CSUN Department of Biology

BIOSPHERE

The Weekly Bulletin of Biology

No Biology Colloquium on 25 November … in honor of Black Friday?

Life in the Canal Zone, or Giving Thanks for Poop

—Beck Wehrle

On a muggy, tropical morning in May, I paced along the Smithsonian Institution dock, squinting into the mist, convinced I had seen a crocodile. I was full of excitement. After nearly a year's planning, my assistant and I were in Gamboa, Panamá, half an hour outside of the big city, waiting to be taken to the famed Barro Colorado Island (BCI). For the 45-minute boat ride through the Panamá Canal, I was glued to the window, waiting for my first glimpse of something I might have read about.

Founded as a site for scientific research in 1923, the tropical forest of BCI is among the most well studied in the world. I came to the island to study Green Iguanas and the bacterial communities in their guts, which are necessary to digest the plant material they eat. Most studies of Green Iguanas have been conducted on BCI, and my thesis research builds on hypotheses of microbial acquisition first proposed by an investigator who previously studied iguanas on BCI. Young iguanas are thought to obtain their microbes by eating the poop produced by adults. My aim is to compare the microbial communities of hatchlings to those from various microbe-inoculation sources. I am using molecular tools to determine fine-scale variation in microbial communities.

Upon arriving, we settled into dorms that were very comfortable for being in a jungle. Denizens of the research station come and go. Some scientists stay a few days, others several years at a time. It is truly a haven of international scientific discourse with up to four seminars a week and mealtime discussions with students from Germany working with bats, a Columbian tracking coatis, ant biologists from the Midwest U.S., and some of the world's foremost experts on lianas—just to name a few.

A fellow researcher delivered the first iguana to our door in a cardboard box. Until then, I'd never held a Green Iguana. I'd read about them, their nesting patterns, their internal anatomy, their diet, but it was awesome to hold the whole, live creature. Soon after, we began to see hatchling iguanas all over—flashes of green darting across the ground near the machine shop, an eye peeking out from a tree's foliage, movement among the leaves. Over the course of the season, we caught 65 individuals. Some, like our first, were caught once. Others we captured repeatedly, allowing me to trace individual movement and changes in microbes over time.

We began the season by building fences wherever I thought there might be iguana eggs. I wanted to catch the iguanas as they dug out of their nests, so we rushed to install six fences in the first two weeks. Yet, none of our fences ever caught an iguana. They did, however, get in the way of mother crocodiles, which barreled

through the plastic walls to retrieve their young, and we also found ping-pong-ball-sized aquatic turtles nesting around the edges.

The best way to get around was in a canoe, or once I got my pilot's license, in a little motorboat. Our first stop was to be DeLesseps Island, an islet off the northern tip of BCI, right on the border of the canal's busy shipping lane. In 1980, DeLesseps was the site used to collect the iguanas for the first study of lizard digestive microbes. Thrilled by the historical connection, I was sure I'd find droves of iguanas there. Yet after an hour of searching, we could not find a trace of the small island. At dinner, I asked if I had misread the map. "You're looking for DeLesseps?!" a post-doc exclaimed, "They blew it up six months ago to widen the canal." I knew fieldwork was full of surprises, but an island wiped off the map was beyond my expectations.

Our typical days were filled with scanning the trees and the shores. We looked for sunny patches and grass, sometimes to be rewarded with young iguanas running along the banks or basking in the trees, usually in pairs or larger groups. When we caught an iguana, we measured, marked, and swabbed the lizard for microbes.

The rainy season progressed. One sunny afternoon in June, after a good chase, we caught two juvenile iguanas in a stand of vegetation on the rocky eastern point of the island. As we finished our sampling, ready to release the pair, storm clouds moved in quickly. Soon the sky was dark, with the rain and lightening close behind. We realized we couldn't outrun the storm in our boat and ducked under a tree for cover. For over an hour, we huddled on the bank, lightening striking nearby. After the storm died down, we bailed out the boat and returned to the lab. The dining hall windows had blown in from the violent winds, trees had fallen, and our friends working under the forest canopy had barely escaped getting hit by dropping branches! By late afternoon, it was sunny again.

As a goodbye to the island, we spent our last night searching for sleeping adult iguanas one last time. After months of seeing nothing but hatchling Green Iguanas, we stumbled upon adults in the fork of a cove, far from where we had found the juveniles. One adult was low enough in the vegetation that we could inch forward just enough for me to touch its tail. In a swift motion, I pulled it into the boat and wrestled it to the deck. With scratched arms, I proudly held up my catch, wishing I had remembered a camera. The exhilaration of that triumph carried over into the weeks after our return to the U.S.

I returned to Panamá for a second field season in spring 2011. I wasn't sure I'd be able to afford to return, but I fortunately received a Short-Term Fellowship from the Smithsonian, allowing me to collect more data. My second year was a great success: I caught almost four times as many iguanas as the previous year! Though some nesting sites were flooded, the iguana population was higher than anyone had seen it in years. Returning to the same spots I had been to the year before gave me an appreciation for the fluctuations of an ecosystem and a taste of how much one can learn from really getting to know a research site.

Over the past two years, I've spent 134 days in Panamá, and I have a story for every one of them.

Students who would like to write an article for *Biosphere* should contact the editors.

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Department of Biology
California State University, Northridge
Editors: Paul Wilson and Robert Espinoza
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