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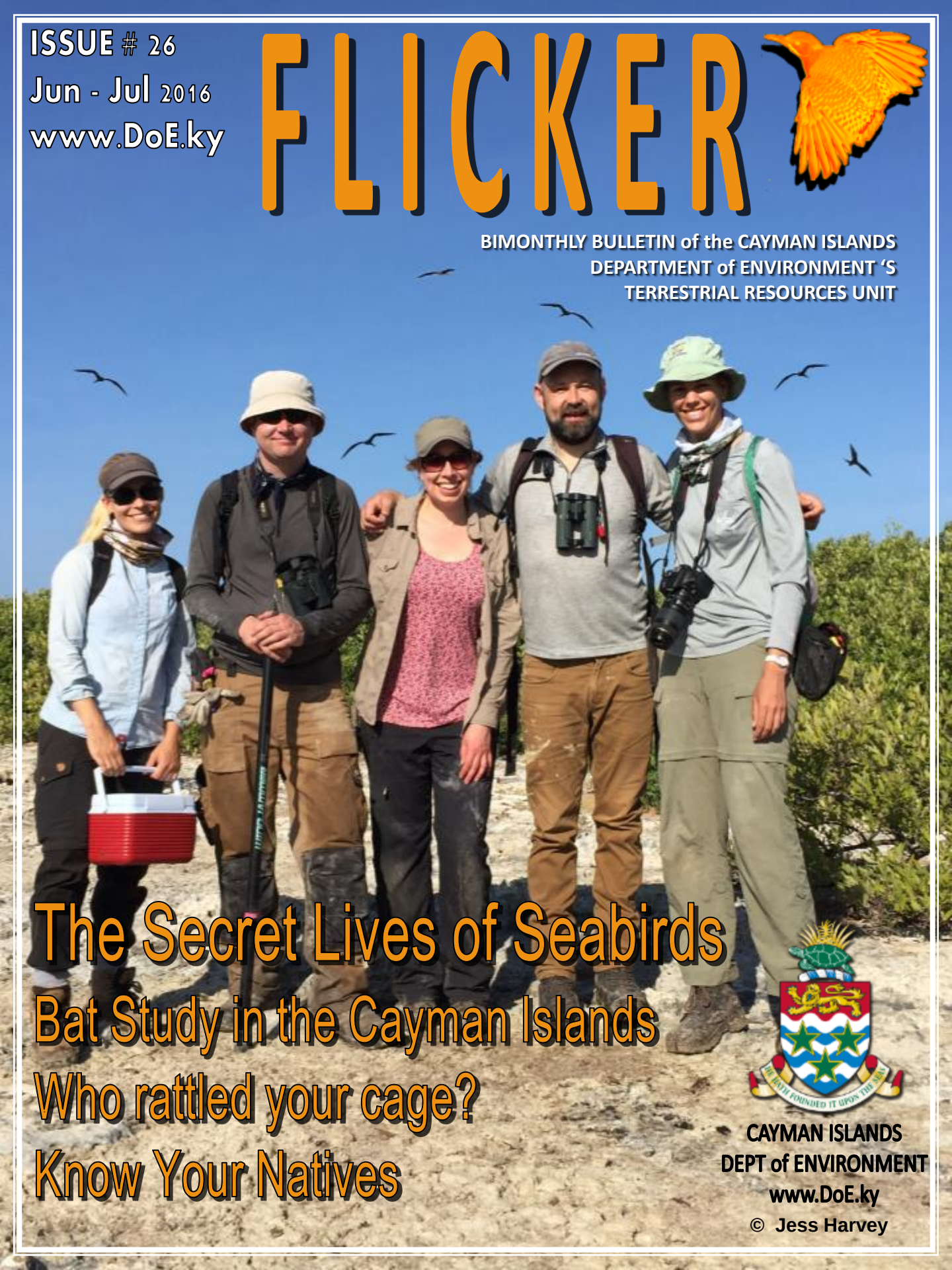

The Secret Lives of Seabirds

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CAYMAN ISLANDS
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The Secret Lives of Seabirds

- by Rhiannon Meier

Watching the stream of incoming boobies make their way back to their eagerly awaiting chicks in the mangroves at Booby Pond Nature Reserve on Little Cayman, one wonders about the secret lives that these birds lead when away from home.

Seabirds, some of the longest distance migrants on this planet, spend the majority of their lives at sea, and are capable of traversing huge stretches of ocean in their search for food. While these aerial predators only venture back on land to breed, and are thus effectively marine, we still know relatively little about their movements and behaviour at sea.

To address these knowledge gaps, we are embarking on a new two-year study of resident seabird species here in the Cayman Islands, funded primarily by the UK Government's Darwin Initiative.

The Department of Environment (DoE) and National Trust of the Cayman Islands (NTCI), in partnership with our team of seabird scientists at the Universities of Liverpool and Exeter, UK, plan to uncover some of the resident seabird secrets, to obtain information that can be used to better protect and manage important breeding populations. Unlike us, seabirds don't require passports to cross international boundaries, and therefore multi-national conservation efforts are often needed to effectively protect them across their entire distribution range. However, in order to achieve this goal, a thorough understanding of their movement behaviour, habitat use and ecology must first be gained.

Over the last two months, a group of red-footed boobies (*Sula sula*) at Booby Pond and brown boobies (*Sula leucogaster*) on Cayman Brac (the two main focal species of the project) have been outfitted with miniaturised GPS devices. By taping these devices to the backs of the birds (a backpack of sorts) we are able to record where they go when away from land, what types of foraging strategies they use to catch fish, and what times they travel to and from their nests.

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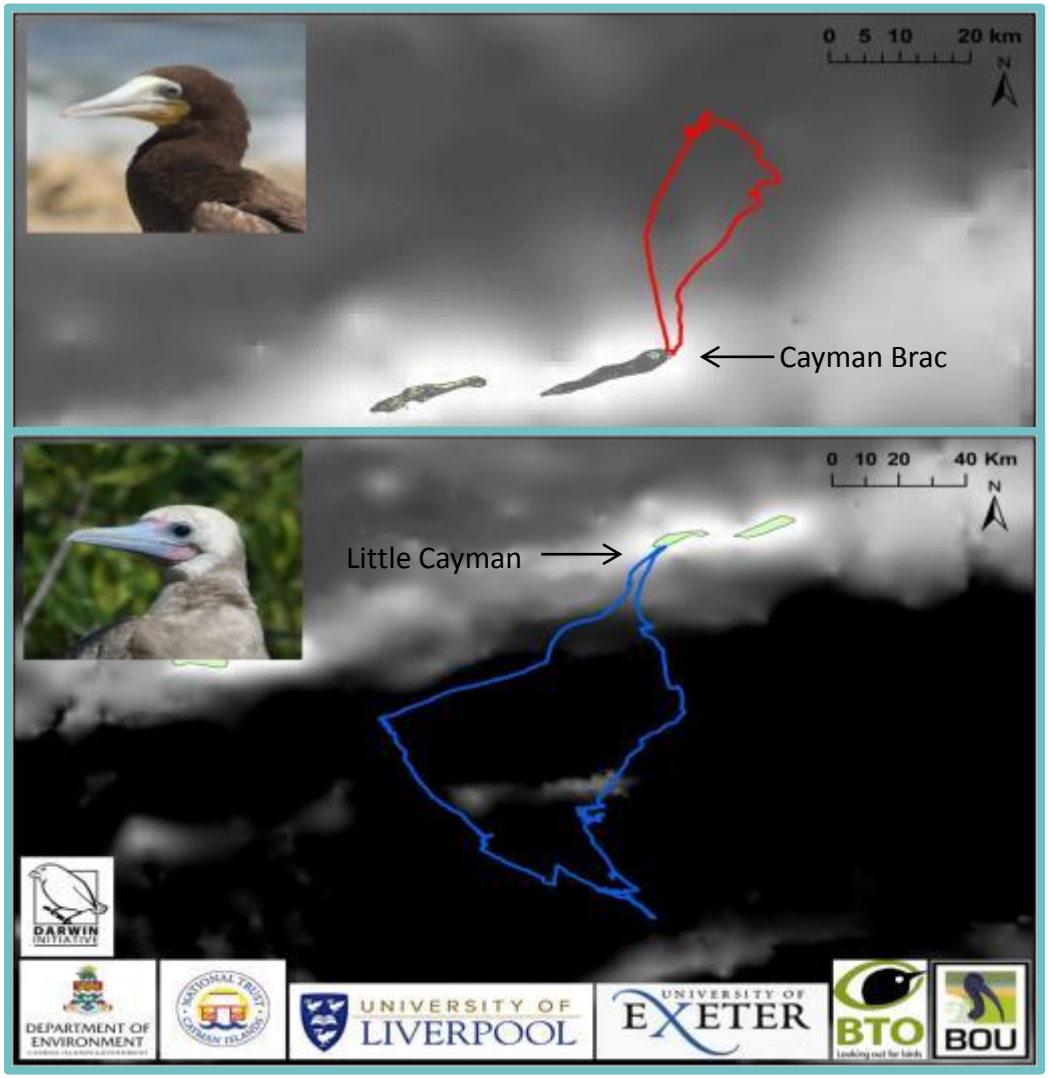
New data recovered over the past weeks is already beginning to reveal fascinating insights into the at-sea lives of these birds. For example, not only do some individuals remain at sea for a number of consecutive days but they also travel impressive distances of up to 300 km from the colony in search of prey (as far as waters off Jamaica!).

The population of red-footed boobies on Little Cayman has, in the past, been identified as one of the largest in the Caribbean, and is of global importance. Similarly, the brown booby population on Cayman Brac is listed as regionally important. However, despite these statuses, we know little about current population sizes or trends, which poses a problem for managers as they develop conservation strategies under the new National Conservation Law.

Using visual survey methods, information on population biology and breeding behaviour will be collected over the next two years. These data, in combination with previous information recorded by volunteers, will allow our team to assess the status of populations, and develop long-term seabird monitoring programmes that the DoE and the NTCI hope to continue into the future.

We also plan to collect data on other important seabirds, such as the magnificent frigate birds (*Fregata magnificens*). They nest side-by-side with red-footed boobies on Little Cayman and are often seen pursuing them near to shore in the hope of an easy meal as they steal fish from the boobies!

Above: A GPS device newly attached to the back of a red-footed booby and ready to collect fixtures of the at-sea movement of the bird. Below: The team working nights at the Booby Pond. © Jess Harvey



Initial foraging tracks from the brown and red-footed booby respectively.

In addition to the new data being collected on at-sea movements and population status, our team is collecting small blood samples from the birds to obtain information on their dietary habits.

Biogeochemical markers called stable isotopes (a type of internal tracker) can be used to identify the different types of prey that contribute to the diet, and it might even tell us what marine areas the birds forage in when away from land.

By the end of this project, it is hoped that we will have gained important new insights into the elusive lifestyles of seabirds on the islands, which will help to protect these wide-ranging marine predators -both on land and at sea.

For more information, please contact Dr. Rhiannon Meier by email: caymanseabirds@gmail.com or phone (949-4910), or to learn about our latest activities at the colonies follow us on twitter: @CaymanSeabirds.

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Bat Study in the Cayman Islands

-by Livia Loureiro

My name is Livia Loureiro and I am doing my Ph.D. at the University of Toronto with Dr. Burton Lim who is the Assistant Curator of Mammalogy of the Royal Ontario Museum also in Toronto, Canada.

In April, 2016, we started our field trip to the Cayman Islands with the help of our local partners, the National Trust and the Department of Environment. We packed all our heavy equipment and flew from Toronto to Grand Cayman and our goal was to catch bats!

Bats are the most diverse group of mammals in the Caribbean, representing about 80%, with most endemic to the region. Caribbean biodiversity has been much studied, however, a biogeographic debate still continues on how to explain the distributional patterns and species diversity found on these islands.

The Cayman Islands have nine species of bat, including five insect-eating species that consume about half their body weight in invertebrate prey every night! Three are fruit-eating species that are great seed dispersers because they don't eat their food at the parent tree, and one is a nectar-feeding species which also pollinates flowers as it laps up the sweet reward.

Although the current diversity is well known, there have been few published studies based on genetic analysis or acoustic monitoring.

Therefore, our goals were to establish a DNA reference collection and an echolocation call library from the Cayman Islands in order to access the genetic and behavioral variation among Caribbean bats and to explain the biogeographical patterns across the New World tropics.

A Triple High Net is being used to capture the bats as they forage at night. Photo by Livia Loureiro.

During ten days of fieldwork in April 2016, we used mist nets, harp traps, and hand nets to survey bats in various habitats, such as forest, clearings, caves, and urban areas.

We spent six nights in Grand Cayman and four in Cayman Brac which resulted in the capture of five of the nine species known from the country! The most common species on Grand Cayman is the velvety free-tailed bat (*Molossus molossus*), which roosts in buildings, trees, and bats houses that were erected throughout the island beginning in 1990's through the National Trust.

However, this species was caught on only our last night in Cayman Brac. The most widely occurring species was the Jamaican fruit-eating bat (*Artibeus jamaicensis*). It was caught at most of our study sites and in caves as well as forest and urban areas.

By contrast, the Antillean fruit bat (*Brachyphylla nana*) does not seem to be very common, and the only place that we caught it was in a residential area of Bodden Town. The Buffy Flower Bat (*Eropylla bombifrons*) was caught in both islands, however, only from a few places.

Livia Loureiro releasing an *Artibeus jamaicensis* in Barker´s National Park.

The highest number of individuals of this species was at Great Cave, which is also used as a roost for the Jamaican fruit-eating bat and Big brown bat (*Eptesicus fuscus*), which was only documented in Cayman Brac.

The other four species of bats, Brazilian free-tailed bat (*Tadarida brasiliensis*), Red bat (*Lasiurus borealis*), white-shouldered bat (*Phyllops falcatus*), and Waterhouse's leaf-nosed nat (*Macrotus waterhousii*) weren't caught during our survey, indicating that they are probably rare in the islands. However, we have not had a chance to review the giga-bytes of acoustic recordings, so the 3 insect-eating species that have strong echolocation signals may have been also been documented.

Research will focus on analyzing the DNA samples derived primarily from wing punches and the echolocation calls from Cayman Islands to compare with other Caribbean and mainland populations. Molecular and acoustics techniques have transformed the ability of scientists to describe and define biological diversity and discriminate otherwise indistinguishable species.

Differences in genetic variation will help in identifying cryptic species in the Caribbean and for understanding the diversity of bats as well as the biogeographic patterns in the Neotropics. In addition, an echolocation call library will be established that will be useful for long-term monitoring and conservation of bat populations.

Above: Nets were erected in known bat locations to optimize sampling success. Below: Fruit bats "hanging out" in caves.

Who Rattled Your Cage?

Like many times before, the endemic & harmless ground boa (*Tropidophis caymanensis*) was called in at DoE, but thankfully this time, the boa escaped unharmed! Thank you to Kurt Anderson for raising awareness! For a direct link to the Cayman Compass article click here.

Kurt Anderson, with the harmless ground boa he found. - PHOTOS: JEWEL LEVY

Snake sighting rattles spotters

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A snake found slithering along a road in downtown George Town alarmed people in the vicinity this week, but turned out to be a harmless ground boa.

Kurt Anderson bagged the snake and brought it to the *Cayman Compass* to be photographed and identified.

"I was walking into Archie's Bar when I heard all the commotion," he said. "Some people showed me the snake and told me to kill it.

"I said, no, I would take it to the *Cayman Compass* to let them take a picture of it and to let people know what we have on the island."

Bradley Johnson, research officer at the Department of Environment, when shown the snake confirmed it was a Cayman ground boa, which is endemic to Cayman and non-poisonous.

With a diamond pattern on its back and yellow colored tail, the harmless ground boa is sometimes confused with a baby rattlesnake. - PHOTO: JEWEL LEVY

He acknowledged that the ground boa is sometimes mistaken for a small rattlesnake.

Cayman ground boas are variable in body color, from pale (pictured above) through to light or very dark brown.

The dark diamond patterns on their back and the pale cream or yellow on the tip of their tails lead some to think they resemble small rattlesnakes.

They are considered "dwarf snakes" and typically grow to 1 to 2 feet in length. They prey on frogs and small lizards.

Only four types of snakes – Cayman ground boas, Cayman racer snakes, Cayman water snakes and Cayman blind snakes – are endemic to Cayman, according to the Cayman Islands Department of Environment website, and none pose threats to people or pets.

In addition to Cayman's native snakes, two other species have been introduced and are considered invasive species – the Brahminy blind snake and the corn snake.

The snake found by Mr. Anderson was later released into the wild.

KNOW YOUR NATIVES

WILD JASMINE

Wild jasmine (*Tabernaemontana laurifolia*), also known as the slingshot tree, is a noticeable understory tree native only to Grand Cayman and Jamaica. It is assessed as Near Threatened on the IUCN Red List but the population is decreasing due to habitat loss.

A small tree, growing up to 7 m. tall (~ 23 ft.), wild jasmine is typically found in dry, rocky woodlands on limestone. It is easily recognized by its waxy shiny leaves, its scented greenish-yellow flowers and its broad, fleshy fruits which open when ripe and display its seeds embedded in deep orange.

With opposite branching this tree makes a great candidate for a natural slingshot, hence its common name, and as such it plays an endearing role in Caymanian culture.

It is a very attractive tree, suitable for landscaping and can be easily propagated from cuttings as well as from seeds. As with all native trees, it is easy and cheap to maintain as it sustains the local climate, needs little water and grow at a moderate rate in harsh conditions. Remember –if you are developing land or contemplating a garden, retaining naturally occurring vegetation will help attract local wildlife and it will save you money!

Wild jasmine with waxy leaves and deep orange fruits. Photos by Mat Cottam.