened are in need of the fullest possible protection. The full range of factors responsible for the decline in Sea Turtle populations are not completely understood, and therefore all pressures which can be reasonably removed should be, until these species are no longer endangered. Subsistence allotments are difficult to limit and difficult to rescind should they be found to be detrimental. Such regulations are also particularly subject to abuse. For these reasons, and because no traditional culture in Hawaii or Guam seems dependent on the taking of sea turtles, we would find revision of Special Rule 50-CFR-227-D inadvisable.

With proper management now, sea turtles may be expected to rebound sufficiently to withstand "subsistence" taking in the future. Without adequate safeguards now, sea turtles may well be lost to all cultures forever. Expansion of the subsistence taking rule would seem worthy of consideration if current restrictions threatened the existence of true traditional cultures, but this is not the case. Expanding permissable taking under the present circumstances risks possible permanent loss of a resource in exchange for the temporary pleasure of a few. This is an unwise bargain. Perhaps in the interest of equity subsistence taking should be banned in all areas, but expanding subsistence taking seems clearly unreasonable. The potential consuming populations in Hawaii and Guam are too large to assume that these markets could be breached without very serious detriment

to sea turtle populations. Consistency with the letter and intent of the Endangered Species Act would seem to preclude this option. We would suggest that the prudent action for the present is no less than maintenance of the current stringency of subsistence taking rules.

Yours truly,

Doak C. Cox
Director

cc: Jacquelin Miller
Lee Hannah
Mark Ingoglia

George.
The only old timer I know is Francis Ruddle, who runs the boat house at Mauna Lani

5-25-83

Steve - Thanks - Steve.

DOLLAR

Here is the background information I promised to send you. Note the parts I have circled in Mr. Cooper's testimony. I would appreciate hearing your comments.

Also, can you provide me with the names and addresses of any "old timers" (or the Big Is.) who might shed some light on this claim.

Aloha, George

United States Department of the Interior

FISH AND WILDLIFE SERVICE
300 ALA MOANA BOULEVARD
P. O. BOX 50167
HONOLULU, HAWAII 96850

IN REPLY REFER TO:

ES
Room 6307

May 24, 1983

George Balazs
NMFS - F/SWC2
P.O. Box 3830
Honolulu, Hawaii 96812

Dear George:

Thank you for sending copies of recent testimony concerning subsistence take of turtles in Hawaii. I'm afraid you've drawn another blank. I have not heard of, nor am aware of, specific references to the use of sea turtles for cropping algae in fish ponds. The only source on this that I am aware of is Alika Cooper. I would, however, suggest checking Handy & Handy, "Native Planters in Old Hawaii", & other Bishop Museum anthropological references. I have seen turtles held in ponds along the Vacationland Estates area at Kapaa, HI; however, I don't know what specific purpose they serve ... or served. Sorry I don't have more!

Sincerely,
Helen J. Ford
Fishery Biologist
Environmental Services.

CONSERVE AMERICA'S ENERGY

Save Energy and You Serve America!

ATTENTION K.U.A. MEMBERS

SEA TURTLES S.O.S.

PUBLIC MEETING

THURSDAY, MAY 19

7PM._9PM.

AT THE LIHUE LIBRARY

THE PURPOSE OF THIS MEETING IS TO REVIEW THE REGULATIONS CONCERNING THE TAKING OF SEA TURTLES FOR SUBSISTENCE PURPOSES.

___ SHOULD SEA TURTLES BE "PROTECTED"?
___ IS THERE A NEED FOR MORE SCIENTIFIC RESEARCH?
___ HOW COULD ENFORCEMENT PROGRAMS BE SUPPORTED AND ENHANCED?

THE ATTACHED INFORMATION IS TO HELP YOU UNDERSTAND WHY I FEEL THAT OUR HAWAIIAN TURTLES COULD NOT SUSTAIN A COMMERCIAL HARVEST AT THIS TIME.

PLEASE READ

PLEASE COME

PLEASE FORGIVE MY TYPING!

SANDY CONRAD
KAUAI UNDERWATER ASSOCIATION CHAIRMAN

K.U.A.
BX 56
WAIMEA KAUAI HI
96796

History of Hawaiian Green Turtle Exploitation

Under the Hawaiian "Kapu" system that remained in effect until 1819, turtles could only be eaten by men who were nobility or priests, and were forbidden to be eaten by women. Commercial and noncommercial harvesting of green turtles in the main Hawaiian Islands proceeded with virtually no controls from the time of the 1819 abolition of the Kapu system, until the adoption of a protective regulation by the Hawaii Division Fish and Game (HDFG) in May 1974.

No records exist for the noncommercial capture of turtles prior to May 1974. However, the director of the HDFG stated in 1969 that "I have little doubt that the sport fishery take plus possible unlicensed commercial take far exceeds the legitimate commercial take." From May 1974 to June 1977, 48 adults and 1 injured (an illegal capture) were reported in compliance with the HDFG regulation that permitted only noncommercial exploitation.

In May 1974, HDFG banned the commercial exploitation of green turtles and the use of tangle nets. Adults measuring 36 inches and larger in straight shell length could be taken for "home consumption", but only from waters around the eight main islands.

In September 1978, Hawaiian green sea turtle were listed in the Threatened category under the U.S. Endangered Species Act, by the U.S. Dept. of Commerce, National Marine Fisheries Service and U.S. Fish and Wildlife Service.

Biology and Ecology of Hawaiian Green Sea Turtles

Age to Maturity

The smallest female turtle found nesting at French Frigate Shoals (FFS) was 32 in. long (straight shell length), with 37 in. being the average size at which nesting begins. It takes between 11 to 59 years for a female turtle to reach sexual maturity or to reach a 37 in. shell length. Therefore, 11 to 59 years represents one reproductive generation in the life span of Hawaiian turtles. Since 1978, when turtles became Federally protected, only 5 years have passed and such a short time represents only about 1/10 to 1/2 of a generation. In 1981 it was estimated that there were between 95 to 250 adult, egg-laying female turtles in the entire Hawaiian archipelago. Sex ratios have averaged 66% female and 34% male (range 50-81% female, 23%-50% male); the greater number of females is consistant with Chelonia population elsewhere.

Hawaiian Chelonia form a distinct breeding population. Turtles do not migrate to Hawaii from the other areas of the Pacific. The minimum survival rate necessary to maintain the Hawaiian green turtle population at a stable level is one in which each female replaces herself with a female offspring that survives to lay fertile eggs during at least one breeding season.

The survival rates and reproduction cycles of adult females after their first breeding season are only partially known at the present time. Due to the tagging effort thus far expended at French Frigate Shoals and other locations in the Archipelago, there is an excellent potential for acquiring this information within a 5-year period (by 1985). It should be emphasized that it is unknown if the Hawaiian green turtle

population is stable at the present time (1980). The number of females nesting annually since 1973 has fluctuated substantially, and no trends can presently be detected (see Figure 1).

Nesting begins in May, peaks during late June, and declines to a very low level by early August. Female turtles have been recorded laying as many as six egg clutches within a season, however, the mean number of clutches is only 1.8. Approximately, 40% of the turtles lay only one clutch per season. The average clutch has 104 eggs (range 38-145 eggs); larger turtles lay the most eggs. Virtually all nesting occur in the Northwestern Hawaiian Islands, 90% on French Frigate Shoals.

Egg incubation period averages 64.6 days, range 54-88 days.

Turtle eggs hatch between mid-July and early October. Hatchlings enter the sea and quickly take up a pelagic existence far offshore. Virtually nothing is known of the juvenile turtles distribution, growth rate, feeding behavior or mortatility rate until they reach a size of about 15 inches, at which time they return close to shore.

Reproductive Cycles

Reproductive cycles, as measured by remigration (of females ashore to nest) intervals, have shown that 67% displayed a 2-year cycle, 28% a 3-year cycle, and 5% (based on one turtle) were not seen again until 6 years after being tagged at the nesting site. No nesting turtles have been recorded at FFS after only a one year absence (or no turtles have been recorded nesting at FFS on two consecutive years). The low recovery rates of tagged adult females in both the Hawaiian and Caribean Chelonia populations suggest the possibility that many turtles may only be involved in a single breeding season during the course of their lifetime.

Size Composition

In Hawaii, size composition has been found to be 7% adults, 22% sub-adults and 71% juveniles. Therefore, extrapolating from the 1981 data on nesting Hawaiian turtles gives between 150-500 adults, 471-1571 sub-adults and 1521-5071 juveniles, or a total population of from 2142 to 7142 turtles in Hawaii.

Mortality

Tiger sharks are virutally the only known natural predators of juvenile, sub-adult and adult Hawaiian Chelonia. The percent of captured tiger sharks containing turtles in their stomach has been found to vary considerably between locations in Hawaii, with the range extending from 6.7 to 75%. Also, pelagic drift net fishing for squid and other species in international waters around Hawaii may add to turtle mortality.

Feeding Behavior

Green sea turtles are gregarious and often feed in groups at areas where their preferred foods are abundant. This gregarious behavior can give a false impression of the abundance of sea turtles since they are not evenly distributed around any given Hawaiian Island, rather they tend to form groups.

The International Union for Conservation of Nature and Natural Resources Marine Turtle Specialist Group (1982) stated the following:

1) Sea turtle populations exposed to high levels of exploitation have, without exception, declined or become extinct. Thus, our present concern is real and immediate.
2) Each sea turtle nesting population is genetically isolated and distinct and cannot replenish other such populations. Detailed knowledge of each population is necessary, and our knowledge of nearly all populations is insufficient.
3) Nesting aggregations draw turtles from large disperse feeding ranges and thus give falsely high indications of population size.

4) Numbers of turtles nesting in any one season are difficult to estimate because of our inadequate knowledge of their biology. Nesting numbers vary by factors of 2-50 in different years so that the single season cannot be used to estimate total numbers.

5) Despite the large numbers of eggs laid by a female in a given clutch, the ability of a sea turtle population to replace individuals which die is actually very low, for the following reasons:

a. It takes a long time for them to reach sexual maturity in the wild- recent estimates include figures of from 15-50 years.

b. There is heavy mortality of hatchlings.

c. New data and re-examination of old data suggest that turtles nest less frequently than previously supposed, both re-nesting fewer times in a season and re-migrating in fewer seasons (often only nesting in one season).

Combined these factors mean:

1. Each turtle population must be treated as a discrete entity for the purposes of conservation.

2. The estimation of turtle population sizes and hence sustainable yields cannot be done with certainty at this time.

3. Turtle populations exploited on the basis of nesting aggregation size are likely to decline rapidly.

4. Turtles have a very limited ability to replace individuals lost to the population.

Bibliography

1) Balazs, G.H. 1980. Synopsis of biological data on the green turtle in the Hawaiian Islands. NOAA Tech. Memo. NMFS, SWFC, Honolulu, HI, 141pp.

2) International Union for Conservation of Nature and Natural Resources: THE IUCN AMPHIBIA-REPTILIA RED DATA BOOK (Part 1) (1982). Compiled by Groombridge, B. and L. Wright, published by IUCN, Gland, Switzerland. Prepared with the financial assistance of THE WORLD WILDLIFE FUND and THE UNITED NATIONS ENVIRONMENT PROGRAM.

UNIVERSITY OF FLORIDA
GAINESVILLE, 32611

DEPARTMENT OF ZOOLOGY
223 BARTRAM HALL
904-392-1107

15 June 1983

Mr. Alan W. Ford
Regional Director
Southwest Office
National Marine Fisheries Service
300 South Ferry Street
Terminal Island, California 90731

Dear Mr. Ford:

I am writing in response to the notice in the Federal Register Vol. 48(77):16925-16926 concerning the review of regulations governing the subsistence harvest of sea turtles in Hawaii and Guam. I see no justification for any change in the existing rules for the following reasons: 1) the social and economic situation in Hawaii and Guam does not meet the legal prerequisite that harvesting be customary, traditional and necessary for the subsistence of residents; residents of these islands can and do participate in the existing cash economies; 2) the original position of NMFS that subsistence harvest might harm the already depleted Hawaiian population is still valid. There may be a slight improvement in the survival outlook of this population recently, but it is largely due to the existing prohibition. The population is still quite small and, in my opinion, cannot withstand exploitation at this time; 3) the original position of NMFS that a complete prohibition was necessary to control commercial trade in turtle shells, meat and other products is also still valid. Problems in enforcement throughout the region can be anticipated if the regulations are changed in Guam and Hawaii.

I respectfully urge that no change be made in the existing legislation, in order that Pacific turtle populations be given the opportunity to regain their former health-status.

Sincerely yours,

Anne Meylan

Anne Meylan
Member, IUCN Marine Turtle Specialist Group

bcc: Balazs

567 South King Street
Suite 200
P.O. Box 3466
Honolulu, Hawaii 96801
Telephone 523-6200

KAMEHAMEHA SCHOOLS / BERNICE PAUAHI BISHOP ESTATE

May 20, 1983

Mr. George Balazs
P. O. Box 1346
Kaneohe, Hawaii 96744

Dear Mr. Balazs:

Thank you for the information. I am completely lost, I have never heard of these things. Perhaps I have lived too sheltered a life style.

No further comment.

Sincerely,

Richard Lyman

Richard Lyman, Jr.

Don't forget. When you are in town and free for a few minutes I would like to have a chance to talk to you.

P. O. Box 622
Haiku, Maui, Hawaii 96708
June 2, 1983

Dr. George H. Balazs
National Oceanic and Atmospheric Administration
Marine Fisheries Service, Southwest Fisheries Center
Honolulu Laboratory
Honolulu, Hawaii 96812

Dear Dr. Balazs:

Rene Sylva has permitted me to see his copy of your excellent Synopsis of Biological Data on the Green Turtle in the Hawaiian Islands. I realize that I am rather a latecomer in requesting a 1980 publication, but if copies are still available I would greatly appreciate receiving one. This fall I will be doing some work for the Maui Community Library at Maui Community College and, should there be no copy in that collection, I would donate the copy you send me.

About a dozen years ago we used to take our four children to Pauela Point near the lighthouse to explore the shoreline. The children played a game of collecting rifle shell casings around the point, and actually found them in rather large numbers. To our horror we learned from Rene that these were from "sportsmen" who would target shoot turtles below in the sea. God knows how many were destroyed in this manner, and whether the practice also occurs at other points along the shore. If it would be helpful to your research, I could make a check to see if evidence of the practice can be found still.

Your consideration of my request will be greatly appreciated.

Sincerely yours,

John Bose, II
Conservation Chair,
Maui Group, Sierra Club

Dear George,

Aloha! Enclosed are the comments I submitted - They are not long + detailed because

① Mike thought it was the best strategy to be low key - so that they could drop the issue rather than have more attention drawn to it.

② Time limitations - I've been going crazy w/ WATS etc. I'm also leaving today for a one week camping trip in New Mexico + I can't wait to forget D.C. for a while.

I did attach Cooper's 1974 Testimony to my comments. I thought his testimony would speak for itself (his lack of credibility) and silence on my part "sounded" better - let him attack himself - NO!

Take Care - Can't wait to hear from yr -

Emily Hoet

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Fisheries Center
Honolulu Laboratory
P. O. Box 3830
Honolulu, Hawaii 96812

July 5, 1983 F/SWC2:GHB

TO: William G. Gilmartin, Leader, Marine Mammals and Endangered Species Program

FROM: George H. Balazs, Wildlife Biologist

SUBJECT: 5-year ESA status review of sea turtles, and the NMFS review of subsistence use of green turtles in the U.S. Pacific islands

The formal public comment periods previously announced in the Federal Register for the subject status reviews have come to a close. In addition, all public meetings scheduled for the U.S. Pacific islands have now been completed. The SWFC, and specifically the Honolulu Laboratory's Marine Mammals and Endangered Species Program, need to be fully apprised of any new biological information submitted in this testimony to the Regional Office. I would therefore like to suggest that a request be initiated to obtain copies of the following materials:

1. Copies of all letters of testimony relating to the 5-year status review for the eastern, central, and western Pacific area;

2. Copies of all letters of testimony relating to the subsistence review; and

3. Copies of the transcripts of tape recording made at the 10 public meetings held in Hawaii, Guam, Saipan, and American Samoa.

It should be noted that No. 1 of the above was originally scheduled to be forwarded to the Honolulu Laboratory for evaluation under our segment of the 5-year status review which was completed in early May.

The Garden Island Lihue, Kauai, Hawaii May 23, 1983 (front Page)

Protection of sea turtles urged

by Bill Sollner

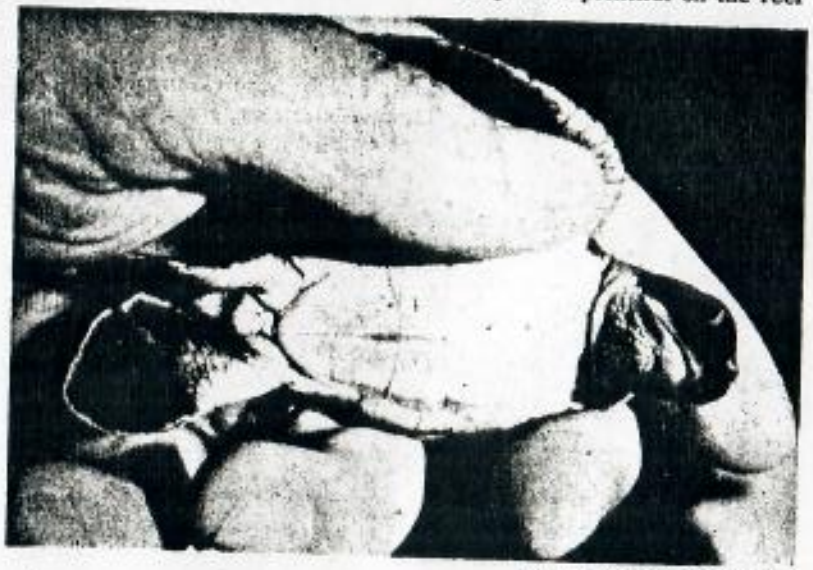
"There used to be hundreds of them out there sleeping on the beach. Big as bathtubs, they were . . . but you don't hardly see big ones like that anymore." That's how Vernon White and George Kaona described the depletion of the green sea turtle population on Kaua'i at a hearing in Lihu'e Library Conference Room Thursday evening.

They and some 40 others turned out to express their views on what should be done about regulations prohibiting the taking of sea turtles. Since 1978 they have been protected by Federal law, except for subsistence harvesting in the Trust Territory of the Pacific.

OF THE TEN people who spoke for the record, some were for relaxing the regulations, but most were in favor of retaining them, at least until the turtles have had time to replenish their numbers.

"After all, five years isn't very long, and they've just started to make a come-back in that time," said David Boynton, one of those for continuing to protect the creatures. He pointed out that at least in Hawaii no one needs the turtles for food. "The population is increasing," he said, "but if we open up harvesting they will be soon back where they were before harvesting was prohibited."

THE DIFFERENCE between traditional, Hawaiian methods of taking turtles and modern methods that involve use of power boats and wet suits and shotgun ammunition . . . was stressed because with the technology of today hunters can slaughter so much faster than skin divers using home-made spears or a rope with a noose.



Baby Green Sea Turtle

VALENTINE Ako said that's how he used to take turtles when he was a young man growing up on the Kona coast of the Big Island. He said he would skindive carrying a rope with a noose in it and slip the noose over the turtle's head.

They were plentiful on the reef there until human population soared, along with development, and hunters thinned out the herd to the point that those surviving left for parts unknown.

"Now there are no more turtles off the Kona coast," said Ako.

THE PARALLEL between how American Indians hunted the buffalo and how Hawaiians used to hunt the turtle was drawn. In both cases, the balance between humans and creatures was maintained because like the Indians, Hawaiians took only so many turtles as they could use.

But as with the buffalo when commercial hunting began, so turtles in Hawaii were hunted to the point of disappearing before the Federal law protecting them came into effect.

BOTH SANDY Conrad and Patty Grant, officers of the Kaua'i Underwater Association, came out strongly in favor of retaining the prohibition. As divers, both women have come to know the waters around Kaua'i, and both indicated there are few if any turtles. Grant said she has never seen one. Conrad said, "The oceans of the world are our inheritance to conserve and protect for all time." Both indicated 5 years of protection under Federal law is not enough.

IN SUPPORT of that view, aquatic biologist Don Heacock said it takes between 11-59 years for turtles to be able to reproduce. So, if hunting is allowed, he indicated it would probably result in killing

(Please turn to Page 2)

★ Turtle plight ★

(Continued from Page 1)

off the breeding stock that is just beginning to come into the right age for reproduction.

HEACOCK SAID those turtles now in Hawaiian waters probably migrated here from the Leeward Islands where it has been established that the creatures are making a good comeback. "Turtles come down the chain to Hawaii because the kind of limu they like to feed on is more plentiful here," said Heacock.

But he also feels we need to know more about turtles before we relax the laws that protect them from human predators. "We don't even know where they go or how many die during the first 2-3 years of their life," said Heacock. "We can't make a good decision on how many should be harvested until we know more about their life-cycle and their mortality."

ACCORDING to him, tiger sharks are, (after man) the turtles most relentless predator.

According to Vernon White, "At one time you could go anywhere on the NaPali coast and take your choice, (of turtles)." He wants permission to take turtles reinstated because they are traditional Hawaiian food and if Hawaiians are allowed to take them legally, they will not have to resort to poaching.

PATTI NODA didn't at first want to speak for the record, but she finally did, and that was to refute White. Said she, "You can't say only Hawaiians can take turtles. I just don't agree with him, (Mr. White). Tell me one Hawaiian who is starving and needs to eat turtle," said Noda. And she added that she comes from a Hawaiian family of fishermen.

In her view the present laws are neither enforced nor strict enough. She wanted to know what would happen to the two guys caught in the act of slaughtering a turtle near Princeville recently. When no one could tell her, (because no one from the enforcement agency was present) she indicated her feeling to be that they would get off with a slap on the wrist. When asked what she would do with them, she said, "Give them a life sentence."

ACCORDING to Gene Nitta of the Western Pacific Program of National Marine Fisheries Service who chaired the hearing, the maximum Federal penalty for illegally taking turtles is a fine of $20,000.

Another spectator pointed out that Judge Nakea has been handing out $100 fines for persons convicted of taking turtles.

As a veteran helicopter pilot on Kaua'i, Jack Harter said that 20 years ago he once saw as many as 17 large turtles sleeping on a NaPali beach. Then, as years passed, he saw them decline and virtually disappear. Now, after 5 years of protection, he says they are coming back. "This year I saw as many as 7 one day," he reported. After 20 years of watching them decline and recover, Harter said he is convinced they need protection for awhile longer. But he would have no objection to letting them be taken once their numbers have increased sufficiently . . . and if strict controls were enforced.

BASED UPON comments and information received by June 20 throughout Hawai'i, in Guam, Saipan, American Samoa and possibly also in the Trust Territory, the present regulations will be reviewed, recommendations of officials in the area considered, and a final decision will be made in Washington, D.C., according to Nitta.

PROTECT KAHO'OLAWE 'OHANA

STATEMENT
SUBSISTENCE TAKING OF THE HONU (THE SEA TURTLE) BY NATIVE HAWAIIANS

• THE PROTECT KAHO'OLAWE 'OHANA RECOGNIZES THE NATIVE HAWAIIAN RIGHT TO TAKE HONU AS SUPPORTED BY OUR TRADITION, INCULDING THE OLI (OR CHANTS) AND THE MO'OLELO (OR LEGENDS) OF OUR ANCESTORS AND KUPUNA (OR ELDERS) TODAY

This tradition has evolved and developed a special relationship that the native Hawaiian today has with the honu. Chants, and the hula performed, and the many stories illustrate that the honu is an honored figure in Hawaiian thought. The following are a few examples:

· The fishing god A'ia'i creates ko'a (fishing grounds) by constructing various structures throughout the islands. On Lana'i, Ka'ena Point is marked, and the honu are attracted to the waters of Hawai'i.

· There are various interpretations of the legend of the hero Kana, who rescues his mother Hina from a Moloka'i Chief. Keauleinakahi, a monster turtle, is defeated first. Kana then competes with the hill called Haupu, which also is a gaint turtle named Kahonunuimaeleka. Kana breaks the turtle's flippers and crushes its back to pieces. These pieces become the turtles today in Hawaiian waters.

· An unpublished Ka'u family chant and hula describe the honu as leading the people of the area to fresh water, and becomes the aumakua (family god) for the people there.

· From an oli commemorating Pele's return journey from Tahiti, she feasts on honu at Polihua.

· A Kauai hula pahu and the legend to which it belongs, tells of the sacred chief Kalani Kamanomano who is a kapua (demi-god) turtle with a horny shelled back. Kaahumanu, the kapu wife of Kamehameha I, is described in the same words as are in this chant, her rank and descent from the turtle god Kalani Kamanomano.

· Many more chants and stories talk about the honu as as aumakua. The Pelekunu people would eat all but the honu with white spots on their shell, for these were their ancestors. From Kaua'i to Hawai'i Island, there are stories of honu aumakua who continue to lead fishermen to successful catches, who have provided for fishing families safety, and who have also been abused. Many stories heard today relate the apperance of the honu when called upon as a hoailona (physical sign).

• THE PROTECT KAHO'OLAWE 'OHANA IDENTIFIES PLACES THROUGHOUT HAWAI'I WHICH ARE NAMED FOR THE HONU, OR WHICH KUPUNA REMEBER AS AREAS FREQUENTED BY THE HONU - BEACHES WHERE THE RELATIONSHIPS BETWEEN THE NATIVE HAWAIIAN AND THE HONU HAVE BEEN FURTHER ESTABLISHED

. Some of these are: Honuapo at Ka'u, Hawai'i; Ka'ena and Polihua on Lana'i; Honukanaenae on Kaho'lawe, Haupu and Pelekunu on Moloka'i; and Keoneoi'o on Maui.

• THE PROTECT KAHO'OLAWE 'OHANA REAFFIRMS THE CUSTOMARY PRACTICES OF TAKING HONU

. Some of these are: the methods described by A.D. Kahaulelio in 1902 at Polihua - stepping on the flippers and turning the turtle over, or off the reefs - riding the turtle as soon as it begins to dive and flipping it over to surface and load, or as was done by Natives of Bora Bora living in Lahaina in 1850 or in Kona - by spearing; the method still used in Ka'u - hooking the neck or flippers from the cliff areas at night; and the method talked about by the people of Pelekunu - by lasso.

• THE PROTECT KAHO'OLAWE 'OHANA REAFFIRMS THE TRADITIONAL USES FOR HONU

. Some of these are: when there is a need to eat turtle meat; on occasion when determined by religious ceremony to the god Kanaloa; for medicinal purposes including limu honu for ulcers when pounded with 'alaea, or for burning eyes that come from fishing when pounded with popolo berry; and for the oil that is used as a vehicle mixed with noni or kukui for dermatitis or as a penetrant for lomi lomi; or for fish hooks and olena scrappers.

• THE PROTECT KAHO'OLAWE 'OHANA PROTESTS THE FACT THAT THE NATIVE HAWAIIA ARE BLAMED FOR THE DEPLETION OF THE HONU SPECIES BECAUSE OF THEIR TRADITIONAL PRACTICES AND ADVOCACY OF THIS RIGHT. DEVELOPMENT OF THE SHORELINE AREAS AND BEACHES AND COMMERCIALIZATION FOR "TURTLE STEAK", LIKE THE BOMBING OF KAHO'OLAWE, HAVE NOT BEEN HAWAIIAN PRACTICES, AND HAVE PROBABLY CAUSED MORE DAMAGE IN DISRUPTING THE ECOLOGY AND LIFE CYCLE OF THE HONU THAN THE NATIVE HAWAIIAN TAKING OF THE HONU FOR SUBSISTENCE PURPOSES

• THE PROTECT KAHO'OLAWE 'OHANA AGREES WITH PROPER MANAGEMENT OF THE HONU AS A TRADITIONAL RESOURCE. SINCE THE ABOLITION OF THE KAPU IN 1819, AND THE FAILURE OF THE KONOHIKI, TERRITORY, AND NOW STATE OF HAWAI'I TO REGULATE THE EXPLOITATION OF THE HONU BY NON HAWAIIANS, WE SUPPORT THE IDEA OF A GENERAL KAPU, AND WILL HO'OMALU THE HONU FOR REASONS AND PURPOSES STATED ABOVE

• FINALLY, THE PROTECT KAHO'OLAWE 'OHANA MAKES NOTICE OF YOUR FAILURE TO PROVIDE SUFFICIENT TIME FOR REVIEW AND COMMENT OR TO SPONSOR AN ETHNO-HISTORICAL SEARCH, BY NATIVE HAWAIIANS SCHOLARS, THAT WOULD DOCUMENT THE PACIFIC ISLAND AND NATIVE HAWAIIAN BELIEFS AND PRACTICES WITH REGARD TO THE HONU. WE OBJECT TO YOUR HEARING PROCEDURES, AS THEY ARE NOT REFLECTIVE OF THE OPINIONS OF MORE RURAL COMMUNITIES (KA'U, HANA, AND EVEN NI'IHAU), AND THE INCONSISTANT TREATMENT OF NATIVE HAWAIIANS WHEN COMPARED TO THE RIGHTS OF NATIVE AMERICANS AND THOSE OF THE PACIFIC TRUST TERRITORY ISLANDERS

• IT IS IMPORTANT TO PRESERVE THE HONU FOR THOSE WHO HAVE THEM AS AUMAKUA OR WISH TO REESTABLISH THIS ONCE WORKING RELATIONSHIP IN THEIR FAMILY, AND FOR THOSE WHO WISH TO EXERCISE THEIR TRADITIONAL FAMILY FISHING PRACTICES. THE IMPORTANCE OF RETAINING THESE PRACTICES AND RIGHTS (OR THE OPPORTUNITY FOR SUCH) IS THAT THIS IS THE ONLY WAY TO RETAIN THE LIVING KNOWLEDGE OF ANY CULTURE

Endangered Species Act Reauthorization BULLETIN

Notice—CEE supporters wishing to receive periodic editions of this newsletter through 1984 are requested to send a $5.00 donation to the Center for Environmental Education (address below).

A COOPERATIVE EFFORT TO ENSURE EFFECTIVE IMPLEMENTATION OF THE ENDANGERED SPECIES ACT AND TO SECURE THE REAUTHORIZATION OF A STRONG ACT IN 1985.

April 6, 1983 Number 10

In This Issue

Overview

The Endangered Species Act Amendments of 1982 made numerous changes to the ESA which strengthened its protection for endangered and threatened species. There are indications that the Reagan Administration is taking steps to implement the 1982 amendments, but little concrete progress has been made. The Administration's record on listing species as endangered or threatened, for example, remains the worst since the Act was passed. Weakening protection for listed species and promoting economic development at their expense appear to merit greater priority than upholding the letter and intent of the law.

The Administration also has proposed severe cuts in the federal budget for endangered species. Previous Administration proposals to make such cuts have been partially rejected by Congress, but this is the third year in a row that virtually the same proposals have been advanced. Continued strong federal protection of endangered species and the very existence of many state endangered species programs partially supported by federal funds now depends on the will of Congress to provide the modicum of monies needed.

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For additional information, contact the organization that sent you this newsletter or write: **Save Endangered Species**, P.O. Box 50771, Washington, DC 20004.

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Editors: Roger E. McManus and Jann Teeple-Hewes

Implementation of the Endangered Species Act Amendments of 1982

As described in the Endangered Species Act Reauthorization Bulletin (ESARB) #9, the Endangered Species Act Amendments of 1982 made numerous changes to the ESA which strengthen its protection for endangered and threatened species. The following is a discussion of progress being made by the Reagan Administration in implementing the amendments and of anticipated regulatory and policy changes.

Determining Species to be Endangered or Threatened (Section 4) -- Section 4, which prescribes how species are to be listed as endangered or threatened, was substantially modified by the 1982 Amendments. These amendments streamline the listing process, tighten procedures for handling petitions, overturn the Reagan Administration's practice of granting priority to listing "higher life forms," and prohibit delays in listing for the purpose of analyzing economic effects. As the Conference Report (H.R. Conf. Rep. No. 97-835, 97th Cong. 2d Ses.) accompanying the amendments explains:

> The principal purpose of these amendments is to ensure that decisions in every phase of the process pertaining to the listing or delisting of species are based solely upon biological criteria and to prevent non-biological considerations from affecting such decisions. These amendments are intended to expedite the decisionmaking process and to ensure prompt action in determining the status of the many species which may require the protections of the Act.

A brief review of the number of species that may require the ESA's protection and the progress being made to list them underlines the importance of these amendments and provides a baseline with which to judge recent progress.

At present there are 298 U.S. animal and plant species on the list of Endangered and Threatened Species. On December 15, 1980, the U.S. Fish and Wildlife Service (FWS) published a Federal Register notice of review (45 FR 82480) which identified almost 3000 U.S. plants that may be qualified for listing and in need of protection, and which solicited information from the public and government agencies to clarify the status of the candidate species. A December 30, 1982 notice of review (47 FR 58454) listed more than 300 vertebrate animals which can be considered as candidates for listing. FWS is preparing a similar list of approximately 600 U.S. invertebrates. Despite a large backlog of species that may be eligible for protection, species listings have declined significantly under the Reagan Administration, increasing the odds that many species will become extinct before they can be listed. Since taking office, the Reagan Administration has listed only 13 species, about 12 percent of the number listed by the previous Administration.

The 1982 amendments to the listing process provide the Administration with the opportunity to improve its record. An important step toward meeting this objective is to identify possible candidates through the Federal Register notices of review. This not only helps to clarify the status of the candidates but also provides information that may be useful in preventing conflicts between species conservation and economic development. Additional promise of improvement in listing may be found in FWS plans to propose 218 species for listing as endangered or threatened species by October, 1983.

In order to tighten procedures for handling listing petitions, the 1982 amendments require the FWS and the National Marine Fisheries Service (NMFS) to determine

within 90 days of receiving a petition if substantial scientific or trade information is presented in the petition, and, if substantial information is presented, to determine within 12 months if the petitioned action is warranted. Petitions pending when President Reagan signed the reauthorization bill are to be treated as filed on that date. Consequently the 90-day findings on those petitions were due by January 11, 1983; the 12-month deadline is October 13, 1983. On December 23, 1982 the Center for Environmental Education (CEE), Defenders of Wildlife (Defenders), the Environmental Defense Fund (EDF), and the Natural Resources Defense Council (NRDC) reminded the FWS and the NMFS that they needed to make the 90-day findings on 29 petitions, covering 410 species. The FWS published its findings in the Federal Register on February 15, 1983 (48 FR 6752). A NMFS official has indicated that his agency's findings will be published soon.

If the Services determine that a petitioned action is warranted, they must publish in the Federal Register proposed rules to list the species. Publication of proposed rules can be delayed for six months if there is substantial disagreement on the sufficiency or accuracy of the available data or for one year if a proposal is precluded by ongoing work on other listing or delisting actions for which expeditious progress is being made. CEE, Defenders, EDF, and NRDC are preparing recommendations to the Services on the petitions requiring findings by October 13.

During the 1982 Congressional hearings on reauthorization, testimony was provided by several renowned scientists concerning the economic and other values of plants and invertebrates and the folly of the current Administration's policy to give priority to listing so-called "higher life forms." Congress responded by prohibiting listing priorities based on distinctions between "higher" and "lower" life forms. Agency officials have indicated that new priority guidelines are being prepared and should be published soon. In addition to publishing new guidelines, however, publication of the notice of review for invertebrate animals and listing plants and invertebrates in proportion to their representation among all candidate species are needed to demonstrate compliance with Congress' directive.

Congress also directed the Administration to cease its practice of delaying listings by requiring burdensome analyses of economic effects. For two years, it has been Administration policy to do analyses of the economic costs and benefits of each listing proposal to determine 1) if it is a major action having more than $100 million gross annual effect on the economy under Executive Order 12291 on Federal Regulation, and 2) if it has a significant economic effect on a substantial number of small entities under the Regulatory Flexibility Act. Congress directed in the 1982 amendments that "economic considerations have no relevance to determinations regarding the status of species and the economic analysis requirements of Executive Order 12291 and such statutes as the Regulatory Flexibility Act and the Paperwork Reduction Act will not apply to any phase of the listing process." Even so, the Administration has, until very recently, continued to apply these economic analyses to designations of Critical Habitat. The ESA generally requires that Critical Habitat be designated concurrently with listing, so continued application of the economic analyses to such designation could result in the same delays experienced before the 1982 Amendments. FWS officials have acknowledged that such a possibility could occur and they have indicated that changes to administrative procedures are being implemented to ensure compliance with the Amendments.

Cooperation with the States (Section 6) -- Section 6 provides for cooperative programs with the States on behalf of endangered and threatened species. These programs are funded through federal matching grants to the states and represent the

ESA's major provision for effecting recovery of endangered and threatened species and for clarifying the status of candidates for listing. Secretary of the Interior James Watt asserts that the rationale for slowing the listing process is to provide greater resources to recovery efforts for already listed species. This policy is belied by the Administration's consistent attempts to eliminate funds for Section 6 and habitat acquisition under the Land and Water Conservation Fund (LWCF), and does not reflect the dangers to species qualified for listing posed by withholding the Act's protection. Efforts by conservation organizations to ensure that Congress appropriates adequate funds for state/federal cooperative efforts, habitat acquisition using LWCF, and other programs benefiting endangered and threatened species are described later in this Bulletin.

Interagency Cooperation (Section 7) -- Section 7 of the ESA requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of listed species or destroy or adversely modify critical habitats. If agency actions may affect endangered or threatened species, the agency is required to consult with either the FWS or NMFS. The 1982 amendments modify Section 7 to allow applicants for federal agency permits or licenses to initiate consultation prior to applying for a permit or license in order to facilitate early resolution of potential conflicts. Previously, consultations were conducted only after application for a permit or license, and the consultation could be extended without consent of the applicant. The 1982 Amendments shorten the consultation period and require that extensions beyond 150 days require the express consent of the applicant. Guidelines mandated by the Congress and in preparation by the Services will refine the conditions and procedures for early consultation.

The amendments also allow incidental take of endangered or threatened species under certain conditions. An interagency consultation involving Federal actions will specify the extent of permissible incidental take that may occur without jeopardizing the continued existence of any endangered or threatened species and reasonable and prudent measures required to minimize such take.

Permits and Exemptions (Section 10) -- A comparable provision was developed for application to entirely private actions. Section 10(a) provides for permits for incidental take "if the taking is incidental to, and not the purpose of, an otherwise lawful activity" (Conference Report accompanying the 1982 amendments). The first Section 10(a) permit was signed by Robert A. Jantzen, director, U.S. Fish and Wildlife Service, on March 12, 1983 in California. The permit allows three endangered species (Mission blue butterflies Plebejus icarioides missionensis, San Bruno elfin butterflies Callophrys mossii bayensis, and San Francisco garter snakes Thamnophis sirtalis tetrataenia) to be killed during construction of housing and offices on up to 727 acres of San Bruno Mountain, California. In exchange, 793 acres of private land will be dedicated to conserved habitat and permanent funding will be established for a habitat management program.

The Conference Report for the 1982 amendments clearly indicates that Section 10 permits and conservation agreements should reflect the intent of the ESA to conserve the ecosystems on which endangered and threatened species depend and should address the conservation needs of listed and unlisted species. However, review of the supporting documents for this first permit suggests that the conservation needs of the San Francisco garter snake and 12 unlisted species received little attention during the formulation of the conservation agreement. From the information provided by these documents, it also appears that unlisted species may be extirpated from San Bruno Mountain, and, if they do not exist elsewhere, they may, indeed, become extinct as a direct result of this federally condoned development.

FY 1983 and FY 1984 Appropriations

FY 1983 Appropriations -- Congress reauthorized a strong Endangered Species Act, but the Reagan Administration has consistently proposed severe cuts in the budget that implements it. The Administration's proposed budget for FY 1983 requested only $16,550,000 for FWS endangered species work, 26% less than 1981, and 39% below Congress' authorization of $27,000,000. Especially hard hit would have been law enforcement, reduced by $970,000, the state grants program (Section 6) reduced from $4 million to zero, and many specific recovery programs. In addition, only $998,000 was to be used to acquire endangered species refuges. This is inadequate even to acquire habitat for the two species identified in the budget.

Similar reductions were proposed for NMFS: Congress authorized $3.5 million, the 1982 budget was $2.9 million, but the 1983 budget request was only $2.179 million. The loss of $760,000 would have severely delayed needed sea turtle conservation work and decreased enforcement of the Act by NMFS. (Aquaculture research also would have been totally eliminated, including research on captive rearing of Kemp's ridley sea turtles.) Both the Bureau of Land Management (BLM) and the U. S. Forest Service proposed greatly accelerated "resource development" (timber cutting, mineral extraction, etc.) without a provision for additional funds for endangered species. (See ESARB No. 8., for details of these proposed cuts.)

Fortunately, Congress restored many of the proposed cuts. In December, $19,953,000 was appropriated for the FWS Endangered Species program, an increase of $3.4 million over the Administration's proposal, although still 10% less than the 1981 budget allowance. Law enforcement was given an additional $987,000, recovery programs for peregrine falcons, California condors, and whooping cranes received $416,000 more, and the Section 6 state grants program was budgeted at $2 million. (The House voted $4 million for state grants and the Senate voted zero. The conference committee compromised at $2 million.) Funds for acquisition of refuges for endangered species were augmented by $3.9 million, a fourfold increase over proposed figures, although many high priority refuges were left unfunded. The budget reductions for NMFS were restored. Congress designated $1.6 million of BLM wildlife habitat money for endangered species, and redirected a large unspecified amount of Forest Service timber management money for endangered species habitat protection, while greatly reducing monies for its proposed accelerated timber cut.

Prospects for FY 1984 Appropriations -- The Administration's proposed 1984 budget includes almost identical cuts for endangered species work by FWS and NMFS as those proposed for the 1983 budget and restored by Congress. Again, $1 million would be taken from FWS law enforcement, and no funding would be provided for state grants, for the recovery programs funded by Congress in FY 1983, or for acquisition of any refuges. Sea turtle conservation, aquaculture, and fisheries enforcement program budgets would be reduced by the same amounts proposed unsuccessfully before.

The Administration is clearly waging a war of attrition on the federal endangered species program. Some of last year's cuts were partially upheld by Congress, so it is obvious that the Administration hopes that more of its cuts will succeed this year. (For example, state grants funds: $6 million is needed to ensure stable state programs, but only $2 million was appropriated. Although many of these programs still exist, their continued effectiveness depends upon increases in federal funds, not just smaller decreases. Without sufficient funding, the eventual result will be the failure of these programs. Similar processes can be seen in refuge funding and in other areas.)

The Administration's attitude toward the endangered species program is reflected in a January 31 press release from the Interior Department. The Department takes credit for providing "an increase of nearly $1 million for 17 high-priority recovery actions involving 40 endangered species." High-priority species are named, but the department only requested an increase of $514,000 for recovery; the remaining $416,000 would come from money restored by Congress last year. The press release also ignored mention of $3 million in state grants and law enforcement money that the Department recommended be eliminated. Instead of the "nearly $1 million increase" claimed in the press release, Interior's plans for a recovery budget could be better characterized as a net decrease of nearly $2.5 million.

New and severe cuts are proposed for the U.S. Forest Service and BLM endangered species work, along with drastic increases in timber cutting and other resource development. The Forest Service would have to cut endangered species efforts by $208,000 and 6 personnel, leaving $1.1 million and 28 personnel. BLM would suffer even more severe cuts. Allocation of endangered species funds within BLM's wildlife budget is not detailed, but Interior has proposed to cut its budget by 31% to $10,515,000, and by 89 persons (25%) to 271. These cuts would be exacerbated by reductions in other land management functions, and a great increase in timber cutting support.

Recommendations

Elvis Stahr, President Emeritus of the National Audubon Society, provided detailed recommendations for needed changes in Interior's proposed budget before the House Appropriations Subcommittee for Interior and Related Agencies. The organizations cooperating on insuring the effective implementation of the Endangered Species Act agree with those recommendations and support their adoption by Congress. A partial summary follows (amounts represent increases over Administration proposals):

Fish and Wildlife Service, Endangered Species: +$7,917,000
(Listing, +$2,000,000; law enforcement, +$1,147,000; Section 6 -- state grants, +$4,000,000; other recovery, +$777,000)
Refuge acquisition (all purposes): +$63,380,000
Bureau of Land Management, Renewable Resources: +$14,750,000
(Includes +$4,750,000 for Wildlife Habitat Management)
Forest Service, Wildlife and Fish Management: +$4,500,000
(Also +$5,000,000 each for Range Management and for Soil, Water, and Air Management)

In addition to the above recommendations, the cooperating organizations also recommend restoring to the National Marine Fisheries Service: $80,000 for law enforcement; $1,350,000 for protected species biology, including $670,000 for bowhead whale research, and; $5,343,000 for aquaculture, including funds for captive rearing of Kemp's ridley sea turtles.

What You Can Do

Adequate funding to carry out Congress' mandate in reauthorizing the ESA is essential. James Watt has said that the Administration would use funding and economy as an excuse to make changes it cannot make legislatively. The Administration's recommendations for funding federal endangered species programs certainly reflect this intent. The Senate and House appropriations committees have the Administration's proposed budget, and the subcommittees have begun appropriations hearings. Markup (subcommittee and committee amendments) of appropriations bills

should begin in mid May or early June. If your Representative or Senators are members of any of the appropriations committees listed below, especially the Interior or Commerce subcommittees, please write to them and request their support for restoration of needed funding for endangered species. If your Congressional representatives are not on any of these committees, write to the chairmen of the appropriate subcommittees. The Interior Appropriations Subcommittees have authority over the Fish and Wildlife Service, the Bureau of Land Management, and the U.S. Forest Service, even though the Forest Service is actually a part of the Department of Agriculture. (When writing to the Interior subcommittees, refer to and express your support for the testimony given by the National Audubon Society.) The Subcommittees for Commerce, Justice, State, the Judiciary, and Related Agencies are responsible for the National Marine Fisheries Service.

Representatives and Senators are listed by state, followed by R or D for their party affiliations. Abbreviations: i: Subcommittee on Interior and Related Agencies; c: Subcommittee on Commerce, Justice, State, the Judiciary, and Related Agencies; -ch: chairman; -rm: ranking minority member; a-ch and a-rm: chairman and ranking minority member of an appropriations committee.

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For Further Information -- A nine-page report titled "The Endangered Species Budget," may be obtained by sending $2.00 to the Center for Environmental Education, 624 9th Street, NW, Washington, D.C. 20001. A copy of National Audubon Society President Emeritus Elvis Stahr's testimony before the House Appropriations Subcommittee for Interior and Related Agencies may be obtained from the National Audubon Society, 645 Pennsylvania Ave., SE, Washington, D.C. 20003.

Convention on International Trade in Endangered Species of Wild Fauna and Flora

The fourth regular meeting of the Conference of the Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) will be held in Gaborone, Botswana from April 19 to 30, 1983. Representatives of the member nations must consider almost 200 proposals to amend the lists of species protected by the treaty and decide on numerous procedural and technical issues. Listing issues likely to result in intense debate include proposals to increase protection for whales and seals (which the U.S. government has indicated it will oppose) and proposals by the United States to weaken or remove protection for several North American species. The U.S. government also is advocating weakening standards for allowing specimens of protected species to enter into commerce. Final selection of the U.S. delegation to the meeting is not complete, but FWS officials have indicated that it will not include a botanist needed to defend U.S. proposals to add more than 100 cactus and other plant species to the appendices.

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