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February 6, 1974

Director
Bureau of Sport Fisheries and Wildlife
U. S. Department of the Interior
Washington, D. C. 20240

Dear Sir:

This letter is in reference to the Department of the Interior's proposal to classify the green and loggerhead sea turtles as endangered species. As an investigator who has been actively involved in marine turtle research and conservation, I would like to take this opportunity to offer comments and suggestions on the proposal.

I feel certain that the Department has conducted, as I have myself, a comprehensive review of the available literature on the status of the green turtle. Such an exercise reveals in no uncertain terms that exploitative pressures coupled with substantial international commerce and habitat destruction have acted synergistically to reduce population levels throughout the world. There are no indications that the adverse factors will lessen by themselves, in fact, there is now every reason to believe that the green turtle will be subjected to even greater exploitation and commerce in the years ahead. Without significant protective mechanisms enacted at an early date, the outcome will surely be the economic extinction of the species. When compared to the biological data which has been compiled on other vertebrates, our understanding of the green turtle is truly sparse. Minimum numbers necessary to maintain viability in this long range migrant reptile are unknown, and quite possibly the economic extinction will signal the irreversible biological extinction of the species. By every available means of evaluation the green turtle qualifies as being endangered. I strongly concur with the proposal and urge that you take all action necessary to ensure protection at the earliest possible date.

Major topics which I believe are of immediate concern to the issue of the green turtle include: 1) taxonomy, 2) the Hawaiian Archipelago green turtle, and 3) the "farmed" green turtle. I would like to comment on each of these areas.

As you may be aware, what is commonly called the green turtle is actually at least two species of the genus Chelonia, which can more or less be divided into Atlantic (Chelonia mydas) and Pacific (Chelonia agassizi)

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stocks. I say more or less because further taxonomic studies need to be conducted, particularly in the Pacific. Overlapping undoubtedly occurs in some populations, therefore in many areas it may be difficult to establish distinct differences. From a practical point of view, the differences between mydas and agassizi are not all that great. Further, there can be no question that Chelonia in the Pacific is in as great a difficulty as her close relative in the Atlantic. I bring out these points because of the Federal Register's usage of both the genus and species scientific names (Chelonia mydas) when referring to the green turtle. I assume that the Department intends to protect all green turtles regardless of species, subspecies or geographical location. To do otherwise would severely weaken the animal's precarious position and create near impossible enforcement and identification problems. The problems of differentiating between hawksbill (Eretmochelys sp.) and green (Chelonia sp.) shell and parts are now difficult enough without having to make a distinction between Atlantic and Pacific Chelonia. Rather than using the species name, I suggest that the official listing be Chelonia sp. This would provide the necessary protection as well as avoid confusion as to exactly what group of animals are being listed as endangered.

The Hawaiian Archipelago green turtle should be of major concern to the Department of the Interior because it represents the last remaining intact colony within the United States. It is also the only colony of its type that can be assured protection under the jurisdiction of one government at both the feeding and breeding grounds. In summarizing the status of the Hawaiian green turtle one would first emphasize that no state regulations presently exist, or have existed, to conserve this animal and ensure its future viability. This non-management or mis-management approach has led to uncontrolled and increasing exploitation for both commercial and private purposes. "Harvesting" has been known to take place with powerhead and rifle, however, an understaffed State Division of Fish and Game has experienced difficulty in stopping even this illegal activity. Nesting habitat and associated populations have been all but eliminated except for several small sand islets at French Frigate Shoals in the Northwestern Hawaiian Islands. Within recent times active nesting occurred in at least four locations in the major inhabited Islands, however none exist today. Investigations which have been conducted indicate that the French Frigate Shoals nesting population is at such a low level that continued survival may be questionable.

For two years concerned residents have urged that some form of meaningful protection for marine turtles be enacted. The State Division of Fish and Game now apparently sees the necessity of such protection, however there

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is little sense of urgency even though all available evidence indicates a need for immediate protection. The State Board of Land and Natural Resources has refused to act on a proposed protective regulation on two separate occasions. Turtles are apparently a political issue and I now seriously question whether any real form of conservation measure will ever be enacted. If the present proposed regulation were enacted as written, there would still be doubt as to whether viability could be retained. Provisions would allow for the taking of turtles 36 inches and larger for home consumption. Together with difficulties in enforcement and probable poaching for backyard selling, a significant drain would continue.

Initially a complete moratorium was believed to be the best approach to the plight of the Hawaiian green turtle. Careful long term studies could then have been conducted to establish whether or not future harvesting could be permitted and at what intensity. Unfortunately, little support for a moratorium was received from State officials or legislators, therefore the proposed regulation was given backing as it represented the best protection possible under the circumstances. Clearly, some form of protection at the Federal level is essential if the green turtle is to be assured survival in the Hawaiian Archipelago.

Efforts will undoubtedly be made by special interest groups to exempt "farmed" green turtles and their products from importation restrictions should the animal be listed as an endangered species. For the past two years I have conducted studies on the growth and nutrition of captive green turtles. I have only recently returned from the Fifth Annual Meeting of the World Mariculture Society in Charleston, South Carolina, as well as a four day visit to the only commercial green turtle farm presently in existence. During the course of this trip I conferred with numerous researchers and businessmen who are also involved with or have knowledge of green turtle culture. Based on my own information and experiences, as well as that obtained from other marine turtle biologists concerned with the survival of Chelonia, I must conclude that given the expertise as it exists today commercial turtle farming represents an adverse factor to the survival of the species. I believe this to be true from both a biological and an economic point of view.

Hatchling turtles can not as yet be produced from captive reared breeding stock, therefore large numbers of eggs must be removed from natural nesting beaches for commercial farming. Arguments have been put forth in promotional brochures to rationalize this removal of eggs, however, based on the scientific information available, this activity must be considered to constitute predation to the naturally occurring populations. The small number of older animals subsequently released to

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"replace" the eggs taken can not be considered as acceptable substitutes. Some hatchlings were recently obtained from captive nestings on a commercial farm, however, all gravid animals involved in this occurrence (19 out of 60 total) had been captured as adults and held for various lengths of times ranging up to three years. The life cycle of the green turtle has therefore not been completed in captivity and there is no reason to believe that any commercial enterprise will have the capability of producing its own young within the near future. Mature adults and/or eggs will still have to be removed from the wild. Unfortunately, statements made in promotional literature on commercial green turtle farming have not presented a clear and factual picture of the situation. This misinformation, which has been widely distributed throughout the world, has, in my opinion, been responsible for creating an overconfident attitude toward the survival outlook of the green turtle. In addition, such literature has stimulated interest in the formation of similar farms in other parts of the world. In all such cases eggs from natural nesting beaches will have to be used. It would appear that sound biological reasoning is rapidly fading away in light of promising economic advantages. To compound matters, promotional advertising campaigns are underway which will glamorize turtle products and create demands where none previously existed. Such demands are apparently necessary if green turtle is to provide the profit margin required for corporate success. Unfortunately, this demand and popularization of turtle products can do nothing but further increase exploitative pressures on natural populations. There is no reason to believe that farmed turtle will even be priced within the foreseeable future to undersell the animal captured from the wild.

It is possible that one day green turtle culture will be an acceptable proposition, however, basic biological problems inherent to the species must first be solved. Premature commercial ventures will only add to already existing problems and further hasten Chelonia down the road to extinction.

Throughout this discussion I have referred only to the green turtle as this animal has been central to my work. I have, however, reviewed the status of the loggerhead as my interests are in marine turtles as a group and many similarities exist between each genus. I was fortunate enough to recently visit with Bureau personnel at the Cape Romain National Wildlife Refuge and tour Cape Island, a major loggerhead nesting site. It would seem apparent that the loggerhead's survival is also seriously threatened and Federal protection should be granted.

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I hope that the information I have presented will prove useful in your evaluation of the proposal. Thank you very much for allowing me the opportunity to comment on this important matter.

Sincerely,

George H. Balazs
Jr. Marine Biologist

GHB:md

cc: Mr. Keith M. Schreiner



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July 3, 1975

Director (FWS/LE)
Fish and Wildlife Service
U. S. Department of the Interior
P. O. Box 19183
Washington, D. C. 20036

Dear Sir:

I would like to take this opportunity to offer comments on the proposal to provide "threatened" status protection for the green, loggerhead and Pacific ridley sea turtles as detailed in the Federal Register on May 20, 1975. As the principal investigator of studies relating to the mariculture and population ecology of green turtles in Hawaii, these comments will represent the position of the Hawaii Institute of Marine Biology.

It is apparent that the proposed rules have resulted from a careful and in-depth examination of the conservation problems confronting the vast majority of the populations which comprise the three species under consideration. Although delays have resulted since the original petition was filed, both the Fish and Wildlife Service and the National Marine Fisheries Service deserve commendation for taking decisive action in this matter. I strongly support the proposed rules in essentially their present form and urge that implementation occur at the earliest possible date.

The following specific comments and suggestions have been set forth for consideration:

1. I was particularly encouraged to see that the proposal recognizes that each species of sea turtle consists of distinct and reproductively isolated populations. Although seemingly large numbers of animals may still occur at certain locations, the majority of the populations are indeed threatened (if not endangered) with extinction, thereby deserving of protection for the entire group. Protecting one population will in no way aid in the survival of other unique and preservation-worthy populations.

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2. Although some subsistence taking of green turtles still occurs in Hawaii, I nevertheless must endorse the total ban of such activity, at least for the present time. As suggested, numerous alternate food sources are available from the sea and, based on my knowledge of the Hawaiian green-turtle population, continued killing cannot be justified if viability is to be ensured. Recent protective measures enacted by the State of Hawaii must be regarded as less than optimal and extremely belated. Comprehensive investigations are needed on those animals utilizing feeding pastures around the major inhabited Hawaiian islands. The results of such studies are absolutely essential to the formulation of a harvesting plan for subsistence or any other purposes. Unfortunately, the State has not yet seen fit to commit specific research funds to study its own native green turtle resource. Given the dismal history of exploitation and habitat destruction of Hawaii's turtles, continued taking in the absence of an ecologically sound management plan may very well result in the total elimination of this unique land basking Chelonia population.

3. Concerning the exception which involves incidental catch, I believe that sub-section 2 should correctly read:

"The person responsible for the fishing gear or vessel was not fishing in an area of substantial breeding or feeding of any such wildlife;"

4. The exception which relates to mariculture operations places the welfare of naturally occurring turtle populations ahead of vested foreign or domestic corporate interests. The "burden of proof" for all claims in this complex matter rightfully rests with the advocates. The proposed rules make this point entirely clear. Without the qualifications that have been carefully spelled out, that is, without full accountability accompanied by adequate safeguards, conservation results of the proposal would at best be problematic.

5. Concerning the exception which involves wildlife held in captivity or in a controlled environment, it would appear that sufficient allowances have not been made for "commercial" display facilities such as aquaria and oceanaria. Because of the educational benefits derived, specimens held by these establishments should receive exemption, provided they were previously acquired in a legal manner. Because some establishments are in possession of excessive numbers of sea turtles (specifically Chelonia), and because some facilities are grossly inadequate for larger specimens,

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it would seem desirable to encourage a retention of only those animals that can be given proper care and are actually needed for the purposes intended.

As you may be aware, the subject of commercial exploitation of sea turtles, including the problems of mariculture, was investigated by a special task force convened by the International Union for the Conservation of Nature during November, 1974. The results of this meeting are most relevant to the proposed rules. If for some reason you are not already in possession of the findings, I suggest that you directly contact IUCN headquarters in Morges, Switzerland at the earliest possible opportunity.

Sincerely,

George H. Balazs
Jr. Marine Biologist

GHB:md