

RAPHIA

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Spring 2000

The newsletter of Canadian Organization for Tropical Education and Rainforest Conservation (COTERC)

Volume 9
No. 2

ANNUAL GENERAL MEETING ANNOUNCEMENT

**ANNUAL
GENERAL
MEETING
OF
MEMBERS**

**TORONTO
ZOO
ATRIUM**

**WED. JUNE
14
4:00 TO
10:00 P.M.**

A BIG THANK YOU to Kim Birchard & Carole Dorman who have recently updated and revamped the COTERC website. Check it out!

We hope to be able to offer Raphia online in the near future too!

YOU are invited to COTERC's Annual General Meeting of Members.

This year's meeting will take place in the Atrium of the Toronto Zoo on Wednesday, June 14, 2000.

A tour of the Americas Pavilion is planned before the meeting, led by Zoo staff, so don't miss this unique opportunity to learn and to ask questions. Participants should plan to be there at 4:00 p.m.

The Atrium is located in the Administrative Building of the Toronto Zoo at 361A Old Finch Avenue. Take Highway 401 to Meadowvale Avenue in Scarborough and drive north on Meadowvale PAST THE MAIN ZOO ENTRANCE, until you reach Old Finch Avenue. Turn left on Old Finch and take the first entrance on the left side into the Zoo Employees parking lot.

A barbecue and the meeting will follow in the Atrium.

Hope to see you there!

JUNGLE DAYS/DAZE

by Nick Beale
Assistant Manager, Caño Palma

When Ross first asked me to write an account of my time at Caño Palma Biological Station, I agreed with the blind enthusiasm with which one intrinsically seems to be bitten virtually as soon as one steps on to the hallowed ground of the Rain forest. It was this same enthusiasm which was responsible for my having somehow joyfully engaged in various random activities in the past three weeks.

From paddling a canoe very much full of two hyperactive dogs across the canal to traipse up the core of a deceased volcano during a brief but earnest downpour, to doggedly attempting to explain the significance of rain



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Jungle Days/Daze (Continued)

forests to foreign tourists who were trying equally hard to interest me and the rest of the group in their missing underwear and mysterious insect bites; to grovelling in the four inches of silt around the base of a rotten tree stump literally begging a frog only as large as my thumbnail to sit nicely for a photograph; to towing bamboo canes twice my height and as thick as my leg (if you take that to mean the thinnest bit around the ankle!) — all of these activities I willingly threw myself into with the same ardour those previously mentioned dogs threw themselves head on into waves strong enough to knock me over at just about ten inches. Now, don't take this the wrong way; in no way do I resent hauling my puny body, unaccustomed to such vigours, through these grueling tasks. On the contrary. Probably the first thing which struck me about Caño Palma and its surrounding area was the inherent involvement everything and everyone in it has with everything and everyone else. If one was particularly perverse, one could waste copious amounts of energy fighting this atmosphere of sleepy embroilment, but as far as I was concerned that was the point. Be involved; be embroiled.

Initially jittery walking around the dining room table and into the kitchen under glistening webs by the dozen (the sight of which at home would have slow, highly deliberate backward pacing and leaping through the doorway), visitors become accustomed to such changes within hours simply because one has to. It helps, too, that for those brave two, enforced hermit-like gents living here, this is normal. All is fine and good and everything goes on as it should. In fact, so all encompassing is life in the rain forest that visitors find, admittedly to one's slight dismay that waking at 5:15 a.m., one feels almost indecently chipper and raring to go. The indecency of this attitude is underlined when, chirruping like a cicada, one hops into the kitchen still high on the novelty of

"hardship", to be regarded unbelievably by the bleary sloth-like eyes of the two aforementioned nomads. Sloth-like they do not remain for long, however. Within a staggeringly short space of time the kitchen is silent once more and one watches slightly dazed as the round of morning duties begin.

Life begins so early out here for various reasons, one of the main ones being that the period between 11:00 and 2:30 p.m. is pretty numbingly hot, so things have to be done before it gets too late. As for the pattern of days, well, that's not so easy to say.

"Probably the first thing which struck me about Caño Palma was the inherent involvement everything and everyone in it has with everything and everyone else"

RAPHIA STAFF

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Three days can go by almost identical to each other; then one can spend a week madly trying to keep up with all that's going on and suddenly realize that it's five days since you last did the floor. This remark may puzzle anyone of you who hasn't spent even just a couple of nights in the rain forest. However, it is justified. No one in their right mind (which probably excludes most of us who come here) would be a willing martyr to the kind of fate which lies in store for those out there who neglect to sweep. What horrors lie in store? Nothing so tame as mere cockroaches or the odd stag beetle, nothing so pleasantly unobtrusive as skittering spiders. The dreaded plague of the tropics, feared by all who value their skin is ANTS. The small ones. Teensy-weensy seemingly harmless little brown bodies. Do not be deceived; these ants are vicious, sadistic, highly organized terrorists, carefully planning how to get the most enjoyment out of tormenting these foolish, cumbersome creatures who think they are civilized and in control.

Carefully timed raids of the dining room table during dinner result in three-figure diving for dishes and leaping back from the table gazelle-like, proud of their speedy reactions. Alas, the raids are diversionary only; the second attack is then made upon the bare feet of the would-be diners as they are planted, exposed and naked, on the floor. Now, if you've ever seen people at a party drunkenly attempting the Birdy dance while waving pots of dip at people, you will have a fairly good idea of how we looked leaping from one foot to another, clutching the remnants of our meal and cursing spasmodically the quite unperturbed creatures which were busily engaged in biting everything in sight from skin to shoes to sugar.

As a relief from all this excitement one can take various options — a stroll along the beach is a marvellous way to wind down, providing one watches for sharks, avoids the rip-tides and keeps an eye out for flying coconuts. When feeling more adventurous,

the forests themselves loom, murky and musky, luring one in with their strange scents and sounds. I found solitary hikes through the forest to be both exhilarating and relaxing. The serenity the place exudes is somehow tinged with a subdued energy, encouraging one to keep one's ears open and to look in every direction at once. Every walk holds something new, whether it is a furry tarantula crouched in the leaves at one's feet or a shower of sticks and seeds as a group of monkeys play at pelting onlookers.

And of course there is always that one final destination for a real change of pace and scene. Sponging a lift into "Town" when somebody is going in is as worth doing as is every forest hike and every canal-watching hour. One never knows what one will meet or see, both on the short trip up river or while in the town, but there is sure to be something. One day one may see an 85-year-old man calmly whittling away at a 30-foot tree trunk — the rude beginnings of another canoe, or one may see the mid-afternoon rush of local men to butt their cigarettes during their break and smoke as many of them as they can during it too! Alternatively, one may hear the wild squawks of local birds, some destined for the pot that evening. And if one is particularly lucky, one will be bombarded with delicious aromas as people begin to prepare whatever is on the menu that day.

The attitude of the people varies too, for the most part friendly and helpful, nodding to friends and strangers alike. There are days when one can walk down the main street only to be literally gazed through or to have children hide and peek at one from behind a fence. Stopping for a drink at one of the bars during the evening is another experience in itself. Shocking initially is the number of people; the population of the entire village seems to treble as night approaches. Whether you join in or not, simply watching these people have fun, is fun. They drink and they dance, doing both

"you will have a fairly good idea of how we looked, leaping from one foot to another, clutching the remnants of our meal and cursing spasmodically the quite unperturbed creatures which were busily engaged in biting everything in sight"

Jungle Days/Daze (Continued)

with rhythm and ease for hours on end and laughing at the difficulty we "gringos" have in keeping up.

As I said before, everything and everyone affects everything and everyone else, so in the end you just go with the flow — happily involved, happily embroiled in the most intimate, most diverse and most vulnerable environment in the world.

MANY THANKS TO:

NIGHTOWL OPTICS, NEW YORK, NEW YORK, USA, WHO HAVE DONATED A NIGHTSCOPE TO CAÑO PALMA BIOLOGICAL STATION.

ROSS AND NICK HAVE REPORTED SIGHTINGS OF A TAPIR IN THE COMPOUND — VERY EXCITING NEWS!!

THE NIGHTSCOPE WILL BE PUT TO GOOD USE OBSERVING THIS ANIMAL AS WELL AS ALL THE OTHER CREATURES AROUND THE STATION.

THANK YOU, NIGHTOWL OPTICS!!

"THE GREEN REPUBLIC: A CONSERVATION HISTORY OF COSTA RICA"

by Sterling Evans, published in 1999 by University of Texas Press

If you have ever wondered about the history of conservation in Costa Rica, this book will give you the answers. The author has divided the book into two parts, the first describing the development of the national park system and the irony of severe deforestation in unprotected areas. Part two emphasizes the role that non-governmental organizations and others play in conserving Costa Rica's natural wonders.

A NEW POND

by Ross Ballard, Station Manager

There is a new feature within the compound of Caño Palma Biological Station — a new pond has been installed to replace the derelict greenhouse which stood in its place for several years. Plans for the pond were first discussed with COTERC Board members during a visit I made to Canada late last September. The timing of the trip coincided with Tropical Treat, COTERC's big fund raising dinner which is held at the Toronto Zoo.

Nick Beale, the Station's new Assistant Manager, flew into Toronto from London, England to meet the Board, do a little Toronto sight-seeing and generally receive some orientation for the second phase of his journey which was to Tortuguero, Costa Rica.

Within two weeks of our arrival at Caño Palma Nick and I began digging the pit for our new pond. The weather here had been dry, as is usually the case for October, and in only four or five days of hard work we had done most of what was needed to provide a pit 22 feet wide by 35 feet long, with a depth of 22 inches. We calculated that perhaps four hours more digging would be necessary to finish, and planned to conclude the work the next day. That evening, we had rain. The following day, we had rain. For the next five months, we had rain. Sure, there were breaks from time to time, but the ground, if it was visible, was too sodden and heavy for digging. And when I tell you it rained, oh my brethren, I mean that IT RAINED!

This is a wet place at the best of times being a lowland rain forest. We receive averages of more than 5000 mm (about 16.5 feet) of precipitation per year. I have lived here for more than two and a half years, and I don't want to come across as whining and petulant where precipitation is concerned. It comes with the territory, right? But this was not

COTERC MEMBER CHRISTINA SHARMA is holding an "Environmental Day" on May 7, 2000 at her home in Etobicoke, Ontario. She will be handing out membership applications, as well as other information.

For further information you can contact Christine at (416) 236-7234.

Thanks Christine!

VOLUNTEER NEEDED

COTERC has had a very successful education program where volunteers go out to schools in the Toronto region to give slide presentations on rainforest conservation.

We are seeking an individual to coordinate this program. You would be responsible for contacting the schools to set up the programs and to arrange for volunteers to attend. This is an exciting challenge suitable for either a student or retired person. If interested, please contact COTERC.

the "gentle rains which falleth from the Heavens". This was a pounding deluge which delivered more rain in five months than we normally expect to see in a year.

We had three significant floods over those few months as opposed to an average of one every year and a half or so. It was intimidating. Our clothing, luggage, books, hairbrushes and sheets moulded in the damp. I have no way to summarize the emotional impact for you. I think it was hardest on Nick who is a "Workin' Fool" of the first order. Not much to do when the water in the compound is up to your knees. To make matters worse, we had very few visitors or volunteers through the Station because of the Y2K speculations and terrorist threats against U.S. air travellers.

Suddenly the downpours stopped. Abruptly. As though the frog spirit had just remembered where the switch was and suffered a twinge of conscience for his brothers. The green iguanas are climbing through the forest to lay eggs in the beach sand of the Caribbean. Grey-necked woodrails squawk raucously through the forest's dry ground. Breeding season. Flowers are becoming obvious in the area and with them humming birds and Sphinx moths and bees. Crested basilisk lizards seem common at this time of year (they are no more common now than at other times but this is their breeding season and they are more aggressive-clearer emerald greens with distinct patches of turquoise on their pierced crests- a perfect camouflage against the recovering vegetation with its leaf green coloration).

With equal suddenness, we discover the hole we started five months earlier can be completed. In the interim Tom Mason, COTERC Board member and Curator of Invertebrates at the Toronto Zoo, arrived here in early December with a group of zoo volunteers. Somehow among the smuggled Kraft Dinners, magazines and chocolate, this hardy bunch had managed to carry 90 kilos of vinyl which will be necessary to line the pit, if it is to be a permanent pond (although it will still be more than three months before the last shovelful of soil is displaced!).

By the middle of March the liner is fully in place, tucked into the mounds of earth removed during excavations. These same mounds provide the ground

drainage than others in the compound. This fact allows us to bring in plants which have never been able to survive here. At this time there are more than thirty species of flowering plants on the mounds, most of them new to the Station. These plants are selected with an eye towards soil stabilization, nectar production for butterflies and hummingbirds and edge habitats for reptiles and amphibians. As the vegetation matures, it should provide a bright showy display for the Station guests as well.

The pond itself is home to a few other flowering plants, particularly duckweed and water hyacinth. Now I realize some of you are wondering what kind of damned fool would want to put water hyacinth into a tropical pond? Others, more charitable, are speculating that Ross has lost his marbles in the jungle. Nor really his fault, when it comes right down to it.

The common water hyacinth, *Eichornia crassipes*, is originally from the lowland tropics of South America. Able to withstand a wide range of water levels, including pH and salt levels, this aquatic menace had been able to colonize brackish and freshwater all over waterways in tropical and sub-tropical regions of the world, with a little help from its friends — humans who delight in its delicate lavender and yellow flower spikes. Its enemies will tell you that no species of plant, no agricultural weed, has necessitated greater cost in its destruction and removal. It rapidly clogs waterways, making navigation of even vast river systems impossible. The immature crassipes can colonize an acre of water in an

REMINDER

PLEASE
RETURN
YOUR
RAFFLE
TICKETS
AND
MONEY TO
THE
COTERC
OFFICE
BEFORE
THE DRAW
DATE OF
MAY 14.

PLEASE
TRY TO
SELL AS
MANY
TICKETS AS
YOU CAN.

REMEMBER
THIS IS ONE
WAY THAT
COTERC
RAISES
FUNDS IN
ORDER TO
CARRY OUT
ITS
PROGRAMS
AND WE
NEED YOUR
HELP!!

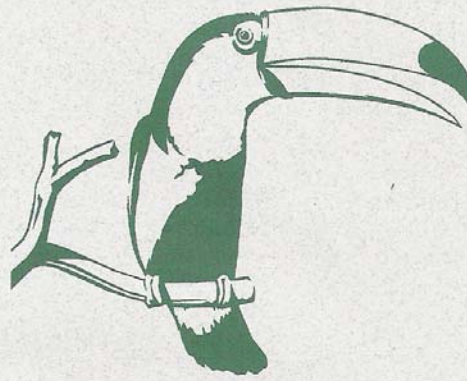
THANK
YOU!!

A NEW POND (Continued)

eight-month period (Penfound & Earle, 1948) and qualifies as one of the most prolific photosynthetic organisms on earth. Archie Carr, the great American biologist, wrote in his book "A Naturalist in Florida" of a time in Tortuguero when *Eichornia crassipes* blocked eight miles of navigable waterways for seven years before suddenly breaking up and drifting into the Caribbean.

If you can suspend your "Creatures of the Black Lagoon" nightmares for a moment, another side becomes apparent. Water hyacinth provides feeding grounds for birds, fish and manatees, and they do so on a vast scale. Medium order predators require broad invertebrate bases to sustain them. James O'Hara calculated 84,000 invertebrates of various species in Florida where crassipes is not even native. It is also home to many species of amphibians and reptiles. In our little pond, water hyacinth also provides a broad invertebrate base and allows for some shading of the water so that temperatures can never reach a critical level. Along with the hyacinth which Nick and I introduced were the inadvertent inclusion of some freshwater prawns and a number of small fishes of genus Rivulus, which apparently rode in on the long hairlike root masses of the hyacinth. Not knowing that Rivulus was present, we also caught small tetras, *Astyanax aeneus*, a wide-ranging Costa Rican minnow, in order to keep mosquito populations in check. The only thing the pond "really needed" now, we thought, was frogs, and so we tried to find tadpoles which we hoped would naturalize and stick

"The only thing the pond 'really needed' now, we thought, was frogs..."



around.

Those of you even casually familiar with temperate reproduction modes among toads and frogs might be shocked by the promiscuity, aggression, subterfuge and fast-track larval development of tropical anurans. That would be a long-winded article in itself. Few frogs in lowland rain forest even dare to enter water directly, so great is the threat of predation, and they prefer to drop eggs into water from over-hanging branches. In other cases terrestrially-laid eggs hatch froglets, rather than tadpoles, the entire larval stage having occurred in the egg itself — a process known as direct development.

But among toads there exists an exception to this (are there not always exceptions in tropical biology?). There is a large toad native to this locality which has certain notoriety among biologists and had even insinuated itself to ourselves in a cultural sense. The toad in question is *Bufo marinus*, the cane or marine toad. Also the victim of unreasoned prejudice, it is the water hyacinth of amphibians. A large adult *Bufo marinus* may weigh in at one kilo (when I was in Toronto for the Tropical Treat I saw an exceptionally large male that was perhaps 12 inches long and 6 inches wide!!). *Bufo marinus* is a species that has been introduced to many tropical and sub-tropical regions of the world to control agricultural pests. These pest control programs have only been moderately successful and at a terrible cost. The toad, however, like the water hyacinth has been wildly successful in its new ranges. This toad will eat anything that it can fit in its belly. Creatures that other animals eschew — wasps, bees, beetles, millipedes, ants — are eaten with impunity, and they

are also cannibals. Cannibalism is not particularly odd in anurans, except that this is infamously one of the most toxic amphibians known. In Florida and Australia where they are an introduced species, *Bufo marinus* have learned to eat food left out for dogs and cats, which is understandably annoying to the mammals at issue. But if they retaliate directly, they stand an excellent chance of being poisoned by the toad, which has a large venom gland in front of its eardrum.

It is this same bufotoxin that has made them interesting to a select group of human beings bent on experiencing nature directly. For a mammal as large as a human, a toxin capable of killing a dog may produce a powerful hallucinogenic episode, and this toad is a powerful commodity within the "pet" trade. Occasionally people die from these self-administrations of bufotoxins. Biologist Archie Carr, referred to earlier, commented on *marinus* "A toad can't hurt people unless they bite it, and few people bite toads. Those that do can be considered expendable" (A Naturalist in Florida Vignettes).

Nick Beale, the Assistant Manager at Caño Palma, kept captive *Bufo marinus* individuals for several years in Britain (I do not mean to implicate Nick in toad-biting here; this bit of information simply seems to me part of the article's flow). He was delighted to see *marinus* in its native habitat. Both he and I were gratified to see *marinus* take an interest in our new pond.

On April 5th and 6th, 2000 the evenings were filled with the loud drumming of the mating call of this species — a sort of rapid hollow sound as might be produced by striking an empty plastic bottle 3-4 times per second for a minute or so. We found several pairs of toads in amplexus, the male (and larger) toads matching to the backs of the females and hooked over the females' shoulders by virtue of elongated thumbs. This is not foreplay however — at least in the sense that animals fairly tied to internal fertilization might know it. The ardour is recognizable, but not the mechanism. All fertilization of the eggs will occur in water, the female releasing eggs generally and the male, planted to her back, releasing sperm generally, fresh water being the medium for fertilization.

The spawn hatched in two days. Literally thousands of black tadpoles — also toxic — swam throughout the pond. In their first day, they actually doubled in size between morning and night. After that time, growth was much slower, perhaps because the larva had stripped the food supply from what was, after all, a virgin pond. I did a microscopic survey of fauna on April 15th and saw very little. I think it is possible that the tadpoles have pretty much cleaned out the microfauna of this little pond, so great are their numbers.

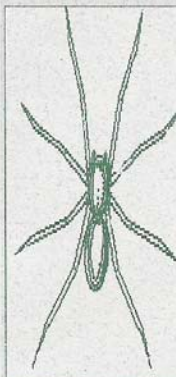
As of April 16th the *Bufo* tadpoles appear ready to metamorphose; develop legs and absorb tails. Some differences are appearing, though. Relatively few of the small tads are apparently the spawn of frogs. Vaillant's *Rana vaillanti*, a bull-froggish frog, has also been spotted in the pond and has large tadpoles (one and 3/4 inches) and are fast developing.

I am personally very partial to frogs and hope to see more of them in this little pond. Frogs are the proverbial canary-in-a-coalmine. In this area, with its tiny human population and lack of industry, they appear to be doing well. They have come to symbolize the fact that something has gone amiss with our heavy-handed domination of the planet. As a species, we have grown up with them. They were already ancient when we became bipedal, only 2.5 million years ago. They are "disappearing" from this world so fast that biologists can hardly track it, and can only guess at the causes.

I hope to give you updates on the Station pond in future issues of *Raphia*.

IT IS WITH REGRET with we announce the resignation of COTERC Board member Bev McMullen. Bev has been a valued member of the team for several years, but has found that the demands of her job are making it impossible for her to continue as an effective Board member. We wish Bev well in her future endeavours and hope to see her again at Caño Palma.

THANK YOU TO TIPPET-RICHARDSON LIMITED, WHO HAVE RENEWED THEIR CORPORATE MEMBERSHIP



**MARILYN COLE
RESIGNS**

After a great deal of thought, I have decided to resign as Executive Director of COTERC. As most of you know, I was one of the co-founders back in 1991 and have been working since then to continue and develop the programs and projects associated with the organization.

At times, the work has been challenging and sometimes discouraging. But just as things appeared to be bleak, some wonderful thing would happen. A new donation would bring in much-needed funds; a sighting of a flock of rare green macaws would be noted at Caño Palma Biological Station. These events kept me going.

It is now time to turn the reins over to someone else. I will still be around; indeed I have agreed to continue as editor of Raphia, and will act as advisor to the Board of Directors, when appropriate.

To all my supporters and friends over this amazing journey, I want to give you my most heartfelt thanks. The decision to leave has not been easy for me, and one that I have not made lightly. I know that you will continue to support the conservation work of COTERC — something to which I am still committed.

God bless!

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