

Cayman Islands National Biodiversity Action Plan 2009

3.T.3.2 Terrestrial Species - Reptiles

Sister Islands Rock Iguana



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Sister Islands Rock Iguana *Cyclura nubila caymanensis*

Taxonomy and Range

Kingdom: Animalia, Phylum: Chordata, Class: Sauropsida, Order: Squamata, Family: Iguanidae
Genus: *Cyclura*, Species: *nubila*, Subspecies: *caymanensis*

The Sister Islands Rock Iguana *Cyclura nubila caymanensis*, is endemic to Cayman Brac and Little Cayman. A subspecies of the Cuban Rock Iguana, it apparently diverged from a common ancestor some two-three million years ago.

Status

Distribution: Subspecies **endemic** to Cayman Brac and Little Cayman.

Conservation: **Critically endangered** (IUCN Red List, Gerber, G. (1996). Recent surveys, (M. Goetz 2008, pers. comm.) indicate the iguana to be nearly extinct on Cayman Brac (less than 50 animals). Little Cayman supports a population of, very approximately, 2,000 individuals (M. Goetz 2008, studies in progress).

Legal: The Sister Islands Rock Iguana *Cyclura nubila caymanensis* is protected under the Animals Law (1976). Pending legislation, it would be protected under the National Conservation Law (Schedule I). The *Department of Environment* is the lead body for legal protection.

For Reference and Acknowledgement: Cottam, M., Olynik, J., Blumenthal, J., Godbeer, K.D., Gibb, J., Bothwell, J., Burton, F.J., Bradley, P.E., Band, A., Austin, T., Bush, P., Johnson, B.J., Hurlston, L., Bishop, L., McCoy, C., Parsons, G., Kirkconnell, J., Halford, S. and Ebanks-Petrie, G. (2009). Cayman Islands National Biodiversity Action Plan 2009. Cayman Islands Government. Department of Environment. Final Formatting and production by John Binns, International Reptile Conservation Foundation.



Natural History

Like all *Cyclura* species, the Sister Islands Rock Iguana is primarily herbivorous; consuming leaves, flowers and fruits. Their natural diet includes native shrubs such as the flowers of Bay Vine *Ipomoea pes-caprae* and the fruit of Broadleaf *Cordia sebestena caymanensis*. The iguanas likely serve an important ecological role as a seed disperser. As a result, extinction of the iguanas could have serious consequences for the endemic flora of Little Cayman and Cayman Brac.

In common with the Grand Cayman Blue Iguana *Cyclura lewisi*, the Sister Islands Rock Iguana has also been quick to adapt to cultivation of the land. In Cayman Brac iguanas have been reported to feed on windfall fruits, including pawpaw, plums and mango.

The Sister Islands Rock Iguana lays its eggs in excavated burrows; making access to suitable nesting areas essential. Soil deposits are limited on both islands, and in Little Cayman iguanas have been observed to excavate nests in the sandy beach ridge, down to within 9m of the high water mark. Females nest May-June, and may lay up to 20 eggs at a time (Gerber, Goetz: *unpub.*).

Eggs generally hatch after about 10 weeks. Emergent hatchlings are prey to the native Racer Snake *Alsophis cantherigerus*, and tend to adopt an arboreal nature in their early months, reaching sexual maturity about two-three years-of-age. As adults, they are primarily terrestrial in nature, seeking shelter in natural rock crevices and excavated burrows during the evening hours. They emerge in the morning, as ambient temperatures rise above 80°C, to bask in the sunshine and warm up.

Natural longevity in the wild is unknown, but is presumed to be many decades.

Associated Habitats and Species for *Sister Islands Rock Iguana*

ASSOCIATED HABITAT PLANS	ASSOCIATED SPECIES PLANS
2.S.5 Coastal Shrubland 2.T.3 Dry Shrubland 2.T.6 Farm and Grassland	Broadleaf <i>Cordia sebestena caymanensis</i> Cocoplum <i>Chrysobalanus icaco</i> <i>Banara caymanensis</i> Century Plant <i>Agave caymanensis</i> Little Cayman Snail <i>Cerion nanus</i> Little Cayman Green Anole <i>Anolis maynardi</i> Grand Cayman Blue Iguana <i>Cyclura lewisi</i>

Current Factors Affecting *Sister Islands Rock Iguana*

- **Habitat loss:** though both Little Cayman and Cayman Brac are much less developed than Grand Cayman, recent years have seen a proliferation in residential development and roads infrastructure. In common with Grand Cayman, beachfront and coastal property is increasingly a real estate premium, making establishment of protected areas increasingly cost-prohibitive.
- **Habitat fragmentation:** proliferation of roads networks, particularly the development of circum-island roads networks effectively separates shrubland foraging habitat from coastal nesting areas.
- **Non-native species:** predation of young iguanas by rats and cats, and adults by dogs is a growing problem. Habitat fragmentation and increasing ingress of residential areas into remnants of natural habitat facilitate access and establishment of invasive species.
- **Road kill:** iguanas are attracted to roads surface for thermo-regulation, and many are killed on the roads each year.
- **Artificial feeding:** feeding of iguanas by tourists has encouraged aggregation of increased numbers of animals in certain areas. Artificial feeding of animals contributes to a modification of natural behaviour, making individuals bolder and on occasion, more aggressive. Iguanas deliver a powerful bite, and several injuries have been reported to date.
- **Shifting baseline:** it is now possible to purchase “souvenirs” from Cayman Brac, sporting an image of Green iguana *Iguana iguana*. The Green Iguana was first reported from Little Cayman around 2005, and efforts to prevent establishment may or may not have succeeded.
- **Legal:** DoE staff are not currently legally enabled to use firearms to effect lethal control of invasive species. This has resulted in situations in which immediate control of feral cats and dogs to preserve endangered native species has not been possible, likely resulting in the loss of individuals through reliance on less immediate control mechanisms.

Opportunities and Current Local Action for *Sister Islands Rock Iguana*

No formal conservation programme exists for the Sister Islands Rock Iguana, however, the *Blue Iguana Recovery Programme* is currently working with the *Durrell Wildlife Conservation Trust*, to survey the Little Cayman population, and assess conservation needs.

Scientific and project management expertise are available through the *Blue Iguana Recovery Programme*, with strong volunteer, international partner support, and internet presence through www.BlueIguana.ky.

In 2007, the *DoE*, with support of *DoA* and *CSL*, instigated a feral cat eradication pilot project on Little Cayman.

The iguanas are a popular and well-established tourist attraction in Little Cayman.

SPECIES ACTION PLAN for *Sister Islands Rock Iguana*

OBJECTIVES	TARGET
1. Reduce unnatural mortality rates sufficiently to halt population decline and assist recovery.	ongoing
2. Establish and manage protected areas and other sites that are key to iguana population survival.	2012
3. Carry out targeted research and assessment as needed to better inform iguana conservation actions and measure results.	2016
4. Achieve sustained support for the conservation of the Sister Isles Rock Iguana through targeted education and awareness programmes.	2014
5. Set up a management structure and staffing to lead implementation of this plan.	2012
6. Secure sufficient financial resources to implement this plan.	2014

Sister Islands Rock Iguana PROPOSED ACTION	LEAD	PARTNERS	TARGET	MEETS OBJECTIVE
Policy & Legislation				
PL1. Pass and implement the National Conservation Law.	CIG	DoE NT	2006	1,2,3,4,6
PL2. Implement the Endangered Species (Trade & Transport) Law.	DoE	CIG	2006	1
PL3. Protect <i>Cyclura nubila caymanensis</i> under Schedule I of the National Conservation Law, through establishment of conservation regulations.	DoE	CIG	2006	1,2,3,4,6
PL4. Promote amendment of the Planning Law to facilitate rapid imposition of stop-orders on illegal developments and provide a responsive and effective enforcement mechanism.	DoP	DoE CIG	2010	1,2
PL5. Promote establishment of a <i>Development Plan</i> for the Sister Islands, incorporating a long-term vision for the environmental, social, and economic development of the Islands.	DoP DCB	CIG MP DoE	ongoing	1,2
PL6. Conduct a Species Recovery Plan Workshop to update and refine this Action Plan once research data is adequate.	BIRP	DoE NT	2015	1,2,3,4,5,6
PL6. REPORT: (2011) Species Management Plan for the Sister Isles Rock Iguana (2011-2014) formulated in stakeholder workshops 1 st -3 rd AUG, Little Cayman. This SAP is based on this SMP.				
PL7. Enable DoE Conservation Officers to implement legal eradication of invasive species, as necessary to ensure the survival of endangered native species.	DoE	CIG	2008	1
PL7. REPORT: (2011) Animals Law revised to enable culling of Green Iguanas.				
PL8. Create and enforce a policy to ensure all new domestic cats arriving in Little Cayman are sterilized.	DoA	DoE	2014	1
PL9. Enforce Leash Laws and work with agencies to ensure implementation of penalties.	RCIPS	DoE NT DoA	2011	1

Sister Islands Rock Iguana PROPOSED ACTION	LEAD	PARTNERS	TARGET	MEETS OBJECTIVE
PL10. Ensure all dogs in Little Cayman are registered, and all ferocious dogs in the Sister Islands are muzzled as per the Animals Law.	RCIPS DoA		2011	1
PL11. Develop a protected areas land purchase strategy incorporating sufficient habitat for the Sister Islands Rock Iguanas.	DoE NT		2012	2
PL12. Develop a policy for consultation prior to development on key parcels - seek Cabinet / CPA/ DCB endorsement, and communicate same to the public.	DoE	CIG CPA DCB MP	2012	1,2,4
Safeguards & Management				
SM1. Control feral cats and dogs and eradicate <i>Iguana iguana</i> in Little Cayman and Cayman Brac.	DoE RCIPS DoA	DEH IntC MP	2013	1
SM1. REPORT: (2012) Cat trapping initiated in Cayman Brac, under field management of Bonnie Edwards.				
SM2. Implement regular free domestic cat sterilization, micro-chipping and collaring sessions.	DoA DoE		ongoing	1,4
SM2. REPORT: (2008) Pilot project completed by DoE, DoA and FERA. All pet cats in Little Cayman were micro-chipped. Twenty eight cats were removed through trapping, however, more remain. Trap-shy individuals will require alternative control methods.				
SM3. Train and license marksmen for IAS control.	DoE		2012	1
SM4. Issue police with annual "hot spot" map of iguana road kills.	DoE	RCIPS	2012	1
SM5. Install seasonal speed bumps or chicanes at road kill hot spots on Little Cayman, and fixed versions in Cayman Brac.	NRA PWD	NT DoE	2012	1
SM6. Establish secure holding cages on all three islands to house iguanas during rehabilitation, as an interim measure pending construction of the CIG CITES / Border control Animal Holding facility.	DoE IRCF		2012	1
SM7. Establish a full-time DoE field Conservation Officer for the Sister Islands to implement conservation actions.	DoE		2012	1,2,3,4,5,6
SM8. Maintain and expand local and international volunteer support.		DoE NT IRCF DWCT	ongoing	1,2,3,4,5,6
SM9. Explore local, international and corporate funding avenues, and matched <i>Environmental Protection Fund</i> donations / Crown contributions of land, taking care with respect to competition with BIRP.	DoE NT	BIRP IntC CIG MP	2012- 2014	1,2,3,4,6
SM10. Incorporate key areas of natural habitat for <i>Cyclura nubila caymanensis</i> into system of protected areas.	CC	NT MP DoE CIG IntC	2010	2
SM11. Use the <i>Environmental Protection Fund</i> to purchase / establish management agreements with landowners, towards protecting <i>coastal shrubland</i> communal nesting grounds, Little Cayman, (78A 42 2.57ac, with adjacent parcels 78A43 1.26ac and 78A41 1.48ac) and establish associated Crown land to the north (77A3 22.8ac), as a protected area.	CC	NT MP DoE CIG IntC	2010	2
SM12. Agree and implement management plans for the protected areas.	BIRP	DoE NT	2015	1,2,3,4,5,6
SM13. Consider translocations from Little Cayman to Cayman Brac to restock Brac population.	BIRP	DoE NT	2012	1,3
SM14. Implement associated HAPs.	DoE		2015	1,2,3,4
Advisory				
A1. Targeted awareness of the need for the National Conservation Law and the Endangered Species (Trade & Transport) Law.	DoE	CIG NT	2006	1,2,3,4,6
A2. Recommend employment of speed gun on Little Cayman.	RCIPS		2011	1

Sister Islands Rock Iguana PROPOSED ACTION	LEAD	PARTNERS	TARGET	MEETS OBJECTIVE
A3. Secure approval and licensing to cull on Crown Lands and NT property with projectile weapons.	DoE	RCIPS NT	2012	1
A4. Secure approval to cull on private land.	DoE NT	MP	2013	1
A5. Support complementary organisations to ensure they have useful / correct information on SIRI.	DoE	NT BIRP	2012	1,4
A6. Meet with RCIPS towards increasing penalty / enforcement for speeding.	NT DoE	RCIPS	2012	1
A7. Meet with RCIPS towards universal enforcement enforcing Leash Law in Sister Islands.	NT DoE	RCIPS	2011	1
A8. Meet with Thompson Shipping, Port Authority and Cayman Airways to determine measures to reduce accidental carriage of animals between islands.	DoE	MP	2012	1,4
A9. Produce guidelines for assessment and treatment of injured iguanas, including inter/intra-island transportation protocols.	DoE	MP NT	2011	1,4
A10. Write letters to DCB, CPA and relevant Ministries recommending tougher regulation and denial of planning permission for proposals arising from internet advisements purporting sales of undivided land as if legal subdivision had taken place (e.g. Crown Acquisitions) as premature under the relevant sections of the Development and Planning Law.	DoE NT		2011	1,4
Research & Monitoring				
RM1. Conduct pilot project towards eradication of feral cats in Little Cayman.	DoE CSL	DoA	2015	1,3,4
RM1. REPORT: (2008) Pilot project completed by DoE, DoA and FERA (supported by Governor's fund). All pet cats in Little Cayman were micro-chipped. Twenty eight cats were removed through trapping, however, more remain. Trap-shy individuals will require alternative control methods.				
RM2. Monitor and, if possible, eradicate <i>Iguana iguana</i> in Little Cayman and Cayman Brac.	DoE	DoA DEH MP	ongoing	1,3
RM2. REPORT: (2007) Two feral Green iguanas reported on Little Cayman are identified and removed. (2011) Green iguana removed on Cayman Brac.				
RM3. Quantify genetic structure of wild population of <i>Cyclura nubila caymanensis</i> in Little Cayman and assess viability of reintroduction of individuals to Cayman Brac.	BIRP	DoE NT	2015	3
RM4. Investigate new technologies, such as captive bolt and humane poisons to augment cat control programme.	DoE NT		2012	1,3
RM5. Research fixed speed cameras and mobile speed flashers for use in Little Cayman.	NT	RCIPS	2012	1,3
RM6. Research engine speed governors for hire cars and new vehicles on Little Cayman.	NT	RCIPS	2012	1,3
RM7. Iguana Surveyors to find out the number of stray dogs in Cayman Brac via community networking.	NT MP		2012	1,3,4
RM8. Rationalise NT Heritage Register and DoE proposed protected area shape-files to agree final proposed protected areas, incorporating sufficient habitat for the Sister Islands Rock Iguana.	DoE NT		2012	2,3
RM9. Acquire land valuations for key areas.	NT	MP	2012	2,3
RM10. Map nesting sites to Government GIS, and ensure availability to other agencies and key landowners.	DoE	NT DoP MP	2011	2,3

Sister Islands Rock Iguana PROPOSED ACTION	LEAD	PARTNERS	TARGET	MEETS OBJECTIVE
RM11. Identify funding sources for land purchase and management, including key landowners to develop management agreements, and working with CIG to ensure proper access to <i>Environmental Protection Fund</i> .	DoE	NT DoP MP	2012	2,3,5,6
RM12. Use DoE's habitat maps to ID potential habitat / field verify areas with a view to protection or restoration.	DoE	NT MP	2012	2,3,5
RM13. Confirm number, location and Planning status of sub-division schemes in the Sister Islands.	DoE		2011	
RM14. Conduct baseline population survey of Cayman Brac Iguanas.	DoE	NT MP IRCF DoA BIRP	2012	3,4,5
RM14. REPORT: (2012) Big Brac Iguana Count implemented in January. Team of local and international volunteers under leadership of Bonnie Edwards and Doug Bell initiate extensive public outreach, and capture, PIT and bead-tag and release 82 iguanas in one month. Trapping of feral cats also undertaken.				
RM15. Use baseline data to identify likely nesting grounds in Cayman Brac and implement Nesting Site Survey with follow-up monitoring.	DoE	NT MP BIRP	2012	2,3,4
RM16. Conduct population estimate on Little Cayman. Monitor peak nesting season and mark hatchlings. Conduct mark-recapture over three years to determine population structure/size, update nest site maps - building on current work of Matt Goetz (DWCT).	DoE	NT MP BIRP	2016	2,3,4
RM17. Determine impact of road kill and cat and dog kills on Little Cayman.	MP DoE		ongoing	1,4
RM18. Assess diet/fertility of Little Cayman's feral cats.	DoE	SMU	2012	1
RM19. Publish genetic analysis of extant Sister Islands iguana samples.	BIRP		2011	3
RM20. Monitor vehicular traffic levels on Little Cayman, through registrations/traffic meters.	NT		2012	1,3
RM21. Assess effectiveness of artificial nest mounds using NT nature trail as test site.	DoE NT		2012	2,3
RM22. Construct quarters for visiting scientists in Little Cayman and Cayman Brac, and support research initiatives complementary to the objectives of the NBAP.	DoE	IntC	2012	1,2,3,4,5
RM22. REPORT: (2008) Accommodation for up to four individuals on Little Cayman established by DoE.				
RM23. Utilise population and habitat surveys of Little Cayman to outline protected areas sufficient to support a population of 1000 individuals in the wild.	BIRP DWCT	NT DoE	2010	2
Communication & Publicity				
CP1. Island wide awareness campaign towards distinguishing differences between <i>Iguana iguana</i> and <i>Cyclura nubila caymanensis</i> and explain the threat posed to native wildlife by <i>Iguana iguana</i> .	DoE	NT MP IRCF	2010	1,4
CP1. REPORT: (2011) Spot the difference posters distributed on Sister Islands.				
CP2. Raise awareness of the unique nature of <i>Cyclura nubila caymanensis</i> and other endemic flora and fauna.	DoE NT QEIBP	MP CN GC OS SB LCN	2008	1,2,4,6
CP3. Utilise the unique fauna of Little Cayman to promote the Island.	CIG	DoE DoT NT MP	2010	1,2,4,6
CP4. Utilise native flora and fauna, and associated preservation efforts, in the international promotion of the Cayman Islands.	CIG	DoE DoT NT MP QEIBP	2010	1,2,4,6

Sister Islands Rock Iguana PROPOSED ACTION	LEAD	PARTNERS	TARGET	MEETS OBJECTIVE
CP5. Make road kill statistics highly visible to the public and emplace traffic-slowing interpretation towards encouraging motorists to be aware of iguanas, and reduce mortality of <i>Cyclura nubila caymanensis</i> .	DoE BIRP		2008	1,4
CP6. Island wide awareness of illegality and undesirability of moving iguanas between islands, outside of managed transfers.	DoE BIRP	CIG	2008	1,4
CP7. Create and distribute a curriculum package / treasure chest activity pack for schools, church and youth groups, Conservation Clubs and associated tours.	NT	DoE DoT	2012	1,4
CP8. Design and develop a programme newsletter.	DoE NT	IRCF	2014	1,4
CP9. Adopt and publicize (via poster campaign) zero tolerance of speeding on Little Cayman.	NT IRCF RCIPS	MP	2011	1,4
CP10. Police to work with community to ensure everyone understands the Leash Laws and associated penalties.	DoE NT	RCIPS MP	2011	1,4
CP11. Create outline document for conservation stewardship, incorporating native landscaping, pet control, feeding iguanas, traffic calming etc.	DoE NT		2012	1,4
CP12. Conduct annual questionnaire to determine public opinion and awareness of conservation issues.	DoE		2011	4
CP12. REPORT: (2011) First “Future Conservation in Little Cayman and Cayman Brac” questionnaire produced and distributed by DoE.				
CP13. Create branding image for the Sister Islands Rock Iguana to help identify it as different from the Blue Iguana.	DoE NT	DoT	2013	4,6
CP14. Raise awareness of Sister Islands nature through the production of rack cards and dedicated Natural History Field Guide.	DoE NT	DoT IRCF	2014	4,6
CP15. Consider production of a multipurpose short film showcasing Sister Islands the issues associated with unsustainable development.	IRCF	DoE	2012	4,6
CP16. Create dedicated SIRI web presence.	IRCF DoE	NT BIRP DoT	2012	4,6
CP17. Emplace trailhead signage (four signs in total) carrying information about the Sister Iguanas iguanas.	DoE NT IRCF		2012	4
CP18. Emplace signage to discourage feeding of iguanas.	DoE NT IRCF		2012	1,4
CP19. Develop QR code stickers for outreach materials	DoE NT IRCF		2012	4
CP20. Raise public awareness regarding the humane, wildlife and pet health issues associated with feral cats.	NT DoE		2012	1,4
CP21. Raise public awareness regarding invasive species including agricultural livestock, uncontrolled pets, feral animals (including humane, wildlife and pet health implications) and incidental introductions.	DoE DoA NT		2012	1,4
CP22. Targeted awareness aimed at hire car drivers on the Sister Islands, through production of informational steering wheel covers.	NT	DoE MP IRCF	2012	1,4
CP23. Targeted awareness aimed at car drivers: production of iguana death markers to be placed by roadsides, death toll thermometer, bumper stickers, new road signage, and revamp of existing signage.	NT DoE IRCF	NRA	2012	1,4

References and further Reading for *Sister Islands Rock Iguana*

Barbour, T. and Noble, G.K. (1916). A revision of the lizards of the genus *Cyclura*. *Bulletin of the Museum of Comparative Zoology, Harvard University*,