NGOs in the Global Conservation Movement:

Can They Prevent Extinction?

(African Apes as an Example)

by

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ABSTRACT

Development throughout the course of history has traditionally resulted in the demise of biodiversity. As humans strive to develop their daily livelihoods, it is often at the expense of nearby wildlife and the environment. Conservation non-governmental organizations (NGOs), among other actors in the global agenda, have blossomed in the past century with the realization that there is an immediate need for conservation action. Unlike government agencies, conservation NGOs have an independent, potentially more objective outlook on procedures and policies that would benefit certain regions or certain species the most. They often have national and international government support, in addition to the credibility and influencing power to sway policy decisions and participate in international agendas. The key to their success lies in the ability to balance conservation efforts with socioeconomic development efforts. One cannot occur without the other, but they must work in coordination. This study looks at the example of African Great Apes. Eight ape-focused NGOs and three unique case studies will be examined in order to describe the impact that NGOs have. Most of these NGOs have been able to build the capacity from an initial conservation agenda, to incorporating socioeconomic factors that benefit the development of local communities in addition to the apes and habitat they set out to influence. This being the case, initiatives by conservation NGOs could be the key to a sustainable future in which humans and biodiversity coexist harmoniously.

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CHAPTER ONE: INTRODUCTION

PURPOSE OF STUDY

The purpose of this study is to discuss the impact that development and urbanization has on wildlife while also examining efforts to reverse these negative impacts by the growing conservation movement. Ultimately this study will aim to answer the question, do conservation non-government organizations (NGOs) have the capacity to maintain biodiversity and the environment despite the growing rate of development and urbanization? Over the last century, numerous NGOs have been established with biodiversity conservation goals which focus on a species or area that they deem in need of significant assistance in numerous sectors. NGOs attempt to tackle issues that governments have sidelined or ignored. Their non-governmental status gives them the freedom to indulge in projects that are usually un-biased from political agenda, although they undoubtedly require government support.

This study will examine a number of these NGOs to determine if their efforts truly make a difference, or if efforts are lost in an uncoordinated agenda. Although there are growing conservation efforts all around the world, the focus here will be narrowed down to the diverse Eastern, Central, and Western regions of sub-Saharan Africa and their current situations, specifically looking at the great apes. In order to truly understand the big picture of failures and successes in conservation, this study will look at individual projects implemented by ape-focused NGOs with the idea that if reasons for failure/success can be identified, this information could be used steer current and future efforts onto an overall path of success. With the majority of sub-Saharan Africa considered 'under-developed', international and intergovernmental organizations have emphasized the importance of bringing these countries up to

modern standards, in economic and humanitarian sectors. This begs the question, at what cost? Do these NGOs have the capacity to "save the world"?

This situation, of urbanizing an incredibly large and environmentally/biologically diverse continent, has occurred before. The previous situations, as seen in Europe, North America, and Australia, can be used in comparing, contrasting, and predicting the course of current the development situation in Africa. The current 'developed' nations have already seen humankind conquer land and animals. These nations that are now considered 'modern' and 'developed', are now lacking key components to their original, unique identity from as recently as a few centuries ago. This study will look further into global examples of diminishing or extinct wildlife. Those examples, included in this paper for presenting a comparison and a foreshadowing to the wildlife status in sub-Saharan Africa, will highlight the time-sensitive need for intervention.

OBJECTIVES

The ultimate objective of this study is to determine whether the development of currently 'under-developed' African nations will unavoidably cause detrimental consequences by wiping out a significant proportion of biodiversity or if organized interference can not only maintain, but reverse, the current crisis status. This study will determine if NGOs are actually, truly helping the cause by providing the resources necessary where a government falls short or if their intentions are lost among chaotic implementations and untrusting governments. Can NGOs and governments collaborate efforts in order to produce positive results? The North American example is prime in arguing that development does lead to severe, irreversible losses, as so many different species' statuses since European settlement have been reduced to either threatened, endangered, or extinct. A more optimistic

outlook is that this doesn't have to be the case. During the centuries of early settlement, the concept of conservation hadn't even been conceived. Today's society has become aware and concerned with wildlife and environmental issues, and there have been many laws and regulations put into government policy in order to preserve habitats and prevent rapid extinction rates.

In addition to efforts made by national governments, hundreds more intergovernmental and non-governmental organizations focused on conservation have emerged to combat the crisis. It could be possible to include both development and conservation strategies in the development processes for these nations through which they could secure a better future for themselves while also salvaging the natural world around them. In order to even attempt this, however, it is most important to identify exactly why the animals that are affected, are affected.

The most obvious effect development has on the natural world is land degradation, and therefore loss of habitat for biodiversity (Robbins & Boesch, 2011). This is profoundly evident in activities such as deforestation, clearing land for agriculture, and construction of infrastructure. These activities, among others, cut down and clear away the habitat of many different plant and animal species, forcing them to relocate into smaller areas. In addition to this direct cause of population decline in species, there are other, indirect causes of decline brought on by development efforts. For example, the bush meat trade in West and Central Africa is a major reason for declining ape populations, indirectly facilitated by increasing development efforts (Peterson et al., 2011). Pinpointing both the direct and indirect activities that are affecting animal populations would help to link conservation efforts into development efforts. In the past, the two have been separate, and wildlife populations have continued to decline. Unless the problems are identified at their roots and specific enforceable procedures implemented for conservation, the

development of the nations in the third-world will result in a significant loss of biodiversity that will eventually trickle down to extinction. Interference by NGOs could be the key factor in mitigating this environmental crisis. It is therefore crucial to examine multiple aspects of NGOs to determine what works and what doesn't. From there, perhaps NGOs can evolve to successfully regulate conservation and development efforts in a manner that is fully sustainable.

BACKGROUND OF PROBLEM

The interest over the decline in biodiversity has only become a forefront of global concern over the past century, however, there has been evidence of human impact on wildlife and the environment for tens of thousands of years. According to scientists, there have been five great periods of mass extinction throughout the history of the planet, and many would argue that we are now in the midst of the sixth. Unlike the first five, which were mostly results of climatic changes and natural phenomena, this sixth mass extinction is a result of direct and indirect human activity (Lévèque & Mounolou, 2003). As authors Christian Lévèque and Jean-Claude Mounolou (2003) advocate, biodiversity has always had, and will always have, a past, present, and future. The purpose of this paper isn't to argue this idea, as this idea supports the concepts of evolution and survival of the fittest. If anything, this paper suggests that humankind is at the very top, and everything humankind does fully determines the future of the planet. The natural world will evolve to adapt; however, in addition, it must now adapt to the unnatural world and the all the direct and indirect consequences which it brings, and at an unprecedented and critical pace. As natural selection has played out, 75% of large mammals (ranges 100kg-1t) have disappeared from Earth over the past 50,000 years—excluding those in Africa (Lévèque & Mounolou, 2003). This rate, over tens of thousands of years, has

basically caught up and is on par with just the past couple of centuries after human expansion coupled with the technology boom erupted.

In their book, Lévèque and Mounolou (2003) proceed to chronologically analyze the dates in which humans have arrived on the various continents in relation to the dates in which most, or all, of the large mammals—or megafauna—on that specific continent have disappeared. Disappearances of species have not occurred simultaneously worldwide, however there is an eerie coincidence between the correlation of human arrival and animal disappearance on each continent. Australia was colonized around 55,000 years ago; and by 50,000 years ago, all large and medium mammals as well as over one-half of the rest had vanished. Both North and South America were colonized by humans around 11,000 years ago. At that point in time, North America rapidly lost 95% of its megafauna. South American extinction rate was not nearly as brisk, however today it can claim 80% of its species lost. Similar to the Americas, Europe/Asia lost most of its megafauna around the time of human arrival at 10,000-12,000 years ago. It is both noteworthy and interesting that Africa has had the longest human presence yet retains the most diverse and highest amount of megafauna, for now. This could possibly be because during colonization, the objective wasn't to develop new permanent settlements as in the Americas, but to come in and extract the natural (and human) resources. Since then, Africa has remained relatively undeveloped in comparison.

As previously mentioned, evolution and natural events occur, and species come and go. This rate of decline, however, is unprecedented, especially for such a relatively short period of time. The human-induced reasons are evident. The isolated islands of the Pacific, including Fiji, Hawaii, and New Zealand among many others, are a prime example of human impact. These islands were colonized beginning from 3,500 years ago. Since then, one-third to one-half of terrestrial birds on these

islands (10-20% of known terrestrial birds worldwide) have become extinct. Although New Zealand had primitive people inhabiting the island in harmony with nature for millennia, it was really around the arrival time of the Maori people from Polynesia about 800 years ago that the environment took a turn for the worst. Over half of New Zealand's forests were burned down to make room for agriculture within the first couple hundred years after settlement. This severe habitat loss in addition of hunting and egg-collecting took a dire toll on the area. Over half of their bird species disappeared. Another significant factor in this situation is the introduction of non-native species, such as cats and dogs, to isolated islands. They become predators—previously unknown—to the native species. Lévèque and Mounolou (2003) conclude from this that "it is undoubtedly clear that successive human colonizations of the Pacific islands led to the disappearance of many vertebrate species".

In the previous millennia long ago, extinction rate has been estimated at one to five species per year (Bernstein & Chivian, 2008). This rate has severely increased since the expansion of humans. Amid ever-increasing global populations and ever-increasing capabilities and demands of technology, annual extinction rates are estimated at 1,000-10,000 times higher than before (Bernstein & Chivian, 2008). Scientists predict that one-fourth to one-half of all biodiversity that has ever existed will have gone extinct by the end of the 21st century (Lévèque & Mounolou, 2003). In addition to examining wildlife, one must not forget about the plant world as well. Plants are going endangered and extinct at rates similar to those of wildlife for the same reason and are also considered 'biodiversity'. This is important because plants provide the habitat and nourishment which all wildlife (including humans) needs. Disrupting the ecological system has a high impact on the well-being of all living creatures.

In conjunction with an understanding of the severity of the crisis at hand, an examination of the specific impacts that humans have on biodiversity and the environment will seem more obvious. The first wave of attacks on biodiversity, notably the megafauna, is hunting. Hunting played, and still does, a predominant role in the extinction of many species. Earlier humans not only hunted for food, but protection—a prime example of the idea to 'kill or be killed'. This is noticeable when picturing things from cavemen fighting off sabre-tooth tigers and wooly mammoths, to European settlers battling wolves and bears in early America. Presently, this is an issue in sub-Saharan Africa, where lions and other big cats and carnivores come upon a lonely person or unguarded herd of livestock. These animals are left with no other options, and the humans' only option is to defend. After hunting, the next wave of threats to biodiversity is the timeless quest for economic and social development. These are two concepts that have always been a priority for every culture and nation. Any civilization, ancient or modern, has prioritized the quest for wealth and resources, for betterment and empowerment of itself. Unfortunately, development comes at the cost of nature. Resources are exploited, overused, and eventually exhausted. Wildlife is driven out and away or killed to become income, food, pets, status symbols, etc.

So far, this paper has almost avoided discussion of Africa, as it has been an outlier in the history of biodiversity and human intervention. Although Africa has the longest history of human presence of anywhere in the world, it remains the least developed continent to this day. This is one potential explanation for the amount of 'megafauna' which are still present in the region—there has not previously been dire need to exterminate them. For thousands of years, and even to this day in many areas, Africans have retained traditional cultures, attempting to live in harmony with the environment. Unfortunately, their retention of traditional cultures has proved a

double-edged sword. The lack of modern education, especially regarding reproduction, has enabled the African population to expand at an unprecedented rate. Consistently high birth rates in addition to better medical care and therefore longer lifespans and lower infant mortality rates have the continent rising from entailing 9% of the world's population in 1950 to an estimated 25% of the world's population by 2050 (United Nations, 2015). A population growth of this extent will demand copious amounts of continual and sufficient resources. These resources include food, clean water, supplies for shelter and infrastructure, etc. There is great concern around the world over the development of Africa today, a continent that has so far lagged significantly behind the rest of the world. It would seem, with so much aid and focus concentrated towards Africa, that establishing successful projects and policies for both development and conservation should be more prominent. How has a continent, more "wild" than the rest with its vast diverse landscapes and retention of a significant amount of its megafauna species, become the center of scrutiny and chaos in dealing with its issues?

Sub-Saharan Africa flourished in biodiversity until the colonial period. By breaking down sub-Saharan African history into three periods—pre-colonial, colonial, and post-colonial—author Robert Kasisi (2012) examines how the environmental situation took a turn for the worst. The sub-Saharan pre-colonial period (until around the middle of the 19th century) was an "era of abundance" according to explorer Henry Morton Stanley (Kasisi, 2012). Until colonization, African people lived in harmony with the environment surviving on limited-scaled subsistence farming and livestock. Their hunting, gathering, farming, and livestock needs were too small to leave any significant negative impact on the environment. They adapted their lives to the environment, much the opposite of what occurs today. In addition, certain traditional and cultural practices protected many plants, natural resources, and

wildlife by various stigmas, taboos, and beliefs. The population and population growth rate were only a fraction of todays.

Around the mid-1800s (the beginning of the colonial period), Europeans arrived and claimed the majority of the land for themselves, disregarding any former structure of organization and flow of life. Countries like France, Belgium, and England claimed most of the territory and monopolized all the natural resources. Along with the denial of any rights to their own natural environment, many of the African people's helpful and protective cultural practices were forbidden. During this time, land and resources were severely depleted in the European race for wealth. Fortunately, Europeans began to realize that the sources of their wealth were beginning to rapidly disappear at a non-refillable rate. The thought of losing that which generated their wealth gave incentives for the beginning of conservation movements in Africa.

Yellowstone National Park was founded in 1872, becoming the world's first national park and an inspiration around the globe. Before the turn of the century, southern and eastern Africa developed its first series of protected areas, followed a couple decades later by central Africa. The U.S. was simultaneously establishing more national parks, such as Grand Canyon National Park and Yosemite. The difference between the American and the African protected areas was their purpose. While the U.S. aimed at preserving natural monuments and remarkable landscapes, those in Africa were created with the ambition of maintaining the wildlife in its natural habitat before the explosion of development and population—a looming threat—destroyed them. African parks, typically covering 5-15% of each nation with the exception of those in West Africa, far better met biodiversity conservation needs (Western, 2003).

David Western (2003) argues that late colonization by Western nations actually significantly spared African wildlife. He claims that the destructive behavior towards the environment in the other continents shone light on a potential environmental crisis and need for preservation. In 1906, the Society for the Preservation of Fauna and the Empire began influencing African governments to consider wildlife, their migratory paths, and protected areas in addition to developing interests in natural history and natural resource management. Although their purposes were selfish, a desire to preserve wildlife and natural resources with the intent on continual ability of hunting and extraction, they did begin an era of awareness to avoid maximum depletion. Early government institutions and universities developed programs to focus on these goals, and therefore many principles of game, forestry, fisheries, farming, etc., were set in motion in addition to multiple big game departments with hunting laws, regulations, and licenses in order to manage sustainability. In the 1960s-1970s, studies began including human activities into the relationship of biodiversity in the environment. This developed the idea that conservation and economic/social activities should perhaps be looked at together rather than separate, unrelated issues. Community-based conservation (a concept that focuses on conservation but with local empowerment and the prospect of livelihood growth) has therefore been a prevalent practice throughout Africa for decades, although there are debates surrounding its overall efficiency. Western refers to wildlife conservation in Africa as a "white domain", as it has historically excluded indigenous people from its research, policies, or any high authority on the matter. Even community-based conservation tends to go off ideas by outside forces, thinking local best interests are at hand, however not understanding local knowledge. With the rise of NGOs (such as the World Wildlife Fund and the African

Wildlife Foundation) in the last couple of decades in the twentieth century, indigenous participation in projects has continued to rise.

Unfortunately for conservation movements, the following decades and beginning of the post-colonial period saw a continent-wide pattern of de-colonization and independence from Europe. The transitions were not smooth, and conservation agendas were brushed aside to make way for political, social, and developmental goals. Between civil wars, genocides, poverty, famine, and a continual struggle with European 'rights' to their former colonies, all under the leadership of incapable or military governments, conservation was not a high priority. These brand-new governments were (and some still are) corrupt and chaotic. Proper development of cities and infrastructure was also never prioritized. Funding for the universities and government research institutions that were previously leading the way in biodiversity conservation studies was no longer pulling in remotely what it used to. These institutions began failing. Following the Cold War, African nations became rather geopolitically unimportant and therefore incoming funds and attention from larger nations faded. Countless groups of people were condemned to lives of poverty. Poverty is itself a factor in environmental loss, as the impoverished people have no choice but to exhaust their immediate resources in order to survive. A significant example that will be later discussed is the bush meat trade. Although illegal, it offers far more money than legal hunting or other legal jobs, and therefore offers a high incentive to participate. In addition to the internal circumstances, the multinational pursuit of African biofuel has conservation, sustainability, and energy experts in a race against time for cheaper, easier, more efficient alternatives.

For tens of thousands of years, humans have been pursuing sustenance and security. In earlier times, it was food and protection for small, local populations. In today's society, there is a mission to 'develop' the world. 'Development' is a broad

blanket term that refers to growth and improvement in a variety of sectors, such as politics, the economy, social conditions, etc. At the center of these, is urbanization. Urbanization efforts aim to improve the quality of living conditions in countless ways and by countless measures. City life requires upkeep and improvements as technology moves forward. Rural life also requires improvements in technology and equipment. Generating and transporting power, energy, and water has always been both challenging and unreliable. Infrastructure connecting all corners of Africa need to be improved, to facilitate the human and resource transportation. It is currently easier to get from one African nation to its former colonizer than it is to travel within the continent (Western, 2003). Sanitation systems also require proper infrastructure. At this point in time, natural resources are required for the implementation and upkeep of all of these, among many others. Especially with the severe population boom in Africa discussed earlier, it is becoming more and more critical for successful urbanization to accommodate the people on the continent. Growing populations and a growing middle class seek higher standards of living, moving towards the hyper-consumption state of mind inherited from the West.

"Africa is undergoing the most dramatic era of development it's ever experienced", claims ecologist William Laurance (2015). In addition to the population boom, there is an upcoming and consequential boom in infrastructure, Laurance suggests. More people are flocking toward urban areas and cities centers, while at the same time building roads to connect them throughout the continent. Some 53,000km of roads are either in planning phases or in the works currently (Laurance, 2015). These roads' main purpose is transportation of exploited natural resources and agricultural production. As the population grows, so does the demand for urbanization, and thus the demand for resources and the ability to transport them. By 2030, it is estimated that urban residents in sub-Saharan Africa will grow by two

million (Mcdonald et al., 2008). As urban areas grow, protected areas either shrink or are infringed upon. If all the planned road projects are completed, 408 protected areas and 1,800 other habitat reserves will be bisected and interrupted (Laurance, 2015). It may not seem momentous to put a simple, two-lane road in the middle of an area, because it doesn't require excessive space in the scale of the park. It does, however, significantly disrupt wildlife habitats. For example, in England, the simple little dormouse is listed as endangered due to road development (Wilkie et al., 2000). The mice are either unwilling or unable to cross the roads, which traps one community in one patch of habitat. This leads to inbreeding and competition for food, among other factors that have been so detrimental to their population that they are now endangered. These roads bisecting protected areas are also instruments for illegal hunting and poaching. Hunters have easy access to wildlife near roads and can transport their catches away without having to carry all that they can by foot for far longer distances.

Road presence and resource exploitation companies, which both unsympathetically destroy the surrounding environment, are difficult to hold back, however. In countries stricken with poverty and desperately trying to keep up with the rest of the world, these 'products' are essential. Their economies are linked with the extraction and exportation of natural resources. The central Africa/Congo basin area currently has 450,000 square kilometers under concession of logging companies, or roughly one-fourth of all lowland tropical forests (Megavand, 2013). In the Democratic Republic of Congo (DRC), 74% of the entire country is dedicated to logging while the Central African Republic (CAR) dedicates 44% (Megavand, 2013). The industrial logging sector of this sub-region itself provides eight million cubic meters of timber each year for both domestic uses and exports, and is the major contributor to the GDP of most basin counties (Megavand, 2013). With countries

such as the DRC and the CAR, colonial rule and the transition into independent countries left them in deep bankruptcy and poverty. Their road systems have been left to fall apart. The only remedy currently at hand is to reconstruct the roads. As they have abundant land-locked natural resources, revamping road conditions are crucial parts in the governments' plans to restore their economies. Wilkie et al. (2000) discuss the challenge of roads and road networks, as they are "strongly correlated with economic growth and national wealth and linked to the scale of ecological disturbance and natural resource degradation".

It is indeed crucial to include all forms of biodiversity—plants and wildlife—into any study, project, or conservation effort in order to understand the big picture. The big picture, however, must contain comprehensive details on smaller picture situations. This paper will narrow focus from general biodiversity down to one taxonomic genus involving a couple similar species—the great apes. Looking at the past throughout today, it is evident that human activities and development do cause biodiversity loss to the level of mass extinction. Focusing on this iconic genus, however, can fully dissect to just what extent humans negatively impact. The great apes (this paper will include the gorillas, chimpanzees, and bonobos of Africa and exclude Asian orangutans) are an iconic family of species indeed, as well as our closest relatives and clues to our ancient ancestry. From zoos to movies to books, the apes are a popular genus loved by many and referenced almost everywhere. Stories from people such as Jane Goodall and Sheri Speede, as well as incredible accomplishments by Koko the gorilla herself, give the world a glimpse of the 'humanity' of nature, especially this family of species with whom we share most of our DNA (over 96%, humans are in the same genus) (Population Council, 2006).

The great apes are currently in an era of crisis. Their numbers as well as their habitat area are plummeting. In some areas, up to 95% of specific ape communities

and populations have died out. Their habitat includes maybe half of what it used to. In areas of western and central Africa, different ape populations fragmented from large groups into numerous, unconnected, small groups and saw severe reductions in numbers. In the study by Jessica Junker and colleagues (2012), they discuss "suitable environmental conditions" (SEC) and how SEC impacts the ape populations. From the 1990s until the 2000s, over 208,000 square kilometers of SEC was lost. Even inhabiting an area labeled as "protected" does not safeguard wildlife. By 2002, twenty-four protected areas saw a 96% decline in the population of apes while over 70% of total ape habitat had been negatively affected by human activities (Population Council, 2006). The areas most affected were central and eastern DRC and western equatorial Africa. These tropical areas are the richest with natural resources. Junker and her team note, however, that those results may be slightly skewed due to possibilities that a significant portion of SEC in west and east Africa have already been destroyed before they began measuring. The following map shows apes' historical habitat ranged compared to its current reduced area.

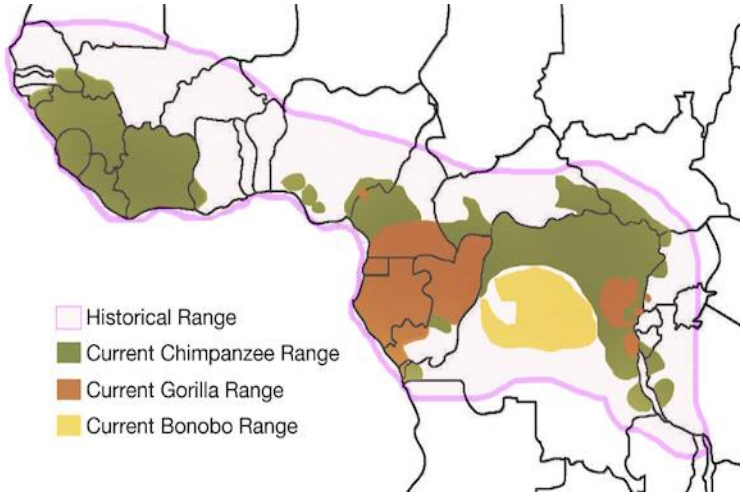

Figure 1. Historical Range of Great Apes in Africa. (www.chimpsnw.org)

THE GREAT APES

The wildlife discussed in this paper will include the great apes of Africa. This includes chimpanzees, gorillas, and bonobos, and excludes the orangutans of Asia. The three are related enough to all be considered 'great apes' by their proportionally larger brains, their "knuckle-walking", and their habitat in the tropical forests and savannah woodlands of equatorial and central Africa (Robbins, 2011). Otherwise, their food, behavior, and specific habitats set each specific species apart from one another.

Chimpanzees occupy a larger area and are more adaptable to a variety of habitats. They are found along the southern parts of West Africa as well as the western equatorial region of Central Africa. Gorillas are split into two groups, western and eastern gorillas, and can be found within western Central Africa or eastern Central Africa, respectively. Bonobos are now limited to the central region of the Democratic Republic of Congo, in between the two groups of gorillas, secluded from both them and the chimpanzees as well (Robbins, 2011).

Chimpanzees and bonobos mostly eat fruit in addition to other vegetation, however they also will hunt small monkeys, duikers, bats, etc. for meat. It is suspected that a handful of diseases contracted by both humans and apes are results of chimpanzees eating infected meat of other animals, and transmitting it throughout and to the other species. Both of these apes also live in large exclusive groups, although they are not always near each other. Chimpanzees are highly territorial, while the other two are not so much. Gorillas on the other hand eat mostly vegetation, with occasional fruits or insects. They live in much smaller groups than the other two and are fluid in their group formation (Robbins, 2011).

All of these great apes form a complex system in the African wildlife environment. They form an intricate network amongst themselves and in relation to other species. Observably, their fragile habitats are currently reduced to very small regions. Less than one-fifth of apes live in protected areas, many of which within the Congo Basin area, which is decreasing by several million acres per year (Stanford, 2012). Large-scale changes brought by humans will have obvious effects on their food supply and habitats, with extremely negative consequences.

WHY ARE THE APES DISAPPEARING?

One major disadvantage the apes have had since the beginning of development and urbanization in Africa is living near impoverished areas. The largest evidence of this misfortune lies within the bush meat trade. Historically, apes have been hunted by rural villagers mostly for consumption due to traditions and daily sustenance. In the recent decades, however, bush meat has become a hot commodity. Within the tropical rainforest, it is not common to keep livestock for food purposes. Instead, people hunt daily. Also, and often, people are too poor to even afford food, so they hunt. Illegal bush meat trade is a serious issue in the African nations now, with markets expanding all over the continent and even abroad. In the book *Eating Apes* (Peterson et al., 2003), the authors discuss one man's journey into the bush meat business. As a young boy from a poor village in Cameroon who wanted so badly to go to the city and go to school, Joseph Melloh attempted a handful of different ways to make money. One was illegal bush meat trade. He didn't stick with the trade for long because of the hassle from authorities, yet he ended up returning to the business because of the money. He learned that "doing anything illegal gives you more benefit than when you prove the right child". Many of those

hunting the great apes aren't sport-hunting them—there is a high paying commercial market now for bush meat, and that is where they can find money in impoverished areas.

Deforestation for logging and mining purposes is another fundamental factor in the decline of the great ape populations. It is not only a cause of habitat loss, but also a way to substantially promote the illegal bush meat trade. Population increases, urbanization spreads, and now not only do people need more food, they need more space and more resources to build up their communities. Development of both cities and rural areas require timber. Timber from the tropical rainforests is also exported to other countries. In addition to timber, many minerals such as gold, cobalt, and a product called Coltan (a mixture of mineral ores used to hold electrical charges in technological products such as cell phones) come from central Africa, the DRC in particular. Eighty percent of the world's Coltan comes from the DRC (Stanford, 2012). This area of the DRC happens to be where the remaining small number of lowland gorillas live. Habitats for the animals are destroyed, while communities for the people are constructed.

The logging/mining industry requires dependable infrastructure. The logging companies must be able to reliably transport their products out of the forests, jungles, and rural areas and into cities. The roads and trucks used to export the timber and minerals also double as a carriage for large amounts of bush meat into cities (often for free). Due to this increase in transportation networks, the movement of bush meat has never been easier. *Eating Apes* (2003) refers to this as the "wood-and-meat business", as the two extraction businesses have a layered relationship. According to the book, logging communities themselves eat two to three times more bush meat than non-logging communities. Loggers will either supply hunters with

the guns and equipment they need in exchange for meat, or simply hire an illegal hunter. This is a good deal on both ends; it is cheap on the loggers' end to pay for their gains in bush meat, while it is a hefty paycheck on the end of the hunter. This illegal hunting earns a lot more money than most legal activities.

These reasons specifically, the illegal bush meat trade and the legal yet destructive deforestation business is where the ethical question of technology comes into play. When it comes to traditional hunting by the traditional people, the controversial position by most governments is often the same as this response by a German logging company in the Congo Basin area: "We want to generally state that hunting in Africa belongs to the traditional rights of the native population" (Peterson et al., 2003). Looking at the small picture of that statement, it seems logical. On the other hand, before development of these African regions, the native populations could not kill enough of the great apes to really make a difference. They used smaller, less accurate tools such as a bow and arrow to hunt an animal to feed their family, perhaps their village. The introduction of so many new technologies has made bush meat hunting an unsustainable commercialized industry. There are now guns to kill more and larger animals, and vehicles and transportation networks to carry far larger loads of bush meat around the world. Indirectly, as cell phones and such are becoming typical everyday items, more of the great apes' habitats are set on a path for destruction so that people can get Coltan, or timber, or any of the other natural resources within the tropical forests.

In addition to the aforementioned causes of declining ape populations, there is one other huge cause that most people don't even realize. "Much evidence indicates diseases, some with human origins, are playing a significant role in ravaging great ape populations in Africa" (Stanford, 2012). Just as disease affects

their human counterparts, the great apes are also capable of contracting and spreading a number of serious diseases and viruses at epidemic levels. These can spread like wildfire through ape populations, even more so than it does in humans. Many of the same diseases that are contractible through humans are contractible through apes: influenza, tuberculosis, Ebola, polio, pneumonia, scabies, the common cold, etc. The mentioned diseases have all been recorded in ape populations via human origin and transmission. They are also able to spread from humans to apes, which the ecotourism has unintentionally increased and brought into light.

The numbers regarding ape deaths due to disease is alarming and devastating. For instance, between 2002-2003, around 5,000 gorillas (90-95% of the local population of gorillas, or 5% throughout all of Africa) were found dead in just the northwestern region of Congo (Stanford, 2012). The same data shows that of this gorilla population, which was in well-defined borders, 130 out of 143 marked gorillas died. This population was least affected by other factors such as logging and hunting, yet more devastating. This local population, now essentially gone, was found to have contracted the strain of the Ebola virus known as ZEBROV (Stanford, 2012). This strain had broken out in human populations a year earlier along the Congo-Gabon border. This particular study did not even include local chimpanzee populations, whose numbers could very well be near the numbers of the gorillas.

The chimpanzees are equally as vulnerable to human diseases, as evident in the research of the renown Jane Goodall. Goodall spent a solid half century among the chimpanzees in the Gombe Stream National Park in Tanzania, studying every aspect about their lives. During this time, she noted six separate epidemics (Stanford, 2012), beginning with a polio outbreak in 1966 that was probably caused by polio outbreaks in humans in nearby Gombe villages. One in seven chimpanzees

were killed by this epidemic, and many others left with disabilities. Out of the other who survived the disease, many were crippled and left with disabilities. These disabilities prevented them from keeping up with the rest of their groups, and therefore were killed by them or left for dead. Finally, with the assistance of vaccines flown in, the epidemic subdued. Two years later, a pneumonia-like respiratory disease hit the chimpanzees of Gombe. Between the 1980s-early 2000s, four more pneumonia-like epidemics hit the Gombe chimpanzees. During a forty-seven-year period, 58% of Gombe chimp deaths were accredited to disease (Robbins & Boesch, 2011). Similarly, Taï National Park, located in Côte d'Ivoire, has seen a handful of Ebola outbreaks and respiratory epidemics similar to those in humans. In two Ebola outbreaks in 1992 and 1994, twenty out of fifty-two individual chimpanzees in one community were presumed dead from the disease (Robbins & Boesch, 2011). These Ebola outbreaks, especially in the DRC, exactly follow patterns of spread seen in humans (i.e., timeframe, north-to-south).

It is uncertain to what extent humans impact the health of the apes, as these groups which are studied are in far more contact with humans than those relatively unknown in the middle of the forests. The fact does remain, however, that humans clearly do have an impact and can transmit their diseases cross species. Human-ape contact, enough to transmit these diseases, can occur in numerous direct and indirect ways.

Ecotourism is a double-edged sword for conservation efforts. As much attention and revenue that is draws in, the significant number of tourists drawn in (and, in addition, those human resources required to conduct ecotourism businesses) are some of the easiest ways for apes to contract air-borne diseases. Craig Stanford (2012) discusses how ecotourism is, in fact, a booming business in many countries

such as Uganda, the DRC, Rwanda, and others. In Uganda, for example, it costs a single person five hundred dollars to take a gorilla tour in the Bwindi Park. In a single day, the Uganda Wildlife Authority can gross over ten thousand dollars between multiple gorilla tours in multiple areas of the park. With over twelve thousand people participating in gorilla tours in 2009, gorilla tourism is one of Uganda's leading sources of revenue for the country. Chimpanzees are not as subject to ecotourism, as they have much larger habitats and travel much further distances, with fluid group membership. In addition to the five-hundred-dollar fee, the government recently added an additional five dollars onto the price of the tour. This extra 'pocket change', compared to the original price, is allocated to the local economy, new schools, and new health care clinics and dispensaries. Of the approximate ten thousand daily dollars grossed, three hundred and twenty dollars daily, or nine thousand dollars monthly, are put into the local economies of Kabale and Kisoro. Although there are debates over the exact amount that should be directed towards economies, it is obvious that a significant difference is made with revenue from ecotourism. Over two hundred thousand dollars were raised between 2000-2009, which allowed for the construction of at least thirty new schools and ten new health clinics and dispensaries in the areas. This is huge incentive for the conservation of apes, general wildlife, and the environment. Ecotourism is a huge factor in combatting habitat loss and deforestation, logging, and mining efforts. It works as compensation for locals who might otherwise resort to high-paying illegal poaching and similar activities. On the one hand ecotourism is a monumental asset in conservation.

On the other hand, such human proximity to great apes act as a giant vessel of communicable diseases that can develop into epidemic levels. What most people

don’t realize, is that a tourist cannot simply find a random, wild gorilla and have the experience that they get with their guided tours. Primatologists and field experts accompanied by guides and guards must essentially ‘train’ gorillas and build trust to become accustomed to groups of tourists near them. This ‘habituation’ is also crucial in studying ape behaviors and patterns, allowing researcher to go within a closer range and get more involved, rather than distant observations. Habituation is a slow process, as it takes a while for gorillas to get accustomed to increasing human presence. The process and the result present innumerable opportunities for disease to be introduced and spread. The number of gorillas habituated can add to the threat as well. Those habituated will still interact with those not habituated, thus spreading any contracted disease to those groups, who will then spread it amongst themselves. Currently, Stanford estimates that 23% of gorillas in Bwindi Park are habituated, while an incredible 70% in Virunga National Park in the DRC are habituated.

Being this close to so many humans so often, gorillas are at high risk of contracting human diseases. The researchers may have an illness not yet showing symptoms, or a tourist may have a cold they are unwilling to report in order to maintain their place within their once-in-a-lifetime tour. In his book, Craig Stanford (2012) compares ecotourism to the missionaries and European imperialist settlements, and the effects on indigenous people. They carried and introduced many new diseases, some not even terribly harmful to themselves as they have developed immunities to them. To the indigenous people, these were all brand new and very deadly, wiping out significant amounts of the populations. This is precisely the situation between humans and the apes.

Since the beginning of great ape field research, the realization of the threat inter-species disease transmission has been realized. Steps and protocols, such as

requiring researchers to be quarantined for several days to allow an illness to either surface and show symptoms or to go away before they are allowed to go near the animals, have been put into place. There are also limits as to how close a tourist can be to a gorilla. Christophe Boesch, in his chapter in *Among African Apes* (2011), describes protocol when tracking chimpanzees with colds in Taï National Park: washing all field boots and clothes before/after entering the forest, staying at least seven meters away from the chimps, and requiring proper qualifications for dealing with dead chimps. Despite certain regulations, the apes themselves cannot be fully contained, and may wander up to some trash or something left behind and easily accessible. This disregarded object could be carrying a disease on it, allowing it to easily contaminate the animal. There remains the ongoing debate between agendas of protection and agendas of profit regarding the apes—among other wildlife and environmental aspects. Ecotourism is significantly profitable to governments and communities, and the profits are incentives to protect the wildlife to continue bringing in the revenue. It also is a large risk for introducing new diseases and viruses, creating deadly epidemics.

In the article *Wiping Out the Wildlife* (2014), author Ken Norris discusses the results of a study conducted by the World Wildlife Fund (The Living Planet Report, 2012). These results state that the two main reasons for declining animal populations are loss of habitat and exploitation. These are both man-made problems. "This damage is not inevitable, but a consequence of the way we choose to live", Norris claims. Indeed, the consequences of increasing technology and development are at the expense of the natural world. Using the bush meat hunting example, natives have hunted apes sustainably for hundreds of years. Apes maintained their habitats and their food sources side by side with their human counterparts. It has

been within the last century, when technology and development have increased significantly, that most of the species' populations have been so severely reduced (wildlife has been reduced by 52% since 1970 according the WWF study). Humankind has chosen a certain lifestyle, and unfortunately the cost of it is the environment and wildlife. It is imperative to change these expectations of reality, and the means by which they're sought, if there is any hope for the great apes and all of the other biodiversity in the future.

SIGNIFICANCE

As previously discussed, development agendas and human activities are undoubtedly the main driver behind the movement into the sixth mass extinction period of history. Earth will prevail despite significant changes, however, not as it is experienced today. Biodiversity plays a forefront role in maintaining the planet in all familiar aspects. The process of asking the question of whether or not development inescapably will end in a mass extinction and loss of biodiversity is really the beginning of asking what can be done to change the path down which humanity is headed and understanding what exactly is going wrong in the present. With the great apes as the narrower focus of this study, the hope is to shed light on the specific factors leading to all of the species' demise. Steps can be implemented to neutralize, if not reverse, the tragedy at hand. Specific data relaying certain causes and effects, previous, current and potential habitat locations, sustenance availability, predators/hunters, etc. are important points to be made to both conservation organizations as well as governments. The specific information can be crucial support for policy making and regulations.

Biodiversity in general is imperative to ecosystems worldwide, of all sorts. The World Summit on Sustainable Development, adopted in Johannesburg in 2002, states that "biodiversity, which plays a critical role in overall sustainable development and poverty eradication, is essential to our planet, human well-being and to the livelihood and cultural integrity of people" (Population Council, 2006). The significance in asking questions of how to protect it lies in the reasons there are to protect it in the first place. Lévèque & Mounolou (2003) discuss the significance of preserving biodiversity, claiming that there are three major processes within ecosystems: trophic relationships between organisms (food chains/networks), the role of species in the dynamics of biochemical cycles, and biological production (the ability to produce living matter and accumulate energy within the ecosystem). The authors then discuss the different categories of biodiversity: intraspecific diversity (genetic variability of species), diversity among species, and ecosystem diversity. In short, each specific animal, each specific species, each specific interaction between species, and each specific ecosystem play dramatic roles in relationship to one another to keep homeostasis and the flow of life in order.

Apes are just one example of certain species playing a specific role in an ecosystem. Lévèque and Mounolou (2015) discuss the term 'zoochory', or seed dispersal by animal means. It is the most frequent form of seed dispersal throughout tropical forests, responsible for 75% (Kasisi, 2012). Animals such as apes, monkeys, and large birds are the vessels through which these seeds are spread throughout tropical forests, and thus responsible for a high percentage of plant diversity. Apes in particular "play a key part in maintaining the health and diversity of tropical forests, by dispersing seeds and creating light gaps in the forest canopy which allow seedlings to growth and replenish the ecosystem" (Population Council, 2006). Sunlight is critical for plant growth, and it is the apes' movement throughout the

trees that make it possible. It is obvious that apes alone have an incredibly important role in maintaining plant life throughout tropical forests. Without apes and other animals to assist in plant spread and growth, the "empty-forest syndrome" (a healthy forest devoid of wildlife, usually caused by hunting) will take effect, and effectively cause plant life to diminish (Kasis, 2012). With so much at stake, in just considering the apes alone, there is high priority and focus on studying the genus. Every option from big picture to little picture must be looked into in determining the key factors in their declining populations.

CHAPTER TWO: LITERATURE REVIEW

NGOs must be achieving significant progress, as there is an ever-growing amount that have been working worldwide, gaining support and numerous partnership, working with zoo, universities, and research centers, and advising government policies for around a century. In general, articles critiquing NGOs seem to suggest a more optimistic than pessimistic outlook and opinion among authors and the public. Is this optimistic outlook more so from a blissful ignorance of the general public, however? Science and government experts seem divided on the competence and output of these organizations. If it were possible to take all the positive accomplishments from these organizations and integrate the negative feedback and consequences into their plan of action, it should be possible to change certain aspects and maximize their success. It is necessary to review literature arguing both attitudes on NGOs to assess what exactly causes negative options of an organization that was solely established with good intentions

Conservation NGOs started popping up in the earlier half of the twentieth century, and really started making waves beginning in the 1960s. Authors Lotsmart Fonjong and William Markham (2015) discuss the emergence of conservation NGOs as legitimate organizations ran independently of government influence with the purpose of aid and assistance to the more susceptible both human and wildlife populations. They argue that for years, researchers, civil society theorists, agencies, and policy makers frustratingly watched development funds disappear into both ineffective and corrupt governments, who only seemed to serve elite people and

ideals. As a result of this "state failure", they began to suggest channeling these funds to non-government organizations, both international and local.

Fonjong and Markham (2015) continue to discuss the two types of NGOs that emerged. A Type I NGO has much more funding and at a more stable and predictable rate. These are usually international NGOs, with a large staff full of experts and better-equipped projects. These NGOs have a broader, global knowledge bank on international environmentalism. Type II NGOs area smaller, usually locally-based organizations. Their funds are often unstable, and their staff is often underpaid or unpaid. As with the financial situation, expert knowledge, field equipment, and office facilities are severely lacking and inadequate. Larger, Type I NGOs tend to focus on biodiversity as a whole or have many concurrent projects, while smaller, Type II NGOs typically focus on individual species and their habitat (Brockington & Scholfield, 2009).

As of 2009, there are over 280 NGOs with active projects in sub-Saharan Africa (Brockington & Scholfield, 2009). Dan Brockington and Katherine Scholfield (2009) state that NGOs work in about 14% of Africa's protected areas. The estimated annual expenditure between 2004-2006 was just over USD $2 million, but that is, at most, 40% of the lowest predicted needs, which is also most likely a severe underestimate. The authors examine numbers put out by the World Conservation Monitoring Centre and estimate a shortfall of funds in sub-Saharan Africa at about USD $458 million. These numbers only include protected areas. Any need that extends outside of the protected area is unfortunately unable to be accounted for.

Although these organizations are not government-oriented, they certainly have support from numerous governments and governmental organizations

worldwide. Government recognition of NGOs have created a mutually beneficial relationship between the two. In her article, Kim Reimann (2006) discusses the United Nations' growing interest of conservation and development NGOs. She explains that support of NGOs by the UN has grown "exponentially", currently including funding for multiple matters such as implementing field projects and projects for capacity building. In addition, the UN also now funds attendance to UN conferences and supports NGO networking. By 1990, the UN was providing around USD $2 billion per year on NGOs around the globe. Some NGOs cooperate with the UN as a sort of subcontractor while others operate more like a partner. The UN has invested a lot into NGOs and often fully relies on their information and consultation on issues. "Although not all UN organizations included NGOs when they were originally set up, over time nearly all UN agencies and affiliated institutions have come to provide NGOs formal and informal opportunities to access decisionmakers and participate in policy debates" (Reimann, 2006). NGOs heavily rely on governmental and intergovernmental funding, so their support is imperative, as they probably could not survive on private funding alone—especially those that fall into the Type I category.

ARGUMENTS FOR NGOS

Both the larger, international and the smaller, local NGOs have positive aspects and negative aspects. This goes for opinions too, as literature on the topic is rather divided. Even without yet divulging into the negatives of NGOs, it is not wrong to give credit where credit is due to these organizations of all levels. Kim Reimann (2006) refers to NGOs as "borderless activism" made possible by a revolution in information and telecommunication technology. "Conservation NGOs

promote the needs and sustained existence of wildlife, biodiversity, habitat, wildlands and protected areas (such as national parks). They are widely known and trusted by northern publics as serving unproblematically good causes" (Brockington & Scholfield, 2010). Matthias Finger and Thomas Princen (1994) claim that "at the international level, NGOs do lobby and educate and substitute for governments". They have a broad scale of tasks including campaigning to change government policy/public perception, undertaking ecological research on species/ecosystems, policing conservation policies (and sometimes areas), raising funds/awareness for causes, and strengthening/diversifying the capacity/attitudes of the conservation community and support of particular projects (Brockington & Scholfield, 2009). Rosaleen Duffy (2010) names the four largest conservation NGOs: Conservational International, Wildlife Conservation Society, World Wildlife Fund, and The Nature Conservancy. These four alone invested USD $490 million into conservation efforts in 2002 (Duffy, 2010). Brockington and Scholfield (2010) discuss NGOs as being "vital to any assessment of the efficacy of conservation expenditure. They are important means of transferring funds from the wealthy North to the poorer South".

The general public, and even governments, aren't necessarily very familiar with every detail of an NGO. One might just hear the name "World Wildlife Fund" and be able to recognize that it is an organization dedicated to the conservation of animals doing work throughout the globe. Knowing only that much, the general opinion for the WWF is positive. That same person might not have ever heard of the Mountain Gorilla Conservation Fund, however the name suggests positive goals and that alone can create a widespread positive opinion, blissful ignorance or not. These organizations therefore gain the trust and support of the public.

One of the most undeniable positive aspects attributed to NGOs is their ability to bring awareness to crises, and even issues before they reach crisis status. Governments are certainly involved in the conservation and preservation of the natural world, even if for no other reason than selfish claims to resources; however, their motives tend to be driven politically and might not always serve the best purposes. Finger and Princen (1994) discuss the importance of a non-governmental organization for this reason. They also state that citizens, either alone or as a civil "movement", cannot accomplish what an organization can. For the most part, any average person cannot easily set out to save the whole chimpanzee population alone. For legal, political, financial, etc. reasons an organization is needed to acquire necessary human and technological resources as well as a sense of authority.

A major accomplishment that the formation of NGOs can boast is that they are often accredited for being the reason environmental concerns were put in the international development agenda in the first place. Especially in Africa in the mid-twentieth century and later, the decolonization of many nations caused governments to focus on political and humanitarian issues without any consideration regarding the environment. Groups of people organized and realized the implications of certain actions on biodiversity and the need to officially regulate it. Not only did NGOs accomplish getting the environment on an international agenda, but their boom in popularity and worldwide support also easily paved the way for their shaping international laws and institutions.

The creation of The Convention on the International Trade in Endangered Species (CITES), discussed by Rosaleen Duffy (2010), is one substantial example of NGO influence on official international policy. NGOs such as the World Wildlife Fund played a major role in advocating for the creation of this organization. NGOs now are

key in providing information and lobbying at both national and international levels for CITES. CITES operates on voluntary membership by individual governments whose objective is to ensure international plant and animal trade is carried out at a sustainable level and does not threaten their survival. As of 2008 CITES had 173 members who are all a part of global agreements. CITES is not without flaw, as it is a voluntary intergovernmental organization and therefore policies are often swayed by politics, laws seem more like a symbolic gesture as they're difficult to enforce (who enforces the laws—local governments? State governments? The UN?), and there is a lack of adequate reports. Duffy suggests that strong NGO cooperation would help this organization maximize its outcomes.

The human population growth rate throughout most of Africa is estimated as at least 2-3% annually (Struhsaker et al., 2005). This growth brings significant added demands on natural resources and land area to keep up with the population. The need to extract more natural resources also deepens the need for environmental regulations. National Parks (NP) and Protected Areas (PA) give biodiversity a safe haven without threat. Although NGOs do not solely operate in these areas, these protected areas do give them an edge in the conservation battle. NPs and PAs receive substantial technical and financial assistance from NGOs. For instance, Taï National Park in West Africa has a substantially higher success score in a study involving numerous parks in West, Central, and East Africa (Struhsaker et al, 2005). Taï National Park was on par with those scoring high success rates in Central and East Africa, while it scored significantly above the rest in West Africa. The difference between Taï and the others in West Africa is the high amount of attention, in form of technical and financial assistance, received from NGOs over a couple of decades.

Noting a unanimous agreement that conservation efforts are more effective in PAs, Thomas Struhsaker et al. (2005) discuss what this means for NGO involvement. They suggest that large NPs and PAs are more likely to have strong NGO involvement. One reason is perhaps because of having a greater probability of long-term success. The authors suggest that there are three parameters significantly correlated with NGO involvement, and that these parameters are outcomes of involvement, rather than a cause for becoming involved. Adequate guard salaries, positive public attitude, and partial monitoring programs are three aspects that were observed in PAs with strong NGO involvement. Another potential reason is the lack of dispute over land. Hunting and land degradation are illegal within PA boundaries, so besides poachers and catching illegal activities, dispute over land/resource use is one less battle with the government.

ARGUMENTS AGAINST NGOS

There is a vast amount of negative critiques on NGO involvement in underdeveloped nations. That is not to say the majority of people believe NGOs shouldn't exist, simply that they are messy organizations with little guidance and are often incapable of fully reporting their consequences. Dan Brockington and Katherine Scholfield (2010) point out several critiques regarding conservation NGO involvement in underdeveloped sub-Saharan African nations. One critique they have towards conservation NGOs is that they become "too big and powerful" and unilaterally concentrate funds and influence. Decisions are often made from afar and made without local input when big NGOs could be using small, local organizations or grass-root environmentalist groups as allies. Local groups could be a great source of first-hand knowledge regarding efforts and consequences of any projects. Brockington

and Scholfield also discuss in their 2009 article some concerns of conservation policies marginalizing and disempowering local groups. In this same article they discuss how projects often don't consider possible negative social impacts. These large NGOs, following an agenda completely their own, have gained themselves the nickname "Nature Lords" for being "imperious and violent" (Brockington & Scholfield, 2010). The authors go as far as to suggest that at a point, NGOs begin erasing history and the locals' sense of belonging in their own indigenous lands.

Another critique towards NGOs, especially big ones, is that they might grow in influence to the point of acting like large corporations or oppressive states (like a local or national government) (Brockington & Scholfield, 2010). One of the largest positives argument for NGOs is the fact that they are not a corporation or a government with political agendas. Once an NGO becomes so big, however, the amount of private donor and government funding channeled into them almost requires a reciprocation of political compliance. In exchange for funding and support, NGOs begin to follow demands of wherever, and whomever, is sending money their way. In addition to swaying toward a political rather than apolitical stance, conservation NGOs often find themselves uncompromisingly participating in state-behavior. For example, a collaboration between NGOs lead to removal of people from forest reserves in Tanzania, a power that should only be held by the government (Brockington & Scholfield, 2010). "Politics is what matters. The inability to negotiate these conflicts and work with the people on the ground is where conservation often sows the seeds of its own doom" (Duffy 2010). These issues of power are more so problems among large NGOs rather than small and local ones. Rosaleen Duffy (2010) discusses "The Big Four" conservation NGOs (mentioned previously), stating "The Big

Four claim they alone have scale and capacity to organize and implement large-scale conservation projects".

In addition to power and influence, general incompetency is another common critique towards NGOs. This incompetency is seen as several reasons. They have been accused of an inability in handling expensive projects as well as imposing inequitable and inefficient community-based conservation arrangements (Brockington & Scholfield, 2010). Unclear objectives, ineffective information management, long time-frames, scarcity of resources for evaluation, and lack of incentives for evaluation certainly makes for an inefficient organization (Kapos et al., 2008). Kapos et al. (2008) discuss the lack of coherent and coordinated evaluations regarding NGO involvement. Without structured evaluations, it is difficult for anyone to assess if projects are deemed successful, and why (or why not). Structured goals are another factor that leads to ambiguous decisions and outcomes. There tends to be insufficient explanations regarding specific goals, which lead to ambiguous time-frames and efforts.

Incompetency in management of NGO resources also allows for incompetency in knowledge management. Sutherland et al. (2004) discuss the significance of using secondary sources or following advice from other organizations as opposed to having the existence of a scientific knowledge base. In the conservation agenda, many decisions are based on experiences from other organizations with different factors and situations. There is also only a small amount of effort put into dissecting consequences of current practices and projects. Without evidence of effective practices and the production of significant, expanding knowledge, donors can be discouraged from investing in projects that could potentially show no reward.

GOVERNMENTS/PRIVATE DONORS AND NGOS

Despite several successful reports and a common positive attitude from the general public, NGOs are often seen by academics as a chaotic mess of organizations. Unfortunately for NGOs, the governments with which they work are often the causes of impediment in their efforts. Markham and Fonjong (2015) discuss how state governments, especially in sub-Saharan Africa, create hurdles for NGOs to overcome. One hurdle is their limited ability to deliver services and enforce laws. A second hurdle is their lack of legitimacy—after decolonization, states still struggle with official control and legitimacy, often left with no choice but to allow regional warlords and leaders autonomy in their areas. Thirdly, artificial borders created by different tribes and former colonial control within their nation create instability and conflict. The authors discuss the difficulty in government cooperation with NGOs when the governments are hardly in control of themselves. Environmental issues and the regulation and enforcement of laws often come second, if not way down the line, in a long list of essential socio-economic issues like healthcare and infrastructure. Political instability may completely limit the ability to work in a certain region, or at least meet conservation efforts with threats and bribes to stay away.

Although authors Martin Barber and Cameron Bowie (2008) claim that NGOs have "only money and good intentions on their side", they often find themselves struggling for finances. The financial uncertainty seen by NGOs can partially be blamed on the government status. Weak governments with little to no regulatory framework for projects and operations are often unable to enforce regulations introduced by NGOs—even those which they claim to support. Western governments tend to hesitate to channel funds into projects or areas where the money might not be used for its supposed official purpose.

Barber and Bowie (2008) discuss that NGOs must act on wishes from private donors in order to keep the finances coming their way, as often is the case with government funding as well. According to them, the donor demands are the "impetus", rather than the situation in wherever they are working. For instance, distorting local markets, participating in activities inconsistent with government policy, or removing key program staff are things that NGOs might have to do because the donor insists, and to argue would result in withdrawal of support and funding. It is especially easy to get into these situations with international NGOs, as the people running the programs aren't familiar with the local situation and implications. They often run programs from abroad without a true sense of what consequences their actions will bring. Indeed the "good intentions" are there, but international donors and governments would benefit from getting a local point of view before they put their support on the line.

SUGGESTIONS FOR A SUCCESSFUL NGO

Despite the ongoing debate about whether NGOs are truly succeeding in their agendas or not, there is a consensus that "conservation NGOs are basically forces for good doing their best in difficult circumstances" (Brockington & Scholfield, 2010). Some critics fail to address negative impacts, believing that any intervention is better than none. Some critics cannot see past any shortcomings, believing the entire big-picture must be considered to really make a positive difference. Several critics have, however, envisioned several ways that NGOs can learn from their mistakes and do better. Martin Barber and Cameron Bowie (2008) discuss six prescriptions NGOs should consider applying.

The first prescription is good donorship. Often, shortfalls from NGOs can be blamed on the fact that when donors give direction, they don't necessarily understand the potential implications or consequences. Educating donors about every aspect of a project/program can dissuade them from forcing NGOs to go in an unhelpful direction. The next prescription they suggest is working together. Although NGOs participate in conferences, in general NGOs each have their own agenda with their own results and reports. They do not coordinate efforts or make solid efforts to work towards a common goal by pulling resources. Thirdly, the authors suggest being predictable by prioritizing consistency and reliability. Including back-out clauses and long-term commitments into a project contract between donor and NGO could mitigate potential chaos. The fourth prescription, stressed not only by these authors but many others, is paying national staff. National staff are underpaid (if paid at all) which doesn't make the job very appealing, especially to people who are from poor communities in need of a source of income. This is a more difficult prescription, however, because it would be hard to determine who decides upon wages. Poor or corrupt governments, or those that don't have conservation high on their agenda, might also be unwilling or unable to pay these wages. The next prescription offered is building national capacity. Building capacity and educating locals to the point where they can fully run operations is the most effective way to simultaneously tackle socio-economic development with conservation efforts. Lastly, the authors suggest limiting donor visits and reports to ensure well thought-out reports, with more longer-term effects to present.

Thomas Struhsacker (2005) has similar prescriptions, as well as a couple different ones. These additional prescriptions are not necessarily factors that an NGO can change within themselves, but they could absolutely take steps in advocating for governments, the public, and other organizations to make them happen.

Struhsacker suggests strengthening public support. If the local populations are against an NGO for whatever reason, they might either try to impede/undermine their efforts or provide no support or helpful resources. It is far more effective when locals have a positive attitude towards outside organizations. Struhsacker mentions that positive attitude towards PAs by neighboring communities was the strongest correlate of PA success (although it was undetermined how the attitude was developed exactly). Secondly, Struhsacker suggests effective law enforcement for effective efforts. This is another prescription mentioned by numerous critics. Effective (and paid) law enforcement are at the forefront of preventing criminal activity within parks and PAs with the ability to hold people accountable for criminal actions. Low human densities around PAs is third on this list, and although it might not always be a plausible prescription, in theory, it would be better to not populate the boundaries of PAs with humans. This prevents animals from wondering into human areas and either getting taken or returning to their population with a communicable disease. It also prevents humans from easily wandering into a park or PA. The last prescription is that PAs be surrounded by large similar habitat. This coincides with the previous prescription. Having a large area of similar biodiversity surrounding official boundaries of parks and PAs allows any animal or plant species wandering outside of the borders to remain in a safe area. It is also noteworthy that many critics mention funding for PAs doesn't typically include outside of the borders, but ecosystems and biodiversity does extend borders and need a form of protection.

Many of these prescriptions are specific steps that each individual NGO would have to consider and implement. They all, in theory, seem like a sufficient way to ensure a successful plan of action which yields the best results. However, any organization can only do so much in the political and socio-economic environment

which surrounds it. There are a handful of other ideas for maximizing success that are not exactly in the hands of NGOs. David Western (2003) discusses ideas like political and economic reform, improved educational standards, reduced poverty, and better job prospects as ways to improve NGOs. It is no secret that conservation agendas tend to put placed on the backburner when other issues like human development is at hand. Conservation efforts get postponed or forgotten when healthcare and infrastructure are immediate needs. The reforms which Western mentioned are a continuous effort and battle in these countries currently, but without doubt impede efforts of conservation.

Rosaleen Duffy (2010) echoes this idea, bringing up that some of the main imminent threats to gorillas are the never-ending wars, rebels, and militias. She mentions instances where groups of gorillas are killed and left dead on the forest floor just to send messages to conservation groups that they are not welcome in their territories. Militias violently fight for power over land and resources, such as conflict minerals/gemstones (hence the name), and trophy animals. These groups are huge obstacles to conservation efforts, but unfortunately small groups of conservationists are no matches for large, armed groups raised in war-torn situations. Duffy also discusses that in order to truly be "on the front line" of conservation issues, it is not enough to condemn these violent groups. Worldwide consumers are equally to blame, as they're the ones who demand the product. Unfortunately, even with the formerly-mentioned NGO-based prescriptions, there are still many hurdles until these reforms can see a success themselves.

David Western (2003) suggests that one-way international aid itself creates problems in underdeveloped nations. Foreign aid creates a sense of dependency and unilateral relationships. This relationship should be looked at as an international

collaboration rather than international aid. With collaboration as a main goal, everyone involved has a sense of equality rather than a formerly colonized nation allowing another group of foreigners to make demands within their nation. In reciprocation for funds and support, receiving communities can offer traditional knowledge, experience, and skills that can benefit policy and direction worldwide. Collaboration can focus multilaterally on weaknesses and strengths, using all the collective information to make decisions.

All good, all bad, or somewhere in between, there is no doubt about the imprint conservation NGOs have left on the world for near a century. Many authors on the subject conclude that NGOs have at least given a voice to millions of people around the world, bringing conservation and environmental issues to an international agenda. They are changing the way governments make policies, and indeed often have a strong say in those policies to begin with. Is it possible to revamp the way conservation NGOs are globally ran and viewed to where they are all-around successful?

CHAPTER THREE: METHODOLOGY

Humans are undoubtedly causing rapid extinction rates and extreme losses of wildlife and habitats. This study will look into whether socioeconomic development inescapably equals these extreme extinction rates in biodiversity, as we have witnessed in the past, or whether humankind can prevent such losses. With the growing presence and interference of NGOs, can decreasing numbers be stopped/reversed? Are NGOs helping or hurting the issue? In determining this, we examine the efforts put forth by organizations in both mitigating the problem and reversing it. Perhaps the most important in these steps is understanding the problem in the first place. An organization can identify a crisis and take steps to fix it, however it is crucial that they understand the root of the problem so to avoid a vicious cycle of back-and-forth results.

In this study, the focus is on the great apes of Africa. Although these great apes are found in only one small corner of the world and comprise just one family of species, narrowing down the focus specifically to them could pinpoint certain successful conservation factors that could apply to many more species interlinked in the web of biodiversity. If these ape protection organizations show significant signs of succeeding in reversing their critical condition, it sends a message of hope around the globe that with awareness of the situation and conscious efforts, development and conservation efforts do not have to undercut one another.

Non-government organizations have proven themselves as prominent institutions over the past century. They are arguably as influential of a player as governments and governmental organizations in dealing with world-wide issues. This study aims to analyze NGOs in order to measure their level of capability, hoping to

answer the question of whether they can prevent severe losses of biodiversity. Eight specific ape-focused NGOs will be evaluated for an in-depth analysis of their capacity and potential. In addition, three separate case studies will be discussed. These case studies involve ape and conservation NGOs and highlight the potential that could come out of NGO cooperation.

In an attempt to provide a quantitative measurement to NGO capacity and "success", local economic growth, the number and scale of people affected, and the number of wildlife and habitat area affected will be assessed. These measurements are taken from projects an NGO has undertaken, with consideration if these projects were part of an original plan or if the NGO's capacity has been able to grow and expand. Conservation success is dependent on its ability to coincide with socioeconomic development, where the two complement each other's efforts. Conservation organizations should realize this strategy in order to gain momentum and results for their cause.

FRAMEWORK OF STUDY

For this study, all information is pulled out of the articles and websites listed in the bibliography. No new information, such as from interviews, is presented. This section describes the framework in which each be analyzed, to determine if its efforts are indeed yielding quantitative positive results while addressing the negative arguments presented by critics. The framework also searches for whether any of the prescriptions and suggestions for a successful NGO, discussed in the literature review, have been realized and incorporated into each NGO's policy. "Success" of an NGO will be based on its ability to augment its surrounding economy, involve local

people, empower and inspire communities to indulge in projects, improve the health and education standards, in addition to working to preserve land and animals. This suggests a balance of conservation and development must be obviously present. The following list presents questions and information this study aims to assess. There are brief descriptions about why this sort of information is relevant to measuring efficacy.

1) Length of activity and original purpose.

   One factor in assessing NGOs is their length of activity. This doesn't mean newer NGOs are not successful, simply that older NGOs are doing things right if they're still in business. Do they remain focused solely on their original mission or have they expanded to other projects as well? Is this due to an increased capacity to multitask or is this due to the realization of underlying factors that must first be addressed? Ability to multitask projects shows an increased capacity with increased financial, technical, and human resources. The realization that these underlying issues exist shows ability to evolve with community-based programs to solve many issues.

2) How does an NGO's project(s) affect the local community?

   Public opinion arises from how a project will affect people's daily lives. Are conservation efforts coming at the expense of traditional livelihoods? Are conservation efforts undercutting socioeconomical development projects in the community, or, are they contributing jobs and money into the economy? In achieving the capacity to produce local jobs, are these jobs good enough to divert illegal businesses? Illegal jobs are often taken up as the best paying means to support families. Are tools and resources available for local African people to indulge in business opportunities brought about by NGOs that will

eventually be self-sustaining? Will NGOs make sure these resources are available?

Is the community involved in both the decision-making and execution processes? This especially is an important factor to look at. If outside decisions are being made that are deemed highly unpopular within a community, there will be resistance to any project, resulting in a struggle for rights and power. Public opinion will also be strongly influenced by maintaining freedom and power in addition to positive socioeconomic contributions. Communities are often eager and open to development projects but shouldn't have to lose their sense of identity or independence.

3) Do NGOs have any relationship with the government(s)?

NGOs can provide a significant amount of information to a local government, state government, or inter-governmental agency such as the United Nations. It is important to look at If governments are receptive to an NGO's capability. With enough helpful information, NGOs can sway government policies as leaders in this sort of information that a government might not otherwise be aware of. Three factors to look for are whether governments look to an NGO for policy/procedure advise and feedback, whether governments share information and collaborate with NGOs regarding active projects, and what is an NGO's relationship to local law enforcement?

4) Are any of the previously discussed prescriptions for improvements or suggestions for success found implemented in any NGO?

The presence of any of these suggestions shows an NGO's capability to adapt needs and evolve their goals. In evolving their goals, there is a better chance of seeing positive opinions, as an NGO would be identifying underlying

factors. This would also show that several negative critiques of NGOs could be outdated concerns.

Questions so far have focused more on the social aspect of conservation efforts. Some results are more subjective, as they are based on observed relationships. The more objective results with quantitative measurements are based on growth and development of both the NGO and the local communities/nations they affect. Quantitative measurements are determined by an NGO's annual capacity of growth in financial, technical, and human resources. The first section of questions focuses more so on what an NGO is doing, how they're doing it, and who is involved. The next set of question focuses on land and wildlife data.

1) Where exactly do NGOs operate?

This section looks at answering numerous questions regarding the land on which an NGO works. Is this land area within a National Park/Protected area, is it limited to where apes are found, or do NGOs work in a vast region that supports both current habitat and potential habitat? Do NGOs work internationally? Both the ability to conduct international programs and the ability to increase active working area suggests they have higher capabilities and more resources.

Another significant factor in measuring success is looking at an NGO's relationship with surrounding deforestation issues. First, it should be determined whether deforestation is an immediate threat to the surrounding area. Are NGOs attempting to reach their goals while also battling legal deforestation and other land degradation? Has their presence caused any difference to the annual impact of land degradation? Are NGOs capable of

working with extractive companies in creating a sustainable solution with minimal impact on wildlife?

2) How has the number of apes changed due to NGO interference?

Since NGO presence in an area, have nearby ape populations increased, decreased, or remained the same? Have the number of apes seen a significant growth due to rescue and rehabilitation methods? Do NGOs place importance on re-releasing rescues back into the forests after rehabilitation? What techniques, such as veterinary intervention and eco-monitoring, show significant results? The overall variation in numbers might have a lot of contributing factors, so this study will take into consideration any increase that can be attributed to any NGO interference.

Identifying key factors in a significant increase or decrease is crucial to possibly using the same framework (or not) in applying conservation efforts to other species of biodiversity. It could be possible to incorporate methods into a global agenda. Some factors, however, may prove successful only under certain circumstances.

These questions will be researched using official websites of the NGOs in question. Any reports, including financial and activity reports, along with third-party observations and publications will also be considered in order to construct an accurate as possible big picture of the NGOs.

LIST OF CASE STUDIES

In addition to discussing individual NGOs and their scale of impact, three unique case studies will be examined. These case studies, though not solely NGO-oriented, present NGO involvement in three different situations. The three situations discussed are three of the top issues for wildlife conservation. In each case, it is important to examine what an NGO has done for the situation and what information can be taken from the studies. This information can be useful in creating policies for similar situations. The case studies include:

1) Virunga mountain gorillas

   The case study of the Virunga mountain gorillas describes the difference between extreme conservation methods and conventional methods. It explains why going beyond conventional methods is necessary and describes the roles that several NGOs have played and continue to play.

2) Gombe (and Taï) chimpanzees

   The study of the Gombe and Taï chimpanzees highlights the spread of disease among their populations. It discusses how disease spread and habituation is dealt with, and also why habituation of apes is both dangerous and helpful. NGOs are also prominent in this research.

3) Congo Basin area chimpanzees and gorillas

   The Congo Basin area has a lot of deforestation and hunting activity occurring. The study examines why one is more of a problem than the other while highlighting the need for NGO research to guide government and private business operations to find a sustainable balance. It also looks into

how exploitation affects habitats and ape behavior and how exploitation and hunting are related.

LIST OF NGOS

Listed below are the NGOs that will be focused on during this study. Along with their websites, a brief description of each one is provided. The descriptions state their individual ultimate missions. The goal is that by analyzing each one of these NGOs in depth, it can be proven that the conservation movement and awareness of the present can save the biodiversity of the world. The specifics of each one will be discussed in order to show socioeconomic impacts each NGO is responsible for in addition to its impacts on apes and their habitat.

1) Ape Action Africa
    a. www.apeactionafrica.org
    b. Originally a UK charity operating at a zoo in Cameroon under the name Cameroonian Wildlife Aid Fund (CWAF), this organization's goal was to improve living conditions in the zoo for primates. Their goals and mission expanded greatly, prompting a name change to Ape Action Africa. They currently strive to address immediate threats to chimpanzees and gorillas, search for new territory to include in their protected areas, as well as working with local communities to come up with solutions to these threats. Ape Action Africa provides local education programs to school children encouraging to visit their Mefou Primate Park and protected area.
2) African Wildlife Foundation (AWF)

a. www.awf.org

b. The AWF website states their mission is to "ensure wildlife and wild lands thrive in modern Africa". In addition to wildlife conservation, habitat protection, and community empowerment, the AWF also focuses on economic development and incorporating this into conservation methods and research to ensure sustainability. Although its headquarters is located in Kenya, there are offices throughout multiple African countries as well as one in Washington D.C., USA.

3) Bonobo Conservation Initiative (BCI)

a. www.bonobo.org

b. The BCI has headquarters in both Washinton D.C., USA and the Congo Basin in DRC. Their mission is protecting bonobos and their habitat as well as empowering local communities. Their approach to conservation is the belief that local leadership is the most effective path and stresses the importance of connected networks of community-managed reserves. Through their project, the Bonobo Peace Forest, they are able to integrate community development into conservation processes.

4) Chimpanzee Conservation Center (CCC)

a. www.projetprimates.com/chimpanzee-conservation-center

b. The CCC is a sanctuary located within the Haut Niger National Park in Guinea. Originally funded by the European Union, the sanctuary has had a rocky road to remain in business. Project Primate was established in France, while a local branch is in the works for opening in Guinea to provide support for the CCC. The goals of Project Primate and the CCC include rescuing, rehabilitating, and re-releasing

chimpanzees back into the wild. They also campaign to raise awareness on the issue and provide educational information regarding chimpanzees.

5) Dian Fossey Gorilla Fund (DFGF)
    a. www.gorillafund.org
    b. Dian Fossey dedicated and lost her life over her dedication to gorillas in Rwanda. This institute carries out her legacy of direct and daily protection of gorillas and their habitat, scientific research, educating scientists and conservationists, and helping local people with their basic needs thus enabling them to join conservation efforts. The brand-new Ellen Degeneres campus will now house Fossey's 50-year-old Karisoke Research Center out of which most activities are based.
6) Jane Goodall Institute (JGI)
    a. www.janegoodall.org
    b. Founded by world renowned chimpanzee conservationist Dr. Jane Goodall, this organization strives to empower local communities in improving the lives of people, animals, and the environment. Goodall and her institute are firm believers in the interconnectedness of all three of these areas of biodiversity. Their community-centered conservation approach focuses on these nine strategies: conservation science, advocacy, protecting great apes, public awareness and environmental education, healthy habitats, Roots and Shoots youth leadership programs, gender/health and conservation, research, and sustainable livelihoods.
7) Last Great Ape Organization (LAGA)
    a. www.laga-enforcement.org

b. LAGA is the first wildlife law enforcement NGO in Africa and works closely with governments. This field-based organization initially registered in Israel and operates in Cameroon. Its activities include investigations, field operations, legal assistance, and putting stories and coverage out through various media. LAGA has won various governmental and non-governmental awards for their successful work.

8) Wild Chimpanzee Foundation (WCF)

a. www.wildchimps.org

b. The mission of the WCF is to enhance the survival and habitats of chimpanzee populations. They strive to achieve this goal by empowering local African communities to participate in projects involving research, conservation, and education. WCF runs from Switzerland and Germany, while their projects operate in Guinea, Liberia, and Côte d'Ivoîre.

CHAPTER FOUR: RESULTS

Through dissecting eight separate NGOs, three collaborative information-sharing organizations, and three case studies, the relationship between conservation and development is evident. This is a highly-intertwined relationship, and one cannot exist without the other. The balance must be found to achieve sustainable development, in which wildlife, the environment, and humans alike can all thrive. Dissecting the activities of NGOs while considering each case study shows methods that work in the conservation of a species and highlight factors that must also be considered.

All information discussed in the first two sections of the results chapter is taken from the official websites (listed in the methodology section and bibliography) for each organization unless otherwise stated.

NGO-ALLIANCES AND INFORMATION SHARING ORGANIZATIONS

Great Apes Survival Partnership (GRASP). In 2001, GRASP was launched by the UN to focus on the survival of African apes and Asian orangutans in addition to their habitat. GRASP is a multilateral organization, involving other UN agencies, national governments, conservation NGOs, research institutions, and private sector contributors. As a 'Type II' partnership within the UN, all parties involved have equal voting power.

There are twenty-one 'range-states' (meaning that apes are found in these states) in Africa and two in Asia, all of which are involved in GRASP. The GRASP website

provides links to each of these countries that provide information regarding apes in each country. There are also several 'non-range state' partners. These include the European Union and individual national governments from Europe and the US. There is an extensive list of partnered NGOs available which include the AWF, BCI, DFGF, the EAGLE network, JGI, PASA, and the WCF (all of which are discussed below). CITES, the IUCN, and several zoos worldwide are involved as well.

This cooperative multilateral global organization concentrates on all factors related to ensuring a future for great apes. GRASP is involved in political advocacy, conflict-sensitive conservation, habitat protection, promoting a green economy, disease monitoring, and illegal trade. GRASP has published several books and other publications, from *The World Atlas of Great Apes and Their Conservation* (2015) to publications that highlight specific problems.

Pan African Sanctuary Alliance (PASA). PASA was created in 2000 with the intent to assist the growing number of ape and primate rescue/rehabilitation sanctuaries with communication and networking amongst themselves. Sanctuary directors acknowledged the lack of communication and information sharing, and after an initial meeting together for the first time, created PASA. PASA is the largest association of wildlife centers in Africa, currently including 23 sanctuaries in 13 countries. They have expanded their purpose from communication and networking to also strengthening members' capacity, establishing high standards for members, crisis response, and law enforcement. This alliance is an internationally high-level advocate, providing support for all their members. PASA collaborates with law enforcement agencies and governments in patrolling protected areas and critical habitats, creating new protected areas, and providing conservation education.

PASA makes a huge effort to reach out to every single member and ensure they all have access to the same vital information. For instance, PASA has a 'Primate Care Training Program', where instructors visit and give each member customized, hands-on training to maximize the daily quality of life of all apes and primates in a sanctuary. Veterinary supplies and medications are donated to PASA members. In addition, PASA provides consultations and emergency support.

PASA also organizes and funds a 'Strategic Development Conference' each year. As sanctuaries often cannot afford the expenses for international conferences, PASA provides the funds for one person per member organization to attend the annual conference. This allows each member organization to obtain information, capacity building, training, etc. that would otherwise be unknown due to absence. Organizations can discuss challenges and solutions among an endless number of other topics.

Overall, PASA uses a system of operational, veterinary, welfare, and conservation standards to hold members accountable and keep their standards high. They provide accreditation and credibility through PASA-certified members. PASA also functions to insure and protect their members. They respond to crises of all sizes. From small-scale crises such a fire or building collapse, to large-scale crises such as military conflict in the region, natural disasters, or disease outbreaks, PASA acts fast to ensure a rapid recovery. They send the financial, technical, and human resources to affected members until they are able to get back up and running properly.

Law enforcement has become a large part of PASA's duties. PASA works closely with law enforcement agencies in the capture and detainment of poachers and wildlife traffickers. PASA collaborates with local authorities in patrolling

ape/primate habitat, and around 75% of PASA members partake in patrol duty as well. PASA and the individual members have a strong capacity and credibility in influencing national and international laws.

Ape Action Africa and the Chimpanzee Conservation Center are two PASA-certified members which will be discussed further on. The PASA website provides full annual reports, financial reports, and project reports/manuals to further information transparency. A few accomplishments from the 2017-2018 census report include:

1) Several PASA members completed infrastructure projects greatly increasing their capacity.

2) Two/thirds of members developed or update strategic plans which have resulted in various general improvements and a more cohesive team.

3) 216 primates were rescued from illegal activities.

4) Around 3,300 animals are receiving high-quality, long-term care (most of which are apes and monkeys)

5) 107 primates were released back into the wild, with 184 releases planned for the near future.

6) 60% of members monitor primate populations within the wild.

7) 87% of members have education programs, reaching over 500,000 people each year.

8) Over 22,000 people in 240 communities participate in PASA member activities and community development.

9) Over 80% of PASA staff members are from local African communities.

10) PASA members generate over US$5 million each year for local economies.

Conservation Evidence/What Works in Conservation. The regularly updated online journal *Conservation Evidence* and its counterpart, the annually published journal, *What Works in Conservation* (also archived on the website), is a collected series of published conservation interventions in which experts assess what "works" and what "doesn't work". Panels of experts, independent from any project, look at interventions and determine their effectiveness and negative side effects. These experts rate interventions of a scale from "beneficial", to "unknown effectiveness", to "harmful", and compile all data into a single database. This database is publicly available as a way to share information in order to inform and maximize effectiveness for any prospective conservation project. This project is based out of the University of Cambridge and was created by William J. Sutherland and Rebecca Smith. It has a global network of contributors. Contributors take information from scholarly journals on conservation in addition to unpublished literature and specialist journals. Currently, studies from over 200 journals have been included. With their free-to-publish, free-to-read, easy-to-use database, their tagline is stated as "providing evidence to improve practice".

The website allows viewers to pick certain categories such as 'primate conservation' or 'forest conservation'. Or the viewer can be more specific, such as searching 'chimpanzees'. Under the 'chimpanzee' search, there are currently 37 separate 'actions' that have been dissected, cross-referenced, and rated by independent analysts. For example, the action "implement community control of patrolling, banning hunting and removing snares" is rated 'likely to be beneficial', based on three studies which were reviewed. The 'gorilla' section has 48 studied

'actions'. For example, "Run tourist projects and ensure permanent human presence at site" is rated as 'a trade-off between benefits and harms', based on eight studies.

INDIVIDUAL NGO INFORMATION

Ape Action Africa (AAA)

Length of Activity and Evolution of Purpose:

Ape Action Africa began in 1996 under the name Cameroon Wildlife Aid Fund (CWAF) as a UK charity and in collaboration with the Bristol Zoo. The original goal of CWAF was to improve living conditions for apes and monkeys living at Mvog Betsi Zoo in Yaounde, Cameroon. After its beginning, CWAF's mission evolved to acquiring and providing sanctuary for orphaned primates due to pet trafficking and bushmeat trade. In 2000, a second sanctuary site was created within Mefou National Park (Farmer, Courage 2008). In 2009, CWAF decided to change their name to promote their evolved goals—Ape Action Africa. Ape Action Africa currently has a base in both the UK and the US. As a PASA-certified organization that is supported by zoos worldwide, their goals now are listed as:

1) To provide sanctuary for individual, endangered primates orphaned by the illegal bushmeat and pet trades.

2) To actively rescue orphaned primates, providing rehabilitation and long-term care in a protected environment.

3) To work closely with the Cameroonian people to protect their natural heritage through education and social support.

Community Presence:

Ape Action Africa currently only employs local Cameroonians as their education officers, keepers, and construction workers. Providing job opportunities to locals with living wages dissuades significant amounts of hunting and bribery. One of the main reasons behind the popularity of indulging in the illegal bushmeat industry, among other illegal activities, is the high price it brings. Over 2.6 million Cameroonians live on less than US$1 per day, and the bushmeat trade can bring in as much as almost US$50 per day to each hunter (Peh, 2008). It is imperative to provide local people with a better incentive than the illegal activities can, and AAA works to help communities develop self-sustaining alternatives to earn income.

AAA values an active education program and stresses that the future of apes lies within the hand of children today. They consider their education program to be fundamental to the program and have a very active role in teaching local children about the bushmeat trade, deforestation, and environmental issues. AAA education officers visit school, run nature clubs, and promote awareness by art activities, planting trees, etc. with the children. They also run education centers at both the Mvog Betsi Zoo and in the Mefou Park. In addition to their website, AAA runs a YouTube channel. Although AAA was originally focused on captive ape habitats, it appears as though their focus has significantly shifted over the past couple decades. They still prioritize the apes and their conditions in the Mvog Betsi Zoo and the Mefou sanctuary, however it appears as though conservation education is an equally top priority.

Relationship with Government:

AAA works with the Cameroonian government in addressing the need for environmental conservation. Deforestation and the bushmeat trade are the two main issues within Cameroon. AAA works with law enforcement and the national

government in providing assistance in the arrests and prosecution of wildlife traffickers.

Where They Work and Impact on Apes:

AAA originally focused on improving captive habitats at the Mvog Betsi Zoo. As they continued increasing the number of apes they took in, they provided a consistent construction job for locals for two years beginning in 2009, hand-building Mefou's largest-ever ape enclosure within Mefou National Park and Wildlife Reserve. (funded by the US embassy). This sanctuary is currently one of the largest conservation projects of its kind in Africa. The previous enclosure was degraded and contributed to disease between gorillas due to proximity to humans, so this was essential to the well-being of numerous apes in addition to the ever-growing numbers. AAA Now runs the Mefou Primate Park/Sanctuary, while continuing to advocate for better habitats in nearby zoos.

The official website states that there are over 350 primates living at the sanctuary, including 110 chimpanzees and 20 gorillas. There is an extensive photo gallery of the primates and primate activities within the sanctuary, allowing visiting to get to know each one individually.

Additional Noteworthy Information:

On the website, there is a news archive listed by year. Similar to the WCF and the CCC, however, the records are incomplete and only list 2008-2015. There is no mention of the years before or after. This news archive is also more of a regular update on the apes and monkeys living within the sanctuary than an update on the organization or their other projects, such as education initiatives, or any new goals.

They do mention financial donations and regularly suggest to website visitors the importance of individual donations and where/how to do so.

It has been difficult to obtain information about Mefou National Park. Website searches lead to the AAA website, which has no statistical information regarding the wildlife or the forest. Web searches also seem to just lead to travel websites, such as Trip Advisor. These offer the briefest of descriptions and comments from visitors. This organization mentions intention to rehabilitate primates to potentially be released into the wild, however there is no mention of whether this is a priority, any proposed steps towards making this happen, any ability or intention to monitor released primates, if there are any release sites, or if they have made any attempts (successful or not). Although AAA is a PASA organization who does work closely with some zoos and other organizations, therefore information exchanges between them certainly exists, this information would serve better as public knowledge as well. If the Mefou National Park website is one and the same as Ape Action Africa, there should be a section on the website allowing viewers to obtain information such as park size, park age, biodiversity within the park, any significant changes AAA presence has caused within the park, guards, etc.

African Wildlife Foundation (AWF)

Length of Activity and Evolution of Purpose:

The African Wildlife Foundation was founded in 1961, under the name African Wildlife Leadership Foundation, Inc. It is the oldest and largest international conservation organization focuses solely on Africa. Their mission is "to ensure that wildlife and wildlands thrive in modern Africa". AWF works locally, nationally, and

internationally with active projects in 17 sub-Saharan countries. Their main headquarters are located in Kenya and they have offices throughout Africa, Europe, and North America. AWF focuses on "key" African species (14 populations of African elephants, 10 rhino populations, 9 large carnivore populations including lions, cheetahs, wild dogs/wolves, and 9 subspecies of African great apes). They hold the belief that development in Africa is a good thing, as long as it is done so sustainably with an awareness of biodiversity conservation.

AWF believes that conservation must be done at a large-scale level rather than focusing exclusively on small, local projects or single species. They state their approach to conservation as:

1) Targeting large areas of land that extend beyond single parks, even national boundaries.

2) Implementing a variety of conservation initiatives, all of which are centered around three specific areas: land, wildlife, and people (including education and enterprise).

3) Incorporating climate change adaptation and mitigation efforts into projects.

4) Working with governmental partners and regional bodies to effect policy change.

Community Presence:

In 2015, the UN created a list of Sustainable Development Goals (SDGs) designed to significantly improve environmental and socioeconomic conditions by 2030. AWF has worked with similar goals for decades before the UN's official announcement of SDGs; however, since their official 2015 declaration, AWF has

reviewed their programs in order to strongly align with these SDGs. The AWF website provides a list of SDGs which they are working towards and specific goals for each project. Some of these SDGs include No Poverty, Zero Hunger, and Clean Water & Sanitation, however the goal they put most emphasis on is Life on Land. Deemed their "core business", their Life on Land statement reads,

> "AWF advocates for natural resource conservation, mobilizes resources for wildlife and wildland conservation, promotes sustainable use of land resources and management of natural resources, supports legal frameworks for fighting illegal exploitation and trafficking of wildlife, and implements and supports natural resource conservation activities".

The AWF opened the Sabyinyo Silverback Lodge in Rwanda which has since generated US$2.9 million since 2007. This lodge is run by Rwandans and has significantly improved local livelihoods, and in turn, support for gorilla conservation. In the DRC, the AWF has helped increase local incomes by 250% with a river transportation project connecting remote villages to new markets, along with spreading knowledge on sustainable farming and agriculture in order to decrease bushmeat hunting and deforestation. In Uganda, the AWF taught local farmers how to grow chilies in addition to their usual crops. This caused farmers' income to more than double. They began selling to local markets as well as solve their problem of constant crop raids by elephants (the chilies emit a smell that repulses the elephants). With a strong influence in African education programs, primary schools are at an 89% attendance rate.

Relationship with Government:

The AWF recognizes the dire threat of illegal wildlife trafficking and has been working against it since its inception. Like LAGA, they claim numerous achievements in this sector, and have donated over US$5 million over the past five years to combat illegal poaching

In their Canines for Conservation initiative, 33 canines and 45 handlers have been trained for illegal product detection in several sub-Saharan countries' wildlife protection agencies. Focusing on ports of exit and entry, arrests and detections have significantly grown. To date, there have been over 250 seizures, including an attempt at a one-ton ivory smuggle through a sea port. Tanzania reports almost no more attempts at ivory smuggling, after over 25 seizures.

The AWF strives to strengthen judicial and prosecutorial involvement. To date, 26 judicial and prosecutorial training workshops have been completed throughout sub-Saharan Africa, at both regional and national level. Over 1,000 judicial, customs, forest and wildlife, anti-corruption, and police officers have been trained as well as prosecutors, air and sea port authorities, and even other NGOs.

The AWF believes improving legislation for wildlife laws is key to putting an end to illegal trafficking and activities. They work with governments to analyze and amend laws. Kenya has already amended national laws with the AWF's guidance, while Uganda is in the process.

The trade relationship between Africa and China have been prioritized. The AWF has worked with China and its authorities since 2012 in decreasing the demand for rhino and elephant ivory. They initiate public awareness campaigns, often celebrity-endorsed, which have so far been proven successful in lowering Chinese

tolerance towards the product. China announced a 2018 plan to officially shut down its domestic ivory trade, and as a result has reported an 80% decline in seizures.

Making huge strides in government partnerships and collaboration, the AWF has also signed a partnership with the African Union (AU) and integrated their initiatives into the AU's final development vision document for 2063. They also work closely with African heads of state for collaborating efforts in economic and education issues.

Where They Work and Impact on Apes:

The mountain gorilla population has almost doubled in the last few decades within their area of activity. Less than a decade ago, the AWF established a project called the 'African Apes Initiative' (AAI). With most of the focus prioritized to West and Central Africa, AAI strives to:

1) Identify landscapes to sustain long-term populations of apes.
2) Work with partners to conserve these ecosystems.
3) Prioritize ape habitats most in need.
    a. Based on immediate level of threat and capability of working with certain ground partners and local communities.
4) Work with other NGOs, researchers, authorities, and other partners to identify any challenge to any conservation initiatives and decide steps to address challenges.
5) Provide technical support for critical time-sensitive projects while determining potential long-term efforts are necessary.

6) Implement long-term strategy using knowledge and data gathered from specific intervention sites and is customized for specific threats of specific locations.

So far, AAI has launched three projects. All projects provide jobs to local community members, hired to protect the reserves and biodiversity as well as monitor wildlife using ecological tracking tools.

In the DRC, AAI worked in collaboration with Congolese authorities in creating the Lomako-Yokokala Fauna Reserve. This is a 3,625 square kilometer protected area and a scientific research center that is home to an estimated 1,000 bonobos. In Senegal, AAI provides ecological-monitoring training for authorities within the Niokolo-Koba National Park as part of a plan to construct an anti-poaching strategy. This park is home to a specific population of western chimpanzees. Their Cameroon initiative in the Dja Biosphere Reserve, has the same model and goals as its Senegalese counterpart. The region is home to central chimpanzees and western lowland gorillas.

Additional Noteworthy Information:

As the AWF is not solely ape-focused, they have made some outstanding progress on other species and focuses as well. Ten out of the 14 populations of elephants supported (71%) are stable or increasing. All 10 populations of rhino supported (100%) are stable or increasing, with reductions in poaching since 2015. Seven out of the 9 populations of carnivores supported (78%) are stable or increasing. Human–wildlife conflicts in landscapes where the AWF works have significantly decreased. Conservation enterprises supported by the AWF have incentivized wildlife protection across the continent in Botswana, Cameroon,

Democratic Republic of Congo, Ethiopia, Kenya, Rwanda, Tanzania, Uganda, Zambia, and Zimbabwe. Elephant killings in a protected area in northern Tanzania has dropped from 20 to 0. There is a 67% drop in the belief that ivory cures cancer (therefore significantly lowering its demand/value).

The AWF publishes scientific books, papers, and handouts for public use in order to shed as much light as possible on the issues they aim to solve, available for global information consumption. Their annual reports, available on their website, discuss in depth their accomplishments, current projects, and future goals. The reports discuss the millions of dollars that AWF economic initiatives have put into local and national economies.

The AWF annual reports list an incredibly extensive record of all donors, partners, and contributors of any way. They also provide public audits with a financial breakdown of activities that describe how their donor money is generally spent. They claim a high rating with both Charity Navigator and the Better Business Bureau for fiscal responsibility.

Bonobo Conservation Initiative (BCI)

Length of Activity and Evolution of Purpose:

Headquartered in both the USA and the DRC, the Bonobo Conservation Initiative is the only international organization focused solely on the great ape subspecies of bonobos. BCI was founded in 1998 by Sally Jewell Coxe during the incredibly destructive midst of the Congo War. The war destroyed infrastructure, and therefore left communities without access to many necessities which promoted a highly environmentally unsustainable lifestyle. By 2002, Coxe had taken her second

trip to the DRC and formed a collaboration with Dr. Mwanza Ndunda, director of CREF (the Congolese ecological research center), and Albert Lokasola, director of the local NGO Vie Sauvage/member of DRC Parliament since 2011. They conducted area studies and were able to identify a handful of bonobo groups, realizing that active conservation efforts were imperative. After meeting with local conservationists and scientists, the three understood that local communities were highly against the idea of a national park where their voices and traditions would be lost. They conceptualized what would become the Bonobo Peace Forest, where local communities would remain as they are, yet connect to one another and have the support required for a sustainable development agenda. The overall mission of BCI is to protect bonobos, preserve their habitat, and empower communities within the Congo Basin area.

Community Presence:

The BCI works towards their goals through their Bonobo Peace Forest initiative. This is a collaborative interconnected network of reserves and villages inspired by bonobos' natural range of habitat and cooperation among their species. The Peace Forest is geared towards helping the situations of bonobos and humans alike. It protects from habitat destruction and other threats. Their stand on conservation is that local leadership is critical for the success of conservation efforts and that the socio-economic factors of nearby humans play a critical role in the conservation of the environment. All villages within this protected area operate on a conservation-centered way of life, promoted by a handful of NGOs, local partners, and the national government. Numerous community development projects have been initiated.

The first Congolese university of its kind was founded within the Peace Forest—Djolu Technical College/Institut Superieur de Developpement Rurale (ISDR-Djolu). As a collaborate between BCI, Vie Sauvage, and regional authorities, it is the only high-learning institute within 100,000km. It was founded in 2003 and nationally accredited in 2012. ISDR teaches conservation management, sustainable agriculture, and micro-enterprise development. Students have participated in scientific studies with BCI, Harvard University, the Max Planck Institute.

Sustainable development has a high priority for the BCI and the Peace Forest. Sustainable agriculture is a priority to dissuade the bushmeat trade and avoid land degradation. ISDR students and graduates cooperate daily with local communities and farmers to promote sustainable practices.

BCI develops business opportunities to grow the local economy. They provide material support, micro-credit programs, and training to local businesses and entrepreneurs. As bonobos have a matriarchal society, BCI is especially involved with women's business efforts. They recognize the disproportionate education rates between men and women and offer management and organizational skill training to women in addition to providing materials to increase capacity of women's small-business initiatives.

Health care was Peace Forest residents' number one stated priority (life expectancy is <50 and child mortality is 1/5, as those living deep within the forests have little to no access to any type of care or medication). A modern healthcare clinic (named Bonobo Clinic) was built in Kokolopori Bonobo Reserve which provides healthcare to over 10,000 people. A goal of BCI is to expand healthcare programs to other communities within in the Peace Forest.

Reforestation programs are also a priority of BCI. Striving towards goals set in the Kyoto Protocol, BCI is working with national and international partners to establish locally-run reforestation projects around the Kokolopori Bonobo Reserve. By investing in this project, which includes conservation, sustainable development, and community services over 25 years, local income will be generated and will actively support Peace Forest activities.

The BCI helped in creating the 'Community Coalition for the Conservation of Bonobos'. This is a legally recognized network of local NGOs and partners to collaborate on conservation goals. The BCI emphasizes that all efforts and accomplishments are the result of highly coordinated efforts and information exchange between people, organizations, or any potential party involved. They seek to spread conservation ethics in addition to both scientific and traditional knowledge throughout the area.

The BCI acknowledges that many people do not know that bonobo hunting and the bushmeat trade are currently illegal. They seek to spread information and awareness to as many communities as possible through education and media campaigns. Media campaigns include collaboration with musicians and other artists. For instance, the BCI originally partnered with two top Congolese musicians. The first is Werrason, known as "King of the Forest". He is the Congo Ambassador for Peace and a highly influential person and philanthropist. Werrason did numerous highly effective radio spots on protecting bonobos. The second is Papa Wemba, a superstar throughout Africa. He is a native of Sankuru and wrote a song about bonobos and the Sankuru Nature Reserve.

Relationship with Government:

Collaboration with local law enforcement has seen a huge impact on bonobo conservation. Where BCI is active, law enforcement is more sensitized towards bonobos and more involved in anti-poaching activities. BCI claims that one of its most influential collaborations has been with the local police of the 241,400 square kilometer region of Mbandaka. Local police were previously unaware of the illegality of bonobo hunting. BCI provided bonobo conservation education to officers, and in return has received support in rescuing bonobos and enforcement of anti-poaching laws.

All rescued bonobos are taken to the Lola Ya Bonobo sanctuary located in Kinshasa. Rescue requires BCI officers to confront poachers, which sometimes will result in dangerous situations. BCI hopes that through law and conservation education and actions, the need to approach poachers and rescue bonobos will significantly decrease.

Where They Work and Impact on Apes:

The Peace Forest encompasses over 193,000 square kilometers in the northern half of the DRC. It includes two officially protected reserves, both beginning at the grassroots level and growing to national level. The Kokolopori Bonobo Reserve was established in 2009 and encompasses over 4,850 square kilometers. It inspired three nearby communities in the Djolu region to independently initiate their own separate reserves and community-led conservation projects which encompass 2,800 additional square kilometers. These sites are located closer to more populated areas, therefore more subject to the bushmeat trade and logging threats. BCI is working to gain these reserves official protected status as well. BCI also provides the technical

tools, training, and conservation centers to empower these communities to succeed in their efforts.

The Sankuru Nature Reserve was established in 2007 and encompasses over 30,570 square kilometers. This is the largest continuous protected area for great apes in the world and is crucial for combatting climate change. Over 660 million tons of carbon are stored within this reserve, which if released (due to deforestation), would be equivalent to 38 million cars for ten whole years. This is the first Congolese protected area to be managed by indigenous people.

In addition to these official reserves, there are also several key sites where bonobos are protected by local people. The Bekala people in Lilungu maintain traditional beliefs which honor bonobos and have been collaborating with BCI and CREF since 2005 to establish an official protected status of their surrounding forest. The female cooperative 'Merci Bonobo' was created after a couple occasions where bonobos raided village crops. This cooperative formed and proceeded to plant crops specifically for bonobos, creating a buffer zone around their own crops that serves solely to feed bonobos, diminishing the inter-species food-battle. Over 100 eco-guards and conservationists are working daily and are highly trained in tracking, data collection, data analysis. Training and materials are provided by BCI.

Currently, scientists from the Max Planck Institute for Evolutionary Anthropology are studying bonobos within Kokolopori in collaboration with locals to measure the impact of the Peace Forest on conservation. Their studies include the first-ever study of the salongo monkey.

In addition to the entirety of areas making up the Peace Forest, BCI also operates in the Lac Tumba region of north-western DRC. At the request of USAID in

2003, BCI as well as several other organizations formed the Congo Basin Forest Partnership. This multilateral organization aims at studying and protecting the region. BCI was brought in to study the presence of bonobos and has since signed agreements with three separate communities to link them together and create community-led bonobo reserves. The bushmeat trade here has traditionally been prominent, although since BCI's presence, over 30 communities have pledged to stop hunting bonobos. Logging and illegal bushmeat trade still pose a huge threat to both the people and bonobos.

Additional Noteworthy Information:

BCI does not currently offer any ecotourism opportunities, however the website mentions the intentions to build on this option. Ecotourism is another vehicle to raise awareness, spread information, foster a sense of care, while also contributing to jobs and the local economy.

The BCI website provides a list of partners and collaborators, including those involved in the Community Coalition for the Conservation of Bonobos. The AWF and the DFGF are among important partners mentioned. Accreditations for BCI include:

1) 2019 Global Giving Top-Ranked Organization
2) 2014/2015 One of the Best Catalog for Philanthropy
3) 2014 finalist of the Buckminster Fuller Challenge Initiative Award
4) Officially endorsed by both UNESCO and the DRC Office of the Kyoto Protocol.
5) The Peace Forest was the subject of award-winning author Deni Béchard's book, *Of Bonobos and Men: A Journey to the Heart of Congo*.

Chimpanzee Conservation Center (CCC) and Project Primates

Length of Activity and Evolution of Purpose:

The CCC was founded by Estelle Raballand in 1997 in collaboration with the recently founded Haut-Niger National Park (HNNP) in Guinea, West Africa. The organization had a rocky and uncertain beginning, and Raballand soon left to pursue chimpanzee projects in Cameroon, leaving the CCC to Janis Carter. It was originally financed by the European Union until 1999. After EU funding stopped, Carter gave the CCC to the Direction Nationale des Eaux et Forêts (DNEF). DNEF's inability to manage the sanctuary lead the Minister of Agriculture to step in and request assistance. Estelle Raballand (who also originally contributed numerous chimpanzees to the organization) returned to Guinea to direct the CCC, managing to raise a small amount of funding. In 2004, Raballand earned the Human Society International's award for Extraordinary Achievement and Commitment. In 2015, Christelle Colin took over the position of director after years of her dedication in the management team.

The original goals of the CCC were stated as:

1) Improve the lives of chimpanzees by building enclosures.
2) Improve the infrastructure by constructing a food room, veterinary room, and a camp for volunteers.
3) Release the chimpanzees after several years of rehabilitation
4) Bring in volunteers to help on site.

As the organization has grown and developed, their current mission is stated as:

1) Rescue orphaned chimpanzees confiscated by the Guinean government and provide the best living conditions.

2) Release chimpanzees, when possible, to the wild after completion of their rehabilitation process (at least 10 years).

3) Educate the local and international community regarding the threats faced by wild chimpanzee populations and raise awareness to prevent illegal wildlife trafficking.

The sanctuary has a team of scientific advisors including Guinean veterinarians and European-based primatologist Tatyana Humle. After spending some time at the CCC, some former French volunteers founded 'Projet Primates'. This association was created to not only help finance the CCC, but bring awareness and education to chimpanzee conservation in France through discussions, presentations, conferences, etc. Project Primates France then inspired the foundation of Project Primates in Seattle, Washington U.S.A. They echo the goal of the French, to raise awareness and offer full support to the CCC and the HNNP. The CCC website is ran through Projet Primate France.

Community Presence:

In addition to chimpanzee conservation, the CCC also plays an important role in the economy. The CCC currently employs two local drivers (as the sanctuary is over four hours away from the nearest big city of Faranah) to drive to villages and obtain food and supplies for the sanctuary. Due to the distance, CCC staff live at the sanctuary. They also employ ten local keepers as well as an ever-changing group of international volunteers. All food and supplies for both chimps and humans at the sanctuary are purchased from local people and villages. It is also the major employer

of the area, not just hiring locals as drivers, keeps, and vets within the sanctuary. In the 2003 annual report, the CCC mentions hiring local people regularly for various maintenance tasks around the sanctuary; for example, six workers were hired for two weeks to create firebreaks, protecting the camps from annual bush fires set by local hunters and farmers every January. Ten workers were hired to fix a road that the HNNP was unable to fund construction for despite it being the responsibility of the park, which is funded by the EU.

There has been a noticeable increase in locally-initiated education and awareness programs around the park in addition to CCC education programs. One significant mention from the 2010 report is the impact a wild chimpanzee had on one village. After receiving reports about the visiting chimpanzee (trying to raid crops) in a small nearby village, a CCC education officer and a volunteer were able to go spend over a week in the village until they saw the chimp, and the community's reaction to the chimp, for themselves. The two people spent time in that village and surrounding villages to explain the importance of both chimpanzee and environmental conservation. The educator reported being very well-received and much appreciated by villages after describing the need for conservation, the implications of both legal and illegal deforestation, and why the hungry chimp was coming to raid crops in the first place. In all of the reports, conservation education appears identified as being on the same level of importance as financial capabilities.

Where They Work and Impact on Apes:

This PASA-certified organization is the only chimpanzee sanctuary in Guinea, created to give orphaned and confiscated chimpanzees a home until they can be released into the wild. Their extensive description of rehabilitation and re-release, in addition to continued monitoring, can be shared among other chimpanzee

organizations in order to maximize cooperative efforts. Being PASA-certified, this information is highly regarded and useful for any potential chimpanzee-focused organization, or any organization struggling to produce positive results.

An extensive survey of multiple locations was conducted to find the perfect release site, without placing them back into a threat-filled environment. The Mafou forest in the HNNP, considered a core area, was selected. After a 1995-1997 reconnaissance survey, this area was deemed "an area of particular interest thought to have a healthy population of chimpanzees" (Ham 1998). This location is also off-limits to visitors and has only one road traversing the core forest area. Criteria for deciding the location of the CCC release site included: habitat suitability, distance from human habitation and settlement (distance to villages and settlements had to exceed 20 km, or if less, access had to be obstructed by natural boundaries), the protection status of the release area and current and future anthropic pressures on the local fauna, chimpanzees, if present, and the habitat, the presence or absence, distribution, and status of wild conspecifics if present, and the potential for long-term survival independently from human assistance.

The CCC began with several chimpanzees being handed over from Veterinarians Without Borders, Estelle Randalland, and a few individual rescues. The organization continues to accept rescued orphans in addition to confiscating victims of the pet trade and rescuing wild babies who have been abandoned or whose mothers fell victim to capture or poaching.

The CCC website and the 2010 article by Tatyana Humle, Estelle Raballand, Christelle Colin, and current manager Matthieu Laurans together provide a strict policy to be followed for a lengthy rehabilitation process in addition to a detailed release report. Chimpanzees at the sanctuary receive four feedings per day and

routine veterinary care. Captive reproduction is not a goal of the CCC, although the birth control administered to females has not always been successful. Upon arrival at the sanctuary, there is a mandatory three-month quarantine for the chimpanzees. While in quarantine, they are provided with around-the-clock monitoring and veterinary care. The orphaned chimpanzees tend to have at least one, if not a few, issues upon arrival. Health issues include skin diseases, respiratory diseases, malnutrition, and abuse. They also potentially suffer psychological trauma due to pre-rescue events. At the end of their quarantine period, the chimps are placed into groups in accordance to their age. Separating them into age groups allows the CCC staff to focus on certain levels of rehabilitation.

The first group is Quarantine/Babies (up to four years old). This group includes the newest additions to the sanctuary, until health standards and social skills are developed enough to graduate into the next group. They receive daily supervised outings into the forest. This introduces babies to climbing trees, foraging for food, socializing with others, learning community dynamics. Staff and volunteer supervisors provide oversight, guidance, reassurance, and encouragement.

The second group is the Nursery (up to six years old). This group consists of long-term members, who have been there at least a few years and have formed group bonds with one another. They share a common enclosure which allows them to sleep together and constantly interact, and still receive daily supervised outings. This allows them to further develop their survival skills, this time with a learned group dynamic and mindset.

The third group is the Small Group (up to ten years old). Chimpanzees in the Small Group have daily access to a large, outdoor enclosure together, similar to a "natural habitat", however they are still monitored and sleep in a designated area.

This improves social learning and group interaction. During forest outings, they display confidence and empowerment. As the supervisors take a more background role, the chimps feel more empowered to search for food, use tools on their own, and improve hunting techniques, thus demonstrating their level of capability.

The last group is the Big Group (over ten years old). This group consists of adults and young adults and is in the process of preparation for release into the wild. The adults and young adults share a five-hectare outdoor enclosure and exhibit strong social ties to one another. The young adults still return to sleeping quarters at night while the adults remain in the outdoor area, able to make and sleep in nests. Human interaction with adults is limited to necessity—either veterinarian care or food related issues.

The rehabilitation process at the CCC takes several years, and all releases must meet requirements set by the IUCN. Group outings consist of six hours each day and is the central focus of rehabilitation, as it allows chimps to gain the skills necessary to feed themselves, find water, avoid danger, and interact in groups. The very first group of chimpanzees, at the sanctuary from the start, were released in 2008.

The first group of released chimpanzees included six males (aged 8-20) and six females (aged 9-19) as a single unit. The group had been rehabilitated together during the past 7-11 years. Each one had been proven completely healthy with a wide range of edible vegetation knowledge and foraging skills. Fake collars had been worn for around a year, to accustom the chimps to wearing them. Upon release, four males and five females were fitted with real collars, some with GPS storage and some with satellite transmission capabilities for monitoring purposes. Financial setbacks prevented the CCC from fitting every chimpanzee with a collar, and from

each collar having satellite capabilities. The post-release monitoring lasted for 27 months. At this time, 9/12 chimpanzees remained living in the wild, three had even joined wild groups and of those, two had given birth. A full report on individual collared chimp activities, along with sightings and speculations for uncollared chimps, is available in the 2010 article by Humle et al. The article also goes into detail to discuss monitoring techniques and checking for normality.

The conclusion from the original release of chimpanzees from the CCC is that it is possible to successfully teach chimps how to live their lives back in the wild from which they were taken as young babies. The project also highlights conservation and the species as a whole in a positive light for all of the HNNP. As of the end of 2016, the CCC has 52 chimpanzees in their care.

Relationship with Government:

There has been an increase in law enforcement activities by local and national authorities who work in collaboration with the CCC (who have been able to stop illegal logging within the park) and a reduction of illegal hunting thanks to CCC staff presence and support from authorities. The 2010 annual report mentions a prominent poacher being arrested, due to collaboration between the CCC and Guinean government. Collaboration between the CCC and the Guinean government is significant, especially after the 2010 election. The CCC participates in all government meetings and discussions regarding conservation and protection of the HNNP.

Additional Noteworthy Information:

It appears the biggest issue this organization has had is financial stability. From its creation, the CCC was passed around with the pursuit of financial stability. The 2003 activity report mentions it being a slow year due to the inability to fund all

projects outlined in their goals. They were unable to fund a series of surveys for potential release sites due to not receiving expected funds from USAID/Guinea. They were also unable to fund vet attendance to a PASA conference, could not hire an education officer or even send a representative to a PASA education workshop, and mention that their education program was almost non-existent due to financial setbacks. Most goals outlined in the annual reports are finding the finances for upkeep and expansion. Despite insufficient funds to accomplish every goal, the 2004 annual report mentions that the CCC is one of the most cost-efficient NGOs in the world, using 95% of its money for operation of the sanctuary. The following annual reports have more promising outlooks. As the mission and accomplishments of the CCC are brought to attention globally, they have been able to gain donors and partners. Every year they are able to hire more people and to expand on current assets. The 2010 report mentions being able to send numerous representatives to PASA conferences and workshops. They also report having the capacity to fund and gain funding for various community development projects, such as healthcare and education programs, in the nearby communities from where they get their food and supplies.

Annual reports are only available, per the website, between the years 2003-2016. Their level of growth is obvious in reading through each of the years. They provide a detailed evolution of their assets and financial capabilities, in addition to a detailed evolution of their sanctuary, team members, and individual chimpanzees. Their goals have evolved from chimpanzee conservation, to community development programs and understanding that community livelihood is a main factor in attitudes and actions toward wildlife. Worldwide donors and partners have increased.

Dian Fossey Gorilla Fund International (DFGF)

Length of Activity and Evolution of Purpose:

In 1967, Dr. Dian Fossey established the Karisoke Research Center in Rwanda. The original mission was to study gorilla ecology, demography, and social organization. Located in the Virunga Mountains at Volcanoes National Park (VNP), this research center prompted one of the longest continuous studies of any single species worldwide. Similar to Jane Goodall's organization, the DFGF uses in integrated approach between governments, communities, and partners. Despite lacking proper facilities, the DFGF has managed for decades to continue its work and expand its projects and resources. Their mission has evolved tremendously and is currently stated as:

1) The direct protection, conservation, and study of gorillas and their habitats
2) Scientific Research
3) Community development programs
4) Educating conservationists

Upon studying gorillas, Dr. Fossey quickly realized that conservation efforts were imperative. Guards at VNP were severely underpaid and underequipped. The bushmeat market and animal product markets were thriving, with countless snares in the forests. Dr. Fossey began paying park staff, confiscating snares, and scaring away poachers by herself in attempts to maintain gorilla populations. She began to campaign for the preservation of gorillas, founding the Digit Fund (named after her favorite gorilla who was murdered by poachers). After Dr. Fossey's own murder, the fund was renamed to the Dian Fossey Gorilla Fund International.

Karisoke continues its work as part of the DFGF. It employs over 100 gorilla trackers which protect about half of the entire gorilla population per day. They have expanded their programs to include community and education programs, as well as research of all biodiversity of the region. The DFGF brings hundreds of local university students to Karisoke each year for field, scientific, and conservation training. Karisoke also holds scientific and conservation meetings and other educational programming.

Relationship with Government:

The Karisoke Research Center employs an anti-poaching unit within VNP to prevent illegal hunting, trapping, and other illegal forest activities such as wood cutting. The DFGF collaborates with the Rwandan government and VNP authorities to seek out illegal activities, monitor wildlife, and adapt nationwide conservation and enforcement efforts.

Community Presence:

Since its conception, Karisoke has not had a permanent or adequate facility to conduct all that it does. It started out in two tents put up by Dr. Fossey and has consistently been relocated to different temporary facilities unable to meet the demands of its goals and activities. In 2018, Ellen DeGeneres and Portia DeRossi established the Ellen DeGeneres Wildlife Fund. As this fund's first project, The Ellen DeGeneres Campus will be built to become the permanent, large, eco-friendly facility for Karisoke right on the edge of VNP. This campus will provide technologically advanced laboratories, classrooms and meeting spaces, housing for visiting students and scientists, an interactive exhibit for students and tourists, etc. This center will be an aid to Rwanda's priority of enhancing natural resource management and

conservation. It is also estimated to create over 1,500 jobs (with 40% being women, 10% of which are in leadership positions), provide US$2 million spent on local labor, and US$2.5 million spent on local materials, thus significantly impacting the Rwandan economy, especially in local communities and in VNP. The campus is expected to open in 2021.

The DFGF and its Karisoke Research Center is a world leader in gorilla research and is one of the largest databases of any animal, with over 300 scientific publications coming from the center. The DFGF website provides a list of these publications. They collect data on a daily basis to share with the government, partners, and global scientists. Sought data includes all aspects of gorilla life, such as ranging patterns, changes in group composition, feeding and social behavior, dominance shifts, etc. Other plants and wildlife are studied as well, as there are noted patterns in relationships between biodiversity.

DFGF emphasizes educating conservationists. Karisoke sponsors over 400 scholarships for Rwandan and Congolese university students per year to train and indulge in scientific meetings at the Center. Post-graduate internship opportunities are also offered. Over 85% of university students participating in Karisoke activities proceed to obtain jobs in conservation organizations or the government. DFGF staff are also provided with education and scholarship opportunities to attend universities and pursue education. Park staff receive training workshops and educational materials to constantly develop conservation management skills on the job.

The DFGF emphasizes helping communities on a level parallel with gorillas, and meeting people’s basic needs surrounding gorilla habitat areas is a forefront of the organization. Each year, more than 5,600 school children are impacted by the DFGF. They receive supplies, materials, specific courses, and conservation education

courses while teachers receive training programs. The DFGF provides a program called 'Citizen Science'. This includes class works, environmental clubs and activities, active field research, data analysis and entry, etc. Programs are aimed at creating sustainable food alternative to combat poverty and malnutrition. Healthcare and clean water sources are also established, with education programs and disease prevention information readily available. The DFGF supports a local school and modern health clinic in Bisate, Rwanda.

In another separate DRC location, the DFGF recognizes that community participation in the conservation of their targeted Grauer's gorillas is essential, due to the location of these unhabituated gorillas. All the field staff are hired from Rwanda and the DRC. They stress the importance of community participation and provide training and educational programs regarding both conservation strategies and community health issues.

Where They Work and Impact on Apes:

The DFGF focuses on direct protection of gorillas (and general wildlife within gorilla habitat). Direct and daily protection, along with extreme conservation methods, is the root of the organization. The DFGF had a strong hand in almost doubling the population of the Virunga mountain gorillas via extreme methods, however, less than 900 mountain gorillas left in the wild today. Daily protection has so far prevented complete extinction over the past few decades. Presence of trackers and researchers have proven to be effective conservation methods according to a 50-year database. Each gorilla group is tracked daily to record patterns of movement, health, population dynamics, etc. Tracking is fairly simple due to habituation of these gorillas.

In 2012, the DFGF established a research and conservation station in the DRC to protect the Grauer's gorillas. They are working with 11 gorilla families on about 1,100 square kilometers to protect a population of ~100-150 Grauer's gorillas, in addition to some chimpanzees and leopards. The goal is to double to amount of this subspecies being protected in the next 3-5 years.

Jane Goodall Institute (JGI)

Length of Activity and Evolution of Purpose:

The Jane Goodall Institute prides itself on being a global community conservation organization. Their goal is to improve the lives of animals—specifically chimpanzees—in addition to people and the environment. At the heart of their mission, they believe that everyone and everything is connected, and every person can help to make a difference. After spending years in the forest studying chimpanzees, Dr. Jane Goodall realized the immediate threats that chimpanzees face—habitat destruction and illegal hunting/trafficking. She also realized that the key to successful conservation is lies within local community opinions and actions.

In 1977, she founded the Jane Goodall Institute to inspire individual people to gain awareness and make the decision to help the environment. The JGI created a "triangle" approach to ape conservation: educate, protect, rescue. In 2004 she was named the UN Ambassador of Peace for decades of her community-based conservation efforts in Tanzania. The JGI currently has nine interrelated program areas designed to improve livelihoods of people and chimpanzees by stressing the importance of sharing the planet.

Community Presence:

The Gombe Stream Research Center, founded in 1965 by Dr. Goodall, continues to be the longest-running and world renown chimpanzee field research center. It uses innovative science, tools, technology and conservation methods used by Tanzanian scientists and professionals. Research and groundbreaking findings by Dr. Goodall and the JGI have provided an understanding of social structures and habitat requirements, essential for effective conservation methods (Pusey et al., 2008).

The Conservation Science Programs explore and use new technologies and tools to improve habitats of chimpanzees and other apes, including satellite and GPS technology and mapping systems. This advances understanding and monitoring of individual chimps to large groups of chimps to improve strategies. They emphasize crowd sourcing in order to get local people involved and share information with governments, other NGOs, and partners in order for everyone to have access to information that could sway policies and identify problems and solutions.

The Environmental Awareness & Public Education Program is essential in conservation attempts, and the JGI has launched numerous education programs, stressing the importance of early youth education. Education also sensitizes communities towards chimpanzees. Programs in this area include billboards, tv programs, and radio broadcasts. To maximize education opportunities and availability, the JGI has implemented numerous education-system projects, giving communities proper educational facilities and tools which enable children to acquire the best education possible.

The JGI Roots & Shoots program was founded in 1991 by Dr. Goodall and a group of Tanzanian students. This program has expanded throughout 100 countries and hundreds of thousands of students. Roots & Shoots is a series of youth-led campaigns giving young people the skills and resources they require to identify local issues to take action. They identify challenges for people, wildlife, and the environment. They collaborate with community leaders to create specific solutions and celebrate accomplishments, promote motivation, and apply experiences to future projects. Schools, zoos, libraries, churches, etc. are examples of institutions participating in these programs and supporting the children worldwide. They stay connected through a global website allowing them to share projects, ideas, blogs, etc. Exemplary Roots & Shoots members can join the US National Youth Leadership Council, which has been featured on Animal Planet, representing themselves in UN meetings, and participate in immersion trips to other countries.

In addition to education, the JGI recognizes the inequality of gender within the education system. Their Gender Health & Conservation Program aims to equalize the male/female ratio, giving girls opportunities that are often lost. They provide girls with tools ranging from sanitary products to scholarship possibilities to promote their presence in schools. Providing easily accessible community potable water frees time and energy for girls to attend school while also lowering the risk of health-related problems. The JGI also works to provide immunizations and promote the idea that protecting the environment also protects their own health.

The JGI takes action to educate not only children, but adults as well. Their Sustainable Livelihoods Program helps communities develop several self-sustaining projects. For instance, it teaches communities to build and cook with fuel-efficient stoves, requiring half of the amount of firewood as traditional stoves. This saves a

significant amount of time for cooking, reduces smoke production therefore respiratory diseases, and reduces deforestation. They help to organize and fund micro-credit programs to give people, especially women, the tools to create small businesses. This has resulted in an 85% rate of full loan payback and enable borrows to combat the poverty which is a huge factor in environmental degradation. Over 7,600 coffee farmers from 12 coffee collectives are supported by the JGI and their involvement with the Kanyovu Coffee Cooperative Society. Technical knowledge of sustainable farming skills and management are shared in order to maximize yields and diminish environmental strain. In another example, beekeeping activities are taught to communities alternative sources of income. This decreases the necessity for locals to participate in activities detrimental to chimpanzees, such as logging and the bushmeat trade. They can sell honey and other bee products in national and international markets. They also promote agroforestry in and around chimpanzee habitats. Promoting small farms and growth of fruit tress reduces dependence on local bushmeat hunting while also providing a source of income.

All of these programs are community-centered, as Dr. Goodall's long-standing philosophy is that people's needs must be met in order for people to even be able to consider conservation action. Jane Goodall's inspirational approach to conservation has awarded the JGI US$20 million in 2018, funded by USAID and supported by a handful of other organizations in implementation, for a five-year program entitled Landscape Conservation in Western Tanzania (LCWT). Taking place in the Gombe-Masito-Ugalla ecosystem, this project aims at protecting chimpanzees and their habitat while empowering local sustainable development in nearby communities. It will extend programs from 74 villages to 104.

There are several specifications of this project. Natural resource management supports local governments in enabling conservation through local natural resource management practices. Land-use planning and sustainable development integrates sustainable livelihood development into immediate land-use planning. Healthcare education improves understanding, access to reproductive health and family planning, and highlights the relationship between the environment, general health, and population growth. Mass-media is used to spread and promote information on community-based conservation. LCWT will use scientific technology to gather, analyze, and share data in monitoring both conservation and development targets/threats for the purpose of adapting activities.

The JGI claims to have an excellent relationship with communities throughout Tanzania due to their community-empowering decades-long presence. They claim to have built the trust which is essential for any conservation project. Some recent statistics from western Tanzanian projects provided on the website include 668,700 hectares of biologically significant areas have improved under JGI management/guidance, 74 villages are implementing land-use plans, 178,242 people have created economic benefits derived from sustainable natural resource management and conservation, and 16,819 students are involved in environmental programs.

The JGI 2017 annual report provides several significant impacts on both the environment and the community made possible by these projects. Approximately 339,533 people were impacted by JGI programs. Forty-four women and girls were supported by the scholarship program in Tanzania. One-hundred communities effectively managed their natural resources in Tanzania. Twenty-eight microcredit groups invested in environmentally friendly business, which accumulated US$78,108

in Tanzania. Approximately 592,354 trees were planted in Uganda and 1,290 sustainable livelihood projects were created in the DRC.

Where They Work and Impact on Apes:

The original goal and program of JGI is Chimpanzee and Ape Protection. Their Healthy Habitats Program stresses the importance of maintaining ape habitats and giving apes a diverse network to thrive within. They promote local community participation, and in creating networks of habitats through different areas, promoting communication throughout different communities to maximize ape habitats.

Jane Goodall began her work in the Gombe Stream Reserve in Tanzania. Although this area is only 35 square kilometers, it is home to around 150 chimpanzees today. Her work has expanded tremendously throughout Tanzania. In 1992, the JGI formed the Tchimpounga Chimpanzee Reserve in the DRC. This reserve, around 70 square kilometers, was created in conjunction with their government and is also home to around 150 individual chimpanzees. There are over 50 billboards in populated areas of the DRC put in place by the JGI to raise conservation awareness.

JGI programs are globally renown and globally involved. In addition to the Tanzanian and Congolese reserves, JGI implements monitoring and habitat preservation projects throughout most areas in Africa where chimpanzees are located. From Tanzania to Gabon to Guinea, JGI has a prominent legacy in the research and preservation of chimpanzees. As of 2017, around 50,000 square kilometers of chimpanzee habitat is under JGI management.

Relationship with Government:

JGI provides Tanzanian authorities with the proper tools to act upon tip-offs and transfer chimpanzees (and other apes) to sanctuaries. Snare removal within forests is a huge factor of saving apes (and all wildlife). Policy and Advocacy is an important program of the JGI. This program aims to give a voice to those who otherwise might not be heard, regarding animal welfare and impoverished communities. They raise awareness regarding the consequences of extractive industries. They aims to give captive chimpanzees the best lives possible while advocating for the release of chimps used for research and experiments, as well as dissuading chimps as pets. They work with local and international governments in advocating policies that support climate change, sustainability goals, and battle illegal wildlife trafficking.

Last Great Ape Organization (LAGA)

Length of Activity and Evolution of Purpose:

The Last Great Ape organization was founded in Cameroon in 2002 and is the very first NGO of its kind. LAGA is a wildlife law enforcement agency that works in close collaboration with other NGOs as well as governments. They operate in West and Central Africa, although their name is increasing in recognition and collaboration worldwide. When they began, the regions were averaging zero poaching/selling/trafficking arrests per week due to lack of accountability, laws, enforcement, etc. Since 2006, LAGA has produced one arrest per week.

LAGA has realized that in most of Africa, there is no deterrent against wildlife crime. This, coupled with the lack of official measurable standards, makes wildlife

law enforcement nearly impossible. This is especially true for trans-border situations. LAGA was conceived with the aspiration of becoming a main piece of conservation efforts, complementing the usual main focuses—education, environmentalism, and socioeconomic development. The website states the main goal as fighting commercial poaching and related illegal trade activities. They list several individual objectives:

1) Create an effective deterrent factor for wildlife crimes in Cameroon.
2) Expose through the Cameroonian media that the law is enforced, thereby achieving education of the public on the change, increased deterrent, and classification of the illegal bushmeat trade as a criminal activity in the eyes of the public.
3) Form a model for government-NGO collaboration in a nationwide fight against wildlife crime that functions efficiently with measurable standards of success.
4) Form the first model for an independent monitor for wildlife, as stated in the AFLEG declaration.
5) Assist the international and donor community in mapping potential or lack of potential in developing wildlife law enforcement in the sub-region.
6) Forge a link between economic operators, including timber companies and transport agencies, and legal responsibility for wildlife law violations facilitated by their activities or committed on their premises, on the basis of negligence and collective responsibility.

LAGA collaborates with the Cameroonian Ministry of Forestry and Wildlife (MINFOF) for effective law enforcement. They aspire to inspire a guideline model of

effective wildlife law enforcement policies and authority throughout sub-Saharan Africa. LAGA states that they have a built-in procedure to determine success and failure of their model. They directly audit follow-ups for their cases in addition to measuring the numbers of those arrested, prosecuted, and detained.

The LAGA website lists and describes their four main activities. The first is investigations. Investigators, undercover agents, and informers gather precise information so that dealers of illegal animal products can be arrested in the act, producing concrete evidence for the courts. This sometimes requires international travel and many months of preparation. LAGA participates in an investigation network and often participates in field operations. Investigators are carefully selected and trained in undercover techniques. Their objectives are to identify large-scale dealers and provide enough information to initiate a successful operation—both nationally and internationally. Operations are coordinated throughout numerous countries all over Africa, European countries France, Belgium, Spain, and Ukraine, as well as Asian countries Taiwan, China, and the Philippines. Recently, LAGA expanded to include investigating illegal internet trade. Internet trafficking is surveilled globally and interfered in whatever can be traced to Cameroon.

Their second activity is operations. LAGA closely coordinates with governments, and technically assists MINFOF and the proper law enforcement authorities to arrest violators and to channel complaint reports to the courts. They organize arrest locations, arriving days early to familiarize themselves with the area. All efforts are made to prevent escape, utilizing as many officers as needed. They closely supervise field operations and arrests (carried out by government authorities) and monitor activities, thus identifying obstacles. This is a way to prevent and measure corruption and bribery. Bribing attempts have been witness in 85% of

arrests and 80% of court cases. LAGA stresses the importance of protecting their officers and concealing their actual identity, in addition to taking special care for human rights of surrounding communities. LAGA then remains in the area to write a report and give it to the local court. They also make the arrangements for any rescued wildlife to be taken to a sanctuary or rescue organization.

Next, LAGA will provide legal assistance. LAGA formed a legal team to assist in the administrative procedures of prosecuting the first wildlife cases known in the courts of Cameroon. As Cameroon does not have public prosecutors, they have traditionally relied on representatives, who lack the strategy, knowledge, and professionalism to win cases, even if the evidence is strong. LAGA urged the national government to invest in a private lawyer for all cases. They offered to pay a percentage of lawyer fees until it is evident that their system is effective and damages awarded to Cameroon would be able to cover the full costs. LAGA will first help in writing up formal complaints and seeing that they are transferred to the court, as their expertise allows them to strengthen legal arguments and avoid errors. They prepare and discuss the case with the courts before any field operation allowing the courts to prepare for the specific case and evaluate/dissuade threats of corruption. LAGA legal assistants are often present for arrests and interrogations, ensuring law enforcement are themselves acting legally. They supervise court proceedings to ensure good governance and understanding by all involved. Case analyses are provided, describing aggravating circumstances, possible responses and excuses from the defendant, suggestions for the prosecution, and a recommended demand of damages. Legal assistants maintain a high-level communication network nationwide, which involves many personal meetings and distribution of technical materials such as CDs and booklets describing laws and related information in detail.

LAGA also regularly checks up on convicted criminals, both to ensure they are paying their damages and to ensure humane living conditions within jails. Damages paid to Cameroon from these cases secure paying jobs for private environmental lawyers.

As their fourth focus, LAGA is active in the media. They put news flashes into national TV news, national radio news, and written press concerning the success of the operations and positive court rulings. The Cameroonian media informs the public that the law is actively enforced, thereby achieving education of the public on the change, increased deterrent, and classification of the illegal trade in endangered wildlife as criminal. Articles, audio, and video pieces are released in both English and French. "Wildlife Justice Magazine" was created dealing with information exchange of wildlife law issues and application. It is geared towards professionals in any industry that could help the movement grow. The LAGA website provides a list of outside publications which mention/discuss LAGA.

Unlike any other NGO website reviewed in this study, LAGA identifies a key argument which critics have against NGOs: the NGO/donor relationship and the importance of financial specification and transparency to hold accountability and prevent corruption. One factor they address is dishonesty, persuasion, and mismanagement. International development banks provide easy targets to donors and NGOs alike due to little external monitoring. Funds are requested to maintain an illegal cash flow, and desire to maintain cash flow alters project planning and implementation. Project funds are sometimes used for personal gains and interest, and LAGA has found that corruption diverts around 30% annually of international development loans. They also highlight uncoordinated planning and estimates, such as double funding for the same project, receiving money for activity that never takes place, and not accounting for inflating costs. A second factor they address are

conflicts of interest. This includes receiving money from an industry related to the 'problem', where donor payments require NGOs to act according to their agenda under threat of defunding.

LAGA describes how they avoid such prominent controversies in the NGO-industry relationship world. They produce an extensive and highly accountable line-by-line budget for all of their projects. This is done by avoiding ambiguous blanket terms like "workshops" and instead list every specific detail proposed in addition to justification of demands. Transparency is a top priority and they regard confidentiality as immoral and a pathway for corruption. Highly extensive and detailed grant reports, budgets, and financial reports are all available for public viewing on their own website. LAGA demands full transparency from any donor and have declined donor offers due to lack of public transparency, intention of influencing policy, and attempts to take unethical commissions. All donations must have full public financial disclosure. Salary reports are even kept public information.

Multinational Cooperative Efforts:

LAGA has grown and evolved tremendously since its conception. Beginning as an idea to be the missing puzzle piece in successful conservation, LAGA set out to augment legal government authority and presence in illegal activities. The focus has evolved toward a huge and recognized milestone for anti-corruption methods. Corruption entails not only bribery during arrests and such, but also NGO donors who wish to persuade NGO activities to strengthen their own political agenda. Their model of extreme transparency and accountability in addition to having a capacity to almost act as official law enforcement in coordination with governments have inspired multiple similar organizations, just as they had hoped to do. These individually

operating organizations, who also formed a collaborative network—EAGLE (Eco Activists for Governance and Law Enforcement)—include:

1) PALF-Project for the Application of Law for Fauna in Congo
2) RALF-Renforcement de l'Application de la Loi Faunique in the Central African Republic
3) AALF-Appui à l'Application de la Loi Faunique in Gabon
4) GALF-Guinée-Application de la Loi Faunique in Guinea
5) SALF- Sénégal-Application de la Loi Faunique in Senegal
6) B-AALF-in Benin
7) EAGLE Togo
8) EAGLE Uganda
9) EAGLE Côte d'Ivoire

Each participating organization and their individual websites can be found on the collective and collaborative website, www.eagle-enforcement.org. The LAGA website lists regional briefings from the years 2012-2014 including activities from each of these active organizations.

Not only has LAGA both joined and represented Cameroon in CITES meetings, they were also a chair on the Great Apes Survival Project council for two years and continue to be an active member of both GRASP and the Species Survival Network (SSN). They work closely with sanctuaries in Mefou National Park run by Ape Action Africa, Limbe Wildlife Center, and Sanaga-Yong Chimpanzee Rescue Center. A full list of collaborators and donors are available on the LAGA website.

Additional Noteworthy Information:

LAGA, its director, and Cameroonian government working in conjunction with LAGA have received numerous awards for their achievements:

1) 2007 Interpol Eco-message award for investigation in large-scale ivory trading.
    a. Hong Kong authorities seized a 603-tusk shipment out of Cameroon.
2) 2007 Bavin Award for outstanding wildlife law achievements.
    a. LAGA attended the CITES meeting with Cameroon and became the first NGO to win an award, independent from their home country, at this intergovernmental organization.
3) 2011 Future for Nature Award given to individuals for international outstanding species protection efforts (LAGA director Ofir Drori).
    a. Drori is recognized for an entrepreneurial, innovative, impactful, and influential approach to conservation.
4) 2012 Condé Nast Traveler Environment Award for innovative environmental activism.
    a. This annual award come with a large financial prize and exposure in Condé Nast's global mass media.
5) 2012 Marsh Christian Trust Award given to individuals/organizations who unselfishly give their time to improve the world.
6) 2012 Duke of Edinburgh Conservation Medal (the WWF's top award, given out by Prince Phillip of England) recognizing highly meritorious contributions to

the conservation of wildlife and natural resources and outstanding service to the environment.

In receiving each award, LAGA hopes to gain credibility and spread their message globally while influencing others to take on their methods. This includes every platform they emphasize, from wildlife law to donor anti-corruption measures.

Wild Chimpanzee Foundation (WCF)

Length of Activity and Evolution of Purpose:

The Wild Chimpanzee Foundation, established in 2000 by primatologist and author Christophe Boesch, is an NGO based out of Switzerland. The WCF launched a German office in 2006. Their efforts are concentrated in Guinea, Liberia, and Côte d'Ivoire—areas still abundant with chimpanzees, specifically the western chimpanzee subspecies.

The WCF website states their mission is "to enhance the survival of the remaining wild chimpanzee populations and their habitat, thereby participate in saving the behavioral diversity of this fascinating species". Their philosophy in implementing this mission involves three components: education, conservation, and research. The WCF emphasizes these projects being done for and by African people.

Community Presence:

In the WCF's philosophy of education, conservation, and research, they have thirteen specific projects in effect. Each of these projects highly focus on and involve local African communities in addition to chimpanzee conservation.

Ecotourism in Taï National Park has made a huge impact on the area. In 2001, the local people of Taï National Park reached out to the WCF in asking for assistance in design and implementation of ecotourism as a community project and means of sustainable development of the area. Unfortunately, this project was sidelined in 2002 due to civil crises (www.ecotourismetaï.com). The project restarted in 2010, partnered with the Ivorian Office of Parks and Reserves (OIPR). Fees for WCF-led ecotourism projects fully fund eco-guides, event organizers, and the upkeep of materials and forest camps. Local culture is also a big part of this project, garnishing understanding and respect from outside visitors to the local people in addition to the local wildlife. Women play an important role, involved in ecotourism and cultural presentation activities for visitors. Cultural ceremonies, dances, masks, arts, food, etc. are all presented to visitors as part of their experience in the park (www.ecotourismetaï.com). Gender equality is a large part of project implementation.

Coupling with the ecotourism project, the community built an eco-museum. Launched in 2014, this eco-museum aims to highlight ecotourism activities and issues within Taï National Park. Serving as the tourist information center, it also provides environmental awareness activities through providing informational leaflets, theatrical plays, poster exhibits, and film screenings. Natural and cultural heritage is also highlighted to develop appreciation.

The WCF also helped to build the Nature Center at Banco National Park. In 2005, the WCF partnered with OIPR, many other NGOs in the area, and several scientists involved with Banco's biodiversity to turn a former colonial villa into the 'Maison de la Nature'. This is an interactive and educational nature center aimed at increasing visitors' wildlife education and awareness for the need of chimpanzee (among other species) protection.

In addition to nature centers and museums, the WCF supports local theater groups as a means of educational entertainment. They believe conservation methods are most effectively passed along by peers in local communities, and therefore entered partnerships with multiple community theater groups in hopes of effectively bringing awareness to environmental issues. These theater groups are some of the most well-known in West Africa: "Ymako Teatri" in Côte d'Ivoire, "Eddie Theatre Productions" in Liberia, and "TOUCHATOUT" in Guinea.

"Forest Wisdom" Newsletters are published throughout communities. Although these newsletters (geared towards children) put out by the WCF are not regularly published, each includes a copious amount of interesting information regarding WCF activities, individual chimpanzees, theater groups and plays, ancestral and cultural information, interviews, etc. They even include emotion-invoking comics. Forest Wisdom has a handful of assistance and financial aid through the Great Ape Conservation Fund (GACF) of the Fish and Wildlife Service of the US Department of the Interior, the Leipzig Zoo, and the Critical Ecosystem Partnership Fund (CEPF).

Club P.A.N. (Personnes, Animaux, Nature/People, Animals, Nature) is part of the WCF's educational programs around Taï National Park and Moyen-Bafing National Park. This club was formed in 2007 in conjunction with the Primate Conservation Group at the Max Planck Institute for Evolutionary Anthropology and is a collaboration with schools in both Côte d'Ivoire and Guinea. They release regular reports. Their conservation goals include teaching children about and developing their appreciation towards local biodiversity, teaching children basic knowledge on environmental issues and the significance to promote concern and action,

discouraging illegal trade and consumption of bushmeat, and promoting local research and conservation activities.

Germany and Côte d'Ivoire participate in a WCF-sponsored partner-school program as a way for children to internationally exchange information and promote global conservation methods while opening the door to a new culture.

The bushmeat study is another WCF project. They monitor illegal trade and data on trans-boundary markets. They also monitor the effects that their many environmental education and awareness programs have on attitudes and consumption. The 2011 annual report mentions a clear change in consumption behavior of families participating in WCF activities. The WCF realizes that many people rely on wildlife, especially bushmeat, for food and income. They work with local experts in their micro-projects program, to implement alternative food and income projects until communities can and will maintain projects on their own. One example is sustainable chicken and goat farming.

Relationship with Government:

The WCF collaborates with West African governments in helping countries create protected areas, set goals, and put these conservation goals in motion. Their collaboration with the Forestry Development Authority in Liberia lead to the creation of the Grebo-Krahn National Park in 2017. Collaboration with the Guinean Office of Parks and Reserves in Guinea lead to the creation of the Moyen-Bafing National Park in 2017 (the largest western chimpanzee sanctuary, according to the WCF's 2017 press release).

The WCF is also involved in sustainable extractive processes. Involvement in sustainable extraction practices and deforestation mitigation ensures a habitat for

wildlife. Per recommendation of the IFC, the WCF collaborates with the private mining operators Guinea Alumina Corporation (GAC) and Compagnie des Bauxites de Guinée (CBG)—both in Guinea. The WCF has a pilot study project in the Cavally Classified Forest in Côte d'Ivoire, supported by Cameroonian NGO FLAG (Field Legality Advisory Group), as part of the Forest Law for Enforcement, Governance, and Trade program (FLEGT). This project, entitled 'Development of an Independent Observation Strategy of Forest Management in a Classified Forest with Civil Society and Communities', is funded by the European Union and the UK Department for International Development. Also in Côte d'Ivoire, the WCF works with the project 'Greening the Cocoa Industry'—a project for certifying sustainable cocoa farming under the Rainforest Alliance label and training farmers in environmentally friendly and sustainable natural resource use.

The WCF has developed a significant relationship with governments and law enforcement. They report all findings (such as animal densities and illegal human activities) to local law enforcement authorities to maximize their efficiency. They share data with the Forestry Development Authority (FDA) in Liberia, Ministries of Water and Forests in Guinea and Côte d'Ivoire, Office Ivoirien des Parcs et Réserves (OIPR), Office Guinéen des Parcs et Réserves (OGUIPAR), Société de Développement des Forêts (SODEFOR), and also funds and supports eco-patrols in Taï National Park and Grebo National Forest.

Where They Work and Impact on Apes:

According to the WCF website, there are between 18,000-65,000 western chimpanzees left in the wild. The WCF has projects implemented throughout Guinea, Liberia, and Côte D'Ivoire affecting between 20,000-25,000 chimpanzees. The website, fully in line with their emphasis on education and situation awareness,

provides an intricate description of the causes of their endangerment, including deforestation (habitat loss), poaching (the bushmeat trade and selling babies as pets), and their vulnerability to human diseases. In addition, they provide a detailed description of the life of a western chimpanzee. Their habitat, diet, daily life, etc. along with mentioning the closeness of human-chimp DNA, allow website viewers to get a full big picture of the species in their habitat while understanding the looming threats. Several individual chimpanzees living within Taï National Park are also listed, along with their individual biography. This effective technique certainly allows readers to feel connected to the individual, and in turn gain an awareness and concern for the species.

Biomonitoring plays a huge role in their conservation methods. The WCF website provides an overall description of their methods of biomonitoring, involving cartography of chimpanzee areas, protocols of collecting data, and training the locals. They emphasize a high priority of using strict scientific criteria and data analysis which is shared with multiple government agencies, and in regularly checking methods to adjust them if necessary in order to provide the most accurate data possible. This data is used to focus efforts where they're most necessary. Experts collaborate with locals by training and supervising them. By repeatedly monitoring the species, surveyors can determine where the populations are living, if the populations are stable or declining, the approximate population numbers, and the current or impending threats.

Additional Noteworthy Information:

The WCF website provides a list of annual reports between the years 2011-2018. These extensive reports describe in great details each of their thirteen projects and any sub-category within each one. They include summaries, charts, maps, photographs, etc. to provide a transparent-as-possible review of the year's work and accomplishments. They also discuss setbacks, such as Côte d'Ivoire's violent political instability in 2011 putting efforts on hiatus in that country, while remaining functional in Guinea and Liberia. The reports also mention that upon request, reports with even more detail on specific projects can be provided. There is also an extensive list of partners working with the WCF, including many zoos, NGOs, government agencies, foundations, and corporations worldwide.

Christophe Boesch, Hedwige Boesch, and the WCF have received multiple awards for their efforts in chimpanzee preservation. These include (but aren't limited to):

1) 2007 second place "Trophée de Femmes" from the Yves Rocher Foundation
2) 2012 Educating Africa Pan-African Awards for Entrepreneurship in Education as the organization with the most entrepreneurial approach to education
3) 2013 "Officier de l'Ordre National" by the president of Côte d'Ivoire
4) 2013 Saville Foundation Pan-African Awards for Entrepreneurship in Education
5) 2015 St. Andrews Prize for the Environment

Boesch even introduced Sir David Attenborough to the situation of western chimpanzees and inspired him to publicly support the issue and the 2013 Disney film "Chimpanzee" (starring a chimp from Taï National Park).

CASE STUDIES

Virunga Mountain Gorillas

One fantastic example showing the effects of conservation efforts and conservation NGOs is that of the Virunga mountain gorillas. This example comes from the information of two consecutive census studies regarding the same sample population. Mountain gorillas are located in the transboundary Virunga mountain range. Three contiguous national parks in three countries form the 450 square kilometer habitat of this particular critically endangered gorilla subspecies: Virunga National Park in the DRC, Volcanoes National Park in Rwanda, and Mgahinga Gorilla National Park in Uganda.

The first study of the two studies takes gorilla census data between 1971-2003. The main purpose of this study was to compare conventional conservation efforts to extreme conservation efforts. Conventional conservation is described as education, law enforcement, and community development programs generally designed to bring awareness to the situation and mitigate future negative actions. Extreme conservation is described as necessary human intervention, usually veterinary aid to treat life-threatening injuries and diseases. The study was a collaborative effort between several NGOs, national authorities from the three countries and their park rangers, and other partners, led by Martha Robbins (2011). All data mentioned in this case study is retrieved from the 2011 Martha Robbins et al. publication unless otherwise noted. The second study is a census extension study from the first study, performed by the International Gorilla Conservation Programme (IGCP) in 2010.

Data for this study dates to 1967, with 30 habituated gorillas recorded by the DFGF. The first official, complete census is from 1971, however, and recorded 274 gorillas (both habituated and unhabituated). Over the next decade, the population

declined to 254 due to habitat destruction and poaching. During the late 1970s and through the 1980s, scientific research and conservation challenges were being published significantly more than before, causing a significant increase on international focus on gorillas. This led to an increase in conservation activities and strategies alike. These efforts included both conventional and extreme methods, from education and wildlife law enforcement to veterinary programs and habituation proposals. Mountain gorilla populations rose again, to 320 by 1989. Despite the 1990s seeing an influx of political and civil turmoil surrounding the region, gorilla populations were still able to be regularly monitored and continued to rise to 380 by 2003. 70% of those gorillas have been habituated. The population appeared to drop to 339 in 2008; however, a 2010 census counted a 26% increase of Virunga mountain gorillas since the 2003 census, up to 480 (IGCP 2010). Of these, 352 are habituated while 128 are unhabituated. The GRASP website states the number increased between 2010-2016 to 604 individuals.

The data between 1967-2008 suggests a ~6.6% mountain gorilla growth rate. When accounting for dispersal between habituated and unhabituated gorillas, the percentage is ~4.1% for habituated gorillas and ~-0.7% for unhabituated gorillas. The study mentions that habituated gorillas continuously produce a higher population growth rate than their unhabituated counterparts. A critical comparison was that of survivorship versus fertility rate. The study found that survivorship is significantly more important to population growth rates than fertility levels, with 5% of growth rate attributed to fertility while 42% attributed to survival of young gorillas and 53% attributed to survival of older gorillas.

Mortality rates and factors are telling signs of the effectiveness of both types of conservation efforts observed in this study. Twenty-six habituated gorillas were

killed by humans (poaching for bushmeat/crop raiding/pet trade, snare injury, shot by militia groups), making up 12% of total mortality. Growth rate would have been ~4.6% with no poaching. Forty-two interventions were conducted due to snare injuries. Forty-one of these gorillas were saved while sadly, one still died. Assuming all 42 would have died without veterinary intervention, the growth rate would have dropped to ~3.4%.

Seventeen respiratory disease outbreaks affected 254 gorillas, causing 16 habituated gorillas to die out of 42 that were treated (an 86% survival rate with veterinary intervention). It was undeterminable, however, whether this was a human-transmitted disease. Without these deaths, growth rate would have been ~4.5%. Assuming these outbreaks were human-induced, and none would have survived without intervention, the growth rate would have dropped to ~3.4%.

In addition, 28 other habituated gorillas were treated for various causes and survived. Without any of these interventions, the growth rate would have dropped to ~2.2%. The authors note that they assume all those treated would have died without intervention, however there is always a potential that any one of them could have managed to survive, thus the percentages are approximations. They also note that intervention is saved for truly life-threatening situations so the probability is high that the gorillas would not have survived without treatment. In conclusion, the authors account for ~40% of the difference in population growth rates between habituated and unhabituated gorillas as a result of veterinary interventions. The other ~60% is estimated to come from increased protection and daily monitoring. They also note that the Virunga mountain gorillas studied have no natural predators, do not participate in infanticide, and food availability was not a problem. This data

suggests that changes in population growth and decline rates are mostly due to human influences.

This study suggests that not only are humans responsible for the declining population of Virunga mountain gorillas, but also responsible for their incredible population increase. The original census project by Robbins et al. as well as the IGCP census project were both highly collaborative initiatives. IGCP states its project as being an "exercise in collaboration". They headed their project, coordinating efforts between institutions and organizations involving 72 people mixed into six teams coming from all three countries involved (IGCP 2010).

The other main objective of IGCP's study (in addition to monitoring population trends), is to determine health trends and levels between habituated and unhabituated gorillas in order to gain insights on human pathogens introduced to their groups (IGCP 2010). The significance lies in the fact that habituating gorillas is necessary for close monitoring and research, however, increases risks for human diseases. Habituation is also necessary for ecotourism, which places a huge amount of money into the economy. Around 20,000 ecotourists provided US$8 million in revenue for the Rwandan economy in 2008, including park services and local employment opportunities.

Conventional conservation is stabilizing low populations of endangered wildlife, but extreme conservation methods are necessary to increase populations. NGOs prove a significant factor in both conservation strategies. The Virunga mountains, with all three parks, have over 50 field staff per 100 square kilometers, which is 20 times the global average. These personnel are made up of park staff and NGO members. Gorillas groups are also guarded during the day by separate groups of field staff. NGOs, in addition to ecotourism, provide most of the funding for this.

This is especially true during times of military conflict, when ecotourism significantly dwindles because of the danger. Conservation efforts are often limited by finances, and projects often sidelined until financial gains are met. This is where NGO donorship and ecotourism revenue can truly make or break a solid effort.

Both the AWF and the DFGF played important roles in these two census studies, as well as in their physical conservation efforts. There were several other NGOs that contributed, as well as full support from governments. Information exchange and multilateral collaboration is very important for conservation efforts. Through cooperative, transboundary efforts, conventional and extreme conservation methods have provided a steady increase in a critically endangered species. NGOs and governments can use this case study learn from the impact of extreme methods and collaboration. Together, resources and information can be pulled to put these methods into place throughout gorilla habitats. This example can be tested for chimpanzees and bonobos, in addition to other wildlife. Eventually, perhaps NGOs focused on different species could compare data and create a more overall agenda, using the best methods for each species.

Gombe (and Taï) National Park Chimpanzees

A less promising case study than the Virunga mountain gorillas is that of the eastern chimpanzees located in Gombe National Park (GNP). This region had been declared Gombe Stream Game Reserve in 1948, when the Tanzanian colonial government realized the gaining momentum of deforestation due to population growth surrounding the area (Pusey et al., 2007). The government set up this reserve in order to protect chimpanzees and their habitat before population

expansion could destroy the entire region. In 1960, Jane Goodall began studying the chimpanzees of Gombe. Her work resulted in breakthrough discoveries about chimpanzees, such as their use of tools and hunting/consumption of meat (Pusey et al., 2007). The international attention brought by these discoveries (and the spread of international articles and films on the subject) pressured the Tanzanian government to officially create GNP in 1968, shortly after Dr. Goodall's creation of the Gombe Research Center and just a decade before she officially established the Jane Goodall Institute within the park (Pusey et al., 2007).

Unfortunately, GNP only encompasses a mere 35 square kilometers. The small size of the park is one reason that the population of these eastern chimpanzees has not seen significant growth; however, the establishment of the park is probably the sole reason deforestation hasn't completely consumed all biodiversity here. Satellite data shows that vegetation and forest thickness have increased within the park boundaries over the last 40 years (Pusey et al., 2008), while deforestation has consumed 50% of the area surrounding the park (Pusey et al., 2007). Research suggests that Gombe chimpanzees would not be around today, if it had not been for the international recognition and national protection brought on by Dr. Goodall and the JGI (Pusey et al., 2008).

Another reason provoking stagnant population size is their habituation. Unlike the Virunga gorilla case, habituation has proven almost more harmful than helpful to chimpanzees. There is a difficult balance to keep—"human presence in the form of research and tourism protects chimpanzees from poaching, and human diseases from the same researchers and tourists endanger them" (Pusey et al., 2008). Chimpanzees appear to be especially vulnerable to human-transmitted diseases; for example, around half of all western chimpanzee populations that were habituated for

research purposes have shown long-term decreases in Taï National Park (TNP) due to disease outbreaks (Köndgen et al., 2008).

The study outlined here (Köndgen et al., 2008) at TNP describes the specific vulnerability that chimpanzees have to human respiratory diseases. Five outbreaks hit three communities of habituated chimps between 1999-2006, with 92% of chimpanzees showing visible symptoms of illness. Similar to most human cases, the chimpanzee cases showed a mix of bacterial and viral respiratory pathogens within the lungs, and all those sampled tested positive for either human respiratory syncytial virus (HRSV) or human metapneumovirus (HMPV). HRSV and HMPV are common causes of respiratory diseases in humans, and especially in developing countries, have a strong effect on children and infant mortality. These diseases also tend to prompt Streptococcus Pneumoniae (found in all observed TNP chimp outbreaks) and Pasteurella Multocida (found in a few TNP chimp outbreaks). Infected younger chimpanzees were also found more likely to die from these infections, as with humans. Although research could not fully confirm the spreading of these diseases from humans to chimps, there is a plethora of evidence to suggest it. Certain strains were more closely related to human strains than to one another. Humans are the only known carrier of the two viruses, therefore suggesting "that humans introduced the two viruses directly and repeatedly into wild chimpanzee populations in the recent past". This would have occurred through either researchers or poachers within the park, as there are no villages there and the chimps' range does not extend the park. It was also observed that non-adult chimpanzee mortality rate increased significantly when habituated, where research effort increased and distance between chimp/researcher decreased. The TNP study states that respiratory

disease is the most prominent cause of sickness and death among habituated apes, thus the Gombe study was conducted for comparison.

The Gombe case study outlined here (Pusey et al., 2008) involves three communities of chimpanzees and their census numbers: Kasekela, Kalande, and Mitumba. The Kasekela community is in the center of the park, with Kalande to the south and Mitumba to the north. Dr. Goodall began studying and habituating the Kasekela chimpanzees in 1960, completing habituation in 1966. She originally counted 60 individuals, although the numbers fluctuated through the years to as low as 38 and back up to 62 in 2008. The Mitumba community census was more difficult to produce and did not begin until the mid-1980s, with habituation being estimated at completion in the early 1990s. It was estimated at around 30 individuals in the 1980s, although the number could be as high as 50 if the forest reserve area north of park boundaries is included. In 2008, Mitumba numbers were observed to decrease, fluctuating between 20-25. The Kalande chimpanzee community has never been habituated and had just recently become monitored when the 2008 study was published. Estimates from the 1980s have population numbers being anywhere between 50-80, however the case study suspects that because of a poor quality of habitat, the area could not have supported more than 40 individuals. 30 individuals were confirmed in 1998 and by 2008, there were only 11—some of which were seen interacting with the Kasekela community and probably transferring into it. In total, GMP has fewer than 150 chimpanzees.

While the Kasekela chimpanzee community lives exclusively within the park, its northern and southern counterparts expand their territories extensively outside park boundaries. Due to this, habitat loss and poaching are significant threats to the two communities. As deforestation encroaches GNP, Mitumba and Kalande

chimpanzees are staying closer and closer to park boundaries. These two communities have also seen an increase in poaching due to their proximity to human populations. Fluctuations between population numbers are also attributed to chimpanzees switching communities. As Kalande has been declining, it is observed that a handful of them have integrated into the Kasekela community.

Without the looming threat of deforestation and poaching as with the other two communities, Kasekela chimpanzees have been observed having a 58% mortality rate out due to disease. The total number of disease-related deaths within the ~45 years recorded is 86 chimpanzees, and 50% of the 58% was caused by an epidemic. Epidemics included polio-like symptoms, mange, and respiratory epidemics—often human-transmitted or from domesticated animals. The respiratory epidemics were similar to those of the western chimpanzees in Taï National Park. As illegal poaching has not historically been a significant issue within GNP, disease is the number one killer of the chimpanzees (Pusey et al., 2007). Despite this, Kasekela populations have not declined like the other two. There has not been any true growth either, so the population simply remains stable.

A form of 'extreme' conservation has been present since Dr. Goodall began her work with the Gombe chimps. The Kasekela community provides an example of effective conservation in both extreme and conventional methods. While habituating this particular community, Dr. Goodall began dosing bananas with polio vaccines, treatments for mange, and antibiotics during the late 1960s—a technique carried out until the late 1990s. It is noted, however, that it is difficult to get the same chimpanzee to consume all doses required if they will eat a provided banana at all, so this method isn't necessarily completely dependable. On the conventional side of conservation, the protection of the habitat has seen an increase in forests and an

increase in food availability and fruit for food. This data suggests that decreases from diseases is probably balanced by increases for food availability.

Data from Mitumba shows that in 1996, a respiratory disease killed 32% of the community. The only disease-related data from the Kalande community is a respiratory disease outbreak in 2002, the same time as an outbreak in Kasekela. Three Kalande chimpanzees were found dead although no Kasekela chimpanzees died (possibly due to extreme conservation methods used for this habituated population). It is assumed that a chimpanzee traveling between groups spread the epidemic.

As most of these diseases have the possibility of being human-transmitted or coming from domesticated animals, it is suggested that the habituation of chimpanzees highly contributes to their disease susceptibility and frequency. Even habituated chimpanzees who might have gained certain immunities could spread a disease to unimmune, unhabituated populations. Their fluid group interactions put both habituated and unhabituated individuals at risk for diseases. Human-chimpanzee interaction was not uncommon even before the creation of the GNP and the arrival and research methods/tools of Jane Goodall. Habituation really accustomed these chimpanzees to human proximity, however. One major factor is banana provisions. From Dr. Goodall's arrival, Gombe chimpanzees were given bananas—both as means of vaccination/medicine and as habituation bribes. A respiratory disease outbreak in 2000 prompted a series of new health standards for both research and eco-tourism (Pusey et al., 2007). Minimum distance between humans and chimps was increased from 5 meters to 7.5 (10 for tourists), quarantine periods for researchers was implemented, and banana handouts were put to an end.

They also reduced the number of researchers living within the parks and introduced a chimpanzee health-monitoring program similar to that of the mountain gorillas.

The study in 2007 discusses a population viability analysis, which predicts that in 100 years, only 40 Gombe chimpanzees will remain. Eventually, it will become zero. This reiterates that although the Gombe population as a whole is not significantly decreasing, it is also not increasing. More and more habitat destruction surrounding the small park with continue to decrease their already tiny habitat range. Reducing mortality due to disease and habitat growth are the two main factors that could reverse this path. The outlook for Gombe chimpanzees is not so bright, however all the research conducted there, in the longest-running chimpanzee research project, has at least provided decades of monumental information regarding the species that has inspired many other organizations and conservation projects.

It has been generally believed that TNP in Côte D'Ivoire remains one of the largest and last home ranges of western chimpanzees. A 1989 census estimated Côte D'Ivoire's western chimpanzee population at 8,000-12,000, which was thought to be approximately half of the remaining population total (Campbell et al., 2008). As of a 2007, a 90% decrease (amid a 50% human increase) has occurred since the 1989 study. Researchers conclude only 480 chimpanzees within TNP, which is one-tenth of the original estimate going into their 2007 census study (Campbell et al., 2008). TNP is vastly larger than GNP, encompassing 3,300 square kilometers complete with a 200 square kilometer buffer zone. This is further evidence that disease is the most detrimental factor to chimpanzee populations. In a 35 square kilometer range or a 3,300 (+200) square kilometer range, diseases spread rapidly to and throughout chimpanzees.

Habituation and research/ecotourism both helps populations by preventing poaching and bringing in significant ecotourism money, but also hurts populations by spreading life-threatening diseases. This is the information that NGOs, such as JGI, managed to obtain and focus on for years. This study shows the effect that NGO presence has on maintaining habitats and acquiring protected statuses. It also shows their work must be done with caution and could provide guidelines and methods to best prevent disease spread while maintaining significant habituation for research.

Gorillas and Chimpanzees in the Congo Basin Area

The Congo Basin area (CB) in Central Africa is made up of Cameroon, Equatorial Guinea, DRC, CAR, Gabon, Republic of Congo. The CB has, on average, a much lower human population density than West or East Africa. Its lush rainforests have not experienced the extent of deforestation and population growth as elsewhere in Africa, thus its capacity to maintain higher levels of wildlife than its surrounding regions. The CB is home to western lowland gorillas (and mountain gorillas at the eastern DRC border; eastern lowland gorillas in northern Cameroon into Nigeria) and central chimpanzees (and Nigeria-Cameroon chimpanzees in the northern part of Cameroon into Nigeria). This case study pertains specifically to western lowland gorillas and central chimpanzees. Although human expansion and habitat loss in Central Africa do not pose as big a threat as in West or East Africa, these apes are threatened species, nonetheless. The case study presented here uses comparative data from the IUCN, a 2008 published study by E. Arnhem et al., a 2018 published study by David Morgan et al., and a 2001 article by Caroline Tutin. Comparing data from these sources describes the effect of the logging industry (and general extractive industries) on these specific subspecies and their habitat. Despite

Central Africa being highly involved in natural resource extraction, hunting appears to be the most detrimental activity towards apes in this region.

The situation in Central Africa is quite different than West or East Africa. Both the western lowland gorillas and the central chimpanzees of this region are far less studied, documented, and censused than any other gorilla or chimp subspecies. Their populations are estimated to be far greater than the others. In the gorillas' case, the IUCN listed their 2013 total population at 361,919, although their projection for 2018 decreased to an estimate of 316,000. They also mention that these gorillas had a mostly continuous population throughout the CB until recent years. The IUCN lists the central chimpanzee population around 140,000. Around 40% are found in Congo, around 30% in Gabon, Cameroon holds the third highest population (in addition to 6,000-9,000 Nigeria-Cameroon chimps), and the rest of the population is scattered throughout the other CB countries (IUCN). Currently, as the central forests are not fragmented as much of the eastern and western forests, gorilla and chimpanzee habitats also remain mostly unfragmented.

Disease has not been documented as a true threat in this area. As they are not habituated and do not live near human villages, their human contact is minimal and therefore do not experience nearly as much exposure to human-transmittable diseases as those in West or East Africa. The exception is in Gabon. Gabon is home to the Minkebe Reserve, which is equatorial Africa's largest block of undisturbed rainforest (32,382 square kilometers) (Huijbregts et al., 2003). In 1990 there were an estimated 4,171–4,411 gorillas and 8,825–10,812 chimpanzees (Huijbregts et al., 2003). Gabon saw two Ebola outbreaks in 1994 and 1996, resulting in a 90% population decrease for gorillas and 98% decrease for chimpanzees (Huijbregts et al. 2003). Hunting and habitat destruction are not threats in this region, and the data

found here is similar patterns of a disease outbreak in 1995 for TNP chimpanzees and another Ebola outbreak in Gabon in 2002 (which was indeed traced to a gorilla). Minimal habitat destruction/fragmentation, the maintenance of large, dense forests, and minimal exposure/interaction with humans has mostly kept CB apes safe from the threat of disease. This data supports the argument that a high proportion of the deadly epidemics among apes originate from humans.

The CB depends on extractive resource exploitation and foreign aid/loans/investments for its development and economies. Conservation issues have been forced into their political agenda, and it is certainly in their best interest. Sustainability is key to their economies. The logging industry impacts 40% of Central African forests, and it is therefore imperative to understand the consequences apes face from habitat loss, fragmentation, and modification (Arnhem et al. 2008). Selective logging practices prevent a complete loss of habitat, although forest modification does have consequences. Forest modification has the potential to change the vegetation of the area, food availability, and distribution of resources. This in turn can change the social structure of a group of gorillas or chimpanzees (Arnhem et al., 2008).

E. Arnham (2008) conducted a short-term study between 2003-2004 on gorilla/chimp populations in an active logging zone in south-eastern Cameroon. Results from this study show different effects between gorillas and chimpanzees. This study mentions that chimpanzees have a 7-26 square kilometer habitat range that sometimes overlaps on the perimeters with other chimpanzee communities. They are highly territorial, especially around the core of their community, and generally do not share a habitat or wonder in between groups. Gorilla habitats range from 8-18 square kilometers and usually overlap with others. They defend their

social group rather than their physical territory. This data suggests that displaced groups of chimpanzees will either try to stay within their territories as much as they can or else fight for a new territory, showing little to no flexibility in spatial area. Their diet seems inflexible as well. Gorillas appear highly flexible in satisfying their needs, with displaced groups simply moving around and adapting.

The Cameroonian government has legislation involving forest management units, which compartmentalize the forests into 'annual allowable cuts', or AACs. AACs are selectively logged, at a rate of one per year, following a 30-year rotation. AACs are spatially determined based on the volume approved to be removed (Morgan et al. 2018). Arnhem's study involved four AACs (AAC1 & AAC2 logged before the study, AAC3 & AAC4 logged during the study) and one unlogged, control zone. This 176 square kilometer area did not have active hunting or snare activity, so these were therefore not considered variables to the outcome. In 2003, surveyors recorded 116 chimp nests in 82 nest groups. In 2004, surveyors recorded 115 nests in 56 nest groups. The 2003 gorilla survey showed 91 nests and 37 nest groups. In 2004, surveyors recorded 180 nests in 65 nest groups. Since AAC1 and AAC2 were already logged, the study was only able to compare before/after data from AAC3 and AAC4. In AAC3 and AAC4, it was observed that chimpanzee nests and density did not significantly change before and after logging. Density levels in AAC1 and AAC2 also remained stable. Despite the generally consistent nest numbers in all four logging compartments, an influx of chimpanzees was observed in the control zone in addition. Gorilla nest density, on the other hand, was six times lower in AAC4 directly after logging activities. In AAC3, which had ended logging six months prior to the 2004 survey, the same density was observed as before disruption. AAC1 density increased by two, and AAC2 density increased by four between 2003-2004. The

control zone remained stable. Fruit availability was also monitored to determine if food availability in logged/unlogged compartments is a driving factor in migrations. It was determined to not be a significant contributing factor.

Arnhem concludes that the study would need significantly more time and larger survey areas to draw any significant conclusions, however, certain trends were certainly apparent. Chimpanzees were far more resilient towards logging activities. They preferred older forests and were less likely to change habitat areas. The influx of chimps in the control zone is possibly due to displacement, however female chimpanzees tend to switch communities anyways. Their territorial nature and social structure could also attribute to only having a small-scale displacement. Gorillas often preferred younger and secondary forests, expanding their habitat throughout different vegetation. Their densities were highest in the older logged compartments and lowest in the most recent logged compartments. They exhibit spatial flexibility, as they do not care to compete for territory amongst themselves. They have also been observed as modifying their diets to whatever is within their surroundings rather than searching for a particular food. They are likely to return and adapt to an area as soon as human activities stop. Food availability did not significantly change within any compartments and did not account for any displacement of either ape.

David Morgan et al. (2018) suggest that forest conversion can have neutral, beneficial, or detrimental effects on wildlife. The Arnhem study supports this opinion. For example, gorillas seem to gravitate towards the younger, secondary forests. These forests have a lusher bottom-vegetation situation that better suits their needs, therefore benefitting their species. Morgan et al. even noted that gorilla populations have grown in exploited forests in other surveys. Chimpanzees remained around the neutral area, possibly skewed slightly negative as their displacement was more of an

issue than gorillas. The Morgan study cites scientists' predictions of chimpanzees being affected more negatively than gorillas, mentioning that other studies show a decline in chimp numbers after logging in an area. It is predicted to take 25-30 years for a chimpanzee population to recover in a logged area (Tutin, 2001). A specific case in Gabon is referenced, wherein a significant chimpanzee population decline was observed directly after the onset of a logging operation. This decline was due to deadly conflicts between chimpanzee groups, who were now fighting for territory.

Morgan et al. conducted their own ape survey in northern Congo between 2004-2012. The results of this study in Congo are comparable to the study in Cameroon. Chimpanzee density decreased nearby logging activities. Gorilla density decreased during logging activities where they were occurring, but actually increased in the surrounding logging areas and throughout the resulting varied-vegetation areas. They were also quick to repopulate logging areas that had recently stopped activities. This is further evidence that selective logging can benefit gorillas. Chimpanzees were more likely to build their nests far away from roads while gorillas seemed to build nests closer to roads. Both apes, like in the Arnhem study, exhibited an ability to persist throughout the logging cycle. Chimpanzees make small-scale and local adjustments (unless completely displaced or forced to fight for territory) while gorillas roam around and adapt their range and diet.

The area which was studied is the first FSC-certified area in Central Africa and had been selectively logged 30 years prior to the study. FSC, or the Forest Stewardship Council, is a global organization which require member countries to set and enforce sustainable forestry practices that are also beneficial to indigenous people. Natural forest recovery was well underway, many of the largest tree stems were still standing, and apes' preferred fruits were plentiful. Like Cameroon, the

government of Congo also has steps in place to ensure social and environmental values are maintained within its production forests. In 1999 the government signed an agreement with the Wildlife Conservation Society (WCS) and the local logging company, which allowed it to become FSC-certified. FSC certification requires conducting commercial timber inventory (CTI), which was cooperatively conducted by the government and the logging company. Conservationists are regularly involved in management, monitoring, and assessment suggestions and procedures. For example, eco-guards were hired to reduce and prevent hunting in logging areas. Meetings between stakeholders to discuss concerns and results proved as effective as following conservationists' suggestions. FSC certification also requires annual audits. These field visits require direct interaction with the director of the forestry company in addition to non-governmental partners such as NGOs and independent scientists. AACs and road construction is pre-approved. All logging companies are required to conduct inventories on trees.

Based on date from the studies in Cameroon and Congo, deforestation does not (yet) seem to be a major cause in the declining ape populations of the CB. The deforestation rate is only 1% annually (Tutin, 2001). Tutin does note that habitat fragmentation and road construction does negatively affect gorilla populations. Gorillas appear unwilling to cross large, uncovered forest gaps, confining them to an area. Roads and wear-off along road sides also produce large forest gaps that they are unwilling to cross. These 'barriers' didn't have any influence on chimpanzees. The data also suggests that sustainably extractive activities can be accomplished with little influence on apes and can even produce positive effects for certain species.

Caroline Tutin (2001) states that the number one reason for declining CB ape numbers is in fact hunting. This includes commercial hunting, bushmeat hunting,

taking baby apes for pets, and death from snares meant for other animals. Unfortunately, resource exploitation that doesn't directly influence ape populations can facilitate these illegal activities. Tutin (2001) observes that the highly selective logging activities of the CB region "does not in itself lead to loss of forest habitat or of individual species, but the roads opened by logging companies into previously inaccessible forests create access for hunters and the means of transporting bushmeat to lucrative urban markets".

Bad economic conditions in these countries as well as an influx of refugees from crisis zones also produce a higher demand for bushmeat, if not just for a food supply. National and international pressures have highly influenced wildlife laws and enforcement, however. Especially with organization such as the Cameroon-based LAGA, public awareness and concern has significantly increased and pushed this issue into the political agenda. Tutin states that the international sale and trade of baby apes has almost stopped as a consequence, although it is more difficult to monitor local and national sales. This study can serve as an example of why it is important to pinpoint exact reasons for declining ape population. Ape-focused NGOs can study the different ape groups, and what is specifically affecting them. NGOs, governments, and industries can create collaborative agendas that minimize negative effects on biodiversity. Again, this method could be used by conservation NGOs of different focuses, and then cooperate to create overall solutions.

OUTDATED CRITIQUES

Throughout the examination of all eight NGOs, the case studies, and the information sharing alliances, it seems negative critiques of NGOs are outdated. Within the past two decades, huge strides were taken in creating information sharing alliances in order to maximize efforts and reduce undercutting one another. PASA and GRASP are both prominent organizations with numerous partnerships, involving not only ape-focused NGOs, but zoos, universities, and other conservation organizations as well. *What Works in Conservation/Conservation Evidence* is also a global information exchange platform that employs experts to determine helpful and hurtful initiatives. With these three, working together is extremely stressed and simplified.

Most NGOs provide annual financial reports, audits, and activity reports just on their websites. Most say further information is available upon request. This fact, coupled with the number of donors and partners that are involved in each NGO, produces transparency and predictability.

All NGOs studied included education and empowering national capacity and livelihood building into their philosophies. All of them began with a sole focus on apes, however they quickly realized their goals needed to be amended to include people into conservation policies. This is both for public support and trust, as well as empowering alternative activities to divert hunting, land degradation, etc. Policies quickly changed, after original intervention, to include self-developing sustainable education and projects within communities.

All NGOs have provided numerous jobs of all types for community members. A lot of these jobs include law enforcement and eco-monitoring. Presence of these

officers alone has created a decreasing rate of illegal activities. NGOs have also been collaborating with local and national governments on legal and policy advising, increasing their legal capacity to prevent wildlife poaching and trafficking.

The ability to realize several different issues and develop agendas to address not only ape conservation, but socioeconomic and political conditions suggests that conservation NGOs have the capacity to truly make a difference, and that most arguments against them have been tackled. They are stepping up where governments lack, and providing tools and resources for communities to sustainably self-develop with policies that include conservation strategies.

CHAPTER FIVE: CONCLUSION

The conservation movement over the last century has grown enormously. There is a global awareness of the threats that humans impose on wildlife and the environment. This awareness is regularly creating more and more conservation NGOs among other sorts of organizations, including government agencies and intergovernmental alliances. Despite the growing global awareness and push for action, there has been a constant debate about whether conservation NGOs are actually successfully helping the situation. Several critics are quick to endorse the efforts and dedication of these NGOs while several are focused on negative consequences, suggesting that the negative consequences far outweigh and diminish any positive outcomes. The purpose of this study is to examine these arguments and attempt to determine if NGOs are making overall positive impacts on the global conservation agenda or if their efforts are indeed lost. By narrowing the focus from an overall question to looking at the African great apes, this study can thoroughly examine arguments made on each side of the debate by inspecting an NGOs actions, consequences from those actions, and where they have gone from there.

By examining eight different conservation NGOs and three separate case studies, this study can conclude a circumstantial positive outlook for the future of wildlife. As it turns out, the success of biodiversity conservation extends far beyond focusing solely on one species and/or its habitat. These NGOs in question have realized the need for a multilateral approach to conservation that equally includes socioeconomic development factors in surrounding communities. Law enforcement, education, healthcare, daily livelihoods, etc. are all factors that influence conservation efforts. Without factoring these together, efforts will be neutralized.

One major negative argument that critics of NGOs have are their worry of a struggle between conservation and development efforts undermining each other. It appears that conservation NGOs have realized their efforts are only successful when socioeconomic development is addressed as well. Conservation NGOS have built and provided supplies for hospitals, health clinics, schools, etc. as well as providing resources for economic growth. Another major argument is critics' worry of public opinion and resentment towards foreign NGOs imposing projects around a community. The idea of community-based conservation/development tackles this particular issue. All NGOs studied maintain a philosophy of conservation for Africa, by Africans. They do provide resources and education, however most of the people hired to run and implement their projects are local people. Numerous jobs are created within communities and their own knowledge and input is valued. This has proven beneficial for education as well. Local educators were proven to be well-received by local communities. Conservation has become no longer simply a foreign organization imposing rules and ideas about animals at the expense of communities, but a way to improve livelihoods every single day with an additional focus on the environment and its significance.

Poverty and education appear to be the two biggest factors influencing the successful implementation of projects. As most African communities are underdeveloped, people are forced to deal with poverty on a daily basis. Conservation is a foreign concept as well as the least of their immediate worries. Bushmeat hunting and other illegal activities can provide food and money for families that they perhaps could not get elsewhere and through legal jobs. Developing livelihoods from daily survival into a sustainable lifestyle is a major component that conservation NGOs have realized and began incorporating into their agenda.

Education goes hand in hand with poverty. It is truly the way out of a situation of stagnant underdevelopment and environmental degradation. Most conservation NGOs in this study have incorporated capacity-building and community-empowerment development strategies in with their conservation strategies. These NGOs all have stated the importance of empowering communities to self-develop. This method ensures the ability to continue a pattern of development, even if NGO interference comes to an end. They provide initial financial, technical, and human resources to begin development projects. Some of these projects include teaching small-scale sustainable farming and livestock, empowering small-businesses, market expansion, and credit systems, and classes and education centers about wildlife for both children and adults. These strategies provide communities with sustainable, legal alternatives to illegal hunting and trafficking activities.

Law enforcement education has made an enormous difference in conservation efforts. Many African countries have unstable political and economic situations, and therefore conservation has hardly been a priority. Often, government and law enforcement agencies have not known the legal status of many wildlife laws, activities, and products. The law enforcement system has been complicated and unknowledgeable in implicating and detaining criminals. LAGA is an excellent example of education in effective law enforcement, especially on a multi-national level. Training in both the field and court room in addition to public media ads have significantly reduced illegal activities. Poaching rates decline simply where NGO and law enforcement presence is known.

NGOs provide numerous valuable resources to communities. Projects could not be possible without NGOs investing large amounts of money into a community and the wildlife and habitat it focuses on. These are often resources that the local

and national governments are not able to provide due to poor and unstable conditions. The governments just don't have the capacity yet to fully invest in the conservation agenda. In addition to financial resources, policy advocacy and implementation is another way NGOs have been able to contribute to governments. Government and NGO relationship is a third argument critics have had, which seem to be addressed in those studied. As NGOs have been helping communities to develop socioeconomically and self-sustainably, this has fully warranted the support and interest of governments. NGOs offer governments policy advise to support their conservation agenda in ways that benefit economies and provide jobs. Governments trust to listen to NGOs' policy advise and collaborate in policy implementation.

Another factor discussed by conservation critics is the lack of information sharing, cooperation, and transparency between NGOs, and their concern that NGO activities might overlap and undermine one another. This fear has also been realized by three recently established organizations. GRASP, PASA, and *Conservation Evidence/What Works in Conservation* all have the purpose of collaboration and coordination. Two great ape-focused NGO associations and one platform of general conservation information sharing provide the cooperative attitude previously absent from conservation efforts. To maximize efficiency and results, these NGOs are able to share information, work together, and share resources.

Each of the three case studies discussed show specific problems that must be dealt with for successful conservation. For instance, the case of the gorillas in the Virunga Mountains show that extreme conservation methods in addition to conventional methods are necessary to increase populations. The DFGF provided the resources to give veterinary interference in a way that has saved many gorillas' lives. This example can not only be carried out by other ape-focused NGOs but

implemented in the agendas of other species-specific or overall wildlife conservation NGOs.

The example of the Gombe and Taï NP chimpanzees shows the pros and cons of habituation and the severity of diseases. Habituation of an ape, or other animal, provides researchers and veterinarians the ability to get within close range. It also provides ecotourists, who pay huge sums of money for the experience, the ability to get within close range. On the other hand, habituation has proven to be a huge factor in disease outbreaks and epidemics. The animals also do not scare away as easily and show less fear coming into villages.

Thirdly, the study in the Congo Basin addressing the population declines of gorillas and chimpanzees discusses the implications of deforestation. In this example, sustainable practices were shown to not have too detrimental of an effect on the apes. Hunting, however, ended up being a much larger issue. This proves it is important not only to look at the immediate effort of an activity, but that there can be other unintended consequences as well. Also, there was a huge difference between the responses of chimpanzees and gorillas. Not every 'solution' can be a blanket 'solution', compatible for every species. Research is needed on individual species, and solutions must be adapted and tailored for specific cases. An NGO has a better capacity to accomplish this than governments. They tend to focus on one species or even one sub-species and their habitat, allowing particular observations. Taking several species-specific observations and opening comparative discussions can be beneficial for biodiversity policies as a whole.

The incentive to conserve is no longer a Western idea for Western benefits. NGOs have been able to show African communities the financial benefits they gain from conservation and using sustainable practices. Revenue from ecotourism and

natural resources contribute greatly to national economies. If they lose these resources, their economies will suffer huge losses. Communities have realized the positive financial impact these have, and NGOs are empowering them to manage these opportunities to maximize their benefits.

Measuring the success of conservation NGOs can be achieved by looking at their overall impact in a community and region. They have been able to expand/create national parks and protected areas, create and influence national policies and laws, improve peoples' livelihoods through healthcare and education, develop self-sustaining local economies, and provide financial/technical resources where governments have fallen short. Most of the NGOs studied began with the purpose to save the great apes but have evolved into a multiplatform of activities. Their 'success' is achieved by a balance of conservation and development, where one does not undercut the other, rather complements it. This is all possible through their philosophy of strong community involvement and empowerment. NGOs can maintain biodiversity, but they must include socioeconomic development factors into conservation agendas. Educating communities and eradicating poverty is key to conservation, and strong community involvement is necessary. These, together with a global network of collaboration and communication, provides a positive outlook for conservation NGOs.

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LIST OF ABBREVIATIONS

AAA	Ape Action Africa
AAC	Annual Allowable Cut
AAI	African Apes Initiative
AFLEG	Africa Forest Law Enforcement and Governance
AU	African Union
AWF	African Wildlife Foundation
BCI	Bonobo Conservation Initiative
CAR	Central African Republic
CB	Congo Basin
CBG	Compagnie des Bauxites de Guinée
CCC	Chimpanzee Conservation Center
CEPF	Critical Ecosystems Partnership Fund
CITES	Convention on the International Trade in Endangered Species
CREF	Center for Research in Ecology and Forestry
CTI	Commercial Timber Inventory
CWAF	Cameroonian Wildlife Aid Fund
DFGF	Dian Fossey Gorilla Fund
DNEF	Direction Nationale des Eaux et Forêts
DRC	Democratic Republic of Congo
EAGLE	Eco Activists for Governance and Law Enforcement
EU	European Union
FDA	Forestry Development Authority
FLAG	Field Legality and Advisory Group
FLEGT	Forest Law for Enforcement, Governance, and Trade
FSC	Forest Stewardship Council
GAC	Guinea Alumina Corporation
GACF	Great Ape Conservation Fund

GDP	Gross Domestic Product
GNP	Gombe National Park
GRASP	Great Ape Survival Project
HMPV	Human Metapneumovirus
HNNP	Haut-Niger National Park
HRSV	Human Respiratory Syncytial Virus
IFC	International Finance Cooperation
IGCP	International Gorilla Conservation Program
IUCN	International Union for the Conservation of Nature
JGI	Jane Goodall Institute
LAGA	Last Great Ape Organization
LCWT	Landscape Conservation in Western Tanzania
MINFOF	Ministry of Forests and Wildlife
NGO	Non-Government Organization
NP	National Park
OGUIPR	Guinean Office of Parks and Reserves
OIPR	Ivorian Office of Parks and Reserves
PA	Protected Area
PASA	Pan African Sanctuary Alliance
SDS	Sustainable Development Goal
SEC	Suitable Environmental Conditions
SODEFOR	Society for the Development of Forests
SSN	Species Survival Network
TNP	Taï National Park
US	United States
UK	United Kingdom
UN	United Nations
UNESCO	United Nations Educational, Scientific, and Cultural Organization
USAID	United States Agency for International Development

VNP	Volcanoes National Park
WCF	Wild Chimpanzee Foundation
WCS	Wildlife Conservation Society
WWF	World Wildlife Fund

AFRICAN APE INFORMATION

(www.un-grasp.org)

1) Bonobo
    a. Range state: DRC
    b. Popuation: 15,000-20,000
    c. Status: endangered
2) Chimpanzee
    a. Western chimpanzee
        i. Range states: Côte d'Ivoire, Guinea, Liberia, Mali, Sierra Leone, Ghana, Guinea Bissau, Senegal
        ii. Population: 18,000-65,000
        iii. Status: critically endangered
    b. Central chimpanzee
        i. Range states: Angola, Cameroon, Central African Republic, Congo, DRC, Equatorial Guinea, Gabon
        ii. Population: 128,760 (114,208-317,039)
        iii. Status: endangered
    c. Eastern chimpanzee
        i. Range states: DRC, Central African Republic, South Sudan, Tanzania, Uganda, Rwanda, Burundi

ii. Population: 181,000-256,000

iii. Status: endangered

d. Nigeria-Cameroon chimpanzee

i. Range states: Nigeria, Cameroon

ii. Population: 4,400-9,345

iii. Status: endangered

3) Gorilla

a. Western lowland gorilla

i. Range states: Congo, Gabon, Cameroon, Central African Republic, Equatorial Guinea, Angola

ii. Population: 361,919 (302,973-460,093)

iii. Critically endangered

b. Cross-river gorilla

i. Range states: Nigeria, Cameroon

ii. Population: <250

iii. Critically endangered

c. Mountain gorilla

i. Range states: DRC, Rwanda, Uganda

ii. Population: 1,004

iii. Status: critically endangered

d. Eastern lowland/Grauer's gorilla

i. Range states: DRC

ii. Population: 3,800 (1,280-9,050)

iii. Status: critically endangered

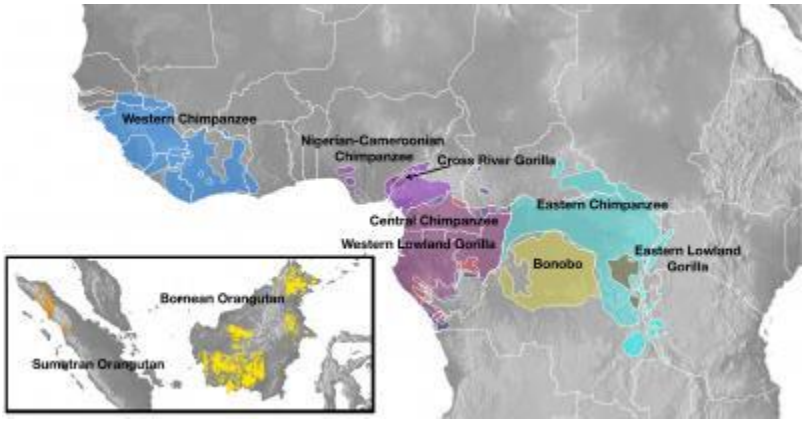

Figure 2. Dispersal of Great Ape Sub-Species. (www.eurekalert.org)