

2013 Bahamian Iguana Research Report

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Andros

From 31 March to 5 April 2013, Dr. Chuck Knapp returned to Andros Island in The Bahamas onboard the research vessel, the Coral Reef II, with a team of citizen scientists, the past president of the Bahamas National Trust (BNT), Sandra Buckner, two BNT staff members, Scott Johnson and David Clare, and Giuliano Colosimo, a graduate student from Mississippi State University. Our goals included revisiting iguana populations that we have studied for over a decade to monitor their health and collect data on long-term growth and survival. We explored a rarely visited region to search for iguanas on small cays so we can better understand iguana distribution across Andros. We also continued our efforts to collect DNA samples throughout their range to better understand gene flow across the fragmented island landscape. On Andros, gene flow depends on the ability of iguanas to swim across water barriers and survive in their new localities. Isolated populations can potentially experience reduced genetic variability and subsequent inbreeding complications. It is also important to identify isolated iguana populations with high levels of genetic variability, since these individuals may be good candidates for potential relocation efforts. Ultimately, this information will help determine whether to manage the Andros Iguana as a single large population or many smaller populations.

We captured and processed 46 (25 males, 20 females, 1 unknown) iguanas including 17 recaptures from 11 locations. The low recapture rate reflects our refocused efforts to survey new locations. At the two long-term study locations visited this trip - Sandy Cay and Mangrove Cay - 11 of 12 iguanas and 5 of 8 were recaptures from as far back as 2002. We collected 41 blood samples for genetic analyses.

The mean body size for iguanas captured was 35.3 centimeters snout-vent-length (SVL) and 2598 grams in body mass (BM). The smallest iguana captured was 10.5 cm SVL and 39 gm. This was an unusually small animal for the time of year. It most likely hatched in September 2012 and experienced very little growth. The largest animal captured was 53.2 cm SVL, but the heaviest was 6030 gm BM (different animals).

We visited a hunting camp on Alcorine Cay at the mouth of Honeycut Creek (in Lisbon Creek). This camp is visited each research trip to check for use since iguana poachers from North Andros are known to visit the site. The camp did not look used within the previous two months.

Exuma Islands

A second research excursion was in May 2013 and concentrated on Pasture, Bitter Guana, and Gaulin Cays. Work was completed primarily by a team of three researchers in addition to four working days with university students from the Chicago area. We continued our long-term mark-recapture study and are beginning to evaluate trends in the data.

Pasture Cay - On 12 May 2013 we visited Pasture Cay in the Exuma Cays Land and Sea Park. Sixteen iguanas were translocated to this cay in 2002 and an additional four in 2006. We observed six iguanas and captured three (2 males, 1 female). The island looked the same as in past years. I am still uncertain why the population is not growing at a faster rate. In April 2014,

we will partner with Island Conservation to evaluate the possibility to remove rats from the island. In addition, we may request to move four additional animals from the source population (Leaf Cay north of Lee Stocking Pond).

Bitter Guana Cay - A total of 45 iguanas was captured (31 males, 14 females). Mean body size was 34.2 cm SVL (range 9.4–51.5) and 1982 gm BM (43–4760). Unauthorized feeding by tourists is causing behavioral and demographic shifts in this iguana population. The skewed male captures reflect more males congregating by the main landing beach to feed from tourists. Capture data between 2007 and beyond 2008 demonstrate the increased ease of capture after a tourism operator from Great Exuma began feeding iguanas for tourists.

Gaulin Cay - A total of 109 iguanas was captured (54 males, 55 females). Mean body size was 23.8 cm SVL (range 10.2–38.5) and 657 gm BM (range 50–2845). While conducting research, we partnered with the Bahamas National Trust and the island manager from Bell Island to bring 19 students and four teachers from the all-ages schools at Black Point and Staniel Cay. Our team spent the morning with students explaining the extent of the research and why it is important for the survival of the species. The students assisted with iguana processing and some (not all) were excited to hold one. As always, we stressed that they were the ultimate protectors of the iguanas and that the animals need their help. The event was published by the Bahamas National Trust in a Nassau newspaper (Nassau Tribune). For a larger audience, including locals and tourists, Shedd Aquarium printed educational brochures for distribution at schools, local establishments, and the headquarters of the Exuma Cays Land and Sea Park.

Tourism and Food Provisioning Study Published

Our research team published a study titled “Physiological effects of tourism and associated food provisioning on an endangered iguana” by C.R. Knapp, K.N. Hines, T.T. Zachariah, C. Perez-Heydrich, J.B. Iverson, S.D. Buckner, S.C. Hallach, C.R. Lattin, and M. Romero (see Virtual Library). We compared a variety of blood chemistry parameters of iguanas subject to supplemental feeding at popular tourist destinations, with iguanas occurring on islands where supplemental feeding does not occur. We demonstrated that male and female iguanas inhabiting tourist-visited islands where supplemental feeding occurs do not differ in body condition or baseline stress and stress response (determined by corticosterone levels) compared to iguanas from non-visited islands. Both males and females from tourist-visited sites experienced a greater incidence of endoparasitic infection and atypical loose feces. Indicators of dietary nutrition, including glucose, potassium, and uric acid values, also differed for both sexes from tourist-visited and unvisited islands. Only male iguanas from visited islands differed significantly in calcium, cholesterol, cobalt, copper, magnesium, packed cell volume, selenium, and triglyceride concentrations from non-visited islands; and female iguanas from visited islands differed significantly in ionized calcium. Although interpreting these differences is challenging, chronic biochemical stressors could compromise individual health over time or decrease survivorship during periods of environmental stress.

The study was disseminated by various outlets including:

Huffington Post http://www.huffingtonpost.com/charles-knapp-phd/to-feed-or-not-to-feed-wildlife_b_4392833.html

Scientific American <http://blogs.scientificamerican.com/extinction-countdown/2013/12/10/tourists-iguanas-diarrhea/>
Strange Behaviors <http://www.takepart.com/article/2013/12/16/surprising-damage-we-do-feeding-wild-animals?cmpid=tp-twtr>
Science Daily <http://www.sciencedaily.com/releases/2013/12/131205220120.htm>
International Science Times <http://www.isciencetimes.com/articles/6477/20131206/iguanas-face-severe-health-challenges-tourists-feeding.htm>
Conservation Weekly Dispatch <http://conservationmagazine.org/2013/12/tourists-stop-feeding-junk-food-iguanas/>
Bahamas Islands info
http://bahamaislandsinfo.com/~bahamais/index.php?option=com_content&view=article&id=16789:please-dont-feed-the-iguanas&catid=34:Bahamas%20National%20News&Itemid=147

2013 Web-based publications pertaining to Bahamas iguana research

- Knapp, C.R. 2013. To feed or not to feed wildlife. Huffington Post, December 10, 2013.
http://www.huffingtonpost.com/charles-knapp-phd/to-feed-or-not-to-feed-wildlife_b_4392833.html
- Knapp, C. 2013. Commitment to conservation creates lasting memories. National Geographic News Watch, June 11, 2013.
<http://newswatch.nationalgeographic.com/2013/06/11/commitment-to-conservation-creates-lasting-memories/>
- Knapp, C. 2013. Can iguanas swim, and what would it mean for conservation? National Geographic News Watch, June 19, 2013.
<http://newswatch.nationalgeographic.com/2013/06/19/can-iguanas-swim-and-what-would-it-mean-for-conservation/>



Images clockwise from above left. Two Bahamas National Trust staff, David Clare and Scott Johnson working with an Andros Iguana on Shedd's citizen science research expedition; group photo after a successful iguana capture on Andros Island; group image of students and teachers in the Exumas, Bahamas; Dr. Knapp speaking to a school group about Shedd's iguana conservation program.