

11/87

Title: A Constructive Review and Evaluation of the Hawksbill Turtle Project of the Micronesian Mariculture Demonstration Center (MMDC).

Submitted by: George H. Balazs, Member, IUCN Marine Turtle Specialists Group

Professional Affiliation: Zoologist and Leader, Hawaiian Sea Turtle Recovery Team
Southeast Fisheries Center Honolulu Laboratory
National Marine Fisheries Service
2570 Dole Street
Honolulu, Hawaii 96822-2396

Aim: To constructively review and evaluate past and present and projected future management practices by MMDC (Republic of Palau) which are intended to replenish and reverse downward trends of their endangered hawksbill population.

Rationale and Background: For the past 15 years a hatchery and headstart project with the hawksbill turtle has been carried out by local personnel at MMDC in Koror, Palau (formerly U.S. Trust Territory of the Pacific Islands). However, very little scientific or procedural information has become available for conservationists to adequately evaluate the program's effectiveness. The project itself would undoubtedly benefit from increased information and technology transfer with the international sea turtle conservation community, specifically the IUCN Marine Turtle Specialist Group. It has not been possible nor practical to comprehensively exchange information by correspondence with the local people in charge of doing the work. A first-hand site visit to Palau is therefore needed to accomplish a review and evaluation. An additional point of interest is the indication that the project may soon be substantially expanded and partially refocused toward commercial farming with outside funding from the Japan Tortoise Shell Association.

Methods: A 10-day site inspection and evaluation visit will be made to the hawksbill project in Palau to comprehensively observe and interview and work with local personnel. In addition, trips will be made to the nearby remaining hawksbill nesting sites to ascertain their survival status and needs. A report will be prepared on all results obtained for submission to the Chairman of the IUCN Marine Turtle Specialists Group. Special emphasis will be placed on making constructive recommendations for future action.

Funding Request: \$2,000 for travel expenses (my services and salary provided at no cost)



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Fisheries Center Honolulu Laboratory
2570 Dole St. • Honolulu, Hawaii 96822-2396

November 13, 1989 F/SWC2:GHB

Mr. Tosh Paulis
Director
Division of Marine Resources
P.O. Box 359, Koror
Republic of Palau 96940

Dear Tosh,

Thank you for stopping by my office during your recent visit to Honolulu. I appreciated having the opportunity to speak with you again regarding the hawksbill hatchery and headstart project, and my September trip to Palau to visit the facility on behalf of IUCN. As the result of this opportunity, I have certainly obtained a better understanding of your project goals, and the efforts that are currently underway. Thank you again for the hospitality and helpfulness that you, Becky Madarisau, Gerald Heslinga, and others provided during my visit. Without this outstanding assistance I would never have been able to obtain a good grasp of the situation in the short time that was available. You may, of course, continue to call upon me for technical advice and opinion whenever you feel it is necessary and appropriate.

As requested when you visited with me, in advance of my report to IUCN I am providing you with some recommendations and options you may wish to consider for the hawksbill project. The premise I have used for these recommendations is the overall project goal that you stated to me while I was in Palau. That is, "to restock Palauan waters with Palauan turtles, for Palauans." Although you are not "closing the door" to possible future turtle ranching or farming endeavors, and the inherent international commerce that would result, if I understood you correctly this is not an immediate project objective nor one that is feasible or being seriously examined for implementation at the present time. Given these important considerations (of which I strongly concur), the following suggestions are offered:

1. Develop a plan to ensure that at least some, if not many or most, of the eggs deposited at nesting beaches in the Rock Islands can be safeguarded from poaching and thereby develop and hatch in their natural state. I realize that this may be a difficult task, but some steps must be taken to work toward this critical objective. I recommend that the persons doing the poaching be identified and met with to help work-out the required long-term solutions. Meeting and negotiating with the poachers may seem like a radical proposal, but I believe it is absolutely essential for such a small, close-knit island community as Palau.



2. Eggs that are more than 12-hours old and have not been dug-up by poachers should be candidates for being left on the nesting beaches for incubation and hatching in their natural state. The excavation and movement of eggs for incubation elsewhere, even after as short a period as 12-hours, is known to induce a substantial decrease in hatchability. The generally low hatch rates seen in some of the clutches at the project's facility are likely the result of eggs being moved well after this 12-hour period. It is now well-known that if sea turtle eggs have to be relocated for protection, the very best time to do so is immediately after they are laid. However, given the numerous scattered small beaches of the Rock Islands, and the very low level of nesting now occurring, immediate egg movement would be impractical, if not impossible. Although leaving eggs greater than 12-hours old where they were laid might be subjecting them to continued exposure to poachers, it is my understanding that the Palauan dietary preference for turtle eggs is almost exclusively for ones freshly laid. Consequently, the risk of loss by poaching should decline dramatically with the passing of another day or two. Some efforts to disguise the nesting site, or possibly give it the appearance of the eggs having already been taken, might be worthwhile.

3. For freshly-laid eggs less than 12-hours old that must be relocated in order to save them from poachers, consideration should be given to directly releasing the hatchlings on the same day, or late afternoon, of their hatching. The release site should be on the nesting beaches of the Rock Islands, allowing the turtles to crawl to the sea in as normal a manner as possible. In spite of headstarting being a somewhat widespread and, in certain quarters, popular thing to do, it is nevertheless a highly experimental and unproven effort aimed at trying to conserve sea turtles. There are many unanswered questions about headstarting, and some projects involved in this activity are now reconsidering what they have been doing. I have enclosed two articles on this subject that I am certain you will find interesting.

4. Any hatchlings that are kept and raised for headstarting as an experimental restocking effort should be raised to at least 35 cm in carapace length. This will provide for the greater possibility of the turtles establishing residency in Palauan waters when they are released. It is my understanding that hawksbills less than about 35 cm are not found in Palau's lagoon. Consequently, the present practice of releasing the captive-reared turtles at a size of 15-18 cm may not be the ideal. At this small of a size the turtles still appear to be adapted for living in pelagic habitats, instead of the benthic environment of Palau's lagoon. This idea is supported by the three tag recoveries that have thus far been made by the project showing that turtles 15-18 cm move to distant locations such as Guam and the Philippines.

5. Hatchlings that are kept for headstarting should be fed at a increased rate, preferably three times a day to near satiation. Consideration should be given to feeding fresh (not frozen) sardines whenever possible. The entire fish should be fed in a chopped state, without removing the head and viscera. A multi-vitamin supplement should also be considered for incorporation into the turtles' diet. A month or so prior to releasing the turtles at 35 cm, efforts should be undertaken to introduce freshly gathered sponges to acquaint the turtles with natural dietary material.

6. A thorough evaluation should be made of the likely negative impacts to the Palau hawksbill population resulting from the commercial sale of hawksbill products (jewelry, stuffed juveniles, polished shells, etc.) occurring at the "Shell Museum" store, and other possible tourist shops, on Koror.

I trust that these preliminary ideas, most of which we have already touched upon in our discussions, will be helpful in charting the future course of Palau's very important sea turtle conservation efforts. Again, many thanks for stopping by to see me while you were in Honolulu.

Sincerely,

George H. Balazs
Zoologist

Enclosures

cc: Gerald Heslinga
Becky Madrisau

Table 1--Results of hawksbill hatchery and headstart activities as summarized from monthly reports of the Micronesian Mariculture Demonstration Center (MMDC), Koror, Republic of Palau, November 1987-September 1990. Compiled by George H. Balazs.

MMDC report date	No. hatched	No. died*	No. missing	No. released alive after "headstarting"
1987				
Nov.	17	104	7	0
Dec.	119	56	0	0
1987 Subtotal	136	160	7	0
1988				
Jan.	146	51	0	0
Feb.	0	148	0	26
Mar.	156	139	0	34
April	52	100	0	39
May	0	78	0	0
June	133	39	0	31
July	60	22	0	39
Aug.	229	20	0	21
Sept.	268	41	0	49
Oct.	57	95	0	0
Nov.	24	79	(1 adult)	0
Dec.	0	62	71	0
1988 Subtotal	1125	874	72	239
1989				
Jan.	0	114	0	0
Feb.	23	50	0	0
Mar.	219	30	0	27
Apr.	0	110	114	0
May	0	31	0	0
June	128	21	0	0
July	186	37	0	33
Aug.	266	73	0	0
Sep.	22	75	0	28
Oct.	106	145	0	24
Nov.	95	140	0	4
Dec.	0	63	0	0
1989 Subtotal	1045	889	114	116

Table 1.--Continued.

MMDC report date	No. hatched	No. died*	No. missing	No. released alive after "headstarting"
1990				
Jan.	118	40	0	35
Feb.	246	72	0	2
Mar.	122	90	0	0
April	74	76	0	8
May	107	80	0	8
June	29	74	0	14
July	221	64	0	0
Aug.	8	56	0	0
Sept.	41	79	0	20
1990 Subtotal	966	631	0	87
3-Year total	3272	2554	+ 192 = 2746	442 (13.5%)
			(Total loss)	

*The number reported as having died each month at the facility does not necessarily consist of turtles that were hatched during the same month.

HHH-6T.GHB

Table 2.--Results of hawksbill egg collection activities as summarized from monthly reports of the Micronesian Mariculture Demonstration Center (MMDC), Koror, Republic of Palau, November 1987-September 1990. Compiled by George H. Balazs.

MMDC Report date	No. successful nesting sites located	No. nests collected for hatching	No. nests and % taken by poachers	No. of boat trips to locate nests
1987				
Nov.	2	1		3
Dec.	10	5		5
	<u> </u>	<u> </u>		<u> </u>
1987 Subtotal	12	6	6 (50%)	8
1988				
Jan.	5	2		4
Feb.	5	2		3
Mar.	0	--		5
April	2	0		6
May	3	3		6
June	6	2		6
July	8	1		5
Aug.	9	3		5
Sep.	3	0		4
Oct.	4	0		6
Nov.	1	0		7
Dec.	5	0		4
	<u> </u>	<u> </u>		<u> </u>
1988 Subtotal	51	13	38 (75%)	61
1989				
Jan.	7	4		3
Feb.	2	0		3
Mar.	4	0		4
Apr.	6	1		3
May	4	2		3
June	12	3		5
July	7	1		4
Aug.	8	1		3
Sep.	3	1		3
Oct.	1	0		3
Nov.	5	0		3
Dec.	3	1		3
	<u> </u>	<u> </u>		<u> </u>
1989 Subtotal	62	14	48 (77%)	40

Table 2.--Continued.

MMDC Report date	No. successful nesting sites located	No. nests collected for hatching	No. nests and % taken by poachers	No. of boat trips to locate nests
1990				
Jan.	3	1		3
Feb.	5	2		3
Mar.	8	1		4
April	3	0		3
May	7	2		3
June	2	0		3
July	0	0		0
Aug.	4	1		2
Sep.	1	0		2
1990 Subtotal	33	7	26 (79%)	23
3-year total 11/87-9/90	158	40	118 (75%)	132

NOTE: The clutch size and percent hatch for individual nests taken to MMDC are not reported/not available. However, using the 3-year total of 3272 turtles hatched at the facility (Table 1), and a total of 40 nests collected for hatching (this table above), an average of 82 live hatchlings was produced from each clutch.

HEG-6T.GHB



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Fisheries Center Honolulu Laboratory
2570 Dole St. • Honolulu, Hawaii 96822-2396

June 8, 1990

F/SWC2:GHB

Mr. Tosh Paulis, Director
Division of Marine Resources
P.O. Box 359, Koror
Republic of Palau 96940

Dear Tosh,

Following an exchange of correspondence with IUCN in Switzerland, I have been informed that the six preliminary recommendations I made to you on November 13, 1989 (at your request) have now been accepted as IUCN's official position.

It is evident that the project's overall goal ("to restock Palauan waters with Palauan turtles for Palauans") is not being accomplished. This is in spite of the fact that the hatchery and headstart efforts have been underway since at least the early 1970's (with involvement by Jim McVey). In addition, the intermediate objectives of the project are not being achieved, such as high hatch rates of transplanted nests, low mortality of hatchlings, healthy juveniles without disfigurement (e.g., blindness), residency of headstart juveniles in Palauan waters (versus movements elsewhere), and increasing numbers of females nesting on the beaches.

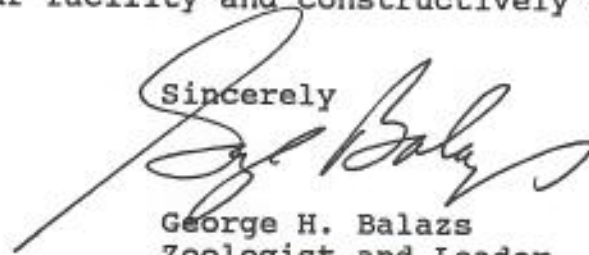
In my best judgement and professional opinion, the time has now come to take new directions on behalf of the Palauan hawksbill. Becky Madraisau has, for many years, put forth commendable efforts as a dedicated conservationist to this project. My six recommendations for pursuing alternate courses of action (to those followed without demonstrable success since the 1970's) should in no way negatively reflect on Becky Madraisau. Becky is clearly the foremost authority and defender of the hawksbill in Palau. It is Becky's leadership that will be absolutely essential these next few years before his retirement in order to implement the recommendations endorsed by IUCN, if they are to be undertaken by your office.



The National Sea Turtle Coordinator for the U.S. Fish and Wildlife Service (Jack Woody) has expressed interest in work being conducted on the hawksbill in Palau. I am therefore taking the liberty of sharing some of our correspondence and data with him.

In closing, I want to again thank you for the courtesy of allowing me to visit your facility and constructively express my views.

Sincerely

A handwritten signature in cursive script, appearing to read "G. Balazs", written in dark ink. The signature is positioned above the typed name and title.

George H. Balazs
Zoologist and Leader
Marine Turtle Research

cc: B. Madraisau
G. Heslinga
S. Edwards, IUCN



L'Alliance mondiale pour la nature
The World Conservation Union

~~Two of Three~~

video-

Secrétariat de l'UICN
IUCN Headquarters

Dr George H. Balazs
Zoologist and Leader
Marine Turtle Research
National Marine Fisheries Service
Southwest Fisheries Center
Honolulu Laboratory
2570 Dole Street
Honolulu
Hawai 96822-2396
UNITED STATES

Gland, 4 July 1990

Dear George,

Thank you for your letter of 14 May and copy of letter of 8 June.
Right on! I could not have said it better. When you get a PAL copy
of the video I would like to see it. I really do not have anything
to add, except keep the pressure up and feel free to use the Union's
name as you have.

I am off for a one month trip to South and Central America, returning
27 July. Let me know how everything is going when you get a chance.

Yours sincerely,

pp Stephen R. Edwards
Coordinator
Species Survival Programme

cc: K. Bjorndal (with incoming of 8 June)
S. Stuart

IUCN -- THE WORLD CONSERVATION UNION
SPECIES CONSERVATION PROGRAMME
Avenue du Mont-Blanc
CH-1196 Gland, Switzerland
Phone: 41 22 64.92.46
Fax: 41 22 64.29.26

Dr. George H. Balazs
NOAA, National Marine Fisheries Service
Southwest Fisheries Center Honolulu Laboratory
2570 Dole Street
Honolulu, Hawaii 96822-2396
UNITED STATES

23 April 1990

Dear George,

Thank you for your letter outlining the results of your trip to Palau. Believe it or not, I have been away most of the time since your letter was received. Time flies. I have tried to screen your video, but have not been able to get the right type of machine (PAL is used locally). I am forwarding it to Karen so that she can keep it.

With regard to your report, as represented in your letter to Mr Tosh Paulis, I fully endorse your recommendations. I would say, that your first point ("negotiating with the poachers") is the key to resolve the conservation problem. Assuming that they are committed to their stated goal, then it is critical that those that are involved in over-exploitation be involved in the process. How this can be accomplished, of course, is a different problem. The immediate thought is to pay them to not harvest the eggs from the beaches. Possibly using them to act as beach wardens. Obviously, whatever solutions are considered they must fit with the local cultural. The only other choice is to work toward strict protection through legislation and enforcement. In any event, feel free to communicate your views as "IUCN's position". If there is any backlash, let me know.

With regard to the balance of \$25.00 that is due, I would very much like to forget it, as long as your don't mind. To get a check written in dollars and sent to you will cost me double that, at least. Maybe I can buy you dinner sometime?

In closing, I wish to thank you for your excellent review of the situation in Palau. Your advice is sound, and if headed, should give them a basis for developing a long-term effective management programme.

Yours sincerely,



Stephen R. Edwards, Coordinator
IUCN Species Conservation Programme

cc: Karen Bjorndal



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Fisheries Center Honolulu Laboratory
2570 Dole St. • Honolulu, Hawaii 96822-2396

May 14, 1990 F/SWC2:GHB

Dr. Stephen R. Edwards
IUCN Species Conservation Programme
Avenue du Mont-Blanc
CH-1196 Gland
Switzerland

Dear Steve,

Many thanks for your letter of 23 April 1990, as well as the earlier note dated 5 April 1990 from your Program Assistant, Linette Humphrey.

The strategy that I have pursued in this complex and potentially sensitive issue has been to try to bring about major changes in the project prior to "formally" submitting my findings and recommendations to IUCN. I had hoped that through tactful correspondence following my site visit I might somehow evoke self-examination and the realization that the project is: 1) philosophically and biologically on the wrong track, 2) totally unacceptable in terms of death rate, which seems all but impossible to ever correct, and 3) without hope, as currently being operated, of ever achieving the stated goal. I regret to say that self-motivated "change" apparently does not come easy. The negative findings of my trip may have to be set forth in the report after all, without the benefit of being able to say "corrective action has already been taken".

A complete chronological set of copied letters has been enclosed, in the event I missed sending something to you. A quick reading of this correspondence, along with the viewing of my pre-report video, should make it clear just how dismal the situation is and probably has been for many years. I realize now that Tom's report hinted that something was terribly wrong, but undoubtedly he felt uncomfortable coming right out and saying so without the benefit of being a recognized researcher of sea turtles. The task has fallen to me, and I deeply regret that thus far, I have been unsuccessful in effecting the needed changes.

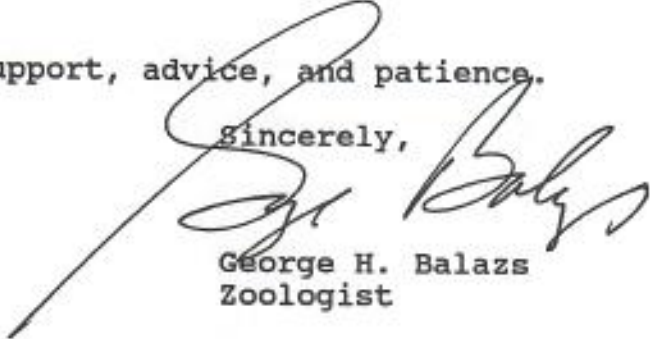
Perhaps the most distressing thing about this project (aside from the mortality) is the way the bekko organization has claimed it as a "conservation achievement" brought about by their scientific expertise and generous financial aid. The glossy color booklet given to us at the Himeji City meeting even states that this successful project prototype will now be replicated (by the bekko people?) throughout the Pacific islands. What a frightening thought.



Having learned from your recent letter that I may now communicate my stated recommendations as "IUCN's position", I will make one more attempt at persuasion. You will, of course, receive a copy of that letter.

Thank you for your support, advice, and patience.

Sincerely,



George H. Balazs
Zoologist

Enclosures

cc: K. Bjorndal