

ISSUE # 37  
Aug - Sep 2018  
www.DoE.ky

# FLICKER



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

**The 1938 Oxford Expedition  
Coastal Crab Migrations  
Mangrove Conservation Plan  
Know Your Natives**



CAYMAN ISLANDS  
DEPT of ENVIRONMENT  
www.DoE.ky  
@ Ann Stafford

# 1938 Oxford University Biological Expedition to the Cayman Islands

## -by Ann Stafford

Marking the 80<sup>th</sup> anniversary, the [Cayman Islands National Museum](#) is featuring a fascinating exhibit of the [1938 Oxford University Biological Expedition to the Cayman Islands](#). The exhibit will run through November 2018 and will then move to Little Cayman so make sure you pay the museum a visit soon!

The 1938 Oxford University Biological Expedition to the Cayman Islands (April 17 to August 27, 4½ months) was the first natural history survey of all three islands; Grand Cayman, Little Cayman and Cayman Brac. Reports were written about the flora, fauna, geology and wetlands.

The expedition was in acceptance of a long-standing invitation by Cayman Islands Commissioner Allen Wolsey Cardinall (1934 - 1941) to make a biological survey of the islands. Lewis, a Rhodes Scholar from the United States, later became Director of the Institute of Jamaica in Kingston.

The identification & documentation of specimens were delayed by of the outbreak of World War II in 1939.

The Oxford team included:

- W. Gemmell Alexander - Leader and Organiser;
- C. Bernard Lewis (Wadham College) - Biologist American, Rhodes Scholar
- W. Neil Paton (Magdalen College) - Marine Biologist
- Wilfred Kings (Lawrence Sheriff School, Rugby) - Botanist
- Gerald Thompson (St. Edmund Hall) - Biologist

Joining from Cayman were:

- Ernest Panton - Asst. Commissioner
- Joseph Rodriguez (Roddie) Watler - Police Inspector, truck owner
- Bentley (Benny) Ross - boat owner - the 'BRAVO'
- Urban Myles - cook
- Norris Jackson - assistant
- Pershing Merren - assistant
- Sam Ebanks - assistant
- John Howard - assistant

EDITOR:  
Jane Haakonsson

EMAIL:  
[jane.haakonsson@gov.ky](mailto: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](http://www.DoE.ky)



**A snippet of the featured exhibition at the Cayman Islands National Museum.**



- Ira Thompson - the Commissioner's chauffeur
- Lesser Islands (Sister Islands) District Commissioner - Aston Ruddy on Cayman Brac
- Capt. Sam Bodden on Little Cayman

Alexander, Lewis, Paton and Thompson left Liverpool, UK, on March 22, 1938 on the Fyffes Line passenger-carrying banana boat, SAMALA for the 14 day voyage to Kingston, Jamaica, then on the CIMBOCO (motor boat) from Kingston to Grand Cayman. Kings left the UK in April and joined them in Grand Cayman.

#### Foundations of the Flora

Wilfred Kings collected 1263 specimens, 660 flowering plants, the rest being marine algae, ferns, mosses, lichens and fungi. The "FLORA of the CAYMAN ISLANDS" by George R. Proctor was first published in 1984, then updated in 2012. The plants collected by Kings on each island are noted. *Encyclia kingsii*, a Little Cayman endemic orchid (top right), and *Agalinis kingsii* - Grand Cayman False Foxglove, a Grand Cayman endemic (bottom right), were both named after Kings.

#### Terrestrial Fauna

C. Bernard Lewis and Gerald Thompson, who celebrated his 21<sup>st</sup> birthday while in Cayman, were the zoologists. They collected Reptiles: Freshwater Turtles, Sea Turtles, Lizards Iguanas, Geckos and Snakes; Insects: Dragonflies, Damselflies, Termites, Cicadas, True Bugs, Beetles, Bees, Ants,

Wasps, Butterflies, Moths, Flies, Mosquitoes and other as well as Arachnids (spiders). They also reported on the now extinct Grand Cayman Thrush (*Turdus ravidus*) which is featured on our Caymanian 1 cent coins today.

Cayman's birds had previously been studied from the 1880's and specimens were housed in various museums.



**Several endemic species were discovered during the 1938 Oxford expedition including *Encyclia kingsii* (top, photo by Christine Rose-Smyth) and the Grand Cayman False Foxglove - *Agalinis kingsii* (bottom, photo by Maribeth Latvis).**

**Both plants were named after Wilfred Kings.**



**Another two examples of endemics discovered during the Oxford Expedition are the Grand Cayman Pygmy Blue Butterfly (*Brephidium exilis thompsoni*) , photo taken by Alec Vasha , and the Grand Cayman Blue Iguana (*Cyclura lewisi*). These species are named after Gerald Thompson and C. Bernard Lewis respectively.**

### **Marine**

Marine biologist Neil Paton, Team Leader and Organizer, 19 year old Gemmell Alexander, and cook Urban Myles camped out on a small schooner the MERITWELL in North Sound, which was also their marine lab. Paton was later killed during World War II.

### **Accommodation**

Althea's cottage was the team's Headquarters in George Town, located where the CIBC -First Caribbean International Bank is now, on Main St, opposite Elizabethan Square. There were lots of fruit trees. Who was Althea? Sisters Althea and Olive Jennett married brothers Hugh and Cuthbert Bodden. Althea and Hugh (a sea captain) moved to Jamaica and Ernest Panton bought the property (between 1938 and 1943). Cuthbert and Olive's daughter, Lucille Bodden, married Bernard Lewis in Jamaica on October 30, 1940. Lewis had been appointed curator of the Natural History Museum at the Institute of Jamaica September 1, 1939, the day Hitler invaded Poland.

For Rum Point they used tents and had to take their own fresh water supply with them. In South Sound they stayed at Czar Hurlston's house, which still exists though it was moved to South Church St. In Little Cayman, Capt. Sam Bodden's house was used and so was Aston Ruddy's house in Cayman Brac.

### **Transportation**

A 1929 Ford truck was used to transport men and materials on land, and a motor boat, skiffs and catboats were used on water. The road from Bodden Town to East End was made in 1935, mostly of sand and coral. Lewis, Thompson and Kings visited all districts.

### **Documentation**

The Cayman Islands National Archive has photographic and written documentation from the Oxford team, including Gemmell Alexander's original daily diary, which hasn't yet been transcribed. The resulting collections were housed in various museums.

[To read more click here](#) and don't forget to visit the exhibit.



# Coastal Migration of the Black Land Crab on Grand Cayman

-by Kinsey Tedford & David Bass

Crabbing has been a part of Cayman culture for many years and the first seasonal rains usually signal the start of crab hunting. Unfortunately, this cultural tradition is becoming far less common on the islands due to threats to land crab populations such as habitat loss from development, increases in vehicular traffic, and overexploitation from humans. The black land crab, *Gecarcinus ruricola*, is found throughout Grand Cayman (as well as the Sister Islands) and their reproductive migration occurs annually, varying in time and intensity each year. Adult land crabs live on land and females migrate to the sea for brood release. After spawning at the water's edge, females return to land while the larvae drift with the currents for several weeks. Later the lucky survivors return to shore where they grow and live their adult life. While there is a great deal of anecdotal knowledge about the black land crab, very little scientific information on this species exists for Grand Cayman.

My name is Kinsey Tedford and I have previously contributed to Flicker (see issue #21 and #31). I am a graduate student of Dr. David Bass (GCM visiting aquatic invertebrates specialist), and together with the TRU we prepared a scoping study of Grand Cayman's land crabs. This research was undertaken because concern was expressed regarding their declining populations and current distributions.

The objective of this project was to gather data on the black land crab to better understand their ecology and migration patterns. Data from this study will aid in developing appropriate management options for an ecologically and economically important species on Grand Cayman. It will directly inform Conservation Plans as required under the National Conservation Law including potential sustainable harvest rates. This is also the first comprehensive study of *G. ruricola* on Grand Cayman and it will provide a greater overall understanding of land crabs and their reproductive migration.

Goals of this study included:

- Determine activity levels for *G. ruricola* during the reproductive season
- Identify locations with the highest *G. ruricola* numbers
- Describe the distribution of the *G. ruricola* migrating population
- Note mass migrations of berried *G. ruricola*
- Discuss *G. ruricola* activity levels in relation to rainfall and lunar cycle
- Estimate *G. ruricola* mortality rates caused by vehicles



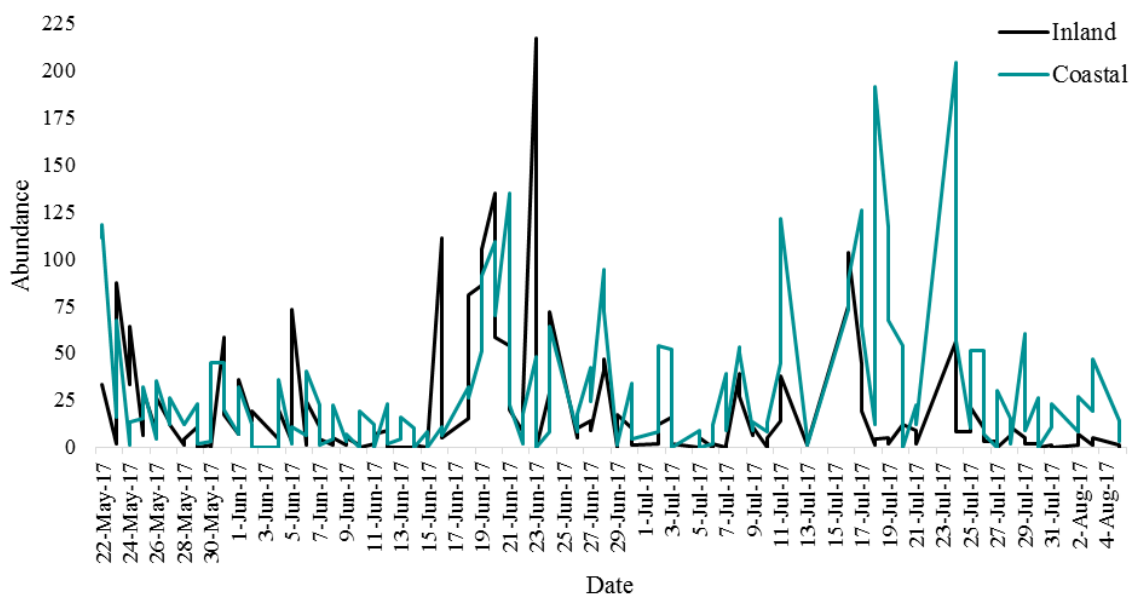
Nightly road surveys were conducted from May to August 2017 along Queen's Highway east of Northside. The study area along the highway was divided into 40 different 100 m road sections to monitor the crab movement throughout the season.

Results revealed high numbers of crabs occurring on the inland roadside in late May and June, and this shifted to the coastal side mid-July through August. There were two mass migration peaks observed in 2017 and it is likely after the first migration in June, the crabs remained on the coastal road edge until the next peak in July. It is possible crabs remained on the coastline to decrease the amount of energy expenditure from moving around to increase reproductive output<sup>1,2</sup>. See figure 1 for coastal versus inland roadside use over time.

The reproductive migrations were concentrated along particular stretches

of Queen's Highway and the greatest numbers of migrating crabs occurred in road sections lacking roadside development. The crabs seemed to prefer the undeveloped areas providing them with the necessary resources and suitable habitat. The loss of a forested habitat and the resources it contains is a considerable issue on the island as tourist-related development and urbanization continues. Habitat loss along the coastal side is a particular threat because it hinders the seaward migration of berried females to release larvae, as well as re-emerging megalops (juvenile crabs) moving inland<sup>3</sup>.

Berried female crabs displayed randomness in their occurrences throughout the season with a higher prevalence of occurrence during nights of overall high crab activity. The nights with the greatest crab movement most likely coincided with spawning events and moonlight was an important factor determining this activity.



**Figure 1. Number of active *G. ruricola* within the 500m<sup>2</sup> sections on the coastal versus inland roadsides along Queen's Highway in 2017. Analysis revealed there was a significant difference in *G. ruricola* activity levels between coastal and inland roadsides (Mann-Whitney U test,  $p < 0.0001$ ).**

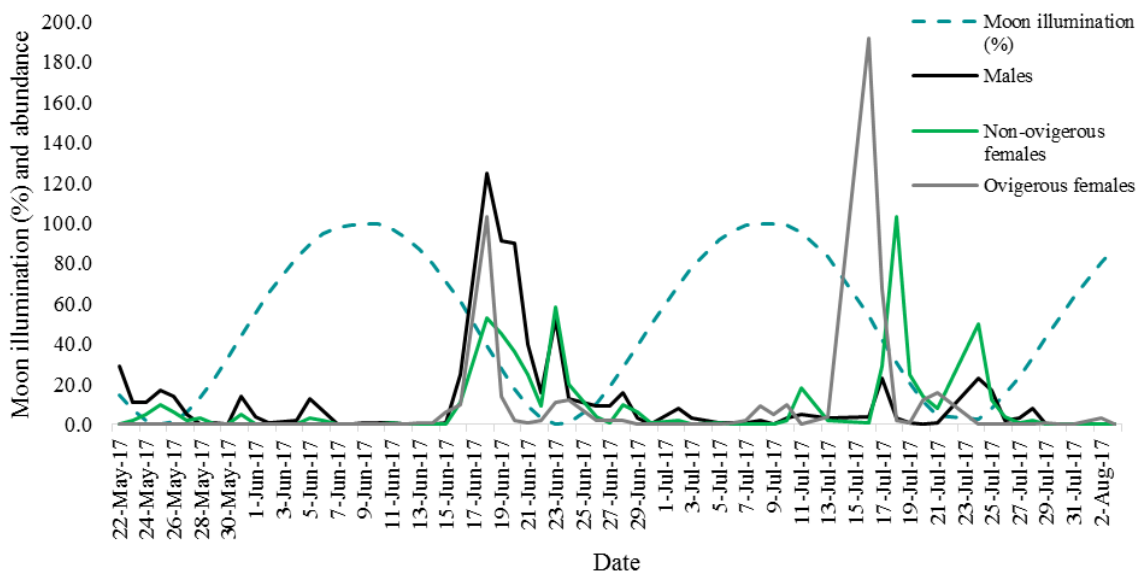


Berried females were particularly active during the several days preceding a new moon when they were most likely in route to the sea for spawning events. Heavy rainfall also stimulated crab movement as there was high activity following the first “big rain” in mid-June. The black land crab migration season on Grand Cayman extends over three months, but intensity varies with time based on the amount of rainfall and lunar phase. See figure 2.

Road traffic is an increasing source of mortality for land crabs on Grand Cayman, especially when they are most active—at night, after rain, or during migration. There was a total of 1,328 crab roadkills counted during the nightly road surveys along Queen’s Highway in June and 1,612 roadkills in July. A large portion of these roadkills were counted following the two mass migrations.

As keystone species and migratory animals, land crabs have multiple roles spanning the ecosystems they cross. In the ocean, many animals feed on the crab’s larvae as they drift through the currents among seagrass beds, coral reefs, and mangrove wetlands<sup>4,5</sup>. Land crabs also play important roles in forested coastal habitats by serving as “gardeners” dispersing seeds throughout the forests and ultimately influencing the species composition of coastal plant communities<sup>6</sup>.

Data indicating locations with the highest crab activity and roadkill numbers along Queen’s Highway (see figure 3) may be useful to the Cayman Department of Environment for consideration of land to protect or purchase to conserve surrounding areas. Using Terrestrial Protected Area mechanisms would protect habitat not



**Figure 2. Moon illumination (%) values obtained from the U.S. Naval Observatory and the number of *G. ruficuloides* individuals encountered on Queen’s Highway, GC. New moons were respectively around 24 June and 24 July 2017. *Gecarcinus ruficuloides* activity levels were highest during the waning crescent phase which took place 18 to 22 June and 17 to 21 July 2017.**



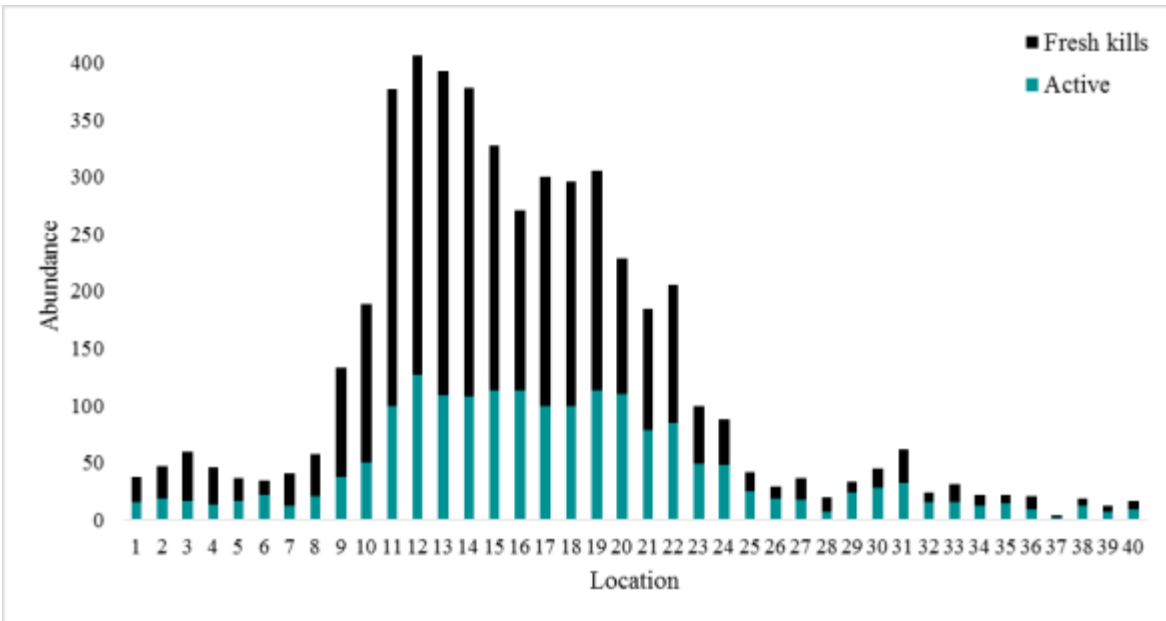
only for crabs but for many endemic animals on the island such as the Grand Cayman racer snake (*Cubophis caymanus*) and the Grand Cayman Blue-throated Anole (*Anolis conspersus*) which are commonly encountered in East End.

Because the crabs are migratory, single-site protection would not be the only possible solution. Installation of crab warning signs with flashing lights in the specific road sections on Queen's Highway deeming high crab activity would alert drivers to the presence of crabs as an attempt to reduce vehicular caused mortality. Currently, land crabs are still exploited for food during the reproductive season on Grand Cayman, but total catch figures are unknown. The next steps may include obtaining catch numbers to aid in assessing the future of Cayman's crab populations. It is essential the local community, particularly crabbers, are involved in

providing input on potential sustainable harvest rates and future management decisions.

As invertebrates, land crabs have a low public profile and tend to be underrepresented in global conservation efforts. Fortunately, this research discusses the importance of land crabs, particularly *G. ruricola*, on Grand Cayman and highlights the significance of invertebrates on the island. Solutions provided in this research are relevant well beyond the Cayman Islands because habitat loss, road construction for motorized vehicles, and human consumption of wildlife are increasing problems in many regions of the world.

If you have any questions or comments about this study, please contact the editor (page 2) or Kinsey directly on: [ktdford1@uco.edu](mailto:ktdford1@uco.edu). References for this article are available on request.



**Figure 3.** Number of active *G. ruricola* on the road versus roadkills encountered during the road surveys within each road section (850m<sup>2</sup>) along Queen's Highway, Grand Cayman from May 22 to August 5, 2017.



# Mangrove Conservation Plan for Public Consultation

The first Terrestrial Conservation Plan is out for Public Consultation from 30<sup>th</sup> July to 3<sup>rd</sup> September 2018!

Under Section 17 of the [National Conservation Law](#), the general public is invited to submit written views on the [Mangrove Species Conservation Plan](#) to the National Conservation Council. Please note that submissions will be published as part of the consultation report.

The period for consultation will end on Monday, 3<sup>rd</sup> September 2018 at 5pm, after which the Council will take into account all written submissions before deciding whether to recommend the proposal to Cabinet.

Submissions should be made using the [online survey](#), or on a form which is available to download and print.



National Conservation Council

## Species Conservation Plan for Mangroves

National Conservation Law, section 17

This Conservation Plan applies to the following species wherever they are naturally occurring or have been restored:

Red Mangrove (*Rhizophora mangle*)  
White Mangrove (*Laguncularia racemosa*)  
Black Mangrove (*Avicennia germinans*)  
Buttonwood (*Conocarpus erectus*)

### 1. Conservation Status

All of the mangrove species covered by this Conservation Plan are protected species in Part 2 of Schedule 1 of the National Conservation Law 2013 (NCL). These are all widespread species with neotropical to hemispherical distributions, and are not listed as globally threatened in the IUCN Red List.

However within the Cayman Islands, mangrove loss has been so extensive over recent decades that it triggers local Red-Listing criteria. In 2008 the Cayman Islands national IUCN Red List status of Black Mangrove was assessed as Endangered, White Mangrove and Buttonwood both as Vulnerable, and Red Mangrove as Near-Threatened.

The Ramsar Convention (1971) has been extended to the Cayman Islands, requiring a commitment to work towards the wise use of our mangrove and other wetlands through national plans, policies and legislation, management actions and public education.

This will assist the Council and Cabinet in objectively assessing the level of public support or opposition for each proposal, as well as providing for comments in your own words.

We suggest you read the proposal before taking the survey. You can only take each survey once, so please check your entries before submitting.

## Species Conservation Plan for Mangroves

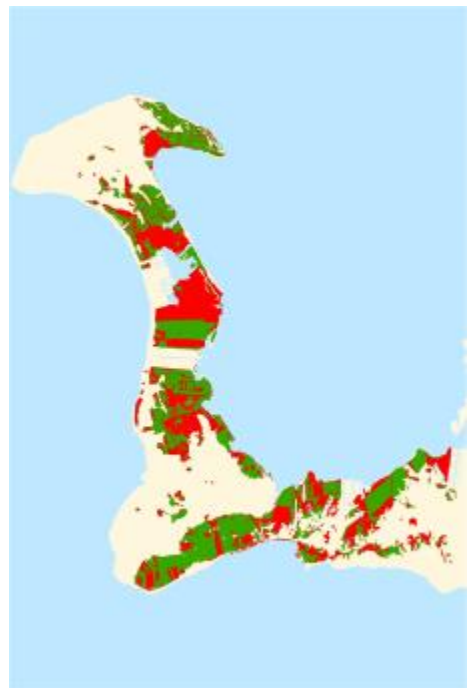
Plan overview:

Mangroves are a familiar and widespread feature of our landscapes. Red Mangrove, Black Mangrove, White Mangrove and Buttonwood trees can be seen on many of our shorelines, out of our car windows as we commute, along MRCU dyke roads, and even in residential and commercial landscapes. Because they are so ubiquitous we tend not to think of them as being in any danger.

For our mangroves, however, all is not quite as comfortable as it seems. In western Grand Cayman for example, between 1976 and 2013 more than two-thirds of the area occupied by mangroves (69%) was removed to create land for human uses. This process is ongoing and is taking away the ecological services that mangrove ecosystems provide and which benefit us in many ways.



**Mangroves in 1976 (shown in green)**



**Mangroves lost by 2013 (shown in red)**

Mangroves are also threatened by modern sea level rise. For thousands of years, the mangroves have been laying down peat that has kept pace with the rise in sea level. With climate change, sea level rise now appears to be accelerating, and the mangroves may not be able to keep up. If they submerge too deeply, they die. For these reasons, the National Red List status of the mangroves is edging into the endangered zone. Red Mangrove is “Near Threatened”. Buttonwood and White Mangrove are “Vulnerable”. Black Mangrove is already “Endangered.”

This Conservation Plan seeks to moderate the ongoing loss of mangrove in the Cayman Islands. It proposes the use of the National Conservation Law to establish additional protected areas in key mangrove sites and gives protection to all mangroves in their natural setting with necessary exceptions made for a wide range of economically important activities. Existing development

approval procedures such as Planning Permissions, Coastal Works Licenses and Gazettal of road corridors will continue to operate normally, and development approved through these procedures will not be affected by this plan.

Mangrove Trimming Guidelines issued under this Conservation Plan lay out the options and methods that can be used by property owners wishing to create or maintain a view through, or over naturally situated mangroves. Use of cultivated mangroves in landscapes is encouraged by allowing collection of mangrove propagules, growing in pots and buying and selling cultivated specimens. Cultivated mangroves planted as part of landscapes are (of course) not subject to conservation measures. The main effect this Conservation Plan will have is to raise the level of protection on mangroves which are not currently approved for development. E.g. clearing mangroves in the absence of planning permission will constitute a violation of the NCL and could carry severe penalties.



## KNOW YOUR NATIVES

### *Agave caymanensis*

Also known as the Century Plant, *Agave caymanensis* is a unique and attractive plant endemic to the Cayman Islands. Not to be confused with *Agave sobolifera*, the Cayman Agave is assessed as Endangered due to accelerating habitat loss and population decline throughout the three Cayman Islands.

Recognised by its broad, succulent and spikey-edged leaves, this plant grows in dry shrubland at all elevations, but seem to particularly favour the drier eastern ends of each island.

Over time the agave leaves form a “trunk” deeply imbedded in old dead leaves. It can grow to an impressive 4m (13 ft.) tall and 3m (9.8 ft.) wide rosette.

*Agave caymanensis*, being true to the agave family, is a monocarpic species. This means that it flowers only once in its life-span and dies shortly afterwards. When in flower, the bright yellow petals attract a great variety of insects and birds and young Rock Iguanas are known to use the hollow core of dead flower spikes as retreats. An endearing Cayman custom is to replace Christmas trees by bringing in the dead agave stalks.

Apart from habitat loss, this plant could be severely threatened by the accidental introduction of the invasive agave snout weevil (*Scyphophorus acupunctatus*). This weevil is heavily impacting the native populations of Agave species on neighbouring islands.



**Agave caymanensis is an attractive ornamental plant, native to Cayman and therefore tolerant to our climate here. Photos by Kristan Godbeer.**