

Ecological Problem Solving: A Comparative Study of Primate Conservation

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Abstract:

As primate species become increasingly endangered, there is a growing imperative to find and engineer the most effective methods of conservation possible. This study looks at some of the contemporary challenges faced by conservationists in today's changing world, and suggests possible solutions to these problems founded in both local and international contexts. Using a comprehensive look at obstacles specific to each region, as well as universal obstacles faced by conservationists across cultures, this thesis creates a framework for ecological problem solving between human and non-human primates. This study compares the economic, geographical, political, and cultural barriers that two grassroots primate conservation organizations have faced: One in the Peruvian Amazon and the other in the South African bush. Drawn from my personal experiences with these organizations, as well as external research, I explore the costs and benefits of ecotourism, research based funding, and other methods of conservation commonly employed by primatologists in order to determine their efficacy.

Chapter 1: Introduction

In the last 50 years there have been fundamental changes in the nature of our world. More and more we find ourselves running into problems that only seem to grow in depth and complexity. Our understanding of national identity, cultural differences, and global responsibilities have become increasingly difficult to identify and address. Spheres of activity that were once completely isolated from one another have somehow become entangled in a web of interconnectivity. This new and globalized landscape that we all now share has integrated itself not only in human societies, but also into the planet itself. Although many great things have stemmed from the possibilities being afforded to us by our current progression, there have also been a number of extremely detrimental impacts that have stemmed from these changes as well; perhaps most noticeably, the rapid degradation of the environment, and the eradication of countless species across the globe.

As an environmental activist, I have been searching for the answers as to why this is happening and how to mitigate any future damage that might occur. Unfortunately, I often find myself lost in this web of interconnectivity, and knowing how to navigate within the intricate global landscape seems nearly impossible at times. However, over the last few years I have had the opportunity to study and work closely with many different species of wild animals in a number of different settings, each one providing some new insight into why the world is changing so quickly and what that says about our future.

Primates are particularly important in regard to understanding the relationship between humans and the environment because of their proximity to both the natural and industrial world. In many ways, primates act as indicator lights that can illuminate changes in the world we

previously did not know were happening. But perhaps more importantly, due to their similarity to humans both in biology and behavior, they can force us to ask difficult questions about the nature of humanity and what changes need to be made if we are to continue to thrive as a species.

This thesis looks at both local and global challenges being faced by conservationists, and I will use my own experiences with primate conservation to filter this exploration through. Using both ethnographic research, as well as literature reviews, I will attempt to create a framework for ecological problem solving that is both comprehensive and reflective of cultural differences across the globe. Furthermore, this thesis will explore the relationship between global shifts in development and small-scale communities with regard to its implications on the environment. It is becoming exceptionally clear that poverty, population growth, and ecosystem health have become increasingly linked (The World Resources 2005), and as such, it is imperative that we develop an in-depth understanding of the reciprocal relationship between these issues.

Many of the areas that have the highest levels of priority for primate conservation are also home to the poorest people in the world. Unsurprisingly, these people are dependent on their local environments for subsistence, and are just as effected by the encroaching influence of globalization as are the ecosystems themselves. We can see the intersection of many different forces at work. Increasing consumption, particularly by western countries, in conjunction with a growing population, work together to dictate many of the changes being seen within ecosystems and the power structures that are associated with them (Millennium Ecosystem Assessment, 2005).

The growing demand for things like space, water, food, energy, and waste disposal services transform the landscapes we occupy. However, what is important to note is that the impact of these necessities has a residual effect on the landscapes both immediately occupied, as

well as more distant and seemingly disconnected areas. For example, agricultural development is the single largest cause of shifting habitat conversion, which can be seen by the fact that almost one-third of the earth's land area is used for food production (U.S. Department of Agriculture 2015).

Moreover, we are faced with a troubling contradiction since economic growth is contingent upon urbanization (State of World Population 2015). Yet, the impact of environmental degradation is felt most directly by the world's poorest and most vulnerable people, particularly those living in the tropics. Loss of their natural resources (e.g., clean water, land, food, fuel, and materials) implies that these people cannot break out of the poverty trap and prosper (WWF - Endangered Species Conservation 2015).

How, then, do we proceed?

Obviously, this is not a simple question, and there is no single correct answer. But using my own experiences in conjunction with the expertise of numerous primatologists and naturalists, I will attempt to break down these issues in the hopes of fostering a clear and precise understanding of how different spheres of activity are interacting within the context of conservation, and what steps should be taken in order to think critically about how to best approach human interaction with the environment in the future.

So I'll begin with a story:

I can remember feeling like I was dreaming. I had never been anywhere in Africa before, and when you're 18 and traveling by yourself for the first time everything carries a slightly

different meaning. You walk around wide-eyed, idealistic, thinking you're ready for whatever comes your way, trying to convince yourself you're not scared to be alone in a foreign country. You carry your malaria pills and tuck away your passport in some hidden zipper inside your pants. You do everything the travel guides tell you to do, but after a few days you realize that the biggest threat you face is not something physical, it's ignorance.

I was headed to the Vervet Monkey Foundation (VMF) to start my first day volunteering and I met up with the founder of the organization, Dave Du Toit, at a nearby town, and from there he took me to the sanctuary. He hardly said a word to me when he picked me up from the bus stop and I could sense a feeling of defeat in the air, as if he was grieving for something, but I didn't know why. Beads of sweat rolled down the side of his stern face, and he didn't look at me once. His eyes were glued to the road, but it was obvious that his thoughts were elsewhere. 'Maybe he just isn't very talkative' I told myself, but when I arrived at the sanctuary there was a blanket of grey smoke over the sparse landscape. He told me there had been a fire the day before I arrived that had burned down one of the vervet enclosures. The people working there had spent the majority of the last 24 hours trying to put out the fire and figure out what to do with the 80-some vervets that no longer had an enclosure to live in.

One of the volunteers there at this time was telling me about the fire as he showed me his shoes. The soles had been melted off from the embers on the ground. The ground where the enclosure was had turned completely black and there was stagnation to the atmosphere as if a storm had just passed. Crumbling bits of clay and ashes drifting through the dry air commanded the landscape.

It wasn't until some time later that I was fully able to understand the gravity of what had happened. Obviously, I knew it was tragic because some of the monkeys had died, and many of

them suffered severe burns, but I hadn't considered the implications of the fire on the organization as a whole. The enclosure that burned down was the largest in the entire sanctuary, and it housed a massive troop of monkeys that were not humanized at all. In other words, they still knew how to interact with each other the way vervets do in the wild, which meant that they would be able to be released into the wild. The VMF had been saving up money for years in order to buy land to release this troop into. However, the money the VMF had to spend on buying medicine to treat the burned vervets in combination with the costs of rebuilding the enclosure depleted the funds that had been saved. Moreover, the amount of time the burned vervets would have to spend around people in order to heal would humanize them to the point that would render many of them unfit to be released back into the wild with their troop.

The campfire smell in the air that I used to associate with tranquility and the comfort of friendship suddenly changed meaning. It turned into a dark, guilty feeling that I was somehow responsible for the circumstances of this fire. I don't really know why I felt guilty; maybe I wished I had gotten there a day earlier so I could have helped try to put out the fire. Maybe I felt bad about the fact that up until that point I had never done much to try to accomplish something larger than myself, but I do know that I began to feel a sense of purpose in my life during my time at the VMF. Now that some time has passed since then and I have had more experiences, I can look back on my time there and see how and why it has had such a large impact on my perceptions of the world, as well as my understanding of humankind's place in it.

This was my first experience with primate conservation. It was like being born into an ideal that was already defeated, on the ground being kicked. Surrounded by broken spirits and charred-over trees, there was little I could do to reassure myself that everything would be okay,

because I knew that no one was coming to help. We were the only rescue team in place, and yet we did not have the resources to change the outcome of the situation.

I am telling this story because it is easy to develop an understanding of something conceptually without realizing its implications on an individual level. It is the day-to-day efforts of those on the ground that make the difference in organizations like the VMF. It is a constant battle to conquer the daily obstacles, which most people have no knowledge of, that are often the most challenging and difficult to overcome.

But it was the first time I held one of the vervet's hands that my responsibility to preserving the beauty of nature truly became clear to me. I remember one of the vervets inside of his enclosure, grabbing on to the fence. We looked at each other through the metal barrier and I felt that there was an understanding between the two of us. He looked like a prisoner, locked up in some jail for the abandoned, his innocence being completely irrelevant to the circumstances that put him there. His hands resembled mine so closely, and yet this was an animal that was somehow considered less than me, so much so that many monkeys in South Africa are legally considered vermin and can be killed or kept as pets without consequence.

This observation, though seemingly insignificant, would lead to a fundamental shift in the way that I looked at the world. Now everywhere I look I see these kinds of connections. They are not all so blunt, and sometimes I have to take the time to find them, but they are always there. I mention this because in the US we live in a sphere completely disconnected from much of the world in spite of our increasing ability to interact and communicate with people from all reaches of the globe, and it is this very disconnection that perpetuates many of the conservation problems our world faces today.

I realized that trying to change the way people interact with the environment was not going to be simple. There was an entire network of cultural beliefs, which had been engrained into a society that I knew nothing about. The complexities and intricacies of culture, which I had always seen as something to be cherished and savored suddenly became a towering barrier with no peak in sight. Before I could hope to solve these problems I needed to understand them.

It is a common tool used by activists to try to appeal to sentiment rather than logic. When we turn on the TV we see infomercials trying to get you to donate money to noble causes. We see images of little children without clothes on, their bellies bloated, their arms and legs consisting of nothing more than bones with skin over them. We see old men and women missing an arm or a leg sitting on the side of a dirt road, looking like they've just lost everything they own. We see dogs and cats covered in cuts and gashes, their eyes hardly able to open because of some kind of infection or mites.

But it's a cheap shot, one which hardly seems to be effective. And of course we should make every effort to show the world these issues, particularly those with the means to create change, and every little donation *does* help, but it is not enough. The reason for this is because while we can empathize deeply with others, it is difficult to channel that empathy into action if we do not have an understanding of the issue, and even harder still if we feel like our actions will not make a meaningful difference in the lives of those we are trying to help. My goal for this thesis is not to try to guilt my readers into action, predicated upon by stories of suffering or loss, but rather I will try to express the actual value of conservation and its importance as a means of saving the planet that we are dependent on. I mean this not as a religious or spiritual sentiment, nor as a metaphysical claim about humanity's need to create a more enlightened world, but as a functional imperative if our species is to survive. The story I mentioned above may seem like I

am using the very tactic I am refuting, but throughout this thesis I will make every effort to explain why these types of events are so important to understand, and the significance they carry within the overarching power structures we are forced to navigate through.

To create meaning out of something without relying entirely on moral sentiment can be a daunting task, one that so many have tried and failed at, and those of us who are conservationists are continuing to fail. Every year more and more species go extinct, rainforests become smaller, the number of natural disasters increases, and the conditions for sustainable life become increasingly absent (The IUCN Red List of Threatened Species 2015). What I wish to make clear to whomever is reading this is that conservation is about much more than any one species. It is about more than humans and non-human primates. It is about much more than any one part of the world.

There is an interconnectedness to all things in this earth, even though it might not always be visible. When sitting at home watching Netflix or going out to Target to buy some back-to-school clothes it can be incredibly easy to not realize that our day-to-day practices have a direct impact on anyone other than ourselves. But the energy we use to run our TVs has to come from somewhere. The wood that is used to build our houses, the water we drink, the materials we use for our clothes all has to come from somewhere. If we as a species are to prosper we must learn humility. We must learn that we are not separate from the earth, but rather an integral part of a rich and connected network of species.

I have worked with many different types of animals and learned something new about myself with every experience. However, primates carry a particular importance when it comes to the realization of our mortality and our connectedness with, as well as dependency on the environment. They are the ultimate reminder of where we as a species come from and where we

as a species are headed. We run the risk of extinction if we do not make meaningful changes in our environmental practices.

In 2012, the International Union for Conservation of Nature stated that of the 418 primates on the IUCN Red List, 207 of the species were considered vulnerable, endangered, or critically endangered (The IUCN Red List of Threatened Species 2012). Simply put, nearly half of the primates on this list are at risk of extinction to differing degrees. This in conjunction with the fact that the human population has nearly doubled in the last 40 years (Bureau 2015) has created a number of problems for the environment and its occupants. A population growth of this rate implies a network of residual effects, the basic train of events that follows going something like this:

The demand for natural resources grows proportionally to the population. In order to meet the requirements of basic subsistence, more land needs to be cultivated. However, this poses an interesting dilemma due to the fact that as the population grows, so does the amount of space needed to shelter that population and grow the food they eat. But unlike plants and animals, which we can grow at much faster rates than would happen naturally, the amount of available land is finite and cannot expand or contract the way many of our resources can. We are left with more people but not enough space to cater to their basic subsistence needs. In order to make space and to acquire the resources needed to take care of all these people, the very environment we are dependent on gets destroyed. And on and on it goes.

Obviously, this kind of short term thinking will not be possible to maintain much longer. The problem is that none of this information is new or unheard of. By the 1970's numerous organizations had been created to mitigate these problems before they got out of hand. Organizations such as the Primate Specialist Group (PSG), the International Primatological

Society (IPS), and the International Union for Conservation of Nature (IUCN) had all been created as a direct result of the unique environmental challenges posed by a globalizing and changing world (Oats 2013). Moreover, they were in a consensus about the nature of the problems at hand and even created guidelines for approaching these relatively new problems. The *Global Strategy for Primate Conservation*, which was created by the PSG in 1978, stated that some of the strategies included protecting vulnerable areas, creating public awareness towards the issues, and creating large reserves dedicated to the maintenance and preservation of biodiversity (Oats 2013). All of these suggestions have been employed by one organization or another, and yet these problems have only gotten worse. But what is it that we are doing wrong?

Our capacity for self-destruction is not limited to war, violence, or political degradation. When we learn to look at ourselves as a part of the planet it becomes very clear that we are destroying ourselves. The attack we have made on our environment and its inhabitants has left a stain on our fragile blue planet. We can no longer hold our heads high and marvel at our own creations because those creations are beginning to get the better of us, and they are rapidly distancing us from our only home. As Carl Sagan once said, “A new consciousness is developing which sees the earth as a single organism, and recognizes that an organism at war with itself doomed” (Who Speaks for Earth 1980). It is this new consciousness that is an important first step in rescuing our planet from the depths of greed and exploitation that we have fallen into. The science has told us that fundamental changes need to be made in the world if we humans are to continue living in it. So then the question is no longer whether or not we need to do something to save the environment and its inhabitants, but figuring out what those changes are and how to best approach them.

Chapter 2: Methods

Before I continue any further in this thesis, I must discuss my role in the research I conducted in order to establish both the limitations and academic possibilities of ethno-primatological research. As with any ethnographic research, the participant observer shapes their analyses through a filter of their own lived experiences and cultural backgrounds (Fuentes 2000). As such, there is a greater degree of interpretation integrated into the conclusions drawn from ethnographic research, as well as a larger margin for bias within any claims the researcher makes (Riley 2013). Acknowledging that any critiques or suggestions I incorporate into this thesis are influenced by the larger social and political contexts that I come from is one of my responsibilities as an ethnographic researcher. Therefore, the reflective and personally interpretive nature of the work I have conducted leaves room for bias, and should not be treated as an absolute truth, but rather as a subjective analysis of both the human-primate interface and an intercultural perspective as well.

Ethnographic research has commonly been criticized as being non-academic, or lacking theory and viable hypothesis testing (Fuentes 2010). However, ethnographic work also provides the opportunity to develop new understandings of the complex and subtle interactions between humans, animals, and our relationship to the environment. Although ethnographic research is implicitly influenced by the researcher's internal perspectives, the narrative I have created in this thesis is not without value. In fact, ethnoprimateology has proven to be an invaluable contribution to the anthropological discipline.

Ethnoprimateology acts as a bridge between primatological and anthropological practices. It views humans and other primates as actors within a shared and integrated social space, and

aims to understand the nature of these interactions across cultural and temporal boundaries (Fuentes 2012). Ethnoprimatology has been a consistently present sub-field of anthropology since the 1950's when an anthropologist named Earnest Hooton expressed the idea that primates have much to tell us about what it means to be human (Riley 2013). The work that followed Hooton's claim aimed to understand the behavioral ecology of non-human primates as they exist in nature. However, before long researchers began realizing that understanding the natural behavior of primates not only meant understanding primates as they exist in ecosystems free from anthropogenic impact, but also in areas where the human-primate interface is well defined (Riley 2013).

It is important to note that ethnoprimatology stemmed from ethnobiology. Although it was not until 1988 that the International Society of Ethnobiology was created, ethnobiology can be seen as having begun to develop during the 15th century when European countries were colonizing different areas of the world (Anderson et al. n.d.). Ethnobiology studies the relationship between humans, biota, and the environment by integrating numerous different academic practices into a unique and comprehensive perspective (Cormier 2003). Europeans noticed that Indigenous people had an in-depth understanding of their environments, and used ethnobiology to understand the reciprocal relationship the Indigenous people had with their local environments. To this day ethnobiology acts as a source of knowledge about medicine, agricultural techniques, and other natural conservation practices (Anderson et al. n.d.). Thus, incorporating interdisciplinary approaches to ecological knowledge has been a long established tradition. However, the creation of Ethnoprimatology allowed for new understandings about the nature of the human-primate interface (Cormier 2003).

Furthermore, the incorporation of reflexivity in ethnographic work has led to some of the most substantial behavioral analyses within the anthropological body. For example, Irvén DeVore was one of the first anthropologists to examine baboon social organization. His research led him to believe that the social organization of baboons was characterized by a male dominated hierarchy. Though initially criticized for projecting his own Western beliefs about the importance of female subjugation (Strum 1982), it was eventually realized that the dominance hierarchy he observed was in fact an integral aspect of primate sociality (Susman et al. 2005). Examples such as these exemplify the importance of acknowledging reflexivity and its role within the anthropological discipline. Ethnoprimateology incorporates both theoretical perspective and methodological approaches into the research being conducted, allowing for a more complete and comprehensive analysis of behavioral trends (Riley 2013).

Moreover, due to the fact that humans and non-human primates are beginning to share more of the same space, it would be a massive failure if we did not acknowledge our own relationship to the animals we are studying. Research has shown that the anthropogenic impacts on primate populations are not limited to reductions in population sizes. Much like us, non-human primates are very adaptive animals and have changed in both behavior and morphology as a direct result of the increasing pressures being placed on them (Fuentes 2006), and as such, ethnoprimateology provides valuable information for biological anthropologists. It is clear that culture and science are not somehow mutually exclusive, but rather culture is an integral part of science (Nader 2001), which allows for previously unstudied topics to come to light.

A very large part of this thesis aims to examine how socioecological variables are influenced by anthropogenic processes. Throughout this thesis I will emphasize the importance of acknowledging the human aspect of conservation work because of the massive impact we

have on the natural world. Some previous conservation literature has failed to address this in analyses of topics such as predation ecology or socioecological impacts, due to the fact that humans are often not seen as being a natural variable within the faunal community (Sponsel 1997). However, by providing first hand experiences, contextualized through interviews of conservation organization founders as well as external literature, this thesis will explore some of the previously undiscussed aspects of primate conservation.

When looking at the types of problems that exist within not only primate conservation, but environmental conservation as a whole, it becomes clear why understanding human impacts on the environment is so critical. For example, land conversion for human use and resource extraction has been pointed out as having the most detrimental impact on forest structures, and the primate populations occupying those spaces have declined as a result (Chapman & Peres 2001). As forest structures become increasingly fragmented, primate populations suffer greatly (Henle et al. 2004); however, perhaps one of the most dangerous residual effects of degrading forest structures is that it brings humans and non-human primates into close spatial contact with each other (Estrada 2013).

There is a visible correlation between global market pressures and declining primate populations (Estrada 2013). Hunting for bush meat and illegal pet trade are some of the more common threats to primates (De Jong et al. 2008) since they are considered valuable commodities in places like sub-Saharan Africa and Southeast Asia.

It is also important to note that some of these markets are heavily influenced by industrial scale logging. The impacts of this industry are long lasting and pose one of the greatest threats to primate populations, as well as biodiversity as a whole (Estrada 2013). For example, a report given from the State of World's Forest in 2011 showed that forest was lost as a rate of 7,450,000

ha/year from 1990 to 2010. In total, it is estimated that 149 million ha of forest was lost throughout sub-Saharan Africa, Southeast Asia, and the Neo-tropics alone (FAO 2011). Much of this stems from growing global market demands for animal and plant food products (Lambin & Meyfroidt, 2011).

Although there have been some attempts to counteract these processes, they have largely been unsuccessful. One of the more common strategies being utilized to combat deforestation is to create planted forests as a means of regaining certain natural resources such as wood and fuel (FAO 2010). Ultimately, these actions are created in response to growing poverty and food insecurity. Unfortunately, studies have shown that forest planting is not effective enough to make up for the amount of forest area lost during the same period of time (Estrada 2013).

One aspect connecting all of these issues is poverty. Not only is poverty one of the largest contributors to the very existence of markets such as bush meat hunting, illegal pet trade, and logging, but the deeply entrenched inequality and lack of political empowerment within poor countries makes conservation work particularly difficult (Estrada 2013). It is clear that environmental degradation is a symptom of high levels of poverty, and as such, conservationists should make every effort to address this problem in their work. For example, the Human Development Index (HDI) is comprised of three main categories: mortality rates, levels of education, and standards of living (UNDP 2009), and a consistent feature in tropical primate range countries is a low level on the HDI.

Furthermore, poverty breeds poor governance and resulting health crises such as malaria, AIDS, and malnutrition (Kates & Dasgupta 2007). These processes act as feedback loops, each problem reinforcing the other to a seemingly endless degree. The size of these problems makes

them seem nearly impossible to solve on a national or global level, however, small steps can be made that pushes countries with low HDI's in the right direction.

Every region of the world faces challenges specific to their cultures, political establishments, and national histories. Because of the massive range of problems different parts of the world face, claiming that there is one single plan that can be applied throughout the entire world would be altogether false. As I began conducting my research I was amazed at how much literature existed on what the problems are, and how little literature existed on how to overcome them. This thesis aims to contribute to undoing the latter.

In my opinion, one of the biggest flaws in current conservation literature is that most of the solutions being proposed consist of nothing more than a list of the most basic problems followed by the most basic possible solutions. For example, research might show that there is not enough funding for conservation organizations and too much logging going on in tropical ecosystems. The posed solutions would then be to increase the amount of perimeter surveillance and find donors for added funding.

Obviously, this kind of thinking is not particularly comprehensive. How is an organization supposed to pay someone to guard its perimeter when lack of funding is such a problem? And how is an organization supposed to receive large amounts of funding when it is failing to fulfill its most basic goals since it does not have proper perimeter protection? Furthermore, this kind of thinking fails to address the question of 'how would someone actually go about doing this?' and does not incorporate the impact of changing cultural practices into its line of thought. Simply saying that conservationists need more money does not provide any real insight into approaches for acquiring it.

Many people treat conservation like a math problem. They assume that variables remain consistent in value, the way $2 + 2$ will always equal 4. However, the truth could not be farther from that. Although there may be consistencies within the overarching premise of the kinds of problems our world is facing, the scope and impact of each factor will have its own unique implications, and it is imperative that conservationists approach each situation with a level of flexibility that can accommodate to these inconsistencies.

In order to provide context to existing conservation literature and illuminate some of the range of challenges conservationists must be prepared to handle, I will focus much of this thesis on two of the organizations I have worked for: The Vervet Monkey Foundation and Fauna Forever. Although the end goal of these organizations was more or less the same, they went about it in two very different ways.

Located in the Limpopo province of South Africa, the VMF is a non-profit NGO that acts as a sanctuary for injured or orphaned vervet monkeys, and their primary objective is to rehabilitate them so that they can eventually be released back into the wild. However, the VMF also places an emphasis on educating volunteers and local communities about sustainable livelihood practices and advocates for a minimalist approach to consumption. Founded by Dave Du Toit over two decades ago, this organization uses an ecotourism model for the conservation work they conduct. Currently, the VMF is run by Dave and his wife, Josi Du Toit, both of whom I worked closely with and interviewed for this thesis.

The role of the volunteers and staff consists of preparing and gathering food for the vervets, enclosure maintenance, providing medical care for injured vervets, and behavioral analysis in order to establish plans for troop integration. Throughout the months I worked at the VMF I was exposed to problems specific to South Africa, as well as problems consistently

present throughout many different parts of the world. Although some of the insights that stemmed from my time at the VMF took many years to contextualize, they proved to be invaluable when it came to understanding the importance of cultural relativity and interpersonal relationships within the overarching goals of conservation work.

Fauna Forever, another organization I worked with during the summer of 2015, was founded by Chris Kirby around the same time as the VMF. Chris is also the president of Arc Amazon, which was co-founded by David Johnston whom I worked with and interviewed for this thesis. Fauna Forever is somewhat different from the VMF in that it is a research based conservation organization. By creating well documented species lists, monitoring species density and movement patterns over the course of many years, Fauna Forever uses the data gathered by volunteers and staff to determine which areas of the Peruvian Amazon have the highest priority for conservation.

However, Fauna Forever only acts as one half of the conservation mechanism set forth by Chris Kirby. The other half is the sister organization called Arc Amazon, which works closely with Fauna Forever using the available data to practice traditional conservation work that includes environmental protection and sustainable development initiatives. I will return to the functional relationship between Fauna Forever and Arc Amazon later in this thesis, as well as provide excerpts from my conversations with these individuals that took place from October through February of 2016.

Though there are many differences between these organizations, it is important to note that many of the differences seen in organizational strategies are representative of the respective challenges they face within their cultures. The problems conservationists in South Africa are confronted with are quite different from the challenges being confronted in the Peruvian

Amazon. However, these organizations share many similarities as well. They are both vessels for ecotourism and most of their sustaining income comes from international volunteers. Similarly, they both employ members of local communities with in depth knowledge about local plant and wildlife.

Throughout this thesis I will be comparing the methods employed by these organizations, and will advocate for the adoption of certain features of the work they do, as well as the abandonment of other features. However, the suggestions I will make in this thesis should not be treated as an absolute guide for how to handle any conservation problem one might be confronted with, regardless of the specific situation. Rather, this thesis should be treated as literature that demonstrates the many different ways conservation work can manifest itself in distinctive contexts, while providing examples of the ways that different organizations choose to handle the problems they face.

Even if someone knows exactly what the problems are and what should be done to mitigate them, the logistical question of how to actually manifest those solutions into action is another question entirely; one which requires consideration of numerous different factors such as cultural barriers, financial realities of respective organizations, and natural obstacles of the environment itself. All of these factors are relative to the time, environment, and location of the challenges at hand, and need to be treated as such. Rather than pretending there is one single solution to the environmental problems we are currently facing, we should reason honestly and critically with the ever-growing wealth of knowledge and information at our disposal, and acknowledge that every situation will require its own comprehensive set of solutions. This thesis aims to address these considerations.

Chapter 3: Ecological Development and Integrated Conservation

As a conservationist, I am constantly confronted by contradictions and dualities within my moral philosophy. For example, some of the environmental work I have done consists of going to underdeveloped countries and trying to promote sustainable living practices that do not degrade the environment. These communities are of particular importance because of their proximity to thriving ecosystems, and as such, these areas are natural priorities for conservation work. Yet, I live in a country which is largely responsible for the economic stagnation and environmental degradation of many underdeveloped countries (Harvey 2005). Whether through neoliberal economic policies, the residual effect of colonization, or the demand that western countries put on economically underdeveloped parts of the world for resources and cheap labor, countries like the US have a direct relationship to the social and economic turmoil these parts of the world are forced to endure (Harvey 2005).

I found myself thinking quite a bit about these contradictions during my time in the Peruvian Amazon. I couldn't help but ask myself 'what right do I have to tell these people how to live their lives when my own privilege is predicated upon by their very lack of affluence?' Dave Du Toit addressed this contradiction when I asked him what advice he would give to any aspiring conservationists. He told me,

"I think these are very important questions and I think a lot of it starts with our own lifestyles, and having a look at making a lifestyle change ourselves, and starting to make those small changes which will actually give you the right to ask other people to try to make a difference. I don't think it helps going out to somewhere like the Amazon and trying to tell them not to eat bush meat or not to do something when we're not prepared to make those same changes at home. If you're not physically prepared to start making lifestyle changes at home and stop making such a big impact and consuming stuff that's actually destroying the Amazon forest, what right have you got to go over there and try to teach them

conservation principles? So I think if you are going to get involved, take a very deep look at yourself. (Du Toit, Dave. Interview by Ian Harryman. Dec. 14, 2015.)”

As we spoke about how conflicting lifestyle choices can disillusion some people into having a false sense of self-righteousness, I was surprised to hear him speak with such encouragement towards those who wish to become involved in conservation work. He did not want anyone to think that they shouldn't try to participate in this kind of work simply because of where they are from, but rather he wanted to show his volunteers that many of our daily activities have a larger impact than we might realize. Dave accomplishes this by forcing his volunteers and staff to hold themselves to these standards by making the VMF a meat-free working environment. The VMF also places limits on things like water usage for showers and monitors electricity usage throughout the month.

I found this methodology to be particularly effective as a means of maintaining a sense of active validation within the VMF. By holding their employees to the same standards they were trying to promote, it ingrained a sense of responsibility into the volunteers, and exposed many of us to minimalist lifestyles for the first time. The initial exposure of this lifestyle change allows volunteers to see how strong of a contrast it bares to daily life in industrialized countries, and potentially encourages volunteers to continue to make responsible changes in their lives at home. As I began to make certain changes in my own life I realized that if I do hold myself to the same standards as I hold others, I not only have a right, but a responsibility to advocate for a change in the lifestyles of other people if it means that their lives will ultimately be improved.

However, here I found myself confronting another contradiction. How do I gauge what improvement is? Countless societies have been conquered and enslaved because one society told the other that they knew what was best for them, and that these conquered nations should be

thankful that they are being ‘saved’ by their captors. Cultural identities were stripped, their religions and cosmology eroded, and in many cases the quality of their lives were not actually improved at all, but rather degraded consistently and without reward.

I wanted to make sure that I was not the conqueror in this situation. I did not want to travel across the world, only to give people a rubric for how to live their lives if it was not what they wanted. In order to answer the question of how to assess improvement there must be an abundance of research collected over an extended period of time. I will return to the importance of research-based conservation later in this thesis; however, for the sake of answering this question we can search for what the most basic necessities are for an ecosystem are if is to survive. Although it would be somewhat foolish to place the value of one species over another, research has shown the importance of primates on both forest structures and local communities.

In her article on primate conservation and its relation to local communities, Catherine Hill posits that in order to establish the importance of primate conservation within primate-range communities, “the ecological, economic, scientific, and moral value of primates much be considered” (Hill 2002: 1184). By understanding the value (both moral and practical) of primates, conservationists can help create economic systems that are beneficial for both local communities and the environment they are dependent on.

Hill notes that primates carry a particular importance to the maintenance of forest structure because of their role as seed dispensers and pollinators (Peres and van Roosmalen 2002). The significance of this role cannot be understated because of the dependency other fauna and their predators have on these plants. By diminishing the primate population in a certain area, whether through hunting or habitat destruction, the rest of the ecosystem will suffer as a result. The seeds that primates disperse not only contribute to the overall biodiversity of the ecosystem

through added plant life, but it also provides the resources necessary for other animals to survive. In many ways, ecosystems act like dominos; when one piece falls the rest follow. The fragility of any given ecosystem must be respected if it is to continue to thrive.

However, it is important to note that this circular pattern is not contained only within the limits of the ecosystem itself. This problem implicitly makes its way back to local communities who are not only dependent on local ecosystems for basic subsistence, but also for their economies. For example, Kibale National Park in Uganda is home to primates that disperse 77 different tree species, and local communities utilize nearly half of these trees (Lambert 1998). As the primate population declines, so will the amount of available resources these communities can use. This kind of data expresses a very clear correlation between the quality of the environment and the communities that surround it.

Establishing a framework for ecological problem solving is contingent upon creating a form of integrated conservation which helps local communities develop by means of ecological preservation (Hill 2002). If conservationists do not engage local communities in this effort they will undoubtedly fail. Furthermore, we must assess the moral implications of abandoning these communities, while at the same time claiming that they no longer have a right to use the land that has been theirs for years. The populations closest to reserves are often the ones who are most negatively effected by the land-grab method that many conservationists are currently practicing (Bell 1987). The loss of land, declining access to resources, potential damage to crops, and threat to human life implicit within these problems are the end result of careless conservation. Moreover, the benefits of the sacrifices imposed on these communities does not go to them, but rather to governments, national institutions, scientific bodies, and tourists (Bell 1987).

Thankfully, these problems also offer the potential to not only mitigate future damage to these communities, but to actually enhance the quality of life for them as well. Effective conservationists can use their resources in a way that is mutually beneficial for local communities and the environment alike.

When it was realized that conservation initiatives could not succeed without the help of locals, the concept of “community conservation” was created. This philosophy stated that conservation must be “participatory” and must treat surrounding communities as “partners” (Adams and Hulme 2001:193). Furthermore, it stressed the importance of providing an economic return to local people that facilitated sustainable livelihoods. The manifestation of these ideas came in the form of Integrated Conservation and Development Projects or ICDP’s. The methodology employed by these ICDP’s was that of compensating local people for minimizing resource use in the form of development initiatives (Abbot et al. 2001). Examples of this could include strategies like having conservation organizations help build schools or install solar based electricity in the houses of locals.

Developed countries in the western world have a tendency to not have the kind of rich biodiversity that many of the less industrialized countries of the world do (Hopcraft et al. 2015). Although it is tempting to assume that industrialization is inherently a bad thing for conservation, I would argue that national development and the preservation of the environment are not mutually exclusive, nor should they be treated as such. Sustainable development should be what we as a species strive for.

Unfortunately, a common trend in conservation is to create false binaries within any number of issues, often times putting the well-being of people on one side of the argument, and the well-being of the environment on the other. However, this is a fundamental flaw in the

approach of many conservationists. Ironically, those of us who study the environment are the ones who are supposed understand that humans and the environment are not separate from one another. The creation of these kinds of binaries does nothing more than to perpetuate the cycles of ignorance and expropriation which created these problems in the first place.

The approach of conservationists should not focus exclusively on the environment, but should aim to encapsulate the preservation of the human species as well. Encouraging human development is as much a necessity for preserving the environment as is protecting the land itself (Hopcraft et al. 2015). In fact, failing to address the impact of poverty and lack of access to health care or education would be a massive failure. In order to truly be successful in mitigating the destruction of precious ecosystems, a broader view must be captured of the problems at hand; one which acknowledges that national development, levels of education, and overall standards of living all have a direct impact on environmental preservation.

The interconnectivity of these issues was taken into account during a study that looked at how road development in Serengeti National Park could be used to promote national development, while at the same time redirecting the sources of revenue from unsustainable agriculture practices to business and trade via improved access to education and health care.

The significance of this study, and the reason it should be used as a blueprint for future development initiatives, is because it shows how national development does not have to compromise ecological values. Serengeti National Park acts as a major revenue source for Tanzania, and yet it is under constant threat due to the encroaching presence of bush meat hunting (Hopcraft et al. 2015). Aside from the park's inherent value as an ecosystem, it provides the country with billions of dollars each year through the tourism industry (World Bank 2012), and the maintenance of the park is imperative for the countries prosperity.

The study done by Hopcraft et al. looked at three possible options for new roads that could be created which would connect regional road networks. Through a critical analysis of data that included access to urban hubs of activity, distance to major roads, costs of creating the road, and proximity to schools and health care services, it became clear that one of the possible options for the roads would grant access to all of these things, while at the same time mitigating unsustainable agriculture. This could be accomplished by providing access to urban hubs that offered alternatives for income, health care, and education.

This kind of development initiative is what conservation organizations should strive for. This framework could be used by different reserves in exchange for help from local communities. Furthermore, conservation organizations should work with local governments to advocate for responsible and sustainable development such as the kind employed in this case study.

The approach Fauna Forever took was to provide jobs for the people in the surrounding community by incorporating them into the role and responsibilities of the organization itself. It is true that buying a plot of land for conservation is inherently taking away from certain markets, but it is also creating the opportunity for new ones. For example, rather than locals hunting game or logging in order to provide money for their families, Fauna Forever was able to pay those same individuals to protect that land from other hunters and loggers by monitoring its perimeter.

Although Fauna Forever approached their methods of integrated conservation somewhat differently, it proved to be crucial to their success and functionality all the same. The site where I conducted my research was tucked away in the western edge of the Amazon rainforest, and as such, was far removed from any kind of developed cities. Across the river from us was a small community called Lucerna. The village was about the size of a football field and was home to

around 50 locals. Their living spaces consisted of huts they made themselves, and there was one shack they used to sell snacks to those of us leaving or returning from the rainforest.

Fauna Forever employed many of these individuals either as rangers, whose job was to prevent hunting and logging in the area, or as research assistants for the volunteers. Because these people lived their entire lives in the rainforest they were incredibly knowledgeable when it came to identifying native species in the area. Animal tracking and basic navigation in a place without trails or signs was critical to maintaining the efficacy of our work.

However, their knowledge was not limited to the identification of plants and animals. They also knew how to use different plants for medicinal purposes. They knew how quickly different species of trees could grow back, and provided us with a blueprint for sustainable construction within the rainforest. They knew which parts of our campsite would be best for growing our own produce, and which fruits would produce the most offspring. In a place so disconnected from technology, where access to information came almost exclusively from experience, having people who knew how to read the rainforest proved to be essential to the research we were conducting.

From an academic standpoint, the knowledge and expertise of the locals proved to be invaluable. But perhaps even more importantly, they provided us with the knowledge that does not come up in classrooms, and points that are left out in data analysis. We can see the numbers, the declining rates of species, the areas of the Amazon experiencing the most deforestation, but that data leaves out many of the day-to-day challenges that had to be overcome to get that information.

Part of the reason my research is so heavily focused on the human side of conservation, which is as much about interpersonal relationships and individual challenges as it is about

organizational goals as a whole, is because it is one of the most essential considerations that needs to be made if someone wants to go about conservation effectively and ethically.

These kinds of individual challenges are not somehow peripheral; they do not exist outside of the overarching goals of conservationists. Only by engaging with the circumstances of this type of work honestly can conservationists hope to be successful in their endeavors. If we choose to ignore this aspect of conservation we are failing to plan appropriately, and in a profession so heavily lacking in funding and resources, we do not have the luxury of being able to overlook the importance of interpersonal relationships. And it is for those challenges, the ones that don't usually show up in academic journals and publications of data analysis, that we need the help of local communities in order to solve.

This kind of knowledge ended up saving the life of one of the volunteers I was working with during my time in the Amazon. While monitoring the density patterns of peccaries, one of the volunteers was bitten by an insect unknown to us. Almost immediately, the pain of the bite became too much for her to take and we had to return to camp. The infection grew at an alarming rate, and by the end of the day she could not move her leg because of the intense swelling. We watched helplessly as the pale and purple discoloration of the leg grew in depth. It was clear that whatever bit her was poisonous and the toxin was beginning to work its way into her blood stream.

The obvious solution was to get her to a hospital, but the nearest one was nearly five hours away. Chris, the founder of Fauna Forever, and the only one at camp who knew how to handle these kinds of events happened to be away on a business meeting at the time, so it was almost entirely volunteers at the campsite. Without any form of functioning communication with

the outside world we were left stranded, without help, and without the slightest clue about what to do.

The ten of us at the camp frantically debated among ourselves what the next step would be to stop the situation from getting any worse. Thankfully, as nightfall came, one of the people from Lucerna returned from his patrol and came into camp. After showing him the infected leg he immediately rushed back into the jungle and returned with some kind of damp maroon bark which he ground into a paste. As he rubbed the paste into the woman's leg he explained to us that the bark would absorb the poison throughout the night.

The following morning, we saw that the leg had drastically improved, and she was no longer in agony. She was eventually able to find a ride back to the nearest city to receive antibiotics resulting in a full recovery, but the camp was still pretty shaken up by the event nonetheless.

The intensity of that situation forced us to realize just how out of our element we were. The reality of living and working in a place like the Amazon is that you are in a different world. The challenges we faced were not just that of conservationists struggling to accomplish minor goals with very few resources. We faced the jungle as well. Learning to live in a part of the world where we were no longer separate from the chain of predators and prey came to dictate many of the decisions we were forced to make.

It is actually very important to note these kinds of challenges. They must be considered when trying to develop a plan for conservation work, particularly if it involves asking volunteers (usually from western countries with little to no experience in tropical settings) to go into a potentially lethal environment without any knowledge of the challenges they will have to endure. The solutions to these problems should be integrated into the framework of the organization

itself. From my experiences working with the community of Lucerna, it seems that the most effective way to do this would be to work with locals and use their expertise in the areas where our own is lacking.

As stated earlier, it is these kinds of on-the-ground challenges that can be just as difficult and demanding to overcome as anything else one might have to face as a conservationist. Without the help of Lucerna, Fauna Forever would not be able to protect the land it occupies, nor would it be able to maximize the positive impact its work is capable of producing. However, by creating an integrated conservation system, which facilitates the growth of the environment, conservation organizations, and local communities alike, the functionality and shared prosperity of this network proved to be pivotal in establishing a mutually beneficial relationship that has come to define Fauna Forever's projects.

Chapter 4: Financial Considerations

Perhaps the biggest challenge any conservation organization will have to face is the lack of funding available to them. During every interview I conducted financial limitations were stated to be the most prevalent and difficult obstacle to overcome, and the managerial strategies available for conservation programs are constricted due to this financial reality (McDonald-Madden et al. 2008). Conservation organizations with limited funding may not be able to create luxurious accommodations that could attract more guests, or they may have to set limits on

transportation and water usage. It is clear that if a conservation organization is to succeed, it must acknowledge this reality and develop strategies for how to best approach the challenges that come with it (Possingham et al. 2001). Thankfully, the growing body of conservation literature has shown that there are feasible solutions that can mitigate this problem through a number of different approaches. In this chapter I will discuss the financial limitations that are prevalent in conservation organizations, and explore some possibilities for how to mitigate these monetary challenges.

One aspect of conservation often overlooked is how land use plays a role in the efficacy of conservation efforts. Due to the general lack of funding available for conservation organizations, it is essential that every aspect of resource availability is maximized. Understanding how land use and resource management affects the overarching goals of primate conservation can make a substantial difference in deterring multiple facets of conservation problems as a whole.

When it comes to strategically approaching the tasks at hand, this lack of funding available for conservationists forces them to employ a level of creativity. However, what is crucial to this process is creating an integrated network of solutions, each one influencing and assisting the others. Conservationists understand the interconnectedness of the problems our planet is facing. Thankfully, this implies that the solutions to these problems are also interconnected, and by tackling one problem we can have a positive impact on other solutions as well.

One such example is the use of natural barriers as a deterrent against logging and hunting of areas critical for the maintenance of biodiversity. Protection of land is a crucial aspect of conservation, and we must use both natural and human barriers against the threats different ecosystems face. However, the protection of land adds another expense to the cost of maintaining a reserve, and this must be considered in conjunction with biological theory (Ayres et al. 1991).

The study done by Ayres et al. shows that the shape and size of a plot of land directly affects the costs of maintenance, as well as the effectiveness of the protection of that land. Ayres et al. posits that rather than buying multiple small plots of land, organizations should aim to buy fewer, but larger plots of land. This is because the amount of vigilance necessary to guard the perimeter of large plots of land is noticeably less than that of multiple smaller reserves that have an equal total area (Ayres et al. 1991). Generally, large reserves are more effective at protecting endangered species, as well as ecosystems as a whole (Soule & Simberloff 1986). Part of the reason they are so effective because they do not allow fragmented forest structures to be created, and they provide a perimeter that can be monitored more easily.

Furthermore, the geometric shape of a reserve is directly proportional to its perimeter, and by extension the cost of surveilling that perimeter. Their data shows that a circular plot of land is the most cost effective, followed by a square shape, and lastly by a rectangular shape. (Ayres et al. 1991). Granted, these considerations are meant for those who have not yet purchased a plot of land and are still in the planning phase of their conservation aspirations.

Previous conservation reserves have been chosen based on areas that show the least likelihood for anthropogenic impacts (Ban and Klein 2009); however, this should not be the main deciding factor in the process. Although it may seem like the logical decision due to the reduced cost of protecting land that is relatively isolated from human contact, this approach fails to consider numerous factors that contribute to the overall effectiveness of reserves as a whole. Development of conservation initiatives must consider both the benefits and correlating costs of specific landscapes and spatial realities, such as proximity to urban hubs, potential for biodiversity, regional threats, and access to transportation (Evans et al. 2015). It is entirely possible that the area that is easiest to protect is not an area that is the most in need of protection.

The study done by Evans et al. demonstrates a shift that is taking place within modern conservation initiatives. While it used to be more common to see reserves being purchased for the sake of maintaining pristine ecosystems, there is an increasing priority being placed on purchasing reserves in areas that have been damaged, but are still capable of being restored (Evans et al. 2015). They also stress the importance of incorporating the estimated costs of landscape and wildlife restoration into the spatial prioritization of the reserve area. Without creating an accurate estimate regarding the added costs of such a task, the implications of such a planning failure could have catastrophic consequences for the reserve and its potential as a conservation initiative (Evans et al. 2015). If landscape restoration is the ultimate goal, it may be that a smaller amount of land must be purchased for the sake of accomplishing this task, while larger plots of land are best suited for environmental protection purposes (Ayres et al. 1991).

The process of deciding where to purchase land proved to be one of the more difficult decisions made by Fauna Forever, and much conservation literature points towards this step in the planning process as crucial for maintaining an efficient and cost effective reserve. One of the consistencies present throughout conservation literature, as well as the input I received from the founders of the VMF and Fauna Forever, was the importance that was placed on planning as a way of maximizing the potential benefits of reserve designs.

The importance of establishing a comprehensive and realistic plan for how to approach specific conservation goals cannot be understated. David Johnston continuously emphasized this point throughout our interview, stating that, “Without a plan in place of how to get there - and that is probably one of the hardest things to do is to create that plan - but I think it was probably having a good plan in place which allowed us to get to where we are today” (Johnston, David. Interview by Ian Harryman. Dec. 14, 2015.). He also noted that cultural differences affect the

working relationship between team members from differing nationalities. For example, he noted that communicating the importance of deadlines was particularly difficult between the British and Peruvian staff. This is largely due to that fact that the Peruvian understanding of a deadline is less absolute than it is in the UK. In Peru, the temporal pace of the culture is slower, and lateness is considered somewhat normal. Understanding how this dynamic can influence the planning process can be as crucial as developing the conservation plan itself; however, I will address this topic in greater depth later.

A large part of the success of Fauna Forever and Arc Amazon has been due to the meticulous planning that went into these organizations before their conservation work officially began. When Arc Amazon was in the initial phases of its development a large team was set in place, each member focusing on specific aspects of the work that they wanted to conduct. The seven-person team consisted of members with backgrounds in volunteer marketing, web design, public outreach, biological conservation, and sustainable business. These different assets came together in such a way that the organization was able to function as a fully formed conservation mechanism; one that addresses not only the conservation work itself, but the numerous other backing necessities for the organization to thrive as a whole.

That being said, it is important to note that Arc Amazon was in a very privileged position when it came to gathering the initial funding to create the organization. One of the founders of the organization contributed nearly 90% of the money used to buy the land and resources that were needed to achieve their goals. Obviously, most aspiring conservationists do not have access to someone with so much personal wealth at their disposal, and as such, other financial possibilities much be explored when trying to create a conservation organization.

The Vervet Monkey Foundation was at somewhat of a disadvantage in this regard, since it was not an organization created under the same circumstances as Arc Amazon or Fauna Forever. In fact, Dave Du Toit did not realize that he was starting a monkey sanctuary when the organization was first developing. During one of my first days at the VMF Dave told me the story of how he came to be involved in conservation work. We sat down next to one of the enclosures as he told me about a baby vervet monkey that had been dropped off to him about two decades ago. At the time Dave was managing a computer company, and although he always had a passion for animals he had no real experience working with them. Naturally, his inclination was to call the conservation authorities to find out who to give it to, and how to take care of it in the mean time. When he called animal control and explained the situation to them they told him, “It’s vermin. Put it in a black bag and shoot it” (Du Toit, Dave. Interview by Ian Harryman. Dec. 14, 2015.).

I can remember feeling my heart drop when I heard Dave tell this story, and based on the heartbroken look on his face, I expect he felt the same thing when he spoke to the conservation authorities. However, when Dave and I sat down to talk about how the VMF was established I was astonished as to how much they have been able to accomplish, given the nature of their start-up.

“I don’t think we actually knew we were creating an organization” He said. “These things sort of grow and grow over time, and it’s a whole different story when you’re founding something. It’s not something that was planned for or that we thought was going to happen or had a budget set aside for. It’s just something that slowly grew up as animals came in” (Du Toit, Dave. Interview by Ian Harryman. Dec. 14, 2015.)

I later found out that the VMF was the first real sanctuary for monkeys in that area of

South Africa. ‘How is that even possible?’ I remember thinking to myself. Then I remembered that vervets are considered vermin in South Africa. The same way no one questions why there are no rat sanctuaries in the US, no one worried too much about vervets in South Africa. The consensus among South Africans at the time was that these were animals that served no purpose other than to destroy crops and vandalize houses. But the real problem was that this belief had become so engrained in the minds of local communities that there was no one looking into the size of the issue. For Dave, this phone call acted as a wake-up to the issues at hand that no one was talking about.

“So, what was the learning process like when you started to get all of these monkeys?” I asked.

“I think the biggest thing was not knowing how great the problem was in South Africa at the time. It all started off fighting for the life of one little monkey... I think sometimes one just gets thrown into it and you sort of grow with it, and as you continue to fight these things just grow bigger.” (Du Toit, Dave. Interview by Ian Harryman. Dec. 14, 2015.)

As Dave and I continued to speak he expressed his frustration towards the pace at which things moved when there were not adequate resources at his disposal. How then, could an organization like the VMF gather added funding in order to acquire more resources?

This question was one of the focal points during my interview with David Johnston. We spent a large amount of time discussing other possible solutions to the financial barriers every conservationist has to navigate within. Throughout our interview David kept mentioning his hopes of integrating corporate business into Arc Amazon’s financial structure. The idea seemed somewhat foreign to me since, like most people, I do not usually associate the interests of large corporate business as being aligned with conservation efforts. However, as someone who comes from a business and marketing background, David felt confident that not only was this idea

plausible, but that it was actually necessary for long-term conservation to be effective.

“So what would that look like then?” I asked. “What would be the incentive for a large corporate group to invest and participate in a field that yields so little money?”

“Well, it could be that each year they would send down their ten best employees or directors or whatever it might be, to Arc Amazon to have some kind of immersion experience or team building experience. For that experience they pay X amount per person, which would end up being a lot more than what you would pay for a normal trip.” (Johnston, David. Interview by Ian Harryman. Dec. 14, 2015.) He said.

David made it clear that most conservation organizations are funded primarily through ecotourism. By aligning with corporate business that can afford to make larger donations, Arc Amazon would have an added revenue stream, which could be beneficial for both parties involved.

He then continued on to suggest that, “Another way would be to get yourself in with the companies marketing team and they would market to their clients and let them know that every time a client spent \$10, 1 penny would go towards saving the Amazon, and we would become the key supplier for that organization. So that would definitely be some kind of long-term system” (Johnston, David. Interview by Ian Harryman. Dec. 14, 2015.).

As we continued to discuss possibilities for extending the financial reach of a conservation organization it became increasingly clear as to just how beneficial it is to have a team in place that can tackle issues such as marketing and sustainable business investment. We then went on to talk about another crucial aspect of financial considerations: resource management.

Much like the land itself, it is essential that the resources required to maintain an effective reserve are used as strategically as possible. Depending on the location of the work that is being

conducted, transportation can be one of the most difficult and costly resources a reserve must work with. In the case of Fauna Forever, establishing the least expensive transportation system possible proved to be essential to running the organization. Due to the secluded location of the Fauna Forever camp, trips to and from the camp had to be minimized as much as possible. This presents a certain challenge when running a conservation organization that is essentially functioning through, and funded by short-term volunteers, all of whom have different arrival and departure dates from the country. One of the largest inconveniences volunteer coordinators had to deal with at Fauna Forever was establishing how and when to bring volunteers back to the city

Being in a tropical environment also presents unique challenges when it comes to the weather conditions required for transportation. Constant rainfall makes the trip from the nearest city of Puerto Maldonado to the Fauna Forever camp nearly impossible. The four-hour drive is almost entirely on dirt roads that become impassable during heavy rainfall. There were numerous occasions when trips to and from Puerto Maldonado had to be postponed for days at a time due to inclement weather. Worse still, was when storms began during the middle of a trip causing the vehicles to get stuck in mud for hours at a time, ultimately resulting in the destruction of equipment such as generators and certain foods.

When talking with David Johnson about how transportation costs affect the overall functionality of Arc Amazon, he informed me that the costs of even the most basic necessities are increased drastically due to the distance of the Amazon rainforest from the nearest city.

He said, "If an egg cost the price of an egg, once it actually arrives on site in the middle of the Amazon, it is not the price that you would have budgeted for an egg. It's like twice the price and the reason is because of the ridiculous logistics involved in getting that egg to its destination. So when you're budgeting for a remote location you have to add at least a good 30%" (Johnston, David. Interview by Ian Harryman. Dec. 14, 2015.).

Although there are certain products that must be purchased in the nearest city, there are some resources that can be acquired locally or grown by the organization itself. For example, Arc amazon has created its own garden for growing produce, and much of the food that would normally be bought in the grocery store such as eggs or chicken is now being bought from the neighboring community of Lucerna. Not only does this approach allow for substantial reductions in the cost of feeding the volunteers, but it helps to strengthen the relationship with the locals and provide them with new, previously underutilized economies as well.

Furthermore, David suggested sustainable energy alternatives that could help eliminate the necessity for equipment such as generators that can be damaged or destroyed during times of heavy rainfall. Currently, Arc Amazon and Fauna Forever are working with an organization called Global Bright Lights, which is dedicated to putting solar energy systems in local communities such as Lucerna. If successful, this endeavor could drastically reduce the cost of running the camp itself, provide readily available electricity to the local community, and utilize a more ecologically conscious form of energy consumption in the process as well.

Although all of these considerations will undoubtedly increase the efficacy of an organization when utilized as suggested, the most essential consideration that should be made for conservation initiatives comes from the structure of the organization itself. Focusing on environmental priorities, while at the same time treating conservation initiatives as if they are businesses has, in my experience, proven to be the most fruitful method of conservation. The business model Fauna Forever and Arc Amazon have created best demonstrates what this duality looks like in practice.

While working with Fauna Forever, I knew that we were working closely with Arc Amazon, but I was not sure of the exact nature of the relationship between the two organizations. Much of this was because of the similar nature of the work being conducted, and the fact that there was so much overlap in staff. Fauna Forever and Arc Amazon work together in a very unique way, and unfortunately, I have yet to find any other organizations that are structured in the same way they are. When I sat down with David to talk about how Fauna Forever and Arc Amazon are connected, I ended up realizing that these organizations are on the forefront of progressive conservation initiatives.

“Could you tell me how these organizations interact with one another? I’m not totally sure I ever knew the distinction between the two” I said.

“So basically the relationship between the two organizations is that Fauna Forever is a client of Arc Amazon now because they utilize Arc Amazon’s center as place to do research and to bring their volunteers, and they pay for that service. That is one relationship. The other is that Arc Amazon is a client of Fauna Forever because Fauna Forever provides us with data, which helps us inform decisions on how we manage the land that we protect in Las Piedras” (Johnston, David. Interview by Ian Harryman. Dec. 14, 2015.).

‘That’s brilliant!’ I thought to myself. They created such a simple solution to one of the most difficult problems conservationists have to overcome using a dual sided organization. I was astonished that I had never heard of this kind of approach anywhere before.

“So could you tell me how the goals of the organizations differ from one another then?” I asked.

“Well, Fauna Forever is a long-term wildlife monitoring and research organization. It’s officially a non-profit organization...so it’s an ecotourism model and all of its money comes from its volunteers. Its focus is not on one particular place. It’s more focused on providing research services to specific lodges, centers, or reserves, and it’s also about putting together large-scale, long-term data which says a lot about a big area” (Johnston, David. Interview by Ian Harryman. Dec. 14, 2015.).

Being one of the researchers with Fauna Forever, this was something I was familiar with to a certain degree, but I had not realized the scope of the work that we were conducting at the time. I spent months recording patterns of primate density, troop movement patterns, and behavioral analysis, entering daily spread sheets into a system that seemed to be trivial and lacking real importance. It was not until I asked Chris Kirby to see some of the data Fauna Forever had collected that I was able to understand why those daily recordings were so important. He sent me piles of data spanning over the course of many years, covering a massive area of land. Entire species lists and traceable patterns of species movements were all right in front of me, and the importance of the work we had been conducting became immediately clear to me. It was simply too big for me to realize from my tent in the Amazon. David then continued to explain the other half of the work these organizations are doing.

“With Arc Amazon, it is a true non-profit conservation organization which gets grants and funding and supplements that with income generation through volunteer programs, tours, and paying researchers, and it’s more specific to one place, so we are a single site. At the moment we are only in one place and we focus on protecting the 4 and a half thousand-hectare reserve that we now own, and the income we generate is to protect that place. So the model is: a for profit business owned by a non-profit, and so when the for-profit makes money those profits that are generated through the business will be received by the non-profit, and then the non-profit uses that money to do more conservation, more community outreach” (Johnston, David. Interview by Ian Harryman. Dec. 14, 2015.).

I was stunned by how much sense their approach made. “That’s amazing because it seems like you guys created a really mechanical way of tackling two totally different aspects of conservation” I said. He responded with a smile I could tell he was trying to hide because he knew how good of an idea it was, but didn’t want to come off as arrogant.

“Yeah, it’s a hybrid model. We have a for-profit and a non-profit working together as one entity”. He paused, then added, “But they have to be aligned with its mission and its vision and what it says in its constitution” (Johnston, David. Interview by Ian Harryman. Dec. 14, 2015.).

During my tenure with Fauna Forever I had always thought that it was a very bare-bones kind of organization; one which was struggling to stay afloat. The lack of development and minimalist approach they took with everything made me think Fauna Forever was running on fumes financially. And although Fauna Forever is by no means a wealthy organization, the reason for the lack of cabins or unnecessarily high tech equipment was because they were spending that money in the places that actually mattered.

I strongly suggest conservation organizations develop and utilize a similar design structure to that of Fauna Forever and its sister organization Arc Amazon. By developing a self-sustaining mechanism that tackles two of the most integral aspects of conservation work (environmental research and subsequent land and wildlife protection), Fauna Forever and Arc Amazon have established the only viable and effective form of long-term conservation that I have encountered to date, both in personal experience and throughout conservation literature. The mutually beneficial, symbiotic relationship of these two organizations allows them to combat many of the most prevalent challenges the Amazon is currently facing, while at the same time creating a financially stable conservation system.

Due to the respective natures of these two organizations - Fauna Forever focusing on gathering much needed research that can be used by Arc Amazon for establishing spatial prioritization, or by the government to advocate for increased land protection, and Arc Amazon focusing on protecting and reinvigorating critical areas - these organizations are structured in

such a way that the beneficial products of each organization assists the other. Understanding how conservation biology and sustainable business work together within environmental contexts is a fundamental necessity for conservation initiatives to be successful, and creating a system that encompasses this duality in its design should be treated as paramount to all other initial objectives.

Chapter 5: Ecotourism and the Role of Research

Throughout this thesis I have made references to ecotourism and research based conservation work. These two approaches are some of the most commonly used models for ecological preservation throughout the world. This is largely due to the fact that as conservation initiatives have grown and continued to develop over recent decades it has become increasingly clear that in-depth research is a prerequisite for effective conservation work. The basic premise of ecotourism is that it gives tourists the opportunity to explore exotic and largely untouched environments, while at the same time working for conservation organizations to help support ecological preservation. The industry has growing appeal because of the increasing awareness about the degrading condition of our planet, and the disconnect felt by developed nations towards natural environments has motivated tourists from developed areas to pursue experiences that bring them more in touch with the natural world. This awareness is a direct result of research based conservation, and the collective results of these two conservation methods can be seen as having some of the largest contributions to conservation as a whole.

It is important to recognize that although much of conservation work consists of

preventing anthropogenic impacts, the ecotourism industry is only possible because average people have demonstrated a deep seated desire to connect with the natural world in the most immersive and authentic way possible. Even those who have no professional relationship to environmental work have shown a proclivity for interspecies compassion and conscious exploration of previously undiscovered knowledge. However, these approaches are not without their flaws, and as a conservationist I feel that it is my responsibility to analyze both the ethics and efficacy of these two fundamental processes.

One of the main goals of conservation work is to maintain ecological biodiversity and minimize species extinction (Butchart et al. 2010). Although the specifics of how these goals are accomplished range widely, whether through animal rehabilitation, ecological research, or land protection, these methods often fall under the umbrella of ecotourism. The potential practical applications of ecotourism include National Park funding, establishment of conservation reserves, and providing funding for breeding, feeding, and rehabilitation (Morrison et al. 2012; Balmford 2012). Clearly, this industry has numerous manifestations in different contexts but the basic premise of ecotourism is that it acts as the bridge between tourism development and environmental protection (Wu et al. 2005). By having volunteers pay to live and work at a reserve, often in foreign countries, the volunteers are able to not only help fund the organization itself, but actively participate in the day-to-day work being conducted. In exchange for their money, volunteers get to work closely with numerous animals and experience a lifestyle change that brings them closer to the natural environment.

Ecotourism has proven to produce massive contributions towards conservation efforts. For example, National Parks receive up to 84% of their funding through ecotourism and it funds the conservation of up to 66% of remaining wildlife (Buckley et al. 2016). Furthermore, the

value of ecotourism is not limited to improvements in environmental preservation and maintenance of biodiversity. It also acts as an important revenue source for local communities in underdeveloped countries (Wu et al. 2005), which is an invaluable contribution to overall conservation efforts.

The ecotourism industry developed in response to the traditional tourism industry. The explosion of the tourism industry during the middle and late 20th century resulted in an overall destruction of the natural environment due to mass tourism activities exceeding the bearing capacity of the places being visited (Wu et al. 2005). However, this boom in the tourism industry illuminated a previously untapped market that, if approached correctly, can provide conservationists with large amounts of funding as well as increased resources and man-power. The goal of ecotourism was to promote a new kind of tourism that advocated for a sustainable and responsible business model.

Ecotourism as a means of conservation funding is necessary for prolonged species survival, however, these same species have been known to suffer as a direct result of the implicit anthropogenic impacts ecotourism creates (Buckley et al. 2016). Species populations in all age classes are reduced by loss and degradation of habitat through the development of tourism infrastructure. These effects are byproducts of repeated foraging interruptions during energy-limited migration, human disturbance, or loss of vigilance (Buckley et al. 2016). Other possible factors include disturbances to courtship and reproductive behaviors, displacement from preferred breeding sites, and accidental death of offspring through human disturbance (Buckley et al. 2011).

Ecotourism differs from regular tourism in a number of different ways. Perhaps most importantly, the evaluation of ecotourism is based off of the quality of the environment and wildlife preservation rather than the quality of the tourism facilities (Font & Mihalic 2002). Yet, one of the challenges ecotourism presents is that the funding that comes from ecotourism is dependent on maintaining a consistent flow of tourists. In order to do this reserves must potentially accommodate to the preferences of their visitors (Drumm et al. 2004). Here we are faced with a difficult confliction. Many tourists want accommodations with a level of comfort that resembles their lives at home. However, most conservation organizations cannot afford to construct high quality cabins or feed their guests with food made by an actual chef, nor would the development of this kind of infrastructure be in line with the goals of conservation work. How, then, can an organization that is funded through tourists expect to remain financially stable if their revenue source is not satisfied with their accommodations?

There is no simple answer to this question. Ecotourism is in some ways a complete contradiction. The tourism industry revolves around customer service, and the goal of this industry is to accommodate to the guests so that they will return. This stands in stark contrast to ecological preservation, which essentially revolves around minimizing tourist indulgence and putting the wellbeing of the environment and its inhabitants first. Ecotourism is much like a balancing act, which recognizes the necessity for the financial viability of traditional tourism, while at the same time aims to mitigate the kinds of damages that are a direct result of that very industry.

The VMF approaches this duality by focusing the day-today work on ecological preservation, while at the same time facilitating more traditional tourism trips on the weekends. After speaking with Dave and Josi Du Toit, I realized that this approach accomplished multiple

goals. It was an intelligent and deliberate decision in order to direct the unavoidable demand for traditional tourist activities towards organizations operating within an ethical framework. They were able to organize trips to places that would be enjoyable for the volunteers, but that were educational as well. It allowed volunteers to experience the more touristy side of South Africa, but also to see some of the less known places. Since the VMF was orchestrating these trips for entire groups of people, it provided volunteers with reduced costs for these types of trips. Doing this makes it somewhat easier to justify the very rustic living conditions at the sanctuary by compensating with discounts on the activities most people who visit South Africa want to experience. For example, the VMF usually organizes a trip to Kruger National Park every few weeks, and takes the volunteers to hidden waterfalls on particularly hot days.

It is clear that ecotourism is a somewhat risky industry since it brings humans into such close spatial contact with wildlife. Although ecotourism has shown itself to be a powerful mechanism for funding conservation initiatives, we must consider the possibility that the most financially viable plan is not necessarily in the best interest of the environment. In order to gauge whether or not the benefits of ecotourism outweigh the potential consequences we must consider the expected time to extinction for individually threatened species (Buckley et al. 2016). This can be done through something called population viability analysis (PVA), which measures the consequences of ecotourism directly against the goals of conservation by analyzing population parameters and finding consistencies in repeated iterations (Brook et al. 2008). Habitat area, reproductive rate, and juvenile or adult mortality are all analyzed through a PVA, providing a relatively accurate assessment of ecotourism consequences and benefits.

The study done by Buckley et al. (2016), which aimed to measure PVA levels across different species populations, illuminates the value of ecotourism. Their research was not

confined to a single species or to a specific area. Animals studied included hoolock gibbons, golden lion tamarins, Egyptian vultures, African wild dogs, African penguins, orang-utans, and green macaws. Their results indicated that nearly all of the species being researched demonstrated improved levels of population sizes as a direct result of ecotourism (Buckley et al. 2016). However, it is important to note that not all of the species researched produced positive PVA levels. Although ecotourism models have demonstrated mostly positive outcomes, they do not *necessarily* produce higher levels of biodiversity and population sizes. The reasons for this could be a result of poor management by specific organizations, lack of research resulting in ineffective species management, or unique cultural challenges, amongst other reasons.

Perhaps one of the most difficult decisions a conservation organization founder would have to make is deciding what would be the appropriate amount of human interaction with the animals. Since we were observing the monkeys from a distance at Fauna Forever, this question was not one that required answering. However, the VMF is a sanctuary for orphaned and injured monkeys, which means that there will implicitly be some level of human contact when working with them. The enclosures at the VMF were not large enough to provide complete sustenance for the vervets, which meant that we had to bring food and water to them daily. We also received orphaned baby vervets, most of them still nursing, that required foster parents to feed them milk formula while they began being integrated into a troop of their own.

Although there are certain necessities that come with working at a sanctuary, the VMF placed the utmost importance on minimizing direct human contact with the vervets. This aspect of conservation work is something that should always be considered when gauging whether or not a sanctuary is conducting its work ethically.

The unfortunate truth about ecotourism, particularly when it comes to organizations that work directly with animals, is that there are many organizations that exploit the ignorance of foreign visitors. People come from all over the globe thinking that it would be amazing to hold and play with monkeys, not realizing that participating in those kinds of interactions usually means that those animals will never get to be released back into the wild as a result. I was no different in this regard. Thankfully, I was lucky enough to work at an organization that I respect immensely; however, I could have just as easily applied to work somewhere that exploits their animals for the sake of profit.

When I spoke with Dave Du Toit about the importance of minimizing human contact, and how to tell whether or not an organization is truly looking out for the best interest of the animals they are caring for he told me,

“If you are working at these sanctuaries try to find out how much hands on work is involved—do they seem to be having babies that you can always play with? Are there always orphans coming in from an unnatural source? How long are you looking after them? What is happening to these little animals once they grow up? Are they being pawned off to another organization, or is the organization taking care of them until they are ready to be released? These are all factors to start looking at.” (Du Toit, Dave. Interview by Ian Harryman. Dec. 14, 2015.).

He noted that this problem comes from both sides – the organizations themselves that are exploiting the animals in their care, and the tourists who come to places like South Africa hoping to engage in this exact kind of indulgence.

“You also have the human aspect that people want to do these things. That’s why these industries are there. People want to touch lions, people want to hold primates and this is a very difficult aspect. We also find difficulty because you do try to run an ethical sanctuary, but you do cut off a lot of people and a lot

of income because there are so many people that come in and want to hold or cuddle animals.” He said. (Du Toit, Dave. Interview by Ian Harryman. Dec. 14, 2015.).

There are many reasons why human contact with wild animals should be kept to a minimum. With regards to primates, much like us they are highly plastic animals, which means that they become whatever they are raised to be. If they are raised as if they are people, they will in turn act as though they are people. Many people find this amusing or cute, but the reality is that they will never lose their instinctive tendencies. If a monkey feels threatened, or thinks you are trying to take something away from it, they will attack regardless of how they were raised.

For example, the fire I discussed earlier in this thesis had many residual effects. One is that the vervets in the burned down enclosure had to be brought all of their food and water. Although this was normal for some of the vervets in the other enclosures, this particular troop was in an enclosure with enough natural forest structure that we had almost no contact with them prior to the fire.

Josi Du Toit had asked me if I would be willing to be the one to bring them their food and water for the following weeks. At the time she asked I did not realize why she seemed so apprehensive to ask me to do this. As far as I was concerned, this kind of thing is what I went there for. It wasn’t until a few weeks later that I realized just how dangerous this task would become as time passed.

During the first week or so the vervets seemed rather scared of me, and would run off to the other side of the enclosure when I entered with their food. But as the days went on the vervets became increasingly comfortable with my presence, and they no longer ran away when I walked in their enclosure. Eventually they were not frightened of me at all. Then one day, when I was bringing in a basket of fruit one of the vervets jumped on my back to try to get to the fruit

before the others. I was so startled by such an aggressive action on the part of this vervet that I dropped the basket of fruit. He understood this as me trying to take his food away from him, and then responded accordingly. Immediately the vervet on my back screamed and yanked on the back of my head, as if he was trying to pull me to the ground. As the full weight of this vervet fell on my hair I could hear the other vervets beginning to scream, as if a riot was about to begin. When the vervet released my hair I lifted my head to find dozens of vervets surrounding me, pulling their heads back and raising their eyebrows (amongst vervets this is a very threatening gesture). Thankfully, this aggression only lasted a few moments before they were distracted by the fruit that I had dropped. I used the opportunity to escape from the enclosure, and breathed a huge sigh of relief that I was able to get out unharmed.

After this experience it became exceptionally clear to me why human interaction with primates should be avoided. When we become comfortable with an animal we can forget just how dangerous they can be. And when monkeys become comfortable with us, they stop seeing us as a threat, and in certain situations will not hesitate to act on their aggression the same way they would with any other animal.

Vervets are particularly susceptible to this problem. They become so used to being around people that they feel comfortable entering into houses and stealing food. This ends up creating another, much larger problem that cannot be solved as easily as minimizing direct human contact. As stated earlier, vervets are considered vermin in South Africa. This is largely due to the fact that they have become so used to human interaction and do not feel a sense of caution around people. The unknowing vandalism vervets in South Africa participate in makes them a target for hatred and stigma, ultimately resulting in more of them being shot and killed,

often times sending them back to the very same organizations that inculcated them into these bad habits in the first place.

Not only does human contact inherently put the human at risk, it means that that animal will most likely not be able to be released back into the wild. Without knowledge of primate social skills, they are likely to be either attacked or abandoned by other monkeys. Just as a human would not know the appropriate way to interact and communicate with a troop of monkeys, a vervet raised by humans would not know how to do this either. The resulting effects of direct human contact with primate populations are clearly very detrimental to conservation initiatives, humans, and non-human primates alike. As such, this practice should be avoided at all costs.

It may be that this is simply one of the realities of conservation work we must endure. People will always want to play with monkeys and lions regardless of the consequences, and organizations like the VMF may not have the same kind of commercial appeal because they maintain a high level of environmental integrity. However, I believe that this is not an issue that can be compromised on. It is a burden one must carry if they want their work to make a truly meaningful difference. I also believe that conservation based research is one of the best ways to educate prospective volunteers on why this aspect of conservation work is so important.

Conservation work does not have a single solution that can be universally applied to any given social, political, or cultural context. Each specific organization must examine the effectiveness of the methods they are employing and respond to their results accordingly, and being able to recognize whether or not an organization is creating a positive impact on wildlife is contingent upon thorough research. Without these two processes working in conjunction with

one another it would be incredibly difficult to accurately assess the long-term implications of the work being conducted.

The traditional role of scientists at academic institutions has been to provide information about the problems at hand. This not only allows for more effective planning and applied conservation, but it increases public awareness and sparks interest across cultural boundaries (Chapman & Peres 2001). Much of the importance of research based conservation is that it is essential for effective planning of conservation initiatives (Regan et al. 2005). For example, population survey data provides insight into density compensation, cascading effects of the removal of seed dispensers, and forest dynamics, among other areas of study (Chapman & Peres 2001).

Though research is a fundamental necessity for effective conservation work, it is not without its flaws either. For example, experiments that are narrowly defined may fail to address larger impacts of interspecies correlations or cultural factors, and may not produce comprehensive assessments of hunting or logging on primate populations as a whole (Chapman & Peres 2001). This can be a particularly difficult challenge to overcome since many tropical primate species are locally endemic or rare and patchily distributed, making it more challenging to contextualize data within a larger framework (Struhsaker 1975). Single-species investigations make it difficult to understand interactive effects on other species in the area as well. Reductions in the abundance of one species may result in a second competing species growing in population as a result of density compensation (MacArthur et al. 1972). Furthermore, species that have limited habitat ranges may not live within a protected area, making studies conducted solely in nature reserves less fruitful than they otherwise might be (Chapman & Peres 2001).

The temporal aspect of conservation work creates another barrier that conservation

scientists are forced to navigate within. In-depth research often takes months, if not years to complete and publish, and the rapid pace at which environmental and social changes take place creates a necessity for continuous research framed within a changing cultural, social, and environmental backdrop (Chapman & Peres 2001). Even studies conducted five or ten years ago may not indicate the current state of population sizes and forest structures. For example, In Amboseli National Park, Kenya, vervet monkeys did not demonstrate a statistically significant drop in population size until nearly 10 years after approximately 90% of their major food resources had been lost (Struhsaker 1976).

This challenge is compounded by the fact that it may take years for conservation organizations to implement changes in response to the insight gained through research. The time gap between when research begins, and when the knowledge gained through that research can be applied in an organizational setting, means that conservation initiatives are always responding to the problems understood in the past, rather than the present. Thankfully, since in-depth research often addresses patterns in environmental change over time, we can assume that the conclusions made through research will still be applicable for years to come.

Although conservation literature is consistently studied and incorporated into the structure of NGO's and other conservation organizations, little has changed at the level of governmental policy making. Part of the reason conservation research is so valuable is because it holds the potential to act as an advocating mechanism for changes in environmental protection legislature. It is very unlikely that a governmental organization will create changes in environmental policy without empirical evidence that addresses the necessity for such actions, and that examines possibilities for how those problems can be mitigated from a legislative standpoint. As such, conservation research plays a vital role in helping to construct a societal

change in the perception towards, and treatment of the environment. The continued decline of forest structures and wildlife populations has shown that reserves alone are not capable of preventing the destruction of the natural environment. It is essential that changes are made on a governmental to change policy through legislation (Hulme 2011).

However, getting a government to create legislature that combats these issues can be exceptionally difficult. The reason for this is because scientific writing is not a particularly effective form of communication when it comes to relaying environmental problems to policymakers. They rarely read scientific writing, and even if they do they may not understand the relevance of the conclusions made by the researchers (Bainbridge 2014). Often times studies consist of dense statistical analyses and complex arguments that require prior knowledge of the content in question. Furthermore, formal scientific education does not usually incorporate the issue of policymaking into the curriculum, making it particularly difficult for conservationists to know what the best approach is when it comes to advocating for change on a governmental level (Bainbridge 2014).

Chapman and Peres (2001) discuss the importance of translating conservation literature into a relatable form of communication that can be used to effect policy making, and suggest possible resolutions to these challenges in a number of different ways. They stress the importance of communicating relevance when advocating for policy changes. Discussions should be focused on the questions policy makers are trying to address, and should be as concise as possible. They emphasize that maintaining a high level of academic vernacular should not be the priority when in communication with a policymaker (Chapman & Peres 2001). Abstracts may be too technically challenging to understand, and complete scientific writing may be too lengthy (Bainbridge 2014). Literature aimed specifically at policymakers should be as simple

and to the point as possible. When these requirements are met it makes it much easier to engage in a discussion of possible solutions to the problems at hand. Though conservation research can be limited by temporal or governmental barriers, it is the bedrock of effective conservation work because research acts as the platform from which all other environmental work can be achieved.

From a functional perspective, it is clear that utilizing an ecotourism model and incorporating research into applied conservation is invaluable. However, the importance of these methods transcends practical applications. In my opinion, the reason ecotourism and research based conservation are so important is because they not only inspire, but *create* the next generation of conservationists. Being one of the people who decided to pursue conservation as a direct result of my experiences with the VMF and Fauna Forever, I can speak to the profound impact organizations like these have on those who work and volunteer there.

Much like myself, most of the volunteers who were working at the VMF had no prior experience with ecotourism or conservation in general. In my case, I saw an opportunity to work with monkeys in South Africa, and I thought it would be a cool thing to tell my friends about. Although I've always loved animals and felt an immense respect for the environment, I never thought about pursuing it professionally until after I became an active participant in this type of conservation work. There was something tangible about it that carried more weight than watching a documentary like Planet Earth or going to the zoo ever did.

Hands-on experience helps to foster a different kind of understanding about conservation work; one that has much more to do with the emotional resonance felt than it does with an intellectual understanding. When we integrate ourselves into the natural environment there is a shift that takes place from an internal perspective. Looking back at my time with the VMF, I remember spending hours watching the vervets interacting with each other. With each passing

day I could see that every one of them had their own personalities and character traits, and as I began to recognize their complexity I found myself identifying with them and the emotions they so clearly expressed.

Part of the work we would do at the VMF was to record behavioral tendencies of each individual monkey in the troop so that we could plan troop integration as smoothly as possible. I kept a journal during these observational periods in order to try to encapsulate what I knew was to become a pivotal time in my life.

One of my entries reads as follows:

“As I sit here waiting and watching I can’t help but feel so incredibly lucky to be a part of this place. Ever since the first time I sat down in front of one of the enclosures I became immediately enthralled in their every action. Their anger, their love and compassion, their incessant struggle for power - it is all so captivating. At first glance, I thought these creatures were barbaric. They are so possessive and fight each other for nearly nothing at all, and they are constantly trying to show their dominance over the other monkeys in their troop. But then I realized that we humans do all the same things. We kill each other for power and we fight over who gets what. But at the same time we can demonstrate such profound love for one another, just like them. Watching them, it’s like looking into a living mirror; one that makes you realize that these animals are here precisely because we are no different from them. We took their land and then we persecuted them simply for getting in our way. And as I spend more and more time with the vervets this truth becomes increasingly difficult to bear. I can see that their internal perspectives are so rich and acutely perceived. It’s not just that they feel everything we feel, it’s

that they *know* what is happening to them. They just don't know why.

All the things that I used to think made humans different have turned out to be the exact opposite. These traits that we share are a reminder that we too are capable of barbarism. The only difference is that when we do it we take the world down with us. Being here has made me realize that if something is going to change, we have to be the ones to do it. We can no longer give in to the darker parts of our nature.

I'm trying to lure one of the vervets into a cage right now so that we can tag him. I've placed banana and corn inside the cage, but he just won't go in. He knows exactly what I'm trying to do. He has seen the other monkeys in his troop go through this same thing, and maybe he has even been lured into one of these things before, so he will try everything he can to get the food before actually going into the cage. But him and I both know that he will only go so long before giving in to his desire for the treats in front of him. He eats what little food is around him, but he just isn't satisfied because he wants what he can't have... I'm watching myself. I'm watching my friends. I'm watching the world. And I can feel this experience chiseling away at the center of me, driving me, and I can tell that it's going to take me places I never thought I'd go." (Harryman, Ian. Sep. 29, 2011)

When we put ourselves face-to-face with wild animals we develop a new respect for them. Whether in the South African bush, or in the Peruvian Amazon, I have witnessed every person who participated in this kind of work change and evolve throughout their time with the VMF and Fauna Forever. In fact, two of the other volunteers from the VMF that I worked with went on to start their own company called The Wild Web, which provides a platform for likeminded organizations to work together on numerous educational and promotional programs

internationally. It is also used as a guidebook for people who may be interested in getting involved with conservation work by showing sanctuaries across the globe that approach ecotourism in an ethical way.

Like myself, most of the people I worked with at the VMF and Fauna Forever became different people after their experiences with ecotourism. Many of my former co-workers are now pursuing conservation work professionally because of the insight these opportunities provided them with. It seems clear to me that the intrinsic value of ecotourism is something that should be cherished and promoted across the globe. Although ecotourism has been the source of much controversy, I believe that as long as it is conducted in an ethical way, it may be one of the few viable solutions to long-term conservation.

Chapter 6: Cultural Considerations

In this chapter I will discuss the differences that exist between some of the very large-scale conservation organizations, and smaller organizations like the VMF or Fauna Forever. I will also discuss the importance of understanding local culture as a means of engaging in meaningful cross-cultural discourses. Insights into cultural perceptions make it easier to address some of the challenges that conservationists must face, and local knowledge holds the promise of connecting conservation initiatives to regional realities (Sayer and Wells 2004). By looking at the relationship between the size of an organization and the methods they must employ to accomplish their goals, we are able to see why ethical conservation organizations tend to have less funding than their commercialized counterparts.

When discussions about conservation come up amongst friends, organizations like National Geographic or the World Wide Fund for Nature (WWF) are almost always mentioned at some point during the conversation. For most Americans, these two companies are the only real reference points people have when it comes to environmental work. In my experience, they tend to be thought of as beacons of light at the end of a dark tunnel; the symbol that cultural exploration and environmental activism are still alive and well, and have the international support it needs to confront the problems the world is currently facing. Much like the majority of my friends, I spent most of my life believing that these organizations were what conservation was all about. They are universally known, and are generally thought of as the leading organizations when it comes to environmental and cultural advocacy.

But after my experiences in South Africa and Peru I began to wonder why it was that these organizations had the funding to do such massive projects, while other organizations like the ones I had worked for were struggling to pay for even some of the most basic necessities. Was it that the articles they produced provided groundbreaking insights into previously unstudied issues? Had they saved indigenous cultures from being exploited by Western countries?

These were questions that became increasingly bothersome to me, to the point where I began to feel a level of suspicion about what the answers might be. After all, I had seen first hand organizations like Fauna Forever protect indigenous communities, and I had seen the VMF publish important work discussing the environmental consequences of misdirected cultural perceptions towards vervets. Yet neither of them ever received the slightest bit of recognition internationally. At first, I simply assumed that this was because these were American

organizations, which meant that they would inherently have more attention brought to the work they were conducting.

However, as I began to look into the issue further, and as I spoke with my contemporaries about their understanding of these organizations, I realized that many of the pre-conceived notions I held about National Geographic and the WWF were not entirely true. It started to become clear to me that these organizations are so successful because they approach the work they are conducting from a profit-driven perspective, rather from the perspective of ecological or cultural preservation. But perhaps most disheartening of all was the realization that they accomplish this goal by tricking their readers into thinking that their work is something other than what it really is.

Organizations like National Geographic and the WWF rely on sensationalism and misleading rhetoric in order to receive more funding. I might not find this tactic so repugnant were it not for the residual effect it has on the readers. The rhetoric being used by these organizations creates a fundamental misunderstanding about how academic research is conducted, the nature of the environmental problems the world is currently facing, and the cultural implications of misrepresenting indigenous people (Yuhua 2015). As stated earlier in this thesis, I strongly believe that we can only hope to solve problems when we truly understand them. When organizations such as these dispel inaccurate or incomplete information it is not only disingenuous, but it robs those who want to help of the opportunity to truly do so.

There are many academics who openly condemn these organizations for their actions. For example, Last year *The Guardian* published an article condemning National Geographic for sensationalizing the field of archeology (Yuhua 2015). This was in response to a National Geographic article that claimed their researchers had found two ‘lost cities’ in Honduras.

Following the articles publication, dozens of letters were sent to National Geographic by angry archeologists who claimed that this publication was an, “aggrandizement of a single expedition at the expense of years of research by scientists and decades of support from indigenous people” (Letter from International Scholars: Archaeological Finds in Honduras 2015). Furthermore, academics were upset that much of the research that *is* known was left out of this publication. The article did not discuss the fact that there are numerous archeological artifacts throughout the river valley, indicating that there was not two ‘lost cities’, but rather a collection of settlements across a larger area of land (Yuhas 2015).

The article was not well received by the international academic community. In fact, a group of international scholars got together to write an open letter about not only the misrepresentation of the content, but about the disrespect this article showed towards academics and the local communities in that area as well.

The letter states:

“Intensive previous research has been conducted by archaeologists, geographers, and other scientists. Far from being unknown, the area has been the focus of many scholarly and popular works, including two Master’s theses, one doctoral dissertation, two popular books, two documentary films, numerous articles and presentations, and a series of booklets recently published by a Honduran newspaper. Furthermore, mentions of a “vanished civilization” are especially offensive given the likelihood that the people responsible for the ancient remains were the ancestors of living indigenous people who have not “vanished” despite genocide, disease, and ongoing injustices...Local indigenous groups and long-time residents of the area have made essential contributions to the location, documentation, and interpretation of archaeological sites.

These have been acknowledged in previous published works by archaeologists such as Begley, Hasemann, Lara Pinto, Dixon, and Gomez Zuniga, making them especially conspicuous by their absence in this reporting...these articles exploit hyperbolic, sensational, and unscientific rhetoric” (Letter from International Scholars: Archaeological Finds in Honduras 2015).

The reason for this kind of misrepresentation is because a headline like ‘Lost Mayan cities found’ is more compelling to readers, and incentivizes unknowing people to buy a subscription to National Geographic. Falsely claiming these types of discoveries also makes it much easier for National Geographic to maintain the flow of funding they receive from governments and other corporations. Because of this intentional deception, many academics criticize National Geographic for placing an emphasis on portraying a certain type of image rather than producing honest and well-researched publications. Santel (2013) posits that that they use the ‘high-hopes’ approach, which convinces readers that they came to a certain cite, found some new and revelatory discovery, and are now able to move on to the next place where they will do the same thing.

Similarly, the WWF is also guilty of disseminating misleading information. For example, they claimed that up to 40% of the Amazon rainforest would be destroyed due to drought created by global warming. However, this statistic failed to note that a large percentage of these losses would not be the result of drought, but of commercial logging and forest fires (Booker 2012). Although the sentiment behind this statement can be seen as being in line with conservation goals, the misleading information being published redirects a large part of the issue, resulting in readers being ignorant towards the realities of the problems at hand.

Moreover, the WWF receives massive amounts of funding from governments (\$55 million a year from Britain alone) and multinational corporations such as Coca-Cola (Booker 2012). There is nothing wrong with accepting money from governments or multinational corporations, but the problem begins when that money is not being used for its intended purpose, and unfortunately, this has proven to be the case on multiple occasions.

An example of this can be seen in the treatment of indigenous Baka populations in Cameroon, where anti-poaching squads arrested, beat, and displaced many of these people from their ancestral lands. The reason for this is because their land has been turned into ‘protected areas’, some of which are now being used as safari hunting zones. Since they are a population that still hunts for their food, they are considered to be ‘poachers’ amongst Cameroon’s Ministry of Forests and Fauna (Cameroon: WWF Complicit in Tribal People’s Abuse 2014).

This kind of abuse might be seen as commonplace in less developed parts of the world, making fewer people stop to look into the issue any further. However, these actions are not divorced from the rest of the world since the anti-poaching squad committing these acts are funded through the WWF (Cameroon: WWF Complicit in Tribal People’s Abuse 2014).

Thewrongkindofgreen.org (2014) published an article discussing the WWF’s involvement in abuses committed against indigenous Baka populations in Cameroon, and noted that the WWF refuses to acknowledge any abuses despite the mounting evidence to the contrary.

At first I could not understand why the WWF would do this. Such an action seemed as though it would have relatively limited benefits, and could hold the potential for funding agencies to withdraw their contributions. After looking into this issue more I found a documentary titled *WWF – Silence of the Pandas*, which discussed the safari programs the WWF is able to create as a result of participating in this kind of land-grabbing. However, this problem

is not limited to Cameroon. The WWF has done this in places like Borneo and India as well; areas where there are unique animals such as tigers and orang-utans that provide the opportunity to make extremely large amounts of money (up to \$10,000 per person) off of tourists (WWF - Silence of the Pandas 2013). This is ironic since integrated conservation and development projects were first introduced by the WWF (Serenari et al. 2015). Unfortunately, These actions not only have adverse effects on indigenous communities, but they destroy the natural habitats of these animals as well. The documentary noted that as many as 152 jeeps may be driving around these areas for 8 hours a day, resulting in the destruction of the habitats the animals are dependent on (WWF - Silence of the Pandas 2013).

I was exceptionally disappointed as I learned more about the way these organizations are handling cultural and environmental issues. It became clear that they place a much stronger importance on producing massive profits than they do on maintaining the integrity of academic research and of the environment. Addressing environmental issues are seen as peripheral, if not altogether irrelevant to National Geographic and the WWF. What matters is creating the *illusion* that environmental and cultural protection is the highest priority. The biggest failure of National Geographic and the WWF in the examples I have given is that they were not able to recognize the ecological value of preserving local cultures, nor did they respect the intrinsic value that the people of these cultures have as knowledgeable inhabitants of the area.

Although these organizations operate within a framework that is questionable at best, I am not simply including this information into this thesis for the sake of name bashing. The reason I feel it is so important to discuss these issues is to try to illuminate the contrast that exists between massive organizations like National Geographic and the WWF, and organizations like the VMF and Fauna Forever. For example, many of the corporate-style organizations like the

WWF and National Geographic portray local cultures as the source of environmental decay, while most small-scale conservation organizations recognize that local communities are often marginalized by the same processes that are threatening wildlife. Small-scale organizations also tend to recognize that local communities can act as a valuable source of knowledge.

The realities of working at a small-scale conservation organization are completely different from what most people imagine it to be. There are numerous misconceptions about what environmental work is and how it manifests itself throughout the world, particularly when it comes to recognizing the importance of cultural differences. At times the biggest challenge a conservation initiative may face will be culture itself. Perceptions towards the environment, outsiders, the role of technology, and religious beliefs are all factors that conservationists must learn to consider when working towards goals of environmental preservation. In many ways, culture acts as the mediator between the relationship of humans and the environment (Awuah-Nyamekye 2009). But rather than simply displacing local communities like the WWF, we must make every attempt to learn from, and engage with these cultures in the most considerate and patient way possible. Moreover, it is important to acknowledge the invaluable contributions that come as a direct result of working with local communities.

Perhaps one of the biggest differences between large-scale and small-scale organizations (aside from funding, that is) would be the importance that needs to be placed on understanding local culture. Large organizations are wealthy enough that they do not necessarily need to consider the cultural differences that exist between developed and underdeveloped nations. While these kinds of organizations have the wealth to simply buy massive amounts of land or to pay for industrial sized facilities, smaller organizations do not have that same luxury. Culture and the environment are implicitly linked and have a mutual influence on each other (Milton 1996),

and because of this reality, conservation work can only succeed if the participants understand how cultural perceptions and practices influence the nature of the work being conducted.

Earlier in this thesis I discussed the importance of integrating local communities into the organizational structure of conservation reserves. This approach accomplishes many goals from a logistical perspective, but it can only be accomplished if there is a level of mutual respect developed between the two parties involved. While ICDP (integrated conservation and development projects) may act as an alternative outlet for income amongst local communities, participation in these ICDP's is dependent on locals being willing to associate themselves with the organizations they would be working for (Sayer and Wells 2004).

Engaging with locals and their knowledge must be an on-going conversation (Nugent 2004). Establishing a dialogue with local communities in which both parties are exchanging beliefs, concerns, and traditions, is fundamental in the effort to operate effectively and ethically as an organization. It cannot simply be that an organization tells a population how their environmental practices are going to change. This approach is not only immoral, but it would fail to reason honestly about the circumstances of the work being conducted. The simple truth is that conservationists need the help of local communities to accomplish their goals. Without these two bodies working in harmony with each other, we cannot hope to solve the environmental problems we are facing.

Previous studies have shown that treating interactions with local communities as negotiations rather than demands have produced largely positive outcomes. For example, the study done by Sarfo-Mensah et al. (2014) looked at different agricultural practices throughout Peru. They found that when there was an exchange of techniques and knowledge between conservation organizations and the local farmers, "Campesino voices were not silenced, but

rather impelled. Through the representations of them—of their desires, their experiences, their knowledge, and their cultivars—campesinos found new ways of representing themselves” (Sarfo-Mensah et al. 2014: 644).

At the VMF we tried to approach this aspect of our work in the same way. During my interview with Josi Du Toit, I asked her how she would describe the cultural perception towards vervets, and how engaging in meaningful conversations with the locals impacted this perception.

She said, “Within our area it’s a big farming community, so there are a lot of crops growing. We did public perception surveys and sometimes the initial answer would be that they are a pest, but then after speaking to them for a while they would say ‘well I actually quite like them. They are sort of cheeky and mischievous and I actually like the monkeys’. So after initially speaking with them you would hear them say that they are sort of pests, but then after getting into a more in-depth conversation with them you would find that they actually don’t mind them at all. So I think because Tzaneen is a farming area they will see the vervets eating a mango and then they will consider it a pest” (Du Toit, Josi. Interview. Dec. 14, 2015).

As she continued to talk about how vervets are known for going onto farms and eating mangos my mind ran to a conversation I had had with Dave on the same subject. I wanted to make sure I was not misremembering that conversation so I asked Josi about a study the VMF had conducted many years ago.

“I remember Dave telling me about a study that you guys conducted where the vervets were going to farms and eating mangos that weren’t quite ripe, and what you guys learned was that it was actually the vervets eating the fruit-flies that had infested the rotten pieces of fruit. And so even though it was ultimately beneficial for the farmers - since those trees would not be using energy to produce a mango that would ultimately be thrown out anyways - farmers were still shooting the vervets. Do you think that is representative of the problem, that there are just some misconceptions about what the vervets are actually doing?” I asked.

“Well, when you actually inform them about what the vervets are doing and explain how a vervet wouldn’t eat a mango that isn’t ripe then they sort of realize ‘oh yeah, okay! I didn’t see it that way’ and we see their perception sort of change as we discuss these things with them” She responded (Du Toit, Josi. Interview. Dec. 14, 2015).

As we continued to talk about the effect cultural perceptions have on the day-to-day work at the VMF, I was curious as to how she thought about the issue, and what could be done to navigate within the cultural landscape of South Africa.

“Do you think it’s beneficial to have people from this part of South Africa working here?” I asked.

“I definitely think it’s beneficial, which is why we employ 12 native South Africans. And the good thing is that they actually take their knowledge back to their communities as well. Within the cultural groups there are a lot of people who believe the monkeys are associated with witchcraft, and for these people to be able to say that they actually work with the monkeys and really understand them - then to take that back to their communities and say that they are actually okay, or that they can’t really talk can make a big difference. I mean, we have had cases where a monkey had been burned in a bucket because the person said it has been talking and telling all of their secrets. So there is some of this witchcraft aspect as well, and having locals around is really helpful in that regard.” (Du Toit, Josi. Interview. Dec. 14, 2015).

It was inspiring to hear Josi speak with such patience towards the local communities, even when they had committed acts like burn monkeys alive. She was able to do this because she understood that aggression or hostility would not be an effective response to these situations. She found it much more effective to gain their respect, have discussions with these communities, listen to their stories, and then incorporate people from those communities into the VMF staff. Sarfo-Mensah et al. (2014) reinforce this sentiment when they posit that, “sustainable environmental conservation is now conceived as unachievable without adequately factoring cultural attributes, especially religious beliefs and practices as well as traditional institutions,

which shape people's worldview, into environmental conservation policies” (Sarfo-Mensah et al. 2014: 33). Understanding how an individual thinks about an issue - whether it is vervets and their relationship to farming, or being familiar with certain religious beliefs - engaging with these kinds of perceptions creates a path toward sustainable solutions (Serenari et al. 2015). It is evident that local communities act as a vessel through which knowledge, cultural appreciation, and common goals can all be obtained.

Chapter 7: Analysis and Conclusion

What is it that makes us human? Is it our self-awareness? Is it our bipedalism? The more I think about this question the more uncertain I become about the answer. Many people have tried to come up with a definitive answer to this question, but I don't know that we will ever be able to say for sure. Perhaps what makes us human, at least for many of us in the Western world, is our inability to recognize ourselves as a part of the natural world.

In this regard, primate conservation carries a particular importance. Non-human primates allow us to see just how similar we are to our fellow inhabitants of the earth. With every bit of new information we gain about them, the boundaries we create between us become increasingly blurry. After all, they too have demonstrated a proclivity for interspecies compassion. They have demonstrated remarkable intelligence. They have created their own tools, and they have passed down knowledge from generation to generation.

I remember thinking a lot about this during one of the first physical anthropology classes I ever took. We learned about an orang-utan named Chantek, who was raised by two American anthropologists and taught sign language at the University of Tennessee. They integrated Chantek into every aspect of their daily life. He wore his own clothes, and would even order his own food at drive-through restaurants. One day his caretakers tried an experiment where they gave Chantek a pile of photos with humans and non-human primates. They asked him to separate the photos into two piles, putting humans in one pile, and non-human primates in another. One by one Chantek placed each photo in the correct pile, until he eventually came upon a picture of himself. After seeing his picture, he put the photo in the pile with the humans.

As he grew in size, Chantek was considered too dangerous to be kept around a university campus and the funding for this experiment ran dry. He was then sent to a primate center in Atlanta where he was placed in a small cage for 11 years. During this time, he put on massive amounts of weight and showed signs of depression. When one of his caretakers went to visit him he told her that he was hurt and wanted to come home. When the caretaker asked where he was hurt he said, “feelings” (Animal Planet The Ape Who Went to College - Dailymotion Video n.d.).

This story was one that I was all too familiar with, and it is a story that seems to keep repeating itself. There is no longer any doubt as to whether or not non-human primates are self aware, and yet they continue to be the victims of our societies. We keep them as pets and put them in cages, we destroy their habitats and blame them for our own environmental mistakes.

When I tell people I want to study primatology, they often ask me why primates in particular? They can understand the appeal of studying animals, but what is it that draws someone to a specific animal? For me, it is the reminder that humans are not separate from the

natural world. We often create self-imposed barriers between us and the rest of life on earth. However, studying primates makes it nearly impossible to do this. The similarities we share forces us to confront the fact that we share the earth with countless other species.

As we have watched the conditions of our planet degrade over centuries one thing has become exceptionally clear: the responsibility to change what is happening falls on us. The problems I have addressed in this thesis are massive in scope and cannot be achieved until the world as a whole begins to form a new understanding of our planet; one that acknowledges the interconnectivity of every aspect of our world. In order to accomplish this goal, we need to integrate these ideas into organizational structures, and use those organizations as mechanism to advocate on behalf of the earth itself. This thesis looked at the numerous ways in which this might be possible.

The framework for ecological problem solving I have laid out in this thesis can be roughly broken down into three categories - logistical, ethical, and cultural. When working within an organizational structure, practical decisions need to be made in order to maintain the overall functionality of the organization as a whole. Some of these provisions include options for cost reductions such as using natural barriers to deter logging or hunting, while at the same time minimizing the cost of perimeter surveillance.

Having a well developed plan in place for accomplishing organizational goals is also essential. However, it is just as important that these plans reason honestly with the circumstances of the organizational limitations. Factors like the effect of weather, transportation necessities, cultural perceptions, and even the landscape itself should not be overlooked. Furthermore, having a diverse managerial team in place that has individuals with a range of backgrounds has proven to be very useful in organizations like Fauna Forever. Moreover, the structure of the

organization itself is something to be considered. The model utilized by Fauna Forever, which is a for-profit organization owned by a non-profit organization, has demonstrated the most promising potential for long-term sustainability I have encountered to-date. This structure allows for ecotourism and research based conservation to work together symbiotically, with each respective organization supporting and influencing the other. Not only does this structure allow for well informed conservation work, but the organizations act as a financially self-sustaining mechanism. Creating a viable business model that incorporates financial considerations into conservation work is a prerequisite for the expansion of conservation initiatives.

Although financial viability is a massive consideration that must be made, it cannot come at the cost of running an unethical organization. If conservation initiatives do not hold themselves to the highest ethical standards, they sacrifice the very goals they are trying to achieve. It is clear that just because an organization is large or well known does not mean that they are making a real difference. It is undoubtedly harder and less profitable to run an ethical conservation organization, but that is a sacrifice that must be made if conservation work is to succeed. Some aspects of conservation simply cannot be compromised on. This includes minimizing human contact with animals, publishing research that accurately address the problems we are facing, and acknowledging the role of local communities in this kind of work.

Lastly, we must consider the cultural dimensions of conservation work. This is what prompted me to create this thesis. My experiences with Fauna Forever and the VMF have showed me that we must learn from local cultures. We have to earn their respect and create a dialogue with them when it comes to our plans and ideas for the work we want to conduct. By doing this we open ourselves up to new forms of useful knowledge, and local communities are more open to learn from us as well. Integrating local communities into conservation work

encourages sustainable development and redirects local economies towards ecologically friendly practices. But one of the most important cultural considerations we must make has nothing to do with other cultures, and everything to do with our own. Many of the most prevalent problems in underdeveloped countries can be traced back to countries like the US where massive consumption demands and wasteful practices dictate global markets. Making changes in our own lifestyles should be a priority for anyone who wishes to create a more inhabitable world.

Looking forward, our best chance at saving the environment is to encourage a new generation of conservationists. Hopefully, ecotourism and research will help to accomplish this goal. However, it is important that conservationists expand our network and make an effort to work together as a global community. Most meaningful conservation organizations are small and unknown. Individually, they cannot combat environmental problems on a global scale, but if we begin to act as a collective voice we stand a chance at being heard.

The purpose of incorporating ethnographic research into this thesis was to show that the challenges we face are not always the ones we think of in the context of conservation. There are, of course, the monetary and logistical challenges. But we cannot forget about culture and how large of a role that has on this kind of work. Culture is the bridge between people and the environment, and we need to show a level of respect for that, even when it is more convenient not to. There are certain solutions that can be applied across cultural contexts, but we still have to reason with each specific situation independently. My goal for this thesis was to provide a glimpse into what these challenges look like on the ground. They are not always the fault of corporate greed or insufficient funding. Sometimes the challenges are subtler than that - the landscape, the way we communicate to people from different nationalities, the ignorance we have towards the problems we are trying to solve – are all very much a part of the challenges

conservationists face on a daily basis. The goal for this thesis was to provide some firsthand examples of the ways in which the suggestions I've laid out can be used in different settings across cultural contexts.

However, the preservation of our planet is more than just an area of study. Its value transcends academic, economic, or political contributions. It is even more important than humankind itself. Thankfully, we now live in a world where we can connect with almost anyone across the globe, and even with other species. It can be easy to forget this during everyday life, but when I feel that sentiment slipping away from me I just close my eyes and I picture the deep green colors of the Amazon. Fauna and flora of all different textures and sizes surround me. Leaves the size of cars drape directly over me, and others feel miles away because they are so high up. I picture pale yellow daggers of light piercing through the steamy air. Moss clings to every surface like a green blanket for the trees. Vines wrap themselves up in each other, towering above me. I hear birds flying above the canopy line. I see brown capuchins curiously looking down at me from the trees. I feel the humidity of the rainforest weighing me down as I imagine myself trudging through the muddy landscape. The brown river water drifts slowly towards the sunset, and the cotton candy colored skyline wraps itself around all of us, every living thing. Then as the sun sinks beneath the trees and the sky fades to black, freckles of light mist the darkness above us, and the circularity of it all comes crashing down to form one beautiful, unavoidable truth: this planet belongs to *all* of us.

Humankind is capable of so much. In the last century alone we have traveled to celestial bodies once thought to be unreachable to us. We have created technologies which challenge our ideas of possibility; their very existence being manifestations of humanities desire to connect

with itself, reminders that we are all little pieces of a much larger, much more beautiful picture. From the cosmos all things are equal, all things carry the same importance.

When looking at a picture of earth as it rests elegantly in the vastness of space, it is difficult to think of all of its inhabitants as anything less than one single organism, living under some infinitely small blanket in some infinitely large place. We are wrapped in the most finite and fragile of circumstances, giving us the opportunity to catch a glimpse of our own fallibility.

But the beauty of life comes from our ability to choose. We get to choose whether we sink into the trenches of turmoil, or gracefully prosper as we learn to harmonize with the natural order of existence. There will come a day when we return to the soil that created and nurtured us into existence. All of our creations, all of our brilliance reduced to the stardust we once came from. But out of that circularity comes a stillness, a tranquility that allows us to see all that we can accomplish if we work together. In spite all of our flaws, all of our contradictions, we humans are capable of such incredible things. But we must learn humility. We must learn compassion, not just for ourselves or for the ones we love, but for the world as a whole. And most importantly, we must not exploit the most precious resource in the cosmos; that is to say, life itself.

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Appendix:

The questions below were used as a guideline during my interviews with Dave Du Toit, Josi Du Toit, and David Johnston.

Dave Du Toit Interview: December 14, 2015

General

- 1) What is it you do at the VMF?
- 2) How did you come to be interested in conservation?
- 3) What is the goal of the VMF?
- 4) Can you tell me about South Africa in general and the cultural perception towards conservation of Vervets?

Creating the VMF

- 1) How long ago did you start the VMF and what made you want to do it?
- 2) How did you approach starting the VMF?
- 3) What were some of the biggest things you learned as the VMF grew and developed?
- 4) Did the geography of the land matter when you were deciding where to set up the foundation?

Funding/Finance management

- 1) How does the VMF sustain itself financially?
- 2) What is the priority for using the money the VMF receives?
- 3) What are the biggest financial challenges the VMF encounters and how do you combat them?
- 4) How large of a role does finances play in conservation efforts?
- 5) How do reduce the cost of running the VMF?

Organizational Methods

- 1) How does the human aspect of having people living at the VMF full time affect the day-to-day activities?
- 2) What level of involvement does the VMF have with the government?
- 3) What is the main goal of the VMF in terms of conservation? Rehabilitation or prevention of further damage?
- 4) What is the VMF doing to continue to progress in conservation efforts?
- 5) Does the VMF work closely with any other organizations?

Second General

- 1) As someone who is from South Africa, do you think you perceive the work you do differently than the international workers?
- 2) What would you say are the biggest problems you face as a conservationists and how do you approach overcoming them?
- 3) What advice would you give to future conservationists?
- 4) How large of an impact do you think the VMF and other conservation organizations have had on ecological problems?
- 5) What do you see for the future of the VMF?

Josi Du Toit Interview: December 14, 2015

General

- 1) Lets begin with what is it you do at the VMF and how you came to be interested in conservation?
- 2) How did you come to work at the VMF?
- 3) How long have you been involved with the VMF and with conservation in general?
- 4) What is the goal of the VMF?

5) Have you worked at other conservation organizations?

Methods

1) What brings new Vervets into the sanctuary more than anything?

2) Could you tell me a little about how the VMF functions on an organizational level?

3) What are some of the challenges you face on a day-to-day basis?

4) How do you approach integrating troops back into the wild?

5) When I arrived at the sanctuary there was a fire that burned down one of the enclosures. How large of an impact do these kind of 'on the ground' challenges affect the organization as a whole?

Culture

1) How does the local culture impact the work you do?

2) You employ people from all around the world, many of whom only work there for a year or less. How does this impact the work you do? Does it make it more or less difficult to make meaningful change?

3) You also employ some native South Africans. How does this influence the dynamic between international workers?

4) Are there benefits to employing locals?

5) Are there detriments to employing locals?

Second General

1) What benefits do you think the VMF provides outside of rehabilitation of Vervets?

2) What do you think are some common misconceptions people have about monkeys and conservation in general?

3) If you could give some advice to inspiring conservationists as to how to make a meaningful difference what would it be?

4) What are the biggest challenges you have to face as a conservationist and how do you approach overcoming them?

- 5) Could you tell me a little about the Vervet Forest program?
- 6) Do you think you have a different perspective on the work you do in South Africa as someone who is originally from England?
- 7) How does the VMF compare to other conservation organizations you have been involved with?

David Johnston Interview: December 4, 2015

General

- 1) What is your involvement with the Fauna Forever and how did you become interested in conservation in general?
- 2) How did you come to work at Fauna Forever?
- 3) How long have you been involved with conservation work?
- 4) What is the goal of Fauna Forever?
- 5) Have you worked with other conservation organizations?

Methods

- 1) Could you tell me a little about how Fauna Forever functions on an organizational level?
- 2) What are the biggest day-to-day challenges you face?
- 3) Does Fauna Forever work closely with other organizations? And if so what is the nature of the relationship?
- 4) Which demographics do you focus on interacting with? Organizations, students, or locals?

Finances

- 1) How is Fauna Forever funded? And how hard is it to get new funding?
- 2) What is the biggest financial challenge Fauna Forever faces and how do you combat it?

- 3) How large of a financial impact do the volunteers and workers have on finances?
- 4) How do resource use and transportation effect finances?
- 5) How does Fauna Forever minimize financial burdens?

Second General

- 1) What is the financial priority for Fauna Forever?
- 2) How does Fauna Forever compare with other conservation organizations you have worked with?
- 3) How do you approach inspiring future conservationists?
- 4) Do you think ecotourism is the best method for conservation? Why or why not?
- 5) What does the future hold for Fauna Forever?