Duke LEMUR CENTER
SAVA CONSERVATION
Madagascar

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Conservation news from the Sambava-Andapa-Vohemar-Antalaha region of NE Madagascar

SPECIAL POINTS OF INTEREST:

- **ADES Stove Distribution**
- **Bamboo Lemur Dependence on Non-native Bamboo**
- **Environmental Education Training at Ivoloina**

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In the Heat of the Moment:

Searching for Fat-Tails in Rainforest Lowlands of Marojejy

by Dr. Marina Blanco

I cannot bear to stay inside my tent – I am sweating profusely, just sitting by the open door, in the shade. A few days ago we left the coastal town of Sambava in two 4x4s, drove for less than 2 hours and hiked the rest of the day, for about 6 hours, forming an endless line with 43 porters carrying equipment and food for a 3-week expedition. We stopped a couple of times to rest and to switch porters between villages. I enjoyed a warm orange Fanta along the way, a delightful treat even for a non-soda drinker like me. After a short night at the Madagascar National Park office in the village of Antongodriha and a quick breakfast the following morning –a sizable pile of rice– we set our sight to our destination: LAT = -14.323508°, LONG = 49.686426°.

The village of Antongodriha. *Photo by Marina Blanco*

Earlier this year, Dr. Erik Patel and I had searched Google Earth with hopes of finding a low-elevation patch of dry forest within Marojejy National Park to conduct surveys, and that's where the pin had dropped on the satellite image. The main objective of the expedition was to find out whether *Cheirogaleus medius*, the fat-tailed dwarf lemur, was living there. Fat-tails are commonly found in western deciduous forests in Madagascar and appear to be dry forest specialists. Yet, the species has been previously observed in northern and northeastern Madagascar (e.g., Daraina forest) and thus, it was at least conceivable to find the species somewhere within the park. Our previous expeditions to Marojejy had only included areas around the tourist circuit (far east side of Marojejy), where we were able to identify not one, but three dwarf lemurs species: *C. sibreei* (a high altitude species, found above 1400m), in addition to *C. crossleyi* and *C. major*, the two largest dwarf lemur species, living side by side at lower elevation rainforest, near Campsite 2.

As we arrived at our theoretical destination on the complete other side of the park (far west side), GPS in hand, we found ourselves on the top of a grassy hill. Thus, we had to

In the Heat of the Moment Continued

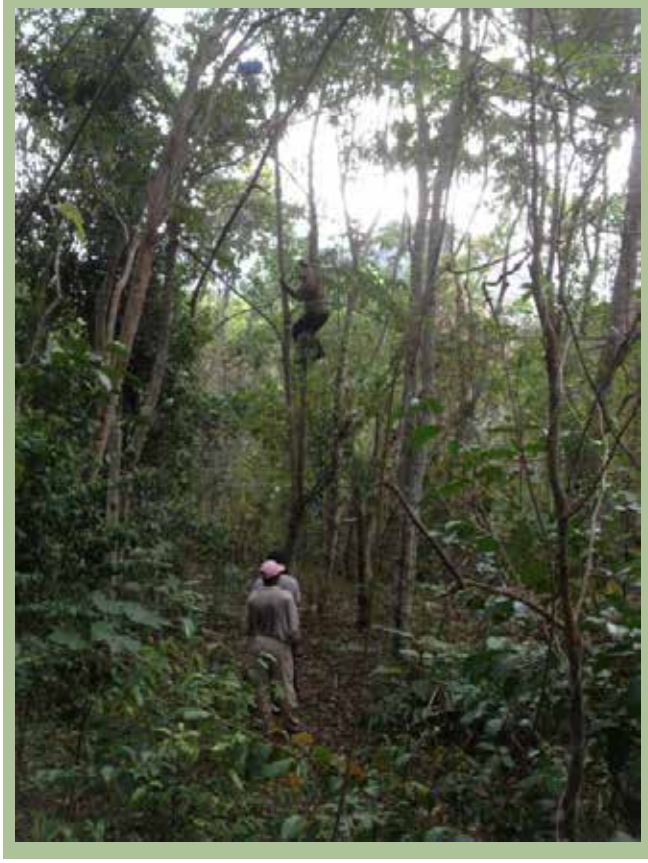
continue our search about 1.5 km downhill for another hour or so, hiking along the margins of a wide river (the natural divide between the park and bare areas patchily occupied by human settlements) until we came across a fairly pristine location to set up camp. Our tents were scattered between rocks and thorny vines, close to a lively stream with small waterfalls flowing into a pond of sorts. A brief traditional speech was made by a local resident and small amounts of honey and tokagasy (the locally-made rum) were offered to the ancestors to respectfully request permission to camp and conduct our surveys.

Early expeditions by Safford et al (1988) and Goodman et al (2000) revealed that the far west side is somewhat drier than the east in part due to a rain shadow as the highest areas of massif are on the east side. Villagers on the west side are acutely aware of this and are not able to grow much vanilla but grow coffee and other crops more suited to a slightly drier landscape. In fact, many migrate each year to the east side to grow vanilla. During our prospections of the area, led by member of the local village park guards (CLP's), we discovered that the open areas identified as such from satellite images were partly secondary growth forest areas previously cleared to grow coffee, vanilla, fruit trees and rice. We also discovered why it was so easy to navigate this forest. As it turned out, we were using trails previously cut by illegal loggers, who had removed and transported precious woods out of the park in the times following the "coup d'état" in 2009.

Despite these discouraging signs of habitat disturbance, we combined our efforts and organized several night walks and trapping sessions. Traps were set near fruiting/flowering trees between 4-15 m high and baited with large pieces of smelly bananas (in order to make sure we had enough provisions, we crossed the river on Sundays to visit the small village of Anketsahely, just outside of the Park, to purchase ripe bananas, coconuts and an occasional chicken). During the nights, we would record the location of dwarf lemurs and during the day we would relocate traps in proximity to those sightings. In the end, our trapping efforts resulted in the worst-ever record of my fieldwork history, only 1 capture over 399 trapping opportunities. Despite these challenges, we were able to confidently report that: 1) *C. medius*, the fat-tailed dwarf lemur is not present in this forest; 2) *C. crossleyi* was the species captured and observed during our night walks; 3) Crossley's dwarf lemurs occupied a variety of areas, including more pristine forest as well as disturbed areas and secondary growth forest in proximity to forest edge.

During one of our last nights in the field, as I was trying to sleep on top of my sleeping bag and wishing I had a tent with a better ventilation system, I thought of how difficult it may be to hibernate in a place like this. Sure, it was not winter and temperatures were not necessarily representative of those characteristic of the hibernation season, but I had gathered from the local assistants that this area was fairly warm year round. If energy savings are dependent upon decreasing metabolic rates by means of reducing body temperature (which approximates the immediate environment during hibernation), would it be worth remaining inactive for a large part of the year, as opposed to extending the reproductive season, provided food was still available? There is so much we just don't know about hibernation in the eastern lowlands. I realized that I was replacing my obsession of finding fat-tails for that of studying hibernation in these truly tropical forests (I have dedicated my hibernation work to dwarf lemurs inhabiting montane and high-altitude habitats thus far). In other words, will dwarf lemurs from the lowland rainforests of Marojejy unlock some of the remaining mysteries of tropical hibernation? We hope to eventually find out.

In the Heat of the Moment Continued



Intensive GIS and GPS Training by FANC and Mitsinjo

by Dr. Erik Patel

Effective forest management requires basic competency with handheld Global Positioning System units (GPS) and Global Information System (GIS) software. Using satellite photos to assess changes in forest cover and GPS points to track habitat disturbance, animal locations, and park boundaries, are powerful tools available to conservationists. Although this mapping technology has improved greatly in the last decade, park managers in developing countries may still lack sufficient training or equipment. When I first began my dissertation research in mountainous Marojejy National Park in 2001, there were no retail GPS units which could obtain GPS point fixes within any reasonable amount of time and with a tolerable amount of error. Around that time, GPS error in rainforests worldwide was frequently reported between 10m and 30m (Dominy and Duncan, 2001). Fortunately, there are now an assortment of effective hand-held GPS units which can quickly and accurately (less than 5m or 10m of error) obtain location fixes even within deep forest cover in Madagascar. Moreover, open-source GIS software such as QGIS offers a no cost powerful and available means to evaluate satellite imagery and create maps.

GIS/GPS training team and participants at SAVA Conservation office.

In October, SAVA Conservation hosted three Malagasy trainers from the Finnish Association for Nature Conservation (FANC) and Mitsinjo, a Malagasy environmental organization. The intensive 7-day training took place in the SAVA Conservation office with about 7 participants including staff from Marojejy National Park, the World Wildlife Fund (WWF), reforestation collaborators Graine de Vie, and our own staff. The first few days included a detailed GPS training. Many participants had used GPS units before, but were unaware what settings were ideal, how to change the settings, the difference between "tracks" and "waypoints", and how to us the "point and go" function in which the GPS machine uses its digital compass to point and lead one directly to a particular point of interest. The second half of the training taught participants how to download the GPS points and use them to make maps using various free software packages such Base Camp, Google Earth, and QGIS. Finally, QGIS was used to examine and manipulate high resolution (.5m) satellite imagery shared by FANC. We thank FANC and Mitsinjo for their collaboration!

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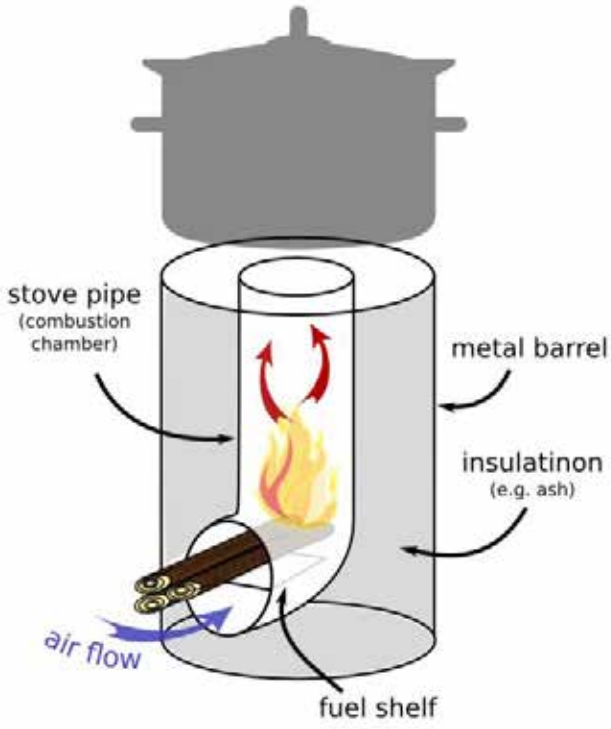
Huge Interest in ADES Fuel-Efficient "Rocket" Stoves!

by Dr. Erik Patel

In November, DLC-SAVA Conservation hosted several representatives from the Swiss-based non-profit organization ADES (Association pour le Développement de l'Energie Solaire Suisse – Madagascar) which has many branch offices in Madagascar. They not only produce a variety of solar ovens but produce the highest quality "rocket stoves" in Madagascar since the strong metal housing comes from Switzerland and the highest quality Madagascan clay from the Fianarantsoa region is used. Rocket stoves (see diagram) are fuel-efficient stoves that use much less charcoal or wood than traditional open fires or locally made stoves. This not only eases logging for fuelwood and saves people money, but benefits human health as well since smoke from cooking fires is a substantial contributor to chronic respiratory disease. Greenhouse gases which contribute directly to climate change, such as carbon dioxide, methane, and nitrous oxide, are also heavily emitted from cooking fires (for more discussion and references see our February 2014 newsletter, page 4-5).

Previously, we had collaborated with Madagascar National Parks to replace all the stoves at the Marojejy National Park campsites with ADES rocket stoves. These stoves were very popular with all Marojejy cooks who unanimously raved about how well these metal stoves retained heat and how much less charcoal was needed. More recently, we have strived to introduce these stoves more widely in the SAVA region. One challenge we face is that they must be shipped by truck from Madagascar's capital Antananarivo (a two to three day drive, including a section of very bad road).

In November, we hosted several representatives from ADES who arrived with 40 stoves. We held several public presentations in Andapa, Sambava and near Marojejy National Park, and were quite surprised by the amount of public interest! All 40 stoves sold within two days and we received hundreds of orders for more stoves by people willing to pay for them! We buy the stoves from ADES but sell them at a reduced price to make them more affordable for local residents. We found that rural communities living near Marojejy mostly requested the small wood-burning stoves but middle-class residents in the cities of Sambava and Andapa were generally more interested in the charcoal burning stoves of all sizes. The tremendous demand for this product speaks to its quality and need, and we are working on a plan to meet that demand in a sustainable way.



Rocket stove. *Courtesy of Wikipedia*

Remarkable Dependence on Non-native Bamboo:

First Account of the Diet and Ranging of the Northern Bamboo Lemur (*Hapalemur occidentalis*) in Madagascar at Antanetiambo Nature Reserve

by Erik R. Patel, Desiré Rabary, and Jacques Harson Tonkasina

The northern bamboo lemur (*Hapalemur occidentalis*) is one of seven species of bamboo lemurs in the genus *Hapalemur* endemic to Madagascar. Although this species has a large geographic range across northeastern and northwestern Madagascar, and is not one of the rarest lemurs (IUCN Red List status "vulnerable"), it is a virtually unstudied species. As of 2010, only approximately 18 individuals were found in European zoos (IUCN, Andriaholinirina et al., 2014). Other than a few survey reports, almost nothing is known about its basic natural history, diet, ranging or habitat preferences. To date, long-term studies of wild bamboo lemur feeding ecology and ranging have only been conducted on *H. griseus* (Tan, 1999; Grassi, 2006), *H. aureus* (Tan, 1999), *H. alaotrensis* (Mutschler, 1999), *H. meridionalis* (Eppley et al., 2011), and *Prolemur simus* (formerly *H. simus*) (Tan, 1999; Wright et al., 2008).

H. occidentalis* eating young dwarf bamboo shoot.** ***Photo by Kyle Smith

In July 2014 we began the first study of *H. occidentalis* diet and ranging after spending months habituating a single group of three individuals (1 adult male, 1 adult female, 1 subadult male) in a small 17 hectare nature reserve in northeastern Madagascar called Antanetiambo. This reserve is a mixed landscape of secondary forest with some fragmented primary forest areas as well as formerly cultivated agricultural land. Northern bamboo lemurs have existed here since the reserve was founded about 15 years ago, and probably for decades before that (Desiré Rabary, pers. comm.).

Five-minute instantaneous group scan samples were conducted from early in the morning until dusk, six days a week, from July 1 to December 10 2014. The study is still

Remarkable Dependence on Non-Native Bamboo Continued

ongoing, but results presented here are from this five month period. Data books were not used. All data was recorded digitally on Garmin GPSMAP 64s handheld gps units. A GPS point was taken every five minutes while in close proximity to the group. GPS error was always less than 8m, and generally between 4m and 6m. Feeding and activity budget codes were entered as digital notes. Plant foods were identified by a professional botanist (Richard Randrianaivo) from Missouri Botanical Garden who also formally assessed the reserve's habitat through 9 botanical plots. Home ranges analyses were conducted with the software package Ranges 9 v1.1 (Anatrack, Ltd.). Fresh fecal samples were collected for parasite analysis and stored in Meridian Bioscience Para-Pak parasitology transport vials from Fisher Scientific (Catalog Number: 14910129). High-definition videotape was collected using a Canon 32GB Vixia HF R52 full HD camcorder.

94.4 hours of feeding data were obtained and over 6000 GPS points were recorded. For the home range analyses, to minimize spatial autocorrelation, only points every 25 minutes were analyzed. Results of the dietary study are displayed in Table 1. Remarkably, 80.2% of their feeding time was spent feeding on *Phyllostachys aurea* which is a non-native Chinese bamboo known more commonly as dwarf bamboo or fishpole bamboo. The second most preferred food, *Dendrocalamus strictus* (which accounted for 5.2% of feeding time) is also not native to Madagascar, but rather is of Indian origin. Plant parts consumed from these two most preferred foods included the young stalks, new branches, new shoots, and the base of leafs, but the large leaves themselves were never eaten, nor were the mature stalks. These two species of bamboo have not before been documented as part of the diet of any wild bamboo lemurs in Madagascar. Geophagy or soil consumption was regularly observed and thus far ranks as the third most preferred food! Many other bamboo lemur studies have observed soil consumption. It may rank unusually high in our case due to a limited number of observation hours.

Analyses of their ranging patterns further confirmed the importance of *Phyllostachys aurea* in their diet. 93.1% of their ranging points were inside two large patches of *Phyllostachys aurea* (see Figure 1 on page 8)! Indeed, their entire 50% kernel core home range (.28 hectares) is deep inside the northern patch of dwarf bamboo (see Figure 2 on page

Table 1. Percentage feeding time on all H. occidentalis foods from July 1 to December 10, 2014

Type	Family	Food Species	Percentage Feeding Time	Feeding Minutes	Previously Described Hapalemur Food?	Native/Endemic?
Bamboo	Poaceae	Phyllostachys aurea	80.21	4544	NO	NO
Bamboo	Poaceae	Dendrocalamus strictus	5.15	292	NO	NO
N/A	N/A	Soil (Geophagy)	3.09	175	YES	N/A
Tree	Sapindaceae	Litchi chinensis	2.17	123	YES	NO
Tree	Moraceae	Artocarpus heterophyllus	1.91	108	YES	NO
Grass	Poaceae	Panicum glanduliferum	1.22	69	YES	YES
Tree	Euphorbiaceae	Macaranga cuspidata	1.13	64	YES	YES
Grass	Poaceae	Olyra latifolia	1.06	60	NO	NO
Tree	Moraceae	Ficus reflexa	1.04	59	YES	YES
Shrub	Zingiberaceae	Aframomum angustifolium	0.94	53	YES	NO
Shrub	Melastomataceae	Clidemia hirta	0.67	38	YES	NO
Grass	Cyperaceae	Scleria lagoensis	0.62	35	YES	YES
Tree	Moraceae	Ficus tillifolia	0.44	25	YES	YES
Mushroom	?	Fungi	0.35	20	YES	?
		TOTAL	100.00	5665		

Remarkable Dependence on Non-Native Bamboo Continued

Figure 1. Google Earth map displaying H. occidentalis ranging (red points) within dwarf bamboo patches (green polygons) in Antanetiambo Nature Reserve (white boundary).

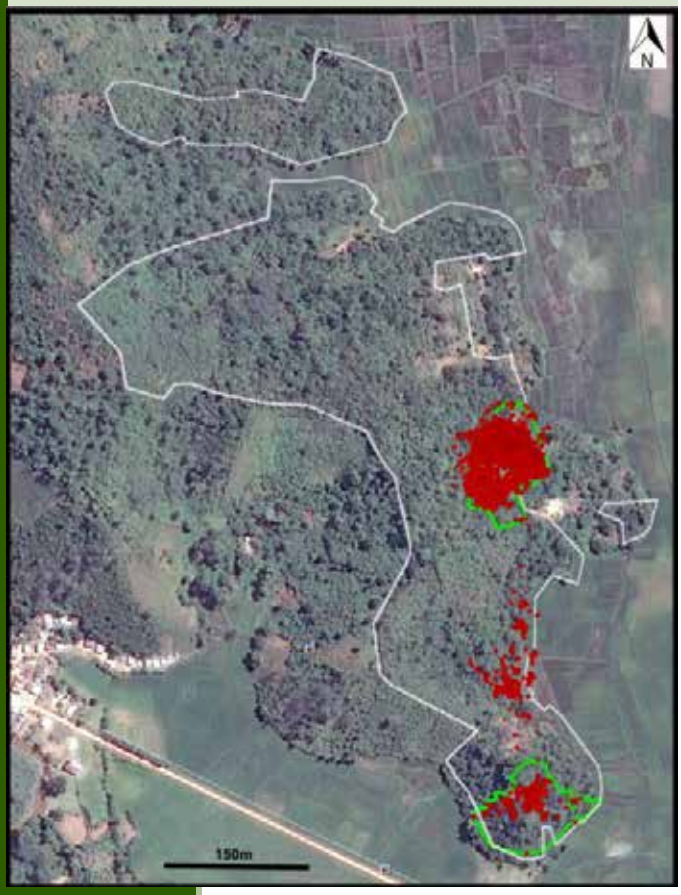
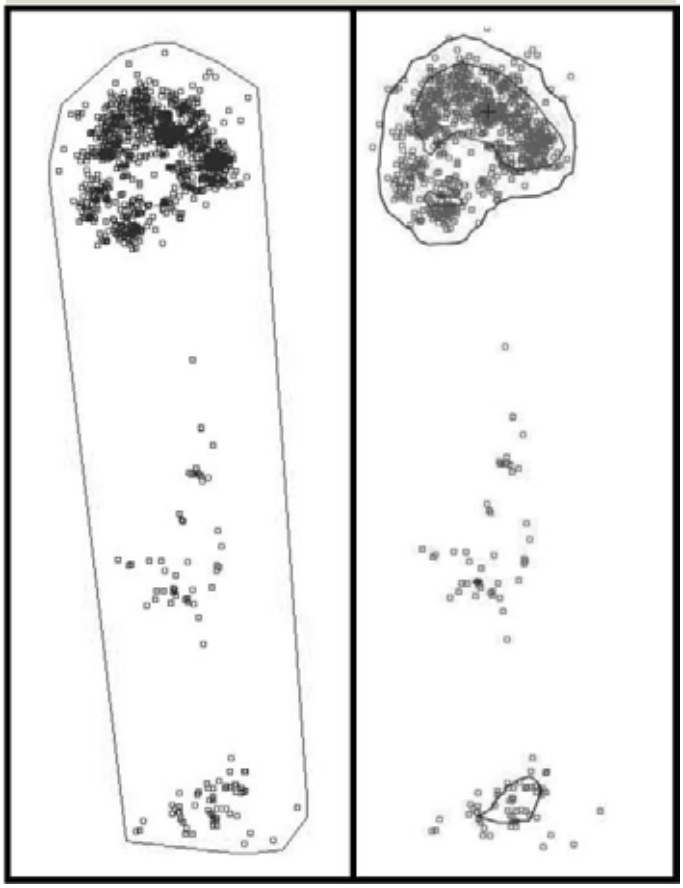


Figure 2. *H. occidentalis* home range. Left: 100%MCP is 4.46 ha. Right: 95% kernel is .82 ha and inner 50% kernel core is .28 ha.



8). Their 100% MCP home range size is 4.46 hectares. The 95% fixed kernel home range size, which may be the most accepted general home range value, is .82 hectares. These home range sizes are somewhat similar to that *H. alaotrensis* (.6 ha to 8 ha), but much smaller than *H. griseus* home ranges (15 ha to 20 ha) and *H. aureus* (26 ha) in Ranomafana National Park (Tan, 1999, 2006).

We obtained a number of High-Definition video clips in order to visually document this new bamboo lemur species. These videos play freely online. Links and titles are listed below.

Geophagy: https://vimeo.com/114479404
Tail-anointing scent marking: https://vimeo.com/114481286
Eating pith of new shoots dwarf bamboo: https://vimeo.com/114348751
Social grooming including one month old infant: https://vimeo.com/114485920
Eating young stems of dwarf bamboo: https://vimeo.com/114420149
Eating Litchie fruits: https://vimeo.com/114483232
Vocalizing "grunts": https://vimeo.com/114499691

Remarkable Dependence on Non-Native Bamboo Continued

There are reasons to be concerned about this small group of northern bamboo lemurs. First of all, it is an unusually small group. In nearby Marojejy National Park, the Camp 1 group inhabiting a large *Valiha diffusa* forest, has at least 10 individuals. Moreover, infant mortality has been high in the Antanetiambo group in recent years. Two of the last three infants died within a few months after birth. Last year's infant was born with an obvious eye deformity, and seemed to be mostly blind. That infant died within a few months after birth. On November 12 2014, the single adult female in this group gave birth to twins, but only one survived, and seems healthy so far. Of the 15 fecal samples examined for parasites at Cornell University's Animal Health and Diagnostic Center (ADHC), only two showed evidence of parasites, both from the adult female who is harboring some strongyles round worms.

Since SAVA Conservation began in January 2012, conservation of Antanetiambo Nature Reserve has improved considerably thanks to the tremendous vision and collaboration with reserve founder, Desiré Rabary. Studying the northern bamboo lemurs protected within this reserve allows us to better understand how lemurs cope with disturbance and secondary forest habitats. Studying lemurs in novel habitats can lead to surprising discoveries. Clearly, this species is more flexible than previously imagined. We have obtained the first evidence that wild bamboo lemurs in Madagascar consume *Phyllostachys aurea* and *Dendrocalamus strictus*, and more importantly that these non-native species can sustain a small group, comprising 85% of their diet. We have also obtained the first home range sizes for this species in Madagascar. We are just five months in to this long-term study and we look forward to more surprises in the future!

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Reforestation Update

by Dr. Erik Patel

Since SAVA Conservation began in January 2012, more than 150,000 trees comprised of over two dozen species have been planted near Marojejy National Park and in Sambava through our collaborative projects with Graine de Vie, Antanetiambo Nature Reserve, Ranoala, and Missouri Botanical Garden. Trees planted are a mix of fast-growing native trees such as *Hintsia madagascariensis*, *Cryptocarya* sp.., and *Chrysophyllum* sp. as well as some cash crops such as coffee, cacao (chocolate), and clove trees. Additionally, some non-native fruit trees have been planted such as mango and jack fruit (which can be used for construction and charcoal in addition to generating food and local income) and also *Acacia* which is a popular alternative to invasive and damaging Eucalyptus trees in the SAVA region. Below is a list of the over 37,000 seedlings in our tree nurseries as of December 2014. As always, planting will take place during rainy season from January to March.

Guard Ramichel, and nursery specialist Jean Chrysostome at the Antanetiambo tree nursery.

Location	Partner	Number of Trees	Number of Species
Mandena	Graine de Vie	7,811	9
Belaoka-Lokoho	Graine de Vie	10,223	14
Marovato	Graine de Vie	6,007	8
Matsobe-Sud	Antanetiambo Nature Reserve	5,476	15
Sambava	Ranoala	8,000	3
	TOTAL	**37,517**	

First Yam Harvest and More Trainings!

by Dr. Erik Patel and Charlie Welch

Left to right: William (Ambodivohitra fish pond guardian), Desiré Rabary (holding a newly harvested yam), Soazaka, and Charles Razafindrafara (yam farmers from Antalaha).

As discussed in the November '13 SAVA Conservation newsletter, we have been promoting the cultivation of large yams (*Dioscorea* sp.) in the SAVA region as an alternative to tavy (slash and burn) rice and manioc. Manioc or cassava (*Manihot esculenta)* is heavily consumed in Madagascar during periods of rice shortage and is the staple food of many African countries. However, much recent research has pointed to numerous health problems associated with heavy manioc consumption such as goiter (very swollen neck from thyroid gland enlargement), cretinism (severe physical and cognitive stunting), and konzo (irreversible leg paralysis). It is now clear that manioc roots and leaves contain a cyanogenic glucoside called linamarin, which is a substance that converts to cyanide (one of the most infamous poisons) when eaten. If manioc is properly processed before eating by extensive drying, soaking, rinsing, and baking, far less cyanide is produced (Nhassico et al., 2008; Nzwalo and Cliff, 2011).

The yams are known locally as "ovybe", meaning big potato in Malagasy. Some of these yams can actually weigh more than 40lbs though most weigh about 20lbs. Like manioc, they can grow well even in very poor soil, but are much less susceptible to cyclone damage than manioc which is a tall shrub. In collaboration with CARE International, another training on yam, sweet potato, and taro planting was carried out in November 2014 in Antanimbaribe (about 15km north-west of Andapa). It was well attended by more than two dozen participants over several days.

We also recently harvested our own model yam plantation in Ambodivohitra, just above the model fish pond, where we had planted nearly 100 yams about 9 months ago. We harvested 75 leaving 25 to grow for another 9 month cycle as an experiment to see how large they may get or if they would rot and die. The 75 harvested yams weighed an average of 22lbs each (see photo)! We were able to see all in two days in Andapa for a total of 50,000 AR or about $20 USD. Clearly there is real demand for yams locally although they are not extremely valuable as a cash crop they can be an important food source and may be sold as well.

More trainings and plantings of yams are planned for villages proximate to Marojejy National Park, in the near future.

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Environmental Education Expansion

by Charlie Welch, Lanto Andrianandrasana, and Dr. Erik Patel

Madame Marie Helene at her Macolline interpretive center. ***Photo by Karl Bates***

SAVA Conservation environmental education activities have so far primarily focused on the Andapa-Sambava part of the SAVA region, but we are now moving to promote environmental education in the Antalaha area, in the southern part of the SAVA. The private botanical garden of Macolline, located near the town of Antalaha, is owned and operated by Madame Marie Helene Kam Hyo. For years she has overseen the planting of native trees (such as rosewood, ebony, and pallisandre) as well as non-native fruit trees and some fast growing exotic species. Although by no means a mature forest, the small 10 hectare reserve is an appealing natural area, which has considerable education potential. Macolline is open to visitors, and includes a forest walk with well labeled trees and an attractive interpretive center. The reserve is also open to school groups, and as with other visitors, the school groups receive a guided tour of the forested site and interpretive center. Unfortunately the Macolline guides had not had the opportunity of formal training in environmental education, which is where SAVA Conservation intervened. In July of this year, we supported two guides from Macolline, Belucien and Euphrasie, to attend a one week environmental education training at Parc Ivoloina (managed by the Madagascar Fauna Group – MFG) in Tamatave. SAVA Conservation project manager Lanto Andrianandrasana accompanied the two guides from Macolline, and also participated in the training. The training was carried out by the experienced MFG education staff of Mr. Nirina, Mr. Andre, and Mr. Gimod and included an exchange of experiences and instruction in techniques and information used by the MFG education team, based on what MFG has practiced around Parc Ivoloina and Betampona reserve for many years.

Belucien, Lanto and Euphrasie at work in the Ivoloina Training Center.

Belucien and Euphrasie returned to Antalaha and Macolline with new information and ideas about environmental issues, and how best to share that information with students. Our goal is to impart meaningful environmental education to as many Malagasy students as possible, and the proximity and easy access of Macolline to Antalaha makes it an ideal site for class visits from the numerous local schools.

Project Support

by Charlie Welch

Fiscal year 2013-'14 was a successful year in many ways for DLC SAVA Conservation, and that includes fundraising. We are very pleased to report that through the generous donations of individuals, foundations, and institutions, in addition to grants, (see below) SAVA Conservation was funded independently, and without reliance on direct DLC operational funding. We cannot thank our donors enough for their generosity and confidence in our ability to bring meaningful conservation and progress to the SAVA region of northeastern Madagascar.

The three year Helmsley Charitable Trust grant, as reported in the July 2014 newsletter, has been transformative for the project, but all of our donors and supporters play a crucial and indispensable role in ensuring the continuity of important project activities. We will continue to seek new support for our conservation work, and with the help of DLC's capable and enthusiastic development team of **Niki Barnett** and **Janice Kalin**, and grant writing assistance from **Valorie Sterling Cook**, we believe that the future of funding for SAVA Conservation continues to be bright.

Once again, a heart-felt thank you to all who have supported us in the past, and continue to support us now and into the future – we could not do it without you.

Donations can be made at https://www.gifts.duke.edu/?designations=Duke%20Lemur%20Center
Please be sure to designate the donation to SAVA Conservation.

SAVA Conservation Supporters

2013/2014 Fiscal Year

Major gifts

Mrs. Alexandra and Dr. Bill Anlyan *through the Alex Donor Advised Fund*
Dr. Jelle Boersma/Black Rhinoceros Foundation
Dr. Allan Chrisman and Mrs. Polly Van de Velde
Dr. Marianne Jackson
Dr. Clint and Mrs. Missy Kelly
Dr. Sarah Miller and Dr. David Howell

Other annual giving

Dr. Kevin and Mrs. Julie Byrne
Ms. Joanna D'Aquanni
Mr. Justin T. Deans
Ms. Morgan W. Faunce
Mr. Andrew Haracourt and Mrs. Jennifer Ganser
Mr. Hans O. and Mrs. Jen Hartvicson *through Ringtail Learning Inc.*
Mrs. Janice Kalin

Other annual giving (Continued)

Ms. Kara Kolls
Ms. Lucy McMorris
Ms. Gretchen Schuessler
Dr. Elizabeth and Dr. Walter Sinnott-Armstrong
Mrs. Jane C. Welch
Ms. Anastasia Wong

Grants and institutional support

Busch Gardens/Sea World Conservation Fund
GIZ (German government group working in alliance with Symrise Vanilla Company)
Leona M. and Harry B. Helmsley Charitable Trust
Seneca Park Zoo docents
South Carolina Aquarium
Terra Incognita Ecotours
Virgin Unite USA Inc.

SAVA Site Visit by Helmsley Team

by Charlie Welch

As mentioned in the previous newsletter, SAVA Conservation has been fortunate to receive a three year grant from the Leona M. and Harry B. Helmsley Charitable Trust. In July of this year, a team from Helmsley was in Madagascar and came to the SAVA to visit a few of our project activities. The Helmsley team of Renu Saini (Program Officer - Madagascar), Robert Cook (Program Director), and Adam Sanders (Grant Management) arrived by plane, and after a quick visit to our Sambava office, were whisked away to Andapa, where most of the project activities are centered. Despite typical rainy July weather, the visit was a success, and it was a pleasure to meet and get to know the supportive Helmsley team. After the site visit, Erik, Charlie and Lanto all attended a workshop in Tana, sponsored by Helmsley, which had the objective of promoting communication among the various Helmsley grantees from around Madagascar.

The Helmsley team visiting the demonstration fish farming pond at Ambodivohitra. Left to right, SAVA Conservation fish farming consultant/collaborator Mr. Guy Tam Hyock, Renu Saini (Helmsley Program Officer), Adam Sanders (Helmsley Grant Management), Erik Patel, Robert Cook (Helmsley Program Director).

A Landmark Meeting Between Population, Health, and Environment (PHE) Partners

by Dr. Erik Patel

On July 30 and 31, the environmental and health organizations Blue Ventures and Voahary Salama hosted a high profile meeting between 35 conservation, health, and donor organizations as well as several government ministries that support the "Population, Health, and Environment Model" (PHE). PHE projects are those "…that integrate voluntary health and/or family planning with conservation activities, thereby seeking synergistic successes and greater conservation and human welfare outcomes than if they were implemented in single sector approaches" (WWF 2008, p. vii). Although PHE has a long and successful history in Madagascar (initially as part of the Integrated Conservation and Development Projects in the 1990's), only within the last decade have conservation ngos begun to implement PHE projects. The goals of this meeting were to 1) Deepen understanding and share PHE experiences, 2) Strengthen political and donor support, 3) Build effective partnerships between organizations.

Left to right: Alain Ben Aboubakary (Ministry of Health), Andriamandranto Razafimandimby (Voahary Salama), Dr Voahirana Ramiaramananarisoa (Ministry of Health), Marcellin Rabeantoandro (Ministry of Environment, Ecology and Forests), Timothy Smart (British Ambassador to Madagascar), Dr Vik Mohan (Blue Ventures).

DLC-SC Project Director, Dr. Erik Patel, gave a 15 minute oral presentation about ongoing collaboration with Marie Stopes nurses in the SAVA region, and reported that 179 women have paid to receive three year contraceptive arm-implants while 8 paid for Intra-uterine devices (IUDs) which confer 10 years of contraception. Charles Welch (DLC Conservation Coordinator) and Lanto Andrianandrasana participated in group sessions to better discuss how to integrate health and family planning programs with environmental projects. By all accounts, the meeting was a huge success as expressed in this video. Everyone recognizes that far too many Malagasy people (19% of the population: World Bank 2013) still report insufficient access to family planning services and that when the population of Madagascar doubles by 2040 or 2050 (World Bank 2013), there will be tremendous health, environmental, social, and economic consequences. The meeting resulted in the creation of a new PHE Network website, a PHE video, toolkit with numerous published articles, and a Google Groups Learning Network.

A break-out session at the PHE conference .

Collaborating With Junior Chamber International (JCI) to Reduce Open Defecation

by Dr. Erik Patel

An estimated one billion people lack access to toilets or latrines and engage in open defecation which leads to water contamination, parasitic infections, and gastrointestinal diseases. In Madagascar, it is shocking to consider that less than 20% of the population and only 11.3% of rural villagers have sufficient toilet access (World Bank Data, 2012). The economic impacts add up to over $100 million dollars lost per year in Madagascar due to diminished productivity and medical costs (World Bank Water and Sanitation Program, 2011). In coastal areas which are susceptible to flooding during cyclone season, traditional pit toilets frequently overflow and spill out. In Madagascar's capital Antananarivo, over 70% of the toilets are pit latrines, and many of the public toilets are not free and frequently fall into disrepair. A bubonic plague outbreak in 2011 in Talatavolonondry (27km north of the capital), was linked to a blocked drainage canal from a large public toilet, which led to a sudden proliferation of rats (IRIN, 2011).

To reduce open defecation in our region, SAVA Conservation has established a new collaboration with the Sambava branch of Junior Chamber International (JCI), a Florida based non-profit organization active in 80 countries. JCI is comprised primarily of young professionals aged 18 to 40. Their mission is to locally promote social and economic development and international good-will. In Sambava, JCI has been cleaning up the main beach through their "plage convivial" program which includes construction of children's playgrounds, public benches, and latrines. SAVA Conservation has financed the construction of one the large two room latrine, which has running water for hand-washing. We recognize the inextricable link between global health and environmental protection, and this project is but one example.

DUKE CONNECTIONS

DLC's Bevan Clark visits SAVA Conservation

As part of the DLC's program to bring staff to Madagascar, lead primate tech Bevan Clark visited SAVA Conservation in November 2014. After a quick visit to a few DLC-SC community based conservation activities, she made the trek into Marojejy National Park to see primary rainforest and in particular the silky sifaka lemurs. Bevan was accompanied by Erik, as well as Mary and Bary Menne, who made the SAVA trip as an extension to their two week Duke Alumni Travel tour of Madagascar. Not only did the group make it to the scenic camp #2, but they even made the difficult climb to camp #3, in typical wet and muddy Marojejy weather! But sightings of silky sifakas made the slog more than worthwhile!

After the Marojejy excursion, Bevan stayed at Desiré Rabary's compound at Matsobe, while working daily in Antanetiambo Reserve, observing and filming the bamboo lemurs there.

A sincere thank you for generous support from the **Trent Foundation** and the **Peter and Kristan Norvig Family Fund** for enabling DLC to draw ever closer ties between DLC-US and our SAVA Conservation project as well as the MFG consortium work at Ivoloina. DLC hopes to continue bringing a staff member to Madagascar on an annual basis, to introduce them to the other side of our DLC lemur obsession!

Bevan waiting to start the trek up to Marojejy, beside portioned loads for porters.

Closing Comments

As we complete the third year of SAVA Conservation, I would like to recognize those who, in addition to our supporters, make the project a success. On the ground in the SAVA, the tireless work of **Dr. Erik Patel** and **Lanto Andrianandrasana** is the true driving force behind the project. In a country where getting things done is always a circuitous route, Erik and Lanto deftly manage a mind-boggling array of diverse project activities. But the project also relies on numerous partners and collaborators in the SAVA – to name a few, **Desiré Rabary, Joxe, Jackson, Guy Tam Hyock**, and many others, all provide essential expertise and experience. In the US, back at Duke, DLC director **Dr. Anne Yoder** gives our conservation work in Madagascar the highest priority and support, without which there would simply be no SAVA Conservation project. DLC operations director **Greg Dye** is always on the lookout for funding opportunities, as are **Niki, Janice, and Valorie**, as mentioned in the support report. DLC business manager **Melissa Dean** navigates the intricacies of project accounting for the university, and ensures that we are properly following Duke procedures at all levels. And thanks to all the DLC staff, for the continual moral support and interest in our Madagascar program.

I would be remiss if I did not also thank **Patricia Massard** who, on a volunteer basis, patiently assembles our articles and photos into an appealing and well organized newsletter (and often in a time crunch!). Thanks also to **Connect Technology**, in Jackson, Mississippi for their generous donation of the service of converting the newsletter into an attractive and very useful online format.

SAVA Conservation is most assuredly a team effort, and we are grateful to one and all who help us to put conservation on the ground in the SAVA region of Madagascar!

Charlie

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