



Adult Sister Isles Rock Iguana (*Cyclura nubila caymanensis*) in the interior shrubland of Little Cayman.

The Cayman Sister Isles Iguana Project: Identifying the Conservation Needs of *Cyclura nubila caymanensis*

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Photographs by the author except where noted.



Among the world's most endangered reptiles, West Indian rock iguanas of the genus *Cyclura* have attracted considerable attention from the conservation community. Monitoring, captive-breeding and reintroduction efforts, or translocation projects have been initiated for many species. The numbers of Cuban Rock Iguanas (*C. nubila nubila*) are relatively large (Perera 2000), but monitoring the status and assessing numbers of the subspecies, *C. n. caymanensis*, endemic to the islands of Little Cayman and Cayman Brac, has been neglected. Whereas the subspecies is listed as Critically Endangered on the IUCN Red List (Gerber, 1996) due to the small area of occupancy and the fact that only about 40 animals are believed to survive on Cayman Brac (Burton, pers. comm.), surveys never have been conducted on Little Cayman. Little Cayman is a small island



Adult male *Cyclura nubila caymanensis* at the west end of Little Cayman (top), and an adult female (bottom).



MICHAEL VALLEE

The author and volunteer Adam Mitchell taking blood samples for genetic analysis from a juvenile iguana.

(28 km²) inhabited by fewer than 200 residents. Most of the land is in private ownership, and the rate of development increasing steadily.

In the mid-1990s, about 1,500–2,000 iguanas were thought to live on the island, although declines were projected (Gerber 1996). What little knowledge we have concerning the population since then, its status and current threats, is the result of irregular trips by Fred Burton, head of the Blue Iguana Recovery Program on Grand Cayman, over the past decade and unpublished research conducted by Glenn Gerber in 1993. A population update, status assessment, and determination of the long-term conservation needs of *C. n. caymanensis* are long overdue.

Aims

In 2007, in close collaboration with the Cayman Islands Government Department of Environment and the National Trust for the Cayman Islands, the Durrell Wildlife Conservation Trust initiated the multiyear Cayman Sister Isles Iguana Project. The overall goal is to provide the Caymanian Government and Little Cayman and Cayman Brac residents with the knowledge and tools to preserve this subspecies in the long-term.

Without any reliable and current figures on the overall population size and its status, the first task for field researchers was to try to determine the existing population size, distribution, and

genetic heterozygosity. Future research will investigate aspects of nesting ecology applicable to conservation, and identify the factors limiting distribution and density with a view towards their amelioration.



TYNE LACOMBE

The author measuring and flagging a sample quadrat in the shrubland of Little Cayman.

Fieldwork 2007

From the beginning of October until the end of November 2007, an estimate of the current population size was made by plot sampling using randomly allocated 20 x 40 m quadrats, as other methods (e.g., distance sampling) are unsuitable for *Cyclura* spp. in the types of habitat present in the Cayman Islands (Burton, pers. comm.). Each quadrat was visited on three consecutive days to allow occupancy modeling of rock holes (i.e., occupied retreats were counted rather than visible iguanas). The third visit to each quadrat included a four-hour observation period beginning at sunrise and conducted by three people and additionally using five IRCF ID cameras (see *IGUANA* 14(3): 208–209).

Using this method, we visited 22 quadrats, but surprisingly could detect only a single occupied retreat. With this very small sample size, our population estimate is a total of 1,800 individuals on Little Cayman; however, this is only reliable to an order of magnitude.

The problem is that the method was designed for randomly or evenly distributed populations or population patches, but, in suitable natural habitats on the island (i.e., dry scrubland and less dense forest — we did not include the abundant mangroves and wetlands, as iguanas are not present in these habitats), a disturbingly low number of iguanas were encountered. In fact, hiking through the bush almost daily for two months to reach the sample quadrats, we encountered or heard only another five individuals. The statement that iguanas reach their maximum densities in the interior shrubland (“bushland” — Brunt 1994, in Gerber 2000) therefore cannot be confirmed.

The situation was very different along roads or in otherwise disturbed areas, mostly around areas of human habitation. Adult iguanas were encountered frequently along roadsides in the south and east, and around houses in the west, giving residents and tourists the impression of a fairly healthy population. Disturbingly, younger age classes were very rarely seen.

This clustering of adult iguanas in disturbed areas and its potential effects on the population, whether detrimental or beneficial, will be addressed further in future field trips. Similarly,



“Disturbed” habitat is not necessarily inhabited by people. A landfill near the site of the attempted but until now abandoned new airport. One adult pair and three hatchling iguanas have been observed at this locality.



Typical shrubland habitat in the interior of the island. Whether iguanas reach their maximum populations densities in such habitat cannot be confirmed at this time.



ADAM MITCHELL

Volunteer Michael Vallee and the author taking measurements.

with appropriate survey methodologies, we will be able to obtain more accurate data on the population sizes in clustered areas, as well as a better understanding of the apparently very low density in undisturbed habitats.

In addition to the population study, we opportunistically recorded GIS positions of all 90 iguanas we encountered. We were able to catch 52 of these, which we marked with PIT-tags and color-coded bead tags on their dorsal crests. Morphometric

data also were taken from all captured individuals and blood samples were collected from 48 for genetic analysis, the results of which are pending.

Glenn Gerber marked approximately 200 iguanas in his 1993 study (Gerber, pers. comm., Gerber 2000) but, as PIT tags were not widely available at the time, no reliable long-term tag data were available for reference purposes.

Threats

The most imminent threats to *C. n. caymanensis* on Little Cayman seem to be feral cats and road mortality. During our stay in October and November, we found three freshly killed adult iguanas on the road, but residents advised us that many more road deaths occur during the breeding season. This is to be expected, as males roam more widely in search of mating partners around May, and gravid females migrate to nesting sites on the beaches beginning in June. Taking this into account, as well as the fact that not all road deaths will be detected or reported, we are estimating that the population might lose 40–50 breeding adults per year as a consequence of road mortality. To establish more accurate numbers and involve the entire community, we initiated a collaborative plan with the Department of Environment to record road deaths while also providing public education and opportunities for public involvement.

As on many other islands, feral cats present a huge danger to hatchling iguanas and small juveniles. This now has been recognized by the Cayman Islands Government, and we were involved in an initial cat eradication program run by the Department of Environment, the results of which are pending. Encouragingly, a public education campaign indicated that residents are aware of threats to “their” iguanas and enthusiastic about protecting them from decline or extinction.



Freshly road-killed adult female *Cyclura nubila caymanensis*.



ADAM MITCHELL

The author with a recently run-over and partially paralyzed adult female on the North road.

Development presents a threat that often is less immediately noticeable but potentially very significant. As one of the least developed Caribbean islands, Little Cayman is about to lose its unique natural character as more and more of the beachside lots are offered for sale. Numerous additional retirement homes and resorts already are in the planning stages. A harbinger of the pressure by investors is the new road crossing the island from south to north in an area not associated with any immediate benefit to the existing human population.

The relatively higher density of *C. n. caymanensis* around houses and resorts might indicate at first glance that the species could cope well with development and could survive on an intensively developed Little Cayman. Maybe the iguanas are indeed attracted out of their natural habitats toward human settlement, possibly because of better and more abundant retreat and basking sites, or perhaps because of additional food resources provided by residents. However, cats and dogs, whether feral or not, and road mortality are likely to act as negative forces in those population clusters. Also, as beach lots are



A typical sight along the coastal roads, where most land is advertised for sale.



The newly constructed third road dissecting Little Cayman is clear evidence of the continuing development.

developed, the continuous disturbance and sealing of the ground there will prevent sufficient recruitment as nesting locations vanish and hatchlings are killed by pets.

The difficulties inherent in assessing recruitment (i.e., reliably detecting hatchlings and juveniles) present a major problem. Until this can be overcome, a seemingly healthy co-existence of (adult) iguanas in and around human settlements needs to be viewed with great caution.

Cayman Brac

The population of *C. n. caymanensis* on the slightly larger island of Cayman Brac (38 km²), which is 7.5 km from Little Cayman and, with approximately 1,000 residents, much more densely populated, is estimated at no more than 40 iguanas (Burton, pers. comm.). Again, accurate data are missing and no thorough study has been undertaken. Development on “The Brac” is much more advanced than on Little Cayman, and feral cats and dogs are abundant (Burton, pers. comm., Cottam, pers. comm.), so that extirpation of the iguana population there seems to be only a matter of time.

We will visit Cayman Brac during the next field seasons to collect genetic material for comparison. If funding can be generated, a status assessment will be conducted, but without the local commitment to tackle introduced predators, conservation resources may preferentially be focused on Little Cayman.

The Future

In 2008, fieldwork is planned for the nesting season to allow identification of coastal nesting areas and possible female migra-

tion routes to those areas. The focus will be on locating possible communal nesting sites, which would then be a priority for protection. Little is known about the location of available nesting sites in the interior of Little Cayman or where the females nesting on the beaches have their territories. Therefore, identifying migration routes would not only be of conservation concern, but following females back to their original territories after nesting could show us where to look for populated natural habitat in the island's interior. To facilitate this, we will fit as many as 30 female *C. n. caymanensis* caught on the beach after nesting with radio transmitters, and then locate them several times a day until they have been stationary for a number of days. Funding provided, in 2009 we will continue with more radio-tracking during the mating season, when following roaming males could lead us to other iguanas, allowing a more accurate estimation of overall population size.

Another focus from 2009 onward will be determining population sizes in the more densely populated areas, as well as research into habitat parameters and what might attract iguanas from natural habitats into disturbed areas (if this proves to be the case). The results may well indicate whether this situation could be halted or even reversed to attract a viable population into protected areas, enhancing chances for the long-term survival of this subspecies on Little Cayman despite increasing development.

Acknowledgements

Thanks are due to Adam Mitchell, Michael Vallee, and Jude Bryja for their invaluable help in the field, and Fred Burton for



Adult *Cyclura nubila caymanensis* in the interior shrubland of Little Cayman.



his immense support and continued collaboration. The Cayman Islands Government's Department of Environment provided the necessary permits and provided considerable support, as did the National Trust for the Cayman Islands and its members on Little Cayman. Durrell Wildlife Conservation Trust provided in-kind support through professional time, and the Balcombe Trust generously provided all financial support. The International Reptile Conservation Foundation facilitated the recruitment of volunteers. The manuscript was greatly improved by comments from Kay Bradfield.

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Other endemic species will benefit by sharing habitat conserved for iguanas. Two examples are this juvenile Little Cayman Trope (*Tropidophis parkeri*; top) and this Cayman Galliwasp (*Celestus maculatus*; bottom).

Ecology and Conservation of Grassland Vertebrates

The Sutton Avian Research Center, a unit of the Oklahoma Biological Survey and the Oklahoma Chapter of the Nature Conservancy are hosting a conference titled "Ecology and Conservation of Grassland Vertebrates." The conference will be held at the University of Oklahoma in Norman on 15–19 April 2008. For more information, please see <www.suttoncenter.org/ecgv.html>.

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SUZANNE L. COLLINS, ONAH

The Slender Glass Lizard (*Ophisaurus attenuatus*) is a limbless denizen of the Midwestern grasslands.