

Species Management Plan
for the
Sister Isles Rock Iguana, *Cyclura nubila caymanensis*

2011-2014



Formulated in workshops held 1st to 3rd August, 2011
Little Cayman, Cayman Islands

With a preliminary meeting held on 16th April, 2011
Grand Cayman, Cayman Islands

OVERALL PROGRAMME GOAL:

To maintain self-sustaining wild populations of Sister Isles Rock Iguanas throughout Little Cayman, and a stable population in managed areas in Cayman Brac.



JOHN BINNS

We envision the population of Sister Isles Rock Iguanas being substantially relieved from the burden of human-induced mortality, rebounding in numbers throughout Little Cayman, and within protected or otherwise managed areas on Cayman Brac.

As an asset to nature tourism on both islands and a source of pride to the people of these islands, these iguanas will continue to symbolize the diverse and natural environments of Little Cayman and Cayman Brac. Their continued presence will become a catalyst for environmentally sustainable development practices, and their ongoing survival an indicator of the health of the Sister Islands' terrestrial ecosystems.

CONSERVATION STRATEGY:

The ongoing presence of Sister Isles Rock Iguanas on both Little Cayman and Cayman Brac is a safeguard against catastrophic loss on either, and so must be maintained.

On Little Cayman, we seek to enable these iguanas to maintain an island-wide distribution regardless of the extent and location of protected areas. However, recognizing the key importance of few communal nesting sites to the ongoing health of the entire iguana population on Little Cayman, we seek to protect these nesting sites. This will be achieved by conservation land purchase, or failing that, through conservation easements. Key nest sites may also be present on Cayman Brac: if so, these too will need a high level of protection.

On Cayman Brac, recovery of a healthy Sister Isles Rock Iguana population will inevitably hinge on protected and managed areas. In addition to seeking to restore these iguanas in fully protected habitats, this plan will explore the possibilities for community-driven managed area plans underlain by voluntary conservation easements, that may allow iguanas to co-exist successfully in some human-occupied semi-natural areas.

Any historic genetic difference between the rock iguanas on the two Sister Isles has already been blurred beyond detection by repeated unofficial translocations of iguanas from Little Cayman to Cayman Brac. This means there is no in-principle obstacle to using iguanas from the still-sizable population on Little Cayman, to assist in restoration and genetic diversification of iguanas on Cayman Brac, once safely protected or managed habitat is available for them.

On both islands, ongoing survival of iguana populations absolutely requires that current levels of road kills and dog attacks on adults, and cat predation on hatchlings, are massively reduced. These are difficult threats to address, especially in the more complex human environment on Cayman Brac. This will require extensive community consultation, education and awareness work, prior to and during implementation of a variety of long-term control and management measures.

Weakness and absence of adequate environmental and land use planning legislation, and lack of enforcement of relevant legislation which does exist, are further challenges to the iguanas and their habitats. These require efforts at both community and government levels.

To verify the effectiveness of conservation measures, monitoring work on the iguana populations, and the threats affecting them, will need to be sustained. Measuring the total iguana population on Little Cayman is a challenging task that is initially likely to take some three years to complete. The much smaller, more accessible population in Cayman Brac can be assessed and monitored more easily.

Inspired by successes with the Blue Iguana on Grand Cayman, the partners working to restore Sister Isles Rock Iguana populations will capitalize on the uniqueness of this subspecies to Cayman Brac and Little Cayman. They will seek to build a level of local and international support sufficient to ensure this critically endangered iguana recovers rapidly, and remains as an enduring symbol of wild nature in the islands of Cayman Brac and Little Cayman.

CURRENT ASSESSMENT

Taxonomy. The Sister Isles Rock Iguana, *Cyclura nubila caymanensis* Barbour & Noble 1916, is a sub-species of the Cuban Rock Iguana endemic to the islands of Little Cayman and Cayman Brac.

Status. The most recent Red List assessment (Goetz and Burton 2011) classifies the Sister Isles Rock Iguana as Critically Endangered, CR A3bce+4bcde.

The population on Little Cayman now appears to be in significant decline. Dense concentrations of iguanas which occupied the mid-northern and mid-southern coasts of Little Cayman 50+ years ago no longer exist. A growing population of feral and domestic cats, dogs, rapidly increasing human development and especially the recently increased road traffic severely threaten the long-term survival of iguanas on Little Cayman.

The Critically Endangered classification applies because it is estimated that over 90% of the population may be lost over the next 60 years or so, unless significant conservation interventions are put in place now. There is evidence of severe population decline caused by road kill and dog predation, with loss of recruitment due to predation of juvenile iguanas by feral and domestic cats. The evidence indicates the population, though still quite abundant on Little Cayman at this time, faces a severe risk of extinction in the wild.

Causes of decline. Threats to Sister Isles Rock Iguanas include habitat destruction from road construction and from commercial and residential real estate development, livestock grazing (on Cayman Brac) and farming practices, predation by cats and dogs (both feral and domestic) and possibly introduced rats, disturbance and development of sensitive nesting areas, and, increasingly, road kills. Feeding by humans is drawing iguanas into the highest threat areas.

Since the construction of a municipal power generating station on Little Cayman in the early 1990s, habitat destruction associated with road construction and real estate development have increased dramatically. The human population, although still small, has increased several fold. There is no controlled development plan for Little Cayman and proposed major development sites overlap areas of prime iguana habitat on the western half of the island where the majority of iguanas occur. The continued destruction and disturbance of coastal nesting areas on Little Cayman is of particular concern as nesting opportunities for iguanas in the interior appear to be limited due to the paucity of suitable soil patches.

The increasing number of feral cats on Little Cayman poses an immediate threat to population recruitment. Increasing road traffic, together with paving of the former gravel roads which dramatically increases vehicle speeds, is causing significant iguana mortality. These road kills mainly affect adult iguanas and are especially severe during the nesting season, when gravid females cross the roads on their way to coastal nesting sites. The estimated deaths of iguanas due to road kill in 2010 was in the range 6% to 10% of the overall population.

Natural history. Like other rock iguanas, Sister Islands Rock Iguanas require suitable forage plants, basking areas, retreats and nesting sites. On Little Cayman and Cayman Brac, these requirements are met in a variety of coastal and interior habitats and iguanas are widely dispersed. Maximum densities occur in xerophytic shrubland growing on exposed and highly weathered limestone or dolomite, and in clearings in coastal sea grape forest on sandy substrates. These habitats provide a diverse assemblage of forage plants, a mosaic of sun and shade for thermoregulation, and an abundance of cavities in the rock substrate, which iguanas of all sizes use as retreats. However, suitable nesting sites in these habitats are restricted to shallow patches of soil that accumulate in small depressions. Most of the larger females migrate to coastal areas with relatively deep sandy soils to nest. Five communal nesting sites, with up to 60 nests in close proximity, have recently been identified in coastal areas on Little Cayman (M. Goetz, unpubl. data).

The diet of all age classes consists almost entirely of leaves, flowers and fruits; however, iguanas occasionally scavenge on animal carcasses (e.g., land crabs) or prey on slow-moving insects (e.g., Lepidopteran larvae).

Courtship and mating occur in April to June, coinciding with the end of the dry season when temperatures and photoperiod are increasing. Males compete intensely for female territories which are occupied in all seasons. Male territories are large, and can overlap many female territories.

Females usually lay a single clutch of 1-25 eggs (mean probably 12-15) annually, though two clutches per year have been recorded occasionally in wild *Cyclura lewisi* on Grand Cayman - this may well occur in other *Cyclura* species. The nesting season lasts about six weeks, with the onset variable from year to year between May and August, roughly coinciding with the beginning of the wet season in a given year. Incubation averages 72 days (range 63-80). Hatchling emergence occurs from early August to October.



THREE-YEAR ACTION PLAN

STRENGTHS, WEAKNESSES, OPPORTUNITIES & THREATS

Strengths

- a) The current iguana population on Little Cayman is still large enough to be genetically viable and potentially capable of recovery and self-maintenance
- b) The iguana population is distributed across two islands
- c) Iguanas are a significant tourism asset on Little Cayman
- d) There is some community interest in iguanas present on both islands
- e) Threats are well understood and quite well documented
- f) Coastal nest sites have been mapped on Little Cayman
- g) Success of the Blue Iguana Recovery Programme on Grand Cayman is a source of motivation and confidence for Sister Isles
- h) Uniqueness of the Sister Isles Rock Iguanas (as a sub-species) is an asset for community awareness and fundraising efforts
- i) Lack of genetic distinction means Brac population can be supported from Little Cayman (but note corresponding weakness 'c')
- j) Iguanas have ability to live with careful development if associated threats are managed/avoided
- k) The iguanas and their location are attractive to graduate students and international volunteers
- l) The Little Cayman district of the National Trust has capacity and track record of effective fundraising for land purchase, etc.

Weaknesses

- a) Iguana populations are massively reduced from original, undisturbed status
- b) The iguana population on Cayman Brac is dangerously small
- c) Any historic genetic distinction between islands has been blurred by transport of iguanas from Little Cayman to Cayman Brac (but also see strength 'i')
- d) Feral cat eradication may be impossible to maintain, and ongoing control very resource-intensive
- e) Iguanas are perceived as actual or potential crop pests
- f) Paucity of human resources available for conservation within the Sister Isles
- g) Poor understanding of conservation issues facing the iguanas, among many local residents
- h) Pro-development, anti-conservation attitudes are quite widespread in local communities, especially on Cayman Brac. Hard economic times also lead to de-prioritization of environmental concerns: even when environment is seen as being important, other issues take precedence
- i) Sense of ownership of the natural environment, and willingness to take action to protect it, is relatively weak in Cayman Brac
- j) Coordination weaknesses between islands, and between agencies and individuals concerned about the iguanas
- k) Inherent conflict between human desire for domestic pet companionship and concern for the natural environment
- l) "Culture" of speeding is deeply ingrained among drivers
- m) Lack of comprehensive legislation for protection of iguanas and their habitat
- n) Measuring the iguana population size on Little Cayman and long-term monitoring of future population trends throughout the island is inherently difficult
- o) There are very few paid environmental staff on the Sister Islands
- p) Lack of enforcement of laws in general
- q) There is very little iguana habitat under protection in either of the Sister Islands
- r) Iguana road kill de-sensitization, resulting from large numbers of road-killed Green Iguanas on Grand Cayman
- s) Charisma and high profile of Blue Iguanas on Grand Cayman may weaken efforts to promote the Sister Isles Rock Iguanas as unique and special

Opportunities

- a) The small human population size on the Sister Isles means the entire community can be reached with messages and information
- b) Conservation strategy development can benefit from experience with Blue Iguanas on Grand Cayman, and other rock iguanas in the region
- c) Strong commitment from existing environmental agencies in the Cayman Islands
- d) Interest from international conservation agencies
- e) A wide range of traffic calming strategies are tested elsewhere and are theoretically available
- f) Despite growing real estate development interest, much of Little Cayman is currently still in its natural state
- g) Large parcels of undisturbed land (including some iguana habitat) is still available for potential purchase for protection
- h) Little Cayman has access to a community with global reach, comprised of a combination of residents and repeat visitors with financial resources, knowledge, skills and commitment to conservation in Little Cayman
- i) There is a tradition of island-wide community involvement on Little Cayman
- j) People do want to interact with the iguanas, and there is potential to re-focus this away from inappropriate feeding towards interactions at a more natural level
- k) Resorts on Little Cayman see the iguanas as a valuable asset and are willing to support conservation efforts
- l) The recent Lionfish invasion is familiarizing divers with the concept of attractive but destructive invasive species, and the need to apply lethal control methods
- m) NTCI/CCMI relationship is supportive on Little Cayman

Threats

- a) Road kill rates are extremely high on both islands and threaten rapid population crash
- b) Feral cat predation is believed to be severely damaging recruitment
- c) Free roaming dogs are adding to adult mortality
- d) Feeding of wild iguanas is causing peri-domestic population clusters in high risk areas, leading to a population sink effect
- e) Artificial population clusters lead people to believe that the iguanas are more common than they really are
- f) Absence of an obviously evident crisis in the iguana population leads to apathy towards conservation measures
- g) Proposals are being made to introduce agricultural livestock (cows, pigs, goats) to Little Cayman, with risks of habitat degradation and establishment of feral populations
- h) Lack of legislation, lack of a development plan and the Cayman Islands' open "buyer beware" land sales framework leaves pristine natural habitats open to aggressive real estate development, and speculative subdivision sales to a global market unlinked to planning permission or provision of public services
- i) Real estate speculation on Little Cayman, and residential development on Cayman Brac are currently stimulating large scale habitat loss and escalating land values
- j) Local CITES legislation which has been formulated to also manage movement of animals between the three Cayman Islands, has still not been passed into law
- k) Green Iguanas have arrived on both Little Cayman and Cayman Brac, by accidental shipment (on vessels and in containers) and in the case of Cayman Brac, also as pets brought from Grand Cayman
- l) The Sister Isles are similarly wide open to other alien species liable to become invasive (e.g. Knight Anoles, Corn Snakes). Blue Iguanas from Grand Cayman, and Cuban Iguanas could also be accidentally or deliberately introduced, leading to hybridization problems
- m) Preliminary results from a survey by DOE suggests a widespread lack of understanding of what sustainable development actually means
- n) Natural disasters such as hurricanes can pull attention and resources away from conservation generally
- o) Existing sources of information for tourists (SITA, island tours and resorts etc. on Little Cayman) are spreading misinformation about the iguanas and promoting inappropriate feeding

THREE-YEAR OBJECTIVES, RESULTS AND ACTION STEPS

OBJECTIVE 1: Reduce un-natural mortality rates sufficiently to halt population decline and assist recovery

1.1

Result: All domestic cats on Little Cayman to be sterilized and micro-chipped and collared – commencing in 2012

Step	Task description	Lead	Timeline
1.1.1	Implement regular free domestic cat sterilization, micro-chipping and collaring sessions	DOA/DOE	Ongoing
1.1.2	Create a policy that ensures all new domestic cats arriving in Little Cayman are sterilized	DOE/DOA	3 years
1.1.3	Enforce the above policy	DOA/DOE	Continuous

1.2

Result: Implementation of a periodic feral cat culling programme – commencing on 2012

Step	Task description	Lead	Timeline
1.2.1	Secure approval and licensing to cull on Crown Lands and NT properties with projectile weapons	DOE/NT	6 months
1.2.2	Train and license marksmen	DOE	12 months
1.2.3	Secure approval to cull on private land	DOE	18 months
1.2.4	Use trapping and shooting to reduce feral cats	DOE	Annual sessions
1.2.5	Investigate possibility of using captive bolt trap and humane poisons to add to culling programme	NT/DOE	3 months

1.3

Result: Implement traffic calming measures and improve observance of speed limits - by 2013

Step	Task description	Lead	Timeline
1.3.1	Employ speed gun on Little Cayman	RCIPS	immediate
1.3.2	Adopt and publicize (via poster campaign) zero-tolerance of speeding on Little Cayman	NT/RCIPS/IRCF	1 month
1.3.3	Issue police w/ annual 'hot spot' map of iguana road kills	DOE	Annually, starting 2012
1.3.4	Research fixed speed cameras for use in Little Cayman	NT/RCIPS	3 months
1.3.5	Research mobile speed flashers as currently in use on Grand Cayman, for possible deployments in Sister Isles	NT	3 months
1.3.6	Research engine speed governors for hire cars and new vehicles on Little Cayman	NT/RCIPS	1 year
1.3.7	Increase the penalty for speeding	RCIPS	3 months
1.3.8	Install seasonal speed humps or chicanes at hot spots on Little Cayman	NT/DOE to NRA/PW	1 year
1.3.9	Install fixed speed bumps or chicanes at road kill hot spots on Cayman Brac	NT/DOE to NRA/PW	2013

1.4

Result: Deaths of iguanas from dogs eliminated (or reduced to near zero) by end of 2012

Step	Task description	Lead	Timeline
1.4.1	Set up meeting with Brac RCIPS to develop policies for enforcing leash law in Sister Isles	RCIPS/NT/DOE	August 2011
1.4.2	Police to work with community to ensure that they understand the law and penalties in place.	RCIPS	Immediate and ongoing
1.4.3	Enforce leash law and work with agencies to ensure implementation of penalties	RCIPS/NT/DOA/DOE	Immediate/ongoing
1.4.4	Ensure that all dogs in Little Cayman are registered under the Animals Law	DOA/RCIPS	Immediate and ongoing
1.4.5	Ensure ferocious dogs in the Sister Isles are muzzled as per Animals Law	DOA/RCIPS	Immediate and ongoing
1.4.6	Find out how many stray dogs are in Cayman Brac, by direct observation and networking through the community	Brac Iguana Survey Team	January 2012
1.4.7	Control feral dogs if found	DOA	Ongoing from 2012

1.5

Result: Measures in place at all Ports to minimize movement of potentially invasive species between the three Cayman Islands – by early 2012

Step	Task description	Lead	Timeline
1.5.1	Meet with Thompson Shipping and Port Authority to determine what measures are in place and what further measures they can recommend to reduce accidental transport of live animals between islands	DOE	3 months
1.5.2	Create and promote recommendations based on outcome of 1.6.1	Shipping companies and Port Authority	By Jan 2012
1.5.3	Meet with Cayman Airways and all local airport authorities to find out what measures are in place and what further measures they can recommend to reduce accidental transport of live animals between islands	DOE	By May 2012
1.5.4	Create and promote recommendations based on outcome of 1.6.3	CAL, Airports Authorities	By June 2012

1.6

Result: Procedures and protocols in place for triage transport and treatment of injured iguanas – by end of 2012

Step	Task description	Lead	Timeline
1.6.1	Write guidelines for assessment and treatment of injured iguanas, including protocols for transport to Grand Cayman for treatment if necessary	DOE	2011
1.6.2	Set up secure outdoor holding cages on all three islands to house iguanas during rehabilitation, as an interim measure pending CI Government establishing a fully-equipped and secure Animal Holding Facility to facilitate the Cayman Islands in CITES compliance and border control.	DOE, IRCF	2012

OBJECTIVE 2: Establish and manage protected and other sites that are key to iguana population survival

2.1

Result: Support in place for work of DOE and National Trust to establish a network of protected areas on LCM – on-going

Step	Task description	Lead	Timeline
2.1.1	Rationalize the NT's Heritage Register of environmentally significant sites and the Dept of Environment's proposed protected area shape file and agree a final protected area network for LCM, ensuring the inclusion of sufficient habitat to maintain self-sustaining wild populations of Sister Isles Rock Iguanas	NT's EPC, DOE	End of 2011
2.1.2	Develop a strategy for protection (eg NT purchase, Crown purchase, joint purchase, conservation easements)	DOE, NT	Mar 2012
2.1.3	Acquire relevant land valuations	NT	2012
2.1.4	Identify funding sources, including working with Government to ensure proper access to EPF	DOE, NT	2012
2.1.5	Prioritize properties for protection by purchase or easement, and proceed to incorporate these into the protected area system	NT, DOE	2012
2.1.6	Utilize all available opportunities and means to support and promote the passage of conservation legislation	NT, DOE	Ongoing

2.2

Result: Protect known communal nesting sites on LCM and CYB, achieved by 2013

Step	Task description	Lead	Timeline
2.2.1	Ensure that all nesting sites are mapped on the Government GIS/LIS	DOE	Aug 2011
2.2.2	Ensure these maps are available on internet to Planning agencies, NT (District Committees etc) and all other relevant parties (eg NRA)	DOE, NT	Dec 2011
2.2.3	Develop a policy for consultation prior to any development action or approval on identified parcels and seek Cabinet/CPA/DCB endorsement of same (adapt flowcharts from NCL)	DOE	2012
2.2.4	Communicate nest site location information to general public as integral part of education and awareness programme (eg. Posters, website, etc)	DOE, NT	2012
2.2.5	See 2.1 above for acquisition and protection strategy	NT	See 1.1 above

2.3

Result: Establish managed areas for iguanas on Cayman Brac through various mechanisms, including the execution of Conservation Easement agreements under Section 13 of the National Trust Law (1997 Revision), by the end of 2012.

Step	Task description	Lead	Timeline
2.3.1	Identify potential areas suitable for management as iguana habitat	DOE, NT	May 2012
2.3.2	Consult with land owners to determine best available management option	DOE, NT	June 2012

Step	Task description	Lead	Timeline
2.3.3	Develop management agreements and execute as appropriate	DOE, NT	Nov 2012
2.3.4	Map agreed managed areas and publicize appropriately	DOE, NT	Dec 2012

2.4

Result: Evaluate conservation land owned by National Trust on Cayman Brac for suitability as restoration areas for iguanas by August 2012

Step	Task description	Lead	Timeline
2.4.1	Using DOE's habitat maps, identify potential iguana habitat	DOE, NT	Dec 2011
2.4.2	Field-verify all areas identified above	DOE, NT	April 2012
2.4.4	Develop restoration plans for suitable areas	DOE, NT	Aug 2012

2.5

Result: Ensure that all relevant government agencies are aware of the nature and scale of speculative land sub-division schemes being carried out by Crown Acquisitions by Oct 2011.

Step	Task description	Lead	Timeline
2.5.1	Confirm exact number and location of all sub-division schemes on Sister Islands and determine status of Planning approval for each	DOE	Aug 2011
2.5.2	Write letters to DCB and CPA requesting that, having regard to the number of existing sub-divisions which have either received Planning permission and/or are actively being marketed by CA, they deny Planning Permission approval for future applications by CA on the basis that they are premature under the relevant sections of the DPL and Regs	DOE (NT)	Sept 2011
2.5.3	Write letters to Ministries of Planning, Environment and District Admin as well as L&S expressing concern about (i) the impact of this type of speculative land development on the environment; (ii) the implications of the lack of infrastructure and services to support this level of potential growth; and (iii) the potential for negative international publicity as a result of failure or default of any of the schemes.	DOE, NT	Oct 2011

OBJECTIVE 3: Carry out targeted research and assessment as needed to inform iguana conservation actions and measure results

3.1

Result: Knowledge of population and distribution on Cayman Brac by mid 2012

Step	Task description	Lead	Timeline
3.1.1	Gather information on iguana sightings by public.	Bonnie Edwards through NT	Immediate through Dec 2011
3.1.2	Design survey protocol and secure permit	Fred Burton, Mat Cottam	November 2011
3.1.3	Move cat traps from Little Cayman to Cayman Brac	DOE staff LC/Brac	November 2011
3.1.4	Secure team accommodation on Cayman Brac	Bonnie Scott Edwards, Kathleen Bodden Harris	End of Oct 2011
3.1.5	Recruit survey team/volunteers	BIRP, Bonnie Edwards	End of Nov 2011
3.1.6	Buy equipment (nets, PIT tags, PIT-tag reader, beads, traps for juveniles, GPS)	IRCF, Bonnie Edwards	End of Nov 2011
3.1.7	Conduct survey, also map potential nesting areas where iguanas are spotted	Bonnie Edwards	Jan 2012

3.2

Result: Knowledge of nesting sites on Cayman Brac by September 2012

Step	Task description	Lead	Timeline
3.2.1	Use population survey results to identify likely nesting grounds	Bonnie Edwards through NT	By April 2012
3.2.7	BIRP to advise on onset of nesting season	Fred Burton	May-July 2012
3.2.3	Recruit local volunteers	Bonnie Edwards	March/April 2012
3.2.4	Ensure team has polarized sunglasses	Bonnie Edwards	April 2012
3.2.5	Conduct survey at least twice/week	Survey team	May-Aug 2012
3.2.6	Continue monitoring	Survey team	Min. bi-annually

3.3

Result: Population estimate on Little Cayman, by 2016

Step	Task description	Lead	Timeline
3.3.1	Secure permission from land owners to put stakes on properties (communal nesting sites)	DOE, NT	Early 2012
3.3.2	Monitor peak nesting season and mark nests	DOE, NT, survey team	Annually until 2014
3.3.3	Fence in nests/nest sites depending on date nested	DOE, NT, survey team	Annually until 2014
3.3.4	Monitor hatching and PIT-tag/release sps	DOE, NT, survey team	Annually until 2014
3.3.5	Catch and scan all iguanas in relevant age range (0-3 years)	DOE, NT, survey team	Dec 2014, 2015, 2016

Step	Task description	Lead	Timeline
3.3.6	Analyze mark-recapture over last 3 years	DOE, NT, survey team	Annually
3.3.7	Directly analyze age structure of sample population	DOE, NT, survey team	Any time 2014-2016
3.3.8	Derive population estimate	DOE, NT, survey team	2015, 2016

3.4

Result: Measured assessment of impact of road cat and dog-kills on Little Cayman, ongoing through plan period

Step	Task description	Lead	Timeline
3.4.1	Acquire iguana mobile phone as hotline for iguana road kill reports	NT	Sept 2011
3.4.2	Respond to calls and record road kills in database (date, sex, approx. size, PIT-tag, GPS location)	Mike Vallee, Debbie Truchan, DOE	ongoing
3.4.3	Recruit regular "surveyors", i.e. residents who drive around frequently, as additional reporters	Mike Vallee, Debbie Truchan	ongoing
3.4.4	Design flyer/poster campaign	Mike Vallee, Debbie Truchan	Sept 2011
3.4.5	Hand out flyers/put up posters	Mike Vallee, Debbie Truchan	ongoing twice/year
3.4.6	Update analysis and mortality estimate	DOE	Dec. annually

3.5

Result: Diet and fertility of feral cats on Little Cayman described by end of 2012 and ongoing for 2 more years

Step	Task description	Lead	Timeline
3.5.1	Recruit vet student to analyze gut contents from 2007 culling	Mat Cottam, SMU	by Oct 2011
3.5.2	Run analysis	student	By end of 2011
3.5.3	Continue with additional material	Mat Cottam, SMU	Ongoing with culling schedule
3.5.4	Recruit vet student to analyze placental scars	Mat Cottam, SMU	Ongoing with culling schedule
3.5.5	Analysis	Mat Cottam, SMU	Ongoing with culling schedule

3.6

Result: Regularly updated and expanded nest site maps on Little Cayman (costs included in 1.3.), ongoing through plan period

Step	Task description	Lead	Timeline
3.6.1	Create nest site survey guide map	Matt Goetz	April 2012
3.6.2	Survey all potential and actual nesting sites	DOE	Annually with hatchling tag/release study.

1.7

Result: Publish genetic results/analysis from extant Sister Isles iguana samples by end of 2011

Step	Task description	Lead	Timeline
3.7.1	Publish results of genetic analysis	Stefan Funk	End of 2011

3.8

Result: Monitor change of amount of vehicular traffic on Little Cayman, especially at nest sites, 2012 and ongoing

Step	Task description	Lead	Timeline
3.8.1	Acquire car registration data on Little Cayman going back to 1990	NT	2011
3.8.2	Investigate possibility of acquiring vehicular meters	NT	2012
3.8.3	If possible and cost-effective, install annually for one month	NT	Annually during nesting season

3.9

Result: Assess effect of artificial nest mounds on interior habitat sites to attract and hold iguanas - by 2014

Step	Task description	Lead	Timeline
3.9.1	Select site on NT property at Nature Trail	DOE, NT	Aug. 2011
3.9.2	Investigate use of helicopter to move 10 cubic meters of "soil". Use "soil" from Little Cayman ONLY, to avoid introduction on alien species	DOE	Aug. 2011
3.9.3	Transplant shrubs onto mound. Use phosphorus mound as a template minus 1/3 of coverage	DOE	Before end of wet season 2012
3.9.4	Monitor annual nesting	DOE	2013, 2014

OBJECTIVE 4: Achieve sustained support for the conservation of the Sister Isles Rock Iguana through targeted education and awareness programmes

4.1

Result: Opinion Questionnaire results, reported by end of 2011

Step	Task description	Lead	Timeline
4.1.1	Compile and distribute annually to the public to maintain relationships and to help assistance and development to the program (online version in website section)	DOE, (Sister Isles District Administration)	By end of 2011 and repeat each year

4.2

Result: Create Branding, complete by mid 2013

Step	Task description	Lead	Timeline
4.2.1	Identify and develop novel branding strategy specifically for Sister Islands (direct branding using iguanas as flag ship species vs indirect branding using a novel project with environmental benefits)	DOE, NT, (DOT)	Within 2 years

4.3

Result: Website development/creation: initial stage by early 2012, secondary stage by end of 2012

Step	Task description	Lead	Timeline
4.3.1	Design/Develop primary website (dedicated programme site)	IRCF	By mid 2012
4.3.2	Develop content: prime focus to be on iguanas and natural history of iguana (image heavy, location, care, guide-to-viewing) with info sections (conservation, tours, donation, blog, gallery, image uploading area), newsletter	DOE, (NT, BIRP)	By mid 2012
4.3.3	Add complimentary site development and linkage (government agencies pages, private industry links-pages, Facebook, public links)	DOE, (NT, DOT, BIRP)	By mid to late 2012 and ongoing
4.3.4	Add online survey (printed version in Opinion questionnaire section)	DOE	By mid to late 2012

4.4

Result: Iguana Signage, installed by mid 2012

Step	Task description	Lead	Timeline
4.4.1	Create and install interpretive signage (Trail head signs about the iguana – Trust House, nature trail, and Preston Bay on Little Cayman; West End community park on Cayman Brac). 4 signs in total	DOE, NT, (IRCF, Sister Isles District Administration)	2012
4.4.2	Create and install “Don’t feed iguana” signs	DOE, NT, (IRCF)	2012

4.5

Result: QR Code Stickers/Signage, installed by mid 2012

Step	Task description	Lead	Timeline
4.5.1	Develop QR code stickers / signs	NT, IRCF, (DOT, DOE)	2012

4.6

Result: Changed public perceptions about feral cats sufficient to generate public tolerance and/or support for active feral cat control measures – by 2012

Step	Task description	Lead	Timeline
4.6.1	Produce three part article for mass distribution; highlighting the inhumane life feral cats live, the threats they pose to eco-systems, and hazards they bring to public health and to domestic cats	NT, DOE	Ongoing/quarterly
4.6.2	Produce articles on proper domestic cat husbandry	NT, DOE, DOA	Ongoing/quarterly
4.6.3	Join with police to inform locals in Little Cayman	NT, RCIPS	2012
4.6.4	Poster campaign on the whole cat issue, to include further distribution of DOE's invasive species poster	NT, IRCF, DOE	2012
4.6.5	Veterinarians to distribute information, collars, and advise clients on benefits of neutering, and risks of allowing pet cats outdoors	NT, DOE, Veterinarian(s)	2012
4.6.6	Locate and publicize existing studies on reduction of cat population's net effect on rat populations	NT	2012

4.7

Result: Invasive Species Awareness, achieved by mid 2012

Step	Task description	Lead	Timeline
4.7.1	Promotion through website, posters and field guide – provide information on and dangers of invasive species, in particular: agriculture livestock, uncontrolled pets, feral animals, and incidental introductions such as Green Iguana, Cuban Knight Anole.	DOE, DOA, (NT)	2012
4.7.2	Pre-emptive Program: Targeted Outreach Program in support of legal patrol of invasive species in protected area to address and delay concerns	DOE, NT	2012

4.8

Result: Driver Awareness, achieved by August 2012

Step	Task description	Lead	Timeline
4.8.1	New Drivers/Rental car road awareness sign – steering wheel cover/rear view mirror rack card – back side to be additional awareness (added to Overall Awareness section)	NT, DOE, IRCF, (local car rental business)	2012

Step	Task description	Lead	Timeline
4.8.2	Death markers (crosses posted wherever road kill happened during that year -tombstone) signs to be removed and replaced each year (calendar year)	NT, (NT Volunteer program, NRA, Sister Isles District Administration)	2012
4.8.3	Central death collection/notification sign (thermometer)	DOE, (NT, IRCF, NRA, Sister Isles District Administration)	2012
4.8.4	Bumper sticker (I break for iguanas)	IRCF, DOE, (NT)	2012
4.8.5	Road signage (awareness + identity branding) 12 signs (3 sets of 2; each island) image plus range QR code	NT, IRCF, (DOT, DOE, NRA, Sister Isles District Administration)	2012
4.8.6	Renew existing slow-down signs on CB=3 signs and on LC=2 signs (if needed)	DOE (Sister Isles District Administration, : Public Works, NT)	2013

4.9

Result: Conservation Stewardship policy, achieved by mid 2012

Step	Task description	Lead	Timeline
4.9.1	Create outline policy document to establish criteria for conservation stewardship areas. To include native landscape, pet control, feeding iguanas, traffic calming within neighbourhood groups	DOE, NT	2012

4.10

Result: Education-Schools, achieved by: beginning of 2012-2013 school year

Step	Task description	Lead	Timeline
4.10.1	Create and distribute curriculum package: for Primary, Middle and High Schools	NT, BIRP	2012
4.10.2	Create corresponding treasure chest package	NT, BIRP	2012
4.10.3	Church and Youth Groups	NT with church ministries	2012
4.10.4	Create Conservation Club (Lyndon Martin) Scouts –conservation badge,	NT	2012
4.10.5	Children's iguana/conservation tours	NT (DOT, DOE, Sister Isles District Administration)	2012

4.11

Result: Support Complimentary Organizations, starting 2012 and ongoing

Step	Task description	Lead	Timeline
4.11.1	Support complementary agencies / organizations / people – to ensure information they provide to the public is factually correct. Information and images will be accessible directly from website.	DOE, (NT, BIRP)	2012 when web site is up

4.12

Result: Newsletter, commencing distribution by end of 2014

Step	Task description	Lead	Timeline
4.12.1	Design/Develop a programme newsletter	DOE, NT, (IRCF)	2014

4.13

Result: Overall environmental awareness in Sister Isles increasing 2012 to 2014

Step	Task description	Lead	Timeline
4.13.1	Field Guide (Natural History info and field guide)	DOE, NT, (DOT)	By 2014
4.13.2	Rack card printed on both sides (created in Driver Awareness)	NT, DOE, (IRCF)	2012

4.14

Result: Educational Short film, achieved by end of 2012

Step	Task description	Lead	Timeline
4.14.1	Conduct feasibility study on concept for an educational short film outlining unsustainable development (CG-animated)	IRCF, (DOE)	2012

OBJECTIVE 5: Set up a management structure and staffing to lead implementation of this plan

5.1

Result: Communication pathways established between all partners in this plan, by end of 2011

Step	Task description	Lead	Timeline
5.1.1	Set up group email including all participants in meetings leading to this plan, plus any others critically involved	DOE	2011
5.1.2	Finalize, adopt, and publish this plan, electronically and in printable form	Fred Burton, IRCE, DOE, NT	2011

5.2

Result: Volunteer co-ordinator appointed to lead initial implementation of aspects of this plan, under direction of the Department of Environment, by end of 2011

Step	Task description	Lead	Timeline
5.2.1	Formulate volunteer job description	DOE	2011
5.2.2	Advertise and fill volunteer position	DOE	2011

5.3

Result: Terrestrial Officer (Sister Islands) appointed by Department of Environment with primary responsibility for implementing this plan, by end of 2012

Step	Task description	Lead	Timeline
5.3.1	Source grant(s) to fund the position for at least 2 years	DOE	2011-2012
5.3.2	Have job description and position agreed by Cayman Islands Government	DOE	2012
5.3.3	Advertise and recruit	DOE	2012
5.3.4	Internalize the post and funding within DOE's core operations	DOE	As soon as Departmental budgeting allows

5.4

Result: Maintained / expanded local and international volunteer support, immediate and ongoing

Step	Task description	Lead	Timeline
5.4.1	Ensure all projects conducted under this plan are well publicized in the local communities in a way that local volunteerism is recognized and stimulated	DOE, NT, all project teams	ongoing
5.4.2	Recruit international volunteers and staff from other supporting institutions on secondment, as needed	DOE, NT, IRCE, DWCT	ongoing

OBJECTIVE 6: Secure sufficient financial resources to implement this plan

6.1

Result: International grants to implement certain aspects of this plan, 2012 and ongoing

Step	Task description	Lead	Timeline
6.1.1	Apply for multi-year funding for education and awareness aspects from the Disney Wildlife Conservation Fund	DOE	2011-2012
6.1.2	Seek additional grants from other international sources (e.g. Mohamed bin Zayed Species Conservation Fund, IRCF), taking care that fundraising for BIRP in Grand Cayman is not in competition	DOE, (BIRP)	2012

6.2

Result: Funding sourced within Little Cayman, towards plan implementation and as a base for raising additional funds internationally, 2012 and ongoing

Step	Task description	Lead	Timeline
6.2.1	Raise ~\$5,000 to \$10,000 per annum through Easter Auction and other fundraising events run by LCM district of NT	NT – Little Cayman District	2012 ongoing
6.2.2	Hold novel fundraising event(s) such as a Ball on Preston Bay beach, that would attract guests also from Cayman Brac and Grand Cayman	NTCI	2012-2014
6.2.3	Ensure purposes of all donations in Little Cayman continue to be clearly identified as for conservation land purchase in Little Cayman, or for Sister Isles iguana conservation generally (which may include work on Cayman Brac).	NTCI	ongoing

6.3

Result: Corporate financial and in-kind support from Sister Isles based / owned companies, 2011 and ongoing

Step	Task description	Lead	Timeline
6.3.1	Seek grants from general businesses operating in Cayman Brac, or owned and run by people from Cayman Brac	DOE, NT	2012-2014
6.3.2	Seek financial support from resort owners for iguana education & awareness signs at their resorts on Little Cayman (note SITA may be a useful avenue to some)	DOE, NT	2011-2014
6.3.3	Seek in-kind donations / discounts on materials and services needed for plan implementation	DOE, NT	2012-2014

BUDGET

(CAYMAN ISLANDS DOLLARS)

PLANNED RESULTS		2011		2012		2013		2014	
1	Reducing un-natural mortality								
1.1	Sterilization, micro-chipping domestic cats on LCM	\$ -			DOE		DOE		DOE
1.2	Feral cat culling	\$ -		TBD	DOE	TBD	DOE	TBD	DOE
1.3	Traffic calming measures	\$ -			DOE		DOE		DOE
1.4	Reduction of dog attacks on iguanas	\$ -		\$ -		\$ -		\$ -	
1.5	Reducing inter-island movement of invasive species	\$ -		\$ -		\$ -		\$ -	
1.6				\$7,000	DOE	\$ -		\$ -	
2	Protected Areas								
2.1	Work towards protected areas on Little Cayman	\$ -		TBD	NT	TBD	NT	TBD	NT
2.2	Protect communal nest sites	\$ -		TBD	NT	TBD	NT	TBD	NT
2.3	Managed area on CYB via conservation easements	\$ -		\$1,000	DOE	\$500	DOE	\$500	DOE
2.4	Evaluation of extant CYB protected areas for iguanas	\$ -		\$2,000		\$ -		\$ -	
2.5	Alerting government to Crown Acquisitions etc	\$ -		\$ -		\$ -		\$ -	
3	Research & Monitoring								
3.1	Brac iguana population survey	\$5,000	IRCF	\$ -		\$ -		\$ -	
3.2	Survey of Brac nesting sites			\$ -					
3.3	Population estimate of iguanas on Little Cayman	\$ -		\$10,000	DOE	\$8,000	DOE	\$10,000	DOE
3.4	Monitoring un-natural iguana mortality	\$ -		\$ 500	DOE	\$ 300	DOE	\$ 200	DOE
3.5	Diet & fertility study of feral cats on Sister Isles	\$ -		\$ 100	SMU?	\$ -		\$ -	
3.6	Little Cayman nest site maps - annual updates	\$ -		\$ -		\$ -		\$ -	
3.7	Genetic analysis	\$ -		\$ -		\$ -		\$ -	
3.8	Monitoring vehicular traffic near communal nest sites	\$ -		\$ 1,000	DOE	With 3.9		With 3.9	
3.9	Assessment of effectiveness of artificial nest mounds	\$ -		\$ 5,000	DOE	\$ 400	DOE	\$ 400	DOE
4	Education & Awareness								
4.1	Opinion survey	\$ -		\$ -		\$ -		\$ -	
4.2	Create branding	\$ -		\$ -		\$ -		\$ -	
4.3	Web site development	\$ -		\$2,000	DOE	\$ -		\$ -	
4.4	Iguana signage	\$ -		\$10,000	DOE	\$ -		\$ -	
4.5	QR code stickers and signage	\$ -		\$200	IRCF	\$ -		\$ -	
4.6	Change public perception of feral cats	\$ -		\$1,500	DOE	\$ -		\$1,000	DOE
4.7	Invasive species awareness	\$ -		\$ -		\$ -		\$ -	
4.8	Driver awareness	\$ -		\$10,000	DOE	\$ -		\$ -	

4.9	Policy document for conservation stewardship	\$ -		\$ -		\$ -		\$ -	
4.10	Education package for schools	\$ -		\$5,000	DOE	\$ -		\$ -	
4.11	Information exchange with other groups	\$ -		\$ -		\$ -		\$ -	
4.12	Newsletter	\$ -		\$ -		\$ -		TBD	DOE
4.13	General environmental awareness materials	\$ -		\$ 15,000	DOE	\$ -		\$ -	
4.14	Educational short film	\$ -		TBD	DOE	\$ -		\$ -	
5	Staffing and Management								
5.1	Communication pathways	\$ -		\$ -		\$ -		\$ -	
5.2	Interim volunteer coordinator	\$500	DOE	\$ -		\$ -		\$ -	
5.3	Terrestrial Officer DOE (Sister Isles)	\$ -		\$ -		\$40,000	DOE	\$40,000	DOE
5.4	Maintaining / expanding volunteer base	\$ -		\$ -		\$ -		\$ -	
6	Fund raising								
6.1	International grant applications	\$ -		\$ -		\$ -		\$ -	
6.2	Fund raising in Little Cayman	\$ -		\$ -		\$ -		\$ -	
6.3	Seeking corporate financial and in-kind support	\$ -		\$ -		\$ -		\$ -	

Notes on budget:

Figures in this table are approximate estimates of costs, indicating only funds that will actually have to be raised and spent.

The value of donated time (voluntary or paid by partnering institutions), and donated or discounted goods and services, are not included here.

“TBD” denotes costs that are yet to be determined and can not be approximated at this time.

See full result and action steps section for additional lead partners that may be involved in fundraising.

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CYB = unaffiliated Cayman Brac resident
LCM = unaffiliated Little Cayman resident
GCM = unaffiliated Grand Cayman resident
DOA = Cayman Islands Department of Agriculture
DOE = Cayman Islands Department of Environment
DOT = Cayman Islands Department of Tourism
NTCI = National Trust for the Cayman Islands
BIRP = Blue Iguana Recovery Programme
RCIPS = Royal Cayman Islands Police Service
DWCT = Durrell Wildlife Conservation Trust
IRCF = International Reptile Conservation Foundation

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The August 2011 workshop that generated most of the content of this plan, was held on Little Cayman at a private rental house *Casa Cassiopeia* which was offered at no charge by the owner, Mrs. Janet Walker. The property's manager and Chair of the Little Cayman District of the National Trust for the Cayman Islands, Debbi Truchan, hosted the group and prepared superlative meals throughout as well as participating fully in the discussions. Accommodations for participants from Cayman Brac, Grand Cayman and overseas were provided free at Casa Cassiopeia, Pirates Point Resort, and the Cayman Islands Department of Environment. Pirates Point Resort also provided the group lunch on the second day, and a vehicle for use of participants staying with them. Cayman Airways granted five free tickets for NTCI & BIRP participants from Grand Cayman.

The workshop sessions were facilitated by Frederic J Burton, who also consolidated and finalized the text of this document for publication. All the plenary discussions were transcribed as they occurred, by Sarah Burton, who also edited the final draft. The final copy of this plan was laid out and formatted by John F. Binns.