ISSUE # 23
Dec - Jan 2015/2016
www.DoE.ky

FLICKER

BIMONTHLY BULLETIN of the CAYMAN ISLANDS
DEPARTMENT of ENVIRONMENT 'S
TERRESTRIAL RESOURCES UNIT

Green Iguana Invasion
Seed bank wrap-up
"For the Birds"
A Year in Review
Know Your Natives

CAYMAN ISLANDS
DEPT of ENVIRONMENT
www.DoE.ky

Green Iguana Invasion

Green Iguanas (*Iguana iguana*) are currently everything but a rare sighting around Grand Cayman.

Very few people need convincing that this species is bad news: from the keen gardener, the pool owner, the naturalist to the average driver, green iguanas prove an overabundant nuisance. For managers of infrastructure, airports, agriculture, landscaping, natural resources and local housing, the species can cost hundreds of thousands of dollars in damage. At the Terrestrial Research Unit (TRU) we are particularly concerned with the negative impacts Green Iguanas have on native ecosystems and biodiversity. While little scientific data has been gathered on the quantitative effects on bird and plant species in Cayman, we understand that to limit the known adverse effects we have to control Green Iguana overabundance.

The Green Iguana is a highly invasive reptile, native to Central and South America. It has found its way to numerous Caribbean countries and American States such as Florida and Hawaii and, to date, there is no precedence of Green Iguana populations being eradicated once a breeding population has established.

In Grand Cayman, the TRU and the USFWS carried out island-wide surveys, using distance-sampling, of the Green Iguana population in August 2014 and again in 2015. The survey results were needed to inform decision makers about the scale of the problem and to arm managers with the ability to make informed decisions through analyzing the probabilities of success. While these surveys represent only two "snapshots" in time, the data provides an idea of the density (iguanas per hectare), the abundance (population size) and rate of

EDITOR:
Jane Haakonsson

EMAIL:
jane.haakonsson@gov.ky

Department of Environment
PO BOX 10202,
580 North Sound Rd.
GRAND CAYMAN
KY1-1102
TEL: (345) 949-8469
www.DoE.ky

change, i.e. the increase in the population per year.

So what do our results show?

Once the results were corrected for detection components (in other words, we used statistics to account for the fact that we know we didn't count every iguana out there), the abundance in August 2014 was 6.5 iguanas per hectare while August 2015 showed an abundance of 10.4 iguanas per hectare.

The actual population size of sub-adult and adult Green Iguanas was around 127,000 in 2014 and just over 200,000 in 2015, see Table 1 below. Importantly, these numbers have an upper and lower value as expressed by the 95% confidence interval as shown in the table below.

From these numbers we can estimate the rate of change and the doubling time of the population. Alarmingly, the population grew 59.8% between 2014 and 2015 which means it has the ability to double itself every 1.5 years!

With these numbers we can start making predictions of what will happen e.g. in 2016 if no removal takes place, see Figure 1. Considering that removal is preferred to doing nothing, we can now put values to our goals. Given that eradication on Grand Cayman is deemed unattainable, what population size do we consider our goal?

For argument sake, say that 50,000 Green Iguanas is the management objective, we then need to find out how many iguanas should be removed (removal target) to get a controllable population.

Date	$\hat{N}$	2.5%	97.5%
08–2014	127,660	75,632	184,970
08–2015	203,980	103,140	403,400

Table 1: Shows the population size (N) and the 95% confidence interval for August 2014 and August 2015 respectively.

We put our results into a harvest theory context and used a logistic model to predict the removal target. It was shown that if 60% of the population was removed, per year, for a period of 10 years, we would have a very high likelihood of reaching our population goal of 50,000, see Figure 2. That means removing 120,000 iguanas in 2016. This is just one outcome of many and the models can predict how many Green Iguanas need to be removed to reach the objective in less time, however, feasibility and logistics are key components here.

TRU presented these results at the Iguana Specialist Group meeting in St. Augustine in November and the results will likely form the basis of a pilot culling effort. The DoE has, under the National Conservation Council, been tasked with designing a strategy for removing Green Iguanas, but more importantly, to find out how the population responds to increased hunting pressures in different habitats. This is important in order to spend time and money in the most effective way possible. One thing is clear, we have our work cut out for us! Please feel free to contact the editor (page 2) for additional information about the surveys or the pilot culling project.

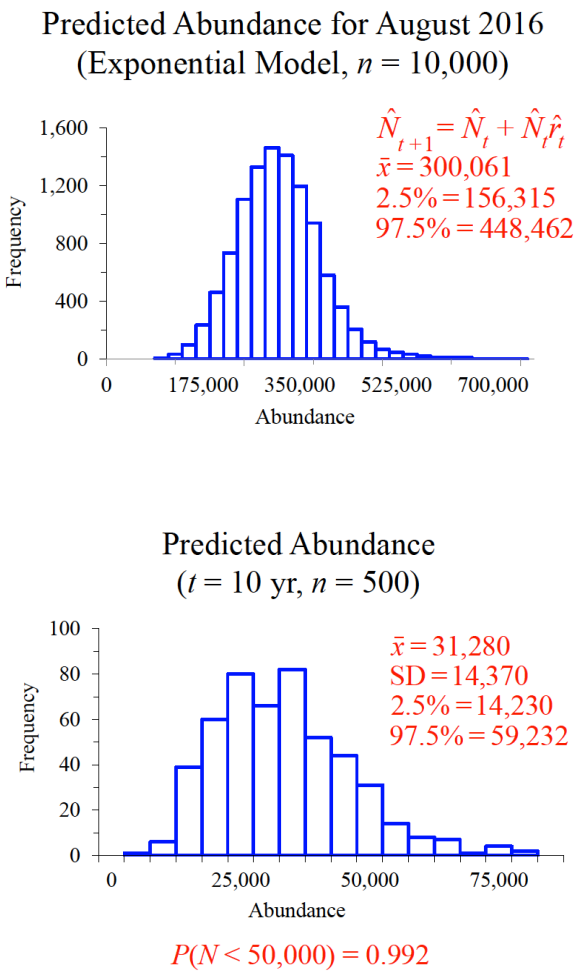


Figure 1: The predicted abundance of Green Iguanas on Grand Cayman in 2016 if no control measures are taken and Figure 2: in 10 years if 60% of the population is hunted per year. Figure 2 shows a very high likelihood of getting below 50,000 iguanas (abundance target) in a scenario of consistent high removal.

Seed bank wrap-up!

By Jessica Harvey

After 3 years of funding towards the UKOTS local seed bank project by Darwin, the grant funding period has now come to an end.

In brief, this project started several years ago as partnership with Royal Botanic Gardens Kew with the vision to conserve high priority plants in the Cayman Islands through one of many avenues used in plant conservation – namely freezing seeds. This only works for seeds that can withstand being dried down and then frozen for long periods of time (i.e. 5-10+ years) but the majority of Cayman's native plants have the potential to do this successfully because they naturally withstand long periods with little to no water in the dry season.

So what are the benefits? With little ongoing management needed, these seeds can be made accessible for habitat restoration, plant science and hopefully local garden enthusiasts who wish to garden more with Cayman's unique flora. Collections have been made on all three islands thanks to the help of Christine Rose-Smyth, Stuart

A trip to Cayman Brac finished the seed bank project: (from left to right) Tom Heller, Stuart Mailer, Wallace Platts, Christine Rose-Smyth and Jane Haakonsson with Jessica Harvey behind the camera.

Mailer, Douglas Bell, Wallace Platts and lastly Thomas Heller, coordinator of the project.

This past October, Mr. Heller paid a weeklong visit to the Cayman Islands to help wrap up the project. During Mr. Heller's visit, TRU organized collection trips around the Mastic Trail with the National Trust, Ironwood Forest with local naturalist Ann Stafford and a weekend collecting trip in Cayman Brac with Cayman Brac naturalist Wallace Platts. This was Mr. Heller's first trip to Cayman Brac and we were able to make a new collection never been banked either at the Millennium Seed Bank (MSB) in Kew or the local seed bank!

To date, 24 species have been stored both in the MSB and Cayman's local seed bank - 56% were on the top 50 priority list. Examples of species given high priority to collect include *Hohenbergia caymanensis* (Old George), *Myrmecophila thomsoniana* (Banana Orchid), and *Agave caymanensis* (Curato). Priority ranking was based on the degree of endemism, red list status and whether or not seeds had already been banked. Additionally, Kew repatriated a number of seeds that were being stored at the MSB until a seed bank could be established in Cayman.

Though the UKOT grant-funding period is ending, TRU hopes to continue this project as it is an important tool to help conserve our local floral biodiversity.

In closing, TRU would like to thank all those mentioned in this article who assisted with collecting. Especially Thomas Heller and Janet Terry at Kew and Darwin Plus for making this endeavor possible by providing training, equipment, funding and expertise. And finally we'd like to thank those, including Isabelle Brown and Fred Burton, who contributed their local knowledge toward developing the fruiting and flowering calendar which is used to help coordinate collecting efforts on all three islands.

Seeds from *Portulaca pilosa* showing just how dainty these collections can be. Below: Stuart and Tom enjoying their time in Cayman Brac.

“For the Birds”

-TRU corrections

The current article “For the Birds” in the Cayman Airways’ magazine “Skies” is a great way of drawing attention to the unique birdlife that Cayman Brac has to offer.

Unfortunately, it has been brought to our attention that several facts are incorrect in this article and we wanted to point out our corrections here.

Firstly, the article finishes by encouraging the reader to approach the nesting Brown Boobies for photographs. Like all birds in the Cayman Islands, boobies are protected under the National Conservation Law and people are strongly encouraged by the DoE to stay 30 m. (100 ft.) from the nesting birds where possible. We recommend using binoculars or camera zooms to enjoy watching their mating rituals and behavior. Please also keep your dog on a leash if you are walking along the Lighthouse Footpath.

In terms of the species one can see on Cayman Brac, we wanted to point out that the Red-footed Booby is seen only on Little Cayman and that the Booby on Cayman Brac is called the Brown Booby (and not the Brown-footed Booby). If you are interested in seeing the colony on Little Cayman, the National Trust house has a stunning observatory deck with great views over the (Red-footed) Booby Pond.

The Cayman Brac Parrot is not a seabird and it can be found in several locations on the island as it is not restricted to the National Trust’s Parrot Reserve. This parrot is distinct from the Grand Cayman Parrot by being slightly smaller, darker in coloration with a larger darker patch behind the eyes and a much different call.

Cayman Brac is home to the last remaining thrush species in the Cayman Islands, namely the Red-legged Thrush (and not Red-tailed Thrush). This is a beautiful songbird with a distinct red eye-ring and reddish legs and bill. It can be found mainly in woodlands and thick undergrowth but is also commonly seen as a garden visitor.

The Brac has so much to offer to the keen naturalist; the stunning Bluff sites, well-maintained trails, numerous caves and pristine forests. It is no wonder that so many resident and migratory birds species can be seen there. Thank you to Cayman Airways for the well-intended article and safe travels to everyone visiting the Sister Islands.

A Year in Review

December is upon us and it is time to reflect on the year that has passed and to prepare for the new year ahead.

2015 was a productive year for TRU with annual surveys of White-crowned Pigeon, White-winged Dove, Caribbean Dove, Zenaida Dove, Red-legged Thrush, Mockingbirds and before and after reproduction surveys of the Cayman Brac Parrot. We also surveyed the Blue Iguana population in the Salina Reserve, the Little Cayman population of Sister Island Rock Iguanas (SIRI) as well as the Grand Cayman population of the Green Iguana. With a total of 606 survey points, there is no area of the Cayman Islands TRU has not been!

Special projects included genetic studies of SIRI, pilot studies of land crab species, genetic studies of Green Iguanas, general assessment of freshwater invertebrates, anole genetics and native plant seed collection.

General inquiries have been diverse with countless wildlife rescue cases. Mitigation of threats to wildlife has been implemented, such as the CUC aerial marking ball project and the installation of signs for the Brown Booby nesting areas.

Planning reviews, 6 issues of Flicker, 3 conferences and 36 media events and school talks later, 2015 is a wrap!

The year 2016 is bound to bring more challenges, projects and surveys.

TRU plans to continue and repeat our annual surveys as outlined above, this year we will focus on before and after reproduction surveys of the Grand Cayman Parrot and we will survey the Blue Iguana population in the Colliers Reserve.

Visiting scientist projects include seabird tracking and monitoring on the Sister Islands, SIRI tracking on Little Cayman, an assessment of our land crab populations and a pilot culling effort of Green Iguanas to assess the population dynamics and responses to removal efforts. Our seed bank efforts will focus mainly on native trees and we will continue promoting the use of native landscaping.

We want to thank all of our partners and colleagues for their help and support and we want to wish all our readers a Merry Christmas and a Happy New Year.

Thank you for your interest!

KNOW YOUR NATIVES

Christmas Berry

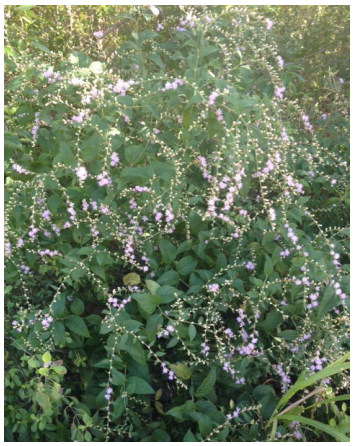
Christmas Berry (*Allophylus cominia var. caymanesis*), is a bushy shrub found only in the Cayman Islands. It is listed as near threatened in all 3 of the islands and it is commonly found in dry forests and rocky thickets.

Christmas Berry is easily recognized by its distinctive shiny leaves with 3 leaflets. The tiny cream-coloured flowers bloom in October and the plant gets its name from the bright red berries which can be seen by Christmas time.

The Christmas Berry grows up to 3 meters (9 ft. 10 in.) tall and normally grows as an understory shrub.

It is a very attractive plant which can be easily used for landscaping as it tolerates both shade and sun. As with all other native trees, it is easy and cheap to maintain and it sustains the local climate.

The Christmas Berry is not to be confused with the Christmas Bush (*Vernonia divaricata*) seen here.



Christmas Berry flowers, leaves and fruits. Photos from Caymannature.