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Summer Field Research Grant
Terminal Report

This past summer I went to Brazil for two months with the intentions of conducting research that would contribute to the improvement of scientific models for measuring how much carbon tropical forests sequester. This research was to be carried out at Linhares Reserve in the state of Espirito Santo of southeastern Brazil. My fieldwork agenda consisted of systematically measuring the biomass of trees in experimental plots that were planted two years ago with particular tree species, densities, and guilds. Such a research topic has important implications for both science and society. Reforestation is presently being considered as an effective means of sequestering carbon dioxide, which is the major greenhouse gas contributing to global climate change. Improving models that measure the biomass of a particular type of forest would be useful for determining the value of reforestation projects in the carbon credit trading system, as well as for determining the carbon dioxide that is emitted to the atmosphere as a result of deforestation.

This research was to be carried out in the second month during my stay in Brazil, as I had also been planning to participate in a one month long Brazilian forest management program north of Manaus during the first month in Brazil. This program would give me the opportunity to examine different ecological aspects of Brazilian tropical forests, and it would also provide me with a crash course in Brazilian culture and in the Portuguese language – all of which would facilitate my research experience during my second month in Brazil. While the forest management program went as planned, my research plans were eventually altered so as to suit the needs and interests of the reserve at which I conducted my fieldwork.

I flew into Manaus and stayed with a Brazilian scientist that worked for INPA (a national Brazilian institute for research in the Amazon) for a few days before the forest management program began. This gave me a chance to study Portuguese and become accustomed to Brazilian life in Manaus. Then I went to meet the other students – approximately 30 in total, all of whom were Brazilian students in the field of “forest

engineering" and from various Brazilian universities – and we drove about 40 miles north from Manaus to a research station embedded in the Amazon rainforest. During this month-long program we studied forest management both in the classroom and in the field each day. The lectures were given by the scientist that were working with us in the field as well as guest lecturers from various related concentrations. Our study topics included methods of measuring the biomass of a tree, taking tree inventories in forest plots, identifying tree species, and other similar forest ecology practices and methods.

As I lived in this close-knit Brazilian community of young scientists in the middle of the rainforest, I quickly realized how incredible an opportunity this really was for me. I had the chance to learn about far more than I had initially set out to learn. Not only was I receiving an education from Brazilian scientists in forest ecology and management, but I was also able to examine tropical ecology and biodiversity firsthand on a daily basis. In addition to this, I found myself submerged in Brazilian culture. From lectures given in Portuguese to fieldwork carried out in Portuguese, and from afternoon futbol games to churrascos, I really had no other choice than to embrace the new culture in which I was living. Having studied both environmental biology and cultural anthropology as an undergraduate student at Tulane, this first month in Brazil was, needless to say, exceptionally well-suited to my interests and also very valuable in preparing me for carrying out research during my second month in Brazil.

When I traveled to the reserve in Linhares I was met with somewhat of a surprise when I encountered the director of the reserve. Unlike the research station in the Amazon, which was very open to sharing data among different researchers and promoting any research that would further scientific knowledge, the situation at the reserve was much more formal and more subject to the interests of the director and the purposes of the reserve. My original plan was deemed unsuitable for the reserve at that time and so we had to work out a new research project. The near polar opposite nature of these two Brazilian institutions was in itself very interesting to me, as both of them were impressively productive, but through extremely different approaches.

The project that we ultimately agreed upon involved taking an inventory of a forest that had been monitored by the reserve for several years. This particular forest had been logged during the 1920's and then was left to grow back. The reserve had

hypothesized that cutting all of the vines would enhance the forest as it returned, because forests that experience severe disturbance events such as logging can be subject to stunted growth due to domination by rapidly growing vines. In 1995 the staff of Linhares Reserve cut all of the vines in this forest and then took inventories (measured all of the trees with a diameter larger than 10 centimeters and identified the species of each measured tree). Inventories of this forest were then taken every two years; and so my work consisted of taking an inventory in the 35 plots of this forest to add to their data set.

This concept of removing vines to enhance forest re-growth has real scientific potential in terms of implementing effective reforestation strategies, but unfortunately the reserve had initially failed to set up the project according to experimental design. The fatal flaw was that there were no control plots (plots that had not had their vines cut) to which experimental plots (plots that had their vines cut) could be compared. Despite having to work from an already established project that was poorly planned as far as a scientific approach goes, I was able to get some really excellent field experience. The reserve expected visiting scientists to help out at the reserve in some way, so in addition to my own research I also assisted a Brazilian student that was studying soil types and associated forest structure and composition, and a fellow Tulane Ph.D. student that was studying insect herbivory in the experimental plots in which I had initially planned on carrying out my own research.

Reflecting on the time I spent living, studying, and researching in Brazil, I must conclude that it was incredibly valuable to me in several different ways. I learned a lot about Brazilian life and what it is like to do research in another country, and I became adept at facing challenges and handling unexpected surprises. I was able to get wonderful field experience that, although it was not what I had originally planned on doing, actually prepared me very well for the independent research and fieldwork that I will be carrying out this year (which involves a project for the reforestation of City Park in New Orleans and getting funding through the selling of carbon credits). From both a scientific and cultural perspective, my experience conducting field research this past summer in Brazil was invaluable, and I thank the Stone Center for funding my project. I believe that my gratitude and appreciation for being awarded this grant manifested itself best in my consistent efforts to learn all that I could throughout my stay in Brazil.