



Sam's Madagascar Volunteer Blog #7: Roving and Reforestation

Greetings all! Here follows a recount of my first week as a volunteer research assistant for MBP's Reforestation team. I miss the lemurs, but I am learning a lot of amazing new stuff about ecology and Malagasy culture, with a group of awesome people! I am so lucky to be here.

Sunday: My Ascent of Sangasanga

By the weekend of August 31st and September 1st, I was again feeling a yearning to push my limits and try something new. I arranged with Theoluc, the noble leader of the *Prolemur simus* team, that we should climb Sangasanga in the early morning of September 1st, to see the sun rise. That morning, I woke in my tent at 3:30 AM, and scrambled to ready myself for the trip. I strolled down through KAFS to the main road, bidding the night watchman hello, and confirmed with Theoluc via text that the trip was still on. We then met up and walked to Sangasanga, our way lit only by headlamps, through the villages of Ambalahosy Sud (Theoluc's hometown) and Ambodibonary (both still part of the Kianjavato Commune). The frogs in the marshes and rice paddies by the side of the road were so loud as to feel almost deafening, and as I recall moths were often present as well. Although obligate forest species like lemurs are profoundly imperiled by spreading agricultural land in Madagascar, I've noticed a plethora of insects, frogs, geckos, and small birds in banana fields and rice paddies. I suspect that the relative absence of pesticides and insecticides in Madagascar allows their farms to remain varied, species-rich landscapes, at least for the smaller members of the biota.

We then reached the mother-village of the commune, Kianjavato proper. Even at four o'clock in the morning, it hummed with activity: shopkeepers setting up by lamplight, laborers walking or bicycling to their tasks for the day. The gate to FOFIFA plantation, the entrance to Sangasanga Forest, was closed at that hour, so we went around, through the narrow, alley-like streets of Kianjavato village off the main road. Chickens, geese, dogs, mats heaped with food products, and early-rising children were, as always, plentiful.

Once we got into the forest, the going was harder, with slim little trails often bounded by little streams or ten-foot drop-offs on one side. However, it was hard in a pleasurable way, the enjoyable sort of exertion where you know you are pushing yourself but also know that you can continue this if necessary for quite a while. I thanked my past self for



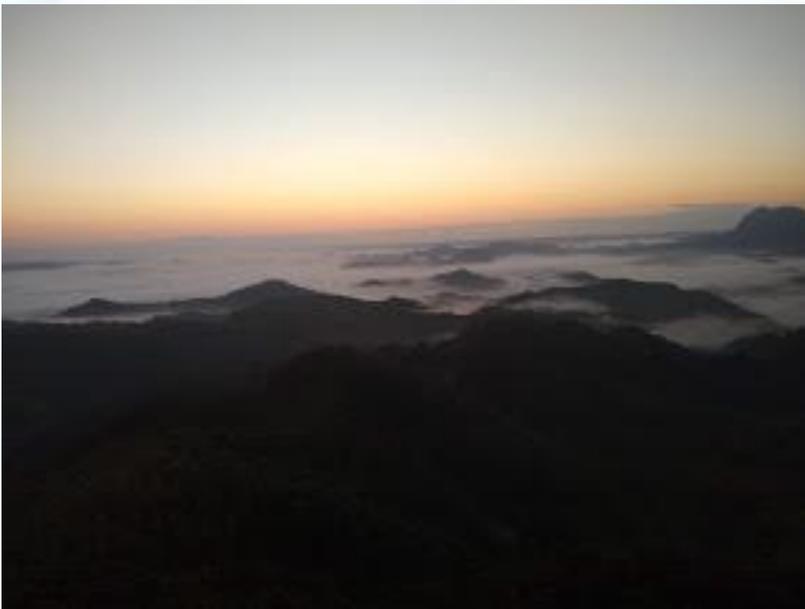
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By Sam Matey, September 8 2019

training, back in Maine, with a weight-filled backpack on a StairMaster-it was ideal preparation for this. Once we neared the top, the vegetation grew sparser and sparser, until it got to be mostly rocky. We ascended a crude staircase of shaped stone, and reached the utmost peak, marked with a giant cross. (How mightily the people of Kianjavato past must have striven, in beasts of burden-less Madagascar, to carry all this up the mountain! It reminded me of a cathedral in its silent testament to hundreds of person-hours of work, all for a glimpse of something divine). We eventually reached the cross, and sat down a few meters in front of it, at the edge of a sheer drop. And I got the chance to fully comprehend the landscape spread out before me.

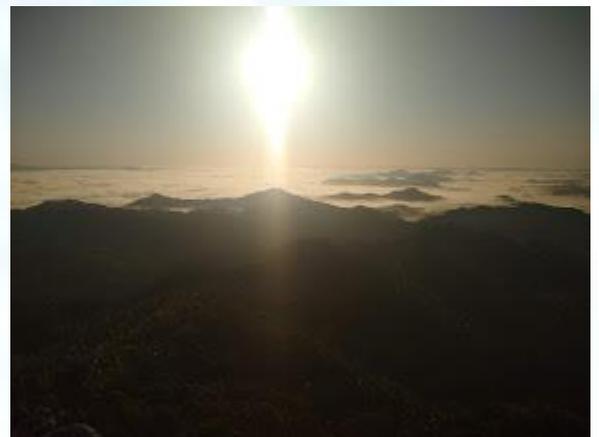


The view was, quite simply, of an archipelago. The hills were islands in a sea of clouds, lit by the pink glow of that pre-dawn where the solar orb has not yet risen but its light is already refracting through the atmosphere. (Pictured). It was a transcendently beautiful sight. I felt that I had been lifted to another world, perhaps a planet from science fiction where valleys were shrouded in some unbreathable gas and only the hills bore life. The only gap in the clouds was right below us, at the mountain's foot, where I could see the town of Kianjavato, the road, and the village of

Ambodibonary back in the direction of KAFS. Theoluc pointed out to me a tiny green rectangle: at this distance I wondered if it was a soccer field, but it turned out to be the great awning of the Kianjavato East nursery. On the horizon, the pink glow was hesitantly revealing a golden smile, the sun seeming to elongate into a cylinder as its light was refracted by the clouds. Later on, it began to positively leap up, rising through the sky at what seemed like a positively reckless velocity.

As the sun rose, the creatures of the forest heeded the call, and rose in their turn. Theoluc and I were graced for beautiful minutes by the aerial gambols of a pair of vasa parrots, who called and loop-the-

looped around each other, dove into the trees below and soared up high above the mountain's peak, and eventually





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retired to a hidden crevice behind a distant angle of Sangasanga's rock face. At about the same time, Theoluc pointed out to me a tree below us and on our right that was home to three varijatsy, *Varecia variegata*, the critically endangered black-and-white ruffed lemur. I stared at them through my binoculars, and couldn't believe how lucky and blessed I was to be there at that moment, in this magical land of wondrous creatures. I reflected again on how vitally important it was that these treasures were preserved for future generations. As long as *Varecia* salute the sunrise, something irreplaceable will be kept in the world.

We sat on top of Sangasanga for a time that seemed both forever and much too short, perhaps an hour in dry clock-reckoning. Theoluc and I talked of the land below us, of Madagascar. He told me of how during the day, he could text Mamy (another of my simus team colleagues) from the top of the mountain, shine a light down into Kianjavato Village (pictured, through the clouds), and Mamy could shine a flashlight from his house in response, little cylinders of photons bearing a message of recognition through the cloud level. He pointed out all the landmarks that I have already described, and to



the bank of clouds below which KAFS nestled in the bosom of the forest. He discussed a distant spot where, beneath the clouds, Chinese miners searched for gold near a distant river. He recounted the peregrinations of Rufiface, the lemur that I knew only as the patriarch of Northwest Two and the father of Ghost. Theoluc had followed Rufiface for his entire life, and knew that he had in fact been born in East One, but as a restless, dispersing young male had moved to the East Two and West groups before settling in Northwest Two. He also told me of Fabio, a lemur I had never met. Fabio and Rufiface had been boon companions, possibly brothers, and had moved between groups together and were often observed playing with each other in idle moments. Fabio had ranged even further afield than Rufiface: he was last observed in a different forest fragment altogether, far from Sangasanga. Shortly after that, however, his radio collar went dead, and his present whereabouts and status are unknown.

After a while, our attention began to wander a little, to some of the other life-forms that shared this eyrie with us. Right next to the rocky outcropping Theoluc and I sat on, I noticed a plant that I had last seen in Antananarivo. Crown-of-thorns (*Euphorbia milli*) is a fiercely spiky little shrub, with blood-red flowers, and likes dry, sandy soils. These were plentiful in the central plateau where Tana resides, but rare in the rainforest fragments around Kianjavato-except for the mountaintops, where water runs off quickly and constant wind has a desiccating effect. It reminded me of the classic ecological story that during a walk up a tall enough mountain in Arizona, you could see the same range of biomes as if



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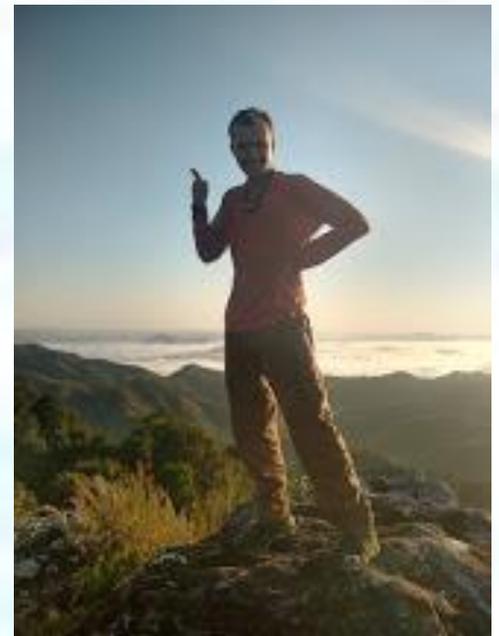
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you walked three thousand miles to the north on flat ground-desert, scrubland, temperate forest, boreal forest, and finally tundra. This principle, that different little ecosystems band mountains at different altitudes (I'm sure there's a snappier name, but I've forgotten it), was first expounded by the great German naturalist Alexander von Humboldt in the early 1800s, in an annotated diagram of a South American peak which also happened to be the world's first infographic. On our way back down the mountain, Theoluc pointed out to me some beautiful white orchids (pictured), with some plants growing on their own on the ground and others straight out of the bark of a tree! Ever-helpful iNaturalist informs me that they were the Ivory-Colored Angraecum, *Angraecum eburneum*, commonly known by the poetic appellation of "comet orchid."



We posed for some pictures before we left, and then departed, grateful for the beauty we had witnessed. (Pictured: myself atop Sangasanga). The descent seemed to take a tiny fraction of the time the ascent had taken, helped no doubt by its being broad daylight. Every so often, we would stop and look behind us, and I at least was shocked at how far away and tiny the little cross seemed. I walked back from Kianjavato to KAFS, and spent the rest of Sunday reading and relaxing, refreshed and inspired by my journey. I felt I had properly said goodbye to the beautiful forested mountain, where I had spent so many happy hours immersed in the lives of lemurs. I was ready to join the reforestation team.



Monday: Compost

On Monday the second of September, Dakota and myself went to work with compost at one of the nurseries. Here I must introduce you to *Drawdown*, one of my favorite books in the world, and one of the few that I took to Madagascar. Its subtitle is "The Most Comprehensive Plan Ever Proposed to Reverse Global Warming," it was compiled by hundreds of the world's best climate and environmental scientists, and it functions as an effective atlas of all techniques and technologies that are proven to reduce or reverse ("draw down") anthropogenic greenhouse gas emissions. Among



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them is compost, or organic matter in the processing of decomposing into soil. Basically, compost is a bacteria-mediated process of converting organic material-anything from eggshells to eggplants to eucalyptus leaves-into stable soil carbon, where it and other nutrients are available for uptake by plants. It requires only enough water, oxygen, and heat to keep the bacteria alive. As *Drawdown* points out, it's a "win-win-win" of cost savings, fertilizer production, and carbon sequestration. It's finally taking off in the US and Europe as a sensible, productive way to dispose of the massive quantities of urban food waste (instead of landfills, where food scraps rot in anaerobic environments and produce methane).

Here, at MBP's nurseries, compost is one of the three major ingredients in the soil that seedlings are nurtured to "planting age" in, along with sand and red clay. As very little food goes to waste in Madagascar (and that which does is fed to farm animals), we used a different source of organic matter for our compost: the vegetation on the side of the road. For an hour or so, my fellow volunteer Dakota Wagner (a congenial and hardworking companion) and I chopped up some fairly nondescript leafy forbs gathered from the edge of the main road, using clippers to reduce bundles of these little plants into bite-sized chunks of leaf and stem. Once we had gathered six plastic barrels full of this raw organic matter, we lugged the lot back to the nursery. There, we deposited our cargo into a concrete-lined quadrangular pit, where we were given an excellent opportunity to watch the production of compost in its different stages. In our pit, previously empty, there were our fresh green leaves and stems, in the second pit there was a mass of withered and browned and broken-up leaves, and in the third pit simply rich, dark soil where the outline of leaves could just barely still be discerned. (Pictured, below).



At this point, we all (Dakota, myself, and the nursery staff, led by Nelson, MBP's able and efficient leader of compost production) lugged watering cans and wheelbarrows full of water from a nearby river to the compost pits, and watered all three copiously, ensuring that there was enough moisture for our bacterial legions to continue their good work. It was a quite enjoyable time, reminiscent of family gardening back home and I was rather sorry to have to return to KAFS around midday.



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That afternoon, I taught my customary English class, to an audience of KAFS grounds and nursery staff. My pupils are coming along excellently: that Monday we learned a host of new adjectives, including “high,” “low,” “full,” “empty,” “wet,” and “dry,” and formed sentences with them. I also tackled the tricky subject of the different forms of the verb “to be.” There are no words like “is,” “are,” and “am” in Malagasy: a direct translation of “Amerikana aho” is simply “I American,” and “Reraka izireo” is “They tired.” I described “am” as a word used only after “aho” (I), “is” as a word appended to “zavatra iray, tsy aho” (one thing that’s not “I,” from a tree to another person) and “are” as the form associated with “zavatra maro” (many things, or people). We also really got a grip on plurals (also absent from Malagasy). At the end of the class, I gave each student a single individual simple English sentence to translate, and they all performed admirably.

Tuesday: Labor and Literature

On Tuesday morning, Dakota, Romuald (a key Reforestation staff member, a lively wit, and a new friend) and I went to move seedlings at a nursery. There was a planting event scheduled in the immediate environs of Kianjavato the next day, and we (plus the five nursery staff members) needed to transport three thousand seedlings from the nursery to a truck. It was a short trip. This nursery was one of the ones only a stone’s throw from the main road, so after the baskets



were loaded, we only needed to carry them fifty feet or so. However, woven baskets full of twenty-five seedlings each (pictured) are surprisingly heavy, I’d estimate at least sixty or seventy pounds each. Then, we got to carrying them two at a time in the Malagasy fashion, with a basket on each end of a bamboo pole and the center of the pole on one’s shoulder. Dakota, Rom, and I made a bit of a game of it, and the work was done very quickly. I carried all my seedling baskets successfully, but carrying two on the pole required absolute concentration, like squatting one’s limit in a weight workout. My

clavicles ached throughout the next day. My awe for my Malagasy coworkers’ capacity for endurance grew still further: they did such work day in and day out, with no complaint.



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We rode with the baskets in the back of the truck to Kianjavato. Once we arrived, we were positively swarmed by an inrushing tide of humanity, grabbing the baskets and carrying them off the street to the planting site in the middle distance. Local fellows knew that they would be paid a set quantity if they carried four baskets, and some of them seemed to be trying to move them at the rate of a mile a minute. Dakota and I realized that the best thing we could do was stay out the way, and we watched the speedy work from a distance.

We were done astonishingly early that day, at only ten o'clock or so, a bare four and a half hours after our 5:30 wakeup. With my unexpectedly copious free time, I gave myself over to a bacchanal of reading, using the rest of the day to completely reread three of my old favorites on Kindle: *Life of Pi* by Yann Martel, *Darwin Comes to Town* by Menno Schilthuizen, and *Ecotopia* by Ernest Callenbach. Two novels and a book on urban evolutionary biology: all three were interesting and thought-provoking. I'd recommend them.

That evening, at 6:50 or so, a chance encounter gave me a new duty for the next week and onwards, which I look forward to with pleasing anticipation. Faranky, the graduate student-in-residence who leads the KAFS aye-aye team, asked me if I could teach extra English classes specifically for his aye-aye guides, who couldn't attend my Monday and Wednesday classes as those were the evenings that they went into the forest. It took me perhaps a quarter of a second to decide my answer. I agreed heartily, and suggest that I add aye-aye team English classes at 3 PM on Tuesday and Thursday to my existing Monday and Wednesday KAFS grounds staff English classes. I had very much liked the aye-aye guides when I joined them on a nest check, and I can't wait to spend more time with them.

Wednesday: The Manakara Nord Odyssey

If Tuesday had been nearly a day off, Wednesday was its opposite, a day spent fully on the job. During the usual morning scramble of getting the reforestation team ready for the day (retrieving and counting out the day's budget, assembling GPSs and notebooks, etc) KAFS leader Fredo mentioned that one volunteer needed to go to Manakara Nord that day, accompanying Romuald. I volunteered, on the principle that volunteering for out-of-the-ordinary things has always led to a more interesting experience for me. (It was volunteering to check on an ill volunteer in the first week, you might recall, that led to my on-the-spot drafting as an English-French translator at the clinic). It certainly did on this occasion. I knew that "MN" was a bit off the beaten track, but I learned that morning that it was an hour's drive down a dirt road, a road moreover perpendicular to the main national highway between Fianarantsoa and Mananjary on which Kianjavato and other local villages are strung like beads on a necklace. The countryside was, sadly, a study in degradation of land: a



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medley of rice paddies and bare, denuded hills, with some of the hills completely deforested and others, former MBP planting sites, beginning to recover.

That day, we moved seedlings and conducted the planting event. The moving seedlings part, with the staff of the Manakara Nord nursery, was more hard labor, loading baskets and carrying them to the van that would transport them to the planting site. After two such loads, Romuald and I reached the planting site ourselves, and I was surprised to find it quite a ways off the road, along a trail, through rice paddies, and up a steep hill. By this point, I was fairly tired, and I felt my thighs burn as I walked through the mud and up the trail. Behind me, nursery staff members walked the same path, often barefoot, and, unlike me, each carrying one of the great heavy baskets on their shoulders. I think I shall never cease to be awed by the physical stamina, endurance, and sheer “grit” of my colleagues.

On the top of the hill, I met the thirty-six or so locals, mostly women, who had been hired for the day to plant the seedlings as part of MBP’s Conservation Rewards program. I took a few pictures of the area, and soon was surrounded by locals clamoring to have their own pictures taken. I asked my standard “Mety manao maka sary anao?” and “Mety manao hanoratra momba ny anareo?” (May I take your picture, and May I write about you all), but they were hardly necessary-everyone wanted a picture with their friends, their relatives, or their kids that they had brought along. They had no phones, so I couldn’t share the pictures, but it didn’t seem to matter-even the brief sight of their own appearances on my phone produced gales of laughter and thanks. Altogether, we were a very cheery group at that planting event, and the time passed lightly. (Pictured: the planting in progress).

By the time the planting event finished, it was past one o’clock, and one of the nursery staff members with great generosity had his colleagues, Romuald, and myself over to his home for lunch. The gentleman even had the consideration to offer me a vegetarian



meal (beans and rice, both excellently seasoned). Although it is generally pernicious to make generalizations about an entire culture based on necessarily limited personal experiences, I can attest that all of the Malagasy citizens I have encountered have been notable for their generosity and hospitality. I wonder if the characteristic is national or primarily due to the rewarding relationship the local communities have had with MBP.



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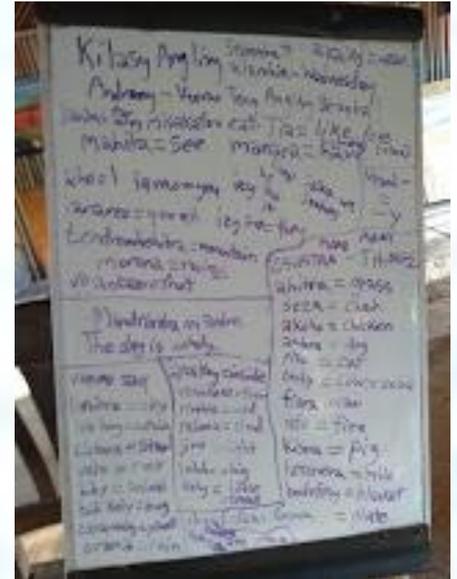


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On the way home, we sang songs, Malagasy and English, in the car together, the chorus diminishing one by one as staff members got out near their homes. No sooner had I returned to KAFS than it was time for my 3 PM English lesson. I declared the lesson one of “Vaovao Teny Anglisy Betsaka” (lots of new English words), and we went down a long list of nouns, from “akoho” (chicken) through “fiara” (car) and “lanitra” (sky) all the way to “zavamaniry” (plant). I love teaching English, and I am psyched to go up to four days of classes next week!

After English class ended at around 4:45, I transitioned to data entry, entering the GPS coordinates and species ID for the five thousand trees that had been planted that day around Manakara Nord. (Three thousand at my planting event, two thousand at a separate “forest species” planting event, enriching the pioneer community with trees that could contribute new ecosystem services to a mature forest). I worked through the twilight, until 8:30 PM, with a break for dinner, and turned in at around 9. It had been another full day of working for MBP in Madagascar. I am so glad that I have the opportunity to be here, and experience this rich and complex culture and ecosystem.



Thursday: The Reasons for Reforestation

On the morning of September 5th, Dana, Soumaya and I went on the weekly nursery check. MBP has sixteen nurseries clustered around KAFS and Kianjavato town, and four others (including Manakara Nord) further afield. We visited only the nearby sixteen: Andranomaintso, Antaretra, Tsitola, Morarano, Ambohitsara, Fotobohitra, Kianjavato (this one, in the town itself, was the one I saw from the top of Sangasanga), Ambodibonary, Antananibeloha, Andalabahitsy, Ambolotara, Vatovavy, Ambodifandramanana, Tanambao besakay, and the two nurseries contained within KAFS itself. (Due to the length of the average Malagasy place names, we often refer to them by abbreviations, such as “ADR,” “ATR,” “ABB” and so on). The nursery check was a pleasant function, almost exactly like the nursery check last week: we counted the number of seedlings ready for planting, inventoried their stocks of compost, sand, and red earth, etc. One difference was that we delivered new equipment this week: a shovel to one nursery, little trowel-like spades to several others, a sieve to a third, and so on.



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The afternoon I spent writing this blog and carrying out various other little tasks for the reforestation team, and one for KAFS. That last was the carrying of two full watering cans from the river down by the road up to the potted plants on the balcony of the KAFS building, the result of a friendly,

teasing gibe that this work was “real work, hard, not like writing.” For reforestation, my tasks included copying down the next week’s budget from Jean, the Reforestation team leader (to be counted out later), retrieving funds from the safe to pay the Single Mothers’ Club at the KAFS nurseries, and, with Jean, calculating weekly, monthly, yearly, and total since 2012 quantities of trees planted by MBP.

Amazingly, MBP has planted 20,000 trees this week, 14,000 trees in September 2019 so far (as this week stretches back into August), 581,852 trees so far in 2019, and an



astounding 2,786,026 since reforestation in the Kianjavato Commune began in 2012. (Pictured above: seedlings at an MBP nursery). This is a spectacular accomplishment for at least four distinct reasons—a “win-win-win-win.” As they grow, these trees will physically hold together the land, preventing erosion and retaining nutrients on the formerly denuded hillsides to the benefit of the local people farming in the area. Second, many of the pioneer species MBP plants are leguminous nitrogen fixers, so they’ll be actively reclaiming nutrients for the soil from the air, bettering the life-sustaining capacity of the land around them. Third, the trees will sequester some carbon (in the structural sugars, like cellulose, made from CO₂ during photosynthesis), doing their bit to combat climate change. And fourth, of course, for their *raison d’être*, these trees will grow to become new habitat for the wonderful local biota, and offer the fragmented lemur populations corridors of safety to travel to new forests and exchange genes. Planting trees, especially with the efficient and foresighted methodologies employed by MBP, is a profoundly rewarding activity, a multifaceted offering of hope for the future. The more aspects of their operation I see, the more I am impressed by the Madagascar Biodiversity Partnership’s dedication, tenacity, and compassion, and the more honored I am to be working here.

This blog covers just a five-day period, instead of the usual week. Earlier, Dakota, Dana, Claire, Soumaya and I had agreed that we should try to travel to as many nearby wildlife areas as possible on our weekends, to take advantage of the fact that we were in Madagascar already. On the weekend of the 7th and 8th, we went to Ranomafana National Park—an absolutely incredible experience deserving of its own coverage, as yet unwritten. Stay tuned!