

Dear All,

I have let many weeks pass since my previous email update, which I sent shortly after returning from trips to Kunming and Laos. Following my return to Man'E, my work for Green Rubber slowed, and I had four weeks in which to complete my independent study project on wildlife use in the village. Despite a strong start on this project in early July, I struggled significantly with my methodology half way through the process. Perhaps my greatest takeaways from this project are not the information I gathered but rather the experience of exploring different ways to ask about a topic nobody wants to talk about. In this final email update, I share with you my journey tackling the challenges of completing my independent study project, achieving progress for Green Rubber, and developing my baby owl into an independent wild animal.

Wildlife Use in Man'E

When I first began earnestly working on my study of wildlife use in the village, my methods seemed to work well. Many people told me about their hunting during my breakfast-restaurant interviews, and several welcomed me into their home after the initial interview for a more in-depth discussion regarding their motivations to hunt and their conservation attitudes. But although breakfast restaurant interviewing worked well for most of the questions I started asking (about fishing, catching butterflies, and even consuming wildlife), the public setting was inappropriate for asking about netting birds and bats. After a couple weeks, I began to notice subtle cues in the behavior of those at the breakfast noodle restaurants indicating some did not approve of my questioning. Meeting with confirmed hunters became increasingly difficult—when contacted on their cell phones, an unlikely number of people claimed to be away in Jinghong visiting sick relatives. I began to realize that my survey methodology did not suit the topic I investigated. The fines for being caught netting wild animals for food had increased in recent months; villagers knew this activity was illegal. Fear of prosecution caused people to avoid me, and I could not be confident in the accuracy of their responses. My project had initially relied on the good reputation I developed over several weeks of socializing. I had not fully appreciated how sensitive this subject is.

I immediately stopped interviewing and started looking for interviewing techniques that gave me the necessary data without revealing incriminating information about the respondent. After more than a week experimenting with methods of indirect questioning using randomization devices to obscure the respondent's truth, I finally settled on a paper questionnaire on which respondents answered simple questions such as, "In the past three years, have you caught bats? (yes/no)." Respondents did not record their name and I did not watch them complete the form. The respondent would secretly fold the questionnaire and put it into a box with several other completed, anonymous questionnaires. I also verbally interviewed respondents with non-sensitive questions and questions that asked indirectly about other people's sensitive behaviors. I interviewed people around lunchtime or in the afternoon when they relaxed in hammocks under their houses. I gave small gifts of appreciation and assured them that this study will not affect them personally in any way. The non-response rate dropped significantly and people no longer left halfway through interviews. I could gather all the information in a single 15-minute visit. This new methodology still suffered from a myriad of problems I am still trying to understand, and I had to part substantially from my original plans. But at least my questioning more carefully took into consideration the needs of the respondents, and in a community I felt so close to, protecting people's identities seemed just as important as uncovering the truth.

Raising Conservation Awareness Through Education:

I also planted the seeds for an educational outreach program for Man'E. I met with Wang Ximin, the director of environmental education and outreach at XTBG to discuss my concern over bird and bat hunting in the local villages and to discuss possibilities for an outreach project to improve conservation attitudes in the village. Mr. Wang is an experienced environmental educator, frequently organizing events at schools and educational programs for visitors to the gardens. He suggested a series of evening educational seminars in the village focused on improving understanding and appreciation for bats. The goal of his educational outreach will be to

develop a conservation ethic that discourages bat hunting both by fostering societal disapproval of killing bats and by developing an appreciation for living bats among hunters themselves. When we design the educational program, we need to keep in mind the true motivations behind this activity (what our conservation goals must compete with), the relationship between the community and the hunters, and the major gaps of understanding that we may be able to fill. Our status as outsiders will make it very difficult to bring change to this community. To maximize our chance of success, we must design the educational programs without false preconceptions. I feel that despite the inconsistent nature of my surveying methods and the inaccuracies that may have arisen due to the sensitive nature of the topic, my work this summer should still be able to help Mr. Wang design a locally-appropriate and effective educational program.

The Rubber Restoration Project

After completing bird surveys on July 1st, I continued to help Dossa with Green Rubber throughout my last weeks in Man'E. Shortly after my last email update, Dossa arrived in the village to sign the final version of the contract with the participants. Upper management had finally indicated that, in the rare case the government commandeered villagers' land, reimbursement money for the experimental crops would belong to the villagers. With their concern over this issue finally cleared up, participants gathered at 10PM in the sweltering village classroom to sign the documents.

However, major issues arose, largely stemming from a lack of communication regarding land ownership during site selection last winter. In four cases, participants had assured us we could fit our study plots on their plantation if we extended over onto their neighbor's land, and they promised to talk to their neighbor about this. I had tracked down these unknown neighbors during my attempt to discuss the contract with all participants in early July. None of them had ever heard of the project, and some of them were not convinced they should participate. This was the background leading up to this contract-signing meeting, when two participants left suddenly without signing. One man had only recently learned about the experiment. The other was his nephew, who felt that he could not participate if his uncle (in the neighboring plot) did not want the land intercropped. Later that week I succeeded in persuading the nephew to help us discuss the experiment with his uncle. The nephew agreed only to sign the contract if his uncle agreed to participate, and the uncle proved to be a very skeptical man. Yet Dossa succeeded in bringing him back into the project with the promise that his plot would only be a "control," where no crops were planted.

During those last couple weeks working to accumulate sufficient land and participation for our project, I interacted with dozens of villagers, all of whom had different attitudes towards our experiment. I found both support and apathy within the broader community. I became frustrated when the village leader resisted a necessary change in the designation of his experimental plot from "control" to "simple intercropping." Yet as we played volleyball, one old man told me "us farmers welcome expert outsiders like you who come to show us how to use our land better. With intercropping we can get two incomes from the land rather than just one!" I believe that the participatory approach of Green Rubber is indeed promising. Problems arose from the difficult requirement that supportive villagers and adequate plantation size/location/slope/age occur together and are found during Dossa's very limited time in the village. I believe that we can succeed if we devote more time to searching for good participant/land combinations and communicating directly with current and prospective participants.

The Future of Man'E

The lessons we learned in Man'E will need to be applied in a different village. More likely than not, Man'E can no longer accommodate Green Rubber. Only four days before I left the village for home, government officials called a big meeting to announce their plans to develop all of the villagers' rubber plantations into a massive movie-shooting complex. At least a representative from every house showed up to hear the news. It was a dramatic sight—the entire community convened together at the basketball court, pondering perhaps the greatest change in the history of the village since the arrival of rubber agriculture in the 1980s. Representatives from the

film corporation took turns at the microphone with local government officials in explaining the 320 hectare development that would swallow all the villager's plantation land from the highway to the nature reserve. This project would benefit villagers by accelerating regional economic development and attracting tourists, the officials claimed.

Villagers are offered 120000RMB/亩 (about \$18,000 for one fifteenth of a hectare) of compensation for the permanent loss of their land. But these are a people who have always relied on their land as insurance for their future. Some villagers feel that without land they have nothing. Their best option will be to invest the one-time cash payment into starting a business that their children can inherit. Several savvy households, such as my host family, may get rich in this way. The only other source of income would be employment, and this will force villagers to invest in higher education for their children—with no more than a middle school education, many villagers can only find low-paying jobs. Yet many young men, few of whom have studied past middle school, might spend the one-time payment on a fancy new home, a nice car, and lots of liquor, cigarettes, gambling, and nights at the karaoke bars. And then what will their children depend on for a livelihood? As with any kind of big change, some will fall and others will come out on top. This is a dangerous game, and the players do not start on equal footing—those with more land always seem to have the upper hand.

The villagers have not yet signed any contract, but it is more than likely that they will sign away their land. Rubber no longer offers enough money to live on, and many have little else in terms of income. The villages on both sides of Man'E are also targeted for the same development project. The whole village must make the decision together. A dozen houses standing in firm opposition will have no option if the majority of people want to sell their land—if your neighbors all sell out, then you would have no way of accessing your land. The villagers will find some good outcomes from this project, and I hope they maximize on the positive aspects. I think they have no choice.

Tiny Owl

Throughout my two months raising my little Collared Scops Owl, I never gave it a name. I tried to prepare myself for when it would leave me. I approached the owl as a project of equal importance to Green Rubber or my hunting study. The owl most definitely detracted from my other projects, and I likely would have had more success in my personal study if I hadn't spent 2-3 hours each day fretting about this little animal. Yet I sincerely have no regrets. There was something more real, more tangible about raising it. In school we spend the vast majority of our time collecting and organizing information and pushing words around. I have spent most of my life piecing words together into essays and narratives—I have found success by throwing around big, vague words. But no matter how well you write, words are at least one step removed from reality. The owl made me work with my hands, and if I messed up, there was no "back-space" button. A life depended on my decisions. And the owl taught me a more common-sense and realistic understanding of the natural world than years of reading textbooks. Food is scarce. Only certain food is suitable for a given species. As it learns to hunt on its own, a young raptor not only must encounter food (coming across a suitable prey item does not happen frequently), but it must catch it (prey actively avoids being eaten) and kill it using body parts and sensory organs it is only beginning to become accustomed to. You can't really appreciate the daunting nature of animal development until your baby owl must accomplish it in a limited amount of time or it will die.

The pressure to release my owl mounted day by day as my departure date neared. My host family did not want to care for the owl, nor did I want to pass the owl on to another caretaker. Caring for the owl required an incredible amount of work, and even my most good-hearted friends would not have had enough time to do more than keep it in a cage and feed it dead store-bought meat. How could my owl develop into a wild animal if kept longer in captivity? Its feathers seemed to have grown in fully, and it had gained weight on its diet of wild rat. There was only one option: prepare it as best as possible for survival in the wild. I stopped feeding it by hand and instead placed dead meat in the cage for it to find on its own. I struggled terribly with ants and maggots, which proved much more effective at finding and consuming food than my owl. I needed to place live food in its cage that it could learn to catch on its own. But what live prey could I provide? Rats were much too large for

my tiny owl. A contact suggested 2-4 day old chicks. Despite difficulty, I procured three tiny chickens, learned how to care for them, and then attempted my experiment. The results? Tiny owls are afraid of tiny chickens. In fact, the chicks often cuddled with the owl, perhaps mistaking it for their mother. A researcher at the botanical gardens suggested purchasing tiny pet store mice; but the nearest pet stores were an hour bus ride away. So I sacrificed a day to travel to Jinghong city where I located a pet store. With only a few days before my departure, these tiny mice represented the owl's last chance.

Night One: after starving the poor bird for a day, I placed two tiny mice in a little basin within its cage. The mice could not escape the basin, and no other animal could break into the cage. Morning One: mice still in basin, owl approached me hissing for food. Exasperated, I picked up the bird and plopped it in the basin with the mice. Both mice met their fate before my eyes—owl can kill! Night Two, owl is presented with the same setup as the previous night. Morning Two: owl is found within the basin red-handed—one dead mouse carcass and the other nowhere to be seen. Night three: two mice placed in a basin of 3 ft. diameter with leaves and branches to act as cover—the owl will have to work harder to catch them. Morning Three; Owl sits within the basin again, no mice in sight. Owl does not appear hungry. On that day I had no more mice to feed it. I had no rats and no chicks and no frogs, fish, or grasshoppers. And for the first time in two months, I did not rush out searching for food. Instead I called a friend at the botanical gardens and arranged to transport the owl to the gardens. We released it at a research site where my friend could provide live mice in a basin each night to “soften” the bird's transition to the wild. I did not cry when I walked away from the bird. This was as perfect as my project could turn out; all I needed to feel completely confident in my success was to return the next day and fail to find both the mouse and the owl.

The next day the mouse was gone, but tiny owl remained exactly where we had put it. It failed to fly away the second night as well. As I boarded the bus home, my friends at the botanical garden texted me a continuous stream of worries. “It is blind,” “It cannot fly,” “It is thirsty,” “It is not ready.” But now I was helpless; I could only carry out my decisions through tactful persuasion and negotiation in Chinese with my friends back at the gardens. Anxiety over my poor little owl plagued me for the next three days, throughout my flight back to the US. Finally, I reasoned the owl did not have enough opportunities to find food in the wild, because the release site was surrounded by rubber plantations. I had the bird relocated to the primary rainforest fragment within the gardens, a place with abundant cover and food for my owl. On its third day in the rainforest, I was told the owl had disappeared. Maybe it starved to death. Perhaps it was killed by one of the evil feral cats that lurk everywhere. Or maybe, just maybe, it caught some big insects or chanced upon a lizard. I prefer to believe it is still out there at this moment, stealthily prowling the night beneath the dense green foliage.



This was two weeks before I released my owl. It wants to show me how big it is.



Every one of these paper triangles contains a live butterfly. There are at least 4 houses in the villages that work with separate butterfly “bosses” who collect multiple times a week. The butterflies in this picture are abundant in this season and thus they are cheap. A man came in with 120 butterflies and walked away with 24 RMB (\$4). They aren’t THAT desperate for cash, but if you have 2 hours to kill, might as well catch some pretty butterflies and make a little cash.



Ants decided to cover my rat bait with dirt. Here is only one of the thousands of challenges associated with raising the owl.



The contract-signing meeting



Contract-signing meeting: The girl in front is the new masters student assigned to help coordinate data collection for the project. The man in the yellow-green "Run" shirt to her right is my host father. The guy in the

red shirt is the “nephew” described in the narrative, and the man in the blue plaid in the back is the village leader.



My host family owned their own restaurant many years ago. The sign is still there. They will more than likely use the reimbursement from losing their plantations to open up another restaurant



The nature reserve sits way out there in the mountains. This is the world I lived in all summer



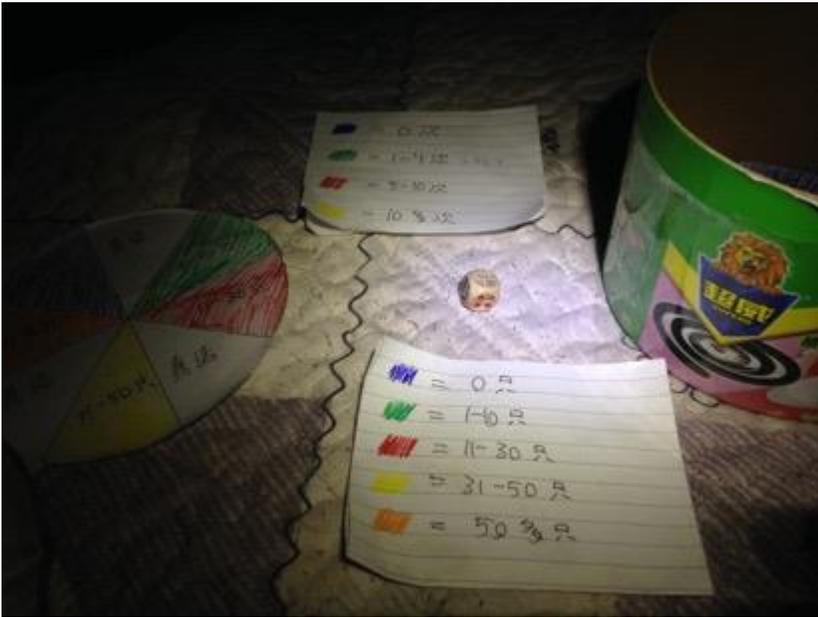
Men socialize during “Ten Houses Festival.” Every week a different group of ten houses in the village celebrates the festival and invites people from all around the community. Those cups are filled with the strongest rice liquor (moonshine) you can imagine. People drink very frequently in this community.



This is where dragon fruit comes from



Why didn't I start my Entomology course collection while I was in China?



My attempt at a “Forced Response” survey method that uses a randomization device to obscure the respondent’s truth. I can use statistics to estimate the truth from the entire community, but I can never determine whether a single person hunted or not. It was too complicated for the villagers, and I may never have been able to get enough data for the analyses. I am glad I didn’t persist with this.



The little shop at the main road. This is the “face” of Man’E.



Migrant workers put pineapple on a recently cleared rubber plantation. Pineapple will form the understory until the rubber is big enough to tap, and throughout this period, the pineapple company manages the land for the rubber farmer in exchange for reaping all the pineapple profits. This eliminates any possibility of planting more diverse, ecologically beneficial intercrops early on in the rubber trees' growth process.



I really loved breakfast 😊



In a community with a low literacy rate, getting contracts signed was a headache not only for me, but also for the poor farmers who had to read the document!



It took me several days to find this man when he was in the mood to sign the contract. He is building a house and never had time for me...



Dossa (left) and Mingxia (the masters student, right) try to explain the experiment more clearly to the nephew (center), as described in the narrative



Baby was climbing on me as I was entering data, so I had to take a selfie 😊



I don't remember what Tiny Owl was hiding from here. You can see it had tears pouring out of its left eye, a problem that lasted for weeks and finally cleared up the week before I released it.



Sometimes vehicles get themselves into precarious situations in narrow places—not an uncommon sight in China. This van literally has no room to move forward or backward. How did they manage this?



Can my owl learn to hunt? These were the darkest, most stressful days the entire summer. I didn't sleep at night. I never slept.



I went to interview this guy about illegal hunting. I was invited to stay for a meal with him and his girlfriend, and they served me wild deer—almost certainly killed illegally with in a nature reserve in the region. I tried a little to be polite. Yes, it tasted wonderful. I still explained why buying deer meat is wrong. People understand that wildlife is disappearing. Just like we know about climate change but continue to drive long distances for non-essential purposes and purchase food flown in from the other side of the world.



Tiny chicken has taken a liking to Tiny Owl. But Owl seems rather unsocial.



There are vegetables grown in this village that I have never heard of before. This one seems to be pollinated by bats, but people all say that bats come to the trees to eat the vegetables. People really don't like the bats attracted to this crop. (locally called 海船 hai3 chuan2)



The owl makes its first kill, as described in the narrative. I swear my heart just about stopped.



Villagers gather to hear about the big development project



Villagers negotiate how much they will be reimbursed per unit area lost to the development



The owl killed again!



Ammo cartridges. Bats died in this cave within the last few days.



Friends took me to a huge bat cave an hour motorbike ride away from Man'E. Bats have been hunted heavily at this location. Locals admit that there are fewer bats; my advisor at the botanical gardens confirmed that this cave has seen massive reductions in numbers. I saw charred marks on the ceiling and stalactites clearly destroyed by gunfire.



Morning Three. The owl killed two more mice in a slightly more difficult setting. No more mice left, no more days left. End of training.





The night of the first release attempt



It's China's "Valentine's Day." The companies are collecting tens of thousands of lightning bugs for releases at romantic events in big cities up north.



On the day I said goodbye to my best friend in the village, I gave him a book on snake breeding. Here we are pictured with his Burmese Python.



This is the last time I ever saw my owl. It was sitting on a papaya leaf. It's eye problem seems to have healed and it has mostly lost its fluffy baby plumage. I think it is ready for the big world.



In a hostel in Kunming. I am leaving tomorrow. After everything I did this summer, my life fits into this one blue backpack. All those experiences are but weightless memories in my head.

