CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA

Fifth Meeting of the Conference of the Parties

Buenos Aires (Argentina), 22 April to 3 May 1985

Interpretation and Implementation of the Convention

Cayman Turtle Farm

REPORTS OF THE AUDIT TEAM MEMBERS

This document was prepared and submitted by the United Kingdom of Great Britain and Northern Ireland, on behalf of the Cayman Islands Government.

1. In February 1985, the Cayman Islands Government arranged an independent scientific audit of the Cayman Turtle Farm (CTF). The audit was conducted by the following:

   Dr. Michael Ford (Nature Conservancy Council, UK)

   Dr. M.C. Rene Marquez (Nationals Fisheries Institute, Mexico)

   Professor Nicholas Mrosovsky (University of Toronto, Canada)

   George N. Pangeti (Department of National Parks and Wildlife Management, Zimbabwe).

2. Jack Woody (Endangered Species Co-ordinator for the United States Fish and Wildlife Service) also attended as an observer.

3. The reports submitted by each member of the audit team are attached. The reports generally support the case put forward for CTF in papers Doc. 5.32 and Doc. 5.44 Annex 3, and in particular suggest that the criteria for ranching in Resolution Conf. 3.15 have been met.

4. The United Kingdom hopes that all Parties will take these reports into account when considering the CTF proposals at the meeting.

Proposal to Transfer Captive Green Turtles in the Cayman Islands to Appendix II. Comments with Respect to the Six Ranching Criteria and General Comments.

Nicholas Mrosovsky

1. Yes, meets criterion. Since no turtles are being taken from the wild there cannot be any impact resulting from taking turtles from the wild. To exclude this application on the grounds that it is not taking turtles from the wild, and is therefore not a ranch would in my opinion not be in the spirit of the Convention. I was a member of the CITES ad hoc Ranching Committee. It was certainly thought likely, and desirable, that in some cases operations starting as a ranch would end up ~~by~~ not requiring to take from the wild. If the ranching criteria are now given a definition so narrow as to exclude something in the transitional stage between a ranch and a farm, then this could be satisfied by taking one turtle egg each year from the wild--something which would have negligible impact. If this proposal is turned down, I would much rather see it done on the basis of the other criteria, than on the grounds of a dubious technical point that would certainly run contrary to the spirit of CITES.

2. Biological success- yes, likely. In fact the CTF has already shown that all stages of the life cycle can be successfully achieved in capitivity under its schedules of feeding, water change, housing etc. Turtles have bred and laid viable eggs on the farm, but because these breeding turtles came from eggs taken from the wild, the F2 generation has not been achieved yet. It must be emphasized that, given the long maturation period, F2 production could not reasonably be expected till around the mid to late 1980s. However some of the fastest maturing farm reared animals laid eggs in 1983. Others laid in 1984 (males in this case known to be farm reared). That hatchlings were not produced is not suprising at all. First time breeding turtles often do worse. Given the steady progress toward F2 production, and given all life cycle stages have taken place successfully at the CTF, it seems likely that F2 will be produced.

The matter of the relatively low hatch rates of the farm reared stock remains a cause for concern. However, individual farm reared females have on occasions laid large numbers of fertile eggs. This shows the conditions of capitivity do not automatically prevent a good output of hatchlings. It is a matter of discovering what particular factors make a large number of the farm reared stock lay fewer fertile eggs. An explanation has been advanced by the CTF, namely that their turtles have been overfed. This is plausible given fatness in various animals is associated with poorer reproduction (eg. in obese rodents). Steps have been taken to produce less overfed farm reared animals; these will not be available for breeding for a few years.

It may be useful to consider a pessimistic scenario: suppose the hatch rate of farm reared turtles remains at 5%; suppose also that of these only half survive till slaughter size. Then to produce the 5,000 turtles/year that they aim for, assuming also that breeders lay 600 eggs every other year, they would need a breeding herd of the order of 1,000 (this would include some males). This size of herd could probably be accomodated by bringing the second breeding/ beach tank into operation, and building a third on land already available. It would probably be uneconomic to maintain such a large herd. This is a very pessimistic projection. Even an increase of average hatch rate to 10-15% for farm reared turtles would greatly improve the situation. Many problems have already been solved on the farm. It seems likely that, without undue optimism, there will be improvements in hatch rates over the next ten years (they should still have many hatchlings from the CWO and Mexican stock over that period). They have already identified a likely cause of the problem. The work they are doing on the reproduction of these turtles is in any case a major contribution to our understanding of these species (see 4 below) that will surely aid in their conservation in the long run.

Economic success: This is something where biologists' opinions should be treated with caution. Some points of information and

tentative opinions will be offered. Almost half of the projected income (circa $1 million) will come from tourists' entry fees and the gift shop. This means that, although raising turtles in captivity is expensive, it is still possible to envisage a situation where as a whole with even a production of as little as 5,000 turtles a year, a profit will be made. The CTF already has enough tanks etc for the 5,000/year (65 lbs) envisaged, with many tanks to spare. The CTF showed us a projected balance sheet; also their figures for the expected income to be derived from the sale of the various products from a turtle appeared quite conservative. I do not believe that they will have to have a huge volume to be economically viable. There is, however, considerable spare capacity in the many unused holding tanks and second breeding pond.

3. Yes. In terms of contemporary standards for intensive farming in general, this can be considered humane. Slaughter is on the premises; no significant transport is involved. The turtles are killed with a cattle gun. Sick turtles are put in a different tank. Some recover and are returned to the main tanks, others have to be killed. A positive feature of this mariculture operation is the research effort made to understand and combat disease. This continues. At the time of our inspection, work on LET disease was in progress.

Mortality figures are documented in the proposal. There is no way really of assessing these as it is not known what the rates of mortality or causes of mortality in the wild are at comparable times. Some of the CTF turtles have skin lesions; my impression was that the incidence of these lesions was less than at other mariculture operations.

Veterinary inspectors from outside the CTF do visit. However, at present the expertise within the CTF for veterinary aspects of turtle culture is far greater than that available outside. In the long run, some better verification/inspection from outside is desirable. I rate the continued research on turtle diseases, and the obvious self-interest of the CTF in maintaining healthy animals, as sufficient at this time. Finally, and most important, the 50,000 tourists visiting the CTF each year provide a major check against slackness in animal care, or against inhumanity. This is a very open operation. There are many superb and well cared for turtles to be seen.

4. It is not clear whether this is strictly relevant, as it is only the captive population that is being considered for down-listing, so that there is no specified wild population for re-introductions. However, as this is an unusual case, it should be noted that here has been a major release programme. Over 12,000 turtles have been released as detailed in the proposal. Many of these were 10 months old or more.

While releases are encouraged by the ranching criteria, in the case of sea turtles there is not much evidence either way that this is a particularly useful conservation measure. This is a personal opinion which many do not share. Within the consensus of current practices for sea turtles, the releases by the CTF should satisfy this criterion. A commendable point is the publication of details, with tagging methods, of some of the more recent releases. This should help on the assessment of the results and value of these releases. Details of the earlier releases have not been published, perhaps because other countries and people were involved also.

Personally, I think that some of the CTF activities other than releases are more important contributions to the long-term conservation and wise management of these resources. Among these are:

a) reproductive potential of green turtle elucidated. Some individuals have laid consecutively for 12 years. Some individuals have produced over 12,000 eggs.

b) findings (still somewhat tentative) on the relationship between mating duration and fertility.

c) findings of skewed sex ratio in their stock; this gave impetus to further work on sex ration as a function of incubation temperature. There have been numerous conservation ramifications. Work at CTF on this continues.

d) the feeding regime developed at the CTF has been a useful starting point for the captive rearing of Kemp's ridley turtle at Galveston, Texas.

e) raising Kemp's ridleys for the Mexican government. These have laid eggs at the CTF. The embryos did not survive, but neophyte breeders often do poorly. It can be reasonable expected that Kemp's ridleys will produce eggs at the CTF. Already this work has been hailed as a "major contribution to the survuval prospects of the most endangered species of sea turtle" (Pritchard and Frazer, 1984, Marine Turtle Newsletter, #31). Considering the high egg production in captivity with good diets, (see a, above), eggs from captive ridleys could become an important input to a species whose numbers are critically low.

f) work on diseases.

g) numerous publications

h) provisions of materials, specimens and facilities to others on numerous occasions.

i) "living tag" method applied to recent releases, enhancing the value of these releases.

5. Yes. We saw the labels and most of the other items mentioned in the additional document detailing the marking system. I believe this system would be comparable in effectiveness to that for the Zimbabwe crocodile ranch. A positive feature is that there have been constructive discussions between the CTF and authorities in the USA, the main prospective trade outlet. For instance for edible products the CTF has offered to export only to one distributor in the USA, should that be considered helpful. It appears that CTF will do anything reasonable or feasible to cooperate with the USA authorities on marking. Indeed, it is clearly in its own interests to have the best marking system possible.

6. During the inspection, we were shown conputer print outs of original unpublished data, and provided with financial projections and details. The CTF (and predecessors) have already published many findings. Their proposal is thorough and contains many data. The CTF seems always to have had a remarkably open policy for a commercial enterprise. It is not clear exactly what kind of assurances are required here. There is no reason to think this policy of openess is about to change.

General Comments

1. Monitoring head-started released turtles. There are anecdotal reports of sitings of juvenile tagged green turtles being seen around the Cayman Islands, but there is as yet no real proof the turtles released from CTF are establishing a healthy population in the wild. To obtain such proof is not easy at this stage. However some more attempts to check on the fate of the released turtles should be made. For example, stting up nets and reading tags of any turtles caught, would provide some useful information and not be too difficult, given some support from the conservation authorities.

2. Re-establishing a nesting population of green turtles. Current publicity surrounding the release of turtles should be continued. Perhaps thereis room for further attempts to explain the long-term nature of this project in the schools. Strong public sentiment against taking any of these released turtles will probably be more effective than laws. Looking still further ahead, when these turtles reach maturity, it is quite likely they will attempt to nest on Cayman Islands' beaches. Will there be any beaches left by then? The authorities in charge of the rapid spread of condominiums may wish to give preference to designs that reduce the amount of light falling on the beach because hatchlings become disoriented by bright lights. In the hope of re-establishing a large population of breeding green turtles, some beaches might be kept as reserves free of development.

3. Cayman loggerhead population. The CTF is currently assisting by incubating eggs of this small population in the protection of their indoor hatchery, and later releasing the offspring. The number of eggs probably constitutes a significant portion of the reproductive output of this small population. Therefore there is a danger the incubation at 28°C is biasing the sex ratio toward males. It is strongly recommended that the pivotal temperature (that giving 50% of each sex) be determined for Cayman loggerheads, and the arrangements made so that some of each sex are produced.

4. Wider perspective. The people of Cayman Islands are very conscious of their traditions as turtlers, and are proud of the achievements of the CTF. Without belittling these, it is recommended that an attempt is made to maintain as wide and as international as possible a perspective on issues in turtle biology and commerce. For instance, while the CTF is presently the most sophisticated turtle mariculture operation, nevertheless some things might be learnt from the Reunion turtle ranching operation; a visit there should be sponsored.

5. Upside possibilities. Much has been made of the downside risks in allowing the CTF to trade under CITES. It must be emphasized that the projected volume of trade (in the order of 5,000 turtles per year) is very small compared to the present day exploitation

of wild populations (for examples see Mrosovsky, 1983, "Conserving Sea Turtles", British Herpetological Society). Some 5,000 or so turtles from the CTF would not be a huge expansion in trade, and the CTF is not taking these turtles from the wild. Finally, as well as considering risks, some consideration should be given to the great opportunities that lie ahead, should the CTF survive. These include collaborative programmes between the conservation organisations and the CTF. Expansion of the captive breeding of Kemp's ridley, using the CTF facilities and expertise as a start, is the most obvious possibility, but there are many others. The provision of turtles at all stages of their life cycle, close to laboratory facilities, allows numerous important questions to be tackled. The tagged release turtles, reported to be abundant in the shallow accessible water of North Sound provide an opportunity to follow the fate of head-started turtles and to throw light on the merits of this widely used yet poorly evaluated conservation procedure.

The Cayman government, by keeping the CTF going are indirectly contributing to research (see 4 above) that bears on the conservation of sea turtles in general. A small country like the Cayman Islands cannot be expected to continue supporting ventures of this sort indefinitely without some return, because it has other pressing demands on funds (eg. installing a sewage system).

It would not enhance the reputation of CITES as a rational convention if this unique facility, with not only past achievements to its credit, but future opportunities for even greater contributions, were now to be destroyed on the grounds of a technicality (Is it a ranch? Is it a farm?) when it is not even taking any stock from the wild.

SCIENTIFIC AUDIT OF CAYMAN TURTLE FARM

by
Dr Michael J Ford
Head of International Branch, Nature Conservancy Council, UK

INTRODUCTION

1. I visited the Cayman Turtle Farm (CTF) from 10th to 13 February 1985 to report on the operation in the context of the proposal to transfer from CITES Appendix I to Appendix II the captive population of the green turtle Chelonia mydas in the Cayman Islands, submitted by the United Kingdom to the 5th Conference of the Parties to CITES (Washington Convention on International Trade in Endangered Species).

2. Dr Jim Wood, General Manager of the Farm, gave myself and the other members of the audit team a guided tour of the facilities and provided us with a detailed explanation of the operation. We witnessed the standard technique used to slaughter turtles on the Farm and were taken out on a boat to see turtles that had been captive-bred on the Farm and marked before being released into Cayman waters where they are now swimming in the wild. Dr Wood described to us the marking system to be used by the CTF under the ranching proposal and we saw examples of packaging, tags and documentation.

3. Throughout our visit the CTF management and government officials (the Cayman Turtle Farm is wholly owned by the Cayman Government) were very helpful in answering our questions and providing us with any documentation and records that we requested.

4. The Farm is currently operating on a low scale, mainly providing meat to the local market and selling shells and products through the Farm shop. The Farm is open to visitors and there is an exhibit describing the various species of turtle, their history on the Caymans, the use of turtle products in various cultures, their conservation and the scientific work of the Farm. Visitors are invited to sponsor the release of tagged hatchlings and receive a certificate acknowledging this contribution to the re-establishment of the natural population of the Cayman Islands.

5. As well as the various stages of the green turtle captive-breeding operation visitors can see a loggerhead turtle, hawksbill turtles, a Pacific ridley turtle and a group of the endangered Kemp's ridley on loan from the Mexican government. This group of 39 animals laid eggs in 1984, the first time captive-reared members of this species have ever laid in captivity. The Farm also exhibits other indigenous fauna: the fresh water turtle Pseudemys granti, the Cayman amazon parrot Amazona leucocephala caymanensis, the Cayman ground iguana Cyclura nubila caymanensis.

OBSERVACIONES SOBRE LA OPERACION DE CAYMAN TURTLE FARM (1983) LTD.

Desde el punto de vista bioecológico la granja (como se entiende para tortugas marinas), tiene menor efecto sobre la poblacion silvestre, con eso quiero decir que, si se puede autorizar el fucionamento del "ranching", que depende directamente de la poblacion natural, no considero lógico no aceptar el funcionamiento de una granja que ha demostrado su autoabastecimiento.

Por otra parte, el aporte científico que puede dar y de hecho se esta obteniendo en una granja como la Gran Caimán no se obtendrá tan fácilmente en una operación de Ranching.

La necesidad de renovar el stock reproductivo adicionando unos cuantos ejemplares para sustituir las tortugas viejas o de bajo índice de reproducción, cada año, o en periodos mas largos puede ser grandemente cubierta por la liberación anual de juveniles de un año.

La mejora de una población silvestre grandemente dañada por sobrepesca, en muchos lugares ha sido muy lenta a pesar de grandes esfuerzos, la población de Gran Caimán sin un trabajo continuo en este sentido seguirá disminuyendo, la operación de Cayman Turtle Farm (1983) Ltd. podría representar una ayuda inmediata y no una operacion futura de un programa netamente conservacionista, que en muchas ocasiones es discontinuo o suspendido por falta de funcionamiento.

La operacion de la granja, en caso de ser autorizado el cambio del Apendice I al Apendice II, debe ser acompañada de una serie de medidas de administracion pesquera, ademas de las comerciales, que favorezcan la introduccion de animales cultivados en Cayman Turtle Farm (1983) Ltd., al medio natural.

El punto de vista operacional y económico en cuanto al rendimiento de la granja es un riezgo normal para toda empresa nueva y puede ser mejorado el funcionamiento y obtención de mayor número de crías en el futuro.

El aporte cientifico del personal de la granja no puede estar en discusion, pues han demostrado su capacidad para resolver problemas tecnicos y sobre enfermedades de las tortugas así como dietas para mejorar el crecimiento y salud de los animales, esta informacion es de gran valor para todos los investigadores que se inicien en trabajos de conservacion y "head starting".

George Town, Gran Caimán, Febrero 12, 1985

M. C. Rene Marques M., C. Pr. B.

6. During our visit we had discussions with two officials of the Portfolio of Development and Natural Resources, Mr Kearney Gomez and Mr Joe Parsons, who told us that the Executive Council had recently proposed and drafted more stringent regulations to protect wild turtles. Under these, all turtles would be fully protected between May and October. Traditional fishermen would be licensed to catch a specific number of turtles each year within Cayman waters for consumption within the islands. Licensed fishermen will be issued with non-reusable tags which must be attached to a turtle immediately it is caught. Fishing boats must be no longer than 25ft long (to prevent the possibility of turtles being taken outside Cayman waters) and the turtles must be taken live (i.e. netted , rather than with a harpoon or spear gun). On return to port, each turtle must be inspected by a Fisheries Officer who may order its release if it is below the permitted size.

THE UK RANCHING PROPOSAL

7. The main purpose of our visit was to assess the Cayman Turtle Farm operation in accordance with the criteria specified in CITES Resolution Conf. 3.15 on ranching.

8. The fundamental principle of Conf. 3.15 is set out in Recommendation (a) of the Resolution under which in order for specimens to be traded as Appendix II the population in question must benefit by ranching. Recommendation (c) clarifies that such a population need not be a country's whole population but may be "a smaller geographically separate population". The population which is the subject of the UK proposal is not the Cayman Islands population but, as indicated in Section A of the proposal, "the captive population of Chelonia mydas in the Cayman Islands".

9. This population is not endangered in that it is increasing to an extent which allows releases to augment the (separate) wild population and its perpetuation is dependent upon captive breeding and so it benefits from ranching. The requirements of Recommendation (a) of Resolution Conf. 3.15 are thus met.

10. Recommendation (b) of Conf. 3.15 outlines two general criteria which any ranching proposal must satisfy. Under (b) (i) "the operation must be primarily beneficial to the conservation of the local population (i.e. ,where applicable, contribute to its increase in the wild)". Since 1980 CTF have released some 9448 captive-bred turtles (Table 5 of the UK proposal) into Cayman waters and prior to this turtles were returned to the wild in Costa Rica, Ascension, Suriname. Such releases clearly meet the requirements of Recommendation (b) (i). Although the number of hatchlings/yearlings released in a particular year will vary with annual changes in the Farm's hatching success we were told that it was the intention to continue to release to the wild all animals excess to stated operating requirements.

11. The second general criterion of Recommendation (b) is that "the products of the operation must be adequately identified and documented to ensure that they can be readily distinguished from products of Appendix I populations". The management of CTF are very conscious that the acceptability of any farming/ ranching operation is critically dependent upon a reliable system of marking and have devised a detailed system, described in Section 7.4.1 of the UK proposal. This system is based upon packages bearing sequential identification numbers which are recorded on the accompanying CITES documentation. This system meets the requirements of Recommendation (b) (ii).

12. Recommendation (c) of Conf. 3.15 details six specific requirements that a ranching proposal must contain and I comment on these below:

i) "evidence that the taking from the wild shall have no significant detrimental impact on wild populations". No wild turtles have been introduced into the CTF captive green turtle population since 1977 and no eggs since 1978. We were assured that CTF have no intention of taking further animals from the wild unless it is shown that this is necessary to prevent deleterious inbreeding. Thus the Farm uniquely satisfies this requirement for a ranching proposal.

ii) "an assessment of the likelihood of the biological and economic success of the ranching operation". Detailed assessments are provided in Sections 7.2.1 and 7.2.2 of the UK proposal. Although,owing to the long maturation period of turtles (even in captivity), the Farm has not yet successfully achieved a hatched F2 generation which would meet the "second generation " interpretation of "bred in captivity" embodied in Resolution Conf. 2.12, it is likely to do so in the near future. Out of 19 F1 females currently held with 12 F1 males, 4 have laid eggs (2 for the first time in 1983, one of which produced fertile eggs in which the embryos developed to the 45 day stage, and a further 2 in 1984) and another 5 were observed mating.
Turning to economic success, the Farm formerly processed 12-15 000 turtles a year but now slaughters 800 per year, the meat for which supplies the local market. We were told that the local demand for meat could be of the order of 3 000 turtles but the Farm would not be economically viable operating at this level without an export market for the shells and shell-products excess to the requirements of the local retail trade. We were told that the operation is only economically viable if all parts of the turtle are utilised. If export markets are re-opened, the Farm intends to produce 5 000 animals per year and we were shown a projected balance sheet indicating the economic viability of an operation at this level.

iii) "assurance that the operation shall be carried out at all stages in a humane (non-cruel) manner".
We witnessed the despatch of 7 turtles by means of a

pistol bolt shot into the top of the head of restrained animals. There was a few seconds of neuromuscular reaction before the animal became quiescent and the head was subsequently severed. We were told of periodic disease outbreaks in the holding tanks: "baby throat" affecting 3-6 month old hatchlings and LET (lung, ear and throat) disease, a respiratory disease, affecting 1-2 year olds. These are probably viral diseases and are being investigated by Dr Gaskin of the University of Florida who visited the Farm during our stay.

iv) "assurance that the operation will be beneficial to the wild population through reintroduction or in other ways". This is well covered by the 6 parts of Section 7.3 of the UK Proposal and I have commented on this in Paragraph 11 above with reference to the general criterion of Recommendation (b) (i) of Resolution Conf. 3.15.

v) "a description of the methods to be used to identify the products through marking and/or documentation". This also relates to the general criterion in Recommendation (b) (ii) of Conf. 3.15 and is comprehensively dealt with in Section 7.4.1 of the UK proposal. The system outlined there seems to be the most secure that could be developed entailing, in the case of filet steaks, the identification of each individual piece of meat as originating from the Farm. We were told that the CTF marking system relied on the printing of bulky cartons rather than stick-on labels because the latter might be more susceptible to forgery.

vi) "assurance that the criteria continue to be met, with records open to scrutiny by the Secretariat, and that the Management Authority shall include in its reports to the Secretariat sufficient detail concerning the status of any ranching operation to satisfy the Parties that these criteria continue to be met".
The Farm has kept very detailed records on each animal over many years. The recording system linked to the marking system proposed in Section 7.4.1 is very comprehensive. I understand that exports from the Farm will be fully reported in the UK Annual Report to the CITES Secretariat.

ACKNOWLEDGEMENT

13. I am grateful to the Cayman Turtle Farm for inviting me to give this independent assessment of their operation.

Michael J Ford

DR M J FORD
Grand Cayman
13 February 1985

REPORT ON AUDIT OF THE CAYMAN ISLANDS TURTLE FARM. COMPILED BY GEORGE N. PANGETI. DEPARTMENT OF NATIONAL PARKS AND WILD LIFE MANAGEMENT, HARARE, ZIMBABWE. 11TH FEBRUARY 1985.

The writer arrived at the Grand Cayman Islands on Sunday 10th February 1985 and commenced the Audit on Monday 11th February 1985 at 8:30 am.

The objective of the audit was to establish whether the turtle farm meets the Ranching criteria as set out in the resolution of the Conference of the Parties on Ranching Conf. 3.15. Prior to my visit the Republic of Zimbabwe, Department of National Parks and Wild Life Management had met to consider the relevant documentation submitted by both the CITES Secretariat and the Cayman Islands Management Authority with a view to establish whether the submission met the criteria as set out in the above document.

The meeting agreed to support the proposal subject to confirmation of the existence of the ranching facilities and availability of documentation to further support the proposal. This condition has been satisfied during my visit in that I have undertaken a guided tour of the turtle farm and made another tour to the coast where I made an independent environmental assessment of the habitat. The staff of the farm have made available to me all the necessary documentation that I requested to scrutinise. To this end I was satisfied that all the necessary documentation was available to me.

Having satisfied myself that the Ranch meets all the criteria as set out in Conf. 3.15 I wish to comment on my observations as below.

a) The Cayman Islands turtle population has benefited from Ranching in that since the population had become extinct the release of captive bred animals has reestablished the turtles in the natural environment. A trip to one of the release points resulted in a few sighting and much evidence of turtle grazing in the mangrove woods. It is obvious that the Turtle Farm has contributed to the reestablishment of turtles on the islands.

b) (i) See (a) above.

b) (ii) I have satisfied myself that the marking system envisaged will adequately distinguish the products of the Turtle Farm from those originating from elsewhere. I have examined the labels that will be used to identify edible products, skin, shells and oil. It was emphasised that each consignment will be accompanied by CITES documentation.

I have also satisfied myself with the CITES import, export and re-export permit system which documentation was made availabe to me for inspection.

Legislation: The Management Authority advised that the Government was currently reviewing domestic legislation with a view to further tighten controls on the capture of sea turtles by Caymanians. The draft copy of this legislation was made available

to me for scrutiny and I was satisfied that it offered more protection to the species. The most commendable aspect being that hunters would be issued with tags which they would surrender after catching the turtles. This would further provide valuable information for both research and monitoring of the resource. A copy of the draft legislation is attached.

c) (i) The information available does not indicate that any animals are being taken from the wild.

c) (ii) The potential for bidogical success of the ranching operation cannot be over emphasised considering that overfishing had rendered populations of this species extinct. Work on the assessment of the populations was in evidence.

A quick cost/benefit analysis of the operation revealed that the farm was just breaking even with a marginal profit. The ranch offers visitor facilities, including tours, information displays and curios for sale. Inevitably returns from these sources contribute substantially to running costs and justify the location of this ranch on a major tourist destination.

The ranch also offers a "living laboratory" for turtle research that is unique throughout the world and a lot of documentation is readily available for use in this respect.

c) (iii) An inspection of the facilities confirmed that the 1 year old hatchlings were kept in open tanks with free flowing water that is chlorinated to reduce bacterial growth. The tanks were clean. The hatchlings were being fed on 40% protein cubes which are available to them at all times. Figures indicated a mortality rate of 40 - 45%.

The breeding herd tanks were adequate to contain 284 breeders which constitute the original stock from the wild as well as animals hatched and reared in captivity. The water was clean and free flowing. Food was readily available.

Another pen contained 31 marked F1 generation animals. Three other tanks held 2 Hawksbill turtles, 1 Loggerhead turtle and 1 Pacific Ridley turtle respectively. Various research programmes are being undertaken on these animals.

One other tank held a hybrid cross between a Hawksbill and Green turtle. Three animals are held in this tank. These animals are reported to have done well as hatchlings.

An inspection of the hatchery showed that suitable facilties exist for the incubation of the eggs and rearing of hatchlings until the yolk is absorbed. There were no eggs nor hatchlings to see.

Similar ponds as described above exist but have not been used since the ban on import of turtle products by USA.

Thirty two holding tanks capable of holding 40,000 to 50,000 lbs of live weight are avaiable but only 4 are being utilized.

The abbatoir can handle about 25 turtles per day for slaughter. A demonstration to show how animals are killed and skinned was made.

The captive-bolt gun was used to kill the animals instantly.

c) (iv) See (a) above.

c) (v) See b) (ii) above.

c) (vi) The Management of the farm made availabe to me all the necessary documentation that I requested to see. These criteria will continue to be met if the Cayman Islands are given the opportunity to utilize the resource that has come by through much effort and hard work. I believe the populations of these turtles will only be increased if the members to CITES accept a pragmatic management philosophy as envisaged by the Cayman Islands supported by protective legislation and grassroots education programmes that will ensure an enlightened conservation concious population.

In my opinion a successful conservation programme relies upon the ability of the country in which the species exists in being able to trade internationally in order to realise revenue which can be ploughed back into further research.

I end by expressing my sincere appreciation to the Governments of the United Kingdom and the Cayman Islands for affording me the opportunity to visit the Cayman Islands Turtle Farm in order to carry out this audit. Hopefully this visit will in a small way create stronger ties between our countries. I have enjoyed every bit of the hospitality of the people of the Cayman Islands.

George N. Pangeti

THE MARINE CONSERVATION (TURTLE PROTECTION) (AMENDMENT) REGULATIONS, 1985

Amendment to Section 4

All turtles protected from May through October

Section 4 shall be deleted and replaced by the following:

4. Any person who attempts to take, disturb or molest any turtle at any time during the months of May through October in any year, shall be guilty of an offence.

Provided that nothing in this regulation shall apply to a turtle bred in captivity by a holder of a licence under the Endangered Species Protection and Propogation Law, 1978.

These amendments are recommended to protect all turtles during the breeding season.

Additional Sections

Possession of turtles by unlicensed persons illegal

5. Any person not being licensed by the Board or holding a licence under the Endangered Species Protection and Propogation Law, who has a turtle in his possession, is guilty of an offence.

Traditional fishermen to be licensed

6. The Board may licence traditional fishermen to catch a specific number of turtles each year within Cayman Waters for consumption within the Islands.

Restriction on such licences

Such traditional fishermen shall be licensed at the discretion of the Board but shall meet the general criteria of fishing in a boat no larger than 25 feet long and shall not fish turtles with harpoon or spear gun.

Size and number limits

7. The Board shall determine the maximum limits and minimum size of each species that may be caught each year.

Applications limited to specific time

8. The Board shall set a specific time limit for receiving applications for licences to fish turtle.

Limited number of turtles to be caught by each fisherman limited

9. The number of turtles of each species which may be caught by a fisherman shall be determined by his economic dependence upon turtle fishing and taking into consideration the number of applications received.

These amendments are recommended to give the Board the right to screen applicants, to prevent unlimited catch of turtles and to set a size limit to enable turtles to mature and re-establish a breeding colony. Limiting the size of boat and the number of turtles to be caught also minimizes the risk of turtles being fished outside Cayman Waters.

Turtles to be identified by tag when caught

10. Licensed fishermen shall be issued with non-reusable tags which shall bear a number. A tag must be attached to each turtle immediately it is caught.

11. Any person who has in his possession a turtle which does not bear a tag as described in Section 10 commits an offence.

Turtles to be inspected before slaughter or injury

12. Anyone who slaughters or injures a turtle before having such turtle inspected by a Fisheries Officer or any other person so authorized, shall be guilty of an offence.

Records to be kept

The Fisheries Officer or other authorized person shall check the fisherman's licence, record the number from the tag with which the turtle has been tagged, the weight and sex, if possible, area and date of capture.

Tags to be returned

13. The fisherman shall, upon slaughtering and disposing of the turtle, return the tag to the Fisheries Officer or other authorized person along with any information which could not be recorded previously.

These amendments recommended to record keeping of each fisherman's licence and other biological data. The tagging of turtles ensures adherence to the licensed limits. Inspection of turtles before slaughter or injury allows any undersized turtles to be released.

Boat sizes limited

14. Anyone who transports any turtle or turtle parts or products in a vessel larger than 25 feet shall be guilty of an offence.

These amendments recommended to prevent catching of turtles outside Cayman Waters as it is unlikely that such small boats will go to the foreign fishing grounds.

Harpooning and spear fishing of turtles prohibited

15. Any person who fishes or attempts to fish any turtle with the aid of a spear gun or harpoon, shall commit an offence.

These amendments recommended to prevent injury to turtles which could therefore not be released if undersized.