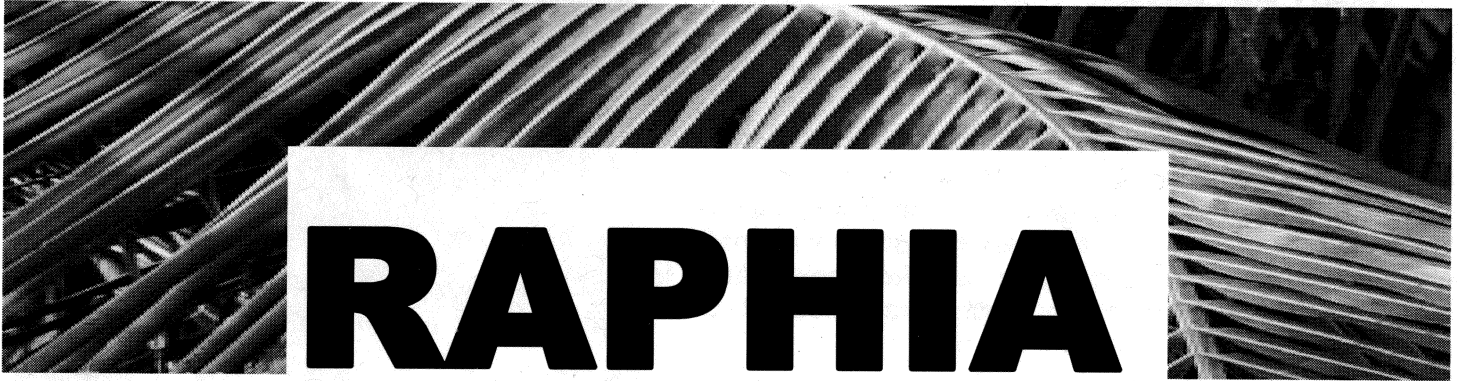


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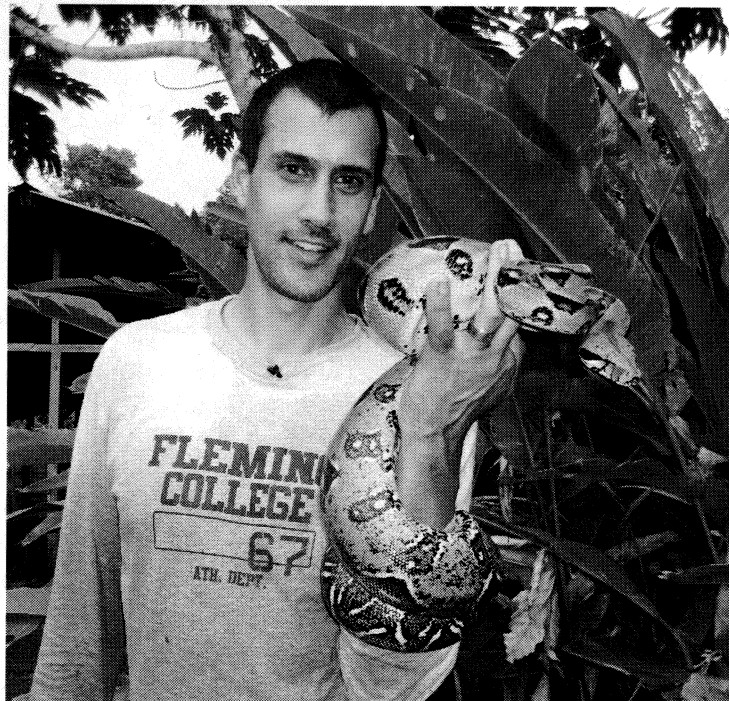
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RAPHIA

Spring 2009 Volume 18, Issue 2

**RAPHIA IS THE QUARTERLY NEWSLETTER FOR THE
CANADIAN ORGANIZATION FOR TROPICAL EDUCATION
AND RAINFOREST CONSERVATION**



*Former COTERC Director Josh Feltham with Boa Constrictor at
Caño Palma Biological Station*



CANADIAN ORGANIZATION FOR TROPICAL
EDUCATION AND RAINFOREST CONSERVATION

Caño Palma Biological Station

Barra Colorado Wildlife Refuge
Tortuguero, Costa Rica

JOSH FELTHAM NOTE

Last year, our family decided to make some changes in our life. We sold our house and put many of our belongings in storage and moved to Costa Rica. Too many long days at work and not enough family time were the motivators for this change. We decided that we would spend the next year assisting COTERC with some of its projects in Costa Rica [you can learn more about our experience at www.destinationconservation.ca].

I have been involved with COTERC for almost 10 years as the Director of Education and more recently a member of the Site Services Committee

DESTINATION CONSERVATION UPDATE

After spending time at the station and what it has to offer, this past fall, we have defined what we can do to help the station and COTERC achieve its mandate to provide leadership in education, research and conservation, and the educated use of natural resources in the tropics.

The station serves as a facility for researchers and educators to use while studying the Atlantic lowland rainforest. Educating local eco-tour groups and local residents is also a function of the station. This proposal focuses on six initiatives that will help COTERC achieve its mandate of education and conservation through activities and resources made available both at the station and online.

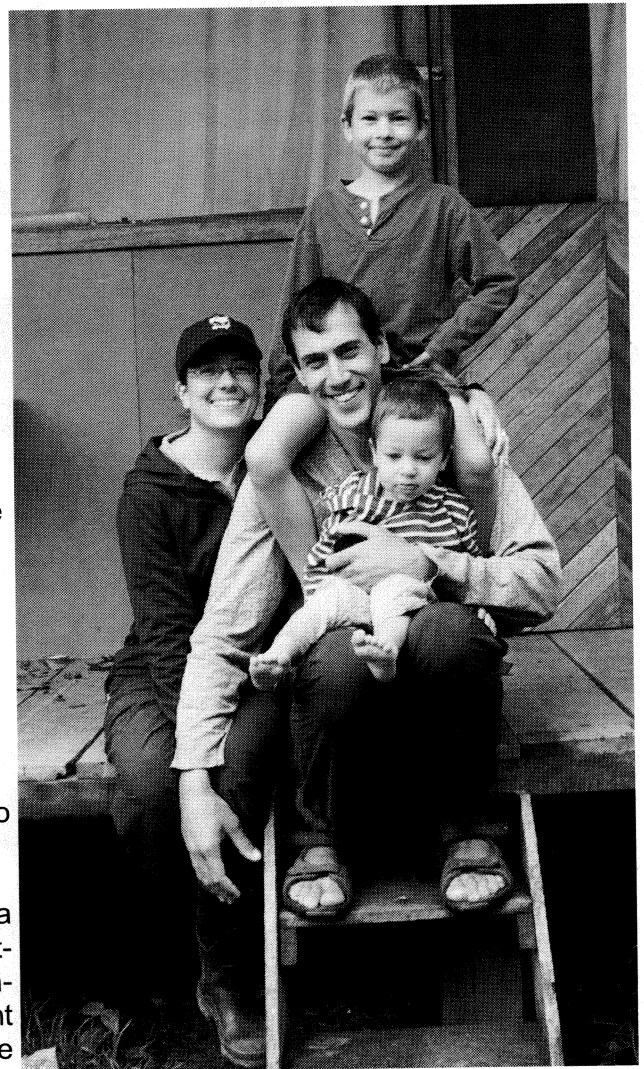
Promotion of Caño Palma Biological Station

After 18 years of operation, Caño Palma Biological Station is still faced with the challenge of making researchers and educators in Canada and throughout the world aware of its presence. Few people know it exists. One of our goals is to spread the word about the sta-

We have developed a public awareness postcard. Each postcard features a photo of a plant or animal found in the area and includes some

information about it as well as information about the station. Every person who visits the station will receive a postcard. People can either keep the postcard or mail it to a friend, which will ensure that at least one more person learns about the station! The postcards will also be available in an online electronic format that can be downloaded from COTERC's website.

A well-designed and effective promotional package for the station will be completed in the next two weeks. As a marketing tool, this package will be invaluable in discussions with researchers, educators, and potential partners who may wish to use Caño Palma Biological Station as a base for their work/expeditions. The package will



include information about the station, the area, ongoing research projects, educational opportunities, etc. The information will be provided in the form of static information sheets and multimedia clips that provide an online virtual tour of the facilities, habitats, wildlife, and projects. The best place for this package is online. Any interested parties will be directed to the website or sent a link to the site to increase web traffic and use of the site. Using electronic media also greatly reduces needless use of paper products.

Colibri Trail Guide and Tours

The Colibri trail has recently been transformed to an elevated boardwalk. The boardwalk provides access to the forest ecosystem while preserving delicate plant life and

water quality during times of flooding. Visiting tour groups from local lodges and local residents can easily access this trail but need interpretive information to gain the most benefit from their experience. The guide will focus on 8 to 10 information points about rainforest ecology, conservation issues, and solutions to conservation issues. To accompany the guide, we will create 8 to 10 information panels to be posted along the trail for visitors to consult. Panels feature text and graphics printed on durable plastic to increase the lifespan of the signage. Each panel will relate to the guide but use specific examples from flora and fauna found along the trail to illustrate the concepts discussed in the trail guide. An outline has already been developed and we are now creating more detailed information for the first draft of the guide.

A small set of guides will be printed and laminated for use along the boardwalk. Laminated guides will increase the life of each hard copy and promote reuse. For those who wish to have a hardcopy, they can print one from COTERC's website.

An online virtual tour will allow people from all over the world (who can't visit in person) to see and learn about the trail from the comfort of their homes.

Environmental Education

Over the years, staff at Caño Palma Biological Station have attempted to establish a local environmental education program in the community of San Francisco. To date, no consistent, long-term program has been successfully implemented. One of the problems has been lack of staff to ensure the program's continuation. Our goal is to

develop an educational program (with specific, progressive lessons) at the school that incorporates visits to the station. We also plan to train local residents to carry on with the program so that it does not rely on educators from outside the community. This will ensure that the program continues, and it gives ownership of the program to the community it serves. In order to do this successfully, we need to develop contacts and work with the local community to ensure the program meets the needs of the community.

Online Educational Resources

The COTERC Education Manual is a resource available to teachers for use in classroom discussions about conservation, sustainability, and rainforest ecology. Video companions to the Education Manual will be developed to provide a more complete product for teachers and students to use. The video clips will



be short multimedia presentations that work together with the Education Manual to illustrate the concepts in each exercise. All items will be produced for distribution online or as a DVD; however, online distribution is best as it reduces the production of DVDs and reduces costs of distribution. The multimedia presentations can be used as a foundation to begin discussion and promote thought about a particular issue.

Tours for Guests at Local Lodges

Caño Palma (Canal of Palms) is a popular destination for eco-tourists from local lodges. Boats visit the

canal on a daily basis with tourists who wish to observe and learn about the local wildlife. These boats pass by and sometimes stop at the station. A program that promotes visits and provides a unique educational experience for eco-tourists will be developed. This program will include an evening visit and presentation to guests at the lodge. The following morning, the lodge guests will visit the station and have a tour of the Colibri trail to round out their experience. A set schedule of tours and recommended donations for the lodges will be developed to ensure tours are reliable and that the effort generates funds for the station. Ultimately, the objective is to train some local residents to give these talks and tours to provide them with an income from ecotourism.

Workshops for Local Tour Guides

More than 100 tour guides operate out of the Tortuguero area. These guides are often a primary source of information about the ecology, conservation issues, and natural history of the area. Unfortunately, the information provided varies from informative and educational to completely inaccurate. Standardized courses about rainforest ecology, conservation biology, botany, herpetology, mammalogy, ornithology, and entomology can be provided at Caño Palma Biological Station. Courses can be offered at specific times when experts in each given field are available. Standardization of content and delivery will ensure that guides get the best possible experience and that information is delivered in a professional manner. We will conduct a pilot workshop, focusing on amphibians and reptiles in the area.

NOTES FROM THE CHAIR

Tom Mason

Well, it is time for another report from the chair. I was thinking of things that I should write about this time. I have mentioned the hard work that the Board is continually undertaking to improve COTERC and Caño Palma Biological Station; there is also the phenomenal group of volunteers that do so much for us; I have talked about our projects and our efforts to improve conservation efforts around Tortuguero and I have mentioned our education programs that have been developed. So what can I say that hasn't been previously discussed?

It dawned on me that I have never talked about what makes the Station so incredible and why people work so hard to keep it open. Perhaps some stories about visiting Caño Palma Biological Station and the region would do that. Hopefully you understand the magic that we feel. This is my first memory of Caño Palma.

It was 1992, and because I had been to Costa Rica twice, I was asked to lead an eco-tour trip to Costa Rica. I was the Toronto Zoo representative. One of our last visits took us to Tortuga Lodge in Tortuguero. I asked to see Caño Palma Biological Station. The manager of the lodge was dead set against it, but I insisted. We were taken by boat past Tortuguero and north along the intercoastal waterway to Caño Palma.

The Penetencia, the name given to the main waterway was wide and open. Trees lined the waterway and large mats of an aquatic grass, water hyacinth and other aquatic plants either grew out from the edges or floated in large clumps down the channel, headed for the Caribbean. The water was a milky tea with poor visibility. Caño Palma was entirely different. At first view, one could not see the entrance for the trees. Trees lined the curving narrow canal, sometimes joining overhead to block out the light. Fallen logs sometimes narrowed the canal so the driver had to guide the shallow drafted boat very carefully. All we saw was green; every colour of green imaginable. Occasionally we heard and saw toucans or howler monkeys. For half a kilometer we travelled up Caño Palma. Finally we turned a corner and came into a wider section with the first aquatic grasses we had seen since entering the canal. To the left was a small clearing. Away from the canal, the surrounding area on both sides was covered with a thick forest with a canopy of about 15 feet. Occasionally a tall tree broke the canopy to 40 or 50 feet.

The entrance to the Station was a single board stuck out into the water. That was the dock. The compound was around 1 1/2 acres. It was neat and tidy with short grass and paths made of the local red volcanic gravel. The only plants within the compound were a dozen or so coconuts, some bananas, a couple of lemon trees and a couple of patches of giant golden bamboo. A few hibiscus bushes added some colour. To the right of the compound was a dormitory with 4 rooms with about a dozen beds. Another small cabin held a couple more beds just behind the well. The final building was more of a lean-to. It was the kitchen and storage area.



The dock as it looks today.

The only person there was the manager, Mr. Greg Mayne. We only had 20 minutes to see the place, so Greg quickly showed me around while others spread out to look around the compound. Finally he led me along a trail to the north of the compound. I only had five minutes, but I knew I was smitten.

As I was being herded back to the board and the boat, I looked up to see a purple throated wood nymph, one of the most colourful hummingbirds I'd ever seen. I knew I had to return. It was the beginning of many years of pleasure that the station has brought me and the people I have introduced to this fascinating area.

UPDATE FROM CAÑO PALMA

Jonathan Willans, Manager, Caño Palma Biological Station

There is a sense of excitement here at the station as we are on the cusp of another turtle season. Word from Tortuguero beach today was that they received their first Leatherback nest of the 2009 season. We are yet to have our first turtle, but the morning census team is out daily looking for the first activity. Once a track is found, the night surveys will start and will not stop until mid October.

Another reason that there is so much anticipation for this season is the arrival of April Stevens. She comes here from the McMaster University in Hamilton, Ontario and is collecting data for her doctorate degree. April is studying the possible effect of climate change on our study beach and is planning on being here for up to 3 years. This is great news for the project as she adds a great deal of experience to our team and will help shape and steer the project over the next few years.

Besides March bringing the first Leatherbacks of the season, it also brings COTERC chair Tom Mason's group annual trip to the station. In a few short weeks, eve-

nings will be full of the light of head torches as they scour the station in search of the colourful and exotic herps of the area. They missed a very interesting find just the other week, after a loud group of Trogons, Toucans and Aracaris were calling and signalled our attention to an intruder. This intruder was soon spotted and turned out to be a meter and a half Boa Constrictor high up in a tree hanging over the canal. Our resident herpetologist Josh Feltham quickly scaled the tree and brought the snake down for all to see. It was a beautiful snake and was just another example of the beautiful and interesting things that can be found just on the station grounds.

One thing that the regular visitors of Tom's group will notice is the new shower and washing area that has been built at the station. The old showers were in need of an overhaul and over the Christmas holidays, they were torn down and a new level concrete base was built. Over the next month, with the help of visiting COTERC board members Greg Mayne and Dr. Kym Snarr and their group of volunteers, we were able to redesign and re-

build the shower area. There are now 3 roomy showers for all to use. Thanks again to Greg, Kym and company for their much appreciated help.

It is hard to think that although it has been only about 2 months since the last hatchlings of the 2008 season entered the ocean on their quest for survival, here we are now, just days away from starting another turtle season. The time seems to have passed slowly, but now we are ready to begin once again.. It is my favourite time of year as the massive Leatherbacks will arrive any time now, the dry season is upon us bringing sun and heat and soon the migrating birds will be passing through and filling the station with song and colour. It is a magical place here for a nature enthusiast and I hope that we continue to get volunteers from both Canada and abroad that can come here, visit the station, help with our monitoring programs and see for themselves the natural beauty of the area.

All the best from Costa Rica,

Jonathan Willans

PROMOTING COTERC

Just recently COTERC Chair Tom Mason gave a presentation to members of the Oak Ridges Trail Association, to tell them about the work that COTERC does both in Canada and in Costa Rica.

Harold Sellers, Executive Director of the Association was most appreciative of Tom's wonderful photos and stories. It is through efforts such as this one that we reach out to new audiences to educate them about COTERC. Thanks, Tom, for your efforts in this regard.

ANOTHER SUCCESSFUL EUCHRE NIGHT

June Enright, Executive Director

Tuesday February 7, 2009 was another fun Euchre Tournament night with a full 9 tables of players! The night raised \$731 to help COTERC in our work here and in Costa Rica.

Amy Lathrop took home Highest Score Female, while Dan Anderson took High Score Male. Kevin and Annette Omura took home certificates for the most Honest Male and the Most Honest Female. The most lone hands certificate was awarded to Marc Sammons.

A special thanks to Amy Lathrop for making up new table signs and rule sheets and to Brad Hubley for bringing along a great selection of tunes for the evening. Thanks to Blue Enright for arranging to lug all the goods to the event and to Barry McKee who, although feeling poorly was also there to help. Once again Fran Mason and others were quick to lend a hand, which was greatly appreciated.

Special thanks to the **Bulk Barn** in Pickering at Liverpool Road for providing some cost breaks on goodies for the evening.

We hope everyone had a good time and look forward to hearing from you! Thanks to all those who attended.



Kevin and Annette Omura



The happy winners

NOT A MEMBER YET? WHY NOT JOIN TODAY?

Please fill out this form and mail to:

COTERC
PO Box 335
Pickering, ON
L1V 2R6
Canada

Please print clearly

Name: _____

Address: _____

City: _____

Postal Code/Zip Code: _____

Phone: _____

E-Mail : _____

Select the appropriate membership category:

Student \$20.00

Senior \$25.00

Individual \$30.00

Family \$40.00

Classroom \$50.00

Corporate \$100.00

Cheque Visa Mastercard

Card # _____ Expiry _____

Will you assist us in our conservation efforts and receive your quarterly newsletter, Raphia, electronically?
Yes

Please let us know if you wish to volunteer:
I would like to help with efforts here in Canada Yes

I would like to volunteer in Costa Rica at Cano Palma.
Yes

Canadian Organization for Tropical Education and Research Conservation
Charitable Number: 890096183 RR0001
www.coterc.org

ANNUAL GENERAL MEETING NOTICE

The Annual General Meeting of the Canadian Organization for Tropical Education and Rainforest Conservation (COTERC) will take place on:

Saturday May 9, 2009
5:00pm

Toronto Zoo Atrium
361A Old Finch Avenue
Scarborough, Ontario, M1B 5K7, Canada

We do hope that you will be able to join us, but if you are unable to do so, and you are a member in good standing, please fill out the proxy below and mail or fax to the office

COTERC
PO Box 335
Pickering, ON L1V 2R6
Canada
Fax: 905-831-4203

PROXY VOTE

I, _____

, of the City of _____

Province/State of _____,

Of the Country of _____

do hereby authorize Tom Mason, chair and in his absence, Dr. William Rapley, Vice-Chair, to cast my proxy vote at the Annual General Meeting to be held on May 9, 2009 in the Atrium of the Toronto Zoo, Scarborough, Ontario, Canada

Signature _____

PAST & PRESENT RESEARCH UPDATE

Dr. Kimberley Anne Snarr, Director of Conservation and Research

Caño Palma Biological Station has been in existence since 1991, bringing a plethora of conservation initiatives and research carried out at the station. Currently, there are a number of research programs which continue year round and seasonally. These can be located on the COTERC website at: <http://coterc.org/resources.html>. There has been a wide range of academic partners with the station and a number of publications coming from this research. Below, I have listed some of the various publications coming from this exciting research over the years.

Dechmann, Safi, and Vonhof (Oct 2006) Matching morphology and diet in the disc-winged bat *Thyroptera tricolor* (Chiroptera.) *Journal of Mammalogy*. 87(5):1013-1019

Vonhof and Fenton (2004) Roost availability and population size of *Thyroptera tricolor*, a leaf-roosting bat, in north-eastern Costa Rica. *Journal of Tropical Ecology*. 20:291-305.

Vonhof, Whitehead, and Fenton (2004) Analysis of Spix's disc-winged bat association patterns and roosting home ranges reveal a novel social structure among bats. *Animal Behaviour* 68:507-521.

Pape, Dechmann, and Vonhof (2002) A new species of *Sarcophartiopsis* Hall (Diptera: Sarcophagidae) living in roosts of Spix's disk-winged bat *Thyroptera tricolor* Spix (Chiroptera) in Costa Rica. *Journal of Natural History*. 36:991-998

Riskin and Fenton (2001) Sticking ability in Spix's disk-winged bat, *Thyroptera tricolor* (Microchiroptera: Thyropteridae) *Canadian Journal of Zoology*. 79:2261-21267

Vonhof (2001) Habitat availability, population size, and the composition, stability, and genetic structure of social groups of Spix's disk-winged bat, *Thyroptera tricolor*. PhD dissertation. York University, Toronto. Dr. B Fenton, Supervisor.

Fenton, Rydell, Vonhof, Eklof, and Lancaster (1999) Constant-frequency and frequency-modulated components in echolocation calls of three species of small bats (Emballonuridae, Thyropteridae, and Vespertilionidae). *Canadian Journal of Zoology*. 77(12):1891-1999

In the future, these and other peer-reviewed articles will be listed and available on our website in the reports section so that you can read the full details in the reports area.

Recent research publications include work carried out on a common vine species which has particular medicinal properties related to stress reduction. Dr. Tony Durst from the University of Ottawa (<http://www.science.uottawa.ca/~tdurst/>) and his colleague, Dr. John Arnason also from the University of Ottawa (<http://www.science.uottawa.ca/~jarnason/>) have been working with former station manager Mario Garcia, who holds a vast knowledge on ethnobotany, to obtain the needed amounts of sustainably harvested material for testing. Over the past four years, research in the area of the station and the surrounding canals has been aimed at collecting the appropriate material in a sustainable manner with a number of clinical trials on the medicinal aspects of various species of the *Souroubea* vine. The medicinal action of a particular family of compounds has been shown to reduce stress in various animal species. Currently, the researchers are attempting to locate a biopharmaceutical partner to carry out clinical trials and to see if the product is found to be commercially viable. There may be a good match for community conservation efforts who may be able to grow the relatively common vine in a cooperative manner, creating a win-win situation for local sustainable initiatives. A variety of publications have come from this important and timely researching can be found at the researchers' websites, most recently, this one has been published and the abstract is included here.

Mullally, Martha; Kramp, Kari; Saleem, Ammar; Rojas, Marco Otorola; Vindas, Pablo Sanchez; Garcia, Mario; Alvarez, Luis Poveda; Durst, Tony; Trudeau, Vance L.; Arnason, John T. **Characterization and quantification of triterpenes in the neotropical medicinal plant *Souroubea sympetala* (Marcgraviaceae) by HPLC-APCI-MS.** *Natural Product Communications* (2008), 3(11), 1885-1888.

Abstract: A rapid, two-solvent, HPLC-APCI-MS method was developed to identify and quantify four pentacyclic triterpenes (betulinic acid, ursolic acid, alpha-amyrin and beta-amyrin) in extracts of the neotropical medicinal plant *Souroubea sympetala*. Analysis of plant organs, wood, bark, leaves, immature fruit and flowers, indicated that the phytochemical distribution and quantity of triterpenes varies across the plant, with betulinic acid and ursolic acid the major constituents in the bark, wood, fruit and flowers and the amyrins the major constituents of the leaves.

Mario Garcia has also supplied COTERC with an up-to-date version of plants and their scientific names found at the

station. He continues to work in partnership with the National Biodiversity Institute (<http://www.inbio.ac.cr/en/>) and is currently working on publishing a book which deals with the ethnobotany from the area. We have also recently added to the research/reports area the station's founder, Marilyn Cole's Masters in Environmental Studies thesis, The Founding of Canadian Organization for Tropical Education and Rainforest Conservation (COTERC), Faculty of Environment, York University.

Further updates on important research carried out at Caño Palma Biological Station will be included in future RAPHIA newsletters. Also look for updates on COTERC.org

I would like to gratefully thank Jonathan Willans, our station manager for bringing to my attention that there were published reports located on our base camp, and for making some initial contacts with researchers, including Mario Garcia.

COSTA RICA INVEST

James Cahill

<http://costarica-invest.blogspot.com/2009/02/costa-rican-banana-industry-to-achieve.html>

Costa Rica recently announced its intention to be carbon neutral as a nation by 2021 when it celebrates the 200th anniversary of its independence, but the Costa Rican banana industry intends to beat that and be carbon neutral in just 4 years. This is the first banana industry in the world to put in place a coherent and holistic environmental strategy in order to offset its carbon dioxide emissions.

Corbana, the Costa Rican banana producers' association, has recently submitted to Costa Rica's Ministry of Environment and Energy the 'Banana Industry Action Plan against Climate Change', which aims at cutting its net greenhouse gasses emissions to zero by 2012. The Plan will first calculate the overall level and source of CO₂ and other greenhouse gasses produced by the industry in order to properly advise individual banana farms on what steps and measures they must take to offset them.

Once the emissions assessment is finalized, Corbana and the Banana Environment Commission will encourage producers to adopt a number of concrete measures, namely: Creating more carbon sinks through: reforestation programmes; Cutting back in the use of fossil fuels and fertilisers; Switching to biofuels and biodegradable plastics; Reducing the use of traditional pesticides and fertilisers through the application of biopesticides and biofertilisers; Implementing energy-saving programmes.

Furthermore an educational programme will be implemented, to raise awareness amongst banana workers of the importance of combating climate change through CO₂ emissions reduction; and a manual of good environmental practices will be developed to reinforce this programme.

While Costa Rica makes up only 0.03% of the world's landmass, it holds 5% of the world's biodiversity. That is why the Costa Rica banana industry is a leader in the environmental field. For over 15 years, most of Costa Rica's banana farms have been carrying out long-term reforestation projects in their plantations. For example, the banana industry's current contribution to conservation and reforestation is 6,305 hectares of replanted forests, 14.4% of the land used for banana plantations. More importantly, banana plantations only use less than 1% of the country's territory.

GREAT WILDLIFE WEBSITE



*Montezuma
Oropendola*

Here is the mother lode of wildlife blog information. This page has a list of 96 blogs dealing with wildlife in Africa, Asia and South America. They all appear to be written by rangers, biologists and other people on the ground at each project. Includes cranes, jaguars, elephants, apes, cheetahs, rhinos, birds etc., etc., <http://wildlifedirect.org/blogsList.php>

REPTILE EXPO 2009

June Enright, Executive Director

Who would think there would be so many people out in the cold weather to attend the Reptile Expo held Feb 22, 2009 in Mississauga Ontario? Thanks to Barry McKee, George Banavage, Matt Vernhout, Tasha Vernhout, Malcolm (Blue) Enright and June Enright for being present to promote COTERC and the work underway. It was great to be able to meet people who had already been to the station and hear their stories about the station, the wonderful sightings of animals and their hopes of returning. Many were interested in learning more about the opportunities to volunteer their time here or in Costa Rica to be able to make a difference. Thanks once again to Grant Crossman for his invitation to the Expo and his ongoing support.



Volunteer George Banavage and Director of Finance Barry McKee

REPORT FROM THE FIELD: NEOTROPICAL BIRD AND NESTING PROGRAM

In partnership with Dr. Steven Furino, University of Waterloo, COTERC continues to work on the Neotropical resident bird monitoring program. This program was established in the 1990's and has been gathering important baseline data to aid in conservation management decisions. One individual has shown particular interest and has been building her research skills with this project. Her name is Charlotte Foale.

Charlotte originally came to know Caño Palma Biological Station as a volunteer with Global Vision International in 2008. She stayed on as an intern and became very involved in the program with a building interest in helping to fill in the holes in nesting data. She has strong interests in furthering conservation efforts by partnering with other agencies to help develop education and awareness programs for guides, tour operators, local hotel staff, and local peoples. What follows is a report from Charlotte on her challenges and achievements in the program.

RECENT FIELD REPORT FROM RESEARCHER

Charlotte Foale

January 2009.

The nest-search project is now a year old. We are hopefully wiser, definitely greyer, and absolutely ready for 2009. In 2008, we documented over 500 nests, despite over a month taken during the busiest nesting period to help some overwhelmed bird-banders. In the first week of January 2009, we documented 42 nests – hopefully a sign of a busy year ahead. I essentially have 9 months to collect, from January to September, with the peak occurring March-May. With the breeding season unknown for 30 local species, I do continuous surveys through December, but strategies change, and weather sometimes dictates a slower pace. Aside from the sheer beauty of the environment I get to work in, the gaps in nesting information for resident species are a great motivation to hit the trail and canals.

There are 49 species in the local area with information gaps on breeding behaviour. This ranges from the very specific, such as egg descriptions, to species with absolutely no nest record. Among the data collected in 2008, we have previously undocumented incubation and fledgling information on the white-collared manakin, as well as a nest reported to be of the Green Ibis – of which there is no previous record.

With an increased knowledge of both of the birds and the area, these are two of the species I will be targeting in 2009. I believe we have a good chance of obtaining some solid data for publication, chipping away at the knowledge deficit, raising the awareness and conservation value of both the species, and the area, and keeping me outside doing what I love!



Charlotte Foale, who is partnered with Dr. Furino and COTERC in the resident bird monitoring program, and Greg Mayne, Director of Site Services, discussing the bird nesting program, in San Francisco, Costa Rica, Jan 2009.

NEW VOLUNTEER KAITLIN SECORD

I recently began my volunteer work, and am confident that my efforts are making a difference. I am currently working directly with June Enright, helping her to archive old Raphia newsletters onto the website coterc.org. I hope that members choose to read some of these articles – I know I have before scanning them on to the computer – and realize how much the organization has evolved. COTERC has some amazing stories to tell, and has been through so much.

When I first got the offer to volunteer at COTERC, I'll admit I wasn't even sure what the letters stood for, let alone the goal of the organization. So I did some research, on what I can say is a very well constructed website, and found that it's a place I would be happy to work, and a cause I would be happy to help. So even sitting at a desk, scanning old newsletters, I'm learning, I'm helping, and I'm making a difference. And for that, I'm truly grateful.



Kaitlin Secord

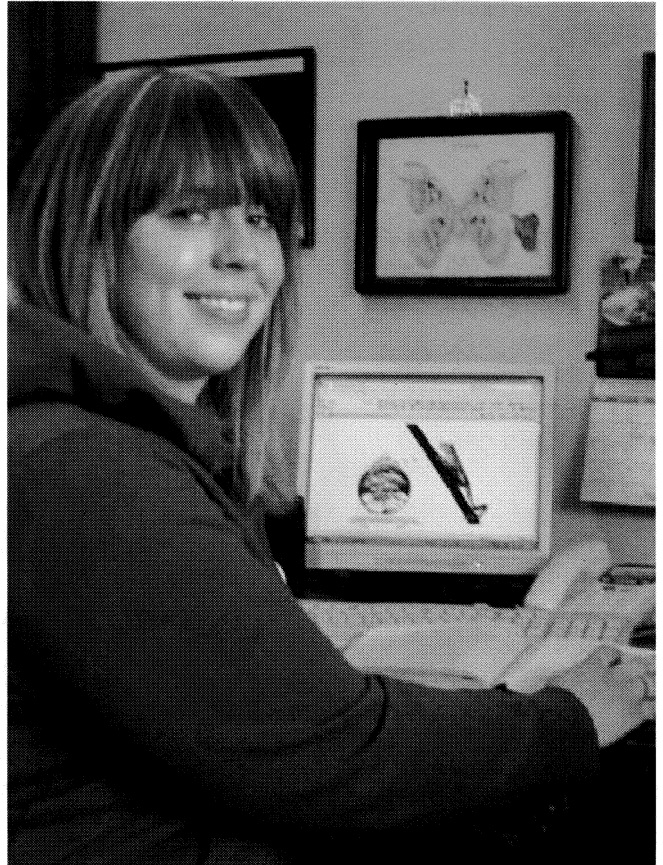
NEW VOLUNTEER ROLEEN ROBINSON

Greetings Raphia Readers!

This is Roleen Robinson, I am a Durham College student completing my work placement with COTERC. I chose such a wonderful organization to gain work experience because I admire the dedication and enriching research and conservation that COTERC's members contribute both in Canada and Costa Rica.

My placement thus far has consisted of working at the Pickering office with June Enright, scanning Raphia newsletters and recently, I have been introduced to the expanding Large Mammal Research project currently being implemented by Dr. Kym Snarr and the team at the Caño Palma Biological station. My involvement with this project includes organizing and updating several checklists of the numerous mammals that have been spotted and recorded at the station. It is truly incredible to see how many different species of animals have been located and observed at the station, including over 20 different types of bats. Important data and research like this makes my involvement very interesting and rewarding and is a great way to contribute to conserving our natural resources and ecosystems in a local way as well as globally.

I look forward to continuing my work placement with COTERC and to uncovering the different aspects and careers available within the environmental conservation and research fields. I am proud to be volunteering and assisting COTERC with their growth and strongly encourage everyone to help out in any way possible because every positive action counts!



Roleen Robinson

FRONTIER PARTNERSHIP

Dr. Kimberley Anne Snarr, Director of Conservation and Research, has been working with Sam Fox, Partner Projects Manager for The Society for Environmental Exploration / Frontier of London, England to form an exciting partnership whereby Frontier would provide volunteers to work on projects at Caño Palma Biological Station.

We are very pleased to have Frontier as our newest partner and look forward to working with their volunteers in the future!

**CHECKLIST TO THE BATS OF CAÑO PALMA
BIOLOGICAL STATION AND SURROUNDING
AREA—Updated on March, 2009**

Dr. Kimberley Anne Snarr,
Director of Conservation and
Research

Bats play an important role because they disperse seeds and many plants depend completely on bats as their only pollinators. There are approximately 109 bat species that have been recorded in Costa Rica to date; approximately half of the country's 216 mammal species and about 12 percent of the world's bat species. Costa Rica has the most carefully studied bat fauna of any Central American country and a few species have been studied extensively. Yet, we know relatively little of the basic biology of most bat species due to the difficulty entailed in field studies. For this reason, specific conservation plans cannot be developed at this time for most species, despite the endangered status of certain species.

Caño Palma Biological Station and surrounding area offers ample opportunity to study an astonishing diversity of bats, which vary in size, appearance, diet and roost sites. The Bulldog Bat (*Noctilio leporinus*) fishes with a radar system that detects ripples in the water that are produced by fish; having located its prey, the bat plunges down and grabs the fish with its claws. The Greater Sac-winged Bat (*Saccopteryx bilineata*) is one of the most commonly seen in the rainforest as they often roost on the outside of large trees. Long-nosed bats (*Rhynconycteris naso*) roosting on the underside of the dock lookout provide easy viewing. A practiced eye can discern evidence of several tent-making bat species alongside the station's trail system. Honduran white bats (*Ectophylla alba*) fold *Heleconia* leaves into tents by biting through side veins until the leaf collapses. Neotropical fruit-eating bats of the genus *Artebius* modify Palm and Arum leaves by a similar method; often housing one male and a harem of several females. The common tent-making bat (*Uroderma bilobatum*) cuts through the midrib of banana (*Musa sp.*) and other plant leaves to form tents. The vampire bat (*Desmodus rotundus*) can be found in caves at the base of the Cerro just south of the station.

This Field Checklist provides bat enthusiasts with a summary of 39 species identified to date in the Caño Palma area. Many more are likely to be found but further study is required. This information is largely based on the work of Dr. Loren K. Ammerman, of Texas Wesleyan University, Fort Worth, Texas and records from Station Managers. Additional records have been provided by visitors. We encourage researchers to visit Caño Palma for additional bat study and to submit records of observations with complete documentation to COTERC.

Continued on Page 12



*Here's a photo of four of our former Station Managers taken at Casa Marbella, Tortuguero, Costa Rica.
From left—Daryl Loth, Ross Ballard, Mario Garcia and Paul Grant*

Common Name	Scientific Name
Intermediate Fruit-eating Bat	Artibeus intermedius
Jamaican Fruit-eating Bat	Artibeus jamaicensis
Large Fruit-eating Bat	Artibeus phaeotis
Toltec Fruit-eating Bat	Artibeus toltecus
Allen's Short-tailed Bat	Carollia brevicauda
Chestnut Short-tailed Bat	Carollia castanea
Seba's Short-tailed Bat	Carollia perspicillata
Shaggy Bat	Centronycteris maximiliani
Godman's Whiskered Bat	Choeroniscus godmani
Short-eared Bat	Cyttarops alecto
Wagner's Sac-winged Bat	Cormura brevirostris
Common Vampire Bat	Desmodus rotundus
Hairy-legged Vampire Bat	Diphylla ecaudata
Honduran White (Tent) Bat	Ectophylla alba
Argentine Brown Bat	Eptesicus furinalis
Commissaris's Long-tongued Bat	Glossophaga commissarisi
Pallas's Long-tongued Bat	Glossophaga soricina
Underwood's Long-tongued Bat	Hylonycteris underwoodi
Yellow-throated Big-eared Bat	Lampronnycteris brachyotis
Orange-nectar Bat	Lonchophylla robusta
Brazilian Big-eared Bat	Micronycteris megalotis
Niceforo's large-eared Bat	Micronycteris nicefori
Schmidt's Big-eared Bat	Micronycteris schmidtorum
Sinoloan Mastiff Bat	Molossus sinaloae
Black Myotis	Myotis nigricans
Riparian Myotis	Myotis riparius
Bulldog Bat (Fishing bat)	Noctilio sp.
Heller's Broad-nosed Bat	Platyrrhinus (vampyrops) helleri
Pale-faced Bat	Phylloderma stenops
Little Yellow Bat	Rhogeesa tumida
Long-nosed Bat	Rhynconycteris naso
Greater Sac-winged Bat (White-lined Bat)	Saccopteryx bilineata
Lesser Sac-winged Bat	Saccopteryx leptura
Disk-winged Bat	Thyroptera tricolor
Pygmy Round-eared Bat	Tonatia brasiliensis
D'Orbigyny's Round-eared Bat	Tonatia silvicola
Fringe-lipped Bat	Trachops cirrhosus
Tent-making Bat	Uroderma bilobatum
Striped Yellow-eared Bat	Vampyressa nymphaea

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- Kunz, T. 1994. *The World of Tent-making Bats*. BATS 12(1).

CHRISTINE PHILLIPS—NEW DIRECTOR AT LARGE

Christine Phillips has recently joined the Board of Directors of COTERC, replacing Cat Braun Rodriguez who has moved out of Canada, as Director at Large. Christine comes well qualified to fill this important position, as she is Senior Chemistry and Biology Teacher at Alexander Mackenzie High School, York Region District School Board. Here is what she has to say about taking on this important role:

"My first introduction to COTERC and the amazing projects that take place at Caño Palma Biological Station was last year when I worked with Joanna Romani and Cat Braun Rodriguez to develop a high school level educational manual. It was a pleasure to work with such enthusiastic and dedicated individuals.

I am very excited about joining the COTERC board to work on various reforestation initiatives at the research station. I am looking forward to utilizing my skills and background in biology and forest conservation to tackle some challenging issues in the field. This project is important to me as I want to stay connected to the world of conservation in a tangible way and to make a meaningful difference where I can."

Welcome to COTERC Christine!

FIELD DIARIES #14— A series of insightful notes into the daily life of Sami Abdelmalik

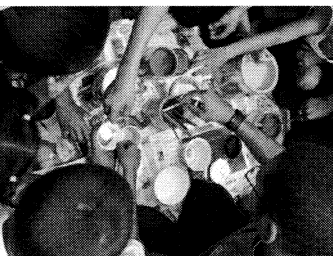
A time for change has come. The Global Vision International (GVI) volunteers have arrived. The station is swollen with commotion and activity. Fourteen new faces from various parts of the world, representing seven countries, will call the station their home. The majority come from the US and England, but there are others from France, Cuba, Sweden, Scotland and Canada. All share the same enthusiasm about hands-on environmental activism. Five of the volunteers will stay for 10 weeks but the majority will leave after 5 weeks (switching over with 5 more new volunteers). Their training began immediately. It was great having eager ears awaiting responses to curious questions.

Even with change, the fieldwork continued this week as steady as the tide cycles. I surveyed the beach every other day, and helped train the GVI volunteers. In addition, I will soon be going out and conducting the sea turtle survey sporadically throughout the coming weeks to add to the field training in identification and data entry. They are really a great source of energy and just this week they helped put new mile markers along the three and a half stretch of beach which gauge the distances along the study site. This was labour-intensive work in extreme temperatures that challenged even the bravest and strongest.

This week I also initiated a new project. It consists of carving, painting, and putting up signs around town with the help of the local schoolchildren, in conjunction with the weekly environmental education program.



This project aims to educate locals, create environmental awareness, and teach the students to take action and responsibility for their environment. The students were encouraged to take full participation and even helped come up with the slogans for the signs, some of which include: Turtles Are Endangered, The Environment Is Everyone's Responsibility, Help Keep Our Town Clean, Protect Nature, Don't Kill Animals, Don't Cut Down The Forest, and No Littering. The students also took part in deciding on where to place their handprints on each sign. To bring this project to fruition, we needed a donation for the materials. A local agreed to donate the wood and Turtle Beach Lodge (a nearby hotel) donated some of the paint. It is fantastic to see the project take off, from the start of an idea to something that hopefully will have a positive influence on everyone involved.



For the only world we've got,

Sami Abdelmalik

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EDUCATION AND RAINFOREST CONSERVATION

COTERC
P.O. BOX 335
PICKERING ONTARIO
L1V 2R6
CANADA

Phone: 905-831-8809
Fax: 905-831-4203
E-mail: info@coterc.org
WWW.COTERC.ORG



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