# Cayman Islands National Biodiversity Action Plan 2009
## 3.T.3.3 Terrestrial Species - Reptiles
## Grand Cayman Blue Iguana

Rev: 19 March 2012

JOHN BINNS

### Grand Cayman Blue Iguana *Cyclura lewisi*

### Taxonomy and Range

Kingdom: Animalia, Phylum: Chordata, Class: Sauropsida, Order: Squamata, Family: Iguanidae
Genus: Cyclura, Species: lewisi

The Grand Cayman Blue Iguana, *Cyclura lewisi*, is endemic to the island of Grand Cayman. Closest relatives are *Cyclura nubila* (Cuba), and *Cyclura cychlura* (Bahamas); all three having apparently diverged from a common ancestor some three million years ago.

### Status

**Distribution:** Species endemic to Grand Cayman.

**Conservation:** Critically endangered (IUCN Red List). In 2002 surveys indicated a wild population of 10-25 individuals. By 2005 any young being born into the unmanaged wild population were not surviving to breeding age, making the population functionally extinct. *Cyclura lewisi* is now the most endangered iguana on Earth.

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.

**Legal:** The Grand Cayman Blue Iguana *Cyclura lewisi* 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. The *Blue Iguana Recovery Programme* BIRP operates under an exemption to the Animals Law, granted to the *National Trust for the Cayman Islands*.

## Natural History

While it is likely that the original population included many animals living in *coastal shrubland* environments, the Grand Cayman Blue Iguana now only occurs inland, in natural *dry shrubland*, and along the margins of *dry forest*. Adults are primarily terrestrial, occupying rock holes and low tree cavities. Younger individuals tend to be more arboreal. Like all *Cyclura* species the Grand Cayman Blue Iguana is primarily herbivorous, consuming leaves, flowers and fruits. This diet is very rarely supplemented with insect larvae, crabs, slugs, dead birds and fungi. Hatchlings are preyed upon by the native Racer snake *Alsophis cantherigerus*. Adults have no natural predators. The age of sexual maturity is typically three years. Natural longevity in the wild is unknown, but is presumed to be many decades. One captive individual, in the USA, lived to 67 years-of-age.

The present-day population is restricted to the eastern interior of Grand Cayman, where it was reduced to a critically low density prior to the first survey, 1938. Their range has contracted significantly over the last 25 years, with many sites once populated now showing no signs of wild iguanas.

## Associated Habitats and Species for *Grand Cayman Blue Iguana*

| ASSOCIATED HABITAT PLANS | ASSOCIATED SPECIES PLANS |
|---|---|
| 2.S.5 Coastal Shrubland<br>2.T.3 Dry Shrubland<br>2.T.6 Farm and Grassland | Century Plant *Agave caymanensis*<br>Cocoplum *Chrysobalanus icaco*<br>Broadleaf *Cordia sebestena caymanensis*<br>Banana Orchid *Myrmecophila thompsoni*<br>Silver Thatch Palm *Coccothrinax proctorii*<br>Sister Islands Rock Iguana *Cyclura nubila caymanensis* |

## Current Factors Affecting *Grand Cayman Blue Iguana*

- ***Traditional habitat loss:*** fossil records indicate that beach-ridge habitat was, historically, a favoured habitat for *C. lewisi*. This area has been a primary focus for development since the 1960s, and intersected by a busy coastal road since the 1980s.
- ***Remnant habitat fragmentation:*** interior habitat has been degraded through land conversion, change in agricultural practice (grazing replacing traditional fruit farming), and proliferation of the roads network.
- ***Hunting:*** historically, iguanas were hunted for food, and occasionally mistaken and persecuted as a crop-pest.
- ***Poaching:*** endangered status of *C. lewisi*. may have encouraged recent incidents of theft. In 2008, seven individuals were killed in what appeared to a deliberate act of vandalism.
- ***Non-native species:*** predation of youngsters by rats and cats, and adults by dogs is a growing problem, exacerbated by habitat fragmentation and increasing ingress of residential areas into remnants of natural habitat.
- ***Road kill:*** iguanas are attracted to roads surface for thermo-regulation, and many are killed on the roads each year.
- ***Shifting baseline:*** confusion with Green Iguana *Iguana iguana.*
- ***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 *Grand Cayman Blue Iguana*

The *National Trust for the Cayman Islands* established the *Blue Iguana Recovery Programme*. Based at the QEII Botanic Park, Grand Cayman, this incorporates a successful captive breeding / release programme.

The Recovery Programme currently employs three full-time staff (two salaried), and delivers ca. 100 hatchlings per year. Directed by Fred Burton, the programme is assisted by a consortium of local and international specialists. Management strategy is implemented through a *Species Recovery Plan*, updated on a three-yearly basis.

The restored, free-roaming QE II Botanic Park subpopulation, breeding since 2001, now numbers ca. 40 individuals (as of Dec 2007). The restored free-roaming Salina Reserve subpopulation numbered over 200 in 2008, and began breeding in 2006.

Expanding education and merchandising programme, with strong internet support through www.BlueIguana.ky. Development of a self-financing strategy to cover core programme costs, through revenue-generating nature tours of the captive breeding facility.

## SPECIES ACTION PLAN for *Grand Cayman Blue Iguana*

Objectives and targets of this Species Action Plan are based on formulations of the *Species Recovery Plan for the Grand Cayman Blue Iguana, Cyclura lewisi 2009-2011.*

| OBJECTIVES | TARGET |
|---|---|
| **1.** Acquire and protect xerophytic shrubland in eastern Grand Cayman sufficient to support one thousand Grand Cayman Blue Iguanas (requirement 300 – 500 acres). | 2009 |
| **2.** Restore, maintain and protect free-roaming Grand Cayman Blue Iguanas in natural habitats. | ongoing |
| **3.** Provide genetically optimal animals for reintroduction through the existing on-island captive breeding and head-starting programme. | ongoing |
| **4.** Safeguard against catastrophic loss of Grand Cayman Blue Iguana populations by maintaining the off-island captive breeding population. | ongoing |
| **5.** Ensure sustained support for the conservation of the Grand Cayman Blue Iguana through targeted education and awareness programmes. | ongoing |
| **6.** Secure sufficient financial, technical and human resources for the long-term sustainability of the Blue Iguana Recovery Programme. | ongoing |

| Grand Cayman Blue Iguana PROPOSED ACTION | LEAD | PARTNERS | TARGET | MEETS OBJECTIVE |
|---|---|---|---|---|
| **Policy & Legislation** | | | | |
| **PL1.** Pass and implement the National Conservation Law. | CIG | DoE | 2006 | 1-6 |
| **PL2.** Implement the Endangered Species (Trade & Transport) Law. | DoE | CIG | 2006 | 2 |
| **PL3.** Protect *Cyclura lewisi* under Schedule I of the National Conservation Law , through establishment of conservation regulations. | DoE | CIG | 2006 | 1-6 |
| **PL4**. Implementation of Species Recovery Plan for *Cyclura lewisi.* | BIRP | DoE NT QEIIBP | ongoing - 2008 | 1-6 |
| **PL5.** Maintain local and international volunteer support for captive facility and field work. | BIRP | NT | ongoing | 6 |
| **PL6.** Develop a business plan to develop revenue lines and ensure long-term financial sustainability of the Recovery Programme, including core staff salaries. | BIRP | NT DoE IRCF DWCT | 2006 | 6 |
| PL6. REPORT: (2011) Financial model for proposed visitor centre in Colliers Wilderness Reserve prepared by Charles Mougeot under contract to DoE. | | | | |
| **PL7.** 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 |
| **PL8.** Enable DoE Conservation Officers to implement legal eradication of invasive species, as necessary to ensure the survival of endangered native species. | DoE | CIG | 2008 | 2,6 |

| Grand Cayman Blue Iguana PROPOSED ACTION | LEAD | PARTNERS | TARGET | MEETS OBJECTIVE |
|---|---|---|---|---|
| **PL9.** Strengthen the *Development Plan* on Grand Cayman, incorporating a long-term vision for the environmental, social, and economic development of the Islands. | DoP CPA | CIG MP DoE | ongoing | 1,2 |
| **Safeguards & Management** | | | | |
| **SM1.** Identify land acquisition options and prioritise for the establishment of a shrubland reserve. | NT | EAC | 2006 | 1,2 |
| SM1. REPORT: Completed. From a half-dozen candidate sites, the two most suitable areas of shrubland were identified in the East End of Grand Cayman, 2007. Both incorporate areas of Crown land: one abutting the southern boundary of the East End quarry, the other located approximately midway between the Salina Reserve and Colliers Pond. | | | | |
| **SM2.** Use Crown land protection and the *Environmental Protection Fund* to negotiate and purchase a shrubland reserve with Government and local landowners. | CC | DoE NT MP | 2009 | 1,2 |
| SM2. REPORT: (2011)190 acre Colliers Wildeness Reserve leased to NTCI for 99 year by Crown at no cost. | | | | |
| **SM3.** Request international contributions and matched Crown contributions of land / funds for reserve establishment. | DoE | | 2009-2010 | 1,2 |
| **SM4.** Establish an inalienable protected shrubland area of ca. 500 acres. | DoE | NT | 2010 | 1,2 |
| SM4. REPORT: (2011)190 acre Colliers Wildeness Reserve leased to NTCI for 99 year by Crown at no cost. | | | | |
| **SM5.** Joint management agreement and nature tourism strategy for sustainable financing of a reserve. | DoE NT | | ongoing - 2010 | 1,2 |
| SM5. REPORT: (2011) 190 acre Colliers Wildeness Reserve leased to NTCI for 99 year by Crown at no cost. | | | | |
| **SM6.** Suitable habitat in the Salina and Botanic Park to be stocked to capacity. | BIRP | NT | 2007 - 2010 | 2 |
| SM6. REPORT: (2012) Ongoing | | | | |
| **SM7.** Optimize genetic diversity of worldwide breeding strategy and expand to 225 individuals / 20 founder lines. | BIRP | SDZ | ongoing - 2007 | 3,4 |
| **SM8.** Acquire and protect parcel of shrubland (65A / 37) to consolidate Salina Reserve and increase its carrying capacity for Grand Cayman Blue Iguanas. | NT | DoE | 2009 | 1,2 |
| SM8. COMPLETED: (2010) National Trust purchase, part-funded from MPASSE project grant. | | | | |
| **SM9.** Improve dietary supply, content and diversity. | BIRP | NT | 2008 | 2 |
| SM9. REPORT: Completed. Diet of pelleted iguana food replaced by wholly fresh diet of leaves, flowers and fruit, collected daily. Dietary change is accompanied by a significant increase in fecundity. | | | | |
| **SM10.** Security improvements at the breeding facility. | BIRP | NT | 2008-9 | 2 |
| SM10. REPORT: Seven adult iguanas were killed inside the captive breeding facility in what appears to be a wilful act of vandalism, 2008. RCIP investigations have, as yet, failed to identify perpetrators. In a second incident, two free-roaming adults were killed inside the Park by feral dogs, 2008. DoE Conservation Officers were halted from shooting the dogs amid legal concerns. Some dogs were trapped, however, at least one remains at large. | | | | |
| SM10. COMPLETED: (2010) Captive facility fully enclosed by security fence. | | | | |
| **SM12.** Improve control of feral cats and dogs in Grand Cayman, especially in / in the vicinity of areas protected for iguana interest. | DoE | DEH, IntC DoA, MP | 2012 | 2 |
| **SM13.** Implement associated HAPs. | DoE | | 2015 | 1-6 |
| **Advisory** | | | | |
| **A1.** Secure amendment of gazetted road corridors through the critical east interior habitat. | DoE | NT | 2009 | 1,2 |
| A1. REPORT: (2011) Alternative road alignment agreed and built giving access to Colliers Wilderness Reserve. | | | | |
| **A2.** Train Government officers / key personnel in identification of *Iguana iguana* and *Cyclura lewisi.* | BIRP | DoE | 2006 | 6 |

| Grand Cayman Blue Iguana PROPOSED ACTION | LEAD | PARTNERS | TARGET | MEETS OBJECTIVE |
|---|---|---|---|---|
| **A3.** Targeted awareness of the need for the National Conservation Law and the Endangered Species (Trade & Transport) Law. | DoE | CIG NT | 2006 | 1-6 |
| A3. REPORT: Extensive public outreach Mar-Sept 2010. | | | | |
| **Research & Monitoring** | | | | |
| **RM1.** Identify capacity of additional areas for re-stocking (Barkers, Mastic, Wilderness Farm etc.). | BIRP | NT DoE CIG | 2006 | 2 |
| RM1. REPORT: Completed. Barkers and Wilderness Farm would support small populations, but pose significant ongoing management issues. The Mastic grassland pockets are now reverting to secondary growth woodland. Most suitable sites were identified as two shrubland areas in East End, 2007. | | | | |
| **RM2.** Develop and test methods of non-native predator control for managed iguana habitats. | BIRP | DoE | 2007 | 2,6 |
| **RM3.** Assess the ecological impact of *Iguana iguana* on *Cyclura lewisi.* | BIRP | DWCT ISG DoE | 2010 | 2,6 |
| **RM4.** Quantify genetic structure of wild and captive populations. | BIRP | DWCT | 2008-9 | 3 |
| **RM5.** Publish existing data on Grand Cayman Blue Iguana diet. | BIRP | | 2010 | 2,3 |
| **RM6.** Regular health screening of captive and QEIIBP wild populations. | BIRP | WCS DoA | ongoing | 2 |
| **RM7.** Construct quarters for visiting scientists. | BIRP | DoE | 2009 | 6 |
| **Communication & Publicity** | | | | |
| **CP1.** Targeted awareness campaign to key sectors of Government and the local community | NT | DoE | 2006 ongoing | 5 |
| **CP2.** Local and international media campaign. | NT | DoE BIRP | ongoing - 2006 | 5 |
| **CP3.** Launch of educational DVD / schools packs. | BIRP | NT DE | 2006-2009 | 5 |
| **CP4.** Island wide awareness of the differences between *Iguana iguana* and *Cyclura lewisi.* | BIRP | NT IRCF DoE | ongoing - 2007 | 5 |
| **CP5.** Construction of a *Grand Cayman Blue Iguana shrublands* interpretative centre / classroom. | BIRP | DoE CIG NT IntC | 2009 | 5 |
| CP5. REPORT. Contruction postponed until 2013-2014 to accommodate move of focus from QEIIBP to Colliers Wilderness Reserve. | | | | |
| **CP6.** Develop and expand merchandising lines. | BIRP | NT IRCF | ongoing | 5,6 |
| **CP7.** Use *Cyclura lewisi* as a flagship for *dry shrubland* preservation. | DoE NT | CIG | 2008 ongoing | 1-6 |
| CP7. REPORT: (2011) Blue Iguana successfully used to establish Colliers Wilderness Reserve, (further expansion will be needed). | | | | |
| **CP8.** Utilise native flora and fauna, and associated preservation efforts, in the international promotion of the Cayman Islands. | CIG | DoE DoT NT MP QEIIBP | 2010 | 1-6 |

## References and Further Reading for *Grand Cayman Blue 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*, 60:149-164. (New spp. *caymanensis*).

Burton, F.J. (2004). Revision to Species of *Cyclura nubila lewisi,* the Grand Cayman Blue Iguana. *Caribbean Journal of Science,* 40(2):198-203.

Burton, F.J. *et al.* (2000). The Grand Cayman Blue Iguana *Cyclura nubila lewisi Species* Recovery Plan 2001 – 2006.

Burton, F.J. *et al.* (2006). Species Recovery Plan for the Grand Cayman Blue Iguana, *Cyclura lewisi* 2005 - 2009.

Burton, F.J. *et al.* (2009). Species Recovery Plan for the Grand Cayman Blue Iguana, *Cyclura lewisi* 2009 - 2011.

Seidel, M.E. and Franz, R. (1994). Amphibians and reptiles (exclusive of marine turtles) of the Cayman Islands. In: *The Cayman Islands, natural history and biogeography*. (eds M.A. Brunt and J. E. Davies), pp. 307-31. The Netherlands: Kluwer Academic Publishers.

www.BlueIguana.ky

www.ircf.org