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ACHIEVEMENTS & Frontier OPPORTUNITIES

FOREWORD

PROGRAMME MANAGER PAUL RUBIO ON WHY FRONTIER IS A WORLD LEADER AT FURTHERING THE UN MILLENNIUM DEVELOPMENT GOALS

2006 MARKS A GROUNDBREAKING YEAR AS FRONTIER SENDS ITS 3000TH VOLUNTEER INTO THE FIELD

As all countries of the world move towards implementing the UN Millennium Development Goals (MDGs), Frontier is distinguishing itself as leader in the global battle for "ensuring environmental sustainability" (Goal 7) by the year 2015. The successful realisation of the goals set forth by the United Nations will only become a reality through a concerted and unified effort by civil society and government, where organisations like Frontier execute interdisciplinary development projects that are underpinned by poverty eradication and livelihood enhancement. Frontier's biodiversity conservation projects have long produced lasting results, as data compiled from biodiversity inventories and assessments have formed the foundation of new protected areas, optimal land-use plans, park management strategies, and efforts to raise awareness and respect for the environment.

A pioneer in the field of conservation since the 1980s, Frontier worked towards achieving the MDGs long before their precise definition in 2005. Nearly twenty years later, Frontier is expanding its groundbreaking studies and projects deeper into the poorest regions of the world, often characterised by the stark duality of economic and social marginalisation set in magnificently biodiverse environments.

Spring 2006 marks a record for Frontier, as we send our 3000th Research Assistant, Rachel Turner, on a 20-week volunteer expedition deep into the wilds of Tanzania's undiscovered Eastern Arc forests in search of new species of small mammals. Afterwards, she'll move to Madagascar, where she'll help to establish one

Paul with friends from one of our host communities.

of the first marine protected areas in Diego Bay. Rachel's data collection will help to underpin a biodiversity analysis that will aid the long term conservation of Tanzania and Madagascar's natural environment.

I hope enjoy our latest news from the field and that our work inspires you to play a role in global biodiversity conservation.

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DONOR FUNDED PROJECTS

SAVING MOST ENDANGERED SPECIES AND EXCEEDING OUR DONORS' EXPECTATIONS

NICARAGUA: DARWIN INITIATIVE

On March 11, 2006, Frontier Nicaragua hosted the first ever sea turtle symposium in Nicaragua, sponsored by the UK Government's Darwin Initiative. With over 100 participants from across Central America, the symposium brought together local, national, and international experts as part of Frontier's Capacity Building for Sustainable Management of the Nicaraguan Pacific North Region Project. Recognising that Central American delegates might not have the means to attend the International Sea Turtle Symposium in Greece later this year, Frontier staff generated a concept for a Central American regional conference that would coincide with the graduation ceremony of the inaugural twenty participants of Frontier's pioneering BTEC in Conservation Management.

The BTEC qualification, equivalent to an A-level, represents the first of its kind in the history of Central America: on the one hand, accrediting a degree that previously did not exist in the Americas and on the other, exemplifying the global paradigm shift where developing countries are coming to prioritize sustainability and conservation as valid development goals.

In a poignant ceremony, Nicaraguan participants presented the fruits of their efforts from the BTEC course, including their reports and logbooks, to the audience, after which they were awarded with diplomas. Afterwards, renowned experts spoke of the most pressing issues for Central America's conservation, focusing

largely on sea turtles. Project Co-ordinators expressed gratitude to the Darwin Initiative for funding the development and implementation of the course, crucial to giving candidates the means to achieve the conservation goals set for by the Convention on Biodiversity. Park guard Ramon was grateful to Frontier: "I cannot find the words to express my gratitude; this is the best thing I have ever carried out in my life."

CAMBODIA: PADI AWARE

In 2005 Frontier received a grant from the conservation branch of PADI, PADI Aware, to prepare and disseminate information about Cambodia's Ream National Park. The project, which will include print, Internet, and public workshops, aims to raise public awareness about the unique flora and fauna that can be found in the park.

Frontier was one of the first organisations to produce baseline biodiversity surveys of Ream National Park since the country became accessible to foreign scientists in the late 1990s. This represented a unique opportunity for Frontier to establish the first comprehensive picture of what species exist within Ream's borders, and the results of our surveys showed an abundance of exotic and endangered wildlife. Notable species include the great hornbill, leopard, tiger, Asian elephant, lesser adjutant, and palm civet.

Now, Frontier and PADI Aware are seeking to bring information about Ream's spectacular flora and fauna to a wider audience. Materials will be produced in English, Khmer and other foreign languages, and will be distributed both within Cambodia and overseas. Included in the web-based initative is a collaboration with Cambodia's Ministry of Tourism to either update their website or provide an independent web resource for people wishing to learn about the fascinating park.

Frontier hopes that this initiative will help to raise status of Cambodian wildlife by demonstrating the ecological and economic value of conserving these places for future generations of visitors.

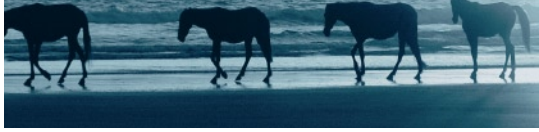
TANZANIA: CEPF MTWARA PROJECT

The Mtwara region, at the border with Mozambique in south-eastern Tanzania, is part of the Eastern Arc and Coastal Forest range – one of the most biodiverse areas in the world. From April 2005 to March 2006, Frontier-Tanzania conducted a Critical Ecosystem Partnership Fund-funded project in eight forests that partially comprise the CEPF-numbered Key Biodiversity Sites 81, 95 and 102.

Findings from our study show that the eight forest reserves studied are of crucial value to the surrounding human population, providing it with precious water, forest resources and protection from soil erosion. However, human population growth has contributed to the exploitation of the

FACT: *To date, Frontier has trained over 600 host-country partners, identified hundreds of new species, and published over 350 papers.*





area and the severe curtailment of its biodiversity and endemism.

Apart from recording the presence of endemic and threatened species, this study also revealed some interesting range extensions. These include the lesser bush baby (*Galago moholi*), an arboreal species usually found in the semiarid scrub woodlands and savanna grasslands of central-southern Africa and the grey-crested helmet-shrike (*Prionops poliolophus*) a bird previously recorded only in restricted areas of south-western Kenya and northern Tanzania.

The problem of trying to balance human demands with the needs of a fragile ecosystem is not unique to Mtwara, nor is virgin territory for Frontier. Indeed, Frontier has long been a world expert in participatory, grassroots conservation that seeks to build symbiotic human-environment relationships based on sustainable livelihoods. We are therefore in an excellent position to make recommendations for the development and implementation of an effective and sustained management plan for the safeguard of these forests.

Tanzania BREAM Project: Exploring the "Galapagos of Africa"

Frontier-Tanzania's Forest Programme has been conducting biological research in lesser-known Eastern Arc Mountains, dubbed the "Galapagos of Africa", with aims to better target conservation priorities and raise environmental awareness. Funded by Conservation Internationa's Critical Ecosystem Partnership Fund, the Biodiversity Research and Awareness in the Lesser Known Eastern Arc Mountains (BREAM) project fulfils CEPF's objective to safeguard the world's most threatened biodiversity hotspots in developing countries. Uniquely, this project expands on Frontier's previous expertise in baseline survey work to include large mammals, camera trapping, nocturnal primates and in-depth herpetological surveys, covered during an initial training period provided by some of the pre-eminent experts in these fields.

Several reserves in the Mahenge Mountains have now been surveyed, revealing a previously unexplored pocket of pristine sub-montane primary forest in Sali Forest Reserve. Enormous trees and diverse wildlife attest to the remoteness of this reserve and highlights of our surveys included a gargantuan 4-metre long python, a close encounter with a buffalo, temporarily fostering a juvenile bush-baby *Galagoides granti*, camp invasions by large and vociferous tree frogs *Leptopelis vermiculatus*, and evidence of the movements of elephants, lions and hyenas through the reserve from the Selous Game Reserve and the Kilombero Valley.

Another Mahenge mountain reserve surveyed revealed the presence of a possibly new species or hybrid species of hyrax *Dendrohyrax validus*, with strange and unusual nocturnal calls that have never previously been recorded.

The BREAM project is an initiative of Frontier-Tanzania (a collaboration between the Society for Environmental Exploration and the University of Dar es Salaam) in partnership with WWF-Tanzania Program Office, and the Forestry and Beekeeping Division of the Ministry of Natural Resources and Tourism; funded by the Critical Ecosystem Partnership Fund.

New Publications

1: Browne NK & Markham HL - Assessment of the extent of bleaching and recovery rates of corals in Diego Suarez Bay, Northern Madagascar, IMAREST WMTC Conference 8th March 06

2: Brown LF, 2005, An update on the shark fisheries of Southwest Madagascar with regard to stock status, economic importance and management considerations. Reef Conservation UK conference December 05

3: Markham HL & Browne NK, 2005, Mapping the coastal ecosystems of the World's Second Largest Bay, in Northern Madagascar. Reef Conservation UK conference December 05

4: D'Cruze NC. 2005, Zonosaurus Laticaudatus (Western girdled lizard): Semiaquatic defensive behaviour. Herpetological Bulletin (In review)

5: D'Cruze NC and Sabel JA, 2005, Ptychadena Mascariensis (Mascarene ridged frog): Predation on an endemic Malagasy chameleon, Herpetological Bulletin

6: D'Cruze NC, Green KE, Robinson JE & Gardner CC, A rapid assessment of the amphibians and reptiles of an unprotected area of dry deciduous forest in north Madagascar, In preparation for Herpetological Bulletin 93

7: Grainger MJ and Hengeveld FJ. Puku (Kobus vardonii) in the Kilombero Valley, Tanzania - Threatened? Gnusletter - In review

8: Goodman SM, Thomas H and Kidney D, 2005, The rediscovery of Mungotictis decemlineata lineata Pocock, 1915 (Carnivora: Eupleridae) in southwestern Madagascar. The Newsletter

FIJI: Saving a Pacific Paradise

BREAKING NEW GROUND IN THE PACIFIC ISLES

Fiji, fast becoming one of the world's most enticing holiday destinations for divers and wildlife enthusiasts is under tremendous threat from over-development and other anthropogenic pressures. Frontier has teamed up with the International Oceanography Institute at the University of Suva to carry out groundbreaking new biodiversity work that will be key to establishing management plans for Fiji's marine environment.



FRONTIER VOLUNTEER PROJECTS

CHANGING THE WAY THAT WE TREAT OUR ENVIRONMENT, ONE VOLUNTEER AT A TIME

CAMBODIA: TRACKING ELUSIVE CATS BRINGS SURPRISING RESULTS

The forests of Botum Sakor National Park, fast becoming islands in a sea of barren land, left scarred and torn by logging and overuse, are a vital place of refuge for a number of rare and fascinating species of cat. In the 12 months since Frontier started conducting baseline biodiversity surveys in the park, we have found evidence of leopards, clouded leopards, Asian golden cats, leopard cats, fishing cats, and even the rare and elusive jungle cat. The area is also probably home to a small tiger population, but as yet we have found no evidence of them.

Despite the damage caused to the area by logging, poaching, and un-sustainable human usage, the presence of larger predators such as leopards and tigers suggests the presence of good-sized populations of large prey such as sambar and muntjac deer. Leopards in particular are an exciting find, as they are under intense pressure from illegal hunting throughout the extent of their range in Asia and Africa and in many areas have been eliminated altogether.

The sighting of a jungle cat is a fairly unusual event: smaller wild cats are not often seen in the forest even when present in abundance! The presence of these smaller but no less exotic felines is similarly indicative of a variety and abundance of prey species.

MADAGASCAR FOREST: REDISCOVERING AN ENIGMA

In 2004, Frontier Madagascar's Terrestrial project captured a species of *Mungotictis decemlineata* (a Malagasy mongoose) whilst working along the Manombo River in southwest Madagascar. The mongoose is extremely rare and only one individual has previously been captured, at the beginning of the 20th century.

The Mungoticitis decemlineata is one of the most geographically-limited species in Madagascar and until recently little has been known of the distribution or ecology of this diurnal or crepuscular species. Recent studies have focused on the subspecies *Mungoticitis decemlineata decemlineata* which has been identified and captured within the northern region of the species' range, close to Morondava on the west coast of Madagascar. *M.d.lineata* however was previously only known from one holotype in the Natural History Museum, and details as to its capture site had been varied and anecdotal. The discovery of an individual of very similar colouration that can be classified within this subspecies provides valuable information as to the potential distribution of *M.d.lineata* as well as shedding further light on the taxonomic classification of the species. Such discoveries help to unravel the complex natural history of these animals and allow for a better understanding not only of their current distribution but also of their evolution and thus the natural history of Madagascar.

TANZANIA SAVANNAH: AFRICA'S "BIG 5" BIRD SPECIES

Staff and volunteers on Frontier-Tanzania's Savannah Programme have been fortunate enough this phase to see three of Africa's finest birds of prey: the martial eagle *(Polemaetus bellicosus)*, crowned eagle *(Stephanoaetus coronatus)* and Pel's fishing owl *(Scotopelia peli)*.

Volunteers spotted two martial eagles—one of the largest of all African eagles—courting (holding onto one another's talons and spinning rapidly for around 20 seconds) as they were conducting bird surveys on the floodplain at Mofu. During early morning river surveys, a crowned eagle was observed eating what was believed to be the remains of a puff adder. This eagle species has a wide-ranging diet and will eat snakes, monitor lizards, monkeys, or even small antelopes. It is believed to be the most powerful and ferocious of all African eagles. The Pel's fishing owl was observed along the river early in the morning. This highly secretive and rare species is nocturnal and will perch silently in dense tree canopy during the day. The bird was observed sitting on a branch, probably resting after its long night's hunt along the water. Fishing owls feed mainly on fish and amphibians, but also the occasional rodent and bird. The observations of these three magnificent birds was tremendously exciting for everyone involved in the project and will be hugely important additions to the species inventory of the area.

TANZANIA MARINE: CONSERVATION IN ACTION

Frontier has been fighting to save Tanzania's fragile coral reefs since 1989 when it embarked on an exhaustive study of Mafia Island, the first of its kind in Eastern Africa. A team of local and foreign Frontier divers, working an exhausting six days a week for an astonishing five years produced a set of data that showed without question that the reef was under serious threat. Realising that the problem was as much political as it was environmental, they set about creating co-operative relationships between all those who have a stake in the coastal zone: artisanal fishermen, local politicians, and tour operators.

Award Given

LAVITRA THIERRY

▶ MALAGASY STUDENT LAVITRA THIERRY RECENTLY REPRESENTED FRONTIER AT THE 4TH WESTERN INDIAN OCEAN MARINE SCIENCE ASSOCIATION (WIOMSA) SYMPOSIUM.

AFTER THE SYMPOSIUM, LAVITRA, A PHD STUDENT AT THE UNIVERSITY OF TULELAR, WAS AWARDED A DISTINCTION FOR HIS BTEC DIPLOMA IN TROPICAL HABITAT CONSERVATION.

FRONTIER CONGRATULATES LAVITRA AND ALL OF OUR HOST COUNTRY PARTNERS WHO HAVE ACHIEVED QUALIFICATIONS WITH FRONTIER.



This work culminated in 1995 with the gazetting of Mafia Island as Tanzania's very first marine park. The park has ambitious aims but has been constrained by a lack of resources and training so in early 2006, after completing a number of successful projects along the coast, Frontier-Tanzania returned to the island to build the capacity of park staff. This capacity building work falls into two categories: science training and dive training and involves a whole range of participants including park wardens, scientists, volunteers, and local community representatives.

Frontier Tanzania is proud to work in partnership with the Mafia Island Marine Park, WWF and local actors. We are emphatic about the importance of operating with the full support of the local community, as this encourages sustainability and the development of livelihoods based on non-harmful means.

Nicaragua: Saving a unique cloud forest

Frontier-Nicaragua has recently moved to an area of pristine cloud forest at Volcán Cosiguina: a unique and fascinating ecosystem. Tropical montane cloud forests are a rare type of evergreen forest found in tropical areas where local climatic conditions cause cloud and mist to be regularly in contact with the forest vegetation. These forests support ecosystems of distinctive floristic and structural form, characterized by an abundance of mosses, ferns, orchids and other epiphytic plants on every tree and rock surface. Cloud forests are also believed to contain a disproportionately large number of endemic and threatened species, and our preliminary studies have revealed some exciting finds.

Among these are extraordinarily high numbers and diversity of small mammals including the least shrew, Mexican mouse opossum, and a couple of species of pocket and harvest mice. In addition to the small mammal diversity, the diversity of *lepidoptera* is also high, with 46 species added to the inventory. Further findings include possible range extensions of bird life in the cloud forests including the chestnut-headed orupendula, a beautiful bird with vivid flashes of yellow in contrast to its black plumage.

Madagascar Marine: Coral reefs under threat

Research on the Madagascar Marine Programme this year has been taking place in Diego-Suarez Bay on the northern tip of the island. This area is unique, as although it has been a deep water port for hundreds of years its perimeters are relatively untouched by man, leaving pristine shorelines and untouched coral reefs in abundance. The main research objective in the bay has been to identify high-quality reef systems in order to make recommendations for management plans in the area, which is under pressure from unregulated development. More intensive research is also being carried out on those reefs that are judged to be in poor condition. Specifically, work is being undertaken to assess the impact of coral bleaching that occurred during 2005 as well the effects of anthropogenic pressure. This latter has led to eutrophication, over-fishing and sedimentation.

This study has already shown that the salinity of the water in the bay has been seriously altered by some of these factors, and this is slowing the recovery rates of some of the damaged coral species. Alongside the coral species studies, our researchers have also been conducting extensive reefcheck and baseline biodiversity surveys using the extremely successful rapid assessment protocol (RAP) to produce species lists of the flora and fauna living within the reefs. These will be compiled to produce a comprehensive biodiversity report of the bay.

Fiji: Protecting fragile resources

The vast island group of Fiji contains 4 - 5% of the world's coral reefs, yet due to their remote and inaccessible location very little scientific data is available about this fascinating region. For this reason, Frontier began in early 2006 a project established in conjunction with the International Oceanography Institute at the University of Suva to establish a comprehensive set of baseline data for the area.

The impact that climate-change and environmental degradation has on local socio-economics is especially important due to the fact that Fijians have a strongly marine-based culture. Despite low population densities it is still important that sustainable management plans are implemented to protect these fragile resources for the future. To this end, as well as biodiversity research, the project will be working alongside 18 villages examining marine resource use and investigating ways to increase awareness of the fragility of their local environment.

We hope that our work encourages the area considered by the National Biodiversity Strategy Plan to be of 'national significance' to be extended, and enables the local economy to benefit from careful resource management.

FACT: *Frontier is the only organisation of our type able to offer internationally accredited qualifications, equivalent to A or AS-levels.*

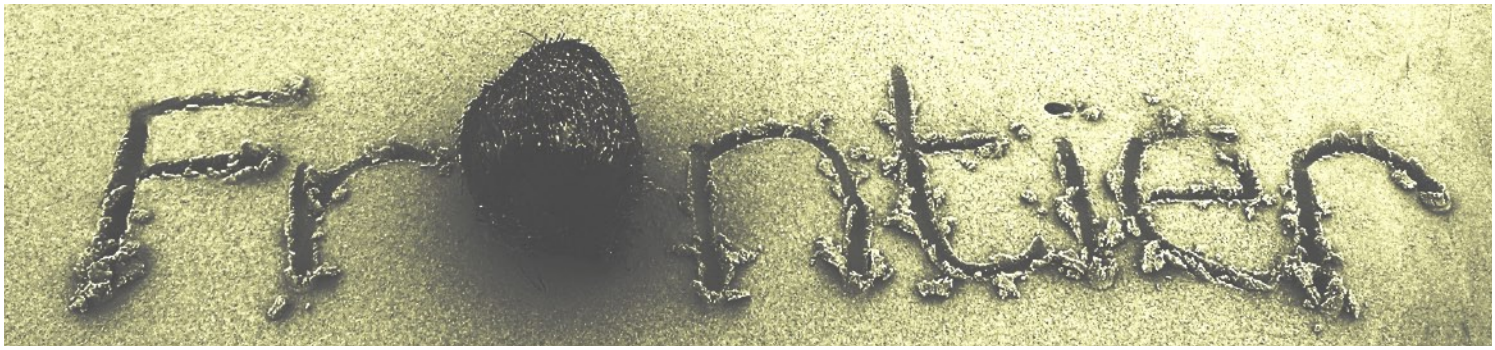
Dispatches from the field

Last night we had an over-the-top fancy dress party night to celebrate Lucy's birthday. It's amazing what you can find to make a fabulous superhero outfit. Jason and Katie made the most incredible cake using the entire supply of eggs that Mike had hauled back from the local village in yesterday afternoon's heat. Despite having planned to get up an hour later, awarding ourselves a post-party lie-in, we've been driven out of our bandas by the sweltering heat, just in time for a breakfast of nutella pancakes while watching the sunrise over the valley. A quick dip in the nearby waterfall and we're ready for the day.

Today we are dividing into two groups, Simba and Chui. Simba group is going to trek to the Chai House in one of the local villages to talk to the village elders about collecting firewood from the forests and cattle grazing, which directly impacts on the rare puku antelopes found in the area. No doubt the entire community will turn out to welcome them. It's a three-hour round trip but we'll be expecting them back in time for lunch. On Mike's recent re-supply trip he heard that a leopard had been spotted and Chui group is going to investigate. We're off to check the camera traps to see if there's been any recent activity. Walking transects in the forests we see plenty of tracks and spoor of large mammals, including elephants and buffalo, but as yet no glimpses of this elusive leopard.

On our return, we're looking forward to Duma group's return from their satellite camp on the savanna flood plains, accompanied by the game guards. We await news of elephants and lion sightings! It's a shame they missed last night's fun but we've got several more party nights planned including a shamba bash with a traditional drumming band from the local village. This is a celebration of our only football win of the expedition, as the village team nearly always defeats us despite the fact that they play barefoot and have an 11-year old goalkeeper. If we're lucky they will barbecue a goat in our honour! That will make a change from rice and beans, although with our improving culinary talents I reckon we'd impress even Jamie Oliver.

Looking forward to a game of river volleyball before dinner, watching the sunset and the world descend into absolute darkness, illuminated only by the brightest stars I have ever seen. Then we're playing card games round the campfire, with some Safari beers followed by Konyagi chasers! I don't miss home, TV, the cricket, or going clubbing on Saturday night; I've got it all here and so much more. We have to make an early start tomorrow for our long trek to the floodplain. There, we'll be sleeping under the stars, hearing the lions roar and waking before dawn to watch another indescribable African sunrise.



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