Studying the World's Most Endangered Rock Iguana, *Cyclura nubila lewisi*

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Among the jagged limestone rock and dry forest vegetation, I spot one of the world's most endangered lizards sprawled on a fallen palm frond and basking in the sun. This magnificent creature, with dramatic red eyes and nearly four feet of bright blue scales, is the endemic Grand Cayman Blue Iguana, *Cyclura nubila lewisi*. Hoping for a closer glance, I hold my breath and creep slowly forward until I am only a few feet away. No reaction yet... Step by step, I stealthily approach until — how's this? — I am only inches away from this apparently bored iguana?! Though free to flee, Old Yeller, as one yellow bead in this iguana's crest identifies him, calmly lies there like a log as numerous staff and visitors to his home pass by on a regular basis.

Old Yellow is one of about twenty free-roaming Blue Iguanas at the Queen Elizabeth II Botanic Park (QEIIBP) on Grand Cayman. These animals were bred onsite and released at 2–3 years of age. The iguanas in this population are few, young (the oldest is eight years old), live in an

Female Grand Cayman Blue Iguana (*Cyclura nubila lewisi*) named Carley. This animal was hatched in the wild and captured by a local Caymanian who kept her until he recently donated her to the breeding facility at Queen Elizabeth II Botanic Park. *Photograph by Fred Burton*

unnatural setting, and are, for the most part, highly habituated to humans. Despite these oddities, the study of these iguanas is critical for the survival of *C. n. lewisi*. The released QEIIBP iguanas are the only Blue Iguanas left living outside of captivity other than an estimated 7–25 iguanas remaining in the wild.

While working on a master's degree at the University of Tennessee, Knoxville, I collaborated with the National Trust for the Cayman Islands (NTCI) in studying the released population in QEIIBP during the fall of 2001 and the summer and fall of 2002. At the IUCN/SSC Iguana Specialist Group meeting held on Grand Cayman in 2001, I participated in a workshop to develop a Species Survival Plan for the Blue Iguana. One component of this plan, addressed by my current research, was a detailed field study of the released animals, including an analysis of spatial distribution, to estimate the carrying capacity of QEIIBP and the required area for a proposed iguana reserve. Additionally, I identified habitats and specific resources which are important to the iguanas in order to improve living and breeding conditions for the released and captive iguanas within the park and to assess potential sites for the proposed iguana reserve.

My project focused on determining the spatial distribution and habitat utilization of the released iguanas by radiotracking and conducting focal animal observations of 12 individuals. Because of the low density of iguanas, I followed each iguana continuously for one day at a time to conduct observations. While watching iguanas sleep motionless for hours on end and trying to remain similarly motionless but alert, I repeated to myself my mantra (borrowed from Beverly Dugan): "Iguanas are not dull; they are just very subtle." I often recorded tens of park visitors and staff passing or driving within three meters of an iguana without so much as a lift of the head from the happy blue basker. For iguana enthusiasts who have patience and luck with weather, up-close experiences and photographs of Blue Iguanas at

Old Yeller rests on a man-made pile of rocks next to a favorite food item, *Asystasia gangetica*. *Photograph by Rachel Goodman*

An iguana's head pokes out from the manicured lawn of the Colour Garden in the Queen Elizabeth II Botanic Park. Biter basks on top of a pile of discarded wooden beams which also serve as her usual retreat. These are decidedly unnatural habitats. In stark contrast is some of the natural shrubland which iguanas inhabit in the mostly undisturbed portion of the park. *Photographs by Rachel Goodman*

Slugger models his radio transmitter. *Photograph by Rachel Goodman*

Slugger regularly sunbathes on the road near the staff office, refusing to budge even when cars pass at less than 3 m away. *Photograph by Rachel Goodman*

The author monitoring movement of iguanas with telemetry equipment. *Photograph by Sandy Echternacht*

Park staffer John Lawrus laughs at the common sight of Pink, a released iguana, begging for handouts on the porch of the staff office. Iguanas have gone so far as to run into this office or attempt to jump into cars or onto people in the park. *Photograph by Rachel Goodman*

the park are guaranteed. The habituation of the released iguanas also proved to be a real asset for my research, as I was able to follow iguanas at a very close range without interfering with their behavior. One exception to this was Pink (also identified by a bead), who, accustomed to being fed by park staff, followed me and begged for food if I approached too closely.

Some limitations and quirks of the QEIIBP population were frustrating for me as a researcher, but emphasize the critical need for research and monitoring of this population. For example, iguanas who were supplementally fed moved shorter distances to forage, leading to a confounding variable in my analysis of home range size which my small sample size cannot address. However, the suggestion that iguanas may center their home ranges around supplemental foods is strong enough for management plans to include a consideration of feeding sites as a tool for encouraging settlement of newly released iguanas, which otherwise might disperse into unprotected areas. The presence of feeding sites also may lead to a

decrease in the size of existing home ranges, thereby increasing the number of iguanas that can be packed into the park.

Another quirk of my study was the constant human disturbance of iguanas and researcher alike. I often interrupted my observation sessions, during which I strived to minimize disturbance, to jump in front of a car threatening to run over my subject or to prevent an iguana from eating a plastic bag or a tourist's berry-colored toenails! Also, convincing park visitors and staff to ignore and not talk with me while I conducted behavioral observations was a constant challenge. Visitors were satisfied receiving a small informative pamphlet I wrote up, but some staff could never accept the fact that I was on duty while watching a motionless iguana and not interested in joining their smoking break.

In addition to my study of spatial distribution and habitat use in the park, I collected data on the diet and demographics of the released iguanas. The first successful reproduction in the released population had been confirmed in 2000 by the appearance of yearlings the following spring. In fall 2001, Fred Burton, director of the Blue Iguana captive breeding and release program, and I built enclosures around five nests of released females to examine nest structure and success. Two nests were successful and an evaluation of a third was inconclusive. These findings and the recensusing of the wild population in summer 2002 indicated a need for headstarting juveniles produced by the released QEIIBP iguanas. In 2002, I monitored nesting of released females. Fred subsequently excavated clutches for incubation, resulting in a total of 25 hatchlings for headstarting in the captive facility.

Fred and I collected and identified plants that Blue Iguanas were observed eating and examined a limited number of freshly collected scats. We found that the released iguanas eat the leaves, seedlings, fruits, and flowers of many species of exotic plants in the park's colorful gardens in addition to native species in the park's natural habitats. They also occasionally take some animal matter in the form of slugs and invertebrate larvae. One six-year old male, Slugger,

The author holds Cagerat (three years old when this photo was taken), who has grown nearly twice as fast as the other released iguanas, presumably because of his double-life as both a well-fed pseudo-captive and a free-roaming forager and basker. *Photograph by Fred Burton*

Cagerat, who was released near the captive breeding compound in the spring of 2002, found a hole in an empty cage shortly thereafter, and has remained resident ever since. He rarely ventures far outside of the compound, but often climbs on top of the cages to bask and display at the captives. *Photograph by Rachel Goodman*

Biter, here five years old, rests for a moment after digging her nesting burrow in a pile of discarded potting soil. *Photograph by Rachel Goodman*

acquired his nickname by searching for and consuming at least six live slugs during one spree.

I also often served as an informal monitor of the captive and released populations at QEIIBP, alerting and aiding when a captive iguana escaped from its cage or when a released iguana's favored retreat was in danger of being destroyed (potentially with the iguana in it). Before my arrival at the park, the general assumption was that released iguanas were not fed heavily by humans, as park staff were explicitly instructed not to feed them. I discovered that nearly all of the released iguanas were supplementally fed, either directly or indirectly — and most commonly by the staff. In fact, several iguanas regularly traveled to the staff office just before lunch to wait on the front steps for their regular meal of fruits, fish, meats, and, most commonly, rice and beans. Besides the obvious potential for nutritional problems, uncontrolled supplemental feeding has led to decreased wariness of and increased aggression toward people. If iguana attacks on park visitors, which currently occur, though infrequently, are to be eliminated, direct feeding by humans must be stopped and signs warning visitors not to approach or pet the iguanas must be erected. The latter will be accomplished this year, thanks to IIS-member John Bendon's donations of two signs for the park.

After wrapping up my last field season in December 2002, I found that I did not want to leave the botanic park, where the Blue Iguanas are still in need of much help and greater understanding. Formerly, Fred Burton, park staff, and volunteers organized through the NTCI fed and cared for the captive iguanas, and I was often the only daily monitor, particularly of the released population. This year, a part-time employee has been hired by the Blue Iguana Conservation Program to feed and care for the released and especially the captive iguanas at QEIIBP. Although I'm sure they are in good hands, I had a hard time saying goodbye to those funny blue lizards: Cagerat, who was released but refused to leave the captive compound; Biter, named for splitting open a finger; Slugger, who thankfully survived vehicular crushing; and Pink, infamous for his assaults on cars and women. Each iguana has a unique personality, and all became my dear friends. I have hope that the Grand Cayman Blue Iguana will survive its current brush with near-extinction and flourish, so that future generations will have the chance to experience this iguana's unique beauty and charms.

Fred Burton and the author built enclosures in 2001 to catch hatchlings as they emerged from nests of released female iguanas in QEIIBP. *Photograph by Sandy Echternacht*

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An iguana stands in front of one of the park's golf carts and contemplates crawling under for some refuge from the hot midday sun. To date, two released iguanas have been run over after doing just that, though luckily one survived. *Photograph by Rachel Goodman*

Billy, a member of the captive breeding program, opens wide for a big yawn. *Photograph by Rachel Goodman*

Pertinent Literature

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