

**Inspection of Cayman Turtle Farm (10-12th December, 2012): Report to the Cayman Turtle Farm (Ltd.)**

George H. Balazs  
Annette C. Broderick  
Brendan J. Godley  
Thierry M. Work

(Authors in alphabetical order)

Submitted to the Cayman Turtle Farm, 17<sup>th</sup> December 2012

**Contents:**

- A. Executive Summary
- B. Timeline of Visit
- C. Terms of Reference Item 1
- D. Terms of Reference Item 2
- E. Terms of Reference Item 3
- F. Terms of Reference Item 4
- G. Acknowledgements

## A. Executive Summary

The authors hereafter referred to as the “the panel” were requested to carry out an inspection of the Cayman Turtle Farm (CTF) between 10-12<sup>th</sup> December according to bespoke terms of reference (**Appendix 1**). The panel concluded that there were no significant issues of concern regarding the public facing aspect of the operation. For the production side of the operation, however, there is clearly room for improvement in standards of care which will require immediate changes in infrastructure, processes, staffing and resources to rectify. Key among the panel’s concerns were the incidence of skin lesions and mortality levels in younger age classes. CTF should immediately implement additional intensive treatment and management of all animals with lesions based on best available information, euthanasia of animals with poor prognosis, and undertake veterinary-pathological investigations of dead animals. The panel was concerned that similar recommendations had been made in the past but have not been acted upon. A series of potential management recommendations are made. The panel concluded there was strong evidence for the positive conservation impact of CTF with regard to: providing turtle meat (the national dish) for Caymanians thus alleviating pressure on the wild population; augmenting the local nesting population through past turtle releases; facilitating applied research over four decades; and increasing awareness of marine turtle conservation. The panel recommends that CTF develop a set of short and long-term goals to rectify existing issues and that an independent Advisory Board be assembled to help support CTF towards development and achievement of those goals. Given sufficient desire and motivation on behalf of managers and decision makers, the panel concluded that the recommendations in this report are fully achievable.

## B. Timeline of Visit and Activities

- 10<sup>th</sup> Dec      **am** Initial meetings with CTF management and tour of public facing facilities  
**pm** Tour of production facilities and Q&A with production staff; Panel deliberations; Q&A with management; Observation of animals.
- 11<sup>th</sup> Dec      **am** Observation of capture, movement and slaughter process with additional Q&A with production staff; Panel deliberations; Q&A with management; Observation of animals.  
**pm** Panel deliberations; Observation of animals and ongoing management processes.
- 12<sup>th</sup> Dec      **am** Observation of production tank drainage, cleaning, treatment regime and animal handling; Examination of animals; Meeting with Cayman Island Department of the Environment.  
**pm** Panel deliberations; Q&A with recently retired production manager; Q&A with CTF management; Observation of animals and husbandry process; Panel deliberations.

**C. Terms of Reference Item 1. Determine whether standards of care meet those required to ensure that the operation is conducted in a “humane (i.e. non-cruel) manner”**

The panel concluded that there were no significant issues of concern regarding the public facing aspect of the CTF. For the production side of the operation there is clearly room for improvement in standards of care which require immediate changes in infrastructure, processes, staffing and resources to rectify. Key among the panel's concerns were the incidence of skin lesions and levels of early juvenile mortality. CTF should immediately implement more intensive treatment and management of all animals with such lesions, euthanasia of animals with poor prognosis, and undertake veterinary-pathological investigations of dead animals.

**D. Terms of Reference Item 2. Examine in particular standards of husbandry and care including attention to issues such as:**

**Levels (if any) of severe injuries:** A notable proportion of animals had quite severe skin lesions that included deep ulceration to the shoulder, forelimbs, head and hind limbs.

**Levels and causes of mortality:** Based on data presented by CTF, mortality levels in younger year classes are high and require intensive veterinary and management intervention. This includes potentially emerging conditions such as enteritis observed in three animals necropsied during the panel's investigation.

**Treatment and prevention of disease and injury:** Although there are processes in place to address existing lesions and ongoing mortality, they need to be intensified, enhanced and their efficacy assessed. The panel also noted that, based on visual examination of body profile, a notable proportion of animals appeared moderately emaciated.

**Water quality:** In the public facing tanks the water quality appears very clear. On the production side the visual appearance of the water varies from very clear for post-hatchling turtles to quite turbid in some of the tanks for the larger juveniles. In the absence of recorded skin lesions/mortality, the level of hygiene/water quality as observed would not be cause for concern. Given the health issues above, however, improvement of water quality both entering and exiting the farm has to be considered as part of a management plan.

**Stocking densities:** As an intensive-rearing facility, stocking density in the production side of the CTF is high. It should be noted that, during feeding, animals aggregate and density can appear artificially elevated. In the absence of recorded skin lesions, high mortality, and moderate emaciation, the stocking density, as observed, would not be cause for concern per se. Given the health concerns above, however, factors related to stocking density and feeding regime must be considered.

**Levels (if any) of congenital deformities:** No congenital deformities were observed.

**Handling of animals by guests (including safety of both animals and guests):** Given changes to operating practices where handling is supervised and handwashing is offered and encouraged, the panel had no concern in this regard.

**Slaughter methods and practice:** The inspection panel concluded that the slaughter was carried out humanely and hygienically. The process does, however, seem to afford an underutilised opportunity for gathering supplementary data for health monitoring and management of the herd.

**E. Terms of Reference Item 3. Suggest any reasonable steps by which animal husbandry and care might be improved at the farm.**

**1. Immediate action:**

- a. Intensive treatment and management of all animals with skin lesions based on all currently available information, euthanasia of animals with poor prognosis, and veterinary-pathological investigations of dead animals.
- b. Immediately retain services of a suitably skilled veterinary surgeon with experience in herd health or management of large numbers of animals in production facilities. This practitioner must be sufficiently resourced and empowered to effect the changes outlined below.

**2. Longer term actions:**

- a. Systematically document patterns and causes of skin lesions, buoyancy problems, enteritis, and other clinical problems, by year class.
- b. Systematically document and necropsy all mortalities to determine cause of death with archiving of tissues as appropriate.
- c. Using information from a and b above, design and implement management action to minimize morbidity and mortality. Possible actions to consider, many of which will need an increase in tank space, staffing and consumables, include:
  - i. Evaluating and documenting effects of stocking density or water quality on animal health.
  - ii. Detailed monitoring and documentation of behaviour, body condition and growth rates.
  - iii. Standardized audited protocols (feeding regimen, animal movement, tank management, clinical care, necropsy, record management).
  - iv. Enhanced ability to isolate sick or injured animals for observation and treatment.
  - v. Development of tank management to minimize transmission of potentially communicable diseases.
  - vi. Evaluating and documenting effects of feeding regimen and diet on animal health.
  - vii. Development of clear written criteria and guidelines for detecting health problems, deciding treatment, isolation or euthanasia of sick animals.
  - viii. Development of systematic and documented approaches to evaluate efficacy of treatment regimens.

ix. Investigate the efficacy of leaving a proportion of clutches in situ thereby liberating staff time for other management and in doing so, investigate and document the potential survivorship benefits to hatchlings.

x. Annual inspection of facilities by accreditation institution or government agency charged with regulation of animal agriculture (eg Cayman Islands Department of Agriculture).

d. The panel recommends that CTF develop a set of short and long-term goals to rectify existing issues and that an independent Advisory Board be assembled to help support CTF towards development and achievement of those goals. This would include scientists and managers from the Cayman Islands and overseas.

#### **F. Term of Reference Item 4. Comment on the contribution the CTF makes to conservation of turtle species.**

The panel judged that there was clear evidence for the positive impact of CTF which can be outlined as:

**1. Consumption of turtles:** Providing a sustainable source of turtle meat (the national dish) to Caymanians, where demand is still high, is an extremely important role of the farm. Without this source of meat, the pressure on wild populations would be higher, and we would anticipate an increase in illegal take, which already occurs to some extent. CTF cannot currently meet all demands and should consider prioritising selling meat to Caymanians. At present, meat is only sold at the CTF. Consideration should, however, be given to selling at other outlets to reach more remote locations on the island. A socio-economic study of the current users would be informative in making these decisions. We would encourage CTF to work with Cayman Islands Department of the Environment to develop protocols for detection of illegal turtle products by law enforcement officers and management of the sale of turtle shells.

**2. Impact on local turtle populations:** CTF-released turtles have clearly contributed to the enhancement of the wild nesting population. There is a need for a genetic study of wild nesting populations to fully ascertain the CTF contribution. At present there are concerns over the potential release of CTF animals into the wild or pathogens from the CTF effluent. Although no evidence of deleterious effects have been documented in wild turtles, we recommend that, in future, all animals released into the wild receive a veterinary certificate of health in conjunction with the health recommendations detailed above.

**3. Science:** The CTF has provided a population of turtles that have been the subject of numerous scientific studies that have been invaluable in understanding the biology of the green turtle. Many of these studies have been in collaboration with externally based researchers and have resulted in a plethora of high quality publications. The panel encourages CTF to continue embracing these activities.

**4. Awareness and Education:** A large number of visitors to CTF are exposed to outreach on biological and cultural conservation each year; however, such activities could be improved. There are currently few visitors to CTF going to the education centre. There are also opportunities to provide more information to visitors, at for example feeding time, when there is a willing audience.

**Conclusion:** Given sufficient desire and motivation on behalf of managers and decision makers, the panel concluded that the recommendations in this report are fully achievable thereby ensuring the long term health of the turtles that are such an important part of the heritage of the Cayman Islands.

### **G. Acknowledgements**

The panel would like to thank the staff of Cayman Turtle Farm and Cayman Islands Department of the Environment for their courteous, collaborative approach to our requests and questions.

## **Appendix 1: TERMS OF REFERENCE FOR INSPECTION OF CAYMAN TURTLE FARM**

To conduct an inspection of the Cayman Turtle Farm in order to:

1. Determine whether standards of care meet those required to ensure that the operation is conducted in a “humane (i.e. non-cruel) manner”;

2. Examine in particular standards of husbandry and care including attention to issues such as:

a. Water quality;

b. Stocking densities;

c. Treatment and prevention of disease and injury;

d. Levels and causes of mortality;

e. Levels (if any) of severe injuries;

f. Levels (if any) of congenital deformities;

g. Handling of animals by guests (including safety of both animals and guests);

h. Slaughter methods and practice;

3. Suggest any reasonable steps by which animal husbandry and care might be improved at the farm.

4. Comment on the contribution the CTF makes to conservation of turtle species.

The inspection should be made on the basis of the standards of practice that would apply to a comparable intensive livestock production facility in the UK or USA.