DARWIN INITIATIVE NEWSLETTER

AUTUMN 2007

DEPT. of ENVIRONMENT

DARWIN INITIATIVE

Welcome…

to our fifth Darwin Newsletter.

Barkers Confusion

The Department of Environment has recently received several enquiries from members of the public regarding the status of Barkers Park… and whether it is really a protected area…

Most have been surprised to learn that currently, the Barkers land does not enjoy any special protected status.

Until the draft National Conservation Law is passed, there remains no legal mechanism under which to declare the area a National Park.

The National Conservation Law is the pending legislation which would enable Barkers to be legally protected. Otherwise, as crown land, Barkers remains vulnerable to purchase by one government and sale by the next…

Students learn about the importance of Cayman's mangroves aboard DoE's *Seakeeper* research vessel

We encourage you to show your support for the **National Conservation Law,** and **help us ensure that Barkers is protected forever**. Participate in the process through the Government website **www.gov.ky**

Sincere thanks to all our Darwin Partners…

Blue Iguana Recovery Programme, Cayman Islands Humane Society, Cayman Islands Bird Club, Cayman Islands Orchid Society, CaymANNature, Cayman Wildlife Connection, Camana Bay Nursery, Department of Agriculture, Department of Environment, Duke University, Garden Club of Grand Cayman, Mosquito Research and Control Unit, National Museum, National Trust for the Cayman Islands, Queen Elizabeth II Botanic Park, Royal Botanic Gardens Kew, Royal Society for the Protection of Birds, Shade Brigade, University of Exeter …

… and to all **photographers** who send images for the website.

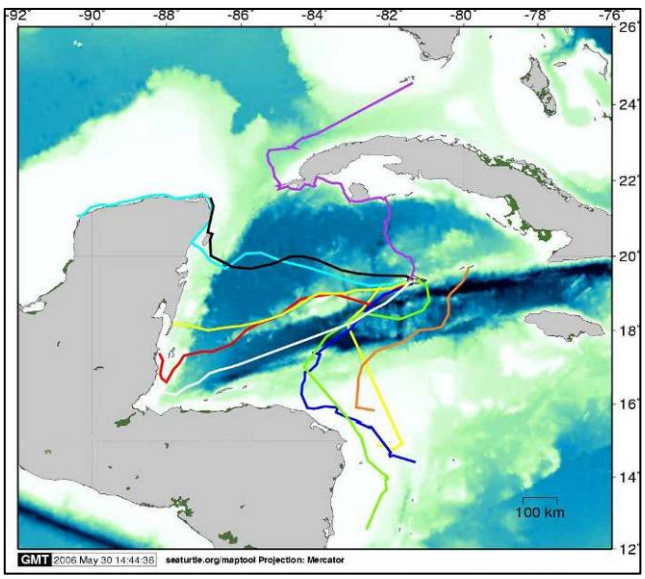
CONTENTS

DoE field research - ADULT TURTLES

Each summer, **Caribbean turtles migrate thousands of kilometers to breed and nest in the Cayman Islands.** The 2007 sea turtle nesting season is now drawing to a close. Our nesting population may once have been one of the largest in the Atlantic – but today, only a handful have escaped extinction, and all marine turtles are now considered endangered.

Mating green turtles Cayman Brac - Summer 2007.

Photo: Jason Belport



Cayman turtles migrations tracks

Adult turtles only visit our waters during the breeding season.

Where do our endangered green and loggerhead turtles live when they are not nesting?

Satellite tracking is the only way to follow them, from the Cayman Islands, to their feeding grounds in far off countries.

With the help of schools and the local community, the Department of Environment has tracked Cayman turtles across the open ocean to Central America, Mexico, and the Florida Keys.

Cayman turtles travel through the waters of many different nations. Effective conservation efforts depend on an understanding of their movements.

DoE field research - JUVENILE TURTLES

By using the turtles' DNA as a kind of genetic barcode, we are discovering that young hawksbills in the Cayman Islands hatched in distant parts of the Caribbean - on nesting beaches in Costa Rica, Antigua, Mexico, Cuba, the Virgin Islands, and other countries.

Those seen in Cayman waters have already traveled hundreds or even thousands of kilometers from their hatching beaches, by the time they reach us. The youngster opposite was first tagged in September 2007. She spent the first few years of her life drifting with the currents in the open ocean, before moving to a reef in Little Cayman at a size of approximately 20 cm (8").

With the support of the Darwin Initiative, the Department of Environment is conducting an ongoing study of juvenile hawksbills. DNA samples are collected and turtles are weighed, measured, tagged, and released, to determine the true origins of our "local" turtles.

New arrival! - tiny hawksbill first tagged Sept 2007. Photo: Mark Orr

Turtle #XXL720 - first tagged May 2000. She was recaptured seven years later, just 1.7 km from her initial capture site. Photo: James Gibb.

Turtle *#XXL720* was first tagged as a small juvenile in May 2000. When she was recaptured in Sept 2007, she had reached a size >55 cm – growing at a rate of just over 2 cm per year. Through long-term monitoring and multiple recaptures, we are discovering that

Cayman hawksbills grow slowly, and may live in Cayman waters for over 15 years.

They benefit from our protection during this vulnerable period, in order to survive to adulthood.

Juvenile hawksbills from across the Caribbean use our waters as a nursery habitat – but as they near maturity, they seem to leave, bound for faraway foraging grounds.

Where do they go? In April 2007, we received our first international tag return: a hawksbill tagged in Little Cayman in May 2000 was recaptured in Honduras.

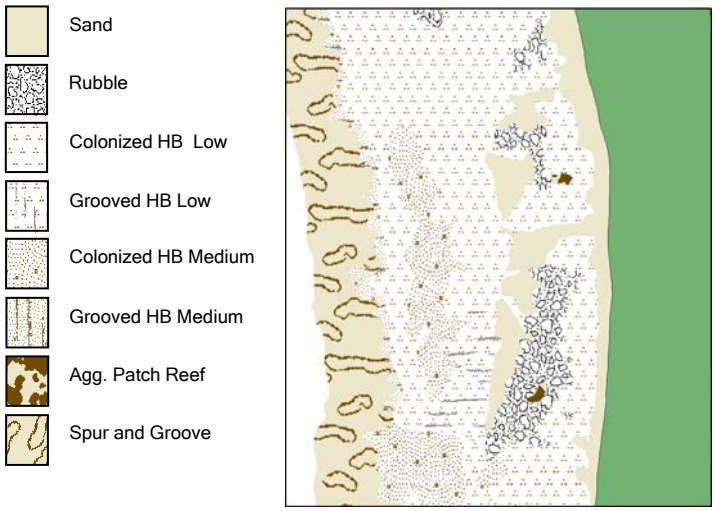
Soon, ***XXL720*** will be ready to begin her migration. She will move to an adult feeding ground in a distant country, returning to her birth place every few years, to breed and nest.

Habitat Mapping – Marine Benthic

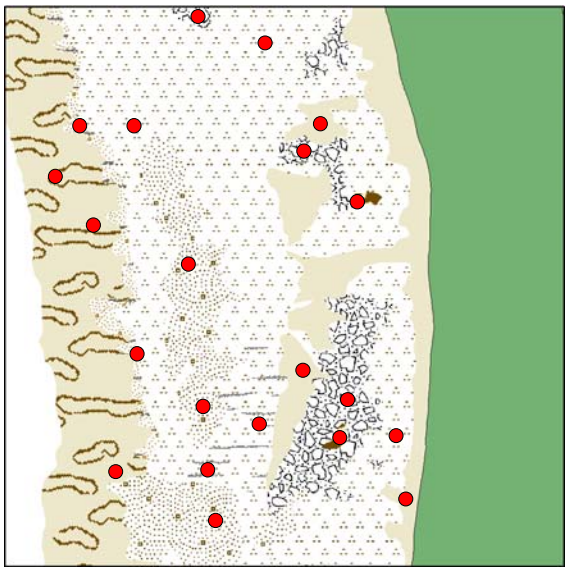
We are happy to announce that the marine benthic habitat mapping is now complete for most areas surrounding the islands! A team of DoE researchers is currently completing an Accuracy Assessment project in which random points are generated inside the study area and visually inspected for a "final look" at the bottom type using a predefined list of possible habitat types. This information is then compared to the original delineation to assess the overall accuracy of the mapped product.

From the beginning: Digitizing begins on raw imagery which consists of 2004 Aerial Photography.

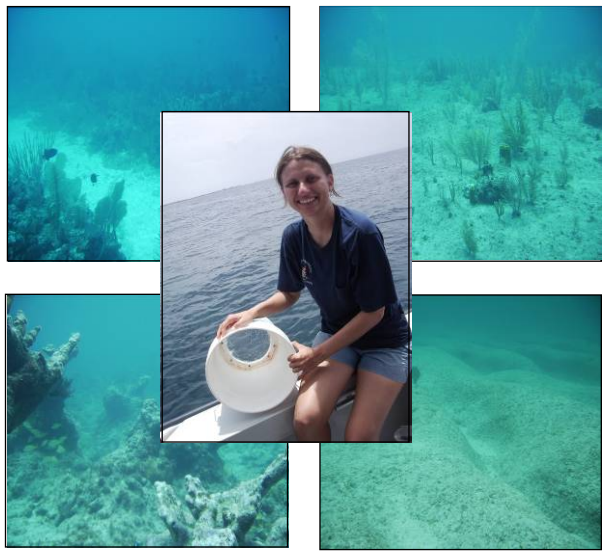
Digitizing complete: The end product of the mapping portion of the benthic habitat classification is a habitat map with intuitive display symbols.



Random points generated: A stratified random sample is generated in ArcGIS based on amount of coverage (sq. Km) of each habitat type. These will be the sites that are ground-truthed and compared with the mapped product.



Field accuracy assessment completed: A team of DoE researchers very familiar with the classification scheme examine the habitat at each random point using accurate gps coordinates, to determine the accuracy of the computer predictions.

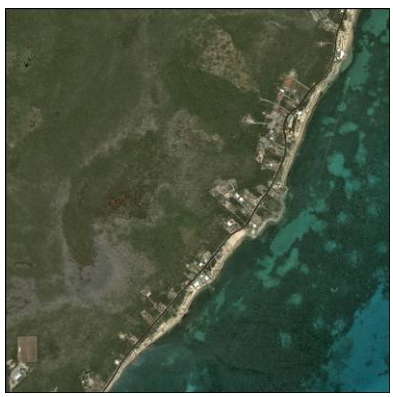


Habitat Mapping – Terrestrial

The terrestrial habitat mapping portion of the Darwin Initiative is now well under way and includes a completed habitat classification scheme. Satellite imagery has been acquired (2006), and includes the near-infrared band of the Quickbird satellite. The near-infrared band is an excellent tool for distinguishing between vegetation types, biomass, and dominant species density among other characteristics. For the most part, an automatic classification (supervised and unsupervised) will be used to determine landcover habitat types using *Idrisi* and *ArcGIS* software. The classification will also be aided by incorporating additional information such as color, tone, size, shadow, and temporal changes.

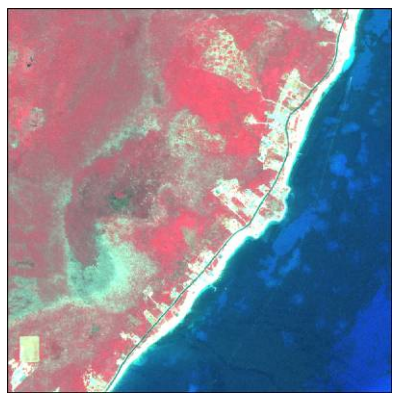
Available imagery: There are two different resolutions of imagery that will be used for the mapping project. One is a pan-sharpened, 60cm, true color image and the second is the 4-band (blue, green, red, near-infrared) multi-spectral, 2.4m, color composite image. **A)** *shows a section of the pan-sharpened image,* **B)** *shows the same section in true color of the 4-band image, and finally* **C)** *shows a false color composite which is created to display the reflectance properties of the near-infrared band (bright red = healthy, thick vegetation, light red = stressed or sparse vegetation, gray and brown = barren land, etc.)*

A)



B)

C)

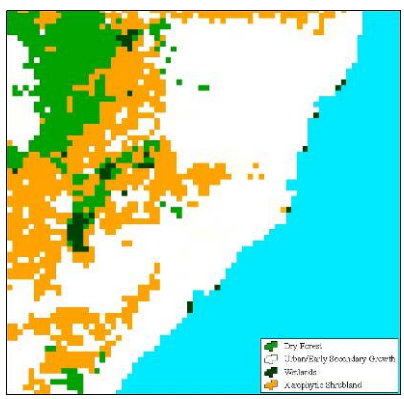


Applying the classification scheme: A detailed habitat scheme has been developed that will classify the terrestrial landcover to a degree that has not been accomplished to this point for the Cayman Islands. Experts on the vegetation species and communities of the Cayman Islands have collaborated to compile a list that will be both useful to a wide range of end users, as well as feasible to map using the available imagery. The below is a subset of the current terrestrial habitat scheme.

TERRESTRIAL HABITAT TYPES

CLASS	SUBCLASS	DARWIN CATs	NOTES (Alliance – Associations)
FOREST *Closed canopy*	Lowland evergreen forest	1. FOREST A. DRY FOREST	**Coccothrinax** - Myrcianthes - Pilosocereus
	Semi-permanently flooded evergreen sclerophyllous forest	1. FOREST B. WETLAND	**Conocarpus erectus** - Avicennia – Rhizophora **Laguncularia racemosa** - Rhabadenia
	Tidally flooded mangrove forest	1. FOREST B. WETLAND	**Avicennia germinans** - Laguncularia – Rhizophora **Rhizophora mangle** - Laguncularia **Laguncularia racemosa** **Conocarpus erectus** - Laguncularia - Rhizophora
	Lowland semi-deciduous forest	1. FOREST A. DRY FOREST	**Bursera– Guapira** - Chionanthus – Ficus – Tabebuia – Coccothrinax **Bursera – Calyptranthes** - Croton lucidus
	Seasonally flooded / saturated semi-deciduous forest	1. FOREST A. DRY FOREST	**Bursera – Roystonea** – Picrodendron **Metopium – Swietenia** – Coccothrinax **Thrinax – Bursera** **Haematoxylum campechianum** - Tillandsia
	Xeromorphic semi-deciduous forest	1. FOREST A. DRY FOREST	**Bursera – Pilosocereus** - Exothea - Agave
WOODLAND	Tidally flooded evergreen woodland	2. WOODLAND B. WETLAND	**Avicennia** - **Batis**
	Needle-leaved evergreen woodland	2. WOODLAND Z. INVASIVE	**Casuarina equisetifolia**
	Semi-deciduous woodland	2. WOODLAND C. DRY WOODLAND	**Coccothrinax – Swietenia** – Myrcianthes
	Lowland / submontane	2. WOODLAND	**Bursera – Guapira** – Tecoma - Swietenia

End product: A supervised classification incorporates knowledge from field sampling to relate measured spectral reflectance properties to known properties of the ground cover. Training areas within the scene are identified for each pre-determined category and these are delineated so that their spectral properties can be studied intensively. The classification of the remainder of the image will be based on the values in the training sets.



Example from Burton, F. 1989 Landcover classification

WEB LAUNCH

They say the best things in life are worth waiting for… we hope you will agree, our Darwin Initiative website **CaymanBiodiversity.com** is certainly one of them!

Special thanks to Sandy Binns of the **International Reptile Conservation Foundation** IRCF for all her incredible work on this huge project.

Launched in November 2007, CaymanBiodiversity.com offers a wealth of information about the natural resources of the Cayman Islands…

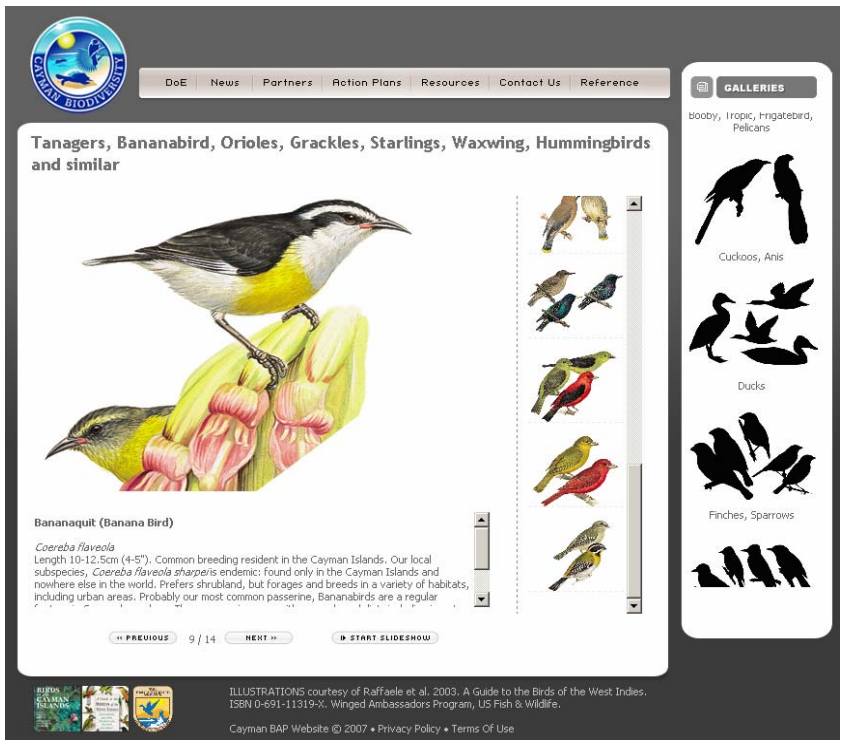
… a one-stop shop for links to local and international charities, NGOs and Government Departments, many if whom are active **Darwin Partners,** with responsibilities and interests which affect the variety of species on our islands.

As the site expands we hope to add more **RESOURCES** to help you explore some Cayman's natural wonders…

Several **RESOURCES** are already complete, including a **Virtual Bird Guide**, coupled with a link to **eBird Cayman**, and some top tips on **BIRD WATCHING** and **IDENTIFICANTION**, and links to **RETURN BIRDS RINGS** should you find them.

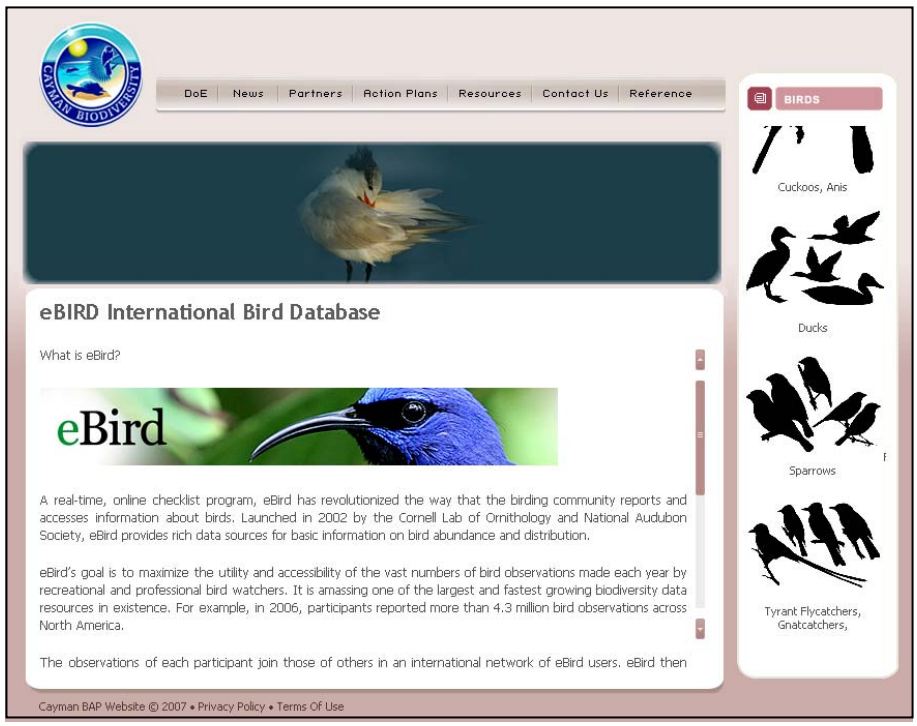
The Virtual Bird Guide is designed with the novice in mind. Even if you know nothing about birds, you should be able to quickly navigate the picture-based menus to find and identify your bird of interest.

The guide includes all the birds recorded in the Cayman Islands, with information based on ***The Birds of the Cayman Islands*** by **Patricia Bradley**, and with images courtesy of ***Birds of the West Indies*****, Raffaele** ***et al.*** 1998, donated through the Winged Ambassador's Program of US Fish and Wildlife.



Each bird is accompanied by a brief text, and direct links to **Cornell Lab of Ornithology** "*All About Birds*" which offers photographs and detailed descriptions of all the different species – you can even **listen to their calls!**

The Virtual Bird Guide is not intended as a substitute for a real field guide, but we hope that it will give you a taste of the variety of local and migratory birds that you can see on the islands, and encourage you to explore further.



CORNELL LAB of ORNITHOLOGY
All About Birds

… but that's not all…

The Virtual Bird Guide is linked to
eBird Cayman

eBird is an international bird recording database developed by **Cornell Lab of Ornithology** and **Audubon**. eBird allows you to set up and customize your own online bird recording system. Catalogue your observations, bookmark hotspots and print reports on your progress. The real value of eBird, however, is that it links your observations to the international database, enabling scientists from around the world to use your records to generate important data on the numbers and species of local and migratory birds. Access is two way – so you too can tap into this wealth of online knowledge. Find out what birds are being seen, when and where.

eBird enables you to make the most of your observations, who knows, your own backyard could yield some important new discoveries?

CAYMAN SAGE - REDISCOVERED!

This reward poster featuring Penny Clifford's rendition of the missing plant prompted a national search from the Cayman Sage - with reports from around Grand Cayman… and even the Brac…

"Extinct" plant found on GC

By Carol Winker
carol@cfp.ky

Mrs. Carla Reid was forced to bring her vehicle to a stop one day last month so that trenching machinery could be moved on Queen's Highway.

As she waited, she looked out of her window and saw something she had feared did not exist any more - a uniquely Caymanian plant identified years ago as salvia caymanensis and known less formally as Cayman sage.

Although Mrs. Reid travels that section of road frequently, it's a 50 miles per hour stretch, so chances of seeing the plant's little blue flowers were minimal.

The flowers apparently don't stay in bloom very long: when photographers went to the area last week, the blossoms were gone. Without them, the plant is not as easy to identify.

Mrs. Reid knew what she was looking for. The Darwin Initiative's recent offer of a $1,000 reward reminded her of her earlier interest.

"Years ago the National Trust produced a colouring book about endangered plants and animals in Cayman," she said. "I was cleaning one of my children's rooms, found the book, looked through it and was intrigued. Some time after, Dr. George Proctor - the botanist who wrote Cayman's Flora - came down and said he wanted to be taken to a certain area to look for Cayman sage because he hadn't seen it in 30 years or so. We didn't get around to taking him, but that sparked my interest again."

The Darwin Initiative is a programme to conserve endangered species. Its newsletter published in April contained the reward offer.

Mr. Mat Cottam, senior research officer with the Department of Environment, thought that a cash prize might get more people involved in the search for Cayman sage.

The timing was right because the plant was thought to flower around June.

The *Caymanian Compass* publicised the reward and Mrs. Penny Clifford contributed her colour sketch of the plant, based on a dried specimen in the National Trust herbarium.

After the article was published, Mr. Cottam received calls from over a dozen people who thought they had found the Cayman sage.

"There are a number of confusion species and several promising reports turned out to be similar-looking Hyptis and Desmodium. The sites reported by Carla were the only real Cayman sage," Mr. Cottam said.

He could speak with authority because specimens were sent to Mr. Proctor, who confirmed the plant's identity.

And he could refer to sites in the plural because Mrs. Reid continued to explore roadside environments with fellow nature photographer Mrs. Ann Stafford. Together they found Cayman Sage in the Cottage area of East End's south coast.

In total, about 300 individual plants have been located, in several small groups, Mr. Cottam said.

Approximately 18,000 seeds have been collected.

They will be divided between the Darwin Partners at the Royal Botanic Gardens, Kew, for their long-term storage programme, and the Queen Elizabeth II Botanic Park for the conservation propagation programme.

If this effort is successful, the park nursery will be able to offer the plants for sale.

Park manager Andrew Guthrie said there are over 900 species of salvia worldwide. Many of them have medical properties and others have become popular ornamental plants for gardens.

"It is very good news that Cayman's own unique salvia species has been rediscovered after being lost for so many years," Mr. Guthrie said.

The last word on the subject, for now, belongs to Mrs. Reid, who volunteered to tell what she is doing v the $1,000 reward.

She has several purch in mind, all for the Natio Trust, of which she chairman. Some will botanical books, she sa But the thing she seems m excited about is a hand-h GPS, so that future finds be pin-pointed for posteri

Mr. Mat Cottam said t next Darwin competiti will be aimed at encouragi school children to thi about their environment a teaching them about son of the special plants th make Cayman truly uniqu The topic will be the pla hohenbergia caymanens -- a giant bromeliad wi leaves that can grow mo than three feet long. The o thing it is lacking is a loc name to match its fantastic appearance.

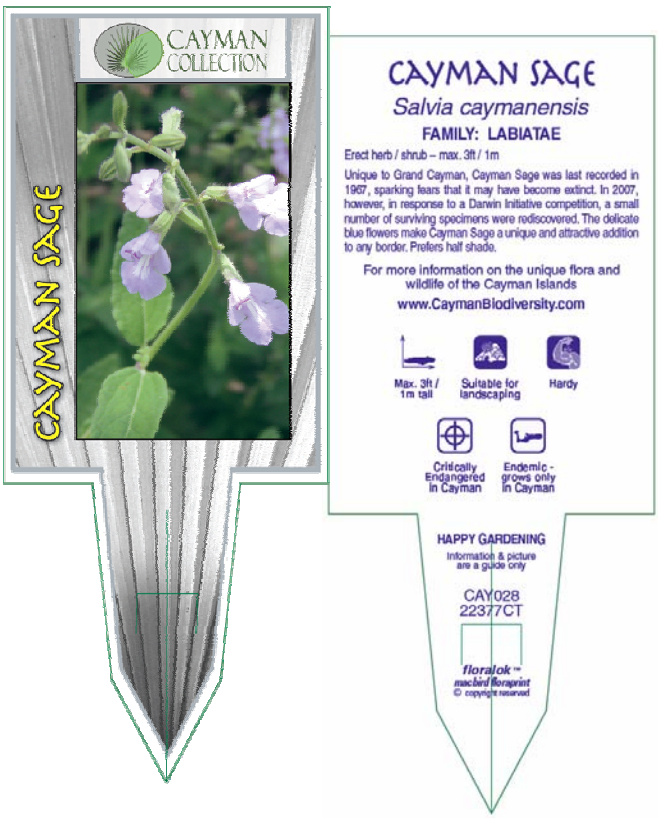
"It is time for hohengberg caymanensis to take its pla alongside Silver Thatc Duppy Bush and Ironwo with an exciting local nam Mr. Cottam said.

The competition will be think up the best local nam "I'm not sure what the pri will be yet, but it will something pretty exciting he said.

Details will appear the next Darwin Newslett and then in the *Caymanic Compass*.

For the presentation of the $1,000 reward, Mrs. Carla Reid and Mr. Mat Cottam chose an area in which she found the Cayman sage. Unfortunately, the flowers were no longer in bloom. Fortunately, Mr. Cottam had taken close-ups the previous week. *Photo: carol Winker*

Ms. Carla Reid rediscovered the Cayman Sage in Northside, and donated the prize money to support the National Trust's Environmental Programmes. CAROL WINKER



Readers of our last Darwin Newsletter will be familiar with Cayman Sage *Salvia caymanensis*. This attractive little herb was last recorded some 50 years ago, and was feared extinct. The Darwin Initiative responded with a competition, encouraging members of the public to look out for the plant.

About a dozen reports were received in total, however, most proved to be the very similar *Hyptis* and *Desmodium* species. As hope seemed to fade, a likely candidate appeared. Samples were rushed to botanist George Proctor, author of the *Flora of the Cayman Islands*, and he confirmed the initial identification – the long lost Cayman Sage.

Surveys revealed a total of about 300 plants, in small patches around Northside and East End. Seed collections were made for the Royal Botanic Gardens Kew Millennium Seedbank project, and for the Queen Elizabeth II Botanic Park's conservation propagation program, where the Native Tree Nursery will aim to grow sufficient plants to offer them to the public - a unique and attractive border plant, and one with quite a tale to tell…!

THE PLANT WITH NO NAME … COMPETITION ENTRY FORM

YOUR NAME: **AGE:** **SCHOOL:**

I think the PLANT WITH NO NAME should be called:

Because… (give a reason why you think your name is a good one)…

SEE BACK PAGE FOR PICTURES and DETAILS and get THINKING…

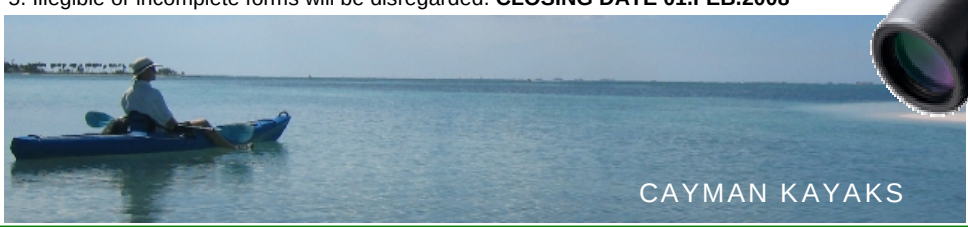
SIGNATURE OF PARENT OR GUARDIAN:

I / we agree that the above named is entering this competition with our consent:

SIGNED: _____ **DATE:** _____

COMPETITION RULES:

1. This competition is open to all students 8yrs + currently attending school in the Cayman Islands.
2. The prize will be awarded to the entry which, in the judge's decision, is the best name and reason.
3. The prizes are as stated:
one mangrove adventure trip (for up to 8 individuals), courtesy of Cayman Kayaks,
one pair of Nikon compact binoculars, courtesy of Cayman Camera. No prize / cash alternatives.
4. The judge's decision is final. No correspondence will be entered into.
5. Illegible or incomplete forms will be disregarded. **CLOSING DATE 01.FEB.2008**



Cayman Camera

THE PLANT WITH NO NAME …

PHOTO: Kristan Godbeer

PHOTO: Mat DaCosta-Cottam

COMPETITION

Imagine a plant **covered with spikes and scales**… even the flowers are spiky. A **giant** air plant – SIX FEET across - a plant which **only grows in one tiny piece of George Town**… and nowhere else in the world!

It catches and stores water in specially designed leaves, which act like mini-reservoirs. Leaves and insects which fall into the water can provide the plants with extra nutrients.. so… **it can grow without any soil**… on a piece of bare rock… or even on other plants.

HOW COOL IS THAT?

Now imagine this monster plant is called…***Hohenbergia caymenensis***… …*Hohen-what-a-nensis*?!

This quiet giant, a distant cousin of the pineapple, is found only in the **Ironwood Forest**, the **last fragment of old-growth George Town forest**.

The Ironwood forest – "*The Forest That Time Forgot*" grows behind the *University College of the Cayman Islands*, off Walkers Road. You might never know it was there, but this tiny forest fragment is an oasis of Cayman biodiversity - boasting a treasure trove of unique plants and trees, including critically endangered orchids and culturally significant trees like Cayman's unique endemic Ironwood.

We think the unique Hohenbergia deserves a great local name… so it can hold its leaves up high, alongside Silver Thatch and Ironwood.

If you are currently a student aged 8+ in a school in the Cayman Islands, and reckon you can think of a **PLANTASTIC** new local name for this old-time George Town resident, this competition might just be for you?

… see inside cover for details and entry form…

FURTHER INFORMATION

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