

3 of 3

BALAZS
CAYMAN
DECEMBER
2012

891



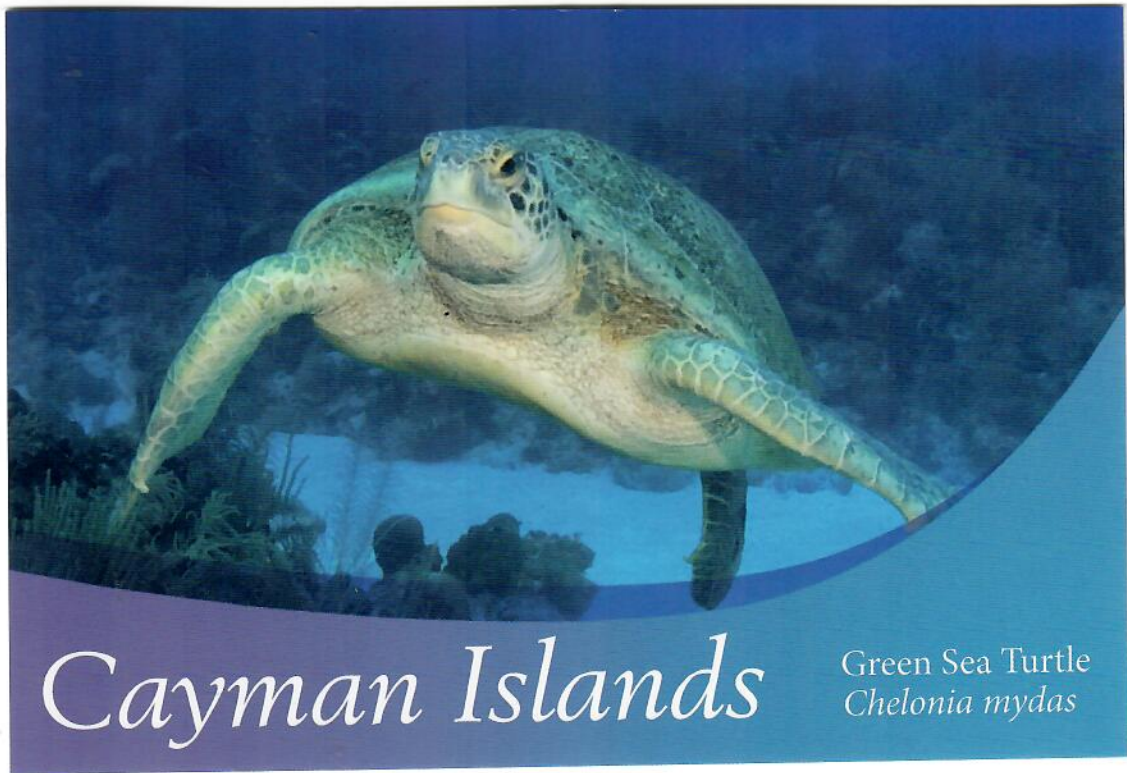
This set from the Cayman Islands (Scott #69-80, Gibbons #84-95, Michel #70-81, Yvert #73-84), issued on 5 July 1932, is currently the most expensive stamp set featuring sea turtles.

It is their first pictorial issue, released in celebration of the 100th anniversary of the founding of the Cayman Islands, and is valued in the 2008 Scott Catalog at \$558.65 mint / \$755.50 used.

The 5 shilling stamp is valued at \$100 / \$140, and the 10 shilling stamp at \$350 / \$425.

Our thanks to Elliott Jacobson and Donald Riemer for contributing scans of the two high-value stamps for this page.





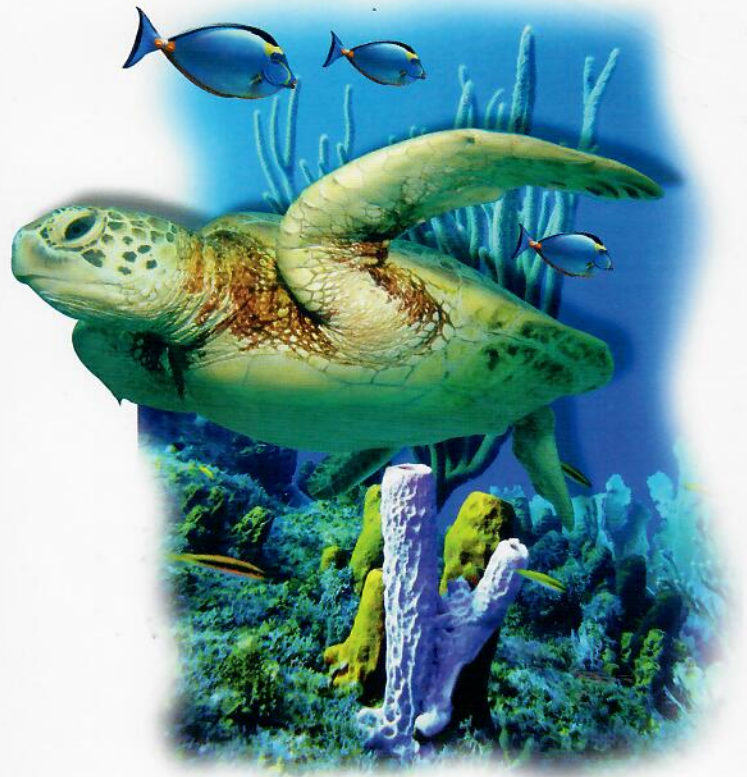
Cayman Islands

Green Sea Turtle
Chelonia mydas

**TURTLE
CROSSING**



**CAYMAN
ISLANDS**



**CAYMAN TURTLE FARM
ISLAND WILDLIFE ENCOUNTER**



Cayman Islands

Green Sea Turtle
Chelonia mydas

Fish Tea Fish Tea is a Caymanian classic that is served as an appetizer, a pick-me-up, or as all night party food.
 1 onion • 4 ribs celery • 2 carrots • 2 hot peppers (minimum) • 1 teaspoon thyme • 2 Irish potatoes • salt and black pepper to taste
 Use 1 quart water per fish. Place the fish and water in a pot. Cut the vegetables into chunks and drop them in the pot along with the thyme, salt, and black pepper. Bring to a boil, reduce heat and simmer for 15 to 20 minutes.

CAYMAN ISLANDS

Watch out for those turtles! Cayman is home to the world famous Turtle Farm.



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Philatelic Bureau Cayman Islands

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CAYMAN TURTLE FARM
 ISLAND WILDLIFE ENCOUNTER





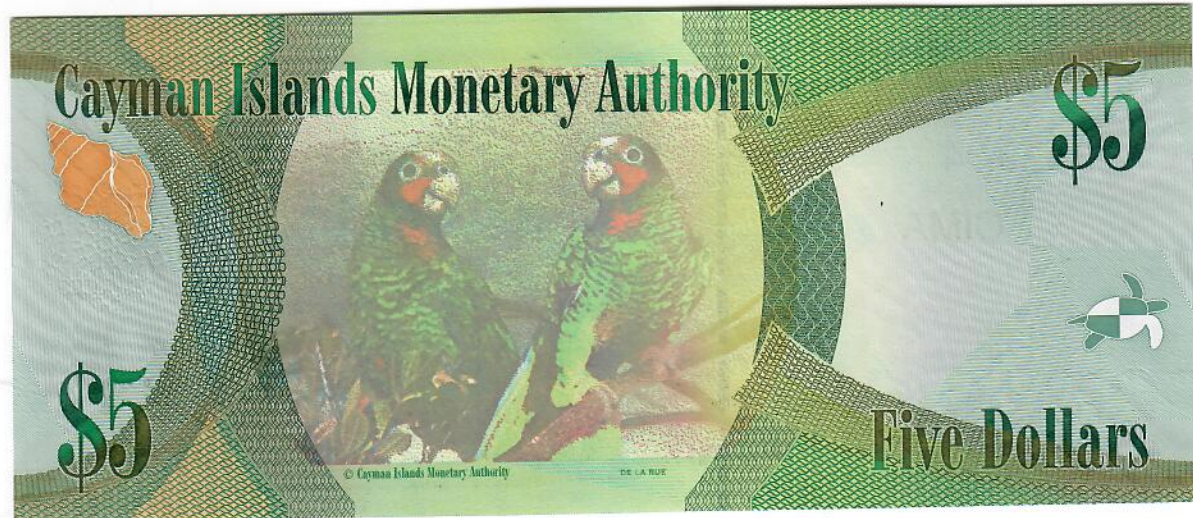
Handle with care



CAYMAN TURTLE FARM
ISLAND WILDLIFE ENCOUNTER



CAYMAN TURTLE FARM
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January 25, 2013

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Cayman Turtle Farm welcomes inspection findings, publishes inspection report

January 25, 2013 By [IEye News](#) [Leave a Comment](#)

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The Cayman Turtle Farm (CTF) is taking action on recommendations coming out of a December 2012 independent inspection by a team of internationally recognised sea turtle experts. The assessment took place from 10-12 December 2012 and the Cayman Turtle Farm released the inspection report to the media and public today (Friday, 25th January).

“We are taking the findings and recommendations of the report very seriously,” said Managing Director Tim Adam. “The Board of Directors and the Cayman Turtle Farm management team are committed to taking all possible steps to address the concerns listed by the external experts in the assessment report, and have already taken action on several items.”

The assessment was carried out by a 4-member team of independent international conservation and sea turtle specialists. All are noted and respected experts on the care, health and conservation of sea turtles and none were employed or remunerated by the Cayman Turtle Farm.

The resulting inspection report notes that the Cayman Turtle Farm makes several important positive contributions to the conservation of and research on green sea turtles, while also stating areas of concern requiring improvement.

The inspection report validated the CTF's provision of a legal source of turtle meat as a way to assist in the prevention of illegal poaching in the wild; confirmed the inspectors had no health or injury concerns with regard to guests handling turtles, either for the turtles or for the humans interacting with them; found no evidence of congenital deformities among the Farm's turtle population; concluded that the process of harvesting turtles for meat is carried out humanely and hygienically; found clear evidence that the Cayman Turtle Farm's turtle release programme contributed to the enhancement of the wild nesting population; and saw the Cayman Turtle Farm's research programmes as invaluable in understanding the biology of green sea turtles.

The majority of the assessment team's recommendations for improvement were focused on the commercial production operations of the Cayman Turtle Farm.

One recommendation for immediate implementation has already been actioned, namely that of the recruitment of a full-time veterinarian. "The Cayman Turtle Farm is in the final stages of recruiting a full time veterinarian . Having a full-time veterinarian on staff will enable us to fulfil several of the short and long-term recommendations made by the inspection team," Mr Adam said.

Another example of a recommendation of the report is that the CTF's existing lesion treatment procedures should be "intensified, enhanced and their efficacy addressed". This recommendation is already being pursued, Mr Adam said.

Recent experimental pre-clinical trials conducted by Dr. Carlos E. Crocker (St. Matthew's University School of Veterinary Medicine) and Dr Walter Mustin of CTF have enabled the Cayman Turtle Farm to develop effective medication protocols for the treatment of skin lesions and, as a result, the Farm has subsequently expanded and intensified these treatments to include the aggressive treatment of all affected turtles in its care, Mr Adam explained.

Mr Adam said the Cayman Turtle Farm is grateful to the independent team of inspectors for their thorough and rigorous examination of the Farm. "We have considerably benefitted from their findings and recommendations as they highlight aspects to prioritise, and we reiterate our commitment to do everything within our capabilities to improve the Cayman Turtle Farm and the welfare of our turtles while continuing to ensure the safety and enjoyment of our visitors. The Cayman Turtle Farm initiated this inspection and we are pleased that the inspection team noted our courteous, collaborative approach to their requests and questions. We believe that the recommendations of the report will serve to enhance the quality of Cayman Turtle Farm and what we offer," Mr Adam said.

As suggested by the inspectors, the Cayman Turtle Farm will be re-establishing a CTF Advisory Board to oversee, support and make recommendations on its on-going operations.

"The report contains various other recommendations which we are developing into short-term and long-term goals," Mr Adam confirms. "The inspection report concluded that the improvements are fully achievable given sufficient desire and motivation on behalf of managers and decision makers. I would therefore like to underscore our commitment to pursuing the report's recommendations to ensure a healthy, safe and sustainable environment for our turtles and all those who come to visit us."

The full inspection report may be found on the Cayman Turtle Farm website at www.turtle.ky

NOTE: iNews Cayman will be doing a FULL report and Editorial on the latest report from the CTF and the WSPA and similar bodies scathing attacks on the CTF in Tuesday's (29) iNews Cayman

To Cayman Book



CAYMAN TURTLE FARM
ISLAND WILDLIFE ENCOUNTER

POST-INSPECTION ACTION SUMMARY REPORT: UPDATE 2013-10-15

[Date of original report: 2013-01-15]

Summary of main concerns: The following post-inspection report addresses the production side of the Cayman Turtle Farm, as the "public-facing" side did not present concerns to the inspectors.

Note that as reported prior to the inspection in December 2012, on the "public facing" side we had already implemented significant upgrades to the supervision, signage, and hand-washing facilities to continue to ensure that interactions between guests and turtles are safe for the animals and the people interacting with them.

The inspectors expressed concerns mainly about skin lesions and mortality levels in younger turtles, and they discovered some turtles as showing "moderate emaciation" in visual examination of body profile. The inspectors affirmed that "there are processes in place to address existing lesions and ongoing mortality." They recommended that these should be "intensified, enhanced and their efficacy addressed."

Following is a very brief summary of the actions taken or planned, in response to the Inspection Report.

Issue: Skin lesions.

Action: In experimental treatment trials conducted in conjunction with St. Matthew's University School of Veterinary Medicine this summer (prior to the inspection), we have demonstrated the efficacy of an antibacterial antifungal medication protocol for treatment of skin lesions when these occur. In light of these positive results, we have recently expanded and intensified our treatments to include the aggressive treatment of all the affected turtles in our care. During each routine tank cleaning, all affected animals are given these antibacterial antifungal treatments. We have also individually tagged a sample group of turtles with lesions to assess treatment efficacy on a weekly basis, with photographic records and measurements to track progress in recovery.

The recently completed construction of additional quarantine tanks will also enable us to better isolate, treat and observe selected affected animals. Animals that need to be separated from the population for more aggressive treatment and observation are being relocated to quarantine tanks.

WHAT?

In addition, we are recruiting a full-time Veterinarian. One area of focus will be further work on diagnosis of causes and treatment of skin lesions.

Update 2013-08-16: *Antibacterial antifungal treatments continue. Our veterinarian is also overseeing trials of the efficacy of a different medication we had not used before, to see which one is the most efficient and effective.*

Update 2013-10-15: *We switched to the new medication as that showed improved results in some aspects compared against the previously used treatments. However now our veterinarian and farm manager are working on reducing environmental stressors to help minimize the development of lesions.*

Update 2013-10-15: *Although various diseases and causes of lesions on wild sea turtles have been described to some extent in various scientific papers, for several of those there remains work to be done to be able to specifically identify particular pathogens. We have found no laboratories anywhere presently with the tests for definitive diagnosis of certain sea turtle pathogens. Our Veterinarian is reaching out to a university with which we collaborate on other research work, and which has the CITES permits in place to receive sea turtle tissues, with the aim of engaging their resources in developing testing facilities to be able to do this more definitive diagnosis.*

Issue: High mortality levels of younger turtles.

Action: We had a "bumper crop" of hatchlings (in 2012) (in large measure as a result of our work on further developing the breeder diet formulation). Accommodating the extra hatchlings in the then-existing hatchling tanks nearly doubled the previous year's stocking density, and that became a major contributing factor to the higher mortality levels of these young turtles. We have recently completed construction of additional hatchling tanks which now enables much lower stocking densities of the younger turtles.

In addition, with the recruitment of a full-time Veterinarian, the mortality of younger turtles will be an area of focus to investigate and determine what further improvements can be made.

Update 2013-08-16: *We have hired a full-time veterinarian (licensed in Florida & California, USA) who has been on staff since late April 2013. Mortality of younger turtles is one of the aspects she is studying.*

Update 2013-10-15: *(As above re testing for lesions) Our Veterinarian is reaching out to a university with which we collaborate on other research work, with the aim of engaging their resources in developing and conducting tests to identify specific pathogens causing hatchling/young turtle mortalities, because we have found no laboratories that currently have that type of testing for sea turtle specific pathogens.*

Issue: "Moderate emaciation" which the inspectors discovered in some turtles (this was in one tank).

Action: The morning after the inspectors verbally reported this to us, we immediately changed the feeding protocols to adjust the frequency, quantities and method of distributing the feed in the 15 production tanks, to reduce crowding at feeding times and ensure that all the turtles in the tanks are readily able to access the food. During routine tank cleaning our farm staff are now examining animals for emaciation, adjusting feed if necessary, and reporting results to our Chief Research Officer. Undersized and oversized individuals are being aggressively removed and re-stocked into tanks with similarly sized animals to reduce risk of emaciation due to competition for feed.

Update 2013-08-16: *The protocols have been effective and "moderate emaciation" is no longer an issue. (This issue now resolved & item closed.)*

Issue: Euthanize animals with poor prognosis.

Action: Our farm team in conjunction with our Chief Research Officer is routinely identifying animals (on a tank-by-tank basis) that have poor prognosis, and euthanizing them using a humane method suggested by Mr. Balazs and Dr. Work, two experts who were part of the inspection team.

Update 2013-10-15: *Solution already implemented as stated above.*

(This issue now resolved & item closed.)

Issue: Conduct necropsies of dead turtles.

Action: Our Chief Research Officer is conducting gross necropsies on dead turtles, cataloging and banking tissues for future histopathological analysis. This data includes disease incidence by age class. Prior to the inspection we had already begun the process of hiring a full-time Veterinarian for the Farm. In addition to the Veterinarian performing necropsies on dead animals, having a full-time Veterinarian on staff will enable us to fulfill several of the other short-term and long-term recommendations made by the assessment team. We have received 17 applications which we have short-listed. We subsequently interviewed the short-listed candidates and have made an offer to one candidate.

Update 2013-10-15: *We have upgraded our freezer storage capacity with procurement of a sub-zero freezer from overseas, to ensure we have sufficient space for banking the tissues at the correct temperature.*

In addition, our Chief Research Officer has explored the possibility of sending tissues off to pathologists in the USA and the UK for histopathology. This would involve the CITES permitting process, and the UK process for that appears to be more "streamlined" than is the case for the USA so we are pursuing discussions with pathologists in the UK. In addition, in light of the major delays and logistical difficulties imposed by the CITES permitting process, we are investigating possibilities to have histology work done on-island. If this can be done successfully then using microscopic images of tissue section slides created on-island, we could send these images to a specialist turtle pathologist without the need for a CITES permit. Preliminary discussions with a pathologist at a local laboratory have been promising, and we now await a decision by their management.

Update 2013-08-16: *We have hired a full-time veterinarian who has been on staff since late April 2013.*

Update 2013-08-16: *Our new vet is also performing necropsies and banking tissues for pathological analysis.*

Update 2013-08-16: *We are now sending tissues for histopathology in a local laboratory and are still making arrangements to send tissues overseas for histopathology (there are complexities in regard to logistics and CITES permitting).*

Update 2013-10-15: *The local laboratory has successfully completed histopathology staining for some tissues.*

Update 2013-10-15: *(See above) Our veterinarian is also pursuing arrangements with a university to conduct studies on sea turtle specific pathogens.*

Issue: The assessment team did not find water quality and stocking densities to be primary concerns *per se*, but felt that these aspects need to be considered (i.e. as possible factors) in relation to the presence of the other turtle health issues noted.

Action: In this regard, we have recently completed the construction of additional small concrete tanks, which will enable us to conduct studies to evaluate the effect of different stocking density rates on turtle health.

Update 2013-08-16: *These stocking level research studies are now in progress.*

Update 2013-10-15: *The data collection phase of this study was just completed last week (9th October 2013). The data are now being compiled and analyzed.*

Water quality of intake supply is measured weekly, with samples analyzed at Cayman Water Authority lab. Discharge water quality is also being measured and analyzed weekly. Discharge water treatment is a longer term goal.

Issue: Re-establish the CTF Advisory Board to help support CTF toward development and achievement of short-term and long-term goals.

Action: We will be re-establishing this independent Board. We have solicited recommendations from the Director of Environment, who was involved in the previous Advisory Board that existed some years ago, as to the make-up of the new Advisory Board and its remit so that we can re-establish it.

Update 2013-08-16: *The Scientific Advisory Committee is now in place and is meeting quarterly.*

Members are:

- *Ex-Officio: Ms Gina Ebanks-Petrie; The Director of the Cayman Islands Department of Environment (or designate)*
- *Ex-Officio: Mr. Roydell Carter; The Director of the Cayman Islands Department of Environmental Health (or designate)*
- *Ex-Officio: Mr. Adrian Estwick; The Director of the Cayman Islands Department of Agriculture (or designate)*
- *Ex-Officio: Dr. Walter Mustin; CTF Chief Scientific Officer*
- *Independent Member: Dr. Karen Rosenthal (Dean of St Matthew's University School of Veterinary Medicine) – she has been selected Chairman of the Committee*
- *Independent Member: Professor Brendan Godley (Professor of Conservation Science, University of Exeter; one of the authors of the inspection report of 17th December 2012)*
- *CTF Board Director: Mr. Armando Ebanks; Deputy Chairman of the Board of CTF (The CTF Board of Directors reserve the right to appoint one of its Directors to serve on the CTF Advisory Committee.)*

Update 2013-10-15: *There were changes to the appointments of some Directors on the Board of CTF, as a result of which Mr. Joe Parsons is the new Deputy Chairman of the Board of CTF and is also now the CTF Board Director on the Scientific Advisory Committee.*

Topic: Quarantine Facilities & Protocols

Update 2013-08-16: *Additional quarantine tanks have been constructed and are now in use. In conjunction with this, our new veterinarian has significantly upgraded our pre-release quarantine protocols.*

Update 2013-10-15: *The quarantine facilities have been implemented and our Veterinarian has developed the pre-release quarantine protocols, but there is some biological sample testing that we would like to do on turtles prior to release, for which laboratory testing is not in existence. As noted above, our Veterinarian is reaching out to a university with which we collaborate on other research work, with the aim of engaging their resources in developing testing facilities to be able to do this more definitive testing.*

Topic: Hatchling Production Rates

Update 2013-08-16: *We had great success in significantly improving egg and hatchling production rates in the 2012 breeding season, and the 2013 breeding season shows production slightly ahead of last year, so in conjunction with the new pre-release quarantine protocols we anticipate we will be able to significantly increase the number of turtles available for release each year.*

Update 2013-10-15: *As recommended by the Inspection Report, we have completed an experimental trial involving a sample quantity of turtle eggs being left "in situ" as-laid on our artificial beach. Preliminary data suggest that present practices of artificial incubation in our hatchery do not adversely impact hatch rate.*

Topic: Farm Management Improvements

Update 2013-08-16: We have also hired a full-time Farm Manager to ensure we have increased oversight of the day-to-day turtle farming operations. He is from the USA with significant prior experience in aquaculture especially fish farming. He started work here in May 2013.

Update 2013-10-15: There have been several visible improvements in oversight of farming operations in various areas such as feeding protocols, data collection, herd surveillance, and overall herd management.

Topic: Online Database

Update 2013-08-16: We have become members of ISIS - the International Species Information System

<http://www2.isis.org/AboutISIS/Pages/About-ISIS.aspx>

and have begun to use their ZIMS -- Zoological Information Management System

<http://www2.isis.org/products/Pages/default.aspx>

for our "collection" animals i.e. front-of-park aviary, terrestrial, display / touch-tank turtles, fish, sharks as well as specialized cases in the production herd of turtles.

Topic: Turtle Nesting Tours and Hatching Displays

Update 2013-08-16: We have implemented "Night Tours" during two peak months of the turtle nesting season, during which guests are educated on the turtles and are able to observe turtle nesting on our artificial beach.

Update 2013-10-15: As live egg incubation is currently in progress during the latter part of the nesting season, we have had in our Education Centre live displays of hatching eggs and emerging hatchlings that educate visitors first-hand on this phase of the sea turtles' life-cycle. This pursues a recommendation of the Inspection Report regarding "awareness and education."

Topic: Department of Agriculture – Animal Welfare Inspections

Update 2013-10-15: CTF has begun discussion with local authorities (Department of Agriculture) as recommended in the Inspection Report, regarding the development and refinement of routine periodic local inspection protocols for the turtle farm. The inspections will comprise a team of three inspectors, including the Department of Agriculture Animal Welfare Officer and their Veterinarian, plus a CI Animal Welfare Advisory Committee member.

Update 2013-10-15: To facilitate the inspection, "Standards of Practice for Green Sea Turtle farming at the Cayman Turtle Farm" are being reviewed to be consistent with the format and language of SoP's for farming other species.

Topic: Publication of Scientific Paper

Update 2013-10-15: In fulfillment of the "science" recommendation of the Inspection Report, another scientific paper produced in collaboration with CTF has been published recently:

- Title: Threshold to maturity in a long-lived reptile: interactions of age, size, and growth.
- Journal: Mar Biol (2013) 160:607-616 DOI 10.1007/s00227-012-2116-1
- Authors: Karen A. Bjorndal, Joe Parsons, Walter Mustin and Alan B. Bolten
- University collaborated with: University of Florida
- Description: Age and reproduction data of captive green turtles at the Cayman Turtle Farm followed over a 34 year period were used to determine the variation of age and size at sexual maturity. This knowledge is important worldwide for conservation and management of this species.

As can be seen from the foregoing, Cayman Turtle Farm has taken the recommendations of the Inspection Report seriously, we have demonstrated clearly we are taking action in response, and we remain committed to maintaining high standards for our animals and for our guests.



TOP STORIES

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Investigation into Turtle Farm complete

By: **Norma Connolly** | norma@cfp.ky
24 January 2013

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Thousands of green sea turtles are kept at the farm on North West Point Road in West Bay. – Photos: File

An independent report on the standard of care at the Cayman Turtle Farm has found that several turtles have severe skin lesions and some are emaciated, but found no hazards to the health of visitors to the attraction.

The report did not find any evidence of health issues involving people who handle turtles at the farm and highlighted the farm's conservation benefits by supplying a legal source of turtle meat, thus giving an alternative to poaching, according to tourism minister Cline Glidden, who gave a brief summary of the report in Thursday's weekly government press conference.

Four marine conservation and sea turtle specialists – George Balazs, Annette Broderick, Brendan Godley and Thierry Work – carried out inspections at the Turtle Farm in December and have now delivered their findings to the Turtle Farm and the ministry.

"The government is ready to address the issues that have come in regards to what was seen as a very negative PR campaign against the farm," said Mr. Glidden.

He was referring to a widely publicised report by the World Society for the Protection of Animals late last year which stated that the farm was "unable to meet the welfare needs of the animals under its care, a threat to wild turtle conservation efforts, a threat to human health and financially unsustainable".

In response to the WSPA's damning report, the Cayman Turtle Farm initiated the independent investigation.

Mr. Glidden said the four investigators' report contained both positive and negative findings.

The only negative findings Mr. Glidden touched on were the presence of severe lesions on the skin of several of the turtles and that some were found to be "moderately emaciated". "The report concluded that there was no significant issues of concern regarding public facing aspect of the Cayman Turtle Farm," Mr. Glidden said, adding that the findings supported the ongoing conservation and research work of the farm.

The WSPA claimed it found evidence of salmonella and e-coli bacteria in the touch tanks, from which visitors can pick up and hold small turtles.

The minister said the report found the harvesting of turtles at the farm to be "humane".

"The inspection team reinforced the conservation value of the Cayman Turtle Farm providing a legal source of turtle meat," he said.

He added that the investigators had found no congenital deformities among the turtles. The WSPA report included a photograph of a turtle without eyes, which the group said was evidence of congenital deformities among the turtles at the farm.

The inspectors made several recommendations to ensure the "long-term health of the turtles that are such an important part of the heritage of the Cayman Islands", the minister said, adding that the Turtle Farm had already started to take action on some of the issues raised in the report.

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Press Release

Wednesday, 16 January 2013

Cayman Turtle Farm refutes Ecologist film's misinformation

The Cayman Turtle Farm is compelled to respond to misinformation that appeared in a recent short film produced by The Ecologist magazine.

Cayman Turtle Farm Managing Director Tim Adam says the film appears to be heavily based on claims from the World Society for the Protection of Animals (WSPA), an organisation which clearly has a biased agenda against the Cayman Turtle Farm.

Despite being contacted on the last day of a longer visit by the Ecologist film crew, the Cayman Turtle Farm did invite them to film inside the public areas of the park, but they declined the offer – apparently preferring instead to film over the fence.

The Cayman Turtle Farm was also disappointed to see that despite accommodating the film's producer with an extensive telephone interview with the Farm's Managing Director, hardly any of that interview was used. Instead the film crew chose to bias the video with negative comments in the editing process, creating a largely one-dimensional piece.

In its video, The Ecologist discusses that activists have raised concerns about threats to human health and infer that bacteria harmful to humans is transferred when turtles are handled by the public.

Mr Adam refutes this risk, pointing out that "The Cayman Turtle Farm has established turtle handling protocols in place - including supervision and hand-washing, which are communicated to guests through signage and spoken instructions. These protocols follow the US Centers for Disease Control safe reptile handling guidelines. But, clearly, the strongest evidence that handling the turtles at the Cayman Turtle Farm is not harmful to humans is provided by the fact that in over 40 years of operation, with millions of guests visiting the farm and handling the turtles, we have not had one known case of transmission of illness or disease."

The Ecologist film goes on to state that concerns had been raised with regard to the Farm's contribution to turtle conservation, with the video downplaying the Cayman Turtle Farm's turtle release programme and its successes.

"In fact, the Cayman Turtle Farm's release programme is steadily providing on-going evidence of long-term success," Mr Adam confirms. "By providing a sustainable source of turtle meat (the national dish) to Caymanians, where demand is still high, the Cayman Turtle Farm reduces the pressure on wild populations and the Cayman Islands Department of Environment states in the Ecologist video that without this legal source, they would anticipate an increase in illegal take from the wild," he says.

The Cayman Turtle Farm's release programme involves 'Headstarting' the released turtles – which is a process undertaken to breed, tag and then release turtles into the wild, after a period of sustained and intensive health and welfare checks.

Dr. Walter Mustin, Cayman Turtle Farm Chief Research Officer, explains the success of the programme further: "Since 1968 we have released over 31,000 turtles into the wild. Of these 24,747 were tagged, 4,498 with 'living tags' – 4 mm disk plastron-to-carapace autographs – a tagging technique pioneered in 1983 by Professor John Hendrickson and Lupe Hendrickson of the University of Arizona. The return in early January, 2013 of yet another 'living tagged' female, demonstrates that turtles released from the Cayman Turtle Farm are completing their life cycle by successfully nesting on Cayman Beaches," he explains. "Wild reared Green turtles take 20-50 years to reach sexual maturity and while females coming ashore to lay their eggs often return to the same beach at which they were born; this is not always the case. Our tagged turtles may well be nesting in other locations in addition to the Cayman Islands. The return of nesting females, documented by the Cayman Islands Department of Environment, clearly shows the Cayman Turtle Farm's positive contribution to the growth of the local wild nesting population and local divers continue to provide anecdotal evidence of increased numbers of wild turtles seen in Cayman's waters."

The Cayman Turtle Farm has also provided an invaluable research contribution to scientific study on sea turtles, with the Farm's turtle population being the subject of numerous research papers on the biology and behaviour of green sea turtles. Many of these studies have been in collaboration with externally based researchers and academic institutions, and have resulted in over 150 high-quality scholarly publications.

At the end of the Ecologist short film, Dr Neil D'Cruze, Wildlife Campaign Leader for WSPA states that the organisation is willing to work with all relevant stakeholders, including the Cayman Turtle Farm. This is contrary to the actions seen thus far by the WSPA in its campaign against the Cayman Turtle Farm. To achieve its own ends, the WSPA has chosen to mount an antagonistic campaign aimed at undermining the reputation and business of the Cayman Turtle Farm.

The Cayman Turtle Farm voluntarily underwent a thorough independent review of its farming and turtle display operations in December 2012, and in the interests of transparency and continuous improvements of the Farm's operations the company anticipates that the inspection report and recommendations will be available for release by the end of January 2013.

-Ends-

<http://www.compasscayman.com/caycompass/2012/12/11/Editorial-for-11-December--Turtle-Farm-review-welcome/>

Editorial for 11 December: Turtle Farm review welcome

11 December, 2012

It would appear that no matter what moves are made at the Cayman Turtle Farm, the World Society for the Protection of Animals just isn't going to be happy.

Turtle Farm Managing Director Tim Adam and others at the farm should be given kudos for bringing in a team of independent inspectors who are visiting this week.

The investigation comes on the heels of a damning report from WASP that was the result of that group sneaking around, making their own covert investigation at the Turtle Farm.

They claim their investigation found Salmonella and E. Coli contamination in turtle tanks, cruel and inhumane treatment and high mortality rates and some birth defects among the turtle population.

WASP also takes issues with our cultural practice of eating turtle meat.

So we've taken their sensational report and have asked independent investigators to come into the Turtle Farm and do their own studies with an eye to making any necessary improvements at the farm.

But now WASP is crying foul, saying the investigators don't have the welfare of the turtles at heart.

This from a group of people who basically sneaked into the Cayman Islands with an agenda of smearing the good name Cayman.

We will be the first to admit there are problems at the Turtle Farm, but not on the scale as put forth by WASP.

For years the Turtle Farm has been an economic nightmare for the Cayman Islands government, which plans \$10.5 million in its current budget for debt servicing and operations at the Cayman Turtle Farm.

We have long advocated that the farm needs to be privatised and taken out of control of the government.

But the Turtle Farm is a vital part of the Cayman Islands and its history. There is a need for the farm and the continued promotion of turtle conservation, not just for the Cayman Islands, but the world at large. Yet it must be taken out of government's hands.

And to ask Caymanians to stop eating turtle is just plain silly. We wish the independent observers well and look forward to their findings and proposed remedies.

<http://www.caymannewsservice.com/science-and-nature/2012/12/11/cayman-turtle-farm-undergoes-review>

(CNS): An independent review of the Cayman Turtle Farm (CTF) began Monday, following worrying revelations by an animal activist group. A four member team, which includes vets and scientists but no animal welfare experts, will be at the site in West Bay until Wednesday, and their report is expected in January. The aim of the inspection is to determine whether standards of care meet those required to ensure that the operation is conducted in a "humane manner" and examine standards of husbandry. Although the World Society for the Protection of Animals (WSPA) uncovered a number of major concerns at the farm in a report published earlier this year, the animal welfare group has not been invited to take part in this review. The group raised concerns that the team of inspectors may be compromised.

The team includes Dr. Annette Broderick, a Senior Lecturer in Conservation Biology who has worked with the Farm in the past, and Professor Brendan Godley, a marine conservation scientist and qualified vet. Mt. Godley has already conducted a review of the farm in the past, which may be what the WSPA has said could lead to bias.

In addition, the animal rights activists said that the reviewers are planning to compare the practices employed at the CTF with standards of practice in other "domestic livestock production facilities".

However, the WSPA has said that, as green sea turtles are not domesticated animals, comparing their production with standards applied to intensive farmed chickens is inappropriate. It has also raised concerns that the welfare of turtles is not part of the review.

In correspondence with the WSPA recently, Tim Adam, managing director of the turtle farm, said that the inspectors are internationally known sea turtle experts and the farm believes they will conduct a fair inspection.

Mr. Adam said, "It is important for the inspection team to maintain its independence and there would likely be a perception of bias if a representative of WSPA, which has campaigned against the CTF, were added. Indeed none of our staff from the CTF will be on the inspection team, since that also would likely lead to the report being discredited as biased."

Disappointed that it has been excluded from the "independent" review of the Farm and surprised that two of the participants in what is being billed as an "independent" review have close professional ties to the Cayman Turtle Farm, the WSPA said Monday that it had 'severe concerns' that the independence of the review is already compromised and that the welfare of the sea turtles will not be at the heart of this inspection.

"We don't believe this is either in the best interests of the farm or will provide the Caymanian people with the independent assurances they are demanding, that the Farm is managing the turtles properly," the WSPA said in a statement. "However we genuinely hope – in the interests of the turtles – to be proven wrong in this instance and that the farm will proceed with total transparency and move to involve, if not us, another leading world-renowned global animal welfare organisation with the expertise to usefully input in to this assessment."

According to the terms of reference, the inspectors will examine: water quality; stocking densities; treatment and prevention of disease and injury; levels and causes of mortality; levels (if any) of severe injuries; levels (if any) of congenital deformities; handling of animals by guests (including safety of both animals and guests); slaughter methods and practice.

The scientists are also being asked to suggest any reasonable steps by which animal husbandry and care might be improved at the farm and to comment on the contribution the CTF makes to conservation of turtle species. The terms of reference also indicate that the inspection will be made on the 'basis of the standards of practice that would apply to a comparable intensive livestock production' in facilities in the UK or USA.

In his previous review of the old Cayman Turtle Farm site in 2002, Professor Godley had noted some concerns at the farm regarding the feed, diseases and mortality rates, but had stated that the standards were "sufficiently high" to meet CITES requirements.

CNS has contacted the CTF for comment regarding the questions surrounding the independence of the inspectors and the failure to include an animal welfare expert in the team, but is still awaiting a response.

See Prof Godfrey's earlier report below and details of the review team.



CAYMAN TURTLE FARM
ISLAND WILDLIFE ENCOUNTER

Freedom of Information request # 51005

1. Which (if any) Green sea turtle experts will be taking part in the "independent review" of the Cayman Turtle Farm?

The inspection and evaluation team consists of:

Mr. George Balazs is a sea turtle scientist with 40 years of professional experience in Hawaii, the Pacific Islands, and globally. He has published over 100 journal papers on sea turtles. He has been a member of the IUCN Marine Turtle Specialist Group (MTSG) since 1976, and is currently the MTSG Vice-Chair for the Pacific Islands Region.

Dr. Annette Broderick is a Senior Lecturer in Conservation Biology. She has been researching marine turtle populations for over 20 years, with much of her work focusing on the UK Overseas Territories, including the Cayman Islands. She is a member of the IUCN Marine Turtle Specialist Group (MTSG).

Professor Brendan Godley is a marine conservation scientist and qualified veterinarian who has been working on marine turtles around the world for over 20 years. He is a member of the IUCN Marine Turtle Specialist Group (MTSG).

Dr. Thierry Work is a wildlife disease expert with 20 years of professional experience in Hawaii, the Pacific Islands, and globally on diseases of sea turtles. He is a member of the IUCN Marine Turtle Specialist Group (MTSG) and the IUCN wildlife health specialist group (WHSG).

2. Which (if any) cruise line affiliated individuals or organizational bodies are taking part in the "independent review" of the Cayman Turtle Farm?

Participating scientists are doing the inspection as individuals rather than representing groups or particular organizations.

3. Will WSPA or any other animal welfare focused Non-Governmental Organization be able to take part in the "independent review" of the Cayman Turtle Farm?

The WSPA or other animal welfare Non-Governmental Organizations have not been invited to take part in the "independent review" of the Cayman Turtle Farm.

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THE CAYMAN TURTLE FARM

A case for change



WSPA World Society
for the Protection
of Animals

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The World Society for the Protection of Animals

The World Society for the Protection of Animals (WSPA) seeks to create a world where animal welfare matters and animal cruelty has ended. To achieve this vision we work directly with animals and with the people and organisations that can ensure animals are treated with respect and compassion.

We campaign effectively to combat the world's most intense and large-scale animal suffering, bringing about lasting change by:

- helping people understand the critical importance of good animal welfare
- encouraging nations to commit to animal-friendly practices
- building the scientific case for the better treatment of animals
- encouraging a worldwide movement towards better animal welfare.

Locally, we improve animals' lives and prevent cruelty by working directly with communities and owners. Working on the ground with local partners for greatest effect, we are active in more than 50 countries.

Globally, we introduce animals into the most pressing debates and prove the links between animal welfare and successful sustainable development. We have consultative status at the Council of Europe and special consultative status with the United Nations: we collaborate with national governments and global bodies including the World Organisation for Animal Health (OIE).

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Written by Dr Neil D'Cruze, WSPA

With original research by:

Dr Phillip Arena, Murdoch University

Dr Adam Dutton, WildCRU, University of Oxford

Ms Catrina Steedman, Emergent Disease Foundation

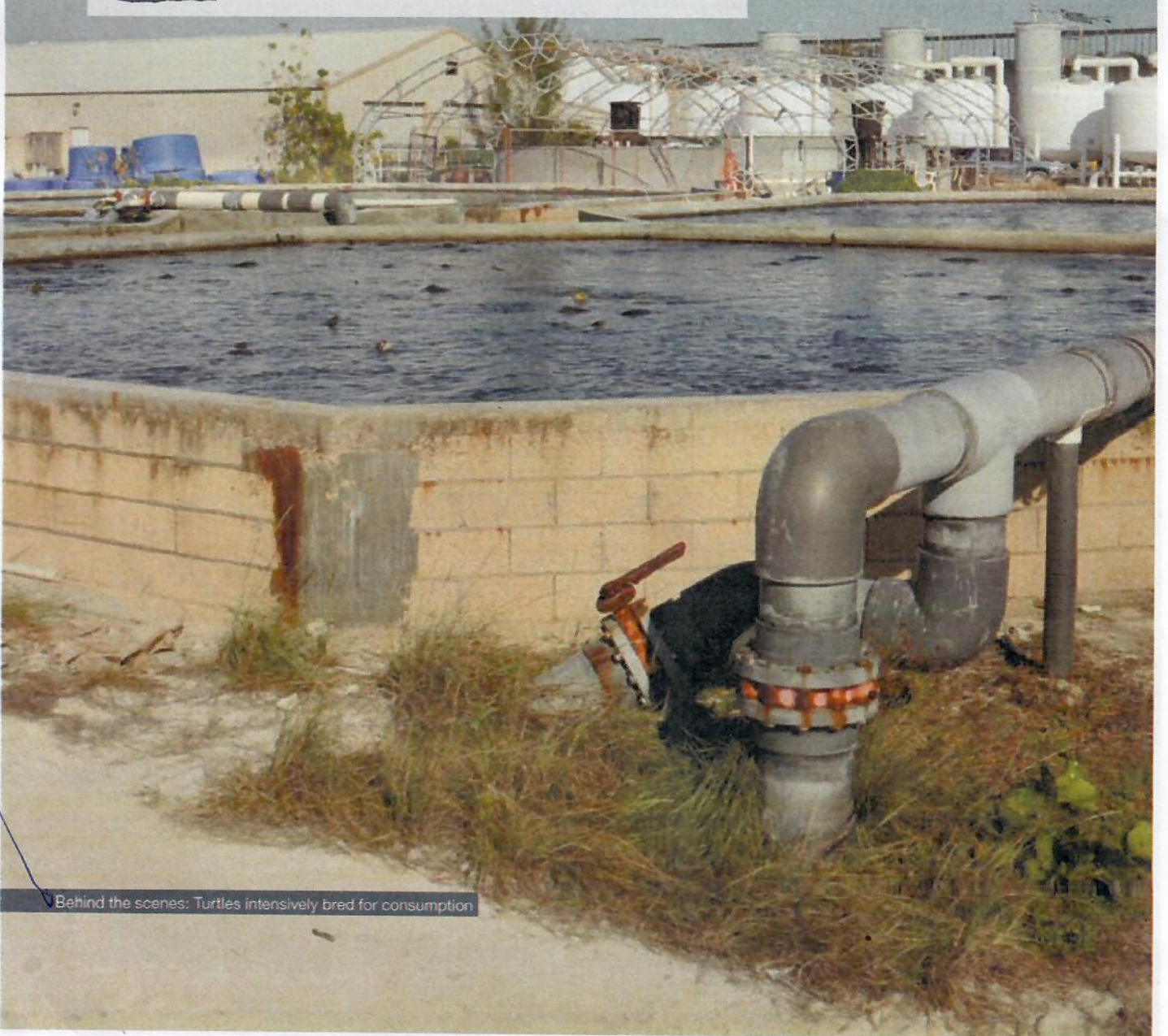
Mr Clifford Warwick, Emergent Disease Foundation

Executive summary

This document explores the serious concerns that result from the commercial production of green turtles for human consumption at the Cayman Turtle Farm. WSPA has conducted a detailed assessment and has concluded that under its current operational model the farm is:

1. Unable to meet the welfare needs of the animals under its care
2. A threat to wild turtle conservation efforts
3. A threat to human health
4. Financially unsustainable.

In summary, WSPA provides evidence for why the farm should look to end the commercial production of green turtles and briefly outlines how the facility can make the transition to humane, effective, safe and sustainable alternative practices.



Behind the scenes: Turtles intensively bred for consumption

Background: The Cayman Turtle Farm

For centuries wild sea turtles have been harvested to satisfy the human demand for meat and decorative objects (Frazier, 2003). A species which continues to be of particular commercial interest is the green turtle (*Chelonia mydas*) (Campbell, 2003). Despite a dramatic fall in wild populations, this species has remained a significant feature of Caymanian culture (Aiken et al., 2001); turtle stew is the national dish and native Caymanians demand for it continues (Bell et al., 2005).

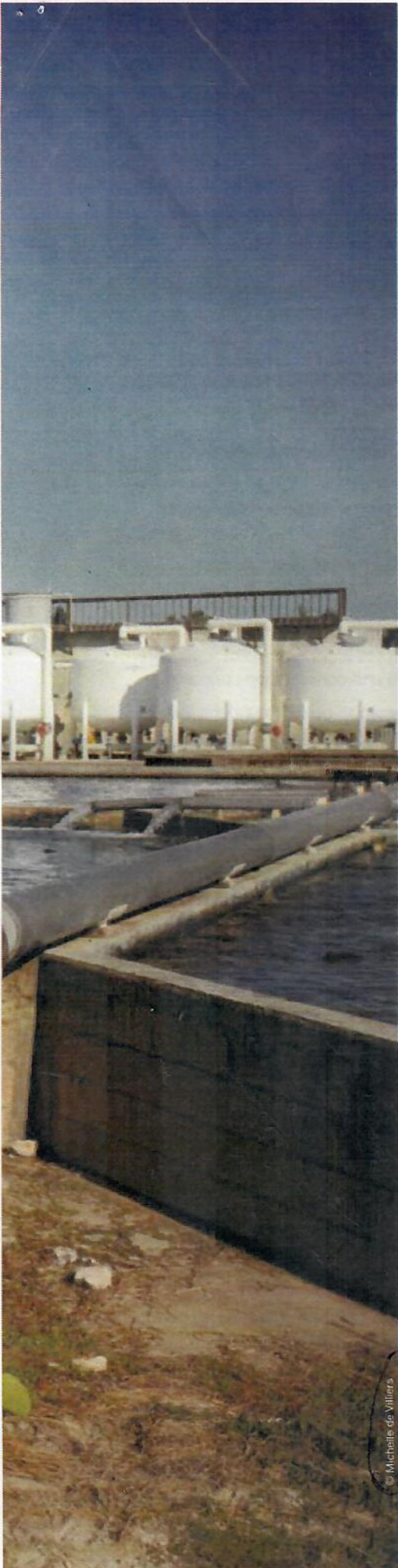
The Cayman Turtle Farm (CTF) was created in 1968 as a commercial venture, originally known as 'Mariculture Ltd'. The founding stock was taken from Ascension Island, Costa Rica, Guyana and Suriname over a 10-year period (Bell et al., 2005). In total, more than 477,000 eggs were collected along with 60 adults (Bell et al., 2005). Later more adults were collected from Mexico and Caymanian fishing vessels (Bell et al., 2005). By 1975 the farm was able to demonstrate that it could breed new eggs, hatch them and rear a turtle to maturity (Bell et al., 2005).

The farm has been owned by the Caymanian government since 1983 (Morriss, 2006). When Hurricane Michelle damaged the original turtle farm in 2001 the decision was made to create a new site, renamed 'Boatswain's Beach' (rebranded as the 'Cayman Turtle Farm' in May 2010) (CTF, 2011). At this stage, the farm was already a tourist attraction and the site move aimed to increase numbers of foreign visitors. The Boatswain's Beach site – still in use today – included a concrete lagoon in which visitors could swim, costing an estimated US\$150 million (Morriss, 2006).

However, the mission statement of the farm clearly states that its tourism agenda is matched by a desire to promote conservation (CTF, 2012). There is a widely-held belief amongst both specialists and the public (expressed in numerous newspaper articles) that the farm is able to protect the remaining local wild turtle populations by: (1) providing an alternative and sustainable source of turtle meat for the Caymanian population (Brammer, 2011; Schabbing, 2012); and (2) by boosting the wild population through the release of captive-bred animals into the wild (Fosdick & Fosdick, 1994; Brammer, 2011; Schabbing, 2012).



Entrance to the Cayman Turtle Farm



© Michelle de Villiers



Major concerns

The introduction of commercial production methods (e.g. farming and ranching) in an attempt to sustainably meet human demand for turtle meat continues to generate controversy with regards to its impact on both turtle welfare and conservation. In addition, WSPA received reports from our supporters regarding welfare conditions at the Cayman Turtle Farm throughout 2011.

Concerned for turtle welfare, WSPA undertook a detailed investigation. To gain a full appreciation of the current situation, WSPA:

1. Conducted research visits to the farm, observing, recording and collecting evidence of the conditions
2. Sought expert independent veterinary advice based on photographic evidence obtained at the farm
3. Interviewed key stakeholders to establish the range of views on the farm's activities
4. Conducted expert animal welfare-based desk-top research
5. Commissioned independent research polls looking at North American and Caymanian attitudes to the welfare and conservation concerns
6. Conducted focus groups with the Caymanian public to understand attitudes regarding turtle meat consumption.

As a result of this investigation WSPA has concluded that the Cayman Turtle Farm represents a major source of concern from an animal welfare perspective. In addition, WSPA has significant reason to believe that the farm is failing with regards to core aspects of its mission statement (specifically the promotion of turtle conservation and tourism) and may even represent a severe threat to human health. The findings of this investigation and WSPA's main areas of concern are presented in this document.

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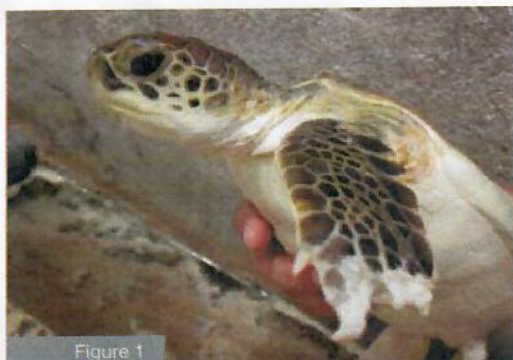


Figure 1
Cannibalism can be observed throughout the farm



Figure 2
Cannibalism caused by intensive farming conditions can result in gross flipper loss



Figure 3
Chronic dermatitis - at least one patch appears to be grey patch disease



Figure 4
Captivity stress can result in maladaptive behaviours such as surface congregation

Threats to welfare

Animal welfare is a scientific discipline which incorporates applied aspects of ethology, bioethics and the concepts of suffering and wellbeing (World Veterinary Association, 2000). Welfare, including health, has many aspects and is measured by both the physical and psychological state of an animal (Webster, 2003).

Protecting the welfare of animals involves the prevention of unnecessary suffering and ensuring a good quality of life and a humane death (Brakes et al., 2004). Evidence suggests that the Cayman Turtle Farm is currently failing to meet these baseline welfare criteria.

Particular husbandry practices that represent major animal welfare concerns for the estimated 5,000 turtles currently held in captivity at the farm are listed and summarised below.

VS

Cannibalism (Figs.1, 2): Green turtles with severe wounds and injuries (including massive flipper trauma such as digit and even gross flipper loss) can be observed throughout the farm. The lesions and diseases associated with these observations are directly related to co-occupant aggression and cannibalism (Frederic Frye, pers. comms., 2011). These traits are known to occur under unsuitable captive conditions (Higgins, 2003). In the wild many potentially injurious scenarios would be significantly limited or prevented altogether by avoidance behaviour (Frederic Frye, pers. comms., 2011). Our research indicates that inadequate captive conditions and severe captive mismanagement are responsible for these injuries.

Disease (Fig. 3): Various diseases have been observed at the farm since its formation including chlamydiosis, grey patch disease, fibropapillomatosis and lung-eye-trachea disease (Haines et al., 1974; Homer et al., 1994; Godley, 2002). The high stress loads, sub-optimal welfare conditions and poor water hygiene associated with commercial farming were thought to be responsible (Haines et al., 1974). Grey patch disease was noted to be prevalent throughout the farm in a recent pathologist assessment (Frederic Frye, pers. comms., 2011). Consequently, it appears that despite abundant evidence of disease at the farm, little has been done to stem its source or spread.

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Captivity stress (Fig. 4): Overt behavioural signs of maladaptive captivity stress can be observed throughout the farm in turtles of varying ages and developmental stages. Overly restrictive, deficient and inappropriate environments are likely to be responsible for the following observed behaviours: (1) hyperactivity; (2) rapid body movements; (3) boundary exploration; (4) surface congregation; and (5) frenzied feeding (Warwick, 2004; Warwick et al., 2011a). The strong presence of these maladaptive captivity-stress-related behaviours confirms that the ethological needs of these animals are not being met.

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Figure 5
Many enclosures are not cleaned regularly, leaving food and faeces in the water



Figure 6
Green turtles are fed an artificial diet of fish food pellets which can negatively affect their welfare



Figure 7
Unsupervised handling is a stressful and potentially dangerous experience for the turtles



Figure 8
Congenital defects observed at the farm include one or both eyes missing

Water quality (Fig. 5): The responsible husbandry of green turtles requires substantial amounts of good quality water; this is fundamental to their welfare (Higgins, 2003). It is clear that many of the water-bearing enclosures at the farm are not cleaned regularly, leaving uneaten food and voided faeces that quickly contaminate the living environment. The result is a foul mix of water, debris and pathogenic microorganisms including bacteria and viruses that pose a significant threat to turtle welfare (Frederic Frye, pers. comms., 2011).

Diet (Fig. 6): Green turtles at the farm are fed an artificial diet composed entirely of fish food pellets, contrasting starkly with their natural adult diet of sea grass. This species shows a distinct shift from being an omnivore as a juvenile to a strict herbivore as an adult (Russell & Balazs, 2009). Currently, the full nutritional value and appropriateness of this artificial diet is not known. However, maintaining herbivorous species on a primarily animal protein diet is likely to impact negatively on their digestive physiology and welfare, as well as their resistance to disease (Frye, 2004).

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Handling (Fig. 7): The farm allows the arbitrary and often unsupervised handling of individual turtles by members of the public. Visitors of all ages can remove turtles (of all manageable sizes) from their respective enclosures in order to pose either for photographs or novelty purposes. This type of practice elicits a severe stress response in these wild animals which can damage their immune system in the long term (Warwick et al., 2011a). Furthermore this practice can lead to significant injury, especially if the inexperienced handler should drop the struggling animal (Warwick et al., 2011b).

Birth defects (Fig. 8): Green turtles with congenital defects are present throughout the farm. Many of these individuals exhibit anophthalmia (absence of one or both eyes) with marked skeletal deformities (Warwick et al., 2011b). In the wild, these deformities would most likely have resulted in early natural mortality (Warwick et al., 2011b). In the farm, their blindness renders them even more susceptible to injury and disease as a result of their reduced ability to feed and avoid co-occupant aggression.



Figure 9
A Kemp's ridley turtle with deep and extensive flipper damage

Neglect (Fig. 9): The extremely poor health and welfare of two additional critically endangered sea turtle species is a grave concern. Despite their high profile conservation status, the farm is currently keeping a number of Kemp's ridley sea turtles (*Lepidochelys kempii*) and hawksbill turtles (*Eretmochelys imbricata*) as 'back up' breeding stock. One Kemp's ridley turtle was observed with such deep and extensive damage to its flipper (a suspected cannibalism injury) that the superficial dorsal forelimb muscles were exposed. The fact that these turtles have been subjected to such neglect delivers a disturbing message about the approach of the farm to any animal in its care.

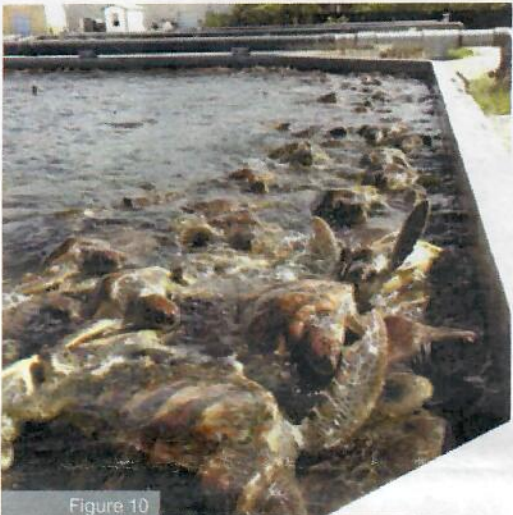


Figure 10
Overcrowding is a major welfare problem at the farm

Overcrowding (Figs. 10, 11): Overcrowding is a major problem at the farm. In many enclosures this is immediately apparent or 'overt' as there are simply too many turtles trying to occupy the same physical space at the same time (Warwick et al., 2011a; Warwick et al., 2011b). However, turtles in the remaining enclosures may be exposed to 'covert' overcrowding (Warwick et al., 2011a; Warwick et al., 2011b) as (despite their spacious appearance) their enclosures do not provide the space required to express their natural behaviour. Both 'overt' and 'covert' overcrowding can lead to disease via increased captivity stress and/or extreme physical injury via cannibalism (Higgins, 2003).

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Slaughter: As part of the meat production process turtles are slaughtered at the farm. After a single shot from a captive-bolt pistol the spinal cord and major blood vessels are severed and the animal is left to exsanguinate (bleed out) (Godley, 2002). The evidence and associated presumptions that the slaughter process is humane (Godley, 2002) are not unreasonable. However, based on the available descriptions, in our view the evidence is not conclusive, and more detailed observations (particularly of possible consciousness 'post-slaughter') are urgently needed.



Figure 11
Overcrowding can lead to co-occupant aggression which can result in painful sores and lesions

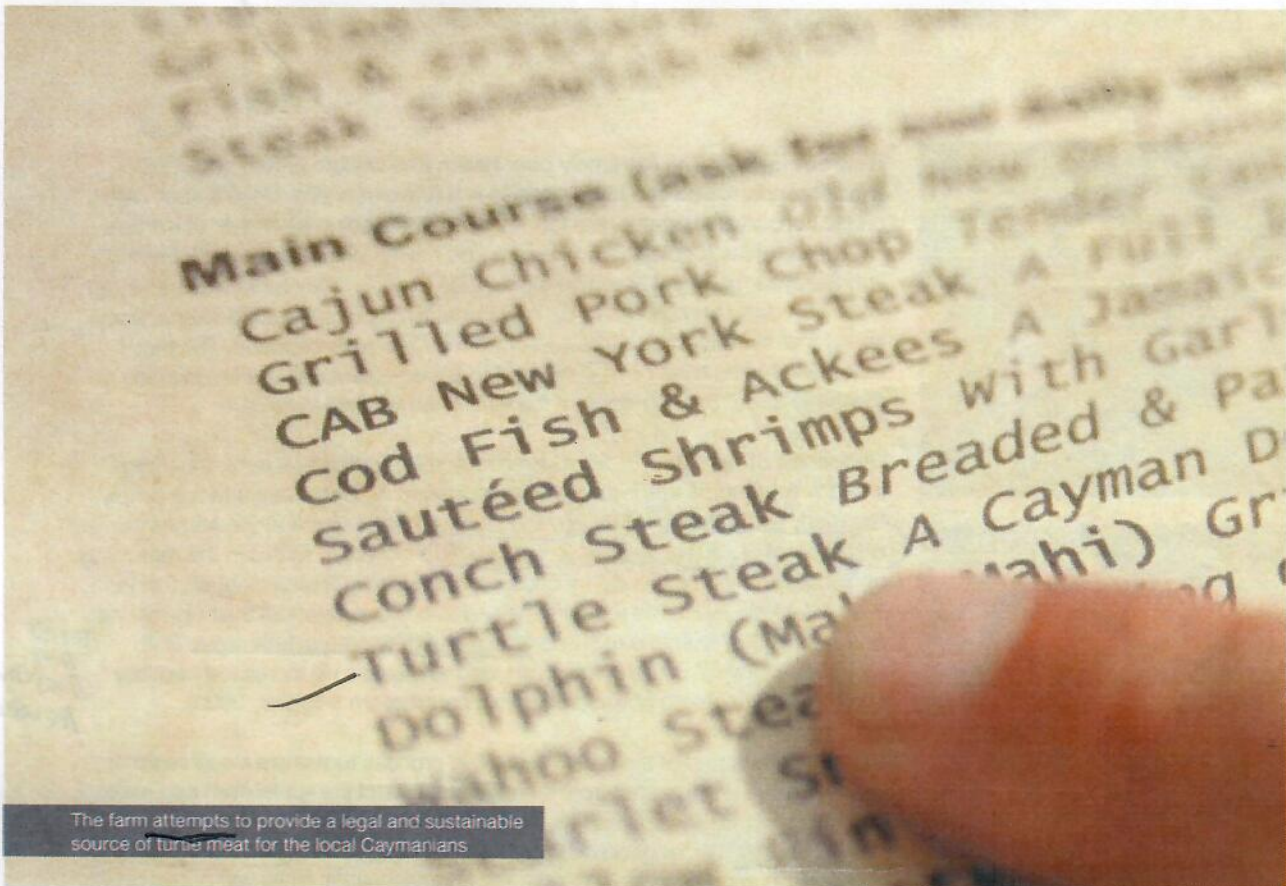
Status as a non-domestic species: It has been argued that turtle farming is no different from farming any other animal for human consumption (Godley, 2002). However, unlike mammalian and avian livestock, sea turtles have never been domesticated. Consequently, they retain strong innate drive states evolved within a naturally diverse oceanic environment and lack particular pre-adaptive traits that lend themselves to sharing an environment with humans (Higgins, 2003). It is clear that the farm is unable to meet the highly specialised physiological, behavioural and nutritional requirements of these wild animals.

LA Alligators - Fresh water turtles

In summary

The welfare of captive animals is dependent on their keepers' actions and knowledge. Where their captors intentionally confine and exploit these animals it is arguably especially onerous on those responsible for their husbandry to provide particularly considerate care.

In our view, major systematic flaws exist at the farm in both the theoretical and applied knowledge of sea turtle biology and husbandry, as well as veterinary management and the related issue of prevention and control of animal welfare problems – whether concerning mortality or physiological and behavioural health.



Failure of conservation mandate

Conservation biology is the scientific study of the nature and status of Earth's biodiversity with the aim of protecting species, their habitats and ecosystems from excessive rates of extinction (Sahney & Benton, 2008).

The farm believes that it is able to protect the remaining local wild turtle populations by: (1) providing an alternative and sustainable source of turtle meat for the Caymanian population; and (2) restocking wild populations via wild release (also known as 'headstarting') (Fosdick & Fosdick, 1994; Bell et al., 2005; CTF, 2011).

However, it is difficult to consider any single threat or solution to biodiversity loss in isolation. A thorough assessment of the situation indicates that the farm's contribution to conservation efforts may be negligible or even detrimental to wild turtle populations.

WSPA commissioned an independent piece of research by an academic based at the University of Oxford. This research included socio-economic interviews with local Caymanians and international tourists. Particular aspects of the findings that represent areas of concern are listed below.

While we cannot rule out the possibility that the farm relieves some pressure on wild stocks, there are significant reasons to believe it does not

Consumer-based evidence suggests that local Caymanians prefer wild turtle meat to farmed meat. This may be a problem that cannot be overcome – if consumers prefer illegal wild meat then it is reasonable to assume that they may be willing to pay large amounts for it or poach animals from the wild themselves when they desire it (Dutton et al., 2011).

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Consumer-based evidence also suggests that in relation to other forms of protein the farmed turtle meat is very expensive for local Caymanians and is becoming increasingly more so (CayCompass, 2010; Cayman News Service, 2010a). The high cost of farmed wildlife products can damage its competitiveness and may mean that its sale is having far less impact on poaching than many people may assume (CayCompass, 2010; Dutton et al., 2011).

Recent production trends appear to suggest that there have already been significant reductions in per capita consumption of farmed turtle meat on the island (Cayman News Service, 2010b). In the past demand was significantly higher within a much smaller human population. If the recent reduction has not led to a significant increase in poaching then it is reasonable to assume that a gradual movement to no production might equally have little impact.

The demand for wild turtle meat means an incentive exists to take turtles illegally from the wild (CayCompass, 2010). Where this desire exists it seems reasonable to assert that it is not the farm which is preventing illegal poaching but the fear of capture or perhaps moral imperative; more research is needed to establish the current risk to reward ratio of poaching.

It is certain that poaching continues in the Cayman Islands (Connolly, 2011; CayCompass, 2011). However, currently there is no systematic effort to measure and monitor it over time. Without this type of information it is impossible to assess what impact the farm is actually making on green turtle conservation efforts in the Cayman Islands.

Releasing turtles into the wild is at best one part of a solution to the problems they face and is therefore likely to be an ineffective use of funds

The Cayman Turtle Farm is the only large-scale turtle farm in existence. For many years the farm has released captive-bred turtles into the wild (Wood & Wood, 1993; Bell et al., 2005). Recent studies indicate that these turtles have survived and are making an as yet undetermined and unassessed contribution to reproductive populations in the Cayman Islands (Bell et al., 2005; Bell, et al., 2007).

Despite this limited success, many conservationists have criticised 'headstarting' projects such as this one because without dealing with the reasons for the initial decline they can have no lasting impact (Mortimer, 1995). Marine turtle populations face a range of threats to their survival including by-catch, marine debris, habitat destruction and climate change (Lutcavage et al., 1997). Although predation by humans for consumption is a threat, it is by no means the only threat. Consequently, it can be argued that the farm is treating the symptoms of the problem rather than the cause.

Releasing turtles into the wild may be having a negative impact on wild turtle populations due to the transmission of disease

Releasing captive animals from farms carries the risk of transmitting diseases to wild populations (Bell et al., 2005). In Atlantic salmon (*Salmo salar*) farms, the genetic and parasitic contamination of wild salmon populations (Salmonidae) by farmed populations is thought by many to be driving severe population declines (Flemming et al., 2000; Heuch & Mo, 2001; Krkošek et al., 2007).

The intensive breeding in the Cayman Turtle Farm is already known to enhance the transmission of contagious infectious agents (Herbst & Jacobson, 2003) and has led to the development of hitherto unseen diseases in the turtles (Jacobson et al., 1986). It is reasonable to assume that the sub-standard captive conditions (including low quality artificial diets and overcrowded and unclean housing) mean that this restocking program has the potential to introduce an increased disease and parasite burden into otherwise healthy natural populations.

40 years

In summary

We do not doubt that the farm genuinely believes its actions are positively contributing to green turtle conservation efforts in the Cayman Islands. However, a detailed and impartial appraisal of the situation has highlighted that a great deal of uncertainty exists around the assumption that the actions are having the desired effect. Consequently, the true impact of the farm's conservation efforts remains at best unclear.

It is apparent that more detailed research is required to investigate many of the aspects causing uncertainty. However, in the interim, it is WSPA's view that given the poor welfare standards and husbandry practices at the farm it is reasonable to assume that this restocking program has the potential to cause significant harm to existing wild green turtle populations.

Releasing turtles may be having a negative impact on wild turtle populations due to the transmission of diseases such as grey patch disease



Risks to human health

The published literature indicates that human contact with sea turtles and the consumption of sea turtle products can present a threat to human health via a variety of pathogenic sources (Acuna et al., 1999; Aguirre et al., 2006; Moore et al., 2008; Magnino et al., 2009; Senko et al., 2010).

Implications for human health associated with the handling of farmed and wild-caught sea turtles or consuming turtle products (e.g. meat, eggs and organs) fall into one of three broad categories: (1) microbiological threats, (bacteria, viruses, parasites and fungi); (2) macrobiological threats (macro and megaparasites); and (3) organic and inorganic toxic contaminants (biotoxins, organochlorines, and heavy metals) (Acuna et al., 1999; Aguirre et al., 2006; Moore et al., 2008; Magnino et al., 2009; Senko et al., 2010).

Following our investigation, the results of our commissioned research and subsequent expert consultation, WSPA believes that the Cayman Turtle Farm represents a potential threat to human health. The practices that represent significant human health concerns for tourists and the wider public are summarised below.

Inappropriate captive conditions: It is important to note that, for healthy humans, the risk of infection from wild turtles is relatively low for many pathogens (Warwick et al., 2011c); as such wild turtles should not be automatically viewed as 'unclean'. However, studies focused on other species (e.g. Atlantic salmon) have shown that contaminants in farmed individuals can be much higher than their wild counterparts (Hites et al., 2004). Arguably the farm represents a higher risk of human infection due the fact that: (1) a large number of turtles are kept in intensive confined aquatic conditions; and (2) poor husbandry and the stressful environment can lower their ability to cope with disease (Arena et al., 2011). In combination, these factors can result in an increased presence of potential pathogens and a heightened threat to human health (Warwick et al., 2011c).

Unclean water: The potential threat that captive conditions at the farm may pose to human health is demonstrated by the documented presence of microbial pathogens in a number of different sea turtle enclosures. As part of our investigation we sent water samples (taken from public areas of the farm) for screening at a veterinary diagnostic laboratory. The results tested positive for the following microbiological threats:

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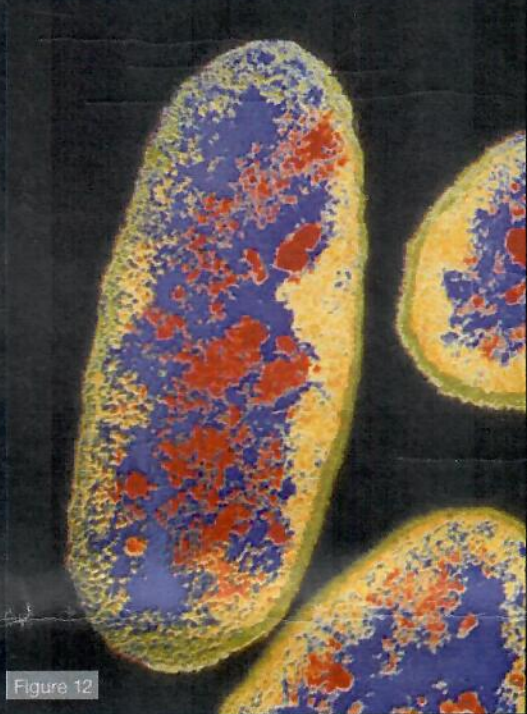


Figure 12

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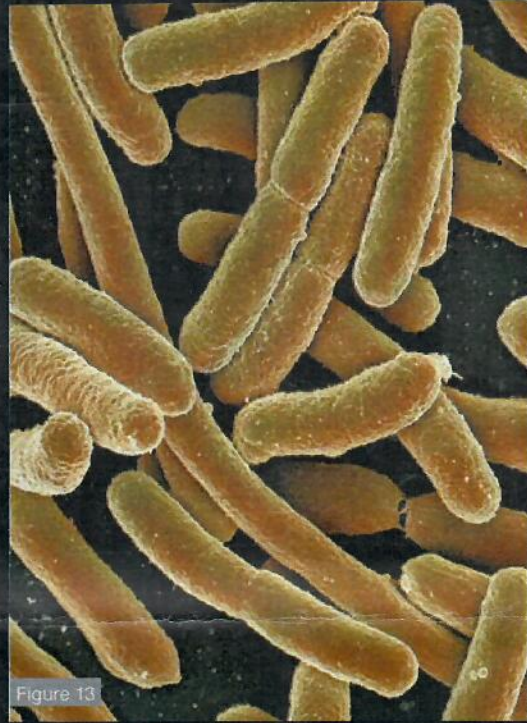


Figure 13

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Figure 14

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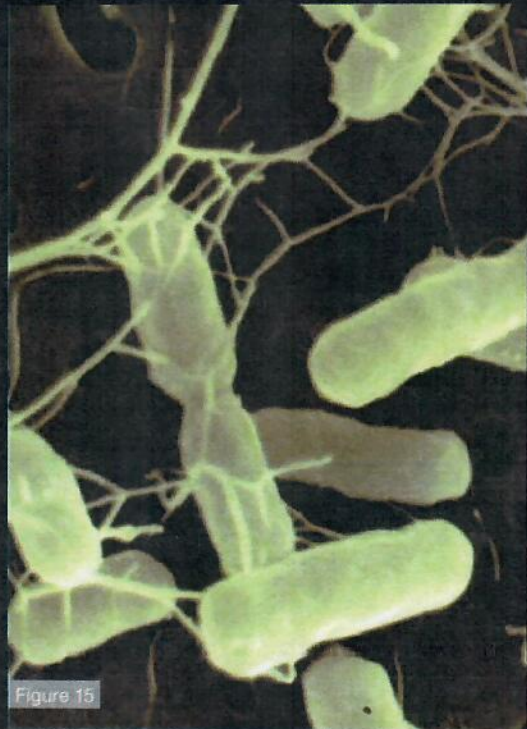


Figure 15

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1. *Aeromonas* spp. (Fig. 12) There are few gram-negative bacteria that rival the genus *Aeromonas* in the scope and breadth of human infections that they can cause (Janda & Abbott, 2010). Only two *Aeromonas* infections in humans (gastroenteritis and wound infections) clearly predominate in healthy people (Janda & Abbott 2010). However, for those with underlying illnesses, Aeromonads are responsible for myriad intestinal and extraintestinal diseases and syndromes, ranging from relatively mild illnesses such as acute gastroenteritis and diarrhoea to life-threatening conditions, including septicemia, pneumonia, and myonecrosis (Janda & Abbott, 2010).
2. *Escherichia coli*. (Fig. 13) *E. coli* bacteria contribute to the normal intestinal flora in humans and animals, but they are also responsible for serious pathogenic infections (Lightfoot, 2003). *E. coli* is a common cause of food poisoning and gastroenteritis (NCEZID, 2011). The symptoms include bloody diarrhoea, elevated temperature, chills, vomiting and stomach cramping (NHS, 2011; Lightfoot, 2003). The severity of illness caused by *E. coli* depends on the strain, with some causing serious illness (NCEZID, 2011). Individuals of all ages can become infected by *E. coli*, although young children, the elderly and those with a compromised immune system are more likely to develop severe illness (NCEZID, 2011).
3. *Vibrio* spp. (Fig. 14) *Vibrios* are a group of bacteria most commonly found in marine or estuarine environments, many of which are considered as human pathogens (Hogan, 2010). While immunosuppressed individuals are most susceptible to *Vibrio* infections, these bacteria are capable of harming anyone (Gopal et al., 2005). Most disease-causing strains are associated with gastroenteritis, but can also infect open wounds and cause septicemia (Oliver, 2005). Infection can be fatal: one study stated that *V. vulnificus* was responsible for approximately 95 per cent of seafood-related deaths in the US (Oliver, 1989). Another potentially fatal disease caused by the *Vibrio* species is cholera, which results in intestinal symptoms such as diarrhoea and vomiting (Sarkar et al., 2005).
4. *Salmonella*. (Fig. 15) *Salmonellosis* is one of the most common and widely distributed foodborne diseases (Hardy, 2004). Millions of human cases are reported worldwide every year and the disease results in thousands of deaths (World Health Organization [WHO], 2005). In addition to acquiring infection from contaminated food, human cases have also occurred where individuals have had contact with infected animals (WHO, 2005). *Salmonella* species can cause diseases ranging from gastroenteritis to typhoid fever (Deng et al., 2003). The symptoms of infection usually appear 12–72 hours after infection and include fever, abdominal pain, diarrhoea, nausea and vomiting (Deng et al., 2003). The very young and the elderly are particularly at risk of infection (WHO, 2005).

Handling captive turtles: Visitors have access to several enclosures and are permitted (often without close supervision) to hold sea turtles (CTF, 2011; Warwick et al., 2011b). Independent water sampling revealed the presence of pathogenic bacterium (*Aeromonas*, *E. coli*, *Vibrio* and *Salmonella*) in the farm's sea turtle 'touch tanks'. Given the shared water facilities it is entirely reasonable to assume that bacterial agents present in any enclosure are also likely to be widely present throughout the rest of the farm (Warwick et al., 2011c). Currently, the farm fails to provide the visiting public with any information regarding the existence of such threats or any sanitising products to reduce the risk of human infection (Warwick et al., 2011c).

STAFF

Consuming captive turtle meat: Currently, the farm sells captive-bred turtle meat to the public and local restaurants on Grand Cayman. Independent sampling revealed the presence of pathogenic bacterium *Salmonella* at the farm which is one of the most common and widely distributed foodborne diseases (Hardy, 2004). A formal animal health inspection procedure for reptile farms and slaughterhouses is considered crucial for controlling public health hazards (Magnino et al., 2009). However, currently it is unclear whether the farm conducts any detailed veterinary verification of animal health prior to consumption (Warwick et al., 2011c).

In summary

For healthy humans, the risk of infection from wild turtles is relatively low for many pathogens (Warwick et al., 2011c). However, intensive captive conditions at the farm can result in an increased presence of potential pathogens – as evidenced by our water sampling – and a heightening of the associated threat to human health (Warwick et al., 2011c).


The potential threat that the farm poses to human health is demonstrated by the documented presence of microbial pathogens (*Aeromonas*, *E. coli*, *Vibrio* and *Salmonella*) in a number of different sea turtle enclosures.

Currently, the farm fails to provide the visiting public with any information regarding the existence of such

threats or any sanitising products to reduce the risk of human infection following contact (Warwick et al., 2011c). Furthermore, currently it is unclear whether the farm conducts any detailed veterinary verification of animal health prior to consumption (Warwick et al., 2011c).

Given the fact that many turtle-associated human diseases symptomatically resemble more common conditions (e.g. gastrointestinal disorders, norovirus and influenza) it is possible that the farm represents a currently undetected yet significant threat to human health (Warwick et al., 2011c). This threat would not necessarily be confined to the island due to the thousands of cruise liner based day-trippers that visit the farm annually.





Despite large-scale funding certain areas of the farm are in a poor state of repair

Overview of income generation through tourism

When first established, despite the controversy which ensued, the farm's primary source of income focused upon the international trade of turtle products (such as carved trinkets and turtle meat) (Fosdick & Fosdick 1994). However, this route to profitability was finally made impossible in 1984 when CITES ruled against the trade in sea turtles and associated products from the island (Godley, 2002).

Consequently the farm was forced to search for alternative forms of income to cover its operational costs. The economy of the Cayman Islands is highly reliant on its 'twin pillars of economic development' – tourism and international finance (BEEA, 2011). Together they represent 70–80 per cent of the country's gross domestic product (GDP) (BEEA, 2011). Therefore, in addition to the national trade in turtle meat, income generation via tourism was a logical alternative to international trade.

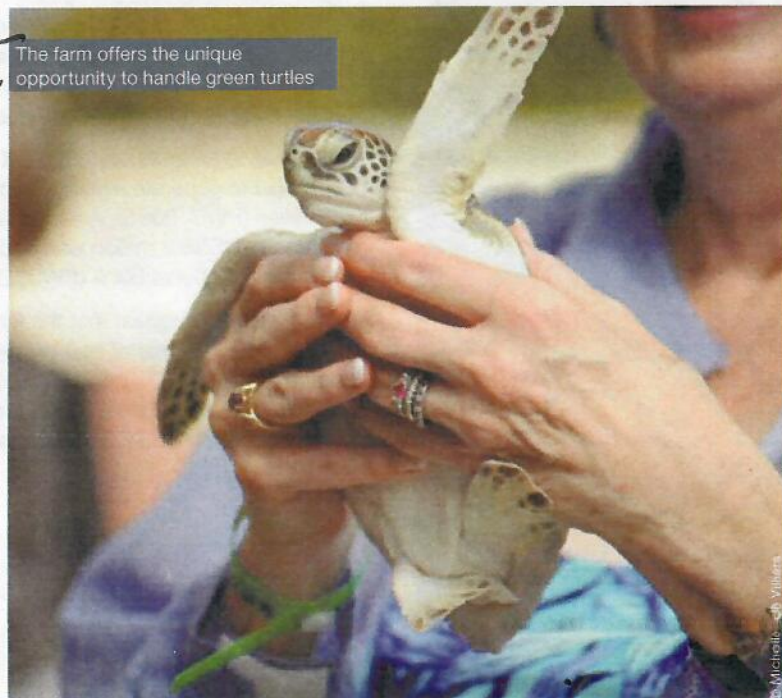
Today, the farm clearly affirms in its mission statement that its primary function is to help generate income through tourism (CTF, 2011). It is often referred to as 'the premier tourism attraction' on the island and is generally viewed as a vital source of employment and income (CTF, 2012; Ross, 1999). However, in contrast to this purported image, over the last few decades the farm's own financial reporting suggest that it has consistently represented a significant drain on the Cayman Island economy:

- From 2001–2004 the farm underwent a major tourism-focused redevelopment into 'Boatswain's Beach' at a cost of approximately US\$47.5 million. Complications and excessive fees related to securing loans to fund this project have remained an ongoing source of discussion on the island (Duguay, 2007; 2009).
- In late 2004 Hurricane Ivan caused extensive damage to the farm and contributed to its existing financial difficulties through loss of assets and earnings (PWC, 2006). In response the farm received insurance compensation of approximately KYD 1.8 million. KYD 336,000 remained outstanding at the auditors balance sheet date (PWC, 2006).
- According to an independent audit performed in 2006, the farm continued to generate significant losses and experienced cash flow difficulties (PWC, 2006). As a result government financial support to the tune of US\$8.8 million was sought and obtained via a loan from the Caymanian National Bank (PWC, 2006).
- Recent reports suggest that the farm remains heavily in debt with total long-term borrowings of approximately US\$55.6 million (balances quoted as of June 2010 [Harrison, 2010]). Furthermore, due to the ongoing operational losses the farm also possesses an overdraft facility of approximately US\$5.6 million (secured by a government guarantee [Harrison, 2010]).

Despite its apparent financial difficulties, the farm continues to attract approximately 500,000 international visitors per year (CTF, 2011). This is thought to equate to roughly one third of all visitors to the island (Cayman Island Chamber of Commerce, 2003). However, a WSPA-funded public attitude survey (focused on a general population sample of US and Canadian residents who intend to visit the Caribbean in the next five years [n =1,436]) undertaken in late 2011 indicates that the current animal welfare conditions have the potential to pile more misery onto the farms existing economic woes.

The top line results of this survey of US and Canadian travellers are summarised below:

- Travellers have a substantial interest in visiting facilities that provide a 'marine animal encounter', but this is strongly linked to their interest in animals and supporting institutions that protect their welfare.
- Travellers have far less interest in eating sea turtle meat with less than one in five indicating any likelihood to do so and only one in 20 revealing some strong propensity. Approximately two in five linked their reluctance to issues related to the treatment of sea turtles and their endangered status.
- Nine in 10 travellers would be unlikely to buy a ticket to an activity if they discovered that the animals were being mistreated. This is of even greater concern for travellers than the fair treatment of human labour or the high cost of these events.
- If the reputation for the mistreatment of animals expanded to include an entire facility or area, then the deterrent is similar: four in five travellers would either definitely not travel there or their likelihood to do so would substantially decrease.
- There is a fairly universal willingness to pay a surcharge for an attraction that seeks to improve its condition for captive animals: more than nine in 10 respondents would be likely to pay US\$2 and more than eight in 10 would pay US\$4.



The farm is often referred to as 'the premier tourism attraction' on the island



In summary

According to its original business model, the farm was designed to generate the majority of its income through the international sale of turtle associated products. When CITES ruled against this trade, making it illegal, the farm was forced to search for an alternative way to cover its running costs.

Although international tourism appears to be a logical choice it is apparent that this income source has failed to resolve the farm's economic difficulties.

The farm has continued to generate significant losses and represents a significant drain on the island's economy.

Furthermore, a traveller-focused opinion poll demonstrates that the current poor welfare conditions at the farm have the potential to cause further economic damage to both the farm itself and the wider Cayman Islands tourist industry.

*ALL
Economic*



The humane solution

Replacing a defunct initiative

Historical evidence suggests that commercial sea turtle production initiatives are not viable. The Cayman Turtle Farm is the only large-scale turtle farm in existence. Two other formal attempts at commercially producing sea turtles have included a series of community-based ranches on the Torres Strait Islands in Australia and the Corail Farm on Réunion Island (Ross, 1999).

On the Torres Strait Islands, attempts at raising hatchlings of both green turtles and Hawksbill turtles were hampered by high mortality rates of juvenile turtles as a result of factors such as poor food supply, disease and parasites. As a result this project was terminated in 1980 (Ross, 1999).

Commercial turtle production at the Réunion Island facility was discontinued following unsuccessful attempts at applying for international trading privileges under CITES and continued issues with poor growth and disease (attributed to the pelletised diet) (Ciccione, 2011). In its place, the Kélonia Observatory of Marine Turtles (known as 'Kélonia') was established, operating with an entirely different humane and sustainable approach to sea turtle conservation.

A model for change

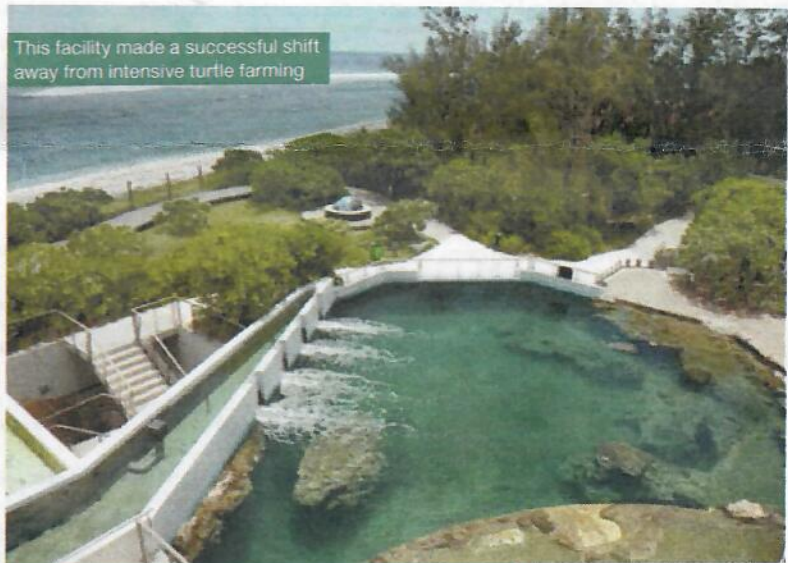
Kélonia now operates as a sea turtle research and education centre with a major focus on the provision of care for injured and ill sea turtles. This shift was financed by both the European Union and Regional Council, with research and development support from external organisations (Kélonia, 2008). The conversion cost less than €20 million and the facility is now run as a non-profit venture generating revenue that covers 67 per cent of its running costs. The majority of the remainder is covered by government and local authority subsidies for awareness-raising or research programs (Ciccione, 2011).

As a turtle rehabilitation and release facility, Kélonia is a more popular attraction than ever

Today Kélonia is a key contributor to the research and conservation of sea turtles and receives over 100,000 visitors annually, proving it to be a successful tourist attraction (Kélonia, 2008). Visitor numbers and turnover have increased since the site's time as the Corail Farm, with 110,000 people visiting in 2010 compared to 80,000 in 1997 (Ciccione, 2011).

Following the transition away from commercial production it is evident that turtles remain an important element of Réunion Island's cultural inheritance. Those involved in running Kélonia believe the importance of turtles is stronger today than in the days of farming and that the status of turtles on the island is progressively improving, with the turtles remaining a driver for job creation and economic success (Ciccione, 2011).

With regards to research, the Kélonia Institute is making a positive contribution to marine turtle conservation. In collaboration with a host of national and international partners (notably the European Union) it aims to broaden the existing knowledge of turtle biology, life cycles and migratory patterns both around and beyond Réunion Island (Kélonia, 2008). Much of this research has already been published in peer reviewed format.



This facility made a successful shift away from intensive turtle farming

2012: Time for change

WSPA firmly believes that there is no humane way to commercially produce green turtles. Furthermore, following a detailed assessment, WSPA also has severe concerns regarding the potential impact of the Cayman Turtle Farm on wild sea turtle conservation efforts and human health. Consequently, WSPA is opposed to the commercial production of green turtles at the Cayman Turtle Farm and is committed to ending this inhumane practice.

Réunion Island's Kélonia observatory provides a working example of how a facility can shift from commercial production to a more humane, sustainable and economically profitable alternative.

Consequently, WSPA urges the Cayman Turtle Farm to make a similar transition to become a sea turtle research and education centre.

*Alligators
Fresh
Water
Turtles*

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Uniformity of decisions / recommendations

Money from gov.

Hawaiian
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Cayman
Culture

BALAZS 12/2012

BEST MANAGEMENT PRACTICES FOR LOUISIANA ALLIGATOR FARMING



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Louisiana Alligator Farmers and Ranchers Association
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Best Management Practices For Louisiana Alligator Farming

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Best Management Practices For Louisiana Alligator Farming

The Louisiana Department of Wildlife and Fisheries (Department) manages the American alligator (*Alligator mississippiensis*) as a commercial, renewable natural resource. The Department's sustained use program is one of the world's most recognizable examples of a wildlife conservation success story. Louisiana's program has been used as a model for managing various crocodylian species throughout the world. Louisiana's alligator management program consists of two complex segments: research and management of the wild population and a statewide farm/ranch program. The program is funded by self-generated revenues (alligator hide tag fees, shipping label fees, other alligator related fees and alligator hide severance taxes). Since the inception of the Department's program in 1972, this program has provided hundreds of millions of dollars of revenue to landowners, trappers and farmers.

Historical Perspective

Alligators have been used commercially for their valuable leather since the 1800s. This harvest was generally unregulated through the mid-1900s. A gradual population decline resulted in severely reduced harvests in the early 1950s. In 1962, the alligator season in Louisiana was closed, and research studies, focusing on basic life history factors, were undertaken which led to development of a biologically sound management program. Of tremendous importance was the establishment of a rigorous survey method to estimate and monitor population trends.

From 1962 through August 1972, alligators were totally protected. During this time a myriad of state and federal laws regulating harvest distribution and allocation of take, methods of harvest and possession, transportation and export of live alligators, alligator skins and their products was enacted. Similarly, in 1970 the Louisiana legislature recognized that the alligator's value, age at sexual maturity, and vulnerability to hunting required unique consideration and passed legislation providing for a closely regulated experimental commercial harvest.

The goals of the Department's alligator program are to manage and conserve Louisiana's alligators as part of the state's wetland ecosystem, provide benefits to the species, its habitat and the other species of fish and wildlife associated with alligators. The basic philosophy was to develop a sustained use management program which, through regulated harvest, would provide long term benefits to the survival of the species, maintain its habitats, and provide significant economic benefits to the citizens of the state. Since Louisiana's coastal alligator habitats are primarily privately owned (approximately 81%), our sustained use management program provides direct economic benefit and incentive to private landowners, and alligator hunters who lease land, to protect the alligator and to protect, maintain, and

enhance the alligator's wetland habitats. One of the most critical components of the management program was to develop the complex set of regulations which required individual applications for each property to be considered for tag allocation, landowner permission, proof of ownership and detailed review of habitat quality related to alligator abundance, all of which combined to equitably distribute the harvest in relation to population levels.

During the period of total protection (1962-1971) alligator populations increased quickly and by 1972 the Department was ready to initiate its new sustained use management program.

Oversight by the U.S. Fish and Wildlife Service

Five years after Louisiana closed the alligator harvest season, the alligator was listed on the federal Endangered Species Act in 1967. At this time the alligator was considered an endangered species throughout its range. In March of 1974, Louisiana petitioned the Secretary of the Interior, requesting that populations of the alligator in Louisiana be removed from the list of threatened and endangered species in Cameron, Vermilion and Calcasieu Parishes. In subsequent years, similar petitions sought to reclassify the alligator, first in the nine coastal parishes in 1978 and then statewide in 1981. Each of these petitions was based on results of detailed scientific study and the demonstrated success of the early harvest programs.

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Export of alligator skins and products out of the United States is regulated by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). This treaty, which became effective in 1975, regulates the international trade in protected species; its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival. The U.S. Fish and Wildlife Service (USFWS) administers CITES requirements and controls for the United States. The species covered by CITES are listed on one of three Appendices, according to the degree of protection needed by each species. Currently, the alligator is listed on Appendix II of CITES, because of the similarity of their appearance to other crocodylians that are truly endangered or threatened.

In order to fulfill CITES requirements, the USFWS through a series of rulemakings, has developed a complex set of requirements that the individual states, including Louisiana, must comply with in order to be granted export approval for harvested alligators skins and products. The most critical component in these requirements is that the Department must certify, on an annual basis, that the harvest programs we administer will not be detrimental to the survival of the species. The "no detriment" finding is predicated on our assessment of the current condition of the alligator population, including trends, population estimates or indices, data on total harvest and harvest distribution and habitat suitability evaluation. Additionally the management program must provide for a rigorously controlled harvest with calculated harvest level objectives. All alligators and eggs harvested must be taken from specifically identified properties and all hides individually tagged (with approved, serially marked CITES export tags furnished by the USFWS). The USFWS requires strict accountability for each tag allocated to the harvester, requiring all unused tags be returned at the close of the season.

Farming/Ranching Program

Early alligator farms in Louisiana were generally small, family owned operations; and often run more as a hobby or curiosity than a commercial enterprise. Extensive studies conducted by Department biologists demonstrated that alligators could be efficiently cultured and grown in captivity. Egg ranching (collection of alligator eggs from the wild) proved more economical and successful than captive breeding. Private egg collections were first permitted, on a limited basis, in 1986.

Louisiana's alligator ranching program increased dramatically between 1986 and 1990. To ensure wild alligators were not depleted as a result of egg collections, and to ensure future recruitment of sub-adult alligators to the breeding population, the Department initially required a quantity of juvenile alligators equal to 17% of the eggs hatched by the rancher be returned to the wild within two years of hatching. In the first three years of the release program (1988-1990) returns were limited to fewer than 15,000 alligators. Sizes at release were generally small, and averaged 36-38 inches.

Our research and review of the ranching program documented that the released alligators are able to forage for food in the wild, grow well, have high survival rates, and successfully nest in the wild. Thus, we decreased the return percentage to 14% of the eggs hatched, starting with the ^{YEAR} 2000 egg permit collection. Continued monitoring and stable to rising survey numbers led us to again decrease the return percentage to 12% of the eggs hatched, beginning with the 2007 egg permits (releases "due" to be returned in spring/summer 2009). Thus, the management program is adjusted when available data warrants a change; although very close monitoring of the effects of this change will continue.

Enormous effort has been made by the Department to monitor the fate of the alligators released to the wild. Each alligator released is measured, sexed, tail-notched, tagged and recorded prior to release to the same area where they harvested alligator eggs. Although it is costly to the ranchers to fulfill the "returns to the wild" obligation, it is an integral necessity of the program, considering the large number of eggs collected. In recent years when weather conditions and water levels led to excellent nesting efforts, around 500,000 eggs have been collected which averted high hatchling mortality that would have occurred from hurricane impacts.

The economic revenue to Louisiana citizens (landowners, trappers, ranchers, etc) from the alligator program is valued at \$50,000,000 - \$60,000,000 annually in peak years. In light of this tremendous value to the state, we have developed this document entitled "Best Management Practices -Louisiana Alligator Farming" to supplement the Department's Alligator Rules and Regulations. This document is intended to guide alligator farmers and ranchers to ensure the humane treatment of captive reared alligators on farms in Louisiana. Similar documentation for farmed Australian Crocodiles exists ("Code of Practice on the Humane Treatment of Wild and Farmed Australian Crocodiles", 2009, Endorsed by the Natural Resource Management Ministerial Council of the Australian Government) and when applicable, similar practices are herein endorsed. Portions of this document were written by Javier Nevarez, DVM, PhD, of the LSU School of Veterinary Medicine to summarize appropriate care and euthanasia of captive alligators.

Principles of Animal Welfare

We must first begin by differentiating animal welfare from animal rights. Animal welfare seeks to ensure the humane and proper treatment of animals recognizing their significant role in society. Animal welfare acknowledges the importance of animals in agriculture as a source of food and other products but seeks to provide these animals with humane living conditions and treatment. Specifically it aims to provide animals with appropriate physical and mental needs for the species. Animal rights is a more radical view that does not support the use of animals for the benefit of humans and often seeks to abolish any activities that support the maintenance of animals in captivity for any reason. *

"The American Veterinary Medical Association, as a medical authority for the health and welfare of animals, offers the following eight integrated principles for developing and evaluating animal welfare policies, resolutions, and actions.

1. *The responsible use of animals for human purposes, such as companionship, food, fiber, recreation, work, education, exhibition, and research conducted for the benefit of both humans and animals, is consistent with the Veterinarian's Oath.*
2. *Decisions regarding animal care, use, and welfare shall be made by balancing scientific knowledge and professional judgment with consideration of ethical and societal values.*
3. *Animals must be provided water, food, proper handling, health care, and an environment appropriate to their care and use, with thoughtful consideration for their species-typical biology and behavior.*
4. *Animals should be cared for in ways that minimize fear, pain, stress, and suffering.*
5. *Procedures related to animal housing, management, care, and use should be continuously evaluated, and when indicated, refined or replaced.*
6. *Conservation and management of animal populations should be humane, socially responsible, and scientifically prudent.*
7. *Animals shall be treated with respect and dignity throughout their lives and, when necessary, provided a humane death.*
8. *The veterinary profession shall continually strive to improve animal health and welfare through scientific research, education, collaboration, advocacy, and the development of legislation and regulations."*

Reference: http://www.avma.org/issues/animal_welfare/default.asp

As a worker in an alligator farm/ranch, each individual is responsible for the welfare of the alligators. If a worker is witness to any procedures or handling of animals that appears inappropriate or inhumane, they should report this immediately to their supervisor or owner of the farm/ranch. In case their supervisor or the owner of the farm/ranch is the individual carrying out the inappropriate treatment of the animals, the worker should contact the Louisiana Department of Wildlife and Fisheries to report the problem. If an outside organization or individual approaches a worker of an alligator farm/ranch to ask questions about the operations of the facility, the worker should direct them to the owner of the facility. *

The worker should not answer any questions, as they may not have full knowledge of the whole operation and management practices.

*

Introduction

Alligator farming or ranching is an industry that utilizes alligators as a renewable natural resource in Louisiana and other southeastern states. The success of the industry depends on the proper management of alligators as a resource. It is important that alligators are managed properly in the wild as well as in captivity. In order for the industry to be successful there must also be a market for the alligators being produced. Part of maintaining this valuable market is to ensure that all farms/ranches are employing humane methods of working with alligators. This document will provide information about how to properly handle alligator eggs and the animals throughout their time at the farm/ranch including euthanasia, and the period after euthanasia.

1. The commercial alligator program in Louisiana consists of a wild harvest, a farm/ranching program, and a nuisance alligator harvest program. Alligator products (raw hides, finished hides, novelty items such as alligator heads and other parts, manufactured leather products, taxidermy specimens, and meat) are traded domestically and internationally.
2. State and federal regulations exist for all aspects of the alligator industry as outlined above. The staff of the Louisiana Department of Wildlife and Fisheries closely monitors activities on alligator farms.
3. This document will serve as a guideline to ensure captive alligators are cared for with their welfare as a high priority. The Department encourages that animals be maintained in conditions that ensure their survival and humane care, with minimal stress and disturbance with little or no risk of injury. The Department endorses euthanasia practices that minimize pain and suffering while insuring human safety.
4. As the Louisiana alligator industry continues to grow and develop, it is important that a consistent set of standards for the humane treatment of alligators is available to industry participants.
5. The standards herein described as "Best Management Practices" (BMPs) are based on current knowledge of alligator welfare issues and what is thought to be the best management practices in humane handling techniques. These BMPs address the unique physiology, behavior, body structure, and safety concerns associated with alligators as compared to mammalian or avian animal production systems and are based on ethical veterinarian recommended care and practices.
6. These BMPs recognize that few studies exist on alligator methods of euthanasia and that alligator sensory perception, physiology, behavior, discomfort and pain awareness are not the same as in mammalian species. The Department encourages humane treatment, yet recognizes

that this BMP document is a "work in progress" that should be modified as new information becomes available. Research on captive husbandry and euthanasia is ongoing and will be monitored closely so any relevant new information might be incorporated into BMPs when obtained.

7. These BMPs are intended for use by commercial alligator producers and exhibitors licensed by the state of Louisiana to collect and incubate eggs, raise and exhibit alligators and harvest alligators for commercial use.

Best Management Practices

Egg collection and transport

8. Any eggs of uncertain viability that are not collected must be replaced back in the nest in the upright position to ensure the maximum chance of hatching naturally. Avoid mechanical injury by rough handling, and restore nest cavity and remaining eggs to pre-collection condition.
9. Eggs should be marked on the upper surface with a non-toxic marker while still in the nest (as they are found in the nest and not rotated), to avoid mechanical injury to the embryo. Eggs should be kept horizontal. They should be packed carefully to avoid rolling or rotation and to avoid damage from rough uneven terrain during boat and vehicle transport. Eggs should not be exposed to direct sunlight and be protected from overheating (about 91° F) or exposure to low temperatures (below about 80° F) during collection, transport, and incubation. Adequate humid conditions should be provided to avoid desiccation; yet adequate ventilation must be provided to avoid hypoxia (low oxygen) and allow for adequate gas exchange.
10. Female alligators may defend their nests in the wild; when egg collecting it may be necessary to hit the ground or water near the alligator with a pole to make a noise to scare the alligator away. For the safety of the egg collectors it may be necessary to deliver a brief tap to the alligator's head or nose, which will usually deter it without any injury to the alligator, due to the thick bone in the upper part of the snout and skull. Caution should be taken to not hit the eyes. Use good judgment and the least amount of force as possible to gently push the alligator away.
11. It is safer to have a minimum of two people in each collecting boat. One can be observant for a guarding female alligator while the other person collects and packs the eggs.
12. Each clutch must be kept separate and identified as to permit number and land company. Records on clutch size, egg viability, and hatch rates should be kept for each clutch.

Egg incubation and hatching

13. Temperature and humidity regimes are recommended as above (see item 10). Avoid fluctuating temperatures. If any eggs appear to die during incubation, they should be removed to avoid microbes from affecting the other eggs in the clutch or other clutches in the incubator. Discarded eggs should be recorded by each individual clutch for inventory purposes and completion of 10 day egg collection and hatch reports. *
14. Swelling of the eggs can indicate that they are too damp; consider replacing damp nesting material and/or reducing humidity within the incubator.
15. Air spaces under the eggshell may indicate the incubation environment is not humid enough; consider wetting the nesting material and/or increasing the humidity within the incubator.
16. If eggs begin to hatch, examine the embryo/hatchling for unresorbed yolk. If present, the eggs may need to incubate longer. Some hatchlings emerge spontaneously; some may need assistance in liberation from the egg.
17. It is often best to let the umbilicus dry for a day after hatching before putting the hatchlings in water. If there is unresorbed yolk, a longer period may be needed before placing hatchlings in water.
18. Be sure to avoid overcrowding, as hatchlings can easily be trapped if there is a "pile up" and they are pinned underwater and suffocate or are drowned by other hatchlings. They are gregarious and can crowd, especially in corners of pens with shallow water.

Culture for adult breeders

19. Adult alligators maintained out of doors should be in secured facilities with fences buried deeply enough to avoid escape by burrowing. Tops of fences can be angled inward to prevent alligators from climbing over fence tops.
20. Provide adequate fresh water of appropriate depth and shaded areas to avoid overheating.
21. Outside enclosures should be in rural areas with no or limited access to passersby. This will avoid harassment and exposure to items being thrown into pens to encourage the animals to "move" for photography purposes etc.

Shed culture/welfare

22. Spacing and temperature should be provided as per current regulations.

23. Alligators should be separated by size class to avoid fighting and to allow ready access to food for all alligators.
24. Alligators should be fed frequently (four to five days a week) or more.
25. Alligators should have ready access to clean water. Holding tanks should be cleaned frequently. Daily is preferred but must be weighed against other factors such as observed water quality associated with excess feed decomposition and animal waste, water volume, and animal disturbance associated with more frequent water changes. Washing less often than ideal may adversely affect alligator health, survival, growth and hide quality.
26. Sheds should be insulated enough to provide warmth in winter and encourage growth, and ventilated enough to avoid overheating during the summer months and accumulation of ammonia and odor from waste materials.
27. Pest and insect control should be routinely practiced throughout the alligator farm so as to minimize potential disease transfer to captive alligators.

Capture and handling methods

28. Alligators should be handled carefully and professionally when grading and sorting. Do not toss live alligators. Rather, place them carefully in bin, tote, or stall.
29. Small alligators can safely be caught by hand and held by securely grasping them behind the head. Larger alligators may need to be restrained by a short noose snare placed around the neck or upper jaw.
30. Capture should be undertaken by trained, experienced personnel to ensure safety of the entire work team, and to minimize stress and struggling by the alligator. This is often safest if conducted in deeper water, where the alligator cannot push off the floor of the pen.
31. Covering the eyes of the alligator with a cloth will help limit stress of captured alligators.
32. Jaws can be secured with thick rubber bands or electrical or duct tape. Care must be taken not to cover the nostrils. Tape or bands should be secure for safety purposes but not so tight as to cause depressions or necrosis in the skin.
33. For larger alligators, the legs may need to be secured with wide tape if being transported.

34. It is recognized that working with alligators has some associated risks but this does not justify inappropriate treatment of the alligators. All workers should have training on how to properly and humanely work with alligators before directly working with the animals. Any person not comfortable working with an alligator in a humane and safe manner should seek assistance and training before doing so.
35. While there is some degree of physical strength and force that must be used for capturing and restraining alligators, once captured and properly restrained the animals should be handled in a gentle manner. Workers should always act in a responsible and professional manner keeping in mind the welfare of the animal whenever handling is required, including the time period after the animal has been euthanized.

Harvest practices

36. Farmers should refer to guidelines by professional veterinarians as to further details regarding euthanasia practices. Current recommendations on euthanasia methods for alligators are based on those employed in other species. The euthanasia of animals takes into consideration the safety of the personnel as well as the welfare of the animals. At this time the procedure used is at the discretion of each facility based on experience and personnel safety and training but it must always take into consideration the welfare of the animals. Any procedure employed must ensure that the brain and/or spinal cord are sufficiently damaged so that there is no connection between the brain and the rest of the body.
37. Euthanasia must be as humane and rapid as possible. Recognizing that reptile physiology is markedly different than mammalian physiology, persistent reflexes in alligators may not be an indicator of pain awareness or consciousness.
38. Based on current information and technology, the method of rapid cervical spine severance (cervical dislocation) with exsanguination has been demonstrated to be most humane. Farm employees with extensive experience can euthanize an alligator in a matter of seconds using this method. This may be followed immediately by pithing (insertion of a rod into the foramen magnum to destroy the brain) in some instances.
39. The use of penetrating or non-penetrating captive bolt firearm followed by spinal cord severance for near immediate brain destruction is also considered to be a humane euthanasia method.
40. Gunshot followed by spinal cord severance or gunshot alone may be used, keeping in mind safety considerations of working indoors and ricochet of bullet fragments.

Releases to the wild

41. Handle alligators carefully and professionally when grading or sorting. Do not toss live alligators. Place carefully in bin, tote or stall to minimize or avoid trauma.
42. It is recommended to discontinue feeding a few days prior to the release, to avoid defecation by alligators on the release table and in burlap bags.
43. Tape mouths of alligators no more than one day before the scheduled release.
44. Do not pile too many alligators in bins or totes for release – those on the bottom of the tote might suffer crush injuries or suffocation.
45. Place only a reasonable number of alligators for a reasonable period of time in a 4'X4' tote (recommend no more than twenty alligators of approximately 4' in length for 30 to 60 minutes). Appropriate adjustments are necessary for larger alligators or for holding alligators for a longer period of time.
46. Do not toss sacked alligators on to trailers before release, or toss from bin or totes on elevated trucks down to the release table site. Carefully pass the alligator down to the next person.
47. Choose release sites in the wetlands carefully. Juvenile habitats consist of shallow ponds, rather than deep canals or large lakes. Release a reasonable quantity in each pond based on pond size. Do not release large quantities in one pond or a canal or roadside ditches. Handle carefully and professionally on releases. Do not throw alligators distances or toss forcefully into water. Release alligators gently over the side of the boat.

Transport of alligators for release or between farms

48. Transport discretely (covered and out of the view of the public on roadways) and with all due attention to welfare. Do not pile sacks. Do not pile multiple "layers" in crates/totes. Do not crowd alligators. Allow ample air space for adequate ventilation and protection from direct sunlight.
49. Place animals in a secure trailer to avoid loss of animals during transit.
50. Stop feeding a few days before transport to avoid regurgitation and aspiration due to taped mouths.
51. Avoid overheating and dehydration; it is particularly easy for hatchlings to overheat.

Quarantine of diseased alligators

52. Immediate consultation with Department staff and Louisiana State University School of Veterinary Medicine (LSUSVM) is recommended if disease outbreak is suspected. Alligators should be quarantined and preventative measures taken (foot bath washes, cleaning of equipment, etc.) to limit spread of disease.

Discretion with welfare of captive animals and euthanasia

53. Use caution and discretion when discussing our successful alligator management and harvest programs with casual visitors to your farm and with media spokespersons and journalists, to ensure accurate, tasteful, and humane techniques, acceptable for all audiences, are portrayed being aware that all persons may not share an appreciation for harvest of any animal species.

SUMMARY

Do's and Don'ts of working with alligators

Do:

- Seek training and assistance on how to properly handle alligators
- Make sure that you have appropriate tools and equipment before working with the alligators
- Look out for their welfare
- Handle them with respect and dignity even after death
- Follow humane euthanasia principles
- Move animals carefully
- Lay an animal down on the floor or table gently
- Keep in mind they are capable of feeling fear and stress
- Conduct work activities in a professional manner when handling live or dead alligators
- Transport and move animals in a secure way to minimize escape, injury to personnel, and injury to the animals
- Ask for guidance and training
- Report any mistreatment of the animals to your supervisor, farm/ranch owner, or the Louisiana Department of Wildlife and Fisheries

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Don't:

- Don't harass, hit, mistreat, scream, or carry out any other action that may be perceived as aggressive towards an alligator
- Don't swing alligators by their tails for either moving them or for euthanasia
- Don't euthanize alligators by a blow to the head against the concrete or any other structure
- Don't euthanize alligators by a blow to the head with a hammer or any other tool other than those described in the euthanasia section
- Don't place live alligators in ice or in a freezer or refrigerator
- Don't carry out any procedures that may be perceived as unpleasant to the animal, with the exclusion of euthanasia procedures, which are always unpleasant
- Don't use excessive force
- Don't leave animals in direct sunlight
- Don't throw animals across the room
- Don't throw or slam animals against the floor
- Don't throw bags or containers holding animals
- Don't attack an alligator for any reason unless the alligator threatens the life of a person

The American alligator is a renewable natural resource and farming/ranching operations help create jobs for many in Louisiana. Workers are directly responsible for the welfare of the animals and must ensure that the animals are being treated humanely. The humane treatment of the alligators must occur at all stages of the operation from the moment of egg collection until the skin and meat are harvested from the carcass. It is critical that the alligators be handled appropriately in the farms/ranches so the jobs created by the industry can continue to exist. Training of workers in humane handling techniques is available through the LSUSVM (in English or Spanish).

These Best Management Practices For Louisiana Alligator Farming are recommended by the Louisiana Department of Wildlife and Fisheries and the Louisiana State University School of Veterinary Medicine and are endorsed by the Louisiana Alligator Farmers and Ranchers Association.

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