

TRAVELOGUE

What Stout Iguanas (Don't) Do All Day

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Photographs by the author except where indicated.

While some 16-year-olds are busy debating the meaning of life or determining their purpose in the world, I spent a week doing field research in the British Virgin Islands (BVI). Guana Island, where the work was conducted, is a private island. It is home to at least 50 species of birds, five species of bats, more than 14 species of reptiles and amphibians, and hundreds of plant and insect species (Lazell, 2005). I have visited the island a few times in the past and had the chance to assist with a bird study last fall.

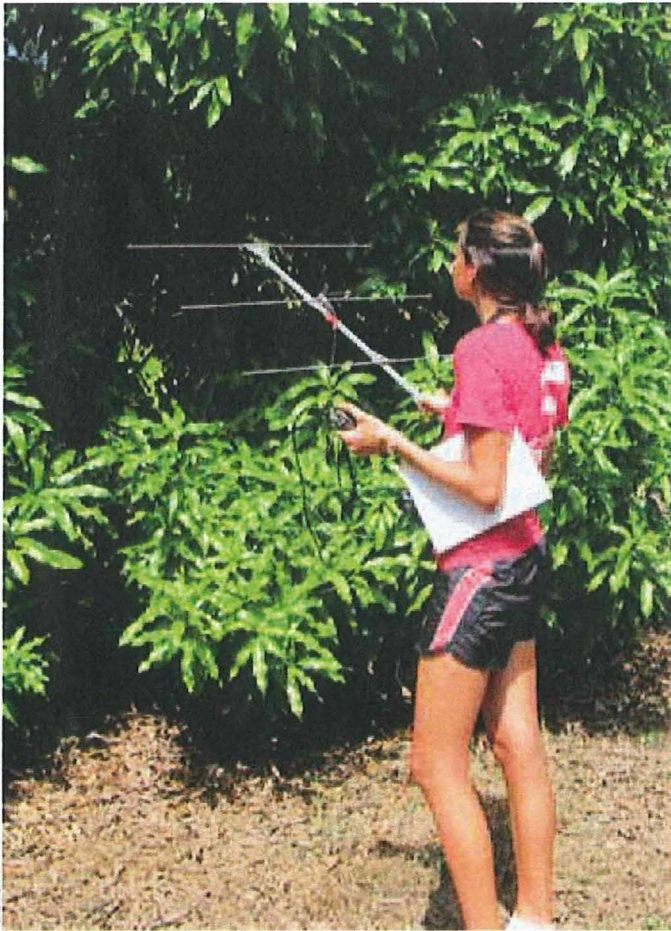
This past October, I designed and executed my own behavioral study on juvenile Stout Iguanas. *Cyclura pinguis*, commonly referred to as the Stout Iguana or Anegada Ground Iguana, is a critically endangered lizard that can be found only in the BVI. Eight individuals were moved to Guana Island in the 1980s in an effort to protect the species, whose one remaining population on Anegada was declining. I would be responsible for observing a critically endangered species, of which only a few hundred exist, but also be one of the lucky few to get the chance to study them. While writing up

my project proposal, I grew more and more excited, dreaming up incredible scenarios of never-before-seen iguana interactions.

I set out to do a basic behavioral study on juveniles, as few had been done. I would be looking for time spent on the ground, time spent in trees, time spent sunning, what and when they were eating, and more. In my procedure, I assumed that once I arrived on the island, the iguanas would basically come flocking to my feet, begging me to study them. I had planned to radio-track five iguanas, hoping I would find three in one location and two in another. This way I would experience interactions between them, as well as see whether or not their behavior changed depending on the habitat in different location. Unfortunately, finding five iguanas proved to be quite a challenge. They were present in abundance at the beginning of October, but by the time I arrived on Guana in late October, most of them had suddenly disappeared (perhaps because they knew a reckless adolescent was coming). However, two were found near the dining area and transmitters



Guana Island, home to all the juvenile *Cyclura pinguis* in this investigation.



GAD PERRY

The author using telemetry equipment to find one of the juvenile *Cyclura pinguis* in a Mango Tree (*Mangifera indica*) in the late afternoon.

were attached. Three more were found in the orchard, and so I had all five iguanas ready to go, thanks to the scientists already there. I now needed to learn how to use the equipment to track them, which proved to be another challenge. The receiver made beeping sounds I was supposed to interpret. Even during practice, while finding immobile transmitters, I picked up wrong signals, went in the opposite direction of the signal, or simply turned around in circles until I became dizzy. Nonetheless, by the end of the week, I had “mastered” the tracking equipment.

Being the unlucky teenager I am, a juvenile iguana died the first morning I was on the island. I followed a signal all the way to a pool behind one of the guesthouses. After looking around on the edge and in the surrounding bushes, I finally discovered the baby at the bottom of the pool. It had drowned. Although the death of the lizard had nothing to do with the study, I felt like a murderer. Not only that, but via Facebook — what else? — word got around my high school back home that I had chased a baby iguana into a pool and held it under water until it died. This was social suicide at its finest.

In the bio lab courses at my high school, the experiments are for the most part already set up, with clear instructions that, when carefully followed, earn an almost automatic A. On Guana, although I had to write the procedure myself, as long as I followed it exactly as written, I was *bound* to be successful, right? Boy, was I wrong! After the death of the iguana, I put my sadness and confusion aside, picked up the signal of my second iguana, and tracked it to a Spider Lily. I sat next to the Spider Lily, staring at it, for three hours. I recorded every rustle, movement, and bird overhead for three hours, then decided to recheck the signal and make sure it was still in the plant. Lo and behold, the signal was now coming from somewhere

entirely different. I had sat staring at a plant, sweat pouring out of me, for *three hours*, and to no avail. I packed up my gear and followed the signal to the actual location of the iguana. When I spotted it sitting on a branch in a tree a ways off the path, my heart rejoiced. I had found my iguana, and it was alive! I then commenced my note-taking once again, writing down every movement, occurrence, sound, anything. By the end of the week I



Juvenile #19 basking in the afternoon sun.



Juvenile #12 doing “push-ups” around midday.



Juvenile #22 on the ground munching a vegetarian meal.



The author marking an iguana with Wite-out®.

discovered that juvenile Stout Iguanas do not do much. Even so, I kept myself busy writing down anything and everything that occurred.

The next day, we found a new iguana and attached a transmitter. All I could hope was that this juvenile survived, despite the cursed transmitter on its back. Further complications arose when one of the three iguanas from the orchard was released in the wrong location. This was the second detour from my thoroughly thought-out procedure. Why wasn't everything going as planned? I wanted an "A" on this lab! After trying and not succeeding in finding the misplaced iguana, I decided to make a little experiment out of the situation — I would see whether the iguana made it back to the orchard by the time I left. I figured, if nature was changing my experiment's course, so could I. I further amended my experiment, not only taking down behavioral observations but also taking a picture of the iguanas and of their surroundings every half hour. I would then determine the amount of sun exposure the iguanas had in their current location and the amount of sunlight available in their current environment.

I spent all of that second day watching the iguana near the dining area. I found it sitting in the exact location where I had left it the evening before. By the third day, I got into the rhythm of things — eating breakfast, sitting and watching iguanas for hours, eating lunch, sitting and watching iguanas for hours, eating dinner, checking location of iguanas, sleeping (with occasional nightmares of iguanas drowning). I had not expected this little excitement and movement to cause such exhaustion. That morning, I watched the iguana near the dining area until it began to rain and the lizard took cover. I headed to the orchard and, to my surprise, found one of the two lizards roaming around on the ground. Apparently, what I had laid out in my procedure was finally occurring. The iguana moved around on the ground almost all of that morning. While nibbling on some plants, it suddenly lurched toward me. A few seconds later, a snake (a Puerto Rican Racer, *Borikenophis portoricensis*) came out of a nearby bush, stopped, then

continued on. My heart nearly jumped out of my chest, as I stood there with my baby at my feet. I began to imagine scenarios of the snake whipping its head around and attacking the juvenile. Part of me wanted to save the baby iguana if that were to happen, but another part of me shouted: "No! The baby must die because nature wills it!" Luckily I did not have to make that decision — the snake slithered off and never came back. I later found out that it was too small to have even considered eating the baby. When I came back in the afternoon, the juvenile was sitting in a tree. Patterns began to develop as I found that the juveniles usually roam, forage, and eat in the mornings, with activity peaking around 9 or 10 AM. They then retreat to higher, safer locations in the afternoon. More often than not, the location they were in around 3 PM was where I would find them the next morning.

The lizards often head-bobbed as soon as they became aware of my presence, as well as when other lizards were nearby. On the fourth day, both of the iguanas in the orchard were on the ground foraging. Although they were not close to one another, I stood between them hoping for some interaction. Naturally, nothing happened, but I still found them eating the same plants and climbing the same trees. In fact, when the iguanas were sitting in trees, they were always found in White Cedars (*Tabebuia heterophylla*). By the fifth day, one of the iguanas had shed its transmitter under a Mango Tree (*Mangifera indica*). I watched the one iguana left in the orchard for the rest of the morning, with foraging occurring around 10 AM, as every other morning. In the afternoon, I began to search for the mis-released iguana that belonged in the orchard. The signal was still coming from the general area of where it was released, although it had moved in the direction of the orchard. On the sixth day, I watched the lone orchard iguana yet again. After tracking the mis-released juvenile, I discovered it had made great headway in moving toward the orchard. It had moved 79 m closer after just a few days. It did the same again on the next day, moving another 71



Map of Guana Island showing movements of the iguana mistakenly released at a site other than where it was originally caught. "1" marks where the iguana was caught, and "2" where it was later released.

m toward the orchard. A few days after I left Guana, however, the iguana moved 54 m back toward the location where it had been released and away from where I first found it in the orchard.

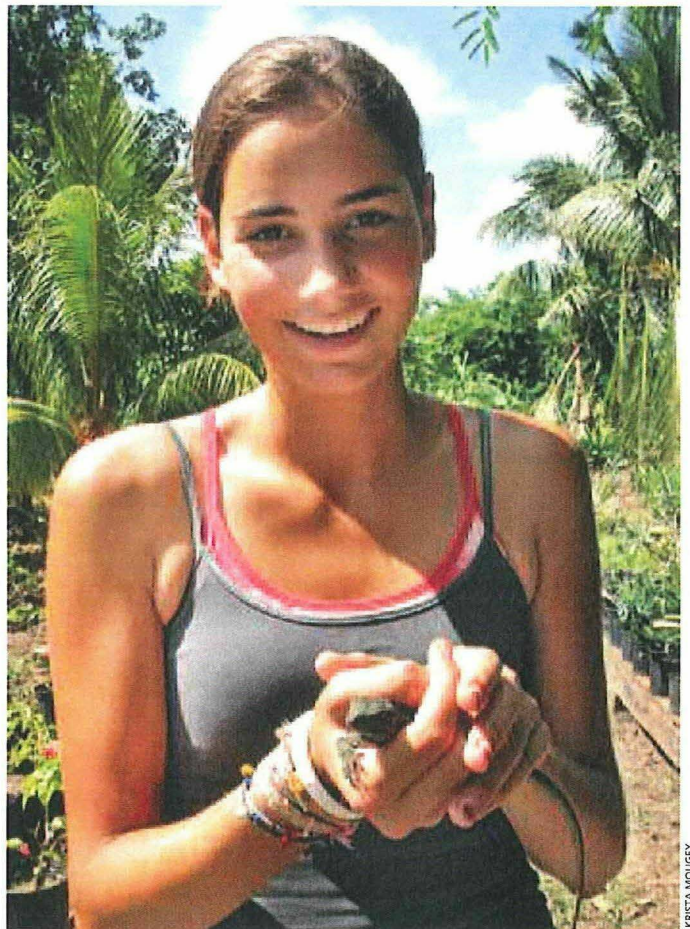
On my last day on the island, I needed to catch all my iguanas and take the transmitters off. After an iguana was caught, I got a chance to hold it. As most transmitters had been put on before I got to the island, this was the first time I was able to hold one. My attachment to the little guys grew, as I finally got to experience what they felt like, see their faces up close, and marvel at the beauty of their coloration. Once the transmitter was removed, each iguana scampered off, and that was the last I saw of it.

When I got back home to freezing cold New Jersey, not only did I miss the warmth of Guana Island, but I also found myself longing to track the life of my newfound friends. I wanted to know what they were doing, where they were sleeping, whether they were still alive or not. I took stock of what I had learned. I found that juvenile *Cyclura pinguis* spend most of their time in trees. I observed them on the ground for an average of three hours a day, almost invariably in the morning, but found them in trees the rest of the time. Although I did not observe them for 24-hour periods, they apparently spend almost 90% of their time in trees. Not only do they spend a good amount of their day in trees, they were relatively high as well. On average, the iguanas were 5.5 m above the ground, although they occasionally were so high I was unable to see them at all. Being high in trees presumably offers juveniles added protection; they are well camouflaged in the foliage. Previous reports indicate that they are eaten by American Kestrels (*Falco sparverius*) and snakes, both of which are common. Although I had

hypothesized that the juveniles were actively seeking to maximize their sun exposure, I found that this was not necessarily the case. On average, $57 \pm 24\%$ of the iguana was exposed to sunlight, compared to $60 \pm 17\%$ of their environment. The difference between insolation at and away from iguana locations was not significant (Wilcoxon Signed Ranks Test; $Z = 0.87$, $P = 0.39$). Consequently, I concluded that the lizards do not appear to be choosing perches based on available sunlight. As the experimental group was relatively small (only 23 data pairs were tested) and the camera settings might have varied between photographs, these numbers should be considered preliminary data in need of further verification.

During my observations, lizards fed mainly on grasses and other vegetation on the ground, often small ground plants such as those in the genus *Ruellia*. Nonetheless, I occasionally spotted them eating leaves of trees in which they perched, and I cannot rule out the possibility that they feed on an occasional insect. I realized that other than eat and bask, the juveniles essentially did not do much. I also realized that these Stout Iguanas would not be critically endangered if everyone had the chance to follow them around for just a day. Their manners, their beauty, simply put, everything about them is fascinating. They need to be conserved for generations to come.

I also learned a lot about field research. Having done field research in the past, I am surprised time and time again by how much more I am able to learn doing hands-on work versus sitting in a classroom. Not only this, but I have finally learned how unpredictable working in nature is. Although high school experiments do serve an educational purpose, they dramatically misrepresent field research. The procedures provided in textbooks assist in organizing your thoughts, but such guidelines cannot anticipate every



The author holding one of the juvenile iguanas at the end of the project. Once the transmitter was removed, the iguana scampered off, and that was the last we saw of it.



Once Stout Iguanas are fully mature, their cuteness is replaced by a regal air.

eventuality. When Nature presents the unexpected, true researchers must quickly adapt to the situation for the good of the investigation. While the mis-releasing of one of the iguanas was an unforeseen accident, I ended up observing its attempt to return home, something nobody had previously reported.

Having to detour from my pre-determined procedures, although scary, emphasized the realization that nature is unpredictable. Although I am certainly no expert — yet, I was forced to practice making the necessary adjustments on several occasions during my week on Guana Island. I began to appreciate the times when my experiment did go as planned. I found indescribable joy in discovering my iguanas within a few minutes, rather than a few hours or not at all. Although the experiments in the high school lab will continue, I can now appreciate the amount of effort, energy, and reworking of procedures necessary for conducting most scientific investigations.

Finally, I learned a lot about myself (including that being tall is not necessarily an advantage when bushwhacking through dense vegetation). It was incredibly tedious to concentrate on one small, fluorescent green object for hours on end. In school, classes are only 50 minutes long, meaning I concentrate on a given topic for a maximum of 40 minutes (depending on the subject). These fairly stationary lizards taught me patience and extreme concentration. Not only that, but I am fairly certain my eyesight improved while on the island, seeing as I needed to strain my eyes more than I ever have before, trying to discover a green blob clutching a leafy, green tree. I am in awe of those who dedicate their life to this kind of work. However tedious the effort, the brief moments of movement provided me with a

day's worth of excitement and gaiety. I grew attached to my juveniles, memorizing their transmitter numbers, and speaking of them as if they were my own. I had debated giving the iguanas names before beginning, to help me differentiate between them, but in retrospect I am glad I did not, otherwise the separation would have been unbearable.

Having this opportunity to work with critically endangered iguanas is one I will never forget. I cannot thank Dr. Henry and Gloria Jarecki enough for their interest in my project and for their vision to preserve the wildlife and natural beauty of this magical island. Guana would not be what it is today without their constant work and effort in caring for it. I also am deeply indebted to Drs. James "Skip" Lazell and Gad Perry for sharing their knowledge, being so generous with their time, showing infinite patience, providing constant encouragement, and a refreshing sense of humor — in short, being amazing mentors. I learned so much from them. My experience with telemetry equipment, discovery of iguanas, tagging of iguanas, and overall lack of insanity in the hours spent in the heat would be nothing without Krista Mougey. Special thanks to Renée Rondeau, whose unmatched plant knowledge proved to be indispensable when looking at multiple images of green, leafy specimens. I will be forever grateful for this opportunity that has further fueled my passion for biology, and I cannot wait until I get a chance to do field research again. Which is why I part with these words: "Beware iguanas. Katharina will be back."

Reference

Lazell, J. 2005. *Island: Fact and Theory in Nature*. California University Press, Berkeley.