



Centre ValBio

Madagascar

Annual Report

2023



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Neodythemis trinervula

History of CVB

In 1986, primatologist Patricia Chapple Wright was given a seemingly impossible task: to travel to the rainforests of Madagascar and find the greater bamboo lemur, a species that hadn't been seen in the wild by scientists for thirty years. Not only did Dr. Wright discover that the primate still existed, she proved that it lived alongside a completely new species, the golden bamboo lemur. What followed was a love affair with an animal and a country that continues to this day. Dr. Wright is best known for her study of lemurs in Ranomafana National Park (RNP), which she helped establish in 1991.

Centre ValBio ('CVB') was created by Dr. Wright in 2003 under the Institute for the Conservation of Tropical Environments' agreement with the Government of Madagascar. The richness of the critically endangered plants and animals, contrasted with the poverty of the people, inspired her to help both survive in harmony.

CVB's mission is:

- To promote world-class research and biodiversity training opportunities in one of the world's most biologically diverse and unique ecosystems
- To promote environmental stewardship by providing conservation education and ecologically sustainable economic opportunities within local communities
- To provide the local people with knowledge and tools to improve their quality of life

Statement of Purpose

Inspiring passion for biodiversity and conservation science in the tropics.

AinaBe Hall

*Biodiversity Lab
Insect Collection
Conference Room
Herbarium*

Mission Statement

CVB's mission is to be the standard-bearer for research stations in the tropics. By approaching the interrelated problems of climate action, poverty, and health with the interrelated solutions of quality education, economic growth, and scientific innovation, we hope to demonstrate that sustainable communities and reduced inequality are possible alongside a flourishing natural environment.

NamanaBe Hall

*Reception
Dormitories
Conference Room*

Goals

- To inspire innovative approaches to biodiversity research and conservation and provide training opportunities in one of the world's most biologically diverse and unique environments.
- To fully understand the complete ecosystem dynamics of a tropical rainforest, including mapping an entire ecosystem's genomics, and connect this with climate, environmental, and household health data to inform local practices, public policies, and global debates.
- To support environmental stewardship in conjunction with ecologically sustainable economic development for the local Malagasy communities.
- To be the coordination center of a network of field sites facilitating comparative research within Madagascar and also across the tropics to better understand regional and global biodiversity dynamics.
- To integrate ecological restoration, education, human health, agricultural improvement, natural resource conservation, and empowerment of local communities in a One Health framework.
- To develop comprehensive natural history collections representing the biodiversity of Ranomafana National Park.

Education Pavillion

LovaBe Hall

*Administration
Dining Hall*

Letter from the Executive Director

In January, CVB's Chief Operating Officer, Michael Docherty, moved on to a consulting position in the UK. Primatologist Dr. Stan Lhota was kind enough to become our interim Chief Operating Officer for six months. We thank Stan for his tireless work, especially with the *Prolemur simus* translocation from Ivato to Ranomafana National Park. In September, we welcomed Shin Shin Hsia to take over the role officially. Her background in administration, biology, human resources, and finance management made her the perfect candidate for this job. She first came to Madagascar as a Study Abroad student in 2005, and later returned as a teaching assistant. We welcome Shin Shin as she moves into her new position.

This year also marked thirty years of the SBU Study Abroad program. Twenty students from the US and Madagascar attended our January session, followed by eighteen students in the Summer session and ten in the Fall, led by coordinator Dr. Mónica Ramírez. St. Benedict's School from the UK and the University of Florida also stopped by. Two first-time study abroad groups arrived in August and September—Wheaton College from Massachusetts, USA, and Bangor University from Wales, UK. Both had productive experiences at CVB, and we hope they will return next year.

I am also happy to report that our ICTE team is now operating at full capacity. In January, we welcomed Johanna Mitra as our Communi-

cations Officer. In July, Kristin Perrichon joined the team as Finance Coordinator, followed by Patricia Paladines, returning as Program Officer. Jennifer Levine recently joined our team to support CVB in securing funds to sustain and enhance our ongoing initiatives. Richard Bankoff has accomplished amazing progress as our Biological Database Manager. It is a joy to have a full ICTE team together. I would be remiss in not thanking Jesse McKinney, who covered all those positions and Chief Technology Officer responsibilities for over six months.

During June and July, CVB National Director Pascal Rabeson represented CVB at the Society for Conservation GIS workshop in Davis, California and the Esri User Conference in San Diego. Since returning, he's taught the staff all the new GIS technology he learned. In August, the International Primatology Society (IPS) held its international congress in Kuching, Malaysia. Four of our CVB staff, two of our Malagasy graduate students, and four of our research scientists attended. CVB researcher and SBU alumnus Dr. Jonah Ratsimbazafy presided over the meeting as the President of IPS. Department Heads Lovasoa Razafindravony, Dr. Hasina Malalaharivony, Nicolas Rasolonjavato, and Dina Andrianoely gave presentations, and Benjamin Andriamihaja and I were on the organizing committee for the next IPS Conference, to be held in Antananarivo, Madagascar, in 2025.

In early September, Stony Brook University sponsored a stimulating CVB strategic planning session attended by chairman Mark Krasnow and board members Benjamin Andriamihaja, James Brumm, Jim and Robin Herrnstein, Steig Johnson, Wai Poc, and Paul Shepson, as well as Shin Shin Hsia and Lawrence Martin, Director of the Turkana Basin Institute. Topics like future CVB leadership and expansion at Stony Brook and in Madagascar were on the table. We also welcomed Dr. Paul Shepson, Dean of the School of Marine and Atmospheric Sciences at Stony Brook University, to our CVB Board this year.

Afterward, I returned to Madagascar to welcome Blake Moynes and Kendall Long, two stars from the reality TV series *Bachelor in Paradise*. Through social media, they raised awareness of critically endangered lemurs with a worldwide audience and filmed a short documentary, *Lemur Legacy*, arriving in 2024. I returned to NYC in September for the United Nations Climate Week, where I presented on a panel at the Global Futures Conference.

At the end of September, I was proud to see my graduate student, Fanny Cornejo, receive the Indianapolis Prize's Emerging Conservationist Award (pictured right). Fanny has researched lemurs at CVB as well as monkeys and bears in her native Perú. I am proud of her accomplishments in establishing relationships with communities to protect the tropical Andes sites where her research foci, the yellow-tailed woolly monkeys and night monkeys, live. Among other awards, Forbes Perú featured her

on its cover as an up-and-coming young star who is changing the world.

In October, I returned to Madagascar to join more than 30 specialists in surveying the biodiversity at the Ivohiboro Protected Area after it was devastated by Cyclone Batsirai in 2022. With an initial grant from Rainforest Trust, we inaugurated this special relict forest as a community-protected area in 2023, to be managed by MICET. A French documentary film crew led by directors Fitzgerald Jego and Laurent Portes came along to shoot a 90-minute film for the public television network France 5. The surveys included bats, spiders, lemurs, trees, frogs, chameleons, birds, and grasses, and many new species will be described.

In December, Jennifer Levine, Beatriz Otero Jiménez, and I flew to San Francisco to meet Stephen Quake and Mark Krasnow to discuss the future of Tabula Madagascar, a cutting edge project based at CVB to study the genomics of the ecosystem.

My best wishes for a productive and successful 2024.

Dr. Patricia C. Wright
Founder and Executive Director
Centre ValBio



Highlights of the Year

External Visitors | Activities Attended by CVB Staff
Workshops and CVB Activities | External Events

January 5–19
Arrival of 20 SBU Winter Study Abroad students

January 12–16
SBU President Maurie McInnis and US Ambassador to Madagascar Claire A. Pierangelo visit CVB

January 14
The Education Team's paper "Evaluating the Impact of Environmental Education around Ranomafana National Park" is accepted by the American Journal of Primatology

March 8
International Women's Day celebration in Ranomafana

March 9–16
Prolemur simus translocation expedition in Ivato-Karianga

May 29–June 30
Arrival of 18 SBU Summer Study Abroad students

June 6–10
World Environment Day is held in Mananjary

June 14–18
Arrival of 13 University of Florida Study Abroad students

June 26–July 21
Pascal Rabeson attends SCGIS Global Scholarship Program training for ArcGIS Pro in California.

June 26
Independence Day Celebration in Ranomafana; CVB Soccer Team wins the commune championship

September 10–17
Arrival of 36 Bangor University Study Abroad students and instructors

September 13
Blake Moynes and Kendall Long from "The Bachelor" arrive at CVB to film

Sept. 18–Nov. 19
Arrival of 10 SBU Fall Study Abroad students

September 18–20
Fulbright Scholar Dr. Jennifer Verdolin leads a scientific communication workshop attended by 22 CVB staff

September 19
Dr. Patricia Wright speaks at the GF23 Global Futures Conference in New York City

October 16
Madaworks awards scholarships to 10 new students

Oct. 15–Nov. 15
Biodiversity survey of Ivohiboro Protected Area

October 27
World Lemur Day celebration held at CVB for local students

January 14
Mission Green engineers Robbie Oates, Michael Johnson, and Jason Lindsey arrive at CVB to survey sites for canopy walkway

January 19
Cyclone Cheneso makes landfall on Madagascar

February 21
Intense Tropical Cyclone Freddy hits Madagascar

July 2–6
Board Member Dr. Onja Razafindratsima attends ATBC conference

July 5–21
Biodiversity assessment in Manombo with Health in Harmony

July 10–14
PIVOT & CVB hold bioinformatics and genomics workshop

August 10–16
Arrival of 16 Wheaton College Study Abroad students

August 19–25
Representatives from MICET & CVB attend IPS Conference in Kuching



Copsychus albospecularis



Hapalemur aureus



2023 was another extraordinary year and I am delighted to share our accomplishments. This year, we signed a new collaboration agreement with Madagascar National Parks for conducting research within Ranomafana National Park and establishing a canopy walkway—the first in Madagascar. Being able to share the forest of Ranomafana National Park with researchers and visitors alike, but from the new perspective of the treetops, will be a special experience. In terms of education and training, we welcomed numerous study abroad groups this year, and some for the very first time! We are looking forward to welcoming them back next year. Our involvement in research and conservation also extended to the Ivohiboro Protected Area in southwestern Madagascar. Over 30

researchers completed an extensive biodiversity inventory at this new research site, and we are excited to see the science reflected in an upcoming documentary from the French film production company *Haut Et Court*. Lastly, we successfully renewed our 15th *Accord de Siège* between ICTE and the Government of Madagascar, ensuring the continuation of our research, conservation, education, and sustainable development initiatives across the country. I sincerely appreciate everyone’s dedication this year and I look forward to more shared successes in 2024!

- Dr. Benjamin Andriamihaja
ICTE Country Director



2023 was a year of hope for Centre ValBio as we resumed our normal activities following the COVID-19 pandemic. For the first time since 2020, all our study abroad programs have been able to run uninterrupted, and we have welcomed students from across Madagascar, the US, and the UK. We were also joined by many new and returning researchers, conducting studies across research sites in Ranomafana National Park and the Ivohiboro Protected Area, a recently inaugurated protected area managed by MICET.

This year was also marked by the representation of CVB staff at international conferences and workshops, like the International Primatological Society Congress in Kuching, Malaysia,

and the Society of Conservation GIS workshop in Davis, California, which I had the opportunity to attend as an alumnus of the program. These international exchanges are invaluable for increasing the capacity of our staff to assist our researchers further, expanding our knowledge of the newest technologies in conservation, and better preserving our biodiversity here in Madagascar.

Thanks to the outstanding leadership of Dr. Patricia Wright, Dr. Benjamin Andriamihaja, Dr. Stanislav Lhota, and the hard work of the CVB staff, I am very proud of what we have accomplished this year.

- Pascal Rabeson
CVB National Director

I arrived in Ranomafana just after CVB, and all of Madagascar, returned to normal life after the COVID-19 pandemic, and CVB was again busy with researchers and study abroad programs. One thing, however, made this year noteworthy for our whole team but perhaps even more so for me as a primatologist. We attempted to translocate a group of greater bamboo lemurs from a degraded bamboo forest fragment to save the species from local extinction in Ranomafana National Park. It was exciting from the conservation perspective, demanding in terms of logistics, and exhausting to emotions of all kinds. The translocation provided us with crucial lessons that will help shape future conservation efforts for this critically endangered species. There were many

more exciting events at CVB in 2023, such as our new partnership between our Health Team and MSI Reproductive Choices, an expert organization on women’s reproductive health and family planning. I believe that family planning is one of the most important answers to reducing poverty in rural areas and relieving the pressure of the growing human population on nature and natural resources. All this progress would be impossible without our dedicated team, and it was a pleasure for me to work with them closely for several months. Even though I was only at CVB in an interim position, I will always feel like a part of this big family!

- Dr. Stanislav Lhota
ICTE/CVB Interim Chief Operating Officer



The world has rapidly changed over the last few years due to issues such as climate change, war, political instabilities, and disease outbreak. However, I am happy that this annual report makes it clear that one thing remains the same. No matter the state of the world, CVB’s mission has held true, and its hard working staff, research community, and partners have never wavered. I am amazed at the progress we have made over the last year across research, operations, and outreach. With highlights that include expanding our Health Team’s impact through new partnerships, to drawing up the plans for a canopy walkway in Ranomafana National Park, to a massive translocation effort, on all fronts, there has been steady and consistent progress.

However, we must not rest on our laurels. There is still much for us all to do. The world is evolving, and science, conservation, and people must continually change and adapt or be doomed to obsolescence. It is times like these that I am comforted by CVB and the knowledge that so long as it stands then no matter the state of the world, no matter the crisis that faces us, the beacon of light that CVB projects to help guide this world will burn eternal.

- Jesse McKinney
ICTE/CVB Chief Technology Officer





I am Shin Shin Hsia (Xīn Xīn Xià - she/her) and am thrilled to have joined the team in the fall of 2023 as CVB's new Chief Operating Officer. I first came to CVB in 2005 as a study abroad student and returned in 2007 to be a teaching assistant and manage the logistics for a MacArthur Fellows tour. This position gives me the opportunity to combine my educational background in conservation biology and the 10+ years of experience in nonprofit management to something I'm passionate about - moving the mission and vision of CVB forward. So far, it's been a whirlwind four months in which I've been able to meet the ICTE team and CVB advisory board members at Stony Brook, reintroduce myself to the teams at MICET and CVB in Madagascar, meet with organizational and project partners in the Bay

Area, as well as pack up my life in Seattle for the move across the world.

My focus for 2024 is to continue the work of Michael and Stan by building a solid operational and financial foundation so that CVB is set-up to continue Dr. Wright's legacy for the next 20+ years. I will continue to strengthen the strategic direction of CVB centering the core aspects of research, community, and conservation through partnerships with local agencies, NGOs and educational institutes. I'm looking forward to working with the amazing teams at CVB, MICET and ICTE, and my new life in Ranomafana.

- Shin Shin
ICTE/CVB Chief Operating Officer

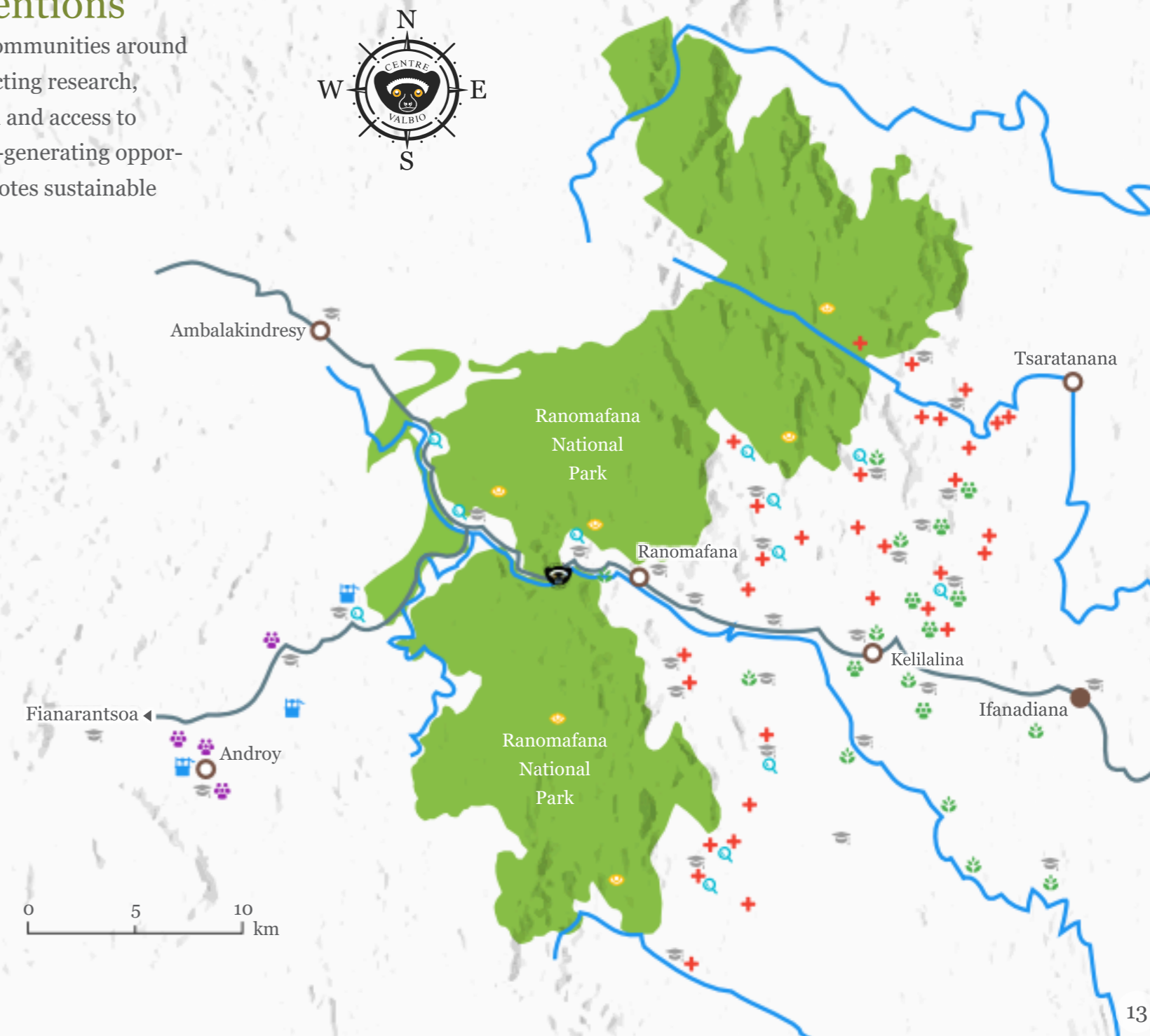


Map of CVB Interventions

Centre ValBio is active in over 75 communities around Ranomafana National Park, conducting research, providing environmental education and access to healthcare, and supporting income-generating opportunities via reforestation that promotes sustainable agroforestry.

Key

- Conservation Club
- Conservation Club & Reforestation
- Reforestation
- Health
- Education
- Participatory Ecological Monitoring
- TEAM
- Boreholes / Wells
- Road
- River
- District
- Commune



Research Department



Researchers

Niainasoa Voary ANDRIATSARAFARA (University of Antananarivo) researched the immunogenetic determinant of RSV infection severity in children living in rural Madagascar.

Dr. Andrea BADEN, Josephine DELANEY-SOESMAN (both Hunter College), Dr. Randall JUNGE (Columbus Zoo), Juliette NYE (Ohio State University), Charline RASOANARIMALALA (University of Fianarantsoa), Mihary Fanantenana RASOAVOLANDRAINNY, and Harizo Georginnot RIJAMANALINA (both University of Antananarivo) continued to study *Varecia variegata* demography, life history, and behavior in Mangevo as part of the Ranomafana Ruffed Lemur Project (RRLP).

Nina BEEBY (CUNY Graduate Center and Hunter College), Charline RASOANARIMALALA (University of Fianarantsoa), and Mihary Fanantenana RASOAVOLANDRAINNY (University of Antananarivo) continued collecting data on the behavioral and nutritional ecology of *Varecia variegata*.

Dr. Christina BERGEY (Rutgers University), Beauriche ANDRIAMBOLAHARIJAONA, and Dr. Rindra RAKOTOARIVONY (both University of Antananarivo) conducted a pilot study on the genetic basis of host preference in mosquitos in villages around Ranomafana National Park.

Dr. Cortni BORGERSON (Montclair State University) and part of her team Dolph RASOLO-

FONIAINA, and Be Noel RAZAFINDRAPAOLY investigated endangered species hunting and human livelihoods to inform lemur conservation strategies.

Morgan CHANEY (Rutgers University), Rota Mamimbahiny ANDRIANTSOA, Dr. Rindra RAKOTOARIVONY, Heriniaina Mamitiana RAKOTOHARY (all University of Antananarivo) investigated the specialized diets and adaptations of bamboo lemurs.

Adrian COLINO BAREA, Lola FERNANDEZ MULTIGNER (both University of Helsinki) and Volaniaina Miharisoa Caren RASOARIMANANA (University of Antananarivo) investigated the implications of changes in bamboo distribution on bamboo lemurs.



Dr. Cindy COSSET (University of Florida), Najoro Jean Chatain ANDRIANALJAONA (University of Antananarivo), and Luke NELSON (University of Sheffield) investigated how species traits can be used to inform landscape connectivity models to guide reforestation initiatives in Madagascar.

Becca DECAMP (Rutgers University) conducted field-based real-time sequencing of lemur seminal genes to understand how sperm competition drives the evolution of sperm proteins in lemurs with different mating systems.

Dr. Mai FAHMY (Fordham University) digitized CVB's Christmas River crocodile subfossil collection to build out an online repository of diverse crocodile-related data.

Ralivalohery FENOMAHANDRY (University of Antananarivo) studied bamboo lemur interactions in Talatakely.

Zo Samuel Ella FENOSOA (University of Antananarivo) studied the germination of mistletoe *Bakarella* in Ranomafana National Park.

Sophia GIBBY (University of Virginia) studied mycorrhizal fungi and reforestation in Ranomafana National Park.

Dr. Daniel GORCZYNSKI (Rice University) and Zo Samuel Ella FENOSOA (University of Antananarivo) assessed associations between habitat and mammalian ecosystem functions in tropical rainforests.

Lindsey HAUFF (Rutgers University) and Noa Elosmie RASOANAIVO (University of Antananarivo) continued investigating rapid evolutionary change in Malagasy primates in Ranomafana National Park.

Amber KHAN (University of Cambridge) conducted interview-based surveys to explore knowledge, attitudes, and practices regarding biotic environmental contact in human health and disease.

Dr. Mark KRASNOW, Dr. Caitlin KARANEWSKY, Chinmay LALGUDGI, Marlie NOCHOMOVITZ, Zeph PENDELTON, Patti YANKLOWITZ (all Stanford University), Dr. Beatriz OTERO JIMENEZ (University of Central Florida), Jeremia RAVELOJAONA (University of Antananarivo), Hajanirina Noëline

Razafindrakoto, Andriamahery Razafindrakoto and Dr. Angela WU (The Hong Kong University of Science and Technology) continued their study of mouse lemur genetics in and around Ranomafana National Park.

Zachary LANGE, Edita FOLFAS, Daniel NICHOLSON (all University of Texas at Arlington), Guillaume DEMARE (Museum für Naturkunde Berlin), and Larissa RAMANDRAIBE (University of Antananarivo) studied the community structure of herpetofauna in Vatoharanana.

Daphne MATTER, Charlotte MATIK, and Tim RAXWORTHY (all University of Michigan) worked with the CVB Education Team to establish an ecological research program in Ran-



omafana High School and to assess classroom dropout proportions.

Franka MEYER (University of Göttingen) investigated the effect of intraspecific variation in fruit traits on animal sensory ecology.

Julianne MONTAQUILA (Rice University), Zo Samuel Ella FENOSOA, Sehen Harilala RANDRIAMIARANTSOA, and Theudy Alexis SOLOFONIAINA (all University of Antananarivo) investigated the role parasitic mistletoe plays in the forest community and ecosystem functioning.

Veronarindra RAMANANJATO (University of California, Berkeley), Ginot KAVA, Tanjoniaina Hery Nirina Patrick RABARIJAONINA, Gaetan RAKOTONDRAISOA (all University of Antananarivo), and Finaritra RANDIMBIARISON (University of Antananarivo & Association Ary Saina) studied the ecology of the rufous mouse lemur.

Hasinala RAMANGASON (University of Calgary), Santatriniaina Hasimbola ANDRI-ANAVALONA, Tsiry Nirina Ary Misa ANDRY NY AINA, Deborah RABESAMIHANTA, Mihajatiana Tanjona RANDRIANIRINA, Harizo Georginnot RIJAMANALINA (all University of Antananarivo), and Hobiniala RAZAFINDRASOA (Institut Halieutique et des Sciences Marines - Toliara) continued investigating the dietary preferences of frugivorous lemurs across varying nutritional landscapes.

Alba SCHIELEN (Leiden University) studied the translocated *Prolemur simus* population in Talatakely.

Diary RAZAFIMANDIMBY (University of Antananarivo) studied the translocated *Prolemur simus* population in Talatakely.

Dr Onja RAZAFINDRATSIMA, Jessica STUBBS, Dr. Jadelys TONOS LUCIANO, Raine ZULUETA (all University of California, Berkeley), Hasinavalona RAKOTOARISOA

(University of Antananarivo), and Diary RANDRIAMORA (Institut d'Enseignement Supérieur Vakinankaratra) studied lemur frugivory and movement ecology in Valohoaka.

Sarah VACCARO (Stony Brook University) investigated the impact of deforestation on aquatic tenrecs in and around Ranomafana.

Sydney VANWINKLE (Rochester Institute of Technology) worked with CVB's Education Team to pilot an impact evaluation protocol on the Conservation Club program.

Volunteers

We'd like to extend our gratitude to all the volunteers who aid our research, conservation and community outreach programs each year. From working alongside our teams on campus to providing expedition support in remote villages, your help is sincerely appreciated.

Cameron BARBER (University of St. Andrews) visited CVB as part of his 'Collections of the Continents' project, which involves working with natural history collections from around the world. At CVB, he worked with our research team to study the subfossil collections

of *Aepyornis*, the extinct elephant bird once endemic to Madagascar.

Lane BUCHER worked with the Restoration Ecology Team to plant native saplings at our restoration sites. During our Conservation Club workshop and roadside trash collection event in June, he also designed a sign for reminding passing taxi-brousses not to litter.

Leah HARRELL (University of Florida) and Adam ABRAHAMS aided CVB's insect expert Emile Rajeriarison with protecting the insectarium specimens from fungal growth and deterioration and outfitting each display case with additional labels and Malagasy translations.

Claire KUBEL (Ecole d'Ingénieurs de PURPAN) is an agronomist who spent a year at CVB working alongside the Restoration Eco-

logy Team to study the impact of agroforestry techniques on banana yields.

Sarah MOFFAT worked with the Education Team to offer tours of CVB to international visitors and aided the Health Team on their 10-day expeditions.

Emma STARINK is a Peace Corps Agriculture Extension Volunteer based in Ranomafana. Three days a week, she works with the Restoration Ecology Team to review grants, plant hundreds of trees at our restoration sites, monitor the health of a dozen nurseries, and pass out applications for new job opportunities to several rural communities. She's looking forward to two more years with the team!

Rhonda STEIN (The Explorer's Club) is an operations support specialist. She provided operations assistance on the biodiversity surveying expedition to the Ivohiboro Protected Area and shared process improvement recommendations with CVB Management.

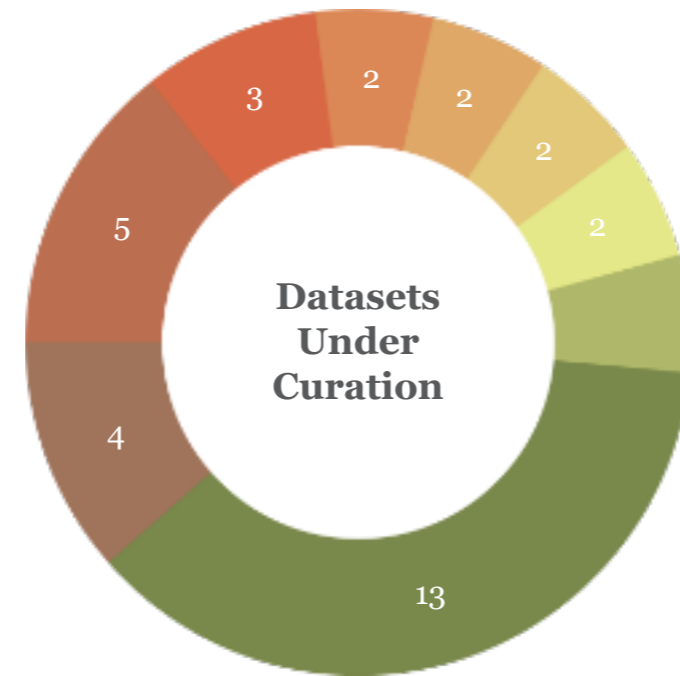
CVB's Data Crucible

Thanks to the Herrnstein Family Foundation and the hardworking team led by ICTE's Biological Database Manager, Dr. Richard Bankoff, we've made significant progress this year in developing our data crucible—a comprehensive digital repository of over 35 years of collected data in Ranomafana. The data crucible will be a searchable collection of CVB's historical datasets with the capability to access, filter, and analyze a wealth of anthropological, paleontological, ecological, genomic, and climate data. This data infrastructure will also make it easier for researchers to enter new data, as well as track and manage their samples, permits, and projects, streamlining and simplifying the research process at CVB.

With the help of CVB's Data Technician Supervisor Dina Andrianoely, Stony Brook University graduate students and engineers Guarav Aggarwal, Shrey Dedhia, and Data Entry Technician Tsioriniaina Rajaonah, this year we were able to take the first steps of ensuring data validation across the dozens of research datasets currently under curation, including scanning and digitally preserving hundreds of historical databooks and primary records and developing procedures for uniform data entry and cleaning. Stony Brook undergraduate Madison Moskowitz also joined the team this year as our media archival assistant, responsible for watching and categorizing hundreds of hours of footage and photographs dating back to the mid-1980s, which will soon be made available to registered users.



As we continue building out the front- and back-end of our data infrastructure into 2024 and beyond, we look forward to sharing this incredible diversity of data and the rich story it tells with the broader research community, universities, and NGOs, for the purposes of furthering integrated conservation and informing future research in Madagascar.



- Behavioral Ecology
- Genomic
- Biodiversity Monitoring
- Human Health
- Conservation Outreach
- Human Non-health
- Environmental Monitoring
- Media
- Morphometric

Tabula Madagascar: Genomes and Transcriptomes for Biodiversity Conservation

The Tabula Madagascar project harnesses the power of genetic data to aid in the conservation of Madagascar's most vulnerable species. The long term goal of the project is to generate reference genomes and transcriptomes for all species in the island. The data generated will aid conservation by aiding in taxonomic identification of understudied species, understanding vulnerable species' adaptive potential, and establishing genetic diversity baselines.

The project started in 2021 as a collaboration between Centre ValBio, Stanford University, and Rockefeller University, and is largely supported by the Eleftheria Foundation. The initial phase of the project has focused on producing genomes and transcriptomes for organisms within the ecological niche of the brown mouse lemur (*Microcebus rufus*) in Ranomafana National Park. In 2023, we completed the proof of concept phase where we collected specimens and conducted genome sequencing for five insect specimens and 2 plant species that are part of the *M. rufus*' diet.

At the time of collection, species-level identification was not possible for these arthropod specimens. Ongoing efforts are dedicated to

exploring their taxonomic identity, with the anticipation that some may represent novel species to science. The team is actively engaged in constructing transcriptomes for these plant and arthropod samples.

In the next year, the team aims to expand our sampling efforts to encompass the approximately 200 species forming the mouse lemur ecological niche. The project aims to conclude this first phase by 2025, with the ambitious goal of completing the genomes and transcriptomes of all species in Ranomafana National Park by 2030.

- By Dr. Beatriz Otero Jiménez





Eco-ethology and Feeding Behavior of *Varecia variegata*: A Comparative Study

Charline Rasoanarimalala

The black-and-white ruffed lemur (*Varecia variegata*) is a critically endangered lemur species found in eastern Madagascar. The behavior of this species can be influenced by the quality of their habitat, notably, food availability, distribution, and quality, as well as changes in forest structure. As a master's student at the University of Fianarantsoa, I am conducting a comparative study of the eco-eth-

ology and feeding behavior of *V. variegata* across two sites with differing forest structures in Ranomafana National Park—Talatakely and Mangevo. My goal is to assess their dietary preferences and explore the different ways *V. variegata* uses the forest canopy in these two sites. Prior to the creation of Ranomafana National Park, the Talatakely site was an intensively exploited and degraded forest. Now, it is a popular tourist site located approximately 10 minutes away from the park entrance. The Mangevo site, on the other hand, is a pristine and relatively untouched forest, situated about an 8-hour walk from Centre ValBio. My research has revealed distinct adaptations in canopy utilization for this species. In Talatakely, where the forest is more degraded, *V. variegata* have developed specific

behaviors to navigate through fragmented canopy areas. In Mangevo, they demonstrated more fluid movement patterns, taking advantage of the preserved canopy for increased mobility and diversified feeding opportunities.

I've come a long way from when I first visited CVB and saw black-and-white ruffed lemurs in the the rainforest. I now work under the supervision of Dr. Andrea Baden, who leads the Hunter College Primate Molecular Ecology Lab (Hunter PMEL). I would like to thank Dr. Baden, Nina Beeby, and the members of the Ranomafana Ruffed Lemur Project at Hunter PMEL for this experience, and, of course, the CVB technicians and staff for all their help over the course of my research and my numerous stays at CVB.



Varecia variegata



Germination of mistletoe *Bakerella* in a south-eastern rainforest of Madagascar

Zo Samuel Ella Fenosoa

I have been studying mistletoes (*Bakerella*) since 2016. My research aims to understand the interactions of these epiphytic and hemiparasitic plants with frugivores. Mistletoes are essential food sources for lemurs and birds in Madagascar because the fruits, leaves, buds, and flowers are available for these animals throughout the year. Some lemur species consume *Bakerella* fruits during periods of fruit scarcity in the forest, making *Bakerella* a keystone species. This year, I focused mainly on

the role that frugivorous lemurs can play in the germination of *Bakerella*. I collected *Bakerella* seeds from the feces of frugivorous lemurs and hand-removed seeds from ripe fruits to understand how the passage of mistletoe seeds through the guts of frugivores may affect the germination by comparing the germination rates of these two categories of seeds.

I am a PhD student at the University of Antananarivo, under the supervision of Professor Hajanirina Rakotomanana and advised by Dr. Amy Dunham from Rice University. I want to thank them for the opportunity to conduct this research and the graduate students from Rice University and researchers from the University of Chicago for their encouragement.

Determining the Socio-Ecological Impact of Field Station Conservation Initiatives

Sydney VanWinkle

Over the course of nine months, I worked alongside CVB's Education Department to evaluate their Conservation Club program. I created and tested an impact assessment protocol, which integrated interview data, surveys, historical program data and geospatial information to uncover programmatic successes and challenges while also providing a deeper understanding of local perceptions of conservation activities.

Our results showed long-lasting impacts of the Conservation Club program in the area surrounding Ranomafana, with lasting, observable impacts even in villages which had not actively participated in the program for many years. The Conservation Club program provides trainings spanning many topic areas. Local communities decide which trainings are most applicable and desirable and then they implement what they learn overtime. We collected photos of projects at each site and gathered information about what worked well, what could be improved in the future and what topics might be of interest as the program continues to develop.

We also collected feedback from CVB program managers across each department, to understand successes and challenges in program implementation. This evaluation has helped lay the ground work for future program evaluations at CVB and will help inform the future trajectory of community-based conservation action, such as the Conservation Clubs.



Lemurs, birds and fruits of the *Ficus* tree: An Interaction Network Within Contrasted Malagasy Habitats

Diary Razafimandimby

Empirical and recent studies have shown the coevolution of fruits and frugivores. For instance, diverse lineages, size, shape, and husk thickness of fruits have all evolved to increase their attractiveness to frugivores. Other signals, such as visual and olfactory traits, can provide information about the fruit's ripeness and nutrient content. Frugivores, in turn, facilitate seed dispersal and seed deposition, and

can promote forest regeneration. Frugivores and fruits therefore foster important mutualistic relationships within their ecosystems. I examine the strength of interaction between Malagasy frugivores and fruiting plants, using *Ficus* as a model species. I conduct my research within contrasted Malagasy forests: Ankarafantsika and Kirindy, representing dry forests, and Andasibe and Ranomafana, representing humid forests. But why is it important to study these relationships within Malagasy ecosystems? Studies have shown that Madagascar is depauperate, or lacking in species variety, when it comes to frugivores. Only small percentages of bird and bat species in Madagascar include fruits in their diet and few are known to be effective dispersers. The majority of Malagasy frugivores are lemurs.

However, a third of lemur species, including frugivorous lemurs, are critically endangered due to habitat loss, hunting and climate change effects. Therefore, I am investigating the strength association between ripe fruits and birds or lemurs by scrutinizing fruit traits and observing fruiting-tree visitors. Furthermore, I aim to clarify how fruit traits correlate with frugivore dispersal ecology. Lastly, by comparing interaction networks in contrasting habitats, I am assessing how the degree of sensitivity between fruits and frugivores changes across humid and dry forests.

I am a PhD student supervised by Professor Aristide Andrianarimisa from the University of Antananarivo and Dr. Omer Nevo from the University of Jena in Germany.

Lemur Behavioral Ecology

Cassandra Andersen

I am a bio-veterinary sciences undergraduate from Dalhousie University's Agricultural Campus in Canada. From June to August, I had the privilege of interning at Centre ValBio alongside the Centre's biodiversity team, contributing to their long-term behavioral ecology datasets on the lemur species in Ranomafana National Park. I observed the golden bamboo lemurs, red-bellied lemurs, Milne-Edwards's sifaka, and red-fronted brown lemurs, recording data on their activity budgets, behavior, and social interactions. I also collected data on Simone, the national park's last remaining greater bamboo lemur (*Prolemur simus*). By chance, my time at CVB overlapped with the Centre's ongoing *P. simus* translocation project, intended to bring a group of greater bamboo lemurs from Ivato in southern Madagascar to Ranomafana, with the goal of preventing the local extinction of this species from the park. I, therefore, had the unique opportunity to help monitor and collect data on the translocated greater bamboo lemurs' activities after their release into the park. This post-release monitoring is crucial for providing insight into the ecology of this southern *P. simus* population, and can be used to inform future translocation attempts for this critically-endangered species.

In the future, I hope to return to CVB to apply my bio-veterinary science background and experience to wildlife conservation on the ground here in Madagascar.



Hapalemur aureus



Prolemur simus

Mouse Lemur Ecology

Veronarindra Ramananjato

My general interests focus on plant-animal interactions and habitat dynamics, with potential applications for conservation efforts. I mostly work with the rufous mouse lemur in Ranomafana National Park.

My primary research goals involve investigating the responses of mouse lemurs to the combined effects of cyclones and habitat degradation. Additionally, I am analyzing the impacts of the changes in population size and body conditions of mouse lemurs on their seed dispersal services. Lastly, I am evaluating the consequences of the extirpation of mouse

lemurs on overall forest integrity. My fieldwork activities include live capture and systematic measurement of mouse lemurs to survey their population and body sizes, night tracking to understand their movement patterns, feces examination to describe their diet, vegetation plots to describe their general habitat preference, and germination experiments to understand regeneration dynamics and their contribution to seed dispersal.

This year, I planned to collect data for six months to build up my dissertation. However, due to cyclones and their detrimental consequences, I needed to spend more time in the field figuring out other methods to fully cap-

ture my research objectives. Therefore, I had to extend my field experience for another three months.

I am currently a Ph.D. student at the University of California Berkeley, working under the guidance of Dr. Onja Razafindratsima. I am grateful to her and the various funders of my project for understanding the difficulties I face and accommodating my needs. I would like to express my gratitude to my fellow students, guides, and research technicians whose invaluable assistance in data collection and protocol adjustments has been central to the progress and success of my work.





Expedition to Ivohiboro

In October, we mounted a month-long scientific expedition to the Ivohiboro Protected Area, a new research site in south-central Madagascar, to accomplish extensive biodiversity surveys across the northern forest of Ivohiboro and the southern forest of Analamary. This community-protected area, funded by Rainforest Trust and The Phoenix Conservancy, and managed by MICET, was recently inaugurated and comprises nearly 3,700 hectares, 800 of which are humid forest.

The expedition aimed to assess species diversity in the rainforest, describe species new to science, and use ingested and environmental DNA to detect cryptic species. Our en-

deavors leveraged the latest conservation technology, including camera traps, audio recordings, and conservation drones. The expedition included CVB technicians and research scientists from institutions worldwide, including Stony Brook University, Missouri Botanical Gardens, La Trobe University in Australia, the American Museum of Natural History, Kew Gardens, the Polish Society for Nature Protection (Salamandra), the Seneca Park Zoo, and more. French director Fitzgerald Jego and his team of filmmakers came along to document the expedition for an upcoming documentary by Haut et Court, titled *The Lost Rainforest* (see page 48).

Upon arriving at Ivohiboro, the team met with the village elders at the recently inaugurated



Conservation Center

Ivohiboro Conservation Center to brief them on the upcoming research activities. They also heard updates from the ten community members training to be park rangers. The researchers then split into two teams, with one group heading to the northern forest of Ivohiboro and the other to the southern forest of Analamary for ten days each. The researchers then switched camps for an additional ten days of surveying.

Within the first couple of days at their respective sites, both teams experienced blistering heat. On the third day, Director Jego and his team noticed red smoke to the north and promptly sent up a drone to record a raging fire nearly two kilometers long, lapping at the edge of the northern forest. As the southern

team worked urgently to contact authorities and prepare for a potential evacuation, CVB technicians on the northern team joined the local community in beating out the fire with tree branches and shovels. After hours of work, the fire was nearly extinguished, and a light rain started shortly after. We later discovered that this was the only place where a firebreak, initiated by our partner, The Phoenix Conservancy, hadn't yet been completed. These firebreaks have been crucial in reducing the number of wildfires around Ivohiboro in the past few years.

The biodiversity survey resumed immediately following the near-evacuation. Dr. Edmund Basham, a canopy specialist (University of Texas at Austin), utilized his tree-climbing ex-



Triaenops menamena

bians in other parts of the world. However, despite its presence on the island, the fungus has not been linked to any mass frog mortalities here. To determine which frog species are present in the protected area and which, if any, might be carrying *Bd*, Matteo swabbed nearly 400 frogs from the canopy, leaf litter, and streams.

Dr. Lily Leahy (La Trobe University, Australia) and Flynn Hogan also set their sights on the forest canopy, scanning for ant colonies and spiders. Dr. Konrad Wiśniewski (Pomeranian University and Salamandra), Justin Lovaso Randriamanandaza, Olafy Tokey Risanirina, and Emilien Razafimahafalisoa used sweep nets, sifting litter, pitfall traps, and direct searches in spider webs, beneath tree bark,



expertise to survey trees for frogs, geckos, chameleons, and more from the ground to the treetops. Working with research technicians Michel Randrianantenaina and Denis Razafit-simalona, they collected data to assess how a recent climate change-induced drought—a phenomenon becoming increasingly intense and frequent in this region—might affect the forest's reptile and amphibian populations.

Collecting data alongside Dr. Basham, Michel, and Denis was Matteo Massoti (Stony Brook University), who studies the relationship between Madagascar's frogs and the deadly chytrid fungi species *Batrachochytrium dendrobatidis* (*Bd*). *Bd*, which has been detected in Madagascar within the last decade, is capable of wiping out entire species of amphi-



Lemur catta

and under stones, to survey about 100 species of spiders, including jumping spiders (*Salticidae*), spitting spiders (*Scytodidae*), and pirate spiders (*Mimetidae*).

Dr. Mai Fahmy (Fordham University and the American Museum of Natural History) analyzed leeches and their blood meals for ingested DNA (iDNA), a tool which has shown to be effective in detecting species otherwise too difficult to spot by eye or on camera traps. She also collected environmental DNA (eDNA), which animals continuously shed into water, soil, vegetation, and the air. Dr. Fahmy's past eDNA and iDNA analyses in the Ivohiboro Protected Area in 2019 revealed several taxonomic families, including shrews, frogs, skinks, and a freshwater fish, which the CVB

team had not found using traditional sampling methods, demonstrating the promise of the eDNA and iDNA collection methods for revealing cryptic species and those new to science.

CVB's Head of Biodiversity, Dina Andrianoely, was in charge of deploying conservation drones, camera traps, and audio moths to aid the team's bird surveys, led by Alexa Lightbourne (Stony Brook University) and Dr. Alex Weibe (Princeton University). Alexa aims to understand how Cyclone Batsirai, which swept through Madagascar in 2022 and devastated sections of Ivohiboro's forest, affected the site's bird populations. Expecting her survey to show a loss of species when compared to a survey in 2016, she instead observed 19 new species for the site, including the Pitta-like Ground-Roller (*Atelornis pittoides*), Ward's Flycatcher (*Pseudobias wardi*), and the Madagascar Nightjar (*Caprimulgus madagascariensis*)—an increase coinciding with the creation of the protected area and firebreaks, and the halting of logging and slash-and-burn agriculture.

Dr. Patricia Wright (Stony Brook University) and research technicians Toussaint Georges and François Zakamanana led the lemur surveying. They saw two groups of ring-tailed lemurs (*Lemur catta*) in the northern forest, each with infants among them. They heard three *Lemur catta* groups in the southern forest but never saw them. The team also captured 15 mouse lemurs and five dwarf lemurs, including the endangered Lavaso dwarf lemur (*Cheirogaleus lavasoensis*) and another species possibly new to science.

Dr. Andrejz Kepel and Aleksandra Lange (Polish Society for Nature Protection, Salamandra) studied the presence of bat populations. Using specialized mist nets, ultrasonic recorders, and cave surveys, Dr. Kepel and Aleksandra were able to locate a group of the Madagascan fruit bat (*Eidolon dupreanum*) high up on a cliff—the first confirmed sighting of this species in the area. Two other species, *Triaenops menamena* and *Myotis goudotii*, were found in the largest cave in Ivohiboro at an altitude of 1,400 meters above sea level. The discovery of a population of *T. menamena* here shifts the known range and altitude for this species, which is typically found at around 500 meters above sea level and further west. The Salamandra team, working with CVB botanist Paul Rakotonirina and technicians from CVB's Insectarium, also collected lichens, mosses, and certain invertebrate groups to analyze back in their lab.

The early findings from this expedition reinforce that Ivohiboro Protected Area is home to a high density of unique and endemic mammal, reptile, amphibian, bird, insect, and plant species, many of which are threatened with extinction in Madagascar. The dedication of the local community to conserving this relict forest and the support of our partners at Rainforest Trust, MICET, the Phoenix Conservancy, and the Ministry of the Environment and Sustainable Development are invaluable to ensuring the continued monitoring and protection of these populations and the forest they inhabit.



Sanzinia madagascariensis

Ambassador Pierangelo & SBU President McInnis Visit CVB

This January, we were honored by the visit of Stony Brook University President Maurie McInnis, her husband Dean Johnson, Stony Brook Vice President for Advancement Justin Fincher, and CEO of the Turkana Basin Institute Dr. Dino Martins. Accompanying the Stony Brook team were the Ambassador to Madagascar and the Comoros Claire A. Pierangelo and Julianna Kim, Chief of the Political and Economic Section at the Embassy. Their visit was a fantastic way to start the new year and to celebrate CVB's 20th anniversary.



Over four days, the Ambassador and President met with CVB's staff to learn about the ongoing projects carried out by our Health, Restoration Ecology, Education, and Research teams. The overlapping Winter Study Abroad program offered President McInnis the unique opportunity to hear stories directly from the twenty Stony Brook study abroad students conducting their independent research in the field. During their own visits to the rainforest, the Ambassador and President observed five species of lemur and countless other species of birds, insects, and amphibians.

For Dr. Dino Martins, an entomologist, CVB's Insectarium was of particular interest. "I was very excited to see the insect collection and to meet Emile [Rajeriarison], one of the research-

ers from this community who has just the most tremendous knowledge about this ecosystem. To see him combining that knowledge with understanding insect diversity...will add to the value of the conservation and protection of this forest," Dr. Martins says. At the Turkana Basin Institute in Kenya, Dr. Martins also hosts Stony Brook study abroad programs. "We are looking forward to building a collaboration between the Turkana Basin Institute and Centre ValBio because we have a very different set of opportunities and landscapes," Dr. Martins says. "[In Kenya,] it is very hot and very dry. We have big animals and mostly pastoralist communities. [In Madagascar,] you have rainforests and small-scale farming, so I think there are huge opportunities to exchange and give students a truly global perspective."



On the last day of their visit, the Embassy and Stony Brook teams traveled to the University of Fianarantsoa to meet with the university's president, Dr. Hajalaina Aimé Richard, in a special reception. They discussed their recent memorandum of understanding and future collaborations between the two universities.

The farewell party back at CVB included the Mayor of Ranomafana, representatives from Catholic Relief Services and Madagascar National Parks, study abroad students, researchers, CVB staff, and Mission Green engineers, who will construct Madagascar's first canopy walkway in Ranomafana National Park. (see page 47). For all, it was a moment to reflect on CVB's two decades of growth and progress and to celebrate all that is yet to come.



30 Years of Stony Brook Study Abroad

This year, we are exceptionally proud to celebrate 30 years of the Stony Brook University Study Abroad program! Since the very first Fall session in 1993, held in the old research cabins of Ranomafana National Park, we have welcomed hundreds of students from Madagascar and abroad to conduct research and experience life alongside the rainforest's incredible biodiversity. This year's programs have been enriching experiences marked by significant academic development and in-depth scientific exploration. Each student brought unique perspectives to the course and honed abilities that will surely be instrumental in their careers. Beyond academics, it was a deeply personal journey as well, granting students the opportunity to form lasting connections with extraordinary individuals from around the world.



Winter Study Abroad

We kicked off 2023 with our first Winter cohort since the COVID-19 pandemic in 2020, led by Dr. Mónica Ramírez, a primatologist from Colombia, and Jon Romano, a zoo veterinarian from Long Island University. Overlapping with the students was a visit from Stony Brook University President Maurie McInnis, providing her with an exciting opportunity to see SBU students in action and out in the field. Between excursions to town, lectures on Madagascar's history and biodiversity given by Dr. Patricia Wright, and guided hikes in the national park, each student developed and executed research projects that aligned with their interests and CVB's missions.

Antsa Ramboninarimalala and Finaritra Benjamin studied how weather can affect activity patterns in golden bamboo lemurs. Sophie Thomas, Alex Casamassima, and Marissa McCandless followed the greater bamboo lemur, Simone, to better understand how her status as the last remaining individual of her species in the park might influence her behavior. Marie Collison closely observed the only infant within the Group I Milne-Edwards's sifaka for a comprehensive look at group dynamics. Megumi Imaizumi, Michelle Kiroff, Tania Valenzuela Lozano, and Julianna Dovi, split their time between Ranomafana's bamboo and guava forests to compare insect abundance and diversity in the two habitats. The students' projects culminated in presentations given to CVB staff, representatives of Madagascar National Parks, and faculty members from the University of Fianarantsoa.

Summer Study Abroad

Our Summer cohort stood out for its remarkable mixture of students from different academic disciplines and institutions. The spectrum of topics investigated by students from the University of Fianarantsoa, University of St. Andrews, UC Berkeley, SUNY Oneonta, Purdue University, and Stony Brook University illustrates a shared commitment to understanding and preserving the intricate ecosystem of Ranomafana National Park. The students tackled a diverse array of ecological and social issues through their research projects, from seed dispersal and parasite analysis and the social behaviors, foraging patterns, and vocalizations of lemurs, to the social implications of health and nutrition in local communities. This melting pot of scholars fostered academic growth and cultivated a multicultural dialogue, emphasizing the global importance of conservation and the shared responsibility of nurturing our planet's biodiversity.



Fall Study Abroad

The diversity of research projects undertaken by our Fall cohort showcases a dynamic engagement with life sciences and proficiency in employing the scientific method, marked by the students' meticulous development of hypotheses and data collection. The range of topics they explored—from Maxwell Eisenberg's public health inquiry to James D. Boglioli's study on the availability of birth control, Ellasun Chamberlain's investigation of soil nitrogen levels and ant populations to Jess Cormier's examination of cross-species parasite infection, and Razafindrasabo Sendrasoa Alice Rosinah's analysis of lemur social dynamics—reflected an integration of various academic fields and viewpoints. Similarly, Colman Shaver's analysis of lemur dietary patterns, Ar-

telen Reyes's research on interspecies parasite transmission, and Lan Yao's study of the effects of tourism on lemur behavior all underscored the students' commitment to contributing meaningful solutions to conservation challenges in the field. Moreover, Kent Hoyama's documentary on reforestation efforts and Arianna Poston's oral surveys on environmental changes illustrate an interdisciplinary approach, combining science with community engagement and storytelling. Lastly, our cross-country trip was an experiential learning journey that brought Madagascar's biodiversity, history, and culture to life, cementing the students' understanding of the ecological and evolutionary contexts that shape wildlife and their habitats.

- By Dr. Mónica Ramírez



Wheaton College

A study abroad class from Wheaton College in Massachusetts visited CVB and Ranomafana National Park for one week in August. The group explored how politics, culture and the environment intersect and influence each other in the inaugural interdisciplinary course *Between Peril and Promise in Madagascar: Intersections of Politics and Biodiversity on the Eighth Continent*, led by Professor of Biology Jessie Knowlton and Professor of Political Science Aubrey Westfall. “We wanted to show the students how the creation of Ranomafana National Park was a collaboration between scientists and local community members, and designed to benefit both biodiversity and people” Knowlton said. “That is the only way conserva-

tion measures are going to succeed into the future.” Some students called the trip life-changing. “It was truly the trip of a lifetime, filled with seeing endemic species, meeting some of the kindest people and experiencing it all with a great group from Wheaton College. But, there were also some really difficult moments in the trip. We saw the harsh realities of life in Madagascar, up close and personal,” said Amanda Bogardus '24, who is double majoring in education and psychology. “We hope that the students took away a deeper understanding of how fragile ecosystems are, and that we are in a critical moment, when some of the earth’s greatest treasures are at risk of disappearing,” Knowlton said.

- By Dr. Jessie Knowlton



University of Florida

Following a four-year hiatus due to the COVID-19 pandemic, we resumed our *UF in Madagascar: Biodiversity and Conservation in a Developing Country* course, which concluded with a week at Centre ValBio. Our thirteen students, with majors as diverse as anthropology, biology, psychology, statistics, and wildlife conservation, were introduced to the work that CVB does for both the community and the forest. As such, they learned the importance of including local people in developing solutions to complex problems in biodiversity and conservation. We revisited the activities that make CVB such an important learning destination—lectures on biodiversity, conservation education, and healthcare pro-

grams; hikes through the national park for lemur spotting and bird watching; and night walks to experience a forest full of sleeping chameleons and geckos. Walking to the rural village of Ambodipaiso to meet with the village’s King and observe day-to-day life, enjoying local music, learning to weave baskets, and discussions with CVB staff and guides helped put into context the work that CVB does with local communities. A Zoom meeting with Dr. Wright provided students with insights into her storied career in Madagascar and was a highlight of our time there. We thank Dr. Wright and her team for sharing their expertise and giving our students the experience of a lifetime.

- By Dr. Michele Tennant
and Dr. Michael Miyamoto



Bangor University

Ranomafana is one name that sends positive tingles down your spine, regardless of whether you're a primatologist. There is a palpable sense of history there, mixed with the appreciation you only get when visiting one of the longest-running field sites that contributes so much to primate conservation. The prospect of planning and leading a first-time primatology field course at CVB with two bus-loads of students from Bangor University in the UK was supremely exciting and intimidating. However, the kind, patient, and exhaustive advice the CVB and MICET teams generously shared helped lay the groundwork for our September trip. Five Bangor staff and two Malagasy colleagues trying to corral, educate, and inspire

28 Bangor and four Malagasy students—what could possibly go wrong? As it turns out, very little. That is a testament to our Malagasy partners' experience and resilience in hosting international university field courses on this scale in one of the most remarkable primate-rich forests in the world. The lemurs were the obvious focus of our primatology and conservation-themed field course. Our students got to see most of the key species of Ranomafana, including the golden bamboo lemurs. Perhaps the highlight of our trip was the time we spent following Milne-Edwards' sifaka. The combination of these animals' charisma with the knowledge that Ranomafana is where they've been intensively studied since 1986 made the entire trip unforgettable.

- By Dr. Alex Georgiev

Education Department



Madaworks

Madaworks aims to change girls' lives by providing them with scholarships to pursue their studies through high school. For the 2022-2023 and 2023-2024 school years, we awarded scholarships to five students and fourteen students respectively, covering the cost of their studies and school supplies. While in the program, the students also take part in park visits and workshops, allowing them to develop critical-thinking skills, positive peer-to-peer relationships, and an appreciation for the natural environment. To date, three students have gone on to become teachers, one is a midwife, two have graduated from university, and six are currently pursuing bachelor degrees. Another six students plan to pursue higher education upon graduating high school.

My Rainforest My World & Rainforest Class

The Education Team designs these programs to bring conservation education directly to the classroom, providing teachers with the resources needed to develop engaging environmental lessons and students with opportunities to learn more about the biodiversity and nature surrounding them. Rainforest Classes take place across 22 elementary, middle, and high schools along the main road, reaching nearly 1,000 students of all ages. The lessons included film screenings and roundtable discussions on the importance of composting, recycling and reusing plastics, and climate change. Our MRMW program aims to reach teachers and students in more remote areas with less access to the main road. With the support of the Apenheul Primate Conser-



vation Trust, we were able to continue providing our MRMW program in 17 remote villages this year, bringing a total of 244 students to Ranomafana National Park and Centre ValBio to learn about their local biodiversity and the value of protecting it.

Conservation Clubs

This year, the Education Team brought the Conservation Club to 13 villages across two districts—Ifanadiana and Lalangina. Our activities were centered around reforestation, park visits, sanitation and hygiene education, promoting traditional art and culture within villages, and improving upon sustainable income-generating activities, such as embroidery, fish farming, and planting coffee nurseries and fruit and vegetable gardens.




Conservation Club in Numbers

 **172**
members visited
Ranomafana National Park

 **55**
local trainings completed

 **31**
expeditions and follow ups

 **4,560**
coffee and fruit
trees planted

Health Department



The Mobile Health Team, led by Dr. Fleurah Zafindrabibisoa and Dr. Thomas Razafimanisa, now serves 30 remote villages around Rano-mafana National Park, providing free health-care services to 12,542 inhabitants. The Team carried out ten expeditions over the year, receiving and treating 3,299 people across the four main intervention areas. This is a 6.3% increase from last year, likely due to population growth, a decline in self-medication and traditional treatments, and increased confidence in the Health Team's services.

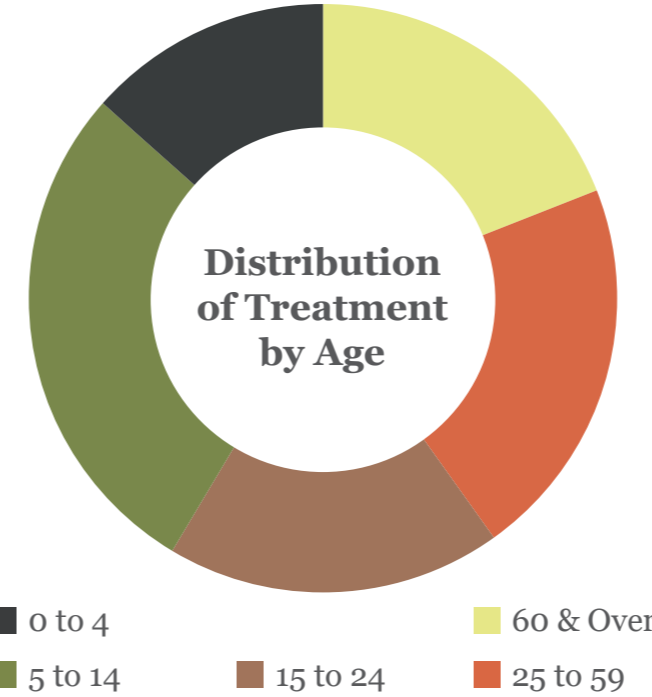
Respiratory illnesses remain the most prevalent health issue faced by patients as a result of the practice of using wood fires to cook in the same room they sleep in. Given this, we encourage villagers to build a small separate

structure outside of their homes for the sole purpose of cooking. We also recorded higher rates of malaria compared to last year, likely due to low stocks of malaria rapid diagnostic tests at community health workers' access points, preventing them from managing malaria cases locally. We are happy to report that, due to the 48 health education and hygiene awareness workshops we carried out this year, diarrhea is no longer one of the five most frequently reported diseases.

Aside from training on sanitation and hygiene, the Team also continued to provide culinary demonstrations to local women as part of our mission to combat malnutrition. This year, we conducted 48 demonstrations using locally available and affordable ingredients, reaching

469 women and 587 children across the four main intervention zones.

In April, we began collaborating with MSI Madagascar to bring reproductive health services to villages within our intervention zones. Over the year, we reached 26 out of 30 villages, making contraceptives like Implanon and intrauterine devices (IUDs) free and accessible to women of childbearing age. Women within the 25+ age group represent our largest number of voluntary users, as our updated census shows that most women aged between 25 and 45 give birth to five children on average, with some women having as many as ten or eleven. By our target year of 2025, we aim to achieve 50% voluntary contraceptive use in all intervention zones.



Restoration Ecology Department



The Restoration Ecology team made great strides in our reforestation and restoration work this year, despite Cyclones Cheneso and Cyclone Freddy hitting Madagascar in early 2023. Working alongside partners such as Catholic Relief Services, TerraMatch, and USAID, we achieved a total of 530 days of expeditions and 207 days of missions.

CVB's Regular Activities

This year, CVB's upper campus tree nursery produced 10,487 seedlings, of which 1,734 were already planted by the Ranomafana Tour Guides Association, the staff of Centre ValBio, and the primary school of Ambodiaviavy. The remaining 8,753 will be planted at the start of the 2024 reforestation campaign. As our tree nursery and others in the region rely on new seeds to produce the seedlings needed for each reforestation project, this year we collected 1,119 kg of native tree species seeds and 551 wildings, or seedlings which have germinated naturally in the wild. We also received five student interns and volunteers this year, aiding us with our reforestation outreach and monitoring. Their internship durations varied from one month to one year.

SPICES

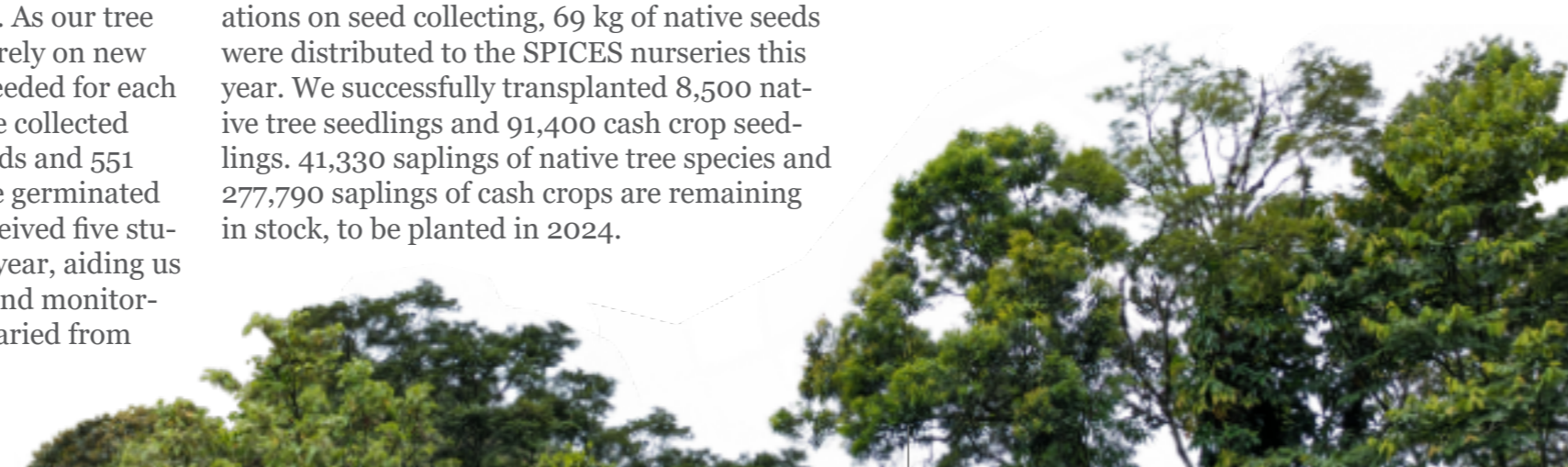
The SPICES project aims to reforest the area around fragmented forests with endemic trees interspersed with cash crops, providing a novel source of income for local communities and creating critical habitat and connected forest corridors for endangered wildlife. Due to limitations on seed collecting, 69 kg of native seeds were distributed to the SPICES nurseries this year. We successfully transplanted 8,500 native tree seedlings and 91,400 cash crop seedlings. 41,330 saplings of native tree species and 277,790 saplings of cash crops are remaining in stock, to be planted in 2024.

TSIRO

Together with the TSIRO Alliance, we helped support the creation of two new VOI (Vondron'Olona Ifotony) this year. A VOI is a local government structure that allows communities to manage, conserve, and protect the natural resources close to their home villages. The village of Ambodivoangy created 'VOI Ranomena' and the village of Ambodimarohita created 'VOI Tsimanavaka'. Together, these two VOI will manage about 5,000 hectares of land, including natural forest.

TerraMatch Project

TerraMatch is a relatively new project within the Restoration Ecology department, having begun in 2022 with a goal of completion by 2026. We aim to plant 800,000 sustainable, high-value forest crops and trees within existing forests. In order to achieve this, agroecology techniques are developed alongside local communities, allowing them to live in harmony with the surrounding forests. This year, we set up 798,000 pots within 40 nurseries and 60,700 saplings were transplanted at the restoration sites targeted for this project.



Greater Bamboo Lemur Translocation

Conservation translocations, or the intentional movement and release of animals to re-establish or reinforce populations of endangered species in the wild, have become increasingly common worldwide. Despite their necessity in the face of climate change, human activity, and habitat loss, this conservation strategy remains a complex and resource-intensive endeavor requiring concerted, coordinated efforts between the scientific community, conservationists, local communities, and government agencies.

The need for such an intervention here in Ranomafana National Park became apparent

within the last few years, as the park's population of the critically-endangered greater bamboo lemur (*Prolemur simus*) gradually dropped to one last individual—a female called Simone. Random fluctuations in the population's sex ratio coupled with individuals having left the park boundary put this species at risk of going locally extinct within the next decade.

Therefore, with generous support from the Holtzman Wildlife Foundation, careful consideration of the risks and challenges involved, and close collaboration with Madagascar National Parks, the Ministère de l'Environnement et du Développement Durable, and local communities and researchers, we decided to translocate a group of greater bamboo lemurs from a small, fragmented forest in the commune of



Ivato in southeast Madagascar to Ranomafana National Park.

Since 2008, we have worked with the local community in Ivato to protect and monitor the population of *P. simus* that persists there. Our joint efforts looked promising as their numbers grew from 43 individuals to 108 in ten years. Sadly, following a food insecurity crisis in 2019, people began growing crops inside the lemurs' habitat and hunting them to sustain themselves. In 2023, only 23 individuals remained.

Our team moved quickly to obtain the necessary permits to carry out the translocation. It was essential to release the lemurs into the park before breeding season began and while young bamboo shoots were still abundant. Getting to Ivato required traveling for several days by car and on foot. With little time and heavy rainfall, which posed a challenge to safely darting the lemurs, the team eventually captured 11 individuals—four males and seven females. On their return to Ranomafana, the team diligently monitored the individuals for signs of distress.

By mid-March, we released the lemurs into a spacious habituation enclosure in Talatakely, where they spent the next month adjusting to their new environment. CVB technicians supplied them with food and protection around the clock, all while preparing for the next crucial phase of the project—post-release monitoring. When we released the lemurs into the park a month later, they split into two sub-



groups and headed in opposite directions. At first, our technicians were able to track the lemurs' locations using radio collars, but one subgroup's unpredictable movements away from the release site and further north into an insecure area of the park soon proved to be a challenge and a serious safety risk for our team. The other subgroup, consisting of all females, remained in a section of Talatakely overlapping with Simone's territory. Despite the females adapting well to the environment and remaining in good physical condition, Simone's relationship with the new females fluctuated between tolerance and aggression.

Ultimately, as is often the case in translocations involving primates, threats like predation, poaching, and dispersal resulted in none

of the translocated individuals remaining within the park boundaries.

Today, all greater bamboo lemurs live in small fragments of highly degraded and constantly changing habitats. Through this endeavor, we gained critical insight into the ecology of Ivato's *P. simus* population and identified where we can improve our future conservation efforts for this species. Translocations will become a vital conservation tool in Madagascar to assure the long-term viability and genetic health of this metapopulation—a tool we are obliged to learn about before the situation of the species becomes even more critical.



Prolemur simus



Mahandry Hugues Andrianarisoa

March 29th, 1991–March 18th, 2023

Mahandry's dedication to Madagascar's biodiversity, forests, and people, was remarkable. He joined us in 2018 to lead the TEAM project and later became the Biodiversity Specialist for both CVB and Catholic Relief Services, after working closely with the Seneca Park Zoo Society in Rochester, New York. His dream had long been to regreen Madagascar, starting with his hometown of Kiranomena. We miss him dearly.



Jean Lucien Talata

January 4th, 1978–October 17th, 2023

Lucien was from Ambodikimba village near Ranomafana and dedicated 22 years to our reforestation department. Quiet, diligent, and a life-long learner, Lucien loved the endemic trees of Ranomafana National Park and worked hard in the CVB nurseries as a specialist propagation agent, collecting and propagating seeds and caring for them as they grew into saplings. We sincerely value his dedication to reforesting Madagascar. He will not be forgotten.



Loret Rasabo

1962–February 23rd, 2023

Loret accompanied Dr. Patricia Wright on her first visit to Ranomafana in 1987, introducing her to the rainforest that was to become the national park and remaining a close friend until his passing. Loret loved birds and eventually became a distinguished and well-known local bird guide. We will be forever grateful to Loret for his expertise, his loyal friendship, and his insights about Madagascar's biodiversity, which he was always keen to share with others.

Richard Leakey Memorial

Richard Leakey (December 19th, 1944–January 2nd, 2022) was not only an icon for wildlife conservation and uncovering human origins, but as a Stony Brook Professor of Anthropology and Founder of the Turkana Basin Institute (TBI) in Kenya, he and his family were close friends of Patricia Wright and Centre ValBio. In July, SBU and TBI, in collaboration with National Geographic, held the Richard Leakey Memorial Conference on the Stony Brook campus to celebrate his life and achievements with a series of scientific presentations about recent paleontology discoveries from around the world. We will miss Richard's keen insights, audacious bravery and his thoughtful wisdom.



Bill Jungers Memorial

We are deeply saddened by the loss of our dear colleague Bill Jungers (November 17th, 1948 – March 28th, 2023). Bill was a brilliant anthropologist, Distinguished Teaching Professor, and the Chair of the Department of Anatomical Sciences at Stony Brook University. Although best known for his work on human evolution, including on 3.4-million-year-old Lucy (*Australopithecus afarensis*), Bill loved Madagascar dearly and devoted most of his career to studying the island's lemur subfossils. His contributions to understanding these extinct lemur species are an outstanding legacy. His memorial was held at Stony Brook in July with a luncheon at Patricia Wright's house with his close colleagues and family.



Canopy Walkway

We are excited to be moving forward with plans for Madagascar's first canopy walkway right here in Ranomafana National Park, in collaboration with MISSION GREEN and the TREE Foundation. Our recent conversations with Madagascar National Parks resulted in a Memorandum of Understanding in support of the construction. This canopy walkway will join eight others around the world as part of MISSION GREEN's goal to build ten walkways in ten biodiversity hotspots within the decade.

The project began in 2022 with preliminary visits by MISSION GREEN Founder Dr. Meg Lowman, TREE Foundation President Elizabeth Moore, and engineer Robbie Oates to sur-

vey potential sites for construction. This January, Oates, along with engineers Michael Johnson and Jason Lindsey, returned to CVB to begin drawing up the plans for the chosen site, which will be easily accessible from the park's main trails.

The walkway, raised about 15 meters above the forest floor, will consist of six cable bridges stretching approximately 150 meters total and connecting platforms built around carefully selected trees. Oates and the team from MISSION GREEN worked with local botanists to identify each tree species, assess their strength and size, and identify those, such as hardwood trees, that would best hold up the platforms. It was also necessary to consider the importance of the trees as food sources for lemurs, as

many of the selected trees bear their preferred fruits. This access to the forest canopy will open up a new avenue for researchers to conduct unique ecological studies involving birds, mammals, reptiles, plants, and more.

The canopy walkway is also expected to boost ecotourism in the region and Madagascar as a whole, providing a gentle and quiet way to explore the forest from the treetops. The walkway's completion will mark a new and exciting chapter in the history of Ranomafana National Park for both researchers and tourists.

We would like to thank Dr. Meg Lowman, Elizabeth Moore, and the teams at MISSION GREEN and the TREE Foundation for their support for this exciting endeavor!



The Lost Rainforest: A Film by Haut et Court

We're excited to share that you will soon be able to virtually tag along on our 2023 Ivohiboro Biodiversity Expedition (see pages 26-29) through the documentary *The Lost Rainforest*, produced by Emma Lepers and Julia Fangeaud of Haut et Court and production manager Nathalie Ducrin.

This 90-minute documentary will first air on France 5, one of France's most-viewed free-to-watch public television channels specializing in documentaries, science, and culture, and then will be distributed and broadcasted internationally. Director Fitzgerald Jego, chief oper-

ator and drone operator Sylvain Georges, sound engineer Julien Vali, and writer Gautier Dubois accompanied the researchers to the Ivohiboro Protected Area to film the surveying activities, including mist-netting birds, trapping mouse lemurs, exploring caves for new bat species, and swabbing frogs for diseases.

Fitzgerald Jego and the film's other director, Laurent Portes, are both well-known and highly experienced French filmmakers who, between them, have directed many nature and natural history documentaries across France, Laos, Egypt, the Galapagos, and more. It is thrilling to think that Madagascar and the unique biodiversity of the Ivohiboro Protected Area will grace the screens of viewers around the world in the coming year.



Lepilemur microdon



Lemur Legacy

We were thrilled to welcome Blake Moynes and Kendall Long, previous contestants on the hit reality series *Bachelor in Paradise*, to CVB this October to partake in their online project to raise awareness of Madagascar's critically endangered lemur species. Blake Moynes, the founder of The SOSA: Save Our Species Alliance, and Kendall Long, host of the Little Curiosities podcast, are known for using their wide-reaching online platforms to support endangered species conservation and to share their passion for nature. They took to social media to share moments of their trip with viewers worldwide, including learning about the history of Ranomafana National Park on a hike with CVB Founder and Executive Director

Dr. Patricia Wright, setting up traps with CVB's research technicians to collect morphometric data on mouse lemurs, and visiting the Ranomafana Nature Center. Blake and filmmaker Scott Bradley also collected footage for their upcoming short documentary, *Lemur Legacy*. The film, expected to be released in 2024, will bring viewers inside the work of the dedicated people helping to protect endangered lemurs and imperiled landscapes in Madagascar.

We would like to extend a big thanks to Endangered Species Chocolate, the Lemur Conservation Network, and, of course, Blake, Kendall, and their team for supporting our work and bringing the biodiversity of Ranomafana to a global audience!





ATBC Conference in India

My two students, Veronarindra Ramananjato, from the University of California, Berkeley, and Hasina Valona Rakotoarisoa from the University of Antananarivo, and I attended the Association for Tropical Biology and Conservation (ATBC) conference that was held in Coimbatore, India in July 2023. This international conference brought together a diverse array of participants from various countries, creating a vibrant, unique and enriching atmosphere for both intellectual and cultural exchange. Not only was it a great opportunity to reconnect with colleagues and friends and hear about the latest advances in the field of

tropical biology and conservation, but also it offered an avenue to make meaningful connections through invaluable networking during breaks and social events. We presented the findings of our research and Veronarindra received an award for best student presentation. Also, as an elected officer of the association's Africa Chapter, I led the chapter's meeting to discuss ideas relevant to its mission and goals.

We brought home great memories of insightful discussions, cultural appreciation, and new scientific knowledge and ideas; and we are looking forward to the next meeting in Kigali, Rwanda in 2024!

- *Dr. Onja Razafindratsima*
CVB Board Member



IPS Conference in Malaysia

It was a privilege to attend the International Primatological Society Congress held in Kuching, Malaysia from August 19 to 25, 2023. The theme of the conference, "Primates and People: A New Horizon," reflected the need for lemur conservation in Madagascar. IPS was an opportunity to show the world the work we do at CVB. Nicolas Rasolonjatovo presented a poster on reforestation with endemic trees; I presented on the importance of nature connectedness; Dr. Hasina Malalaharivony presented on the activity budgets of the greater bamboo lemur; and Dina Andrianoely presented on the our recent greater bamboo lemur conservation

translocation. IPS was indeed a learning opportunity for our team and 500 other participants, with 518 oral and 94 poster presentations. Going to Malaysia was also a chance to encounter the country's unique biodiversity. We saw orangutans, slow lorises, proboscis monkeys, and pitcher plants. We met new people and enjoyed the hospitality of the Malaysian people, our own distant Malagasy ancestry. We are grateful to Dr. Patricia Wright, Primate Conservation Inc., and Stony Brook University for funding our trip. We are already looking forward to the next IPS conference in 2025, to be held in Madagascar!

- *Lovasoa Razafindravony*
Head of Education





Pascal Rabeson at SCGIS California

In April, the Society for Conservation GIS (SCGIS) selected CVB's National Director Pascal Rabeson to participate in their Global Scholarship Program, a month-long training in the latest Geographic Information Systems (GIS) technologies. Pascal is the current president of the SCGIS's Madagascar Chapter, having been an SCGIS Scholar in 2014. For him, the opportunity to reconnect with alums and freshen up his GIS skills was a welcome one. Pascal uses GIS to map CVB's program outreach, to counter illegal activities within Ranomafana National Park, and to train new rangers in mapping the Ivohiboro Protected Area.

This year's training took Pascal to the University of California, Davis, to learn about the newest updates to ArcGIS Pro. Pascal is no stranger to California, having spent extensive time conducting ant research at the California Academy of Sciences before joining CVB. The scholars then traveled to San Diego to attend Esri's User Conference, the largest annual event dedicated to GIS technology. "It was...an important event for me because it was an opportunity to meet the experts from Esri, talk with them one-on-one, and attend different presentations [across] different domains," says Pascal. The training finished with a workshop on ArcGIS Online, a web-mapping software Pascal believes is the future of GIS due to its collaborative abilities. His final project was a StoryMap visualizing how CVB combines

health and education projects into its conservation work around Ranomafana National Park. "I wanted to highlight that it's not just the biodiversity we preserve, but that we integrate the wellbeing of the people living here through environmental education and reforestation projects," he says.

In reflecting on his first exposure to GIS in 1999, during his master's degree at the University of Georgia, USA, Pascal recalls feeling that it was something he would never be able to learn. Now, as President of SCGIS-Madagascar, he works hard to make GIS an accessible tool to other Malagasy researchers and professionals, improving their capacity to apply mapping and spatial analysis skills to solving critical issues across sectors in Madagascar.



Alain Rasolo at The Safina Center Gala

In November, CVB's Malagasy artist-in-residence Alain Rasolo was celebrated at The Safina Center Annual Gala at the Explorers Club for his contributions as a Safina Center Fellow. SC Fellows are creators and connectors who address conservation, the environment, and social justice issues around the world in unique ways. Among the other Fellows present were Ranomafana's Nature Center founder Erik Calender and Dr. Kate Thompson, former SC Fellow and CVB researcher.

Thanks to the Fellowship, Rasolo was able to establish an art gallery and studio based at the entrance to Ranomafana National Park, where he engages Malagasy and international visitors and local school groups in learning about local wildlife and the value of protecting it. Erik Calender was able to complete his PBS series *Menghayati!*, which connects children and families to the natural world, including episodes filmed in Madagascar. In 2018, Kate's dissertation research took her to Madagascar to understand the principal drivers behind wildlife hunting and consumption. "It was the furthest away from the rainforest I've ever been," says Rasolo. "It really was heartwarming to meet my fellows in person and explore New York City. I am thankful to the Safina Center for the unique opportunity."

Congratulations to the Safina Center Fellows for the incredible work they do worldwide!



Workshops & Events

Bioinformatics Workshop ►

From July 10th to 14th, CVB and our partner Pivot held an enlightening bioinformatics and genomics workshop at CVB, inviting 16 scientists and professionals from across Madagascar to take part in the training, including from the Ministry of Public Health, Le Laboratoire d'Analyses Médicales Malagasy (LA2M), Centre d'Infectiologie Charles Mérieux (CICM), and the Universities of Antananarivo and Fianarantsoa. Through lectures and hands-on lab work in CVB's microbiology laboratory, Pivot designed the training with the aim of increasing accessibility to genomics research in Madagascar and building the capacity of Malagasy researchers and professionals

across health and environmental fields to apply genomics to priority issues in their respective sectors. While this year's workshop covered broader topics in bioinformatics, such as sequence assembly, sample processing, and phylogenetic tree construction, workshop leader Dr. Shannon Bennett, Chief of Science at the California Academy of Sciences, placed particular emphasis on the phylogenetic analysis of viruses, specifically SARS-CoV-2, the virus that causes COVID-19. This workshop was a landmark capacity-building event and a continuation of our long-standing partnership with Pivot, which aims to use scientific research to address and improve human health concerns in the Ifanadiana District. We hope to continue providing these tools to Malagasy researchers across scientific fields each year.



▼ *Conservation Club*

With the generous support of Re:wild, CVB held a series of workshops for its Conservation Club members and Tourist Guide Association of Ranomafana. In May, the Education team organized a reforestation session in Ranomafana, a park visit, and training on plant identification led by CVB's botanists Paul Rakotonirina and Dominique Razafindraibe. The training held in June focused on sustainable livelihoods like fruit drying and mushroom farming. The series concluded with a clean-up event on the road between the Andriamamovoka Waterfall and the park entrance. As a popular spot for spotting mouse lemurs and chameleons on night hikes, the Tourist Guide Association led the initiative and collected four large bags of trash.



◀ *Storytelling For Conservation*

From September 18th to 20th, Dr. Jennifer Verdolin, animal behavior expert, faculty member at the University of Arizona, and Fulbright Scholar hosted a workshop for CVB staff titled *Storytelling for Conservation: Integrating Communities into Science Communication*. The workshop centered around building skills in different mediums of storytelling, such as photography, videography, podcasts, and more, to achieve tangible and meaningful impacts and solutions to environmental and conservation issues. We were happy to have staff from every department participating and producing their own science communication products. We'd like to thank both the Fulbright Regional Travel Program and Dr. Verdolin for making this workshop possible!

▲ *Teacher Training*

From July 10th to 14th, the Education Team hosted a workshop for 80 local primary school teachers from 17 remote schools around Ranomafana. The training was led by Faly Rafiefera from *Fanabeazana Miabo Sekolin'ny Reny Aman'dray*, and assisted by Lalasoa Raveloson. The workshop aimed to equip teachers with the tools and resources they need to integrate environmental education into their classrooms and to employ positive education techniques, an approach centered around individual students' well-being. Working together, the teachers developed engaging lesson plans on biodiversity and conservation and practiced creating tree nurseries and fruit and vegetable gardens, which they will implement at their schools with their students.



▲ *World Lemur Day*

On October 27th, we celebrated World Lemur Day at CVB, complete with a full day of lemur-related activities. Our SBU Study Abroad students worked hard to decorate the outdoor Education Pavilion for our talent show and story-telling sessions. Students from Inanda Elementary School and Ifanadiana High School joined us in a park visit, followed by face painting and watercolor painting, a screening of *Island of Lemurs: Madagascar*, and more. We want to thank Iris de Winter and the Apenheul Primate Conservation Trust for supporting this year's festivities and helping us raise awareness locally about the need to protect these unique primates.



Publications and PhD Theses

Publications

Batist, C.H., Bliss, M., Weisenbeck, D.R., Rafamantanantsoa, R., Razafindrakoto, G., Ranaivosolo, J.W., Baptiste, V.J., Wright, P.C. and Donohue, M.E., 2023. Updated lemur species ranges in Madagascar's Corridor Forestier d'Ambositra Vondrozo (COFAV). *Folia Primatologica*, 1(aop), pp.1-17. DOI: 10.1163/14219980-bja10012

Batist, C.H., Razafindraibe, M.N., Randriamanantena, F. and Baden, A.L., 2023. Bioacoustic characterization of the black-and-

white ruffed lemur (*Varecia variegata*) vocal repertoire. *Primates*, pp.1-15.

Beeby, N., Rothman, J.M. and Baden, A.L., 2023. Nutrient balancing in a fruit-specialist primate, the black-and-white ruffed lemur (*Varecia variegata*). *American Journal of Primatology*, p.e23484. DOI: 10.1002/ajp.23484

Donohue, M.E., Hert, Z.L., Karrick, C.E., Rowe, A.K., Wright, P.C., Randriamanandaza, L.J., Zakamanana, F., Nomenjanahary, S., Everson, K.M. and Weisrock, D.W., 2023. Lemur gut microeukaryotic community variation is not associated with host phylogeny, diet, or habitat. *Microbial Ecology*, pp.2023-

01. DOI: 10.1007/s00248-023-02233-7

Everson, K.M., Pozzi, L., Barrett, M.A., Blair, M.E., Donohue, M.E., Kappeler, P.M., Kitchener, A.C., Lemmon, A.R., Lemmon, E.M., Pavon-Vazquez, C.J. and Radespiel, U., 2023. Not one, but multiple radiations underlie the biodiversity of Madagascar's endangered lemurs. *bioRxiv*, pp.2023-04. DOI: 10.1101/2023.04.26.537867

Fahmy, M., Andrianoely, D., Wright, P.C. and Hekkala, E., 2023. Leech-derived iDNA complements traditional surveying methods, enhancing species detections for rapid biodiversity sampling in the tropics. *Environmental DNA*. DOI: 10.1002/edn3.474

Lambert, K., 2023. Wild Brains: The Value of Neuroethological Approaches in Preclinical Behavioral Neuroscience Animal Models. *Neuroscience & Biobehavioral Reviews*, p.105044. DOI: 10.1016/j.neubiorev.2023.105044

Mancini, A.N., Chandrashekar, A., Lahitsara, J.P., Ogbeta, D.G., Rajaonarivelo, J.A., Ranaivorazo, N.R., Rasoazanokolona, J., Safwat, M., Solo, J., Razafindraibe, J.G. and Razafindrakoto, G., 2023. Terrain Ruggedness and Canopy Height Predict Short-Range Dispersal in the Critically Endangered Black-and-White Ruffed Lemur. *Genes*, 14(3), p.746. DOI: 10.3390/genes14030746

Otero Jimenez, B., Montaña, R., Rothman, R.S., Williams, R.C. and Wright, P.C., 2023. A surprising haven: The biodiversity of an old-growth forest amidst a scorched landscape in Madagascar. *Conservation Science and Practice*, p.e12993. DOI: 10.1111/csp2.12993

Pando, C., Hazel, A., Tsang, L.Y., Razafindrana, K., Andriamiadanarivo, A., Rabetombosa, R.M., Ambinintsoa, I., Sadananda, G., Small, P.M., Knoblauch, A.M. and Rakotosamimanana, N., 2023. A social network analysis model approach to understand tuberculosis transmission in remote rural Madagascar. *BMC Public Health*, 23(1), pp.1-11. DOI: 10.1186/s12889-023-16425-w

Razafindravony, L.E., Donohue, M.E., Docherty, M.A., Maggy, A.M., Lazaso, R.S., Rafanomezantsoa, O.J.S., Ramarjaona, R.A.,

Randriarimanana, J.N.M., Rafanambinantsoa, A.O., Randrianarivelo, H., and Wright, P.C., 2023. Evaluating the impact of environmental education around Ranomafana National Park. *American Journal of Primatology*, e23477. DOI: 10.1002/amp.23477

Tecot, S.R., Birr, M., Dixon, J., Lahitsara, J.P., Razafindraibe, D., Razanajatovo, S., Arroyo, A.S., Tombotiana, A.V., Velontsara, J.B. and Baden, A.L., 2023. Functional relationships between estradiol and paternal care in male red-bellied lemurs, *Eulemur rubriventer*. *Hormones and Behavior*, 150, p.105324. DOI: 10.1016/j.yhbeh.2023.105324

Tecot, S.R., Ossello, G.M., Smith, P.G., Rakotonirina, L.H., Telo, A., Rasendry N, V., Rakotonirina T, E. and Peñaherrera-Aguirre, M., 2023. Diurnal fecal glucocorticoid metabolite rhythms in a cathemeral primate, the red-bellied lemur (*Eulemur rubriventer*), and across mammalian species. *American Journal of Primatology*, p.e23521. DOI: 10.1002/ajp.23521

Thompson, K.E., Borgerson, C., Wright, P.C., Randriamanantsy, J.M., Andrianantenaina, M.Y., Andriamavosoloarisoa, N.N.M., Razafindrahasy, T.A., Rothman, R.S., Surkis, C., Bankoff, R.J. and Daniels, C., 2023. A Coupled Humanitarian and Biodiversity Crisis in Western Madagascar. *International Journal of Primatology*, pp.1-28. DOI: 10.1007/s10764-022-00338-3



Myotis goudotii (merged image)



Hapalemur aureus

West, K., Tecot, S., Walker-Bolton, A.D., Borger-son, C., Wright, P.C., Razafindravony, L., Andri-amiadanarivo, A., Andrianoely, D., Celestain, J., Elison, P. and Jordan, J., 2023. An overdue cata-lyst: Limitations imposed by COVID-19 im-proved capacity building in community-led en-vironmental education in Madagascar. *American Journal of Primatology*, 85(5), p.e23497.

Non-Academic Articles

Clark, C., 2023. A Medical Entomologist Battles Bubonic Plague in Madagascar. Re-trieved from: https://news.emory.edu/features/2023/06/er_medical_entomologist_madagascar_06-06-2023/

Dingli, L., 2023. Patricia Wright: The Tireless Protector of "Wandering Souls"; *Biodiversity MAG #6*. Retrieved from: <https://online.flip-builder.com/LaurentDingli/mwhp/>

Dunaief, D., 2023. SBU's Patricia Wright pre-pares to release endangered lemurs into Mada-gascar national park w/videos. Retrieved from: <https://tbrnewsmedia.com/sbus-patricia-wright-prepares-to-release-endangered-lemurs-into-madagascar-national-park-w-videos/>

SBU News, 2023. Critically Endangered Greater Bamboo Lemurs Moved to Rano-mafana National Park. Retrieved from: <https://news.stonybrook.edu/newsroom/press-re-lease/general/critically-endangered-greater-bamboo-lemurs-moved-to-ranomafana-na-tional-park/>

SBU News, 2023. Stony Brook Celebrates Cli-mate Week NYC, Sept. 17-24. Retrieved from: <https://news.stonybrook.edu/university/stony-brook-celebrates-climate-week-nyc-sept-17-24/>

Stony Brook University Magazine, 2023. Re-flections of Africa. Retrieved from: <https://mag.stonybrook.edu/africa/>

PhD Theses:

Fahmy, M.A.E., 2023. Assessing Biodiversity in Madagascar with Leech-Derived iDNA: Methodological Advancements and Ecological Insights. Doctoral dissertation. Fordham Uni-versity, New York.

Guinart, A.B., 2023. Shaking environmental education paradigms: Practitioners' narratives, contextual elements, and biocultural ap-proaches. Doctoral dissertation. University of Helsinki, Finland.

King, E., 2023. Global Reforestation Assess-ment: A Case Study of Reforestation and Spe-cies Survival in a Southeastern Madagascar Community. Doctoral dissertation. George Ma-son University, Virginia.

Mancini, A., 2023. Environmental Drivers of Dispersal in Black-and-White Ruffed Lemurs (*Varecia variegata*). Doctoral dissertation. The Graduate Center, City University of New York.



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We cannot thank you enough.

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