

TESTIMONY BY GEORGE H. BALAZS, HAWAII INSTITUTE OF MARINE BIOLOGY, UNIVERSITY OF HAWAII, CONCERNING SENATE BILL 1530 WHICH RELATES TO THE PROTECTION OF THE HAWAIIAN GREEN TURTLE.

February 26, 1974

U Under the U.S. Endangered Species Act of 1973 (public law 93-205) an animal may be considered "endangered" due to any of five different factors. Not less than three of these factors are directly applicable to the present status of the Hawaiian green turtle. These include 1.) present or threatened destruction, modification or curtailment of habitat or range; 2.) overutilization for commercial sporting, scientific or educational purposes; and 3.) the inadequacy of existing regulatory mechanisms.

The green turtle has now been reduced to a single nesting site in the Archipelago, that being French Frigate Shoals in the Northwestern Hawaiian Islands. In the 1920's and 30's green turtles nested in relatively large numbers on the north shore of Lanai and in lesser but still significant numbers in at least four specific locations throughout the major inhabited islands. Today no nesting occurs at any of these sites. Nesting habitat has been both modified and destroyed and the green turtles' range has been curtailed.

State Fish and Game records show that the reported commercial catch has increased in recent years with only a small portion of the actual catch being legally reported. Exploitation for turtle steaks continues to increase due to the dollar incentive provided by restaurants serving this exotic item. If this situation is left unchecked, the only possible outcome can be the complete and irreversible decimation of the Hawaiian green turtle colony. During the 1973 nesting season intensive investigations at French Frigate

Shoals revealed that fewer than 150 females were present. Population estimates made in 1968 placed the size at two to four times the present level. Fewer than 150 females at the only nesting site in the Hawaiian Archipelago is ample reason to wonder if long term survival can continue without the immediate implementation of special measures. All information available indicates that overutilization for commercial purposes has occurred in the past and continues to occur today.

No specific Hawaii State regulations or statutes have ever existed to ensure adequate management of the Hawaiian green turtle colony. No laws presently exist to help protect or perpetuate these marine reptiles around our inhabited islands. For the past year the State Fish and Game Division has supported a regulation that would provide partial protection for marine turtles. Overwhelming public support has also been displayed for this measure, however, enactment has not been obtained. Whether it ever will be now seems questionable. Without doubt, there is an inadequacy in existing regulatory mechanisms in Hawaii to ensure green turtle survival.

Destruction, modification and curtailment of habitat; overutilization for commercial purposes; and the inadequacy of existing regulatory mechanisms were some of the same major factors cited by the U.S. Department of the Interior when it recently nominated the green turtle for inclusion to the Endangered Species List.

It would therefore behoove the State of Hawaii to at long last take the initiative and afford complete protection to her green turtles. This total protection should continue until such a time that a research management study indicates what level of utilization can take place without adversely affecting the colony. To permit uncontrolled exploitation to take place until a research

management study has been completed would surely be resource mismanagement of the poorest form. In view of recent events and the fact that our green turtle colony is the last in the U.S., it appears highly likely that if the State does not take immediate decisive action, the Federal government most certainly will be justified in doing so. I therefore concur with Senate Bill 1530 and urge its rapid passage along with a slightly modified version of House Bill 1635.

TESTIMONY BY GEORGE H. BALAZS, HAWAII INSTITUTE OF MARINE BIOLOGY, UNIVERSITY OF HAWAII, CONCERNING HOUSE BILL 1635 WHICH RELATES TO RESEARCH MANAGEMENT STUDIES OF THE HAWAIIAN GREEN TURTLE.

February 26, 1974

The green turtle (Chelonia sp.) colony found in the Hawaiian Islands is of a unique nature because it is the last remaining intact green turtle colony in the United States as well as the only one in the world that can be managed and protected under a single government's jurisdiction at both the feeding and breeding grounds. These points alone should be of paramount importance to the State of Hawaii. From a scientific point of view, this colony is also unique because it presents many special problems in population dynamics, ecology and behavior.

Past turtle research in Hawaii has thus far been restricted to limited tagging studies in the Northwestern Islands by U. S. Bureau of Sport Fisheries and Wildlife personnel, and to a preliminary intensive survey of nesting and basking populations at French Frigate Shoals (the last nesting site in the Hawaiian Archipelago) which I conducted during 1973. In addition, the State Fish and Game Division has collected data on commercially captured turtles that have been reported since 1948.

Tagging by Bureau personnel has shown in no uncertain terms that turtles present at French Frigate Shoals during the nesting season subsequently migrate to feeding areas around each of our major inhabited islands. No protection from exploitation exists around these islands. Results of my own investigations have revealed that fewer than 150 females were present at French Frigate Shoals during the 1973 nesting season, a low number by any means of evaluation. State Fish and Game statistics have shown that commercial

exploitation of turtles has drastically increased over the past ten years, undoubtedly as a result of tourism growth and the accompanying demand for exotic foods such as turtle steak. All available information derived from the research that has thus far been conducted gives cause for serious concern for the continued survival of the Hawaiian green turtle. Further intensive investigations need to be conducted in both the Northwestern Hawaiian Islands and around the major inhabited islands at the earliest possible time. Baseline research is clearly necessary if the State expects to wisely manage, on a long term basis, and utilize, to the best advantage, her unique green turtle colony.

Research on Hawaii's turtles has long been urged by concerned scientists and government agencies. In 1973 Dr. Archie Carr, the world's foremost authority on the green turtle, stated in correspondence to me that he would like to "see a complete moratorium on the taking of all sea turtles throughout the Hawaiian Islands until a careful survey of breeding, feeding and basking populations could be made."

In 1971 a United Nations' report on marine turtle resources in the Pacific urged that intensive research be initiated so that valuable information could be obtained on the little studied Hawaiian turtle colony. During the 1971 Legislative Session the Department of Land and Natural Resources recommended that funds be provided for a research management study of our green turtle colony. In 1956 a Honolulu Star-Bulletin newspaper article quoted Fish and Game officials and local scientists as stating that information was needed on our marine turtles so that they might be protected and perpetuated. Research studies were recommended.

Total agreement seems to exist on the need for comprehensive turtle research. The absence of necessary financial support for this work has been, and continues to be, the major inhibiting factor. Budget restrictions and limited personnel in the State Fish and Game Division have restricted turtle research through this agency. The Federal Aid to Sport Fisheries Restoration Act (commonly called the Dingell-Johnson Act) specifically excludes turtles, therefore, funds presently being received by the State cannot be used for turtle research. Representative Dingell has only recently reconfirmed this point for me with the Secretary of the Interior. The U. S. Bureau of Sport Fisheries and Wildlife is only capable of providing a limited amount of assistance to turtle research studies, chiefly in the form of equipment usage and logistics support. The University of Hawaii, including the Hawaii Institute of Marine Biology, is financially unable to support the type of turtle management studies that are needed. Only through a special Legislative appropriation such as provided for in House Bill 1635 can the funds for green turtle research be obtained. It seems highly appropriate to use State funds to study a State resource that has been commercially exploited to the benefit of the State's economy. I therefore strongly concur with those sections of House Bill 1635 which would provide general revenues of the State for research management studies. I am not, however, in agreement at this time with Section 4 which would provide funds for encouraging the commercial culture of green turtles. The present state of the turtle culture art is such that premature commercial ventures only represent an adverse factor to the conservation of the species. Among other important economic and

biological factors, no expertise presently exists for completing the green turtle's life cycle in captivity. Eggs or young must be removed from natural nesting beaches or obtained in part from adults captured from the wild. Until the basic biological problems inherent to the species have been resolved, premature commercial farms will only further weaken the green turtle's already precarious survival position. I suggest that the proposed funds in Section 4 be transferred for use in Sections 2 and 3 which deal with the immediate problem of a resource management investigation.

I have submitted copies of pertinent background literature on the status of the green turtle in order to assist members of the committee in their understanding of this valuable marine reptile. Thank you for the opportunity to present information on this matter.

References submitted to committee along with testimony:

1. Balazs, G. H., Protecting Hawaiian Sea Turtles. Honolulu Star-Bulletin, December 18, 1973.
2. Balazs, G. H., Status of Marine Turtles in the Hawaiian Islands. Elepaio, Journal of the Hawaii Audubon Society. June, 1973.
3. Carr, A. F., Great Reptile, Great Enigmas. Audubon, Vol. 74, No. 2, 1972.
4. Ehrenfeld, D. W., Conserving the Edible Sea Turtle: Can Mariculture Help? American Scientist, Vol. 62, 1974.

TESTIMONY BY GEORGE H. BALAZS, HAWAII INSTITUTE OF MARINE BIOLOGY,
UNIVERSITY OF HAWAII, CONCERNING HB 1635 WHICH RELATES TO RESEARCH
AND MANAGEMENT FOR THE CONSERVATION OF SEA TURTLES IN HAWAIIAN
WATERS.

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In a recent issue of Audubon , the magazine of the National Audubon Society, Dr. Archie Carr, the world's foremost authority on sea turtles, states that:

"Today the plight of sea turtles is widely known, and efforts to learn more about them and slow their decline are in progress almost wherever they occur."

Unfortunately for Hawaii, it appears as though the plight of our sea turtles has not been widely known, and at present only limited effort is underway to learn more about them so that we may slow their decline. Although no definitive data exists on population size, subjective observations by numerous local residents seem to indicate that the number of sea turtles in our waters has decreased noticeably in recent years. Hawaii State Fish and Game Division records show that the commercial exploitation of these salt water reptiles has increased drastically over the past nine years. A low of 380 lbs of sea turtle was reported taken in 1963 while a record high of 25,583 lbs was reported for 1972. A large portion of this commercial catch now enters the tourist industry to be sold as turtle steak, thus increases in exploitation can be expected to continue so long as our visitors create a demand. Since turtles that are captured but not sold for profit need not be reported to the Fish and Game Division, it is unknown how many animals are taken each year just for home use. It is also unknown how many commercial turtle sales go completely unreported to the Fish and Game.

Can our population of sea turtles continue to sustain such seemingly large harvests and still remain viable? Will sea turtles gradually vanish from our Islands' waters as they have in many other areas of the world? Although turtles in the Northwestern Hawaiian Islands are completely protected by the U. S. Bureau of Sport Fisheries and Wildlife, virtually no protection is afforded by the Hawaii State Government to the same sea turtles while they are around our major islands¹. Any number of turtles may be taken for any purpose, at any size and at any time of the year. During the 1971 legislative session, the Department of Land and Natural Resources urged that funds be provided for a research management study of sea turtles in Hawaiian waters because scientific knowledge is lacking about these valuable animals⁷. Clearly intensive research is urgently needed if Hawaii is to prevent from having one of her unique creatures sent down the road to extinction.

In 1969 Dr. John Hendrickson, marine turtle specialist and former Director of Oceanic Institute, stated⁵ that preliminary data on Hawaii's turtles gave the:

"subjective impression that Hawaiian turtle populations are over-exploited, under-protected, and declining at a significant rate."

Further, he urged that research be set up as soon as possible to determine the size and range of our population. In 1971 Dr. Harold Hirth, marine turtle consultant for the United Nations, issued a report⁶ which recommended that the commercialization of turtles in Hawaii be stopped and that intensive research be initiated so that valuable information could be obtained on our little studied turtle colony. In 1973 Dr. Archie Carr indicated³ that he would like to:

"see a complete moratorium on the taking of all sea turtles throughout the Hawaiian Islands until a careful survey of breeding, feeding and basking populations could be made."

I have submitted copies of pertinent material to the committee along with my testimony which I hope can help to further clarify the endangered state of sea turtles throughout the world and to illustrate why it is essential that research on turtle populations be carried out. Only through adequate and comprehensive research studies can effective programs for protection, perpetuation and management be formulated.

References

1. *Balazs, G. H., Status of Marine Turtles in the Hawaiian Islands. Hawaii Institute of Marine Biology, Kaneohe, Hawaii. January, 1973.
2. *Balazs, G. H., Proposed Research Study of Marine Turtle Populations in the Hawaiian Islands.
3. Carr, A. F., Personal Communications, 1973.
4. *Carr, A. F., Great Reptiles, Great Enigmas. Audubon, Vol. 74, No. 2. 1972.
5. Hendrickson, J. R., Report on Hawaiian Marine Turtle Populations. in IUCN N. S. 20:89-95. Morges, Switzerland. 1969.
6. Hirth, H. F., South Pacific Islands - Marine Turtle Resources. Report for the Fisheries Development Agency Project. 102:2, F.A.O. Rome, 1971.
7. Testimony to the Honorable Richard A. Kawakami, Chairman House Committee on Lands from Mr. Sunao Kido, Chairman, Board of Land and Natural Resources, relating to HB 1218 (Preservation of the Green Sea Turtle). 1971 Legislative Session, April 1, 1971.

* Material submitted to the committee along with this testimony.

TESTIMONY BY GEORGE H. BALAZS, HAWAII INSTITUTE OF MARINE BIOLOGY, CONCERNING
SENATE BILL 548 WHICH RELATES TO A GREEN SEA TURTLE RESOURCE MANAGEMENT STUDY

Although two kinds of turtles are native to Hawaiian waters, the green sea turtle is the only one which still occurs in any number. The hawksbill sea turtle is now an exceptionally rare species and its continued survival is questionable. Early Hawaiian people were well acquainted with both of these air-breathing reptiles. The green or "honu" as it is called, provided a valuable source of nutritious high-protein food that was utilized in a nonwasteful manner. The hawksbill or "'ea" was captured primarily for the thick plates which cover its upper shell. This material was fashioned into such essential items as fishhooks and tools used for the preparation of fish nets. In addition, the plates were also made into a medicine believed to be capable of curing certain diseases called "'ea." Both of these turtles, which are represented in petroglyphs and referred to in mythology, have always been an integral part of Hawaiian and other native Pacific island cultures.

With the introduction of outside values and technology, economic patterns were gradually altered from a subsistence level to a cash-based market. Human populations increased, remote areas became more accessible and land development flourished. All of these factors acted in unison to produce ecological imbalances resulting in the decline of the Hawaiian green turtle population. This undesirable situation is, however, by no means unique to Hawaii or the Pacific as the same uncontrolled forces have been allowed to decimate turtle populations throughout the tropics. At an international meeting of marine turtle biologists which I recently attended in Miami, it was concluded that the majority of the world's green turtle populations are either extinct, threatened with extinction, or rapidly declining. Unfortunately, the ones who will suffer most from this decline are those who can least afford it. That is, the indigenous peoples who have been traditionally dependent on the turtle as a supplemental source of food.

For all practical purposes, no restrictions existed on the exploitation of turtles in waters surrounding the major Hawaiian Islands before June of last year. Due to an increasing commercial demand in recent years, most of which could be traced directly to the tourist industry, the killing of turtles had been proceeding at a record rate. Based on numerous testimonies presented at public hearings by divers, fishermen, and other knowledgeable long-time residents, the pertinent aspects of the situation came into focus. Concerning the population's status and exploitation, it was agreed that many areas once relatively abundant with turtles now contained only a small fraction of their previous numbers. Further, the alarmingly large commercial increases reflected in voluntary reports submitted to the Division of Fish and Game were found to represent only a portion of what was actually being taken for the restaurant trade. In regard to reproduction, it was shown that there remains only one site (French Frigate Shoals) in the entire Archipelago where green turtles still emerge from the sea to lay eggs. Although productive nesting sites existed at several key locations in the major Islands as recent as 30 years ago, none were shown to remain today. In summary, not only was the honu being openly sold down the final road to extinction in the name of exotic dishes for tourists, but in a more subtle manner a large portion of essential nesting habitat had been disrupted or modified, thereby rendering it useless. After 13 months of deliberations, a protective regulation was put into effect which prohibits the commercialization of turtle products but still allows for home consumption of green turtles over a maximum size.

My own interests in the ecology, conservation, and wise utilization of the green turtle have caused me to take an active role in furthering the understanding

of this native Hawaiian resource. With the assistance of a small grant from the New York Zoological Society and with the cooperation of the U. S. Fish and Wildlife Service, I have conducted studies at French Frigate Shoals during peak nesting periods over the past two years. In combination with occasional tagging previously carried out by Federal and State personnel during visits to the Northwestern Hawaiian Islands, this effort represents a positive start in assessing the present survival status and potential of the breeding population. In addition, working with very limited financial resources, I have initiated several small voluntary tagging programs around the major Islands in order to gain preliminary population data on this important phase of the turtle's migratory range. As a part of the Sea Grant funded Aquaculture Project at the Hawaii Institute of Marine Biology, a sizable portion of my work over the past 28 months has involved investigations into the feasibility and potential of growing green turtles in captivity. The results of this research, as well as information made available from studies conducted elsewhere, have forced us to reject this animal for husbandry purposes. Reasons why turtle culture is not a realistic proposition at the present include the inability of large numbers of young to be produced in captivity (necessitating the removal of eggs or baby turtles from the natural environment); the relatively high levels of dietary protein needed in artificial diets in order to produce acceptable growth; and the ramifications of large scale commercial turtle husbandry as it applies to the conservation of wild turtle populations.

Although our green turtle has suffered significant declines over the years, I am nevertheless convinced that the remaining wild population has the potential for providing a renewable source of supplemental food to the people of Hawaii. However, in order to successfully utilize this resource, and at the same time ensure its continued existence for future generations, sufficient basic biological information must be available for management purposes. The need for a comprehensive study to obtain this information has long been recognized by both State and Federal officials in Hawaii who are familiar with the situation. Unfortunately, the absence of financial support has thus far prevented such a worthy endeavor from becoming a reality. No funds are presently available through any Hawaii State Department or Agency, including the University of Hawaii. Severe fiscal restraints as well as the inflexibility of ongoing specific task projects that require matching State funds prevent the Hawaii Institute of Marine Biology (a part of the University system) from being able to directly support green turtle ecology studies. In addition, Federal aid grants to States for fish and wildlife restoration projects (Dingle-Johnson and Pitman-Robertson Acts) do not permit funds to be expended on sea turtle studies. I have personally confirmed this point with Representative Dingle, who regrettably informed me that turtles, under the definitions used in the Acts, are not classified as being either "fish" or "wildlife." In the absence of this outside support, a reasonable source of assistance for this pressing research effort is the Legislative appropriation of specific funds, such as set forth in Senate Bill 548. Because the principal responsibility for native resources rests with the State, and because the people of Hawaii are the beneficiaries if these resources are managed wisely, it seems both necessary and proper that the Legislature act with favor on this measure. I therefore respectfully urge members of this committee to enthusiastically endorse Senate Bill 548.

Along with this testimony I have included an outline of the six-point program that would be involved in a comprehensive green turtle study in Hawaii. A list is also presented of the types of essential management-oriented biological information that could be expected to result. In order to give you an idea of how appropriations would be spent, I have prepared a tentative list of expenditures for your inspection. I greatly appreciate being afforded the opportunity to bring the specifics of this subject to your attention.

TESTIMONY BY GEORGE H. BALAZS, HAWAII INSTITUTE OF MARINE BIOLOGY,
CONCERNING SENATE BILL 195 WHICH RELATES TO THE PROTECTION OF
ENDANGERED WILDLIFE SPECIES

A need presently exists in the State of Hawaii for measures that will aid in the survival of wild animals that are faced with extinction. The provisions set forth in Senate Bill 195 fulfill this need, therefore, I strongly urge that you act favorably and expeditiously on this essential and worthy piece of legislation.

The importance of protecting the earth's vanishing wildlife populations has already been fully recognized by the Federal government. With the passage of the Lacey Act, the Marine Mammal Protection Act and the Endangered Species Act of 1973 (which replaced and strengthened the previous Act of 1969), Congress accepted, as a national responsibility, the task of aiding in the survival of the world's wildlife resources. Some of the important findings and declarations made by Congress in relation to these Acts were that:

1. Various species have been rendered extinct as a consequence of economic growth and development because of inadequate concern and conservation;
2. other species have been so depleted in numbers that they are in danger of or threatened with extinction;
3. species of wildlife are of ecological, educational, historical, recreational, aesthetic and/or scientific value to man; and
4. that the United States has pledged itself in the international community to help conserve the various species facing extinction.

Under the Endangered Species Act of 1973, animals that are considered to be in danger of extinction may not be legally imported into the country or transported across state boundaries in (interstate) commerce. Under the Lacey Act, wildlife that is taken in violation of any existing foreign law is also prohibited from being imported or transported between states. Both of these protective measures are designed to help safeguard depleted wildlife populations in the United States as well as in other countries. The present List of Endangered Fauna compiled by the Department of the Interior contains 109 animals which now receive this protection. Considering that this list is in the process of being updated, and that the Red Book Data of the International Union for the Conservation of Nature (a highly respected conservation organization based in Switzerland) presently consider more than 1,000 species to be faced with extinction, it would appear that many other members of the animal kingdom deserve, indeed require for survival, the protective laws available through our Federal government.

Although Federal laws ban the importation and sale across state boundaries of endangered species and their derived products, no provisions exist which deal with intrastate commerce, that is, commerce that apparently takes place only within the boundaries of a single state. Each individual state government must therefore assume the responsibility for assuring the survival of endangered animals by prohibiting sale within their respective jurisdictions. Some states (New York, Illinois, Delaware, Connecticut and California) have already taken this initiative by passing laws which complement and strengthen the Federal Acts. By passage of a similar measure such as the one now under consideration, Hawaii can also take an active and vital part in this conservation effort. Such action, when taken, will provide most welcomed assistance to Federal agents here in Honolulu who have the responsibility of enforcing wildlife importation restrictions.

Of considerable related interest to Senate Bill 195 is the cover-story of the January 6, 1975 Newsweek magazine. In this article, which focused the nation's attention on the timely subject of vanishing wildlife, a narration is given of man's seemingly unending "war" against the creatures of the wild. Commercial exploitation was again pointed to as being one of the most significant factors responsible for the destruction and decline of wild animal populations. Some of the products mentioned include tourists' curios carved from elephant tusks, garmets fashioned from newborn seal skins, jewelry made from tiger claws and teeth, stuffed sea turtles and crocodile shoes. A wide range of similar exotic luxury items are being offered for sale in Hawaii at this very time. For those committee members who have not had the opportunity to read this excellent Newsweek article, I have reproduced a limited number of copies for your information.

Thank you very much for allowing me the opportunity to discuss this important subject with you today.



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