A GUIDE TO WORKING ON THE LOMAS BARBUDAL MONKEY PROJECT, FOR PROSPECTIVE FIELD ASSISTANTS

I. Historical Background:

In 1990, Susan Perry and Joe Manson arrived in Costa Rica with the idea of establishing a long-term field site for the study of capuchins and howler monkeys. We chose Lomas Barbudal Biological Reserve because a study done by Colin Chapman et al. had revealed that both species were abundant there. We rapidly discovered that the monkeys regularly ranged outside the park into many private farms and ranches (e.g. Hacienda Pelon de la Bajura and Hacienda Brin D'Amor, as well as many small farms in the community of San Ramon de Bagaces), and fortunately these landowners also gave us permission to conduct research there. Joe began working with howlers, and Susan began her dissertation work on capuchin monkeys. Susan habituated a single group of monkeys (Abby's group), which was the focus of her dissertation work in 1991-3. Howlers turned out to be excruciatingly boring, so Joe opted to help Susan instead of continue with that work and did his own research in subsequent field seasons. Julie Gros-Louis joined us as Susan's assistant beginning in 1991 and eventually came back to do her own dissertation work in 1996, when she began habituation of the second study group (Rambo's group). Beginning in 2001, observations of the monkeys have continued without a break, and the project has expanded to monitor 11 groups of habituated monkeys. Since 2001, when Joe and Julie shifted their research interests towards other species (primarily humans), Susan has taken the lead role in running the site, while a manager (or two-person managerial team) is in charge of day-to-day project supervision, particularly when Susan is in the U.S. (most of each year). During 2001-6 the project was based at the Max Planck Institute for Evolutionary Anthropology in Leipzig, where Susan Perry and Joe Manson had 5-year jobs in the Cultural Phylogeny group. Since 2006, Susan Perry and Joe Manson returned to tenured jobs at UCLA, and thus the University of California is the project's primary academic home in the US. Over 120 people, including field assistants, graduate students doing thesis research, and postdoctoral scholars, have worked at Lomas Barbudal. During the 23 years the site has been in operation, a "Monkey Project Culture" has emerged: a system of norms and expectations that has kept the site productive and enjoyable. In this Guide, we will be as explicit as possible about working and living conditions at the site, so as to avoid misunderstandings and unpleasant surprises.

In Costa Rica, the "base camp" of the project has shifted many times. Sometimes project houses are rented in Bagaces, a town about 35 minutes' drive from the study site. During other phases of the project, we have camped in the community of San Ramon de Bagaces, a small farming community adjacent to the reserve, or some of us have lived in the "centro," a building where park guards and volunteers live. Currently the project is based on Brin d'Amor ("Brin"), a ranch in the small community of Pijije that is owned by Carlos Jiménez Freer, a staunch supporter of the monkey project. This ranch is adjacent to the biological reserve, so it is possible to walk to the monkeys rather than drive (though it is a long walk, i.e. over an hour), to some groups. During times when there are too many people to live in the two buildings at Brin, some people also live in the park service "centro" with their guards and volunteers, or pitch tents at Brin. We are currently trying to raise funds to build a permanent structure for the monkey project to live in, most likely at Brin, and we hope that this goal will be achieved by the end of 2013.

II. A Typical Day in the Life of a "Monero":

(1) Data collection

Because capuchins rarely sleep in the same place twice, and have highly unpredictable ranging patterns, it is necessary to follow them from dawn to dusk. They tend to move rapidly at dawn and dusk, which means that we must arrive just as the sun comes up and leave when it has set. This makes for an extraordinarily grueling workday; however, it is far more productive and less exhausting than searching for the monkeys for hours (or weeks!) after they have been allowed to slip away. We tend to work in teams of three or more, so that each person spends two days in the forest followed by one day at home. That way, there is always one person who was out the previous day, who can direct the new observer to the sleeping site.

In a typical monkey-watching day, we wake up between 3 and 4 AM, but generally closer to 3:00. There's very little time for breakfast, and any coffee-drinkers must have made their coffee the night before and stored it in a thermos. We throw on our clothes, grab our already-packed backpacks and vests, put on our polainas (snake-leggings), and charge out into the forest in the dark. (If we are studying a group that lives over an hour's walk away, and we have sufficient funds for gas, we sometimes drive part of the way.) It takes anywhere from 5 minutes to 1.75 hours' rapid hike through the forest to reach the monkeys' sleeping sites. This rapid march is done in the dark, with flashlights if there isn't good moonlight. The morning march often involves some unpleasantness, like splashing through a river and getting soaked first thing, or crashing through spiderwebs with your face. If they are far from a trail and it's wasp breeding season, it can also be unnerving to crash through long stretches of undergrowth in the dark. On the bright side, the stars are SPECTACULAR in the hour before dawn, because there are no city lights to make them seem dim. We arrive at the sleeping site about 5 minutes before dawn, just as the monkeys are beginning to wake up and break branches. As we watch the monkeys wake up, we pull breakfast (often pastries or bread) out of our pockets and eat before the monkeys start zooming away. We never eat fruit in the forest, because we do not want to be viewed as feeding competitors by the monkeys -- if they learn that humans are sources of food, they will interact with us differently, and they may also become more vulnerable to disease transmission from human tourists or capture by poachers wanting to catch infants.

The terrain is extremely steep (basically a series of river valleys), and it is largely composed of secondary forest. So there is a lot of thorny undergrowth to deal with. We carry machetes in the rainy season, but most people find that it is easier to just crash through the brittle vegetation with their bodies during the dry season, because machetes are always getting caught on barbwire fences and vines when they are on your belt, making it difficult to follow monkeys quickly. We cross rivers or streams several times on a typical day, so your feet and legs are almost always wet. Many researchers (e.g. Julie, the Fungus Queen) have trouble with fungus on their feet, particularly in the dry season when monkeys frequent rivers the most. In the rainy season, we are constantly covered with rainwater that drips off of plants, but we wade through rivers less often. The monkeys are extremely active, and they spend most of their day pointlessly (from our perspective) zipping up and down cliffs. We virtually never have a chance to sit down -- and in the rainy season, you wouldn't want to even if you could, because the ground is covered with all sorts of squirming invertebrates as well as the invisible chiggers (a type of mite that drills holes in your skin to drink lymph and leaves a hard tunnel that itches for weeks). Although we very rarely actually run after the monkeys (except in intergroup encounters), we are moving almost constantly, often climbing up cliffs or scrambling over boulders. We carry several pounds of water and field equipment on our backs, which adds to the exhaustion. In addition to the physical exertion, it is also a challenge to remain mentally alert during long focal follows.

The first hour or two of the day are not terribly productive in terms of data collection, because the light is not very good, and therefore it is difficult to identify all individual

monkeys unless the monkeys are in a particularly open and well-lit place. By about 7-8 am, data collection proceeds quite smoothly. There is no rigid schedule to the monkeys' activities. They have bursts of travel and feeding time, interspersed with social/rest time. Capuchins rarely spend more than 20 minutes per day actually sleeping during daylight hours, but they do usually stop travelling and foraging to socialize for an hour or two once or twice per day (often, there's a short mid-morning "siesta" and a longer midday "siesta"). However, because social behavior is the main focus of our research, these "siestas" don't afford the researchers any rest: we are on our feet, frantically monitoring the identities of playing juveniles, painstakingly recording the duration of grooming bouts to the precise second, and carefully recording the locations of all monkeys in view of the focal animal (which is particularly hard during rest periods, when the troop is not very spread out). Particularly during troop movement, it is necessary to have two observers per focal animal in order to get reliable data. When the monkeys are traveling, one observer will rush ahead, while the other observer keeps her eyes on the focal monkey. When the observer in front once again has the focal in her view, then the second observer runs ahead. Often we will have an observer on each side of the river, when monkeys are foraging along the stream, to reduce the chance that the focal will be lost while both observers are crossing the river. Particularly during rest periods, when much social activity is occurring, it is useful to have two observers so that one person can keep her eyes focused on the focal animal, while the other person scans the environment to identify approaching monkeys and to pick up on gestural signals directed by other monkeys to the focal animal.

We tend not to take a big lunch break, because the monkeys do not allow us to relax enough to have a sit-down meal. Rather, we snack continuously throughout the day, whenever there is a little break in the action. In the forest, we mainly eat snack foods (peanut butter sandwiches, pastries, crackers, cookies, chips, raisins, nuts) and/or leftovers from the previous night's dinner, carried in tupperware containers. The latter provides more interesting food, but it creates a slight risk of food poisoning, since leftovers can go bad quickly in the hot climate. We **never eat fresh fruit in the forest**, because we do not want the monkeys to know that humans can eat the same foods they do. **This is critical for protection of the monkeys**, as well as for the relationship between the scientists and the monkeys. If the monkeys start trying to raid our backpacks for food, the next step would be for them to accept food handouts from tourists or poachers, who can then infect them with diseases and/or capture them for the pet trade. It is important to drink water regularly to avoid dehydration -- in the wet season, at least 3-4 liters for someone who is already adapted to the heat, and more for people who are still acclimating. In the dry season, many field assistants carry 4-7 litres per day. It is tempting to drink less, so you won't have to carry so much water, but people who do so invariably regret it. In order to avoid bladder infections, it is also important to urinate frequently, even though doing so is really a nuisance in the field. Daily high temperatures range from 32-40 C (90-105 F).

Generally two or more researchers are working together. We insist that people work together, for safety reasons. But occasionally there is some reason why people will work individually for an hour or so. For example, during intergroup conflicts, sometimes a group's males will be separated from the rest of the group for over an hour. In these instances, one person is usually with the males while the other researcher stays with the females. If a male suddenly decides to migrate, someone goes with him while the other observer stays with the group. Or sometimes one researcher will have a stomach ache or need to retrace our steps looking for lost equipment. In this case, one person will stay with the monkeys while the other one goes back to the car or looks for the lost object. When the monkeys are lost (e.g. in a rain storm), the researchers typically split up for a few minutes to search for them more effectively. Any time researchers are out of view of one another, they must be in contact via radio or cell phone.

The last couple of hours in the day are very draining because it is too dark to collect data very productively; therefore, it is easy to zone out and start thinking about dinner. The monkeys pick up speed towards the end of the day, and start zipping up and down thorn-covered hills again. It is difficult, when you are this tired, to keep up with them well enough to ensure that you follow them to their sleeping site. They are incredibly elusive, and there have been several times when exhausted researchers have spaced out on the edge of the group and begun gossiping, noticing too late that the monkeys have vanished.

Once the sun has gone down and the monkeys settle into the sleeping tree, you have to rush through the forest in the dark once again, and walk home. If the group is remote and you are picked up in the car, then you have the Pan American highway to worry about. The evening drive down the Pan-American Highway is stressful because there are numerous lunatic drivers on the road at that time; a desire to avoid this stress is a big part of what made us decide to move to Brin where we could walk rather than drive to the monkeys. When you arrive home, you jump into the shower as the final dinner preparations are made. Monkey gossip is shared over a hot dinner, and researchers strategize about the best route to take to the monkeys next morning. There is a brief squabble over how early you REALLY have to get up in order to get there in time. After dinner, everyone dumps their data into the computer, replaces the rechargeable batteries in the dictophones and radios, and cleans their binoculars. Those people who are going out the next day pack their lunches and fill their water bottles, to save time in the morning. A person who is staying in camp the next day washes the dishes. The evening is fairly hectic, and sometimes a bit tense, because the field people are very tired and everyone is hoping to get to bed as early as possible.

In the rainy season, it may rain virtually every day, at least in the afternoon. We continue to collect data in the rain, if possible, by keeping our Psions and dictaphones in plastic baggies. At the very least, we attempt to stay with the monkeys so the group isn't lost.

(2) Goals of the research.

The primary goal of the research is to document life history strategies in these monkeys, but we also have many side projects. From 1990-1997, the main focus was the documentation of social structure and social dynamics. From 1998-2001, communication (mainly vocal, but also gestural and olfactory) was the primary focus. During 2001-2006, with the support of the Max Planck Institute for Evolutionary Anthropology, we focused on the issues of how behavioral traditions form in capuchins. What are the opportunities for social learning, and what is the role of social learning in establishing intergroup variation in behavior? Since 2001, we have been documenting the social development of 3 cohorts of individuals (from 3 troops) over their first few years of life. We still continue to follow these individuals into adolescence and adulthood. Our plans for 2012-2015 are to focus on coalitions and alliances (collaborating with mathematicians who model these issues). And we also are developing plans to investigate the effects of environmental change on monkey population demographics and behavioral strategies. We have been collecting personality ratings on the monkeys since 2002, and we are tying these data to our datasets on genetic relatedness, early social environments, and life history outcomes. Some of the graduate students associated with the project are studying behavioral endocrinology and social learning.

We continue to do follow-up research on all of these topics, but the main focus currently is coalition and alliance formation. We regularly collect data on 11 social groups and also all-male groups and solitary migrants. In most cases, these migrants are animals we have known for their entire lives or at least since they were young juveniles.

The basic protocol for the project consists of 10-minute focal individual follows, in which all social, foraging, and anti-predator behaviors are recorded. We do longer but less frequent follows of adult females. Fecal samples are collected for genetic analysis (paternity testing) and also for hormonal analysis (testosterone, cortisol, estrogen, progesterone). Sometimes we make vocal recordings for bioacoustic analysis and playback experiments. Ad lib data are collected on food processing techniques, interactions with other species, and (presumed) medicinal plant use (i.e. fur rubbing with particular plants). We also do group scans, in which we record the activities and locations of each group member relative to other group members. At the end of your time as a field assistant, you'll be asked to rate each monkey you knew on 26 personality-related adjectives. Special side projects conducted by graduate students and postdocs often require additional types of data, and we often help them with their data collection as well.

III. A Typical Day in Brin:

Although they are less physically exhausting than forest days, Brin days are most definitely not a "day off." You begin the day quite nicely -- by chuckling to yourself as your comrades charge out the door at 4 am, and rolling over and sleeping for another 2 hours. But once you are up, there are several tasks that need to be done. Unlike field situations in most Third World countries, where labor is dirt cheap and local people are hired to do all the domestic work, the Lomas Barbudal monkey project has always done its own domestic work, because domestic staff cannot be employed from our scientific grants. The following tasks must be done each day off: sweep the floor, cook dinner, wash your own clothes, upload the data, edit your data. Additional house maintenance chores must be performed more sporadically, such as recycling, fixing the toilet yet again, sweeping the yard, cleaning out the refrigerator. We recently purchased a primitive washing machine, so laundry (formerly a terribly onerous chore) is much more manageable. (Project personnel bought and maintain the machine from personal funds, so all assistants must make a one-time, non-refundable contribution of $10 for use of the machine). A couple of days per week, it is also necessary to mop the floor. Occasionally other chores and errands have to be done too, like paying bills, going to the post office, buying office supplies and food, and defrosting the refrigerator (though the house manager can usually take care of these things). It is almost certainly true that you will spend more time in domestic tasks than you are accustomed to at home, for two reasons: (1) there aren't as many machines (dishwashers, vacuum cleaners) to help ease the drudgery, and (2) because we have nature in our backyard, the house fills with dirt and insects just as quickly as you can clean up. A house that is not kept immaculate attracts mice, ants, and GIANT (we killed one a foot long once, no kidding!) cockroaches in no time flat. You can't leave the stove unwiped or leave dishes in the sink; trash must be taken out promptly after each meal preparation. Because dust (in the dry season) and mud (in the rainy season) are ubiquitous, keeping the floor clean is a major challenge. It is important to keep dust out of the house as much as possible, for the sake of the computers and other electronic equipment. We always run the monkey project houses as coops, in which all residents participate equally in tasks. Finally, you may occasionally have to process (i.e. dry by baking) monkey fecal samples for hormone assays.

Now that we live at Brin and have a house manager do almost all of the shopping, we are pretty isolated socially. There are two caretakers (Roger and Donovan) who live at Brin with their families, just a minute's walk from our headquarters, but they are the only people you are likely to see, since the houses are set far back in the property, far from the main road. Roger and Donovan only speak Spanish. In cases of emergency, you will need to know some Spanish to communicate with them, and you should be prepared for social isolation.

Pijije is a small rural community and we are on the edge of it. There are no stores or entertainment possibilities in Pijije, so it is necessary to go into Bagaces or Liberia for both shopping and socializing. The highway is about an hour's walk from Brin, and then you can take a bus to town. We do most of our shopping at Doña Norma's *pulpería* (general store) in Bagaces.

Although Ticos are very insistent on good hygiene and bright white laundry, they are also informal. So it is fine to wear shorts and sandals to do errands. As in other Latino countries, there is a considerable amount of machismo. Ticos are more respectful and less persistent than men in many other Latin American countries, but they are nonetheless more machista than most North American men. Gringas are perceived as being easy targets for sexual conquest, and most female research assistants find themselves surrounded by curious males in their first few weeks in town. This excessive attention usually subsides if women are firm about their lack of interest in dating local men. Women should be aware that if they enter a man's home, or even dance with him at the discomovil, that the man will most likely embellish these accounts to their buddies such that most locals soon believes a sexual encounter occurred. Gossip is rampant in a town the size of Pijije, and everyone is eager to believe the worst about everyone, so that life will seem more exciting than it really is. This can be extremely irritating; you need a thick skin. Liberia is larger than Bagaces or Pijije and more touristy/less gossipy. But the crime rates are much higher in Liberia, due to the tourist presence.

Food is extremely important in the field. Those people who are in the forest start daydreaming about dinner hours in advance, and trying to guess what it will be. We often end up having a culinary "arms race" in which each person tries to outdo the last person's meal. This can be stressful to people who aren't accustomed to cooking much at home, but in our experience, non-cooks become good cooks rather quickly. As the years go by, a larger proportion of our applicant pool is vegan, and thus we have shifted the project diet more towards vegetarian and vegan to accommodate these people. Rice and beans are the main staples of Costa Rican cuisine, so you can expect to eat a lot of them. Because the kitchen at Brin is quite small, meals have become simpler than they were in the Bagaces days and typically consist of R&B, pasta, or vegetable stews with fruit for dessert (or a baked dessert, if someone is feeling particularly ambitious). We have created a "Lomas Barbudal Cookbook" of successful field recipes. Because Costa Rican cooking is almost devoid of flavor (aside from Salsa Lizano), we bring large quantities of interesting spices from the USA (e.g. garamasala, 5- spice powder, cardamom, dill, caraway, turmeric, sage). Our kitchen contains most of the appliances of a typical North American or European kitchen (except that we have no microwave). It is important to get dinner started early, so that it will be ready when people arrive home from the field.

Another task that must be done on Brin days is data dumping and cleaning. We normally collect data on a PSION hand-held computer, and then dump it into a laptop. But when the monkey action is particularly complex or rapid, we narrate into a dictophone and insert these data into the spreadsheets later. It is important to do this promptly, before you forget where the data should be inserted or the files get deleted accidentally. It is also important to check over each line of the file before you forget what happened, because it is easy to make typos. The fights are the most critical aspect of data collection for the current projects, so it is imperative for data quality that you keep up with transcription while events are fresh in your mind, and because you will need to provide this information to your work partner of the day who needs to edit his/her data. You can expect that data cleaning will take 2-4 hours/day. It is imperative that you keep up with the data cleaning, because this task becomes overwhelming if you procrastinate.

The only truly negative thing about living in Guanacaste is the burglary rate. Pretty much everyone in town, regardless of their financial status, get robbed about once a year, and petty crime in Pijije is particularly common. Oddly enough, many people who are genuinely nice people whom you could quite safely entrust your children or your lives to cannot necessarily be entrusted with your wallet or other possessions, and various project personnel have been robbed by trusted overnight guests in past years. This is not to say that no one in Guanacaste is trustworthy – there are several locals with long-term affiliations with the project whom we absolutely trust! However, after several unpleasant experiences we have reluctantly decided that local residents not affiliated with the project are not permitted in the project houses. Even trustworthy people may casually comment to acquaintances or family members on the wealth of computers and other electronic research equipment inside the "moneros'" house, and such gossip will make us a prime target for burglary (despite the advanced age of most of our equipment). It's still possible to socialize with locals by meeting them in public places such as restaurants or the parque.

Furthermore, all doors of the project houses should remain closed and locked at all times. We have learned the hard way that the houses must be guarded at all times. When houses are left unguarded, particularly overnight, EVERYTHING, even the kitchen sink, is taken out of them – sometimes even the roof is stolen, as happened to the Nature Museum at the Reserve once! (It's reminiscent of "How the Grinch Stole Christmas"). If you report to the local police that your house was robbed while you were gone, they respond by saying "Hijueputa! Well of course!!! What do you expect, if you left it alone?" Terribly helpful. So – every vacation (see below), people have to be delegated to stay home and spend the vacation guarding each house. You will probably have to do this 2-3 times a year if we have 10-12 staff members, and 8 times if we have just 3 staff members. Fortunately it is nice to have the project house to yourself after a month of sharing it with a mob of other researchers.

Entertainment: Even with all of these daily tasks to be done, there is occasionally (though very rarely!) some time for a little bit of fun as well on Brin days. If someone is home with you to guard the house while you are gone, you can head down to the river for a swim (though be careful of the crocodiles!) or a stroll in the woods.

Ticos are incredibly friendly and patient with bad Spanish. There is more of a stigma attached to public consumption of alcohol here than in European or North American culture, particularly for women, and so researchers should be very careful about where, with whom, and how much they drink in public. You should be aware that the first people who will want to make your acquaintance at a bar are often unemployed young men with shady reputations who are looking for sexual and material opportunities; please be careful, and consult long-time project members regarding the reputations of the people you meet before getting very much involved with them. There is, unfortunately, a drug-using sector of Bagaces and Pijije society, and we absolutely insist that our project have zero contact with it. Field assistants are prohibited from drinking the night before they go to the field, because our work requires top-notch mental and physical agility, i.e. it cannot be safely conducted with a hangover or with insufficient sleep.

There's also a selection of DVDs in the house to entertain you while houseguarding. Good books are in very short supply and very expensive; it is best to bring those from your home country, though there are a few used book stores in San José. Past assistants have left numerous books (novels, nonfiction, plant and animal field guides, travel guides, Spanish-English dictionaries, etc.) in the project house so you are sure to have a steady supply of reading material. You might want to check what books are in the house before you pack.

There is also a library in Bagaces, right on the town square, though it is limited and most of the English selection has been donated by previous moneros. If you have a Kindle or similar device, bring it.

The property we are living in at Brin consists of an old workers' house that consists of a living/work room, a small kitchen, 3 bedrooms, a bathroom (1 toilet) and a screened in dining porch. The other building is a "bodega" (workshop/warehouse) that we have fixed up for habitation, which has two large rooms (used both for equipment storage and sleeping space), a "poop lab" for processing monkey feces, and a bathroom. It also has a large roofed area suitable for camping. These are old structures, prone to maintenance problems, and construction expertise is very welcome! These buildings are quite close to a river, so we can only use biodegradable shampoo and laundry soap. There is no garbage pickup, so we need to be very conscious of our waste output, composting organic material, taking recyclables to the recycling center, and avoiding the production of garbage that makes an environmental impact.

IV. Vacations:

For 5-6 days per month, we take a break in which we avoid doing any work and dedicate ourselves to having fun. We encourage people to use this time to explore Costa Rica. Although prices are higher in Costa Rica than in most Third World countries, it is still possible to have cheap vacations in Costa Rica, if you are willing to be fairly adventurous. Bus travel is dirt cheap, punctual and reliable, and practically everywhere is accessible by bus. Bus travel is fairly pleasant in Costa Rica; unlike big cities in the USA such as our home Los Angeles, where virtually the only passengers are lunatics, street people and a few poverty-stricken students, buses in Costa Rica are packed with normal people who are perfectly pleasant to converse with. You have to be careful of pickpockets in San José and Liberia, particularly in bus terminals and on the buses, but travel in the provinces is not usually very stressful. It's probably best to steer clear of the "druggy" beaches, such as those in Limon province, Puntarenas, and a few near the borders, particularly if you are a woman traveling alone. But most places in Costa Rica are still quite safe. Many places will still allow you to camp, so if you bring a little tent, you can save a lot of money. There are often cheap hostels for $5-20/night that are not advertised in travel guides. These aren't necessarily the most comfortable places, but they are usually adequate.

All kinds of fabulous natural attractions are within a day's bus journey of our field site -- active volcanoes, lowland rain forest, cloud forest, geysers, beaches, white-water rafting, reefs (for snorkeling) and waterfalls. The wildlife diversity is incredible. There are also a few archaeological sites (e.g. Guayabo monument). There are numerous guidebooks about ecotourism in Costa Rica -- one of the better ones is The New Key to Costa Rica.

Because it's difficult or impossible to collect data with a reduced staff (because we never ask anyone to collect data on more than two consecutive days), we cannot allow assistants to take their vacations at different times, or to have additional days off besides their monthly 5-day vacations. Therefore, if you know that you will need to travel back to your home country, or host visitors (unless you plan to take the visitors out to the monkeys on two out of every three days!), you'll need to try to coordinate your plans with us or the field manager, and with the other assistants, so that you take your trip or host your visitors during the regular monthly 5-6 day vacation. We can't guarantee that we'll be able to accommodate all such requests. For example, moving a vacation by a week or more to accommodate one assistant's travel plans might create a very long gap (over 30 days) between vacations, which everyone else working on the project might find unacceptable.

There are two visa options: One is to apply for a volunteer visa for up to 2 years, which means that you are not required to leave the country (this is what Costa Rica prefers, and what we recommend). Alternatively, you can come in on a tourist visa, in which case you will have to leave the country periodically and take a vacation, then return with a new tourist visa. The amount of time you can stay in CR on a tourist visa varies by country but is 90 days for USA, U.K. and Canadian citizens. After staying out of the country for 72 hours, you are allowed back in for another 90 days. This provides us with a good opportunity to explore outside the country. The most economical (but least exciting) way to solve this bureaucratic problem is to take a two-hour bus ride to Nicaragua and hang out on the beach in San Juan del Sur, a vacation spot for local Nicaraguans. This is very cheap, but not terribly exciting. It's a little town like Bagaces. If you are more adventurous, you can also visit Isla de Omotepe (a volcanic island in Lake Nicaragua), or the lovely and history-rich town of Granada, fairly cheaply. Travel to Panama is also cheap, but it takes much longer to get there by bus.

Field assistants who are citizens of countries other than the USA, U.K. and Canada are responsible for finding out what their visa/residence requirements are in Costa Rica, communicating them to us, and adhering to them. We insist that assistants maintain a legal status as tourists or volunteers. Rumor has it that Costa Rica will soon be cracking down on people who repeatedly renew tourist visas.

V. Why Do So Many Field Assistants Hate Lomas Barbudal?

Although most of those who've worked at Lomas have loved the experience, we have to admit that about 15% of all people who join the monkey project hate it a lot and make a rapid exit (the percentage has declined considerably from about 50% since we wrote this Guide and required prospective assistants to read it). It is in no one's interest that we dupe people into thinking that capuchin field work is more fun or easier than it really is. All of the people who have come to Lomas were convinced that they would love studying capuchins, and all swore that they were "not quitters." Because life at Lomas is so completely different from most people's previous experience, it is difficult for prospective assistants to anticipate what sorts of situations will seem unacceptable to them once they are here. Therefore, we do our best to document all of the site's problems, in excruciating detail. We hope that you will do your best to visualize these situations, and decide whether this is for you. Here are some of the things that have most horrified past assistants:

(1) Paper wasps. Capuchins are an important predator of several wasp species, primarily *Polistes instabilis*. During the peak breeding season for wasps (July-Aug), they consume 1.6 wasp nests/monkey/hour. The monkeys are quite clever about grabbing the nest (full of tasty larvae) and escaping, but the angry adult wasps often sting the primatologist. The nests are hidden behind leaves on shrubs between elbow and eyeball height, which means that we crash into them regularly. The adult wasps only chase you a few meters -- they are just interested in protecting the nest site. The stings are highly painful, and the swellings last for a couple of days. We consider them to be more of a nuisance than a menace. The anticipation of possible stings (when you are blindly crashing through dense brush) is perhaps more unsettling than the stings themselves. Some past assistants have had panic attacks in dense vegetation, or whenever they hear buzzing sounds (and buzzing is pretty much constant in a tropical forest) because they fear these stings.

(2) Killer bees and carnivorous wasps. Lomas Barbudal was actually established for the study of bees, particularly Africanized (killer) bees. Some deaths due to killer bee attacks occur in Costa Rica every year, though the Africanized bees in Costa Rica aren't as vicious

as the ones on the frontier of the species range (i.e. the bees in the southern USA). We have had a few nasty encounters with these – normally you can escape with only one or two stings if you run as soon as you get stung or hear buzzing, but one assistant was stung 30 times. Another assistant had a severe allergic reaction and went into anaphylactic shock. Because it IS hard to run quickly in dense undergrowth, it is easy to imagine a situation in which you would not be able to escape soon enough to avoid problems. We insist that you always carry an Anakit (epinephine injection) in case of bee attack. These are available from your local pharmacy if you have a doctor's prescription.

Carnivorous wasps are more commonly encountered than killer bees. A couple of times a year, a monkey disturbs one of their nests and these wasps chase us for over a kilometer. Their stings are quite painful, their buzzing is infuriating, and they bite as well as sting. These stings tend to leave large swellings that last for several days.

Sweat bee stings are fairly common. Their attacks are not very painful, but they are alarming because you can't tell immediately whether they are sweat bees, killer bees, or carnivorous wasps -- they buzz loudly as they burrow into your scalp, and they are extremely tenacious in their pursuit. Several assistants have quit because they were terrified by "bee hive hairdos" (incidents in which sweat bees have burrowed into their hair and terrorized them).

(3) Ticks. During the dry season, it is not uncommon to have hundreds of ticks on your body at one moment. If you walk though a nest, hundreds of minute seed ticks will swarm up your legs. We are careful to always tuck our pants well into our socks and boots, and we keep our shirts tucked in as well. We never go anywhere without a roll of masking tape (available in local stores) in the dry season. When you see ticks swarming up your body, you pick them off your clothes with masking tape before they can reach your neck. It is quite easy to remove ticks with masking tape, and even if a few reach your skin, Costa Rican ticks don't carry any nasty diseases (yet – though it is possible that Lyme disease will eventually reach us here in Costa Rica, given the high rate of ecotourism). So we consider ticks to be more of a nuisance than a menace. But they are a daily problem, and it is advisable to have a "grooming partner" who can search particularly sensitive parts of your body for ticks each evening, removing them before they become engorged and really difficult to remove.

(4) Chiggers. These mites are common in grassy areas in the rainy season. Use of sulfur powder (flor de azufre -- available from the farmacia) is somewhat effective in deterring them, but it permanently stains your laundry. Chigger bites itch more than you would believe, and they continue to itch for weeks (even months for some people), leaving semi-permanent scars in people who are undisciplined enough to scratch them. We recommend putting clear nail polish on chigger bites, to reduce the satisfaction derived from scratching.

(5) Mosquitoes. These are ubiquitous in the rainy season, and sometimes present in the dry season as well. Malaria is very rare in Guanacaste province (we don't even bother to take chloroquin), but dengue fever has recently arrived and is relatively common some years. We recommend long, baggy sleeves and pants, and insect repellent on your hat. Some of us even wear thick gloves to avoid mosquitoes when video taping or looking through binoculars, so as to avoid jerking the hands during stings, but this is pretty hot. Floppy wide-brimmed hats are good for swatting away big clouds of mosquitoes. If you have already had dengue fever once, you probably should not join this project, since it is far more likely to be fatal the second time you get it (the first exposure is typically minor).

(6) Spiders. Although we have had one highly successful field assistant who had a spider phobia, life at Lomas is stressful for people who intensely dislike spiders. There are no spiders that represent a serious menace (i.e. no really venomous spiders). Nonetheless, it is disconcerting to be hiking through the forest in the dark in the morning and have your face plastered by spider webs every 100 meters or so. There are also some very large and hairy spiders (tarantulas), though these are rarely seen.

(7) Dehydration. In the dry season, temperatures are extremely high (over 40 C [105 F]), and we sweat constantly. Therefore, the risk of dehydration is extreme. Virtually everyone who has been a part of the monkey project has become dehydrated at some point (usually in the first 3 weeks of their stay). It is tempting not to drink enough water because (a) water is heavy to carry, and (b) one of the insidious characteristics of dehydration is that it makes you less thirsty rather than more thirsty. You will begin to feel mildly nauseous, and not want to drink or eat anything. In severe cases of dehydration, vomiting ensues, and it is critical that you drink lots of water, ginger ale and "suero" (Pediolyte or a homemade concoction of water, sugar and salt) and rest for the next 24 hours. Dehydration happens remarkably quickly and can be deadly. On the bright side, it is simple to cure as long as the patient exhibits common sense and determination. (It is tempting to give up on drinking, particularly if you keep vomiting it back up, but you must not succumb to this temptation.) Although there are many "perils" at Lomas that sound more exotic (e.g. killer bees, snakes), we consider dehydration to be the most dangerous aspect of field work, because it is both potentially lethal and also is a highly probable event. Fortunately it is also completely avoidable if you exhibit common sense, by drinking a lot and eating salty foods and bananas (high in potassium).

(8) Sleep deprivation. As mentioned in the "typical day in the field" section, we do not get much sleep. The combination of inadequate sleep, excessive physical exercise and long work hours (during which extreme mental concentration is necessary) cause many people to become demoralized.

(9) Claustrophobia. Because the forest is composed primarily of secondary growth, you will often find yourself (particularly in the rainy season) completely surrounded by dense, thorny vegetation such that you can not see more than a couple of meters and can not move rapidly in any direction. People who have a fear of getting lost, or who are constantly worrying about which way they'll run when they get stung by something, become quite claustrophobic under these conditions.

(10) Bladder infections. If you allow yourself to become mildly dehydrated, you will become extremely susceptible to bladder infections, which can be painful and debilitating. This is particularly true of women. The key to avoiding bladder infections is to drink so much water that you need to urinate once every couple of hours, thereby flushing out the urinary tract regularly. It is tempting to urinate as little as possible in the field, because doing so exposes vulnerable parts to stinging and biting insects and it is gross to have to carry all your used toilet paper in your pocket for the rest of the day. But we know primatologists who have ended up with permanent kidney damage from chronic dehydration over long periods of time.

(11) Fear of getting lost. Although we have created a system of trails at Lomas, we cannot persuade the monkeys to use them, so they do us very little good other than expediting our hike to and from the troop at dawn and dusk. We spend all day crashing through undergrowth, unable to see all of the critters lurking in the leaf litter. Some past researchers have been completely terrified to leave the perceived safety of the trails and have been unable to overcome this fear. The monkeys use a dauntingly large home range, the

boundaries of which are constantly shifting. Plus, they have an unnerving habit of leading you to a new and distant place during the last hour of the day, via some circuitous route such that you would never be able to backtrack along. In part because of the low visibility conditions of the rainy season, and in part because we have to find our way out of the woods in the dark at the end of the day, it is really easy to panic. Normally intrepid field researchers have been known to scream things such as "I'm going to die, and it's all your fault!" to their co-navigators during the sundown scramble to the car from a sleeping site in uncharted terrain. It's sometimes tense, but in fact, no one has ever gotten lost (well, not for more than an hour) in two decades of research at Lomas -- this despite the fact that we have had some remarkably clueless project members who are capable of getting lost after making only two turns in an urban situation. The reason is this: Lomas is composed of a series of stream and river valleys. Whenever you get lost, you just go downhill till you reach a streambed, and then follow the stream downstream until you reach one of the two major rivers running through the site. Roads or major trails run along both these major rivers at all points. People who are phobic about getting lost are advised to bring a Garmin Navigator with them, to help them out of the forest. (The project owns some, but not enough for everyone.)

(12) Scorpions. Although scorpions are common (particularly in the project houses), scorpion bites are rare. They feel like wasp stings, but they also make your tongue go numb. The amount of venom in them is insufficient to do any permanent damage to an adult, but it can be lethal to smaller animals (e.g. dogs, and maybe human infants?). We recommend that you shake out your pants and boots in the morning before getting dressed. One past field assistant tells us that scorpion bites to the testes are far worse than bites to other regions of the body.

(13) Sloanea. Some field assistants list this as #1 on their list of things they hate. *Sloanea terniflora* is a tree that is the major food source of the monkeys in the late dry season. The fruit is covered with tiny purple hairs (like teensy shards of fiberglass) that are an adaptation by the tree to avoid predation on the fruits prior to the optimal time for seed dispersal. The monkeys "beat the competition" to this resource by eating the fruit just before it is ripe. They scrub the hairs off of the fruit so that they can crack open the hard covering. Consequently, the primatologists standing under the tree are showered for several hours a day by clouds of these highly irritating purple hairs. Some people are allergic to these. They are so tiny that they go right through your clothes and into your skin. While they are embedded in your skin, they are very itchy and rather painful. To make matters worse, monkeys vary in their *Sloanea* scrubbing techniques, so we collect detailed data on this to look for social influences on this variation (i.e. you don’t have the option of just keeping your distance from the monkeys while they’re foraging on *Sloanea*). A shower usually washes away the *Sloanea* hairs, but most people can't wait that long and spend a lot of time in the field picking the hairs out of their skin (and eyeballs, if they aren't careful) with tiny tweezers. After several assistants had to seek medical help to remove *Sloanea* hairs lodged in their eyes, we bought safety goggles and we now require assistants to wear them while observing monkeys foraging for *Sloanea.* Our project eye doctor in Liberia is expert at removing these hairs.

(14) Fungus. Some people are more susceptible to fungus to others. About half of the people who work at Lomas regularly get fungus on their skin, particularly on the feet. It is important to give your skin as much exposure to air as possible, so as to dry it out, if you are prone to fungus. There are various over-the-counter remedies that help too. The feet are most susceptible to fungus, since we wade through rivers every day and rarely manage to keep our feet dry for more than a few hours. If you let the fungus progress to the point

where the skin cracks and bleeds, it is quite painful -- particularly since you can't avoid having your boots rub your bleeding feet.

(15) Stinging caterpillars and malamujer plants. Both of these are rare and seasonal problems. But the stings of the *Automeris* caterpillar and the malamujer plant (both monkey foods) are so extraordinarily painful that they warrant mention. When your skin touches the hairs of either of these menaces, it feels as if a nail has been driven through your hand. The pain remains excrutiating for about 30 minutes, and a moderately painful itching remains for up to a week.

(16) Flash floods. Rain can be quite localized in Costa Rica, such that it is sunny in one place and pouring rain just a kilometer away. Therefore, you can be blissfully collecting data, unaware that you are in any danger, and then discover that a river has swollen to twice its normal size, or even that a raging rapids has sprung up in a normally dry streambed. When you are hungry and tired and desperately want to get back to the car and go home at the end of the day, it is tempting to try to cross the stream or river anyway. But it is senseless to do so -- the power of the current is amazing, and it is impossible to tell how deep the water is. If you have any doubt at all about whether it is safe to ford a river, DON'T DO IT!

(17) Forest fires. Every year there are major forest fires at Lomas during the dry season, most typically during "Semana Santa" (Holy Week; sometime in late March or early April), which many men celebrate by getting drunk, going out in the woods, and shooting endangered animals. They set fires in order to flush out the game (or, according to another hypothesis, to distract local residents and park guards from the area where the poaching is occurring). Fires also start when ranchers burn off their jaragua grass fields, to stimulate new growth for the cattle. Although attempts are made to control these fires, they often get out of hand. We generally stop data collection during major fires and join forces with the campesinos to extinguish the fire. Because this is a potentially dangerous activity, we do not require field assistants to take part in it. If you are the first to discover a fire, and it is already too big to be controlled by cutting a firebreak around it yourself, you should quit data collection and report immediately to the ACT, the Bagaces Bomberos, and the community of San Ramon de Bagaces. Fire-fighting is a macho male-bonding activity, so women typically participate mainly by bringing water and food to the men, providing transportation for firefighters, scouting the boundaries of the fire, and conveying messages. The campesino men find it awkward to have women cutting rondas (firebreaks) with them, because they like to make vulgar jokes, use their urine to put out the fire, etc.

(18) Fear of heights. There are very few flat areas in Lomas (this is why the forest is still standing, rather then being converted to grazing land). You will spend more time than you would like clambering up and down cliffs in pursuit of the monkeys. It is not an ideal job for someone with vertigo. The sheer exertion involved in climbing all day long is daunting to many people as well.

(19) Snakes. Rattlesnakes are the only common poisonous snake at Lomas. Coral snakes are present (though they are so small that you would have to stick a finger in their mouth to get bitten), and some other poisonous species are common in Guanacaste but are rarely seen at Lomas. Rattlesnakes are quite passive and spend most of their time during the day coiled on the ground, often in fairly open areas, but sometimes in woodpiles. They very rarely rattle, even when you are about to step on them. We insist that our field assistants wear polinas (leather snake leggings), which cover the top of the foot and extend to the knee (these are available at the field site – if you can’t find a pair at the house that fits you, we can have another pair made). Although they are a bit uncomfortable, they are also useful for crashing through brush. Monkeys warn us of rattlesnakes by giving snake alarms.

The most dangerous time of day is during the predawn and dusk marches to and from the monkeys, when snakes are more active and we don't have the monkeys to warn us about snakes' whereabouts.

(20) Acacia ants. These ants, famous examples of symbiosis in ecology textbooks, do not represent a serious menace, but they are a frequent nuisance. Acacia trees are among the most common trees at the site, and provide food for the monkeys (both the acacia fruit and the ant larvae). These ants bite you when you brush against the leaves of the tree, and the bite leaves a swelling that hurts for up to three days.

(21) Caiman and crocodiles. There are caiman living in the rivers that we wade through every day. They are mainly small and quite shy, and we have never had any trouble from them. However, two of them are growing ominously large. One of them, affectionately known as "The Brow" (because we typically see only his/her browridge protruding above the water), was 7 feet long as of 1999, and frequents the swimming hole. A 12 foot long crocodile was seen in the lower Cabuyo river, and we avoid crossing the Cabuyo unless we can see the bottom of the river.

(22) Frustration with not knowing Spanish. Although this isn't a hazard (tourists get along in Costa Rica perfectly well without knowing Spanish), it makes life much less pleasant. Because we currently have two Tico field assistants, Spanish is often spoken even in the project houses.

(23) Poachers. Although Lomas Barbudal is technically a Biological Reserve in the National Park System, and is occasionally patrolled by park guards, it is nonetheless frequented by poachers. We have encountered them rather frequently in the past couple of years (at least twice per month). They are mainly looking for deer and peccaries, and most are uninterested in monkeys. However, we had one harrowing month in which a tree poacher cheerfully killed several monkeys (including two members of our study population) with a slingshot, just for target practice, and then bragged about it publically! When you encounter poachers, we recommend that you pretend not to have seen them or, if you can't avoid making eye contact, just nod in greeting and go back to work. If you are alone and you know you have been seen by the poacher, pretend to be having a conversation with a fellow researcher who is just out of view. They seem as eager to avoid us as we are to avoid them, and we have never had any problems with them menacing us, but armed men make us nervous nonetheless. We did have one incident in which a hired hand at Pelon ranch attempted an assault on a field assistant, though she succeeded in scaring him off and he has since vanished from the community.

(24) Fear of Costa Rican drivers. Costa Rica has the second highest per travel-mile traffic death rate in the Western Hemisphere, and the great majority of these fatalities result from bad driving. Fortunately, not many people own cars. Even so, driving at night on the Pan-American highway can be a harrowing experience, with semi trucks driving you off the road (the shoulders are usually flat, thank goodness -- just cow fields), people passing you on the left as you attempt to turn left into town, and drivers attempting to pass you or stop on narrow bridges. Recently, various draconian laws have been passed to improve the quality of driving, such as confiscating vehicles for speeding and imposing $300-400 fines on drivers for minor infractions. This has improved the driving a little bit, but of course you need to be careful NEVER to surpass the speed limit and to be aware of all laws.

Although the highway is the scariest part of driving, the dirt road to Lomas represents different challenges. It is full of gulches, big rocks, and cattle, and sometimes the bridge

washes out such that you have to drive through the stream (be sure to wade it first to see where the big rocks are!).

People often try to hitch rides on this road. Although we used to give rides to everyone, we no longer consider it to be safe to do so. We only offer rides to people whom we know personally.

(25) Cows. As in most of lowland Guanacaste, cattle graze in open areas adjacent to Lomas Barbudal, and sometimes even in the forest. Though usually harmless, and in fact frightened of people, cows can be dangerous when they have young calves. We recommend that when cattle lunge at you, you politely and calmly retreat rather than lunging back. One particularly enthusiastic and spunky field assistant was pushed through a barbed wire fence for "talking back" to a bovine mother who was impeding her path to the monkeys' sleeping site (it was pre-dawn, so she didn't see the new calf).

(26) Cleaning. Some people who come here straight from college dorm situations have never had to clean up after themselves, and they find this stressful. People living with them also find this stressful. Keep in mind that the main pet peeve people have is "people who shirk house chores," yet we have at least one of these people most years. Needless to say, the shirkers become rather unpopular, and this can lead to house drama.

(27) Group living. It is surprisingly difficult to live and work in close quarters with the same small group of people 24 hours a day, 7 days a week, for a full year, even if they are really nice people. In most jobs you get a break from your co-workers. Many moneros report that this unrelenting intimacy is the most stressful aspect of the job.

VI. What is There to Like About This Project?

After reading the previous section, you may well be thinking "Don't these people have anything GOOD to say about research at Lomas?" Although our list of pros is shorter than our list of cons, we nonetheless think that the benefits outweigh the costs (obviously, or we wouldn't have stuck it out for 20 years). Of course, not everyone weighs these factors equally . . .

(1) The greatest thing about Lomas is, of course, the capuchins themselves. They are extraordinarily clever, feisty, busy, emotive, quirky and comical animals. Barring those hours when the visibility is too poor to collect data, there is never a dull moment, once you get caught up in the soap opera, and we continue to learn new things about them practically every day. We won't go on and on about how fascinating they are right here, but rather will refer you to the project bibliography. We hope that you will take a look at our popular science book *Manipulative Monkeys: The Capuchins of Lomas Barbudal* because it conveys the excitement of capuchin social life and of the "monero" way of life. (Part of this book is available on Susan Perry's UCLA website and part is available on GoogleBooks, if you don't want to order it from Amazon.) Because Lomas is a dry forest rather than a rain forest, the leaves fall from most of the trees for half the year, and thus observation conditions are much better than at most sites. Also, the monkeys are well habituated and the canopy is low relative to other sites, so you are generally quite close to the monkeys.

(2) Although the capuchins are the stars of Lomas (in our, admittedly somewhat biased, opinion), the forests of Costa Rica are home to an overwhelming diversity of interesting plants and animals. Because it is a dry forest, rather than a rain forest, Lomas affords better observation conditions that most tropical forests. Among the animals frequently encountered at Lomas are howlers, coatis, peccaries, long-tailed mannikins, mot-mots,

anteaters, agoutis, yellow-naped parrots, black and turkey vultures, raptors of various sorts (mainly roadside hawks), elegant trogons, egrets, various herons and kingfishers, numerous species of hummingbirds, tinamous, woodcreepers, caiman, boa constrictors, armadillos, garrobos, deer, indigo snakes, fruit bats, cuyeos and magpie jays. Less frequently encountered are kinkajous, ocelots, margays, jaguarundis, currassows, king vultures, aricaris, tropical porcupines, forest falcons, tayras, and otters. Obviously, I could go on for pages listing the flora and fauna, but if you want to know more, just take a look at Dan Janzen's edited volume *Costa Rican Natural History* -- Lomas has approximately the same species list as Palo Verde or Santa Rosa, minus the jaguars, tapirs, spider monkeys and sea birds.

(3) The monthly vacations afford a chance to see other habitats. Costa Rica is chock full of awe-inspiring scenery and amazing geology, flora and fauna. As we mentioned earlier in the "vacation" section, it is relatively easy to travel to virtually any spot in Costa Rica.

(4) Being part of a hard-working research project is excellent experience to prepare you for graduate school, where you will have to design your own research projects beginning in the first year. Many programs are reluctant to accept primatology students who lack prior field experience, because they do not want to waste three years teaching them coursework only to have them discover that they do not, in fact, like living in nature and chasing after real monkeys as much as they like thinking about nature in the abstract. Thus far (as of June, 2013), all of the >50 former Lomas “graduates” who have applied to grad school have been accepted.

(5) Although the drudgery of daily life at Lomas is fairly extreme compared to most primate field sites, there are a few ways in which Lomas is a safer place to work than, say, most places in Africa. Because there is no military, we can virtually guarantee that Costa Rica will not go to war. Costa Ricans are remarkably pacific people, and it is difficult to imagine the forests filling up with armed rebels. The government is democratic, stable, and respectful of human rights. There are also few deadly diseases and poisonous snakes relative to most other places where you could study monkeys.

VII. What Personality Characteristics Make for a Superb Field Assistant?

Potential field assistants often ask us what personality traits predict whether someone will be a good field assistant. If we knew the answer to this one, we wouldn't have a 15% quit rate! But here's our best guess . . .a distillation of the traits held in common by the field assistants and researchers who have excelled at Lomas and wanted to come back for more.

(1) A spirit of adventure is crucial. When the alarm clock goes off at 3:00 am, you have to be able to think "Hooray! I'm probably going to go places I've never been before and see things that no one else has ever observed before" rather than thinking "*(&(*^&^& It's still the middle of the night and I have to plunge into the dark, get spider webs in my face before the sun comes up, and be dragged through hell by these monkeys until nightfall, when I may have to spend the night in the forest, lost. That's if the snakes don't get me first." Our best assistants have had an amazing ability to see the silver lining in everything, viewing the daily catastrophes of car breakdowns, floods, wasp attacks, etc. as fun challenges and great material for letter-writing.

(2) Whining is bad, laughing is good. Whiners can bring morale down quickly. A sense of humor is absolutely essential, because you will find yourself in numerous undignified and downright disgusting situations. For example, back in 1991, we had a spectacularly cheerful and fun-loving research team that established the annual Festerfest competition. In this

competition, there were different categories for the types of "festering opportunities" that typically arise: e.g. insect, microbial, fungal, fecal.

Whenever something truly disgusting happens to you (e.g. a monkey poops IN your pants while you are relieving yourself; or the saliva-soaked head of a coati corpse is dropped by a monkey into the hood of your rain poncho) then you get a point. In past years, festerpoints were totaled at the end of the field season, and prizes awarded for the best Festerfeats.

In a similar spirit, many research teams have kept "quote books" in which they record the many humorous cultural misunderstandings that arise when novice Spanish-speakers launch themselves into Bagaces social life. Some excellent team members have gotten a kick out of making spoof nature documentaries as well, incorporating absurdly macho phrases from National Geographic and BBC films into our daily life in the field.

(3) You must REALLY love nature. By this I mean that you must love to WALLOW in nature, not merely that you like looking at attractive scenery and cute animals. You need to feel comfortable wearing clothes covered in mud, feces, unidentifiable slimes, and caterpillar guts. You need to have an aesthetic appreciation for and scientific curiosity about the insects that sting or bite you and the various critters that you find crawling in your dinner. For example, you must appreciate the communicative skills of the social insects that establish colonies in your boots overnight, the rapid construction abilities of mud wasps that build nests inside your pantlegs when you leave them on the line to dry, and the beauty of the white moths that lay eggs on your clothes. And you need to be able to stomach the odor of rotting carcasses and the sight of monkeys eating their cute, charismatic prey alive while the prey scream for help. And, of course, you have to like standing around in rainstorms for hours on end. There will be times when visibility is so poor (due to rain, or foraging in espavel trees) that data collection becomes impossible for long periods of time. Nonetheless, you have to stay alert, waiting for your focal animal to come back into view, or -- in the rain -- to make sure the group doesn't slip away while you're huddled under a tree. You need to be good at entertaining yourself in these situations; for example, many past field assistants have amused themselves and their comrades by composing limericks or hilarious "monkey songs" (changing the lyrics of their favorite songs to make them capuchin-appropriate). A genuine love of natural history also helps in these situations: you can admire the ubiquitous insects crawling on your body until the monkeys come out of hiding.

(4) You must be a compulsive workaholic, but highly adaptable. Unfortunately, these two characteristics rarely go together -- i.e. most people who are obsessive about their work are also control freaks. This job requires that you be so insanely obsessed with monkeys that you are willing to stare at them for 12 hours/day while enduring considerable physical discomfort. The main problem with this line of research is that you have virtually no control over any aspect of the data collection process. You are at the complete mercy of the weather, the monkeys' whims, and the actions of all the other wildlife you encounter. So you need to be compulsive enough to stay with the monkeys under extremely adverse conditions, and laid-back enough to not get depressed because you tortured yourself for 12 hours to collect less than an hour of data on a particularly wretched day.

(5) You have to really like people, but also be content to spend hours on end only in the company of monkeys. Because we both work and live together with our fellow researchers, under rather crowded conditions, it is easy for relationships to get tense. Good field workers must be tolerant of alternative lifestyles and viewpoints, refrain from needling and goading co-workers who get on their nerves, and genuinely enjoy cooperating with their housemates and coworkers. In any cooperative living situation, tempers flare when one person is perceived by others to be shirking his/her duties. It is also difficult, if not impossible, to

accommodate everyone's "special needs," particularly those involving food, since many people cook together. People who have numerous food cravings and aversions, who are very picky about the music they can tolerate, who need a lot of peace and quiet, or who need any privacy whatsoever, tend to quit the project rather rapidly. The people who have been most successful members of the research team (and also the people who have enjoyed Lomas the most and come back for more) have been those who (a) almost never get angry and (b) are always looking for ways to do nice things for people (not just members of the research team, but also local people) and who really like engaging in cooperative activities. Gossip leads to terrible outcomes, and we insist that people avoid clique-formation and nasty gossip about their housemates and co-workers. If someone has habits you dislike, either discuss it with the person directly (politely!) or try to focus on that person's good qualities and ignore the habits that irk you.

(6) You need to have a lot of initiative and self-reliance. Because there is such a grueling data-collection schedule, there is not always a project leader on hand during Bagaces business hours to solve the crises that come up at home (plumbing disasters, car breakdowns, etc.). It is tremendously helpful if all research team personnel are capable of fielding these problems as they arise. Therefore, it is useful to have fairly good Spanish skills, and an outgoing personality that enables you to roam Bagaces looking for the people and resources necessary to solve the problem. The last thing that tired monkey-watchers want to hear when they arrive home from a long day of work is "Oh by the way, we ran out of cooking gas, so we're having peanut butter sandwiches for dinner. And the toilet is backed up and I don't know what to do about it."

(7) You need to be motivated for the job strongly and primarily by your (preferably obsessive) interest in collecting systematic data on monkey behavior. Some assistants have seen our project as primarily a way to have their expenses paid while enjoying life in Central America, with a bit of monkey-watching thrown in as part of the deal; these people have either quit or been dismissed. If you're hoping to enjoy rum and romance in a sultry tropical setting, this is not the job for you. You simply won't have the time or energy to pursue these pastimes while doing an adequate job as an assistant on this project. Furthermore, we prohibit assistants from engaging in any other work, whether paid or volunteer, while working on the project. The best assistants are those who keep the project's goals in mind all the time and are keenly aware of the fact that it is a real privilege to share the lives of these animals and to be part of a long-term project. Don't go through the year just trying to do the bare minimum with regard to data collection and house chores. If you see a problem, solve it! If you see a focal monkey, follow it! More is better. And there is a great deal of satisfaction to be gained by doing a good job. Remember, you are contributing to a data base that will be used by hundreds of people in the decades to come, and your reputation as a data collector will live on well past this year.

VIII. Personal Conduct.

Twenty-three years after its inception, the "monkey project" is well known in Bagaces. The behavior of all project personnel reflects back on the project and its leaders. Furthermore, as guests of the Costa Rican people and government, we are obligated to follow the rules to a greater extent than would be true in your home country. We therefore require that all assistants promise that they will abide by the laws of Costa Rica -- even some that you may consider unjust or ridiculous. These include laws governing immigration requirements, controlled substances (i.e. recreational drugs) and importation of goods for sale. Furthermore, we take a very dim view of behavior such as public drunkenness, promiscuity, hanging out with known "shady characters," etc. that may be technically legal but that reflect badly on the monkey project and thus create problems for future field assistants. We

are particularly unhappy if field assistants show up for work with hangovers; we prohibit assistants from drinking the night before a day in the forest, both for safety reasons and to ensure data quality.

IX. Authority.

Susan Perry is the scientific director of the field site. During times when she is not at the field site, day-to-day management of the site will be in the hands of a designated field manager. We require that assistants respect the managers just as they would respect her. Of course, field assistants are welcome to ask Susan questions via email at any time.

X. Our (and your) Financial Responsibilities

In an ideal funding climate, we will pay for assistants' rent, food, and sundries while they're working on the project and will compensate at least some part of the plane fare following fulfillment of your commitment to continue working for the agreed-upon (12-month) period of time. Some years, we may be able to pay a small monthly stipend; this depends on the level of grant support that we receive, and you should ask about the financial status of the project during the interview or via email, as this changes often. You should note that since 2012, the availability of funding for basic research in primatology has been very scarce, and we have been forced to request that volunteers cover portions of their own expenses. Because our funding level is constantly fluctuating, you should always ask the PI (Susan Perry) what the current level of funding is rather than taking for granted information on this website.

We won't pay any other expenses that you may incur in Costa Rica. Most notably, we are NOT responsible for any medical expenses that you may incur from illnesses or injuries suffered in Costa Rica, even if these are work-related. What's more, we require, before you begin working for us, that you sign a Waiver and Assumption of Risk, and that you provide proof of major medical insurance that would cover any major illness or injury that you might suffer while working on the monkey project. Minor problems (e.g. cuts that require a few stiches; bacterial infections that require antibiotics) are also your financial responsibility, but you'll probably be able to pay for them out-of-pocket; such problems would cost less that $60, including prescriptions, to cure. There is a very good dentist in Bagaces, so it is not necessary to purchase additional dental insurance. Many assistants have gone to this dentist in recent years. You are responsible for your own vaccinations, phone, fax and postage expenses, gifts purchased, restaurant meals (if you decide not to eat at home on a particular day), entertainment costs, and vacation expenses (including visa renewal trips out of Costa Rica).

Under certain circumstances, we could hold an assistant financially responsible for damage to project equipment resulting from negligence. Of course we recognize that accidents can happen even to the most careful people (one of our best assistants once dropped a PSION hand-held computer into a river; we did not charge him for its repair). However, if an assistant has been warned twice by Susan or the site manager to handle equipment more carefully, and subsequently causes damage to or destruction of project equipment, we will ask the assistant to pay for repair or replacement of that equipment. It's particularly important to be careful when crossing rivers or streams, and in the rain (none of our valuable equipment is water-resistant); and to protect the video camcorders, computers, radios, and recording equipment from hard impacts at all times. You need to keep electronic equipment in zip-loc bags during rainstorms or while crossing rivers, and regularly check those bags for punctures. Don't sit on your backpack if there is fragile equipment in it. At home, do not set beverages down near the laptop computers.

XI. Reasons for Termination of an Assistant Without Payment of his or her Airfare

Obviously, this is an unpleasant topic which we hope will never have to be raised. But it's best to be as clear as possible about these matters. We reserve the right to fire an assistant, and not pay his or her airfare to or from Costa Rica (regardless of our current funding status), for any of the following reasons:

(1) unexcused absence from work ("work"=collecting data, or transcribing/editing data when this has been scheduled, or doing assigned household chores).
(2) lying (even once) to Susan or the site manager about any work-related or project-related matter.
(3) any abuse of purchasing privileges (i.e. charging goods or services to the project and then using them for purposes not approved of by Susan or the site manager).

(4) any violation of Costa Rican law (as described in Section XIII. above)

(5) harassing another project member to the point where that person's ability to do his/her job is impaired.
(6) data fabrication or other forms of scientific dishonesty

Needless to say, extreme incompetence is also a reason for termination, as in any job. More details about these matters are found in the training manual, which should be read in its entirety before accepting a position.

XII. Project Contact Information

Currently, we have internet access at the project house and most people use Skype for making phone calls. A videocamera and headset is recommended for video calls. Skype can also be used to call landlines, although it costs money to do so. Sometimes people buy a Skype subscription to make unlimited calls, other times people pay a basic fee to have a limited amount of talk time. Email services like Google can be used to send and receive text messages.

Your friends and loved ones will be able to reach you by old-fashioned mail at:
Apdo. 5
Bagaces, Guanacaste
COSTA RICA
Note that we do not check this mail box more than once every 5 days.

Our current cell phone numbers are:
+506-8778-1907
+506-8779-7582
+506-8778-2840
However, we cannot use them to make international calls, so you will have to rely on Skype for that.

Public fax machine: (via the Post Office; costs about 30 cents per page to receive): +506-2671-1119 [Use this as a last resort and realize that you will not get it quickly once we are living at Brin. Digital scans sent via email are a better option.]

XIII. What Should I Bring?

Necessary field equipment:

(1) A good backpack with a frame. Deuter, Gregory, and Osprey are the most recommended brands. 35-55 litres is the size range our assistants have selected, with most choosing 35-42 as 45+ tends to be too big for most people. Water will take up the majority of your space in the dry season, so if you drink a lot of water, select a bigger pack. In your pack, you will need to carry 3-7 litres of water, food, poncho, and all your equipment. Get a pack with at least 3 separate pockets. In addition to a backpack, some field assistants also wear a fishing vest or fanny pack. The fishing vest should be light weight with lots of pockets, including one large enough to hold the Psion, which is 4.5 x 18.5 x 4 centimeters. You must be able to access the Psion and the dictaphone in less than 3 seconds so that you don't miss important action during focal follows – this is why a fishing vest or fanny pack is recommended. Along with the backpack, bring a fitted backpack rain cover.

(2) 3-4 long-sleeved shirts that are lightweight enough to dry quickly, but thick enough to help deter mosquitoes. Some people use cotton, but most people prefer lightweight fabrics which dry quickly. Lightly loose shirts (but not baggy) are better than tight shirts, as they help keep mosquitos from your skin. In the dry season, most field assistants wear short-sleeve shirts and tank tops. Again, lightweight, quick dry is preferred. If you prefer cotton, it is easy to purchase cheap, cotton clothes in Bagaces, so there's no need to bring a lot of those types of clothes.

(3) 3-4 pairs of pants, preferably with pockets to hold equipment. Thicker pants are generally preferable, as they help keep the thorns from scratching your skin and the mosquitoes away, but often people have trouble with the heat and so wear light-weight pants. Select fabric that dries quickly. As with the shirts, lightly loose is better than tight. If you are tall, you might have problems finding pants in Costa Rica. It might also be good to bring one thicker pair and one really light pair so that you can wear the lighter pair until you adjust to the climate better.

(4) Binoculars. We recommend Nikon Travelites (roughly $150) or Trailblazers for those people on a low budget, but everyone has their own preferences. A lot of people also purchase binocular chest straps to keep the weight off their necks. The binoculars need to be fogproof and waterproof, otherwise they will likely mold. People often lose binoculars, so it's not suggested to spend more than $150 on them, but no less than $50. 8x42 and 10x42 are recommended. Good brands: Nikon, Eagle Eye, Leupold, Canon, Celestron. Avoid: Minolta.

(5) A Swiss army knife with tweezers (necessary for *Sloanea* hair removal)

(6) A floppy cotton hat with a brim and no hard buttons on it (so that it can double as a sun visor and mosquito swatter). Visors and baseball caps are also popular as the large brim on a floppy can get caught on the vines.

(7) 3 or 4 cheapo rain ponchos (the 99 cent variety), available from K-Mart or any camping store, as well as at least 2 more durable ponchos for late rainy season. Eddie Bauer's from Target (online) is a recommended brand.

(8) Flashlights. Most field assistants wear headlamps, although it is recommended to have at least one mini-maglight for back up as well. Although flashlights are available in Costa Rica, they are of consistently low quality or extremely expensive.

(9) Band-aid brand anti-itch gel. Bring at least 4 tubes. Also bring about 3 tubes of Afterbite (for mosquitoes). Gold Bond is also a pretty good brand of anti-itch salve, if you can't find Band-aid.

(10) Bring a mini-first aid kit, including Betadine ointment. Although pharmacies sell various types of first aid supplies, we recommend that you assemble a first aid kit in your home country that contains whatever supplies you consider necessary. Recommended supplies: aspirin, portable Benadryl, neosporin, cortizon 10, liquid bandages (last better in the rain), and portable pepto-bismol.

(11) Boots. In the past, many field assistants have worn army surplus Jungle Boots. The advantage of jungle boots is that there are drainage holes to let water leak out when the boots are fully deluged. The canvas allows your feet to stay cooler and dry more quickly. If you think surplus jungle boots might be for you, than you should certainly try on a pair. Altima brand jungle boots are top of the line, and though they are more expensive, they are quite durable. Korean and US surplus boots are less expensive, but significantly less durable, with an average pair lasting only 3 months (so you'd need to bring 2-4 pairs). Chinese jungle boots are simply terrible ($20, last for 2 weeks). The advantage of jungle boots is that there are drainage holes to let the water leak out after crossing a river. The canvas allows your feet to stay cooler and dry more quickly. A few people have preferred wearing Costa Rican campesino boots -- knee-high black rubber boots. These are cheaper (about $10), but they are very hot and don't fit as well. Also, you have to dump the water out of your boots after each river crossing, and it is difficult if not impossible to use snake leggings with them, so we do not recommend these except as emergency replacements.

Recently, most people have worn hiking boots with much success. If you chose this route, remember that these boots must be both comfortable and durable: you will be in the field walking around for 13 hours a day, and you will do this for 12 months. Thus, it is often worth the extra expense of buying high-end boots. Waterproof boots are recommended for the dry season and non-waterproof boots are recommended for the rainy season as you're more likely to dunk your boots completely during the rainy season, and waterproof boots keep water in just as well as they keep it out. Well-stitched full leather waterproof boots are generally better loved than Gore-Tex waterproof boots as the leather both breathes better and continues to provide waterproofness month after month. Vasque and Asolo boots come highly recommended: they are comfortable, durable, and often last an entire field season. Some people have also worn and loved Merrell, Timberland, North Face, Keens, and Meindal boots. Hi-Tecs are consistent underperformers and are not recommended.

Do not bring hiking shoes or trail runners. The leather snake guards you will be wearing around your ankles can chafe against your skin if you don't have the extra protection afforded by a boot. This sometimes leads to wounds in difficult places on your ankles, which will make you a very uncomfortable and unhappy monkey researcher.

(12) Wool or cotton/wool socks. Bring at least 4 pairs, and make sure they are long enough to tuck your pants into. Smartwool is recommended.

(13) A compass. A clip-on one is recommended if you are the type of individual who would use it a lot. You will not be doing anything complex with your compass, and the field site has an almost 0 magnetic declination, so you need not bring anything too elaborate.

(14) 2 Anakits or Epipens (epinephrine injection). Ask your doctor to prescribe these for you, even if you have never had an allergic reaction to a bee or wasp sting (tell him or her that you are working in a killer bee reserve). You could become allergic to bees or wasps at any time. Make sure you know how to use these kits, and carry one with you at all times in case you go into anaphylactic shock. This is an absolute necessity; you will not be permitted to work without it.

(15) A belt, to keep your trousers up and possibly to hanging your machete from.

(16) Water bottles and/or water pouches. We've had both camelbaks and platypus spring leaks and, while they are highly recommended, it's good to also have some waterbottles while you're waiting for your placement water pouch to arrive. If you purchase a water pouch, buy a cleaning kit (you can get them at REI) to help get out the dirt and to avoid moulding. Nalgenes are highly recommended.

(17) Bandanas. These are often lost, so bring ones that will be easy to find in the forest (ie, bright colors and no green). More can be purchased cheaply in Nicaragua, but it's a good idea to stock up and bring a lot with you. It's a tragic day in the forest without at least one bandana.

(18) A thermos - especially if you enjoy hot coffee or tea in the field. 0.5-0.75 litres is good. Recommended: Nisson Thermo

(19) Charlie's biodegradable laundry soap: http://www.charliesoap.com/

(20) A solar lantern such as d.light S20 Solar Lantern: http://www.amazon.com/gp/product/B00BJELHS0/ref=pd_lpo_k2_dp_sr_1?pf_rd_p=1535523722&pf_rd_s=lpo-top-stripe-1&pf_rd_t=201&pf_rd_i=B004B924OG&pf_rd_m=ATVPDKIKX0DER&pf_rd_r=1HCJ7ESVGGE2M7457F9A

Suggested items. Non-essential items that past moneros recommend.

(1) Hamper bag. Some people bring two to keep their field clothes separated from their casual clothes in the *Sloana* season.

(2) Waterproof bags/dry packs in which to keep items such as cameras. Ziplock bags work just as well, but aren't as durable.

(3) Power bars, Gatorade powder, favorite organic snacks, and other such foods which can't be acquired here. Standard junk food such as potato chips is widely available in Costa Rican stores. Please make sure the packaging is recyclable. Cranberries (dried fruit or pills) are useful for avoiding urinary tract infections and cannot be bought in Costa Rica.

(4) Field utensils. You can bring out forks and spoons from the house, but people often like to bring out personal utensils to prevent them from being lost and/or because they are lighter to carry. The plastic Light My Fire fork/knife/spoon combo is very popular, but bring at least two of those as they can easily be broken if you aren't careful.

Personal items:

(1) Clothes. Costa Rica is very informal, so there is no need to bring nice clothing. However, often field assistants find that after days of chasing monkeys in the mud and rain, they

enjoy having one nice dress or fancy shirt to put on (girls especially). Shorts are acceptable for running errands in Bagaces. You will want a pair of long pants for San José and some vacation spots (like Monteverde), and perhaps even a sweatshirt (temperatures at Monteverde and other high-altitude spots can dip into the 50s F at night). T-shirts and shorts/skirts are the typical attire of Bagaceños. You can buy quite cheap and appropriate clothes in Bagaces at the used clothing stores for $1-2/item if you don't want to bother with packing a lot of clothes that will just end up getting ruined in the wash. You'll almost certainly want a swimsuit, for swimming in the rivers or going to the beach.

(2) Music. If it is important to you to hear music other than salsa, merengue and rap, you should bring your iPod if you aren't bringing your laptop.

(3) Don't bring anything you can't afford to part with as it is common for gringos to experience theft. Violent crime is rare, but burglary is quite common in Guanacaste, and anything left unattended on a touristy beach while you swim will almost certainly be gone forever within a few minutes. Bus thefts are common as well.

(4) Novels. You won't have much reading time during the data collection routine, but bring enough good books to get you through the monthly vacations. High quality English literature is virtually impossible to come by, and books are expensive. Some books are available in the project library.

(5) If you still have space in your suitcase and want to endear yourself to those people who have already been in the field a long time, you might consider bringing some of the following: cooking spices unavailable in Costa Rica (e.g. ground coriander, dill, sage, caraway, fenugreek, 5-spice powder, turmeric, clovers, chili powder, Mexican oregano, or asefoetida) or even some pine nuts, mixed dried fruit (cranberries especially), or falafel mix. Trail mixes, high-quality dark chocolate, M&Ms, and candy will also leave a good impression. You will be amazed by how excited fieldworkers are to see these items come out of a suitcase, and it is amusing to watch them fight over the best way to incorporate them into your welcome dinner.

(6) Two pairs of towels and a set of sheets including pillowcases. The quick-dry towels are excellent in the humidity. Often in the rainy season normal towels never fully dry.

(7) Camera and lap. Be aware that Costa Rica isn't the best environment for electronics and it's much better to bring an old laptop than buy a brand new one. There are project laptops for you to use, but often assistants enjoy having their own computers for data editing.

Vaccinations:
Ask your doctor what is currently recommended by the Centers for Disease Control (or its equivalent in your home country) for travellers to Costa Rica, and tell him or her that you may have some contact with wild monkeys. Most likely s/he will recommend hepatitis, tetanus, mumps/measles, polio, typhoid fever and yellow fever (not strictly necessary, but perhaps adviseable since you'll be making contact with monkey feces). You may want to take some chloroquine with you. We don't take it ourselves, but there are occasional occurrences of malaria even in dry forest. If you will be vacationing on the Atlantic coast, or in Nicaragua during the rainy season, malaria is more of a concern. There is no chloroquine-resistant malaria in Costa Rica or Nicaragua. We also recommend that you bring some potable agua tablets (available at camping stores and army surplus stores) for use on vacations. The water supply in Pijije is well water, and the water at the museum in the Reserve is spring water (i.e. safe). But you do occasionally hear of tourists getting sick from the water in other parts of Costa Rica, particularly around Quepos and in Limon Province. In

Nicaragua, tap water is definitely to be avoided. Assistants who have ignored this advice, even just to brush their teeth with Nicaraguan tap water, have regretted it. Amoebas are no fun!

Furthermore, additional vaccinations and tests are necessitated by the requirements of most Animal Research Committees. Their rules and regulations are intended for research on captive animals, and they refuse to make exceptions for us, so that's that. You will need to provide the dates of your more recent tetanus, measles/mumps/rubella, and hepatitis B (this is the odd one) vaccinations. Furthermore, you'll need to get a negative tuberculosis skin test result - preferably administered within a week or two of your start date. The tetanus shot is highly crucial for your own safety, and if the doctor balks at giving you this (due to the nationwide shortage) tell him that you will be crawling through rusty barb wire fences several times a day at high speed. Please supply the dates and results of these tests to us when you have obtained them. We also need your passport number to process your research permit and animal care approval.

Project bibliography

> Note: As in any interview situation, it is desirable that you know something about the position you are applying for. We strongly recommend that you read more than just the website. Below are some options. The popular book Manipulative Monkeys gives the most vivid description of what life would be like as a research assistant, but it would be advisable to read some primary articles as well. If you still have student access to online library services, you will have no trouble obtaining these articles.

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