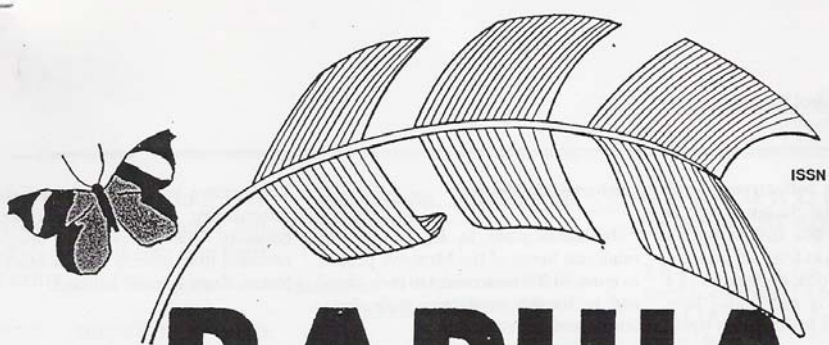

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RAPHIA

The Canadian Organization for Tropical Education and Rainforest Conservation (COTERC) Newsletter.

VOLUME 2, NUMBER 2, SUMMER,1993

REPORT FROM CANO PALMA

One of the more common neotropical visitors to the station which I look forward to seeing is the Tayra *(Eira barbara)*. This inquisitive tropical mammal, with its long and lanky body shape looks not unlike a mink or river otter and belongs to the same family, MUSTELIDAE. The Tayra or Tolumueo, as it is commonly called in Costa Rica, sometimes pays a visit to the station with the intention of pilfering from our banana trees.

It was just the other day while washing dishes, enjoying a refreshing tropical breeze, staring out into the dense undergrowth from our thatched roofed kitchen when I noticed movement among the tangle of shrubs and vines. From within the protective cover of the secondary growth emerged a most curious rainforest resident. On this particular afternoon, I had the good fortune of quietly standing by observing, while a Tayra boldy emerged from its cover.

With its head bobbing and hump-backed gallop, it often stopped, appearing to visually and olfactorily examine its surroundings before seizing a banana with its mouth full of razor-sharp teeth and tearing it from the cluster of fruit.

Kara Richmond, a volunteer at the station and I watched as this venturesome fellow disappeared into the thick undergrowth only to reappear minutes later to snatch another ripened fruit. On each occasion, the Tayra returned and would crane its neck, bob its head in all directions, appearing to survey its unfamiliar environment. At times, he would look directly at us, then quickly break loose another banana and run for the cover of the forest. This reoccurred on five different occasions until presumably he had his fill of

bananas. Tayras are both terrestial and arboreal foragers that do not search in water as does the grison and the otter. I have seen them high in trees on adjacent properties to the station, descending in a straight down fashion and I also have found their dens dug under fallen trees.

Tayras appear to be omnivorous and forage throughout the day, searching for birds nests, small mammals, carrion, lizards, fruit or eggs. Tayras can be found solitary or in pairs which travel together. Females can be found in dens in April or May with three to five young.

The Tayra's geographical range extends from South Mexico to Argentina. Fortunately for the Tayra, they can live in disturbed habitats close to human habitation.

by Greg Mayne
Director of Field Operations

THE HUMAN FACE OF TROPICAL RAINFOREST DESTRUCTION

The following is a synthesis of material that appeared in Cultural Survival, Spring 1992.

THE LOSSES

* Logging and farming on the island of Ormoc in the Phillipines, have destroyed the ability of the island to act as a natural flood barrier. In 1991, flash floods left 20,000 homeless and 3,000 dead.

* World Bank and African Development Bank loans will assist the Cameroon government to 'develop' 90 % of the primary rainforest in the southern part of the country. Parks will be developed that will exclude human habitation, forcing the Baaka and Bakola to abandon their semi-nomadic lifestyle.

* Indonesia plans to log 3/4 of the rainforest home of the Mentawa people, to move 40,000 newcomers to their island and to forcibly modernize their dress, homes and religion.

THE WINS

* Brazil's new constitution grants broader rights to Indians than any other in the hemisphere. The Nucleus for Indigeneous Rights, an organization of Indians, lawyers and rights activists, drafted the sections on indigenous peoples and monitors Brazil's government.

* In 1984, Indian organizations of Peru, Ecuador, Colombia and Brazil formed the Coordinating Body for the Indigenous Peoples' Organizations of the Amazon Basin.

* The Kuna of Panama have formed the first internationally recognized forest park created by an indigenous group. The reserve protects vital watersheds, safeguarding the Kuna's agricultural economy. The reserve also brings in revenues from tourists and scientists and fosters Kuna cultural heritage.

RESEARCH ACTIVITIES AT CANO PALMA

The Cano Palma Research Station has been the site of the following research activities in recent months:

* **Dr. Susan Maki**, her husband and 16 students from Baylor University have been at Cano Palma for three weeks in June to study primates, focusing on handedness in monkeys,i.e. are these monkeys predominantly right-handed or left-handed?

* **Edward Webb**, University of Miami is continuing his research from last year, exploring the effects of shade and sun on certain tree species.

* **Marc Engstrom (Mammalogy), Jim Rising (Ornithology) and Spencer Barrett(Botany)** have taken a group of students from the University of Toronto. This is the second year that this field course has been held at Cano Palma.

* Three students from the University of Toronto spent last December studying bats and their tent making abilities.

* Three zookeepers from Brookfield Zoo have visited the station.

* **Denise Fischer**, a zookeeper from Crystal Gardens, B.C. and her husband Lloyd, spent a month studying three species of primates.

* **Michael Blandford and Beth Burke** of Ohio carried out a census of the amphibians of the Cano Palma property.

OBSERVATIONS AT CANO PALMA

The following is a list of amphibians and reptiles reported by Michael Blanford and Beth Burke from Dec. 31,1992 to Jan. 14,1993.

AMPHIBIANS

Leptodactylidae
- Eleutherodactylus diastema (Tink Frog)
- E. fitzingeri
- E. regulosis
- E. bransford
- E. noblei
- E.biporcatus
- Leptodactylus pentaddactylus (Smokey Frog)

Bufondiae
- Bufo marinus (Marine Toad)

Ranidae
- Rana palmipes (Grass Frog)

Centrolenidae
- Centrolenella ilex

REPTILES

Emydidae
- Rhynoclemmys funerea (Black River Turtle)

Gekkonidae
- Sphaerodactylus homolepis (Ashy Gecko)

Iguanidae
- Norops bipocatus
- N. Humilis
- N. limifrons
- Iguana iguana (Green Iguana)
- Basiliscus plumifrons (Plumed Basilisk)
- B. vittatus
- Corytpohanes cristatus (Helmeted Iguana)

Teiidae
- Ameiva festiva
- A. quadraliniata

Scincidae
- Mabuya unimarginata
- Sphenomorphus cherriei

Colubridae
- Oxybelis aeneus (Vine snake)

More data will appear in the Chicago Herpetological Society bulletin.

RESOURCES FOR RAINFOREST EDUCATION

The Alliance for Environmental Education is a coalition devoted to developing environmental education centres. The Alliance produces a bimonthly newsletter, **The Network Exchange**.

The World Wildlife Fund has designed the **Vanishing Rainforests Kit**. Designed for grades 2-6, the kit introduces students to rainforest ecology, the interdependence of food chains and webs, rainforest animal adaptations and the consequences of disturbing rainforest systems.

The kit includes a Simulation Game. Students take on various roles- native people, cattle ranchers, coffee growers, a drug company, conservationists, scientists and government officials and must decide how to divide a piece of disputed rainforest.

The National Wildlife Federation has produced **Ranger Rick's NatureScope-Rainforests: Tropical Treasures**. This kit contains a selection of ready-to-copy maps, puzzles, coloring pages, worksheets, craft ideas, and activities designed for kindergarten through to grade 8. Reading lists and film suggestions are included.

BIRDS AS BIOLOGICAL INDICATORS

Julia Murphy
PhD. candidate,York University

"Living organisms can be used to monitor movements, accumulations, and modifications of materials in their environments and to monitor the biological effects of those materials. They can also be used to indicate the effects of habitat alterations and fragmentation and the effectiveness of management schemes designed to preserve or change individual species or community-based patterns." (Ecological Knowledge and Environmental Problem Solving: Concepts and Case Studies,1986,p.81)

A biological indicator has been defined as a population or assemblage of populations that reflects the ecological health of the environment. The concept of a biological indicator us not new. Subsistence farmers and hunters were probably aware that the presence or absence of certain species could be related to human-induced environmental change. The death of a canary taken into a mine alerted less-sensitive human beings to dangerously high levels of carbon monoxide in the confined air of the mine. In several cases, the decline of a particular species has been the first observed indication of an environmental problem. For example. the decline of Peregrine Falcon (Falco peregrinus) populations drew attention to the dangerous spread and bio-accumulation of organochlorine pesticides.

"The utility of organisms as biological environmental changes is greatest when the functional relationships between perturbation and response are understood. Nonetheless, organisms can be useful as indicators even if the causal relationships are obscure. If a valued ecosystem component disappears or is reduced, attention is directed to a change that might be important." (Ecological Knowledge and Environmental Problem Solving: Concepts and Case Studies,1986,p.84)

Among other groups of organisms, birds offer certain advantages as biological monitors. they are relatively large and conspicuous "charismatic mega-vertebrates' which attract human interest. There are relatively few species nearly all of which are easily recognized. Because they are easy to observe and study, attractive to humans and there are many amateurs as well as scientists who study them, knowledge about birds is greater than any other group of vertebrates. The published ornithological literature is huge and many other types of records exist. Past records are often available for comparison with observations. Reproductive success can be relatively and easily evaluated by locating nests and monitoring their progress during the breeding season.

Because of the ease of measuring sea birds distribution and abundance at nesting colonies, they can be used to monitor populations of fish and aquatic invertebrates whose populations are much more difficult to assess.

There are some similarities between birds and humans that make them good indicators of potential problems for human health. Most birds species, like the human species, are K-selected, and therefore have a relatively long life span. Long-lived organisms show long-term effects of exposure to environmental contaminants (especially ones that bioaccumulate) and integrate stresses over years and decades, while short-lived species respond very quickly to environmental changes. Both birds and humans have relatively high metabolic rates and are therefore more sensitive to contaminants than species with low metabolic rates. As well, some birds species, like humans are at the top of food chains and therefore more susceptible to bioaccumulated contaminants.

ENVIRONMENTAL NEWS FROM COSTA RICA

* Alexander Bonilla has assumed the role of host of the show "Ecology in Action" on San Jose television. In the 70's, Bonilla was a founding member of the Costa Rican Nature Conservation Association.(ASCONA). In 1989, he won the United Nations Global 500 prize for his environmental efforts. He is a controversial figure who some critics maintain has betrayed the environmental movement by helping private corporations "green wash" themselves. Bonilla states."My thought has not changed... What has changed is my strategy. I'm achieving more now than when I was doing a lot of confrontation." (*Tico Times,23/4/93)*

* Costa Rica's Big Cats- Four United States experts in zoology visited Costa Rica to perform tests on some of the biggest cats as part of a general study of Latin American felines. The purpose of the study is to determine the genetic diversity and variability of the wild animals. Two of the researchers are members of NOAHS (New Opportunities in Animal Health Sciences) Centre whose goals are to ensure a future for endangered species around the world and to maintain genetic diversity in captive and free populations.

* Lighthawk is a non-profit program in which United States volunteer pilots fly government officials and environmentalists over endangered forests, including Central America. This year 4 Lighhawk pilots flew two planes to Costa Rica for three weeks.

The most dramatic siting was the banana expansion in the Atlantic zone.

SAVE AN ACRE' CONTINUES TO GROW

Many thanks to the **Association Quebecois Gardiens d'Animaux de Zoo** (second donation) and to the **International Society for Endangered Cats(Canada)** for their generous donations to the Save an Acre Fund.

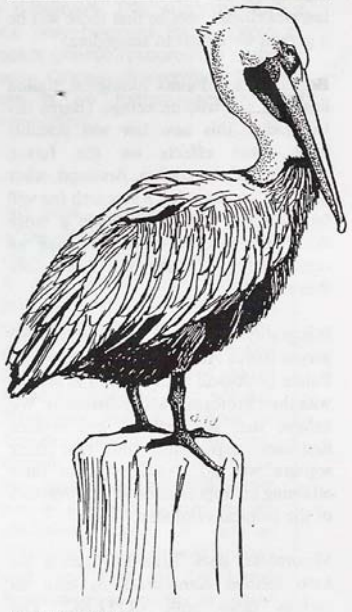
The Centre of Environmental and Political Studies at Fundacion Neotropica has been observing changes that had taken place, taking photographs to complement land-use studies to map out areas adequate for intense forestry, forestry management and conservation with low impact activities.

The pilots supplied the Ministry of Natural Resources with daily flights to monitor the health of the forests and determine where illegal logging is occuring.

Flights were also involved in a study of migration patterns of birds by George Powell, conservation biologist and founder of Monteverde Reserve. The study of the migration patterns and the decline in population of the birds which depend on mature forests for feeding and nesting, could support the need for biological corridors.

* The Tropical Science Centre is seeking a $150,000 donation from the Rockefeller Foundation to buy 276 hectares to expand the Monteverde Cloud Forest Reserve.

* Holland and Costa Rica have signed a technical cooperation agreement as a step toward the more specific accord of the United Nations Conference for Environment and Development (UNCED- the Earth Summit) which established policy for a better environmental future. The Rio accords consisted of five major agreements- including Agneda 21, a blueprint for sustainable development- signed by many of the attending heads of state. The accord represents a new model of international cooperation and involves the participation by non-governmental organizations and private businesses in its content and implementation.



by Joan Watson

EXECUTIVE DIRECTOR'S REPORT

Since our last newsletter, there have been a number of events, both here and in Costa Rica, which I would like to share with you.

The Costa Rican government has recently passed a new wildlife law to enforce protection of its indigenous wildlife--a good step forward to fill in large gaps that previously existed. For example, last year a visitor to Costa Rica was stopped at the airport while attempting to smuggle out various species. The animals were confiscated, but there was no law in effect at that time to charge him, and so he went merrily on his way. Hopefully, the new law will change that so that there will be a greater deterrent to smugglers.

Because Cano Palma Biological Station lies within a wildlife refuge (Barra del Colorado), this new law will possibly have some effects on the future operation of the station. Amongst other things, it appears that a research fee will be instituted. We will provide a more detailed report once we have had an opportunity to study the law more thoroughly.

It is gratifying to note that many students across North America are visiting Cano Palma Biological Station, both in groups with their professors and individually. We believe that no textbook can replace first-hand experience, and that their sojourn will go a long way in their attaining an appreciation of the wonders of the tropical rainforest.

Meanwhile, back here in Canada we have formed committees to take on various tasks with COTERC. The Fundraising committee, chaired by Chris McGirr of Peckham & McGirr Communications, is busily developing a campaign to attract corporate donors, as well as expanding the membership base. We are also investigating a major fundraising event for next winter.

The Education committee, chaired by Roslyn Moore, is developing more environmental education material, and is preparing to initiate a pilot project in selected classrooms this coming fall. Currently, we can provide a slide show detailing the wonders of the Costa Rican rainforest, as well as a videotape discussing various perceptions of rainforest destruction. Roslyn would welcome any of our members who would like to participate, either by taking the prepared programs to a classroom, or else would be interested in developing further programs. You can contact her at 484-8328. The Programs committee, chaired by Ozzie Teichner, is currently developing a lecture program for members and others and there will be more about this in future issues of Raphia.

On June 5, a garage sale was held at the home of Michael and Lynn James in Ajax. If you recall, that was the weekend that the weather forecasters said would be sunny and warm, and they were wrong! At dawn, the skies were overcast and it soon began to rain. Thunderstorms were intermittent throughout the day, but despite this we held the sale inside the garage and many intrepid and dedicated buyers did come by. We repeated the sale again on Sunday in glorious weather!!

On April 22 and June 12th, volunteers held two barbecues, one at the Loeb centre in Ajax and one at the Supercentre in Pickering. The first barbecue was wet and cool but the second was warm and sunny.

COTERC would like to thank the management of both LOEB and Supercentre for providing the facilities and food. Our heartfelt thanks also go to the volunteers who helped in these fundraising efforts: Lynn James, Suzanne Macdonald, John Turtle, Tom Mason, Mrs. Mason, Joy Carney, Antoinette Rudolf, Kim Meehan, Monika Rohlman, Peter Harmathy and Sandra Brown.

!!!WANTED!!!

Our next fundraiser will be a GIANT garage sale at the Pickering farm of Marilyn COle, Saturday, July 24. We are looking for articles to sell, ranging from costume jewelry to furniture in good condition. If you have any articles to donate to this sale, please contact Marilyn at 683-2116.

According to a report by the United States National Academy of Sciences, a typical four square mile patch of rainforest contains up to 1,500 species of flowering plants; 750 species of trees; 125 species of mammal; 400 species of bird; 100 of reptile; 60 of amphibian and 150 species of butterfly.

PROSPECTING THE RAINFOREST- A VALID FORM OF CONSERVATION ?

Of all the ecosystems, tropical rainforests may have the greatest variety of life and therefore have the potential to yield the greatest number of chemicals that could be used in the development of new products such as pesticides and drugs. Pharmaceutical companies and other organizations have begun prospecting for potentially valuable chemicals derived from natural organisms in the tropical rainforest. R. David Simpson and Roger A. Sedjo have provided a detailed description of some of the prospecting activities in their article, "Contracts for Transferring Rights to Indigenous Genetic Resources" Resources, Fall 1992,no.109.

Payments for the use of genetic resources- the natural organisms from which the chemicals are taken- could aid in the development of the poor countries in which most of the forests are found. Such payments could also provide greater incentives for poor countries to preserve their rainforests.

Historically, genetic resources have been commercialized without any payment to the countries that provided them. Europeans found quinine and rubber in the New World but they never made any payments to those people on whose lands these plants were grown.

Population growth and development are threatening to destroy habitats and species at unprecedented rates. If those who have the power to destroy ecosystems rich in genetic diversity are not paid for the products, there is less incentive to preserve them.

The Biodiversity Convention was presented at the recent United Nations Conference on Environment and Development. The provisions include a declaration that countries have sovereign rights in their genetic resources and that such resources cannot be used without the consent of the country. This gives the country property rights in its genetic resources. However, countries wishing to commercialize their genetic resources must either develop ways in which to transfer them to foreign firms that have greater expertise in research, development and marketing or they must acquire the expertise themselves.

In recent years, a number of organizations have entered into contracts for the commercialization of genetic resources. Simpson and Sedjo suggest that the most sophisticated agreement is between Merck and Company, a leading pharmaceutical company and the Instituto Nacional de Biodiversidad (INBio), a quasi-governmental organization, responsible for overseeing Costa Rica's biological diversity.

The Merck/INBio agreement provides for a $1 million up front payment and potential royalties. Costa Rica's political stability has created an environment of confidence that enabled the up front payment to occur. Merck will provide equipment to be used by Costa Rica for pharmaceutical research. The authors suggest that many countries will follow the example of Costa Rica's INBio which has undertaken a massive project to catalogue Costa Rica's entire biological inventory in order to develop domestic collection and research capabilities.

Simpson and Sedjo argue that simple arrangements for the transfer of genetic resources will not work. Large amounts of raw materials may be needed to develop new products and conduct clinical trials. Experts estimate that only about 1 in 10,000 natural materials sampled yields a commercial product. The practical implication is that a researcher testing natural materials will need to have continuing access to the source of the materials. This will mean the creation of complex contracts between buyers and sellers.

Another problem that will necessitate contractual arrangements is that the destruction of tropical rainforests may limit the continuing availability of sample materials. As long as rainforests represent a potential payoff, they will be preserved. This suggests that a once only payment for the right to prosect genetic resources is probably unwise. Once such a payment is made, there is no further incentive for conservation.

"We think... it is far better to think of the world as always "full" in the sense that its life-support capacity is fully shared among existing populations of many species. The question then becomes, what is the proper mix,how should the limited places in the sun be shared among human groups and other species? Wilderness with or without its human population is, in fact, already active and formed. The 'raw material' it offers for industrial use is not truly 'matter' in the Aristolean sense. It is, as Aristolean knew, formed matter, and its form is of great importance...according to these different forms different uses become possible or impossible."

Daly,H.E. & J.B. Cobb,Jr. For the Common Good: Redirecting the Economy toward Community, the Environment and a Sustainable Future.

CANADIAN ORGANIZATION FOR TROPICAL EDUCATION AND RAINFOREST CONSERVATION

MEMBERSHIP

YES, I want to join COTERC and support its efforts in the tropics. I'm enclosing my membership fee of :

Senior/Student	*[ ]*	*$ 15.00*
Individual	*[ ]*	*$ 25.00*
School Class	*[ ]*	*$ 25.00*
Family	*[ ]*	*$ 35.00*
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Corporate Membership	*[ ]*	*$100.00*
*Donation**	*[ ]*	*____*

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