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## News

Gearing up for Ranomafana National Park’s 25th Anniversary

Created in 1991, Ranomafana National Park (43,601 ha) is turning 25 this year! A two-day celebration will be held on Oct. 28-29 and we hope to see you there!

For more news, follow us on:
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- instagram.com/centrevalbio
- twitter.com/centrevalbio
- www.centrevalbio.org
Dear readers

We hope that you will enjoy reading all about the exciting changes and events happening at Centre ValBio (CVB), in Ranomafana village and in the forest these past few months.

Firstly, I am pleased to announce that CVB is expanding (literally!). Thanks to generous support from the Lichtenstein Foundation, we were able to extend LovaBe Hall to encompass even more office, meeting and dining hall space. We also upgraded our kitchen facilities, and now have an all stainless steel kitchen in which to provide nutritious (& delicious) meals to our researchers and guests.

As always, CVB has hosted an incredible number of people and projects from around the world this past season. Read more about visits from Stony Brook’s medical and dental schools, how the Global Health Institute and its medical interns are using drones to carry medicine to remote villages, as well as how students from Allendale-Colombia School got involved with the One Cubic Foot Project, and much more…

As CVB and our programs continue to grow, so does our team. In June we welcomed our new Chief Technical Advisor, Maya Moore. Maya has over twelve years of experience working in conservation and development throughout Madagascar, Niger, Thailand and Guatemala. She holds a B.S. in Biology from Georgetown University and a M.A. in Sustainable International Development from Brandeis University, and is the co-author of the Madagascar Travel Guide (2012) by Other Places Publishing. In 2010, Maya founded the Maroantsetra Area Development Association (MADA) to provide economic and educational opportunities to people in that region.

Finally, this past July, I had the privilege of attending the Association for Tropical Biology Conservation (ATBC) meeting in France, and I am proud to have been elected as a voting member to their council. What is even more exciting is that in 2019, ATBC will hold their meetings here in Madagascar and at CVB!

Dr. Patricia Wright
Founder and Executive Director, CVB
Conservation

Ranomafana Park: Signs that the forest is recovering!

The scaly-ground roller had not been seen in the Talatakely region of Ranomafana National Park for nearly 30 years! That is why it was so exciting when one of CVB’s research technicians sent a text message to Dr. Wright announcing that he had spotted this elusive bird this past May.

The scaly-ground roller (*Geobiastes squamiger*), listed as vulnerable by the IUCN, is in a monotypic genus in the Brachypteraciidae family. Endemic to Madagascar, it ranges from the forests of Marojejy in the north to Andohahela in the south. As its name suggests, it is a ground dwelling bird with a striking pattern of black-and-white scaling on its head and underparts. It has a thick-set body, with long, pink legs, a greyish bill and distinctive black bands running down the center of the head, behind the eye and across the cheek. The upperparts are coppery-brown below the nape, becoming greenish on the wings down to the base of the tail, with attractive white tips to the wing. The rest of the tail is mostly reddish-brown with sky-blue tips.

In addition to scaly-ground roller sightings, black and white ruffed lemurs (*Varecia variegata*) have been seen feeding in the Talatakely area of the park.

This is particularly exciting because selective logging took out the big canopy trees they need to survive. We also noted an abundance of Milne-Edwards’ sifaka (*Propithecus edwardsi*) births this past season. Our field teams discovered a total of 10 sifaka babies in all of the groups that we follow.

Reforestation: Exploring possibilities for shade-grown wild pepper

Malagasy farmers have long managed and exploited the shady environment under trees. There are many valuable cash and subsistence crops that thrive in this understory. When cultivated in combination with tree or forest crops, understory crops enable farmers and foresters to diversify and increase their yields while reducing labor and making more efficient use of land. Thus, the understory is a niche worth cultivating.

To this end, Centre ValBio (CVB), in conjunction with Catholic Relief Services, are participating in a project to investigate the productive and commer-
cidual potential of *tsiperifery* (or *sakarivovahy* in the Ranomafana region), a type of wild pepper liana found only in the tropical forests of Madagascar.

In early June, a workshop was held at CVB which aimed to identify the availability and marketing potential of this pepper around Ranomafana, as well as to examine current collection techniques and their environmental impact. Nine local growers and sellers were in attendance and described how they are currently growing, harvesting, and marketing this product.

Further research on wild pepper is going to be the next important step. Important botanical facts about wild pepper have already been gathered and valuable morphotypes in the area identified, but there appear to be geographical phenotypes. An inventory and map of wild pepper to identify the availability of the resource is currently in progress, and trials to domesticate the wild pepper in local villages and at CVB’s tree nursery are underway.

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**Research**

*Duke University Student Examines Lemur Gut Biomes*

Parasites are an important ecological factor in the health and success of all animals, and may have an especially detrimental impact on shrinking populations in disturbed habitats. Compared to the gastrointestinal parasites of other primates, those of lemurs have been relatively unstudied. In the face of increasing numbers of tourists at Ranomafana National Park and habitat destruction throughout Madagascar, it is important that we identify the species, source, and distribution of parasites infecting the lemurs, as this may inform future conservation decisions.

That’s why students, Isabelle Clark and Brigita Tsavohitra, spent the month of July collecting fecal samples from seven diurnal lemur species living in and around Ranomafana National Park (*Hapalemur aureus*, *Hapalemur griseus*, *Prolemur simus*, *Propithecus edwardsi*, etc.).
Eulemur rufifrons, Eulemur rubriventer, and Varecia variegata. Isabelle and Brigita followed the lemurs, collected fecal samples, and performed fecal flotations back at the CVB lab in order to identify parasites based on egg morphology. A portion of each sample will be brought back to the Yoder Lab at Duke University for genetic analysis to more thoroughly search for and identify parasites.

Endangered Feces: Examining the Effect of Habitat Disturbance on the Varecia variegata Gut Microbiome
By Mariah Donahue, Stony Brook University

I spent three glorious months in Madagascar to test the hypothesis that habitat disturbance impacts the gut microbial composition of the black-and-white ruffed lemur (Varecia variegata). The gut microbiome is a community of bacteria living in the gastrointestinal tract of every critter—from worms to elephants to lemurs—and its composition changes in response to the host’s external environment and diet, making it an effective measure of conservation physiology. So, I packed 200 2 mL cryovial tubes into the bottom of my suitcase and flew from Queens, New York to Antananarivo for a summer of collecting lemur feces.

I chose to conduct my research in four sites with varying levels of habitat disturbance. The first two, Vato and Mangevo, are located within the bounds of Ranomafana National Park. Vato is a lightly disturbed section of primary forest while Mangevo is considered pristine. My team and I followed at least two groups from each site and collected every fecal sample that we could find. We repeated this experiment in Manombo, a coastal forest near Farafangana that has been subjected to repeated anthropogenic and natural disturbances. Manombo is divided into two fragments connected by a small corridor, the Special Reserve and the Classified Forest. While neither region is pristine, the Special Reserve benefits from stricter protection. While we have yet to submit the samples for lab work, we observed significant dietary differences in all four lemur populations. Therefore, we expect that the gut microbiome will reflect these ecological variations.

After scouring the forest floor for three months, we collected a total of 138 fecal samples and recorded close to 300 hours of behavior/feeding ecology data.
working factors on these Malagasy fragments better.

Lemur, lemur predator and lemur food resource population densities for each fragment were assessed as well as the floral composition of lemur food sources within the sites, and information on human disturbance and human activity parameters was collected as well. Extensive documentation of lemur distributions and population densities within Ranomafana National Park will provide necessary and robust comparative data between lemurs in protected (RNP) and non-protected (project fragments) areas.

In addition, regions north of RNP are in an opportune position for potential corridor project sites which could link RNP and related fragments to other known lemur sites. Thus, this research will help to inform which fragments are best suited for incorporation into corridor planning.

Lemur population distributions and other related ecological data additionally would be immensely useful for species distribution modeling efforts and to contribute to knowledge determining threat status of lemur species. Surveying fragments near areas of human occupation also presents the important opportunity for connecting with local people about the importance of preserving fragments, for both themselves and local wildlife.

Lemur Distributions, Fragmentation and Human Influence

Fragmentation is a field of study immensely important for conservation efforts and one which is often difficult to study over time. By utilizing the results and methodologies of a 2003 survey of fragments to the north of Ranomafana National Park (RNP) conducted by Dr. Alex Dehghan, Stony Brook University student Katherine Kling and her team are assessing the impact of thirteen years of continued fragmentation and human influence on the populations of lemurs and lemur predators living within these fragments.

Re-evaluation of the sites, as opposed to evaluation of new sites, is particularly important for documenting change across time. Fragmentation is not best represented by a ‘single snapshot’. Instead, it is a constantly changing and dynamic process. Understanding the change in variables affecting fragments over time will help to understand
Conservation Education

My Rainforest, My World

The My Rainforest, My World (MRMW) Project of the CVB Environmental Education Outreach Program aims to introduce participatory learning and community participation in science education to fourth graders in rural village schools. During the first year of the program, we selected and trained a corps of student teachers from a teaching college in nearby Fianarantsoa, as well as interns from the Institute for Science and Technology for the Environment. The student teachers were based in remote villages for ten months, allowing for continuous delivery of MRMW curriculum in these ten schools.

With input from international and national educators, we began with a workshop to establish priorities, develop curriculum, and refine methods. We brought in outside experts in conservation and science education to guide the development of a “hands-on” participatory curriculum. These experts from Chadwick School (Los Angeles), Oakland Park Zoo (San Francisco), South Fork Nature Center (Southampton, Long Island NY), University of Sussex, UK, and Antananarivo delivered three workshops held in October 2015, January 2016 and May, 2016.
The team also developed new and relevant teaching materials including lemur and ecosystem posters: one of the 12 Lemurs of Ranomafana and a map of the various ecosystems found throughout Madagascar.

In celebration of the completion of year one, 167 students gave final performances to an audience of beaming parents and teachers, distinguished community leaders, program donors, and the entire MRMW and CVB staff on July 13th. The celebration was an excellent way to honor the student participants and share some of the highlights from the year. The event was filmed and later broadcast on national television. A few days later, during an official opening ceremony of the school sport in Vatovavy Fitovinany region, CVB was proud to receive a certificate from the Education Authority of Ifanadiana in recognition of the important education outcomes that we are achieving through MRMW.

As we embark on year two of this successful project, we plan to reach even more students by with adding an additional ten schools. We are extremely grateful to the Three Graces Foundation for their continued support, without which none of this would be possible.

“The Lemur Life” Radio Program

Around Ranomafana National Park live rural Tanala and Betsileo people, comprising 130 villages, whose lives directly connect to the forest and the future for Ranomafana’s thirteen lemur species.

As outlined in the IUCN’s Lemur Action Plan 2013-2016, lemur conservation action should be fostered through education and outreach. To accomplish this, CVB has chosen the medium of radio because of its ability to reach into the homes of listeners in remote villages and connect them to conservation issues. In this way, our approach to conservation can be framed in a personal manner and encourages the formation of personal relationships to lemurs.

Over the course of ten radio podcast episodes, we will focus on the thirteen lemur species native to Ranomafana National Park and highlight their unique ecological and behavioral traits in depth while connecting them to relevant environmental and conservation content.

Stay tuned for more…
Health Outreach

Stony Brook University and Centre ValBio strive to improve Health Care in Madagascar

Centre ValBio has long collaborated with Stony Brook University’s (SBU) School of Dental Medicine and Madagascar Ankizy Fund, a non-profit organization through the Stony Brook Foundation, to improve the oral health of underserved communities in the Ranomafana area. These dental missions address a dire need in these communities, and their impact is often lasting, for the patients as well as the dental students.

That is why we were so pleased when Dr. Mary Truhlar, Dean of SBU Dental School, visited Madagascar for the first time this past July. Accompanying Dr. Truhlar was another important visitor, Dr. Ken Kaushansky, Dean of the SBU School of Medicine.

Dr. Kaushansky reviewed the research of four interns: Jaydon Kiernan, Paul Castle, Lee Hakami, Joeun Choi, all medical students at SBU. These students had joined up with Dr. Peter Small and the Global Health Institute, a new initiative at SBU which is driving cutting-edge health research, to examine the cultural and epidemiological factors that perpetuate worm infections resulting in cystercircosis in Ifanadiana, Madagascar. The students worked along with the CVB Health Outreach Team and the Institute Pasteur of Madagascar to collect samples in the field and analyze them back at the CVB labs.

What’s in the sky? It’s a drone!

This drone with a nine-foot wingspan flying over Centre ValBio is one of two Vayu drones imported with the expertise of Benjamin Andriamihaja’s customs magic. We are accustomed to think of drones as weapons of war. However, these drones are being used to deliver two kilos of medicines to remote villages as part of a new project launched by Dr. Peter Small, Director of the Global Health Institute at SBU.
Study Abroad

Allendale Columbia School and the One Cubic Foot Project: Setting out to capture the incredible amount of biodiversity in one cubic foot

Wildlife photographer David Liittschwager has been traveling the world, from the coral reefs of French Polynesia, to the cloud forests of Costa Rica, capturing the creatures that transverse his “biocube”. By placing the three-dimensional stainless steel frame made of thin 12-inch-long aluminum tubes (which is exactly one cubic foot in volume) in a relatively undisturbed area typical of the habitat surrounding it, every plant and animal species that moves in and out of the frame throughout the course of one day is photographed.

This past May, David and his team, comprised of scientists from the Smithsonian Institution in Washington, D.C. and Directors of Seneca Park Zoo in New York State, along with Beth Guzzetta and 15 of her students from the Allendale Columbia School in Rochester, New York, packed up their bags and traveled around the world to document the unique biodiversity of Ranomafana’s forests.

The team hopes to glean important insights about the biodiversity in Ranomafana National Park. An estimated 30% of the DNA barcodes collected could be new to the database. While

Chris Meyer, an invertebrate zoologist at the Smithsonian Institution, Liittschwager, the Zoo Society’s Executive Director Pamela Reed Sanchez, and Director of Programming and Conservation Action Tom Snyder monitored the primary cube, Allendale Columbia School students were responsible for keeping track of their own supplemental cubes.

One student, Luke Nicosia, recounts his experiences on his blog:

*Our time at CVB was drawing to a close... Today, we would venture out to the rainforest for the last time to collect samples. The One Cubic Foot people did not accompany us this time, but we would encounter them later in the forest. They had found a great spot for a cube within the forest near a stream. We spent a few hours collecting samples to bring back to the lab for analysis. The best find of the day was certainly a memorable one for myself. On the path, Mrs. Guzzetta and I spotted a large creature in the path. It looked like a snake, but as a matter of fact it was a worm! It was 8 inches long, as round as a nickel, and pink! We caught it, but barely, since it nearly escaped. We brought this monster earthworm back to the lab for bar-coding.* (https://lukenicosia.wordpress.com)
Featured Researcher

Peter Houlihan, Florida Museum of Natural History

Peter Houlihan is a conservation scientist and National Geographic Explorer working to better understand tropical rainforest ecosystems. He specializes in planning and leading expeditions into remote environments around the world, including Madagascar.

With an education in tropical biology, Peter’s research projects focus on the biogeography, ecology, molecular evolution, and behavior of tropical organisms. He is passionate about rainforest conservation around the world and has co-founded a conservation organization in Borneo called Barito River Initiative for Nature Conservation and Communities aimed at protecting the livelihoods, wildlife, and tropical rainforests within a threatened region of the island.

Peter is also a member of the Society for Conservation Biology’s Diversity Committee, which aims at working to engage a broader community of students and professionals in conservation science.

Currently based at the Florida Museum of Natural History, Peter has been investigating the interactions between hawkmoth pollinators and orchids from Cuba to Madagascar. Supported by the National Geographic Society, Peter lived in Ranomafana for several months in 2015, and he recently returned this past May, to conduct research on the pollination ecology of orchids in the rainforest canopy. Peter’s expeditions are also supported iLCP, GoPro, and Patagonia.

Peter is returning to Madagascar this September with Dr. Wright where they will be leading an expedition to conduct biodiversity surveys of an exciting new rainforest environment.