

## SPECIAL POINTS OF INTEREST:

- Family planning collaboration with Marie Stopes International
- Annual report
- Duke Engage volunteers in the SAVA

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**Duke LEMUR CENTER**  
**SAVA CONSERVATION**  
M a d a g a s c a r

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News from the Sambava-Andapa-Vohemar-Antalaha region of NE Madagascar

# Enchanted by SAVA

By Dr. Anne Yoder, Director—Duke Lemur Center

For one short week this past summer, it was my great privilege and pleasure to tour the SAVA Conservation project with Charlie Welch as my guide. In the very good company of Charlie, as well as Dr. Erik Patel (the project's Director) and Lanto Andriananandrasana (SAVA Project Manager), we toured all facets of the project. There is a lot going on, and over a relatively vast geographic area, so it was a busy week! We began in the beautiful town of Sambava where Erik lives when not in the field, and where the project's central office is located. Lodged at the serene Orchidea Beach Hotel, we strolled the town and visited the central office. Charlie and Erik chose the site well. The office is spacious and centrally located, and offers convenient accommodations for visiting scholars and researchers. There, visitors will find a comfortable bed, kitchen, and wifi. Indeed, seeing the amenities took me back to my days as a graduate student working in Madagascar. I would have been in heaven with such accommodations at my disposal! It is certainly my hope that the graduate students of today will be similarly pleased to consider the SAVA office as their home base as they explore all the biological and cultural wonders that the region has to offer.

From Sambava, we traveled by vehicle to Andapa, where the heart of the project lies. There, we visited the already successful fish-farming project that is being coordinated with local conservationist Desiré Rabary and with fresh water fish specialist Guy Tam Hyock. The pond itself is in a lovely setting, surrounded by rolling hills and (recovering) native vegetation. Along with Duke Engage students Sophia Staal and Cameron Tripp, we heard all of the details of the first harvest, and the delight with which the local villagers enjoyed the bounty of fresh fish. Afterwards, we repaired to Desiré's home for a delicious lunch followed by a vigorous hike through the forest preserve that Desiré is creating in his one-man mission to purchase and protect local forests. I was so very pleased and impressed with the



**DLC Director Dr. Anne Yoder holds forth with DukeEngage student volunteers Sophia Staal and Cameron Tripp, and SAVA Conservation Director Dr. Erik Patel.**

Photo by Karl Bates

## *Enchanted by SAVA* Continued

collaborative spirit with which the local villagers view the DLC activities. Our logo was everywhere, and the DLC was frequently mentioned as a respected partner in local efforts to protect and restore the native habitat. We also visited with the local MNP office to discuss our plans for future conservation and research in the area. Again, our hosts could not have been more hospitable and I am confident that the DLC is regarded as an important partner in the region's long-term conservation plans.

Of course, all of this was within sight of the majestic Marojejy National Park. It rises boldly on the horizon, with its peaks shrouded mysteriously in the mists. Sadly for me, our agenda was too packed to allow for the two-day hike required to reach the summit and visit with the silkies. But with the last-stop visit to Antalaha, and tour of the wonderful Macolline Project, I was certainly compensated for the delayed gratification of Marojejy. I am more determined than ever to return to the SAVA and make my way to the silkies. The region is rich with opportunity and the local partners that Charlie, Erik and Lanto have developed are par excellence. I could not possibly have been more proud of our accomplishments there, or more encouraged by the opportunities that lie ahead.

## Marie Stopes International — A New Collaboration

By Charlie Welch and Dr. Erik Patel

We are pleased to announce the beginning of another collaboration for SAVA Conservation, this time in the realm of family planning. In October, a women's reproductive

health specialist visited the village of Belaoka Lokoho (adjacent to Marojejy NP, 15km from Andapa) to offer local women the option of contraception. The prearranged visit was supported by SAVA Conservation, and carried out by the NGO Marie Stopes. The nurse was met by a very enthusiastic group of 32 women from 14 to 40 years of age, all of whom already have children, including the youngest. The majority of the women received arm-implants (which is a 15 minute outpatient procedure), although IUDs were an option as well. The arm-implants have a 3-year period of efficacy.

So, why is SAVA Conservation involved in family planning? Population growth is known to be one of the major drivers of forest (and biodiversity) loss. Many organizations are embracing new integrated Population, Health, and Environment (PHE)



Marie Stopes "Lady" explains the contraception procedures to interested village women.

Photo by Lanto Andrianandrasana



## *Marie Stopes International — A New Collaboration* *Continued*

programs. Madagascar's population growth rate is among the highest in the developing world, growing at the disturbing rate of 2.9%, with an average fertility rate of 4.5 births per woman. In some regions, the population is predicted to double within 15 years. With the majority of the population relying on subsistence agriculture for survival, more people means more pressure on the remaining forests of the region as well as posing more challenges for children's wellbeing. Nearly 50% of the population is already below the age of 15, and the incidence of childhood poverty in Madagascar is known to be strongly positively correlated with the number of children per household. More than 50% of Malagasy children exhibit stunted growth due to poor diet (Harris et al. 2012; UNICEF 2010).

It has often been reported that women in Madagascar frequently desire more access to information about contraception and service practitioners. National statistics show that only 29% of women married or in a sexual relationship have access to modern contraception (Harris et al. 2012). Like other environmental NGOs nationally, SAVA Conservation made the decision to support the women's health NGO, Marie Stopes, to offer local women in the Marojejy National Park periphery the choice of contraception. It was not a



**Nurse or "Lady" discussing the procedure before inserting an arm-implant.**

*Photo by Lanto Andrianandrasana*

decision that we took lightly, and by choosing Marie Stopes as a partner, we are collaborating with an organization which has much expertise and experience working in family planning in Madagascar. Marie Stopes (<http://www.mariestopes.org/where-in-the-world#madagascar>) has been working in Madagascar for 20+ years, providing women with reproductive options, and their "Ladies" (nurses) are already working in the SAVA region. We are giving them the means to expand their services into an area that they would not have otherwise been able to reach out to.

Community-based conservation takes many forms, and by working with local people to improve their lives we hope to also build trusting relationships. Trusting relationships open the door for conservation action and forest protection.

### **References**

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# Ovybe to the Rescue!

By Charlie Welch and Dr. Erik Patel



**Yam cultivation training by representative from CARE International.**

Photo by Lanto Andrianandrasana



**Preparation of planting holes for yams at Ambodivohitra demonstration site.**

Photo by Lanto Andrianandrasana



**Dr. Erik Patel holding a yam (in his right hand) and taro (in his left hand) .**

Photo by Lanto Andrianandrasana

Well, maybe not exactly “to the rescue”, but now that I have your attention, there is plenty to be optimistic about in terms of a food alternative to rice and manioc grown by “tavy” (slash and burn) method. SAVA Conservation (SC) has begun collaboration with CARE International, who is promoting the cultivation of yams (*Dioscorea* sp.), locally known as ovybe (“big potato”). Yams can weigh up to 35kg each and are far more sustainable to grow in that repeated clearing and burning of land is not necessary between the growing seasons. There are nutritional benefits as well, since yams contain more fiber than rice and are definitely less toxic than manioc which contributes directly to goiter and requires considerable processing to remove naturally occurring cyanide. Yams are also much more resistant to cyclones (as they are entirely underground) than manioc and we are even told that rats won’t eat yams so they can be stored safely for up to two years after harvesting which is considerably longer than rice as well! In northern Madagascar at least, yams are already considered somewhat tasty as street vendors sometimes serve a sweet yam porridge called “soaba”. Wild yams (“ovy-ala” or “potato of the forest”) are sometimes illegally extracted from nearby protected areas (Marojejy and Anjanaharibe-Sud); encouraging local cultivation should also reduce habitat disturbance in these reserves.

A well-attended training in yam cultivation was carried out in September near the SC demonstration fish farming pond at Ambodivohitra. Yam sets were then planted on adjoining land at the site, which is owned by project friend Desiré Rabary. As with the fish pond, the yam plantation will serve as an easily visible demonstration site, which will encourage local people to try planting the tuberous crop. In the future, taro may also be grown there as it is more valuable than yams, considered more delicious, but is much smaller in size and a little more difficult to grow.

Tavy cultivation of rice on an overcrowded landscape is the single most important contributor to forest destruction and degradation throughout eastern Madagascar. Offering a reasonable alternative will hopefully help to reduce tavy in the SAVA region, and at the same time provide local people with a nutritious substitute for the ubiquitous rice and manioc.

# Financial Report

We are very pleased to report that through the generous donations of individuals, foundations, and institutions, in addition to grants, the SAVA Conservation project 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 activities and progress to the SAVA region of northeastern Madagascar.

For the future we expect to continue the same trend of financial support for SAVA Conservation, but hope to expand the amount of grant funding as the project becomes better known. With the help of DLC's enthusiastic development team of Niki Barnett and Janice Kalin, and now grant writing assistance from new arrival Valorie Cook, we believe that the future of funding for SAVA Conservation is bright.

Once again, a heart-felt thanks to all who have supported us in the past, and continue to support us now and into the future.

## Fiscal Year 7/12 to 6/13 Donors – SAVA Conservation Project

(Donors also listed in DLC 2013 Annual Report newsletter)

### \$20,000-\$50,000

Mrs. Kristan Norvig *through the Kristan and Peter Norvig Family Fund – Silicon Valley Community Foundation*  
South Carolina Aquarium

### \$10,000 - \$19,999

Dr. Sara Miller and Dr. David Howell  
Dr. Clinton and Mrs. Alberta Kelly

### \$5,000 - \$9,999

Black Rhinoceros Foundation  
Nashville Zoo

### \$2,500 - \$4,999

Cheyenne Mountain Zoo  
Dr. Allan Chrisman and Ms. Polly Van de Velde *through the Allan K. Chrisman Gift Fund*  
Seneca Park Zoo docents  
Mr. Joseph and Ms. Nancy Raposa, *in memory of William (specifically for rosewood symposium held at Duke, sponsored by DLC/Kenan)*

### \$1,000 - \$2,499

Mrs. Nancy Ranney and Dean David Levi

### \$500 - \$999

Dr. Ruby Benjamin

### \$250 - \$499

Mr. Douglas and Mrs. Kathy Benson  
Mrs. Margaret Gentry Clegg

### \$250 - \$499 (Continued)

Mrs. Nancy and Mr. Olan Nugent  
Mrs. Jennifer and Mr. Hymen Rubin III  
Mrs. Sarah Sommers and Mr. Thomas Geiger  
Ms. Jen Franklin, *in honor of Charlie Welch and Andrea Katz*

### \$100 - \$249

Ms. Yvonne Beever  
Ms. Dianne Blane  
IBM International Foundation  
Ms. Susan Louie, *in honor of William the baby sifaka*  
Mrs. Brenda and Mr. James Moorman  
Dr. Alan and Mrs. Nancy Proia  
Ms. Suzanne Singh

### \$0 - \$99

Ms. Sue Cloak  
Mrs. Joan and Mr A. Read Cone III  
Ms. Jo Davis  
Ms. Cheryl Klein  
Ms. Tamara Pearce  
Anonymous  
Mr. Joseph Soldati

### Grants Received

Sea World/Busch Gardens Conservation Foundation -  
**\$17,000** *(for the fish farming initiative)*  
Duke Africa Initiative - **\$7,900** *(funds did not pass through DLC – supported SAVA project manager Lanto Andrianandrasana's 1-month training visit to DLC)*



## American Museum of Natural History (AMNH) PhD Student, Jen Crick, Visits SAVA Conservation

In August, I had the incredible opportunity to visit Duke Lemur Center's SAVA Conservation Project. Although my dissertation research focuses on conservation genetics, I had been craving more field experience with lemurs and learning more about community-based conservation in Madagascar. Dr. Erik Patel and the SAVA Conservation team in northeastern Madagascar were kind enough to host me for a two-week visit inside several reserves (Marojejy NP, Antanetiambo Reserve, and the forests of Daraina) as well as in several villages where their conservation project has a variety of programs.

My first impression of the program was an eye-catching anti-bushmeat poster, before I'd even checked into my hotel. I quickly became acquainted with other aspects of the work when I met Duke University undergraduates Cameron and Sophia, who were just completing their time in SAVA through Duke's Engage program. Cameron spent his summer mapping Antanetiambo Nature Reserve and Sophia had investigated local preferences for and the availability of different species of fish in the market in Andapa. I was delighted to see both Antanetiambo and the fish farm that spurred their research.

I visited the fish farm shortly after their first (very) successful harvest of "fony" (*Paratilapia polleni*), the local fish that Sophia's research showed was preferred but not at all available in the markets anymore because its numbers have diminished so much in local rivers. William, the caretaker of the pond, showed us how he monitored the temperature of the water and the meal that he feeds the fish, which is made from rice hulls, which are a waste product to humans, among other ingredients, and a little dried shrimp as the protein component. The fish aren't the only community initiative to see at William's place though. There are terraces that had recently been used to grow bok choy, a nutritious addition to the local diet, and which will soon host a yam crop, since DLC SAVA recently organized a training on how to grow the crop for people in the area.

At Antanetiambo Nature Reserve, we hiked to the group of northern bamboo lemurs (*Hapalemur occidentalis*) that Desiré Rabary is habituating while also collecting ranging (GPS) and dietary data. Along the way, Rabary and Jackson took turns identifying all of the plants in the reserve and telling me about them, displaying truly encyclopedic knowledge. We had a fantastic view of the animals, right off the trail, and even got to observe some impressive foraging behavior when one of the bamboo lemurs spent nearly 15 minutes extracting the inner white pith of the tall green wild ginger plants. I was just thrilled to see the animals so well, as this species is virtually an unstudied species (until now), but Rabary and Jackson immediately set to work, practicing their data collecting techniques on the GPS unit for the first dietary study of this species. At the top of the hill near where the lemurs were foraging, there is a clear line of sight to the edge of Antanetiambo and where the rice fields start. It is also very easy to see smoke from fires being used to keep cropland clear. Without Rabary and DLC SAVA, it is all too easy to imagine what could happen to the forest and lemurs of Antanetiambo.

## *AMNH PhD Student, Jen Crick, Visits SAVA Conservation* Continued

The day before we left for Marojejy National Park, Erik and Rabary told me about a parcel of land they had had their eye on that would help increase the core area and reduce the edge of the reserve, which was apparent from Cameron's map. The problem was that three adult siblings, who now live quite far apart, had jointly inherited the piece of land from their parents. They were all individually happy to sell to him but never in the same place at the same time. Never one to miss an opportunity to improve Antanetiambo, Rabary rounded them all up with the truck we had hired for a couple of days.



Desiré Rabary and Jen Crick at the entrance to Marojejy NP.

Photo by Erik Patel

They all spent the morning hammering out the details of the contract, which Rabary painstakingly copied by hand into three different languages (Malagasy, French and English). I would like to conclude by thanking Rabary, Erik and Jackson for a most inspiring visit to SAVA, and to wish them continued success.

### **Fish Farm Flash!**

You may remember from the fish farming article in the last newsletter, that there was a very successful first harvest of the “fony” from the Ambodivohitra demonstration pond. Of the original 400 fish fry introduced into the pond, 1704 were later harvested with 573 sold/eaten, 531 released into the nearby Matsobe River, and 600 returned to the pond. Lanto reports that there were still too many fish in the pond, so another pond draining and harvest was recently carried out. **The second harvest produced another 2102 fony**, with 600 again being returned to the pond, and 1502 released into the Matsobe River. Turns out that many fish were hiding around and beneath boulders in the pond during the first harvest!

# International Prosimian Congress 2013

By Charlie Welch

In 1993 the Duke Primate Center hosted a symposium for nocturnal prosimians, which along with the subsequent publication, was dubbed “Creatures of the Dark”. That symposium has evolved into what is now known as the International Prosimian Congress, the last of which was held in South Africa in 2007 – until this year.

The 2013 International Prosimian Congress was held at Centre ValBio Research Station, near Ranomafana National Park, on August 5-9 of this year. The Congress is “recognized as the most important global meeting for primatologists studying any aspect of prosimian biology to present and share their experiences”. It was the first such meeting to be held in Madagascar.

The DLC was well represented at the Congress with 12 associated researchers and staff both attending the symposium and presenting. Those affiliated with SAVA Conservation were Lanto and Erik who presented a poster on the various activities that make up the project (Erik was also co-author on three other talks and posters), former Nicholas School student Jennifer Moore gave a talk on her lemur population (line-transect) surveys and remote sensing of Marojejy NP, Malagasy university student Manitra Rajaonarison presented a poster on his silky sifaka research in Makira Natural Park, and Erik presented a poster for colleague (former Yale University graduate student) Rachel Kramer on a socio-economic study in the zones near Marojejy. Also, DLC director Dr. Anne Yoder, who was on her first visit to Madagascar in 14 years, gave an oral presentation on the future impact of climate change on Madagascar and lemurs, and DLC veterinarian Cathy Williams gave a presentation on use of immobilization drugs in the field.

The Congress truly did provide an excellent opportunity to exchange information and ideas with an array of Madagascar researchers and conservationists, many of whom I had not seen in person for years. It was also an opportunity to renew old friendships, with both Malagasy and foreigners, who have been dedicated to the biota of Madagascar for decades. But for me personally, the most exciting aspect of the Prosimian Congress was that approximately half of the 180 attendees were Malagasy nationals, many of whom also gave presentations and posters. That is a striking and impressive change from such meetings a decade and more ago. It is encouraging to see a growing national involvement in Malagasy conservation and environmental issues and research. The increase is in no small part



Nicholas School graduate Jennifer Moore with Congress banner (see Jennifer's presentation abstract in next article). Photo by C. Welch



Photo by C. Welch



## *International Prosimian Congress 2013 Continued*

thanks to conservation NGOs (including DLC and MFG) who for years have methodically incorporated capacity development into in-country conservation and research programs. In the end it will have to be the Malagasy people who bring and support large scale sustainable change in environmental management to Madagascar – it is, after all, their country. There must be a national will to change the environmental degradation that continues to plague the country, and there is a growing group of young Malagasy scientists and policy makers willing to take on that task.

The Prosimian Congress has bolstered my hope for the future of Madagascar's unique natural heritage.

Congratulations and thank you to DLC friends Dr. Pat Wright, Benjamin Andriamihaja, and all the personnel of MICET/ICTE and ValBio who worked so hard to make the Congress such a success – no small logistical feat at a site such as Ranomafana, far from the nearest city. The hospitality was warm and welcoming, and the congress presentations and discussions were informative and stimulating!



**At the poster session - Lanto explaining the various SAVA Conservation project activities to a Congress participant.**

*Photo by C. Welch*



**DLC veterinarian Dr. Cathy Williams giving a presentation on immobilization at the Congress.**

*Photo by C. Welch*

# SAVA Conservation an Active Participant in the Prosimian Congress

Below are abstracts from a presentation by Nicholas School graduate Jennifer Moore and poster by Rachel Kramer and Erik Patel, which was presented by Erik.

## Lemur Population Surveys and Remote Sensing in Marojejy National Park

Jennifer Moore<sup>1</sup> and Erik R. Patel<sup>2</sup>

<sup>1</sup> (formerly) Master's Student at the Nicholas School of the Environment at Duke University

<sup>2</sup> Duke Lemur Center, SAVA Conservation, Post-Doctoral Project Director

Marojejy National Park is among the most biologically diverse protected areas in Madagascar. This unique mountainous park is home to eleven lemur species including the critically endangered silky sifaka (*Propithecus candidus*). Between May 24 and August 3 2012, diurnal and nocturnal line-transect surveys were conducted in two regions (remote north-west and central-east tourist region) to assess lemur population abundance, habitat structure and disturbance. Canopy-height, canopy-visibility, and understory-visibility were assessed at 50 meter intervals along each transect. Additionally, remote sensing of high resolution Geo-Eye satellite imagery was conducted using ENVI and ArcGIS. Each of the five transects received 24 diurnal and 4 nocturnal replicates yielding a total survey effort of 254.1 km. *P. candidus*, *E. albifrons*, *E. rubriventer*, *H. occidentalis* and *L. seali* were found in both regions. *C. major* was only found in the central-east. *A. laniger* were only found in the north-west. *D. madagascariensis* and *A. trichotis* were possibly identified in the north-west. Encounter rates and density were calculated for all species. Approximately 5 new silky sifaka groups (20 individuals) were found. Anthropogenic disturbance was clearly higher in the north-west and included selective logging, old rosewood logs, lemur/carnivore traps, bush-huts, and extraction of wild tubers ("ovyala"). Remote sensing revealed that the amount of secondary forest within the park is higher in the north-west region as well. These results highlight the areas of the park requiring more protection, while providing some of the first lemur encounter rates and densities from this national park.

## Socio-economic Impacts of Disproportionate Investment in Communities Bordering Marojejy NP

Rachel A. Kramer<sup>1,2</sup> and Erik R. Patel<sup>3</sup>

<sup>1</sup> Yale School of Forestry & Environmental Studies

<sup>2</sup> Current Affiliation: World Wildlife Fund US

<sup>3</sup> Duke Lemur Center, SAVA Conservation, Post-Doctoral Project Director

Equity in the investment of conservation-sector finances across target community groups is essential to achieving balanced conservation outcomes. This study examines differences in socio-economic conditions and natural resource use across communities inside and outside of the tourist zone of Marojejy National Park. Between June and August 2011, anonymous structured oral interviews were conducted in Tsimihety dialect Malagasy in 400 households in four communities adjacent to Marojejy NP. Two eastern study communities (Mandena and Manantenina) are part of the tourist zone, which has been the focus of considerable development activities and is frequented by foreign researchers and tourists, while two western study communities (Antsahaberaoka and Ambalanaomby) lie on a remote side of the Park. Mann-Whitney U Tests revealed that communities near the tourist zone reported significantly higher educational level, household assets, paddy rice, and vanilla production compared with remote western communities. Eastern communities reported higher coffee production and significantly higher hill rice production using tavy shifting cultivation. A binary logistic regression was performed to assess the ability of observed socio-economic variables to predict community membership. The overall model was significant (Chi-Squared(14) = 347.85,  $p < .001$ ), and had a good fit (Pseudo-R<sup>2</sup> = .588). The overall percentage of correct classifications was 89.3%. The strongest predictors of community membership were vanilla yield, value of home materials, coffee yield, and hill rice yield. Results suggest that, for the long term, conservation of Marojejy NP will require a more equitable distribution of finances as to-date investment has benefitted only a minority of forest-bordering residents.

# DUKE CONNECTIONS

## Duke Engage

The Duke Engage program is a unique opportunity for Duke undergraduates to acquire service project experience, either in the US or abroad, with financial support from the university. The normally 8-week duration projects can be undertaken either as a group or independently, but must be partnered with an NGO that is working on the ground locally. I think of the projects as a mini-Peace Corps experience – except that each student must file an application, not unlike a grant proposal, with the Engage office. The proposals are carefully reviewed and evaluated and, if deemed worthy, the student will receive complete funding from Engage to carry out their service adventure, some of which are in remote corners of the world. Most students that take advantage of the program do so in the summer between their sophomore and junior years.

SAVA Conservation accepted our first two Duke Engage students this past summer, Sophia Staal and Cameron Tripp. Sophia worked with the fish farming initiative, and Cameron mapped Desiré Rabary's Antanetiambo Reserve and observed the bamboo lemurs there. We were pleasantly surprised at how productive both Cameron and Sophia were in the short 8-week period that they spent on their individual projects. Volunteers can often be more of a hindrance than truly helpful, but our two Engagers made very real contributions to the project. We are grateful to both Sophia and Cameron for the tangible results they produced. Rather than continue on here about their projects, please read their own accounts of the time they spent with us in Madagascar.

## An Adventurous Summer of Service in Northeastern Madagascar!

By Cameron Tripp

When I was told that the Duke Lemur Center (DLC) was looking to partner with two Duke Engage students for a summer service project, I knew it was meant to be. As an Evolutionary Anthropology-French double major, Madagascar was the perfect location for me to complete my Duke Engage Independent Project – I would be able to practice my French while also partnering with the DLC's SAVA Conservation Project. Of course, I wasted little time sending an email to Charlie Welch and Dr. Erik Patel indicating my interest. When I was told that I had been accepted into the project, I was ecstatic, but also so nervous. As you can imagine, northeastern Madagascar isn't your typical summer break destination.

My project took place in the heart of the SAVA region, in the rural town of Andapa where much of the DLC's SAVA Conservation Project's work takes place. The majority of my project took place in Antanetiambo Nature Reserve (<http://antanetiambo.marojejy.com/>), where I developed several maps of the reserve, from a detailed boundary map to several vegetation surveys, in which I mapped areas of deforestation, eucalyptus, and bamboo forest. I was also able to take GPS points at each of the small households in close proximity to the reserve, as well as conduct interviews to establish a record of family names, occupancy numbers, number of children, etc. These maps will be used in the future to obtain legal title for the reserve and to establish whether the bamboo lemurs preferentially avoid certain high deforested areas. I also helped train local guides in GPS use and helped to standardize data collection methods.

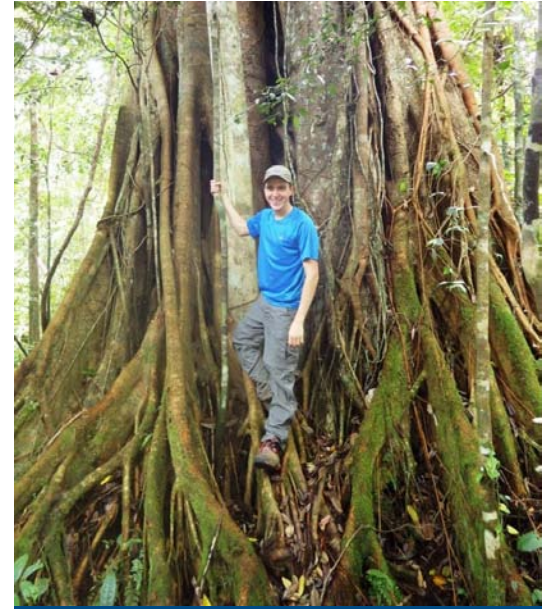


Sophia and Cameron with their guide, translator, and general expert on everything, Jackson.



## An adventurous summer of service *Continued*

In addition to my time in the forest, which constituted the bulk of my project, I was also able to provide support for other DLC initiatives. This included catching fish with my bare hands for the “fony” (*Paratilapia polleni*) harvest (I only screamed a little bit), attending training on how to cultivate ovy-be (a giant yam rich in fiber), and taking a five-day trek into remote Anjanaharibe-Sud Strict Nature Reserve to determine if the DLC could support the park by building bungalows, toilets, and generally improving tourism infrastructure. Anjanaharibe-Sud happens to be the northern-most limit of the Indri (*Indri indri*), so it was an opportunity to see an all-black morph of the largest living lemur species in the wild. Incredibly, our guides were unable to find the indri for two days, but Sophia and I spotted a group of three all by ourselves and were able to follow them for 45 minutes even though they’re not yet fully habituated to humans! It was also incredible to hear their magnificent and loud vocalizations (audible for several kilometers) which are referred to as “songs” due to their melodious and rhythmic pattern.



Cameron on a strangler fig.

In addition to the work I did in the reserve and supporting the DLC’s conservation projects, I was also able to make what will hopefully be lifelong relationships with my project partner, Sophia Staal, my mentor, Charles Welch, my program coordinator, Dr. Erik Patel, and also the local Malagasy with whom I worked, specifically Desiré Rabary (the founder and owner of Antanetiambo), Valerie (his wife), and Jackson (a prominent Marojejy National Park guide).

Two months sounds like quite a long time when you’re a 20-year old college student whose main hobbies include attending every Duke basketball game with the pep band and planning events with Class Council, but two months turned out to be so much more than I could ever have imagined going into it. My two months in Madagascar was one of the most amazing experiences of my life and came to an end much too quickly. I often find myself thinking about my time there and wishing desperately that I were back in Madagascar to relive the whole experience.

## From Political Science Major to Fish Market Expert

By Sophia Staal

As a political science major, working on a conservation project in rural Madagascar is perhaps not the most obvious choice for a summer job. But if I have learned anything in my two years at Duke, it is that following norms and doing what is “obvious” rarely leads to anything worthwhile. So I developed a project where I would be able to combine my passion for the environment, my French language skills, and my policy background to make a valuable contribution to a community. Madagascar, as a francophone country with a unique and highly endangered ecosystem, was an obvious choice, and the Duke Lemur Center’s (DLC) new SAVA Conservation Project in northeastern Madagascar made them an ideal partner. After meeting with Charlie Welch and Dr. Erik Patel, I decided to focus my project on the newly established freshwater fish pond near the Antanetiambo Nature Reserve (<http://antanetiambo.marojejy.com/>).

While my peers were applying for internships in Washington DC or preparing to study international relations in Geneva, I was researching the design and construction of fish farms and breeding and feeding procedures of African cichlids, while drilling useful Malagasy phrases. I was envisioning weeks of wading waist-deep in murky pond water, armed with a net and a thermometer. The reality came as a (happy) surprise.

The primary goal of my project was to conduct research examining local fish markets in the small town of Andapa. The idea was to strengthen our understanding of the availability of fish and seafood in the area, and to determine what

## From Political Science Major to Fish Market Expert *continued*

the demand and price might be for the fish harvested from our pond. I started the first day of data collection holding my breath as we wandered through the aisles of crusty dried fish for sale in the market, taking pictures in a desperate attempt to identify the different species, which to me all looked like identical grey lumps. A month later, I was the official “World Expert in the Fish Markets of the Greater Andapa Basin”. Weeks of interviews with vendors had helped us identify over 80 different species for sale in the area, by both their English and Malagasy names. We discovered that the vast majority of fish available locally were from the ocean, and were being transported hundreds of kilometers to be sold as dried fish, not fresh. There were only two or three vendors selling fresh fish on a consistent basis, and the prices for these were subsequently very high in comparison to other forms of protein for sale.



Sophia taking a GPS satellite location reading.

The conclusion of this study revealed very high demand for fresh fish, and in particular, high demand for the *Paratilapia polleni* (known locally as “fony”) being raised in our pond. Follow-up interviews with local village elders found that most people rated fony as either their first or second choice when asked to rank fish by taste. Everyone we spoke to was enthusiastic about the pond project, and even more excited about the possibility of expanding the project by using the existing pond as a training tool to help local community groups create their own ponds. One of the unique aspects of this project is that a native species is being raised, and that 25% of all harvested fish are reintroduced into local rivers to restock wild populations which have been severely diminished by overfishing and competition from invasive fish species.

The experience was also hugely transformative on a personal level. I have always had a strong interest in international development, and I hope to go into that field eventually. My summer with the DLC’s SAVA Conservation Project gave me real on-the-ground exposure to what community development projects look like, and taught me what factors are essential to the success or effectiveness of a program. The most essential component – and one the DLC SAVA Conservation Project excels in – is close collaboration with the community. Throughout the summer, I was consistently encouraged to reflect on community needs and potential impacts. It was this collaborative environment that enabled me to really get to know Andapa and the SAVA region, and helped me foster friendships that will last far beyond the two months of my project.



Sophia, Cameron and Malagasy finishing up the first harvest of “fony” from the demonstration fish farm pond at Ambodivohitra.



# Closing Comments

A final thank you to our supporters as listed in this issue's annual report. The activities that you read about in this newsletter would not have been possible without you. Donations from individuals/couples are the driving force behind the project, and we hope you will include us in your year-end giving plans so we can keep SAVA Conservation moving forward at its present full speed. Supporters can rest assured that all of their donations are going in full to support our multi-faceted conservation work in the SAVA region. As we heard many times in our years of living in Madagascar, "merci d'avance".

*Charlie*



A day at the beach in Sambava.

Photo by Megan Elwing



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"Protect the forest, and life will grow"