

INDIGENOUS CONSERVATION: AN ALTERNATIVE TO THE DISPLACEMENT  
OF FOREST DWELLING INDIGENOUS AND TRIBAL POPULATIONS?

A Thesis

by

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Submitted to the Graduate School

Appalachian State University

in partial fulfillment of the requirements for the degree of

MASTER OF ARTS

August 2010

Department of Geography and Planning

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ABSTRACT  
INDIGENOUS CONSERVATION: AN ALTERNATIVE TO THE DISPLACEMENT  
OF FOREST DWELLING INDIGENOUS AND TRIBAL POPULATIONS?

(August 2010)

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World-wide forest conservation initiatives and the creation of protected areas, in response to extreme world deforestation rates, are generally accompanied by the evictions of forest dwelling indigenous and tribal populations (ITPs). However, many of these populations had been living in their ancestral forests for hundreds and even thousands of years and appeared to have co-existed within their forests without detrimentally affecting the natural biodiversity. The health and significant biodiversity content, which may be due in part to the practices of the ITPs that have occupied these regions, are the very reason these valued forests are converted to conservation areas.

The forest dwelling ITP evictions profiled in this research are pygmy tribes who have resided in central and east Africa for thousands of years and continue to suffer both land and human rights violations. Their evictions result in environmental problems as they attempt to acquire natural resources in unfamiliar surroundings and social problems as they quickly enter into extreme poverty. These repercussions, which are becoming global issues, suggest the need for an alternate approach to forest conservation, one that responds to the needs of forest conservationists as well as the rights of forest dwelling ITPs.

Satellite imagery change detection suggests that forest dwelling pygmies evicted in the creation of three national parks in Uganda had not adversely affected biomass. A promising alternative to such evictions, forest conservation partnerships between forest dwelling ITPs and national governments and/or non-governmental organizations are located primarily in Latin America. Compilation of five case studies in Latin America enables a comparative study of different types of forest conservation partnerships in different political and cultural contexts. Common characteristics and indicators of success derived from analysis of these case studies and applied to forest conservation in Africa suggest that forest conservation partnerships are not a viable alternative to conservation evictions in Africa at this time. The lack of indigenous cultural and land rights are the primary obstacles.

## ACKNOWLEDGEMENTS

The people who have helped me to achieve my goals first and foremost are my mother and father. They have supported me throughout my academic career as well as through my life choices and experiences. I would not be here without them. Thank you. I would also like to thank my long time companion and friend Jonathan Shelton for his love, devotion, and guidance throughout this research process, my academic career, and the life we have shared together. In addition to Jonathan I would like to thank my children, Naia Isabella and Cerelia Sophia. Their bright shining faces and ability to love without question has inspired me to grow, learn, and seek to make the world a better place. Lastly I would like to thank the professors in the Geography and Planning department at Appalachian State University who have guided me on my journey. They have been immensely patient and unerringly supportive, particularly my thesis advisor. Thank you Jana, you have taken me on an unbelievable journey and brought me into the world of a true academic.

## Table of Contents

Abstract.....	iv
Acknowledgments .....	vi
List of Tables .....	ix
List of Figures .....	x
Chapter 1: Introduction.....	1
Chapter 2: Literature Review .....	8
Chapter 3: Methods .....	43
Chapter 4: Conservation Evictions of Pygmy Tribes in Central and East Africa and Effect on Vegetation Density in Areas of Eviction .....	58
Chapter 5: Forest Conservation Partnerships in Latin America: Case Studies.....	79
Chapter 6: Conclusions .....	112
Acronyms .....	133
Bibliography .....	135
Appendix A: Demands of Indigenous and Tribal Population Organizations in Respect to Protected Areas Established on their Terrestrial, Coastal/Marine, and Freshwater Domains.....	146
Appendix B: IUCN System of Protected Area Management Categories.....	148

Appendix C: Remote Sensing Results.....151

Appendix D: Timeline of Comprehensive Case Studies of Established ITP

    Forest Conservation Partnerships .....165

Biographical Information.....167

LIST OF TABLES

<u>Tables</u>	<u>Page</u>
6.1 Indicators of Success among the Forest Dwelling ITP Forest Conservation Partnerships .....	116

## LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
2.1 Korup National Park in Cameroon .....	22
2.2 The Eight Rungs on the Ladder of Citizen Participation .....	29
3.1 Inductive Research Cycling into Deductive Research.....	44
4.1 Current Pygmy Distribution in Central Africa.....	59
4.2 Members of a Batwa Tribe .....	62
4.3 Distribution of Batwa Communities in the Democratic Republic of Congo, Uganda, Rwanda, Burundi, and Tanzania .....	62
4.4 Locations of Bwindi Impenetrable National Park, Mgahinga Gorilla National Park, and Echuya Forest Reserve in Uganda .....	65
4.5 Location of Kahuzi-Biega National Park in the Democratic Republic of Congo .....	66
4.6 Members of a Baka Tribe .....	69
4.7 Location of D’ja Wilderness Reserve and Campo Ma’an National Park in Cameroon .....	71
4.8 Members of a Bagyeli Tribe.....	73
5.1 11 Million+ Hectares of Kayapó Territory in Brazil.....	81
5.2 The “Arc of Deforestation” Encroaching on Kayapó Land .....	82
5.3 Kayapó Protest in Altamira, Brazil against the Belo Monte Hydroelectric Dam.....	84
5.4 Kuna Yala Comarca in Panama .....	88
5.5 Ingano Established Alto Fragua Indiwasi National Park in Caquetá, Colombia .....	95
5.6 Kaa-Iya del Gran Chaco: a Co-Managed Region Protecting Guarani Territory.....	100
5.7 The Rio Platano Biosphere Reserve: A Top-Down Approach to Conserving Bio-Cultural Diversity.....	105
5.8 The RPBR Zones: Nucleus (Zona Nucleo), Cultural Zone (Zona Cultural), and a Buffer Zone (Zona de Amortiguamiento) .....	109

## CHAPTER 1

### INTRODUCTION

In our modern age forest conservation poses an ethical dilemma: which is more important, conservation agencies and world governments conserving our forests at any cost or the land rights of indigenous and tribal forest dwellers? This issue has its roots in an approach to forest conservation that recognizes pristine wilderness, i.e. no human inhabitants, as a necessity in conserving forests. However, in Africa, as in many other parts of the world, the land rights of forest dwelling indigenous and tribal populations (ITPs) are violated when they are evicted from their native lands for the purposes of forest conservation. In addition, the eviction of forest dwelling ITPs contributes to world-wide poverty levels as these ITPs enter into unfamiliar societies and attempt to provide for their needs. Finally, forest dwelling ITP evictions contributes to the growing number of world-wide refugees and internally displaced persons which subsequently increases the strain on natural resources and contributes to the degradation of the environment.

There are examples of forest dwelling ITPs in Latin America, however, who, through forest conservation partnerships, have successfully maintained their land rights, provided for their needs in a sustainable manner, and conserved their forests

from unsustainable resource use and development practices. The goal of this research, therefore, is to determine the viability of forest conservation partnerships as an alternative to forest dwelling ITP conservation evictions in Africa, thus moving toward reconciling this ethical dilemma.

The conservation of world forests has been demonstrated to be of the utmost importance for planetary health. Forest ecosystems play an important role in storing carbon, regulating water flow and protecting watersheds, providing habitats and resources for animal and plant species, and providing food and resources for many human populations. Deforestation, due to such anthropogenic activities as agriculture, logging, and development projects, has been responsible for the loss of approximately seven million hectares of forest per year (Mongabay 2010; FAO 2006) resulting in devastating environmental disasters, the endangerment and extinction of many animal and plant species, and the loss of important resources for many human populations. For these reasons forest conservation has become a priority for many conservation organizations.

The dominant approach to forest conservation has generally included the creation of protected areas and the subsequent eviction of human inhabitants. This approach to forest conservation is considered a remnant from forest conservation approaches in the late 19<sup>th</sup> century in response to unsustainable logging. This paradigm of forest conservation began in the United States and has become the

dominant paradigm around the world (Dowie 2009; Dowie 2006; Colchester 1997). It has been immensely successful and has contributed to the conservation of valued forests, thus slowing the current forest crisis. However, the evictions of forest dwelling ITPs has come to light and exposed much brutality associated with these evictions. The land rights of forest dwelling ITPs are rapidly coming to the forefront of this issue and has many populations and organizations calling for a new forest conservation paradigm.

In virtually every region of the world where forests and forest conservation areas exist there also exist forest dwelling ITPs. ITPs are generally defined by a traditional lifestyle, a unique culture as compared with the cultures in their national population, and their own social and political organization. ITPs are often considered to be some of the world's "first" people. That is to say that much of their ancestry can be dated back to the first people that populated a given region. Many forest dwelling ITPs have subsequently developed a tremendous capacity in their forests over many millennia. The knowledge that many ITPs possess is passed down through generations and is comprised of valuable experiences with the natural world that do not exist in urbanized cultures.

The evictions of forest dwelling ITPs splinters their communities and endangers their unique knowledge and experiences within the forest. For many ITPs, their small populations and isolation places whole tribes at risk of extinction

following eviction. In addition, many evicted forest dwelling ITPs find themselves joining the ranks of refugees. Like traditional political and religious refugees, “conservation refugees” suffer physical and emotional trauma following displacement from their homes and are forced to tax natural resources as they attempt to provide for their needs. Due to the increase of evicted ITPs experiencing extreme poverty, as previously noted, and the degradation of the environment, the addition of conservation refugees to the growing number of political and religious refugees is rapidly becoming a social and environmental issue.

Participatory management schemes, the inclusion of ITPs within forest conservation, are coming to play a large role in some forest conservation organizations. This approach allows both ITPs and forest conservation organizations to strike a balance between their respective goals. Conservation organizations are able to realize the protection of valued forests while ITPs gain the land rights and/or the entitlement to remain on their traditional lands. In addition, ITPs are able to play varying roles, from consultation to citizen control in accordance with Arnstein’s (1969) Ladder of Citizen Participation, in the management and decision-making of their traditional lands.

The rights and inclusion of ITPs is not a new approach within forest conservation. Beginning in the 1950s there have been international agreements addressing both the land and human rights of ITPs that have served to promote

participatory management schemes. The most noteworthy culmination of these schemes are the forest conservation partnerships found in Latin America. These forest conservation partnerships run the gamut of complete ITP control of their traditional forests to the consultation of ITPs in establishing park boundaries. Forest conservation partnerships generally include relationships with national government conservation agencies and/or non-governmental conservation organizations.

It should be noted, however, that there has been criticism associated with the inclusion of ITPs within forest conservation. Generally speaking, that criticism stems from the argument that not all forest dwelling ITPs use forest resources in a sustainable manner and that some have actually contributed to the endangerment and extinction of plant and animal species. However, in light of the fact that the forests from which ITPs have been evicted and placed under protection had been previously inhabited by ITPs for hundreds, even thousands of years; it appears that the evicted forest dwelling ITPs have been managing their traditional lands in a sustainable fashion. In the beginning of my thesis research and in response to the previously noted criticism, I use remote sensing in three locations previously inhabited by pygmy tribes in east Africa to determine if their evictions did indeed contribute to an increase in forest biomass, a proxy for forest health. I conducted change detection in satellite imagery both pre- and post- eviction which suggested,

based on initial change detection analysis, that their evictions did not contribute to an increase in biomass.

The problem of forest dwelling ITP evictions in Africa is exemplified by three pygmy tribes in central and east Africa: the Batwa, Baka, and Bagyeli tribes. These cases document the human and land rights violations of pygmies, considered by many, including researchers and their national governments, to be the descendants of the first people in these areas. In addition, the repercussions these tribes have faced following eviction including loss of resources, increased mortality rates and medical problems, poverty, and extreme marginalization have been well documented and have contributed to environmental and social problems. Ironically, the above three tribes epitomize sustainably minded populations, as suggested by both researchers and remote sensing change detection analysis, that have inhabited their ancestral forests for thousands of years. In addition, the lifestyle of these populations may have contributed to the sound health and species richness of the forests in these regions.

In seeking a viable alternative to the evictions of forest dwelling ITPs in Africa and allowing these populations to maintain self-reliance within their ancestral forests, forest conservation partnerships, at first glance, appear to fulfill the goals of ITPs as well as forest conservation organizations. I first sought to identify established forest conservation partnerships in Africa in order to piece together case

studies and pull out patterns and characteristics of success. However, no formally established forest conservation partnerships within Africa have been documented in the literature. Instead, I examine five forest dwelling ITPs in Latin America - the Kayapó, Kuna, Ingano, Guarani Izoceños, and the Miskito - who have formed partnerships to varying degrees with national government conservation agencies and/or non-governmental conservation organizations to gain land rights, successfully remain on their ancestral lands, and/or protect their lands from the encroachment of non-indigenous populations and development projects.

The issues of forest conservation and forest dwelling ITP evictions are two important yet seemingly conflicting issues. Each issue is worthy of significant funding and research in order to find solutions to these problems. Yet conventional solutions tend to be linear and focus on either forest conservation or ITP conservation evictions. Does a holistic and integrated approach, namely forest conservation partnerships that look to provide a solution to satisfy all interested parties, form a viable alternative?

## CHAPTER 2

### LITERATURE REVIEW

#### INTRODUCTION

The literature reviewed here primarily comes from experts and academics that focus their work and research on forest health, deforestation, forest conservation, forest conservation partnerships, and indigenous and tribal populations (ITPs), as well as non-governmental organizations (NGOs) who dedicate their study and support to both forest conservation and ITP rights. Using textual analysis, archival research, and interviews I have endeavored to accurately tease out the facts and events surrounding the issues of forest dwelling ITPs, their evictions and subsequent status as refugees, forest conservation, and forest conservation partnerships. In addition, I discuss the remote sensing techniques I used to support or deny claims of sustainability within forest dwelling ITPs.

The literature on the subjects of forest conservation and forest dwelling ITP evictions is often conflicting and in many instances designed to promote an organization's own agenda or an author's opinion. For example, regarding conservation evictions, the responsible parties generally prefer to downplay their

role as evictors and hold up their success within forest conservation to support the necessary consequences of evictions. On the other side, critics of conservation evictions often take an advocacy position and denigrate forest conservationists by casting them into the role of the “villain”. The facts, however, lie somewhere in the middle.

## IMPORTANCE OF FORESTS

There are a myriad of global issues confounding the majority of world governments and world citizens; the issue of deforestation and forest conservation plays prominently among these global issues. Currently, forests make up approximately 30% of the Earth’s surface, roughly half of the world’s aboriginal forest coverage (FAO 2006). Forests have, and continue to, play significant roles in the sustainability of the Earth and its ecosystems. Forests play a role in carbon sequestration thus offsetting the abundance of carbon dioxide in the Earth’s atmosphere; a major contributor to global climate change (Mongabay 2010; FAO 2006; Stock and Rochen 1998). Virtually the entire biomass of a forest functions to store carbon: trees, woody and leafy plants, grasses, and even soil (Mongabay 2010; FAO 2006). Forests regulate water flow and protect important watersheds by reducing soil erosion (Mongabay 2010; FAO 2006; Stock and Rochen 1998). Forests provide this function by preventing surface erosion and mass wasting (Mongabay 2010; FAO 2006). Forest canopies and undergrowth help prevent surface erosion

from both falling rain and rain flow that can create gullies and sediment build-up thus diminishing water quality and augmenting the shape of the land (Mongabay 2010; FAO 2006). Mass wasting, which can result in devastating landslides, can be minimized by the root strength in forest soils (Mongabay 2010; FAO 2006).

Forests provide important habitats and resources for animal and plant species, including the livelihood of many human populations. The loss of forest habitats is a leading cause of species destruction or displacement resulting in the disruption of ecosystems and loss of resources for many people (Mongabay 2010; FAO 2006). Approximately 300 million people live in forests, including 60 million ITPs that depend entirely on forests to sustain their way of life (FAO 2007). Forests not only supply forest dwellers with building materials but also with food products and supplements difficult to obtain elsewhere. Furthermore, forests provide the only source of medicinal plants to upwards of 75% to 90% of populations in developing countries (FAO 2007). The loss of forests for these populations can result in numerous unforeseen consequences running the gamut of loss of income to starvation.

## FOREST CONSERVATION

In the face of massive deforestation and subsequent consequences (Mongabay 2010; FAO 2006; Stock and Rochen 1998), forests, for the reasons discussed above, have become the focus for many conservation organizations and national

government agencies. World net deforestation is decreasing, largely due in part to these conservation organizations, but still hovers around 7 million hectares per year (Mongabay 2010; FAO 2006), roughly the size of South Carolina. Deforestation occurs for many reasons: agriculture, cattle ranching, development projects, charcoal for fuel, and mining and logging purposes (Mongabay 2010; FAO 2006; Stock and Rochen 1998). Between 2000 and 2005 the primary cause of deforestation was small scale agriculture (Mongabay 2010; FAO 2006). However, different regions experience different causes of deforestation. For example, forests in the Amazon face their greatest threat from cattle ranching while in Borneo the primary cause of deforestation is logging for wood products (Mongabay 2010; FAO 2006).

There are many repercussions to deforestation and often they are devastating. Around the world deforestation has been directly responsible for erosion induced landslides and floods claiming thousands of human lives (FAO 2006; Stock and Rochen 1998). Deforestation has resulted in the decrease and loss of biodiversity, including species extinction, due to the loss of habitat (Mongabay 2010; FAO 2006). Finally, and possibly the most insidious, deforestation has resulted in climate alteration and global climate change resulting from a reduction in carbon sequestration (Mongabay 2010; FAO 2006; Stock and Rochen 1998). Global climate change is a world issue that will eventually affect all countries and populations

despite localized forest loss. Six of the ten countries<sup>1</sup> facing the greatest degree of tropical forest deforestation can be found in Africa (FAO 2006). It is for this reason that a great deal of forest conservation initiatives are currently found there. One important goal of forest conservation organizations, including national government agencies, is the creation of protected areas. Protected areas can include, but are not limited to, national parks, reserves, and conservation areas. One of the first acts in the establishment of many of these protected areas is to evict forest residents and/or restrict the use of forest resources (Dowie 2009; Dowie 2006). This is based on the current paradigm of forest conservation: “pristine wilderness” (Dowie 2009). The establishment of protected areas in Africa has been no exception (Dowie 2009). These protected areas, for the most part, eliminate human use and resource acquisition in order to protect plant and animal species (Dowie 2009; Dowie 2006). In addition to the protection of natural resources, other benefits of forest conservation areas include tourism dollars and employment opportunities bringing a degree of financial stability to a region (Dowie 2009).

#### INDIGENOUS AND TRIBAL POPULATIONS (ITPs)

As stated in the introduction, ITPs are generally considered to be a region’s “first” people and before the development of “modern civilizations” indigenous and

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<sup>1</sup> Six out of the top ten countries experiencing deforestation occur in Africa. The top ten, including rank, are Brazil (1), Indonesia (2), Sudan (3), Myanmar (4), Zambia (5), United Republic of Tanzania (6), Nigeria (7), Democratic Republic of Congo (8), Zimbabwe (9), and Venezuela (10) (FAO 2006).

tribal populations were the only people to populate the planet. Today, world-wide ITPs number less than half a billion out of the planet's almost seven billion people (UNFPA 2009; U.S. Census Bureau 2009; Durning 1993). European colonization, dating back 500 years, was responsible for the loss of many ITP civilizations through the exploitation and development of land and resources, the marginalization of and violence toward ITPs, and disease from outside populations. These same actions that ITPs first experienced 500 years ago have continued through the centuries and, according to Durning (1993), are actually responsible for more ITP extinctions in the 20<sup>th</sup> century than any previous century. Making an important point for this study, Durning (1993) finds the loss of worldwide cultural diversity is equal to the loss of biological diversity.

Defining indigenous and tribal populations varies among organizations and, due to claims of indigenous origins by locals attempting to gain access to ITP territories, issues have arisen within forest conservation about what constitutes a true indigenous or tribal person. A widely accepted definition of ITPs is provided by the International Labour Organization (ILO), an organization that has worked to protect the rights of ITPs since the 1950s. The ILO (2009) defines "tribal populations" as living a traditional lifestyle, belonging to a unique culture as compared with the national population, and having their own political and social organization. "Indigenous populations" are included in this definition but are further defined by

the addition of living in a “historical continuum”, that is, living in a manner consistent with the lifestyle of their ancestors (ILO 2009). Durning’s (1993) definition of ITPs follows the ILO definition but includes “self-perception” by ITPs as stewards of their land and resources. This is an important distinction because the relationship between ITPs and their land has significant spiritual relevance which intrinsically ties their culture to their land.

Forests and sustainable resources are of the utmost importance for the survival of forest dwelling ITPs. In order for their generations to continue living on the land they inhabit, their forests and surrounding areas must be utilized in a sustainable manner. For these populations conservation of their forests is self-preservation (Durning 1993). Several researchers report that many forest dwelling ITPs understand this on a basic level (West and Brockington 2006; West, Igoe, and Brockington 2006; Lewis 2000; Durning 1993). Many forest dwelling ITPs make their decisions about their land and resources in terms of generations, not months or years, knowing full well that unsustainable practices would result in their extinction (Dowie 2006; Durning 1993). Ironically, many of these forest dwelling ITPs are evicted for conservation purposes (Dowie 2009; Dowie 2006; Brockington and Igoe 2006). The very reason these forests are converted to conservation areas is because of their health and significant biodiversity content (Dowie 2009; Dowie 2006), which may be due in part to the practices of the ITPs who have occupied these regions for

centuries. However, it should be noted that not all forest dwelling ITPs have made sustainable choices in using forest resources; Galetti (2001) notes that a number have actually contributed to the endangerment and extinction of both plant and animal species. Moreover, Denevan (1992) makes the argument that ITPs in the Americas have altered their landscape, including tropical forests, as far back as the arrival of Columbus in 1492. Denevan (1992) suggests that these ITPs did not live in a “natural” wilderness but manipulated their environment to encourage and manage the abundance of important plant and animal species. However, Denevan (1992) also notes that many forest dwelling ITPs practiced sustainable resource use within their “humanized” forests with no reduction in the natural biodiversity.

#### CONSERVATION EVICTIONS

ITP evictions have been documented on every inhabited continent; the Native Americans are but one well known example. Conservation evictions are generally lesser known but have also occurred on every inhabited continent (First Peoples Worldwide 2007). These evictions take place when conservation agencies, both governmental and non-governmental organizations, designate an area as a national park, reserve, or other type of protected area and evict all human inhabitants. The conservation evictions of forest dwelling ITPs most represented in the literature

occur in central and east Africa and focus on forest dwelling pygmy<sup>2</sup> populations. Researchers have documented the different motives held by agencies responsible for conservation evictions, and find that the common theme at the core is to conserve forests as pristine wilderness (Dowie 2009; Brockington and Igoe 2006).

In the late nineteenth century, one of the founding fathers of national parks, John Muir, effectively established the idea that national parks should be used for recreation only and should be left untouched and pristine (Dowie 2006; Colchester 1997). Muir felt that the relationships between people and nature, specifically in wilderness areas, were in opposition and the two could not be reconciled. Muir's beliefs about this relationship became the dominant paradigm for Americans in the 20<sup>th</sup> century and eventually led to a worldview that conservation required the exclusion of all people (Dowie 2006; Colchester 1997). Subsequently, policies of eviction in national parks and wilderness areas became the standard for conservation areas the world over (Dowie 2006; Colchester 1997).

The creation of the Smokey Mountains National Park (SMNP) in Tennessee reinforced the western idea of evicting people in order to conserve wilderness areas (Schmidt-Soltau and Brockington 2007; Lu Holt 2005; Negi and Nautiyal 2003). The formation of the SMNP resulted in the eviction of more than 1,200 non-indigenous

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<sup>2</sup> Human pygmies are generally defined as a person of small stature. Specifically, pygmies are a population with an average male height of less than 155 centimeters (Migliano, Vinicius, and Lahr 2007).

settlers and their families in the early 1930s (National Park Service 2006). The SMNP evictions were in response to massive logging operations by these settlers which left only 20% of the forest intact at the time the park was formed (National Park Service 2006). The example of the SMNP demonstrates a forest in jeopardy that required extreme action before the forest was completely decimated by logging. This conservation paradigm has resulted in continued conservation evictions even in places that have not been demonstrated to be in jeopardy by the local inhabitants.

The establishment of protected areas by forest conservation agencies has become an integral part of world conservation efforts and successfully preserved many of the world's forests. Examples such as the SMNP demonstrate the importance of protecting forests and may contribute to the reduction of deforestation rates. However, well established and reputable conservation agencies acting to conserve forests have been accused of evicting forest dwelling ITPs and repeatedly violating both their land and human rights. Many of these accusations remain unsubstantiated as the organizations that have been involved in conservation projects in which evictions took place deny these allegations and have not been held accountable for conservation evictions (Brockington and Igoe 2006). The literature on conservation evictions, both evicting organizations and evicted ITPs, show conflicting reports regarding specific details, but the top five Big

International Conservation NGO's (BINGOs<sup>3</sup>) - Conservation International, The Nature Conservancy, the World Wildlife Fund, the Wildlife Conservation Society, and the International Union for Conservation of Nature - are the primary organizations that have been accused of conservation evictions (Brockington and Igoe 2006; Dowie 2006).

Research shows that these organizations are not held accountable because they do not actively order or participate in evictions and displacement but rather engage in the encouragement and promotion of pristine wilderness (Brockington and Igoe 2006; Dowie 2006). In these instances BINGOs drive government conservation efforts with the threat of withholding funding and aid money through their influence with aid providers; they may also wait to get involved with national parks and protected areas until after the eviction and resettlement processes have occurred (Brockington and Igoe 2006). In addition, influential members of large conservation organizations have encouraged evictions and resettlement while the organization itself maintains a policy of non-evictions (Brockington and Igoe 2006).

There are also smaller NGOs who are found at the frontline of conservation evictions. These include the African Wildlife Foundation, George Adamson Wildlife Preservation Trust, Africa River and Rainforest Conservation, and the African Parks Foundation (APF) (Brockington and Igoe 2006). The APF, for example, a Dutch

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<sup>3</sup> Indigenous leaders dubbed the term "BINGOs" to refer to the Big International Non-Governmental Organizations (Dowie 2006).

conservation organization, manages parks in South Africa, Mali, Democratic Republic of Congo, Zambia, Sudan, and Ethiopia (NSCR 2008). In 2005 they came under fire for their role in supporting the evictions of seven tribes from the Omo National Park in Ethiopia. Members of different tribes experienced unprovoked arrests and claim that park officials and local police burned down over 400 homes as part of a harassment campaign (NSCR 2008). When questioned, the APF claimed that they did not want to get involved with local government matters and put a clause in the park agreement that they would not take over management of the park until all tribe members were resettled (NSCR 2008). According to the Native Solutions for Conservation Refugees (2008), the APF were made aware of the measures of harassment and evictions and were asked to put a “no eviction” clause into the contract; they failed to do so.

Colchester (1997) writes that some forest conservation organizations feel so intensely about the need to revert protected areas to pristine wilderness that they fail to admit, or they deny outright, that ITPs have rights to the land they have occupied (Colchester 1997). Ironically, conservation and research organizations that enter into remote yet inhabited forests rely heavily on the knowledge and expertise of local ITPs to act as guides and forest experts (Herlihy 2009; Dowie 2009). To compound matters researchers have documented the repeated violation of basic human rights during the displacement process. ITPs have been subjected to “hard

evictions”: the physical and forcible displacement of residents from their homes and land (Schmidt-Soltau and Brockington 2007; Dowie 2006). Hard evictions have been documented with significant aggressive force against men, women, and children through the use of rubber bullets, tear gas, physical abuses often resulting in death, the killing of livestock, and setting fire to homes and other structures (First Peoples Worldwide 2007; Forest Peoples Programme 2007; Geisler and De Sousa 2001; Colchester 1997).

Not all evictions are quite as brutal. “Soft evictions”, also termed voluntary resettlement (VR), are a method of resettling ITPs through more diplomatic means. VR is used as an effort to bypass expensive international policies and standards set for involuntary resettlement and evictions, assuming these policies are adhered to, as well as to protect the reputations of conservation agencies (Schmidt-Soltau and Brockington 2007). In theory, VR allows indigenous populations and local communities a choice in their displacement and resettlement. However, most countries and organizations do not have policies in place for this type of resettlement, subsequently allowing for a loose interpretation of VR that often results in coercive tactics to remove people from the land in question (Schmidt-Soltau and Brockington 2007).

Schmidt-Soltau and Brockington (2007) describe one of the earliest attempts at VR which occurred in Cameroon in 1986 when the Korup people were evicted in

order to establish the Korup National Park (KNP) (fig 2.1). Previously, in 1937 the Korup Native Administration Forest Reserve was established to protect the region's forest; however, the Korup people were able to maintain usage rights of their forest (Schmidt-Soltau and Brockington 2007). In 1986 KNP was established and policy makers opted to use VR to move the Korup people. The Korup natives were told they would only receive compensation if they left on their own accord. If the Korup did not leave willingly they were told armed guards would drive them out (Schmidt-Soltau and Brockington 2007). Resettlement began in 1992 and was considered the flagship of this method of conservation due to the appearance of success, and became the method by which all other parks should model their resettlement practices. Less than ten years later a European Union evaluation of KNP resettlement practices deemed the methods "involuntary" and a failure (Schmidt-Soltau and Brockington 2007). In addition, the evaluation noted that the only effective conservation method in establishing national parks and wilderness reserves is to use participatory management schemes with the ITPs living in the area (Schmidt-Soltau and Brockington 2007).

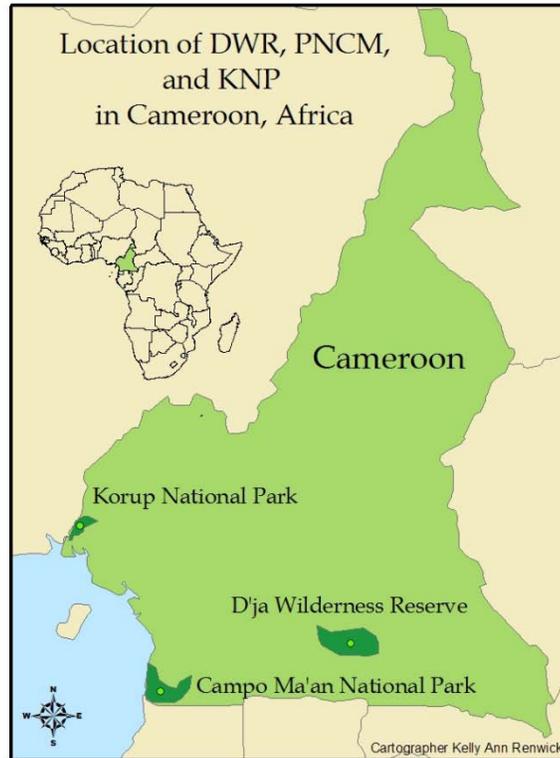


Figure 2.1. Korup National Park in Cameroon.

The use of participatory management schemes has become a growing trend in some forest conservation approaches, namely the use of forest conservation partnerships. However, only some conservation agencies advocate its use. Other NGOs and government conservation agencies faced with the task of creating protected areas who do not evict inhabitants outright will offer ITPs resettlement opportunities or provide financial compensation in place of other forest conservation approaches (Schmidt-Soltau and Brockington 2007; Brockington and Igoe 2006; Brockington and Schmidt-Soltau 2004; Negi and Nautiyal 2003; Geisler

and De Sousa 2001). However, many researchers have documented the inadequacy of these types of mitigation. Authorities and/or administrators are often unable to provide ITPs an alternative livelihood or the necessary funds to acquire resources the forest had once provided for free. In addition, new settlements generally do not provide the quality or quantity of resources needed to support the evicted communities. Finally, compensation does not alleviate the poverty that ITPs slip into following the disruption of their traditional lifestyle and social systems (Brockington and Schmidt-Soltau 2004; Negi and Nautiyal 2003; Geisler and De Sousa 2001). In addition, compensation promised does not always consider ITP lack of experience in financial and social systems. For example, several Batwa tribes were quickly swindled after they were compensated following their evictions from Bwindi Impenetrable National Park (BINP) and Mgahinga Gorilla National Park (MGNP) in Uganda (Nelson and Hossack 2003). In addition, the financial donors insisted on paying these forest dwellers with a check and did not consult the Batwa to make clear their understanding of financial systems (Nelson and Hossack 2003).

## CONSERVATION REFUGEES

The evictions of forest dwelling ITPs has the added dimension of contributing to the growing number of world-wide refugees; yet another reason the current paradigm of forest conservation must be examined. Currently, refugees and internally displaced persons fleeing persecution and/or oppression for reasons of

political or religious differences and/or ethnic cleansing reached approximately 22 million in the early 2000s (Myers 2001; UNHCR 2000). The number of refugees and internally displaced persons today has risen to approximately 31 million (UNCHR 2008). These refugees have been responsible for taxing the environment and exploiting already limited resources in areas surrounding and hosting refugee camps. The transient nature of refugees and their often post traumatic mental state make sustainable resource acquisition and use virtually impossible as they provide for their needs (Jacobsen 1997).

In addition to the more traditional political and religious refugees, environmental refugees, persons displaced for environmental reasons such as natural or anthropogenic disasters, desertification, drought, deforestation, floods, and famine, also contribute to the degradation of the environment following displacement (Myers 2001; Myers 1997). The reasons for displacement are different for environmental refugees than for the more traditional refugees; however, the repercussions on the environment as these refugees provide for their needs are the same. They tax natural resources, both plants and animals, degrade water systems, and increase deposits of garbage and human waste (Myers 2001; Myers 1997). In 1995 there were approximately 25 million environmental refugees (Wilkinson 2002; Myers 2001; Myers 1997); today that number is up to 30 million with an estimate of up to 200 million by the year 2050 (IOM 2009; Reed 2007; Myers 2001).

Conservation evictions that lack sufficient mitigation are now contributing to a third type of refugee: conservation refugees. Conservation refugees have the same associated psychological trauma and the same physical effects on the environment as other refugees (Dowie 2009). Conservation refugees not only lose their sense of self and community, but also tax the environment as they acquire necessary resources and subsequently contribute to the devastating effects on the environment for which refugees have become known.

Case studies from ten African countries between 1977 and 1998 have documented more than half a million people evicted for conservation purposes (Geisler and De Sousa 2001). Other sources have compiled conservation eviction totals in Africa at 14 million (Dowie 2006) and in India between 600,000 and 1.6 million (Dowie 2006; Negi and Nautiyal 2003). The best estimates have been based on the extrapolation of the size of the protected areas and population densities which puts conservation refugees upwards of tens of millions world-wide (Geisler and De Sousa 2001). The addition of the growing number of conservation refugees to the number of traditional and environmental refugees has become a monumental global issue that not only affects the Earth's resources but also contributes to the effects of poverty. This crisis is particularly evident in Africa where civil war and environmental devastation have created millions of refugees. In addition, poverty and corruption in national governments in Africa have contributed to a great deal of

environmental degradation; the addition of conservation refugees in these regions only exacerbates this issue.

In addition to the effects refugees have on the environment, forest dwelling indigenous and tribal conservation refugees suffer multiple social and physical effects. The lack of access to traditional foods, nutrients, and medicinal plants results in severe health problems (Dey 1997) including increased infant mortality and morbidity (Jackson 2006). Health problems are compounded for these indigenous and tribal conservation refugees due to their lack of access to traditional pharmacopeia and their inability to access local health care. Severe racial prejudices, lack of identification cards required for travel and to receive medical care, and lack of funds significantly inhibit ITP access to medical clinics (Jackson 2006). Forest dwelling ITPs become exposed for the first time to pandemics such as HIV, substandard housing, and minimal access to clean water (Jackson 2006). These issues not only disrupt ITP physical lives but also their cultural lives. Displaced forest dwelling ITPs lose their sense of identity, culture, and spirituality when separated from their forests (Jackson 2006; West and Brockington 2006; Colchester 1997; Dey 1997; Durning 1993). Traditional singing and dancing ceremonies that maintain ITP connections between community and forest disappear as their distance from the forest widens (Jackson 2006). This further increases health susceptibilities and increases incidents of alcoholism and domestic abuse (Jackson 2006).

## APPROACHES TO CONSERVATION

Due to the negative effects conservation refugees have on the environment and the devastating societal effects conservation refugees suffer upon eviction, many conservation and human rights organizations are calling for the current forest conservation paradigm to be examined and a new approach to forest conservation established. West, Igoe, and Brockington (2006) attribute the eviction of forest dwelling ITPs, in the name of forest conservation, to the insularity of western solutions to global issues. Westerners typically have a well defined separation between nature and culture and appear unable to understand that many cultures are intrinsically tied to their forests (West and Brockington 2006; West, Igoe, and Brockington 2006). As previously noted by Schmidt-Soltau and Brockington (2007) (pg. 22), participatory management schemes have been considered the only effective conservation methods in establishing protected areas. Accordingly, this approach is being explored by some conservation agencies in order to find a common ground and a balance between global forest conservation strategies and ITP land and human rights.

Participation is a method used by many governments and organizations to allow citizens and/or members degrees of power in public decision-making. This governance practice allows populations "...presently excluded from the political and economic processes, to be deliberately included in the future...induce[ing]

significant social reform” (Arnstein 1969; 216). Arnstein’s conceptual framework distinguishes the degrees of citizen control which can be applied to the role of forest dwelling ITPs who have and continue to face conservation evictions, as well as the forest dwelling ITPs who have participated in forest conservation partnerships. Through the “Ladder of Citizen Participation”, the evolution of forest conservation and its effects on local inhabitants becomes transparent. According to Arnstein (1969) there are eight rungs on the Ladder of Citizen Participation (fig. 2.2). Manipulation and therapy are categorized as “Non-Participation” and primarily allow a population to be controlled and educated by empowered stakeholders (Arnstein 1969). Informing, consultation, and placation are categorized by “Degrees of Tokenism” and allow a population to have a voice in an organization’s processes but does not allow for follow through by empowered stakeholders (Arnstein 1969). The final category, “Degrees of Citizen Power”, includes partnership, delegated power, and citizen control. This category allows a population considerable control throughout all aspects of decision making processes (Arnstein 1969).

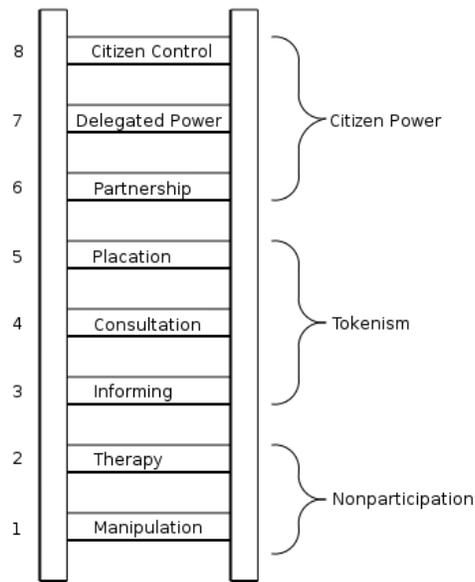


Figure 2.2. The Eight Rungs on the Ladder of Citizen Participation (Arnstein 1969).

The forest dwelling ITPs that have faced conservation evictions find themselves on the lowest rung of the ladder: manipulation. Their role is one of non-participation and they are subject to any and all decisions made by empowered stakeholders. Participatory management schemes would place forest dwelling ITPs on the top three rungs of participations: partnership, delegated power, and citizen control. The forest conservation partnerships discussed below, and in the comprehensive case studies of forest dwelling ITP partnerships in Chapter 5, incorporate varying degrees of citizen power, thus demonstrating the extent to which forest dwelling ITPs are moving up the ladder of participation. Subsequent

travel “up the ladder of participation” would include increased land rights and human rights for forest dwelling ITPs.

The exploration of participatory management schemes by conservation organizations is a new approach to forest conservation which could result in the movement of forest dwelling ITPs up the ladder of citizen participation and offer potential for increased land rights. However, increasing land rights for ITPs is not a new approach and, as discussed below, has been a focus of international organizations for more than fifty years. Incorporating participatory management schemes into international ITP land right agreements may be a basis for a “new conservation paradigm”.

### **International Agreements: A ‘New Conservation Paradigm’?**

As stated previously, in light of the consequences of conservation evictions some conservation organizations and human rights organizations are calling for a new conservation paradigm. Although the dominant forest conservation paradigm involves removing forest dwelling ITPs, in this context, it is important to note that there are existing international agreements acting as precedents to protect the land rights of all indigenous populations. ITP Convention 107 was adopted by the International Labour Organization (ILO) in 1957 and ratified by 27 countries. It states that indigenous peoples have the following rights (Negi and Nautiyal 2006):

- ∞ Communal ownership of ancestral lands
- ∞ Management of natural resources on their lands
- ∞ Exercising their customary laws
- ∞ Representing themselves through their own institutions
- ∞ To remain on their own lands except under very exceptional circumstances and should eviction occur land should only be compensated with land.

A subsequent international agreement, Convention 169, which was adopted by the ILO and the United Nations in 1989, replaced Convention 107. Convention 169 acknowledges the permanence of ITPs and their cultural diversity rather than encouraging their integration into other cultures; this convention has been ratified by 20 countries (ILO 2009). More recently, in 2004, a United Nations draft declaration decreed that indigenous populations shall not be forced off their lands and relocation must occur voluntarily and with informed consent (Dowie 2006). Furthermore, if relocation should occur it must be accompanied by fair compensation and indigenous populations must have the option to return if possible (Dowie 2006).

In combination with the previous conventions and policies designed to protect ITP rights, the Convention on Biological Diversity and the Durban World Parks Congress agreed in 2003 to protect cultural diversity as well as the world's

biodiversity (Venant 2008; UNEP 2003). Venant (2008) argues that this consensus forms an original approach to conservation and protected areas, thus creating a “new conservation paradigm”. The new conservation paradigm incorporates participatory management schemes through sustainable development within forest conservation areas, the maintenance of resources and life support systems within valued forests, the integration of the rights and interests of all interested parties, primarily local communities and conservation agencies, and finally, the involvement of local communities, including forest dwelling ITPs, in both the creation and management of protected areas (Venant 2008; UNEP 2003).

The World Wildlife Fund (WWF) and the International Union for Conservation of Nature (IUCN), two leaders in world-wide conservation, also developed their own guidelines and policies pertaining to ITP land rights. Based on the outcome of the 1996 World Conservation Congress in Montreal, the IUCN and the WWF recognize the following in regards to ITP land rights (IUCN and WWF 1999):

- ∞ Protected areas will only succeed if the land occupied is valued locally and nationally
- ∞ ITPs and ITP land rights must be acknowledged and respected through the use of full participation in the co-management of land and resources

- ∞ The “knowledge, innovation, and practices...” of ITPs are integral to the management of protected areas
- ∞ Biodiversity conservation will be enhanced through the use of traditional ITP tenure and resource use.

The IUCN and WWF joint policy was adopted based on the demands of ITP organizations (Appendix A) and the IUCN protected areas categories (Appendix B) (IUCN and WWF 1999). In addition, the WWF clearly states in its “Statement of Principles on Indigenous Peoples and Conservation” that they will not support any ITP interactions without the “...free and informed consent of affected indigenous communities...or adversely impact the environment of indigenous peoples’ territories...” (IUCN and WWF 1999, 5).

### **Forest Conservation Partnerships**

Despite the approach to conservation as amended by the Convention on Biological Diversity and the Durban World Parks Congress, the ILO conventions, and the WWF and IUCN guidelines on ITP rights; conservation evictions continue to be the dominant paradigm in forest conservation (First Peoples Worldwide 2007; Forest Peoples Programme 2007; Schmidt-Soltau and Brockington 2007; Dowie 2006; Geisler and De Sousa 2001; Colchester 1997). However, not all forest conservation efforts follow the current paradigm. In particular, ITP forest conservation can take several forms throughout the world. The majority of these conservation efforts have

not been formalized and are considered to be “conservation through self-determination” (Stevens 1997). This method of conservation refers to the “conservation as self-preservation” approach in which ITPs practice sustainable methods of resource use in order to provide for future generations (Durning 1993).

Formally established methods of ITP conservation efforts consist of forest conservation partnerships. Forest conservation partnerships are comprised of agreements between ITPs and NGOs and/or governmental conservation agencies that serve to satisfy the goals of all interested parties. Generally speaking, forest dwelling ITPs gain the land rights they desire while conservation agencies have their goals of forest conservation satisfied. These partnerships can be initiated at the behest of forest dwelling ITPs, governmental conservation agencies, or NGO conservation organizations. Stevens (1997) finds that these partnerships generally occur when ITPs lay legal claims to their land, halt the exploitation of their land and resources, and/or because they were approached by a government agency or NGO to participate in land management (Stevens 1997).

The most well documented forest conservation partnerships in the literature are found in Latin America. These areas include indigenous protected areas (IPAs), indigenous community conserved areas (ICCAs), co-managed areas, and a top-down management approach. It should be noted however, that forest conservation partnerships are not without criticism. Zimmerman et al. (2001) points out that

insulated forest dwelling ITPs begin to take on western characteristics after venturing into forest conservation partnerships, thus diminishing their traditional and sustainable lifestyle. This issue becomes difficult to address due to the effect of contact between forest dwelling ITPs and outside cultures (Zimmerman et al. 2001). ITPs who have gained knowledge of outside cultures cannot erase the knowledge they have gained nor can they control whom or how contact with outside cultures is initiated. In addition, ITPs who have gained knowledge of outside cultures generally want to become educated about the outside world (Zimmerman 2009). Galetti (2001) points out another common criticism: that not all ITPs conserve their land and resources and some have actually contributed to species extinction. The use of remote sensing change detection techniques can be used to monitor the patterns of ITPs over several decades providing important data addressing this issue.

### **Indigenous Protected Areas**

IPAs, first initiated in Australia in response to the needs of Aborigines, are lands historically belonging to the “traditional owners” which they voluntarily protect through an agreement with their national government (Esposito 2008). IPAs are required to meet conservation standards set up by the international community and, in addition to occupancy by the traditional owners, traditional owners must actively manage the resources of their land and support their livelihood through sustainable methods (Esposito 2008).

## **Indigenous Community Conserved Areas**

Community conserved areas (CCAs) are natural ecosystems without an overwhelming human presence, that have important and/or high levels of biodiversity, and are voluntarily and actively conserved by a community reliant on the ecosystem's resources (Pathak 2006; Pathak et al. 2004). A CCA becomes an ICCA when the community practicing conservation is indigenous. ICCAs can be initiated solely by a community or with the help of conservation NGOs to procure government and/or financial support. According to Pathak (2006) there are six primary categories for CCAs which also translate to ICCAs:

- ∞ Conserved land is for the livelihood of the community
- ∞ Conserved land is for religious or cultural purposes
- ∞ Land is conserved for irrigation and/or drinking water for the community
- ∞ Land is used for traditional agricultural methods
- ∞ Land is designated as a watershed
- ∞ Land is used for traditional fishing methods.

It is important to note that if the indigenous community is not in the role of a primary player it is not a true ICCA (Pathak 2006).

## **Co-Managed Areas**

ITP co-managed areas are regions designated by government, but responsibility, accountability, and decision making is shared between the

government and ITPs (Beltrán 2000). ITPs can lay claims to be the primary stakeholders in this type of conservation under the following conditions (Beltrán 2000):

- ∞ Current legal or customary rights to the land and/or resources
- ∞ Continued relationship with the land and/or resources
- ∞ Dependency on the land and/or resources
- ∞ Historical and cultural relationships with the land and/or resources
- ∞ Valued knowledge and skill in the management of the land and/or resources
- ∞ Demonstrated effort in the managerial process
- ∞ Compatibility with government and international conservation and development policies.

### **Top-Down Management Approach**

A top-down management approach, which is standard for international and transnational organizations, is also present within the BINGOs and national government conservation agencies. Top-down management approaches in forest conservation generally consist of decision making following data analysis. Decision makers typically lack a close proximity to proposed conservation areas (Zahler 2003). Organizations that use top-down approaches generally have the capacity to

make rapid progress through funding, resources, and connections but lack first-hand knowledge of local environments and culture (Zahler 2003).

## REMOTE SENSING

Satellite imagery and digital image processing offers quantitative and visual support to determine the effects forest dwelling ITPs have on an ecosystem's biomass. In response to the substantial criticism that not all forest dwelling ITPs live sustainably and cannot be treated equally in forest conservation partnerships, remote sensing can provide evidence of the sustainability of evicted forest dwelling ITPs by comparing forests that have been inhabited by ITPs pre- and post-eviction.

Remote sensing is a valuable tool in studying land-cover and plays an important role in environmental and conservation research; it is often the only method to accurately measure changes that occur on the Earth's surface (Kerr and Ostrovsky 2003; Petit, Scudder, and Lambin 2001). However, working with satellite imagery is not without problems. Satellite data can be subjected to errors as signals make their way through the atmosphere and interact with the Earth's surface (Kerr and Ostrovsky 2003). Atmospheric and surface noise such as water vapor, molecules, and other scatter can distort radiance values affecting the accuracy of images (Kerr and Ostrovsky 2003). Problems with satellite data is often exacerbated in tropical regions. Cloud cover and moisture in the atmosphere is often high in frequency and density (Mas 1999). In addition, closed canopy covers preclude the gathering of ground data (Westman, Strong, and Wilcox 1989). To counter these

issues Westman, Strong, and Wilcox (1989) advocate the use of Advance Very High Resolution Radiometer data due to its high frequency of data collection and combining large scale resolution data with vegetation maps and/or aerial photography. Unfortunately these types of data are not always readily available in the public domain; researchers relying on public access data must rely on the best available data.

Once data is acquired images can be processed with a variety of techniques; for the purposes of change detection in vegetated areas the use of a normalized difference vegetation index (NDVI) is an effective tool. Healthy vegetation absorbs most visible light and reflects most near infra-red and red light; NDVI pulls out the near infra-red and red in the electromagnetic spectrum (Lambin 1999). These vegetation indices are sensitive to color changes, moisture level, and absorbed photosynthetically active radiation and can easily differentiate between areas high or low in biomass (Lambin 1999; Sader et al. 1994). In addition, NDVI is able to differentiate between forests, agricultural lands, and other types of vegetation; this is an ideal technique to use in detecting changes in forested regions (Lambin 1999).

Change detection applications use satellite imagery from two or more time periods that can effectively monitor changes in land-cover over time (Mas 1999). There are a variety of different change detection techniques: image differencing, vegetation index differencing, selective principal components analysis, direct multi-date classification, post-classification analysis, and combination image

enhancement/post-classification analysis (Mas 1999). A number of studies have shown that the most accurate method of change detection is image differencing (Wilson and Sader 2002; Petit, Scudder, and Lambin 2001). Image differencing subtracts radiance values of one image from radiance values of another leaving a residual image. The residual image can be analyzed based on pixel distribution; pixels showing no change are centered around a mean while pixels with an increase or decrease in radiance values are distributed in the wings (Jensen 2005; Petit, Scudder, and Lambin 2001; Mas 1999). Vegetation index differencing uses the same technique as image differencing but uses images that have been processed with a NDVI in order to better detect changes in vegetated regions (Jensen 2005; Mas 1999).

## CONCLUSION

The literature used in this research documents the importance of forests to our Earth's ecosystems and climate regulation as well as the urgent need for forest conservation in the wake of mass deforestation and forest ecosystem disruption. However, the literature also brings to light the conditions under which forest dwelling ITPs are affected by the current paradigm of forest conservation, namely conservation evictions. Conservation evictions, as documented by the literature, not only violate forest dwelling ITP land and human rights, but also contribute to the growing number of world-wide refugees. The subsequent status of ITPs as conservation refugees, following eviction, detrimentally affects environmental resources and contributes to the growing number of people in poverty. For these

reasons, forest conservation and the protection of forest dwelling ITP rights are both rapidly becoming a global crisis.

In addition, the literature documents a number of cases of forest dwelling ITPs who have successfully established forest conservation partnerships. Governance of these areas run the gamut of complete managerial control of high value forests, found in the top three rungs of the ladder of participation (“citizen power”), to a top-down management approach found in the middle rungs of the ladder of participation (“tokenism”). These partnerships are best documented from cases in Latin America and simultaneously address the issues of forest conservation and forest dwelling ITP rights.

However, there has been no published work that addresses or evaluates options for conservation evictees, particularly in terms of bridging the disconnect between the western conservation paradigm and the intrinsic sustainable lifestyle of many forest dwelling ITPs. Rather, the literature focuses on past and current events of conservation issues, conservation evictions, and/or forest conservation partnerships with forest dwelling ITPs. This suggests that an interdisciplinary and holistic approach is lacking in these issues and requires that academics, experts in the field, and decision makers work together in looking at the larger picture.

In the following chapters I discuss the methods I use in this research, cases of conservation evictions of pygmy tribes in central and east Africa and the effect on

vegetation in areas of eviction, the study areas I selected to compile comprehensive case studies of forest conservation partnerships, and finally, the conclusions from these case studies. The culmination of these chapters, and the goal of this research, serves to determine the viability of forest conservation partnerships as an alternative to forest dwelling ITP conservation evictions in Africa.

## CHAPTER 3

### METHODS

#### INTRODUCTION

The primary goal of cultural geographers, when conducting research, is to “shed light on shared values and behaviors relating to the geographer’s concerns of space, place, and environment” (Shurmer-Smith 2002, 97). Cultural geography, according to Shurmer-Smith (2002), is not something people possess but what people do: the way people communicate, share, evaluate, and reinforce their surroundings. The central concern of this thesis is to show how conservation paradigms and practices, or “what people do”, affects the possibility of forest conservation partnerships as an alternative to forest dwelling ITP conservation evictions in Africa. Accordingly, my research is based on textual analysis and archival research as well as interviews, three of the mixed methods found in cultural geography and qualitative research (Shurmer-Smith 2002).

Initially, I used quantitatively derived remote sensing techniques to compare and contrast forest health pre- and post- ITP evictions. I conducted remote sensing analysis in three African national parks in order to determine whether the evictions

of forest dwelling ITPs actually contributed to forest health in these cases (see chapter 4).

I followed this by constructing case studies from Latin America of established forest conservation partnerships to develop a theory about how and why those partnerships are successful and corroborated these initial findings with expert interviews (see chapter 5). I conclude my thesis with an inductively derived theory which can cycle into future deductive research (fig. 3.1).

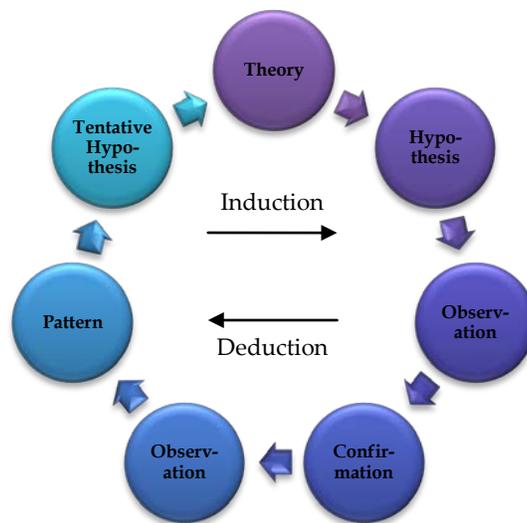


Figure 3.1. Inductive Research Cycling Into Deductive Research.

## METHODS

### **Methodological Approach**

The general analytic strategy with which I approached and practiced this research is derived from feminist research practices. In particular, I used the self-reflective concepts of reflexivity and positionality. Reflexivity, according to Aitken and Valentine (2006), is the reflection researchers undertake throughout their work as to who they are, what they know, and how they come to know it. Positionality, according to Aitken and Valentine (2006), is the way in which experiences, beliefs, and societal positions affect the researcher's perceptions of the world and the methods with which research is conducted. Reference to both reflexivity and positionality serves to remind the researcher that the manner in which she comes to know and process data as well as her beliefs, experiences, and position in society are to be taken into consideration when selecting research topics, selecting research methods, analyzing data, and forming conclusions. These concepts aid the researcher in maintaining objectivity and accurately interpreting results.

McCorkel and Myers (2003) explore the idea that within reflexivity and positionality the identity of a researcher affects the outcome. McCorkel and Myers (2003, 203) suggest that "...researchers should subject themselves to the same level of scrutiny they direct toward the subject of their inquiry". Ekinsymth (2002) sums up such self-reflection as bringing a researcher into the researched. Due to the

nature of this thesis and uncovering the horrific circumstances forest dwelling ITPs face upon eviction, self-reflection concerning my own intentions during the research process allowed me to maintain objectivity and avoid taking an advocacy position, thus maintaining academic integrity throughout this research.

### **Textual Analysis and Archival Research**

Textual analysis and archival research are the analysis of printed documents and visual media including diaries, historical documents, maps, landscapes, films, photographs, and print media (Aitken and Valentine 2006; Brown 2002). Due to the inability to travel to Africa and Latin America to gather primary data, I selected these methods as the best approach to glean past and current data on conservation evictions as well as successful forest conservation partnerships. Conflicting reports regarding conservation evictions and ITP conservation efforts made it necessary to do a great deal of textual analysis and archival research to construct the facts within each case study. I acquired data from journal publications, books, news sources, NGO documents and reports, and maps. In some instances one or two publications provided the necessary events and chronology to accurately portray a comprehensive case study of forest conservation partnerships. In other instances little information was published by one source and multiple sources were required to piece together events and chronology. This drawback of textual analysis can open researchers to accusations of re-presenting information (Shurmer-Smith 2002); I was

able to overcome this obstacle by finding reliable corroborative data and by conducting interviews with experts in the field.

## **Interviews**

Interviews enabled me to gain information not available in published literature, verify data, and test my tentative conclusions. However, there are risks in conducting interviews. According to Bennett (2002), interviewers need to avoid a rigid line of questioning and allow the flexibility of conversational tones to guide the direction of the interview. A natural conversational flow is necessary to receive a thorough understanding of the issue and to avoid missing an opportunity for a perspective or issue not anticipated (Bennett 2002). In addition, the questions and responses within an interview are affected by unconscious and conscious assumptions and behaviors that can be based on virtually any attribute: gender, age, race, experience, etc. As each person in the interview process watches and learns about the other, the interview situation begins to change. Change in behaviors during the interview and in methods of speaking and listening can affect the results or perception of results (Bennett 2002).

In order to establish open communication, a natural flow of conversation, and to avoid unconscious and conscious assumptions I began the interviews by revealing my research and my role as a graduate student. I knew the professional biographical information on each interviewee and revealing who I was allowed both

of us to have a knowledge and perspective of the other. In addition, I paid attention to keeping the questions flexible to allow the interviewees the room to guide our conversation in the direction they felt most pertinent to my research and their experience. I selected people to interview based on their knowledge in the field, presence in the literature, and accessibility.

Each person I selected to interview, with the exception of Georgianne Nienaber, is discussed in detail in a following section, "Study Area Selection and Compilation of Case Studies". Nienaber was the only interview I conducted concerning Africa. All other interviews provided me with information about case studies on forest conservation partnerships in Latin America. Nienaber is an investigative journalist who has spent considerable time in the Democratic Republic of Congo (DRC). She has primarily been investigating corruption charges by ITPs in the area against DRC government forest conservation efforts. While the corruption charges have not been legally substantiated, Nienaber (2009) provided the perspective of her personal experiences of corruption within African government conservation systems.

### **Comprehensive Case Studies and Analysis**

I compiled comprehensive case studies of established forest dwelling ITP forest conservation partnerships, as defined in the literature review, from the best available literature that included forest dwelling ITPs as defined in the literature

review. I developed these examples in order to represent the range of types of forest conservation partnerships (presented in Chapter 5). For each type of partnership, I relied on cases that were most thoroughly documented. For each case, I compiled a chronology of forest conservation which includes past and current events regarding conservation efforts and partnership success, and the characteristics that were considered “successful” in the literature. Once the chronologies were complete, I systematically compared them looking for common characteristics shared by established forest conservation partnerships. I also explored and compared the patterns of history and actions of the ITPs involved in established forest conservation partnerships with the patterns of the history and actions of forest dwelling ITPs that have experienced conservation evictions. Overlap between these patterns of history and actions of ITPs involved in forest conservation partnerships combined with any predicted patterns of behavior by conservation evictees, based on their history and actions, would indicate a degree of validity supporting my hypothesis (Yin 2003).

The limitations of case study analysis are primarily that my data were gathered from secondary sources. The use of secondary sources requires a fair amount of faith in the researchers/authors. I was able to address the limitations of this method by verifying, when possible, who, when, and why my secondary data

was conducted. Furthermore, I was able to corroborate evidence and verify the reliability of some sources through expert interviews.

### **Remote Sensing**

Using change detection techniques with a Normalized Difference Vegetation Index (NDVI) I determined if there was a decrease, no change, or increase in vegetation biomass following the ITP evictions out of three parks profiled in this thesis: Bwindi Impenetrable National Park (BINP), Mgahinga Gorilla National Park (MGNP), and Echuya Forest Reserve (EFR). Increased vegetation would suggest that forest dwelling ITPs in these three parks were hindering the conservation process of valuable ecosystems; decreased vegetation or no change would suggest that these forest dwelling ITPs did not need to be evicted in order to conserve valuable ecosystems.

I selected these national parks based on their well documented presence of forest dwelling ITPs, the Batwa pygmies, their well documented history of the conservation evictions of the Batwa, and the availability of corresponding satellite imagery pre- and post- eviction. All three protected areas evicted the Batwa in 1991 requiring me to find satellite imagery before and after that time. I collected Landsat thematic mapper (TM) data for BINP from 1984 and Landsat Enhanced thematic mapper (ETM) data from 2001 (NASA 2008). I collected Landsat TM data for MGNP and EFR from 1987 and Landsat ETM data from 2001 (NASA 2008). I processed all images using ERDAS Imagine 9.3. I created subsets of each protected area in order

to work with smaller data files. I processed the subsets using an NDVI in order to pull out vegetation reflectance demonstrating the amount of green biomass in the region. I used image differencing techniques using the NDVI images to form a residual image of the changes in vegetation that had occurred within a 14 to 16 year period. I set the user-specified threshold at the commonly used value of 20% increase and decrease within the image differencing application. I used five study areas within each residual image in order to contain pixel analysis inside the park and to avoid pixel values (PV) under cloud cover. I analyzed PVs using a Change Image Histogram and a Surface Profile to determine the range of difference within PVs and for better visual acuity. The floating point Change Image Output Value were between -255 and 255; values in the range of -51 to 51 demonstrate no change in vegetation density, values less than -51 demonstrate a decrease in vegetation density, and values greater than 51 demonstrate an increase in vegetation density.

#### STUDY AREA SELECTION AND COMPILATION OF CASE STUDIES

As stated previously, I selected forest conservation partnerships in Latin America because they are the best documented in the literature. In addition, the following cases within Latin America reflect a close proximity to the climatic and equatorial regions of the conservation evictions I profile in Africa. This allowed comparison between forest types and forest dwelling ITPs way of life, as dictated by weather and climate, on both continents to maintain consistency. The cases I selected

also met the criteria of ITPs as defined in the literature review and the criteria of the four types of forest conservation partnerships outlined in the literature review.

### **Kayapó: Para and Mato Grosso, Brazil**

The case study of the Kayapó was compiled primarily from Zimmerman 2009; Zimmerman 2006; Schwartzman and Zimmerman 2005; Zimmerman et al. 2001; Peres and Zimmerman 2001. This literature best documents the Kayapó conservation efforts. Zimmerman and coauthors' work is corroborated by Daniels 2002 and Dowie 2009. Zimmerman is the self-proclaimed authority on the Kayapó. Both the literature and her experience living with the Kayapó, researching their culture while working as the director of the Kayapó Conservation Project for Conservation International, support this claim. Based on Zimmerman's expertise and literature on the Kayapó, I interviewed her to verify my preliminary findings of success or failure within Kayapó conservation efforts.

### **Kuna: Panama**

Kuna conservation efforts are best documented by Chapin 2009 and Chapin 2000 and corroborated by Daniels 2002 and Stevens 1997. Chapin, an anthropologist and authority on indigenous populations, has been working directly with indigenous populations for 40 years, including the Kuna. Based on Chapin's expertise and literature on the Kuna, I interviewed him to verify my preliminary findings of success or failure within Kuna conservation efforts.

## **Ingano: Caquetá, Columbia**

The case study of the Ingano was compiled primarily from Borrini-Feyerabend et al. 2007; the Amazon Conservation Team (ACT) 2005; and Botero 2005. This literature best documents the Ingano conservation efforts and is corroborated by Ortiz 2004. I selected the literature from the ACT because they partnered with the Ingano and documented the creation of the conservation area. I selected literature from Borrini-Feyerabend because she is an advisor for the International Union for the Conservation of Nature (IUCN) as well as the head of the IUCN Social Policy Programme. The IUCN works closely with ITPs around the world in the context of conservation. I selected literature from Botero because he has documented the Ingano as community participants in a national park. I had intended to interview Botero to corroborate the literature as well as to uncover issues not discussed in the literature, to corroborate my findings, and to gain an expert's opinion on the issue of forest conservation partnerships as a viable alternative to conservation evictions. Unfortunately Botero did not have any available contact information. I then chose to interview Borrini-Feyerabend based on her role as an advisor and head of IUCN Social Policy Programme. I made contact with Borrini-Feyerabend and she referred me to a colleague, Carolina Amaya Pedraza, the science director of Centro de Estudios Médicos Interculturales, an expert who has worked with ITPs in Latin America for 25 years. I interviewed

Pedraza to verify my preliminary findings of success or failure within Ingano ITP conservation efforts.

### **Guarani Izoceños: Bolivia**

The case study of the Guarani Izoceños was compiled primarily from Borrini-Feyerabend, Kothari and Oviedo 2004, and Beltrán 2000. This literature best documents the Guarani Izoceños conservation efforts. Borrini-Feyerabend, as discussed above, is advisor to and head of the IUCN Social Policy Programme. Her collaboration with Kothari and Oviedo documents community participation with indigenous populations and conservation areas. Beltrán also works with the IUCN and has focused his work on ITPs and protected areas. Based on the work Borrini-Feyerabend has done with ITPs for the IUCN I chose to interview her to verify my preliminary findings of success or failure within Guarani Izoceños ITP conservation efforts. I made contact with Borrini-Feyerabend several times but was unable to schedule an interview.

### **Miskito: Mosquitia Rain Forest Corridor in Honduras and Nicaragua**

The case study of the Miskito was compiled primarily from Herlihy 2009 and Herlihy 1997 and is corroborated by the World Rainforest Movement (WRM) 2003 and the Trade Environment Database. This literature best documents the Miskito conservation efforts. Herlihy is a Geography professor at the University of Kansas and has devoted a chapter in Stevens (1997) to the Miskito and their conservation

efforts. Herlihy played an active role in mapping, conducting a bio-cultural inventory of the region, and in establishing the reserve in which the Miskito reside. In addition, Herlihy lived and worked side by side with the Miskito during this time. Based on Herlihy's expertise and literature published about the Miskito and their role in a forest conservation partnership, I interviewed him to verify my preliminary findings of success or failure within their conservation efforts.

## ANALYSIS

The compilation of case studies of established forest conservation partnerships, as defined in the literature review, in Latin America were derived from the best available literature that included forest dwelling ITPs, as defined in the literature review, and corroborated by expert interviews. Analyzing case study research requires researchers to examine and categorize data and to digest both quantitative and qualitative evidence to construct a viable hypothesis and/or theory (Yin 2003). According to Yin (2003) it is important to have two analytical strategies in place, general and specific, before compiling data in order to accurately compile and understand the necessary evidence and to appropriately develop internal and external validity. The general analytical strategy I selected, based on Yin's (2003) work, was to develop case descriptions. Developing case descriptions are best suited to the use of secondary data as well as the complexity of my research topic (Yin 2003). The specific analytical technique I selected is pattern matching logic.

According to Yin (2003) pattern matching logic within case study analysis is a highly desirable technique because, if patterns coincide, it serves to bolster the case study's authority (Yin 2003).

As discussed previously, I looked for significant characteristics in the chronologies of forest conservation partnerships to discern if patterns, history, and actions of forest dwelling ITPs involved in these partnerships coincided with patterns of forest dwelling ITPs that have undergone conservation evictions. Had case study analysis demonstrated a coincidence between these two groups it would have increased the validity of an inductively derived theory that forest conservation partnerships are a viable alternative to forest dwelling ITP evictions in Africa.

It is important to note, however, that case study analysis is not without limitations. According to Yin (2003) qualitative techniques have not been well defined in case study analysis and there are no significant "fixed formulas". In order to address this limitation, I created categories of significant characteristics of successful partnerships. Using these categories I was able to record and analyze the frequency of events represented in the case studies I compiled (Yin 2003). I created a timeline in order to focus on the historical pattern of these events (Appendix C). These techniques allowed me to analyze the comprehensive case studies without the use of fixed formulas and to better discern the necessary patterns and characteristics to determine the viability of my hypothesis (Yin 2003). In addition, due to the

chronological nature of the comprehensive case studies a timeline of events allowed for a quick visual display of ITP conservation patterns.

## CONCLUSION

The methods used in this research were designed to first give me a full understanding of what is involved in the current state of forests, deforestation, and forest conservation, including forest conservation partnerships, as well as the implications of conservation evictions and ITP rights in Africa. Second, the methods used provided the appropriate analysis in fully understanding and comparing the characteristics of successful forest conservation partnerships and their applicability to forest dwelling ITPs in Africa as an alternative to conservation evictions. While this is a monumental issue these methods have provided significant evidence to continue further research. The following chapter profiles well documented conservation evictions of pygmy tribes in central and east Africa as well as the lifestyle and life choices of the pygmies in these regions.

## CHAPTER 4

### CONSERVATION EVICTIONS OF PYGMY TRIBES IN CENTRAL AND EAST AFRICA AND EFFECT ON VEGETATION DENSITY IN AREAS OF EVICTION

#### INTRODUCTION

The conservation evictions of forest dwelling indigenous and tribal populations (ITPs) most noted in the literature occurs in central and east Africa and specifically targets pygmy populations. This is primarily because pygmies are the predominant human populations found in forests considered for conservation in these regions of Africa (fig. 4.1). In addition, researchers have been documenting the history and culture of pygmies for decades and have subsequently published a great deal of literature on the subject. Pygmies are also garnering attention in the literature due to their historic knowledge of forest ecosystems, the extent of conservation evictions, and their marginalization from outside communities.

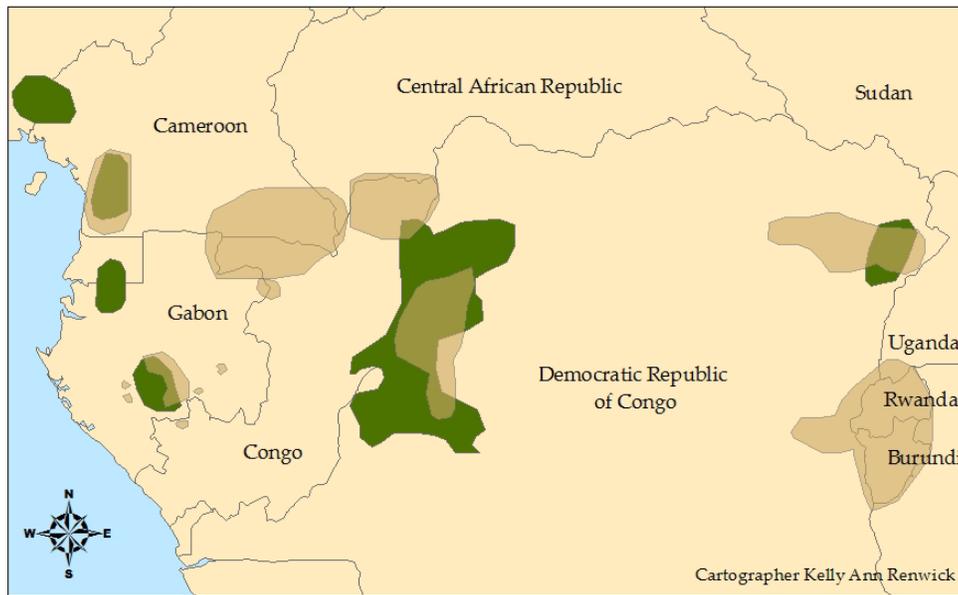


Figure 4.1. Current Pygmy Distribution in Central Africa. Dark green areas represent forested regions thought to have existed around 18,000 years ago. Tan areas represent the locations of present-day pygmy populations (Bower 2009).

Human pygmies are generally defined by their stature; the average height of a male in a pygmy population is less than five feet (Migliano, Vinicius, and Lahr 2007; Destro-Bisol et al. 2004). Pygmies in central and east Africa are thought to have a small stature due to an adaptation for life in the forest. The theories suggest this adaptation is due to the density of tropical forests, thermoregulation by compensating for a lower height to weight ratio, and/or to require less sustenance in a region lacking in nutritional productivity (Migliano, Vinicius, and Lahr 2007; Destro-Bisol et al. 2004). African pygmies are believed to be the descendants of the earliest populations in central and east Africa (Destro-Bisol et al. 2004). Many pygmy

tribes subsisted for thousands of years as nomadic hunter-gatherers until displacement and/or partial assimilation into Bantu farming cultures approximately 3,000 years ago (Destro-Bisol et al. 2004). More recently, through forest conservation evictions, pygmy tribes are again experiencing displacement from their traditional land. Small numbers retain their nomadic hunter-gatherer lifestyles; however, in addition to conservation evictions, marginalization from outside populations and civil war are causing remaining pygmy tribes to disappear within many African forests.

This chapter discusses specific examples of forest conservation evictions of the Batwa, Baka, and Bagyeli pygmy populations in central and east Africa and remote sensing techniques designed to suggest whether conservation evictions of pygmy tribes in Uganda resulted in increased vegetative cover, a proxy for forest health. The specific circumstances in the following examples of conservation evictions are different yet tend to follow the same general pattern of European forest conservation in pygmy inhabited forests. European forest conservation generally began around the early 20<sup>th</sup> century, during the height of colonization, and decision makers typically allowed ITPs to remain in their forests for the first half of the century. Subsequent evictions followed in the 1970s, 1980s, 1990s, and today following the expansion of the forest conservation paradigm of pristine wilderness.

## CONSERVATION EVICTIONS OF THREE PYGMY GROUPS IN CENTRAL AND EAST AFRICA

### **Batwa**

The Batwa (fig. 4.2) existed as hunter-gatherers in the forests of central and east Africa (fig. 4.3) for thousands of years; their ancestral communities have been dated as far back as 50,000 years ago (Fourshey 2004). They are commonly accepted as the first inhabitants in these regions of Africa (Tumushabe and Musiime 2006; Fourshey 2004; Lewis 2000), yet many African governments do not recognize Batwa rights as land owners, as having rights to their traditional resources, or, in some cases, as citizens within their own country (Lewis 2000). Yet Batwa are deeply tied to their forests - physically for resources and spiritually as a sacred space (Lewis 2000). Their traditions hold that God put them in the forest in order to act as stewards of the forests and if they do not live in harmony with the forest they fear they will desecrate God's home (Tumushabe and Musiime 2006). Moreover, they believe God lives in the forest and that it is the only place they can worship and conduct ceremonies (Tumushabe and Musiime 2006).



Figure 4.2. Members of a Batwa Tribe (Middled 2007).

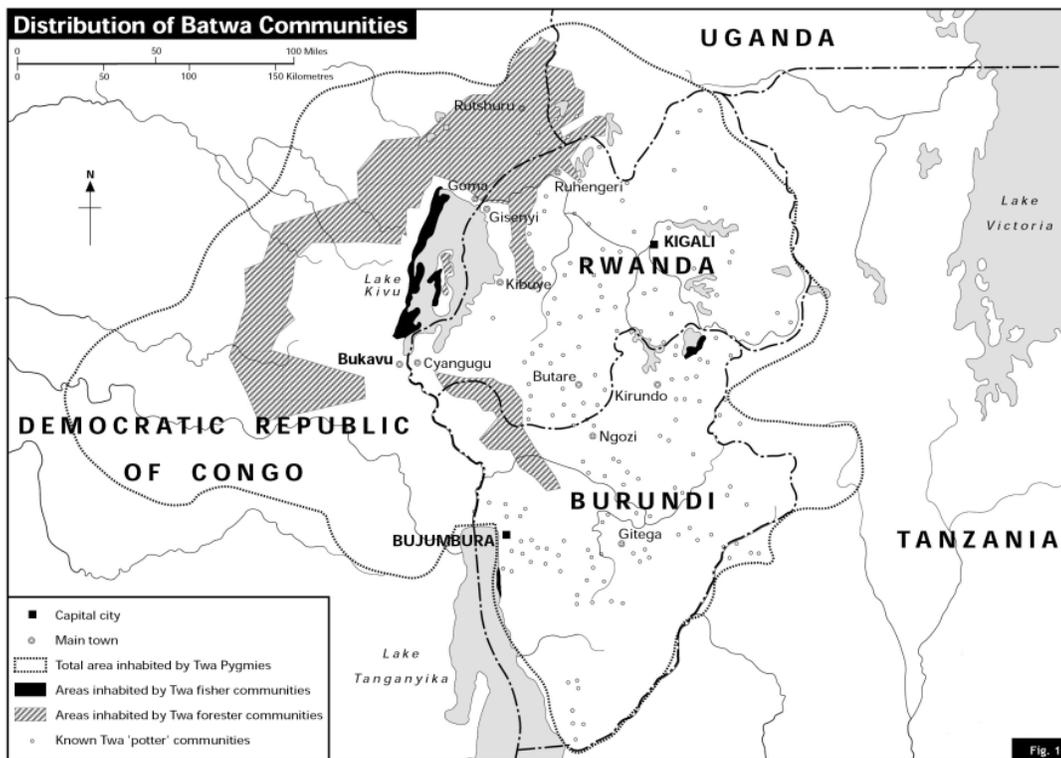


Figure 4.3. Distribution of Batwa Communities in the Democratic Republic of Congo, Uganda, Rwanda, Burundi, and Tanzania (Lewis 2000).

Batwa communities, in general, began to splinter prior to evictions when they became marginalized by outside communities following deforestation in the 19<sup>th</sup> and 20<sup>th</sup> centuries by agriculturalists, pastoralists, and European colonizers (Lewis 2000). In addition to deforestation they also faced significant discrimination and segregation outside the forest (Lewis 2000). The marginalization Batwa communities faced upon first making contact with outside societies became exacerbated as they were forced to enter outside cultures permanently following conservation evictions.

In Uganda, conservation efforts began in the southwest between the 1920s and the 1930s. In 1932 Kasatoro and Kayonza Crown Forest Reserves were established which were later combined to form the Impenetrable Central Crown Forest in 1942 (Tumushabe and Musiime 2006). The Batwa did not participate, nor were they consulted, when the forest reserves were first established. They were, however, allowed to live in and use their forests within the protected areas. Ironically, the establishment of the parks protected the Batwa's territory from outside encroachers by preventing resource acquisition by non-indigenous populations within the protected areas (Lewis 2000). The Crown Forest Reserves became a gorilla sanctuary in 1961; it was at this time that Batwa communities experienced their first round of conservation evictions; however, only a few families were affected (Tumushabe and Musiime 2006). In 1991 all the Batwa were evicted by the Uganda Wildlife Authority when the gorilla sanctuary, formerly the Crown

Forest Reserves, was established as Bwindi Impenetrable National Park (BINP) (fig 4.4) (Tumushabe and Musiime 2006).

Mgahinga Gorilla National Park (MGNP) (fig 4.4) was also originally established as a forest reserve between the 1920s and 1930s. It then became a gorilla reserve in 1941 (Tumushabe and Musiime 2006). As in the case with the Crown Forest Reserves the Batwa did not participate in the establishment of this protected area but were allowed to continue living in and using their forest (Lewis 2000). In 1991 the gorilla reserve became the MGNP and the Uganda Wildlife Authority evicted all Batwa inhabitants (Tumushabe and Musiime 2006). Batwa communities were also evicted from Echuya Forest Reserve (EFR) in 1991 by the Uganda Wildlife Authority (fig. 4.4) (Tumushabe and Musiime 2006; Blomley 2003; Lewis 2000).

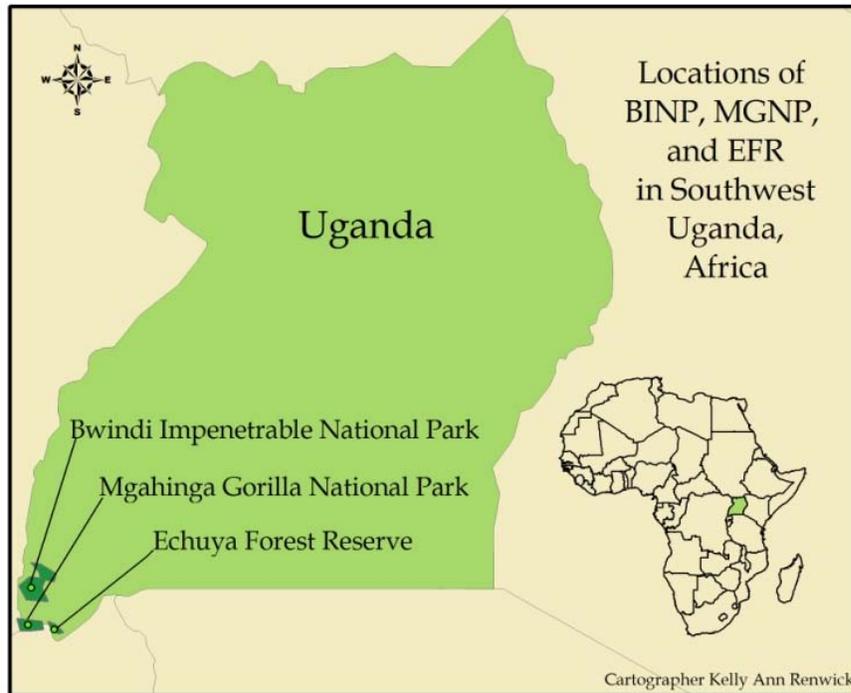


Figure 4.4. Locations of Bwindi Impenetrable National Park, Mgahinga Gorilla National Park, and Echuya Forest Reserve in Uganda.

The eviction of these Batwa communities in Uganda resulted in the collapse of their traditional cultural units and lifestyle. In 1995, 82% of the Batwa in Uganda were found to be landless and lacking sufficient access to food and resources to maintain a healthy lifestyle (Tumushabe and Musiime 2006; Lewis 2000). Many Batwa were living as squatters near the parks and were routinely accused of entering the park and killing animals; consequently they were subject to brutal and tortuous penalties (Lewis 2000).

Batwa communities also experienced conservation evictions in the Democratic Republic of Congo (DRC). In the 1960s, 580 Batwa families were

violently and forcibly evicted in order to form the Kahuzi-Biega National Park (KBNP) (fig. 4.5) (Lewis 2000). The Batwa families from this region had no prior warning of their impending eviction, no compensation, and no resettlement support. This may be a reason why the death rate of this group is the highest of any other evicted Batwa with a 50% loss of the originally evicted group and the highest infant mortality rates of all Batwa (Lewis 2000).



Figure 4.5. Location of Kahuzi-Biega National Park in the Democratic Republic of Congo.

Following the conservation evictions in both Uganda and the DRC, out of a population between 70,000 and 87,000, less than 7,000 Batwa are currently living in or have access to their forests (Blomley 2003; Lewis 2000). The Batwa are primarily

landless and impoverished and make a living as day laborers, potters, and/or beggars (Lewis 2000). One of the biggest obstacles to their quality of life is discrimination. The Batwa are stereotyped as 'dirty', 'ignorant', and 'animals', they are segregated from other populations, and are refused basic rights (Lewis 2000). The majority of the Batwa in both the DRC and Uganda have no access to health care facilities, education, employment, and no legal rights (Lewis 2000). Compounding matters, the Batwa are unfamiliar with some of the basic systems of modern society making it virtually impossible for them to fight for rights and surmount the discrimination they suffer (Lewis 2000).

### **Baka**

The Baka pygmies of Cameroon (fig. 4.6) are another example of conservation evictees. Like the Batwa, they are tied emotionally, spiritually, and practically to their forests. Forests represent survival and self-preservation for the Baka; they not only receive all necessary sustenance from forests, but also important medicines and spiritual harmony (Nelson and Hossack 2003). Also like the Batwa, the Baka are the region's oldest inhabitants who, until conservation evictions and policies of sedentarization,<sup>4</sup> lived a sustainable and traditional hunter-gatherer lifestyle (Nelson

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<sup>4</sup> Cameroon policies of sedentarization dates back to the early 1960s and were designed to integrate the Baka socially and economically into Cameroon society. The Cameroon government wanted hunter-gatherer societies to establish permanent settlements in order to improve health conditions and to increase the amount of the population growing cash crops (Schweitzer, Bieseke, and Hitchcock 2000).

and Hossack 2003). The Baka have been recognized as the region's best conservationists due to the fact that the land they have occupied for millennia has the largest biodiversity and the greatest resources (Venant 2008). Furthermore, ITP knowledge is so valued in Cameroon that logging companies, safari companies, and even conservation organizations use Baka pygmies for species identification and forest guides (Venant 2008). Yet multiple government and NGO conservation agencies continually exclude them from conservation policies and practices despite the increasing advocacy of the "new conservation paradigm" (Venant 2008). The Baka are relatively widespread in southern Cameroon and have experienced varying degrees of evictions and loss of land rights.



Figure 4.6. Members of a Baka Tribe (IPS 2009).

The Miatta Baka, named for the village they were relocated to, originally lived in the Dja Wilderness Reserve (DWR), the largest and oldest conservation area in Cameroon (fig. 4.7) (Venant 2008; Nelson and Hossack 2003). The Baka were relocated to Miatta, just 50 km from their “village of origin”, Mabé, in the DWR, between 1940 and 1950 (Nelson and Hossack 2003). The DWR was first formed in 1950 by the French and then joined the United Nations Educational, Scientific and Cultural Organization’s Biosphere program in 1981. In 1992 the management of DWR was turned over to the Central African Forestry Ecosystems, a European tropical forest conservation organization initiated at the behest of the European

Commission in 1992 (Nelson and Hossack 2003). The Miatta Baka were able to maintain access to the DWR for hunting, gathering, and ceremonial purposes until zoning regulations restricted usage activities in the park in 1995 (First Peoples Worldwide 2007; Nelson and Hossack 2003).

Prior to eviction from the DWR the Miatta Baka maintained an egalitarian system with leadership conferred upon individuals based on skill, courage, and knowledge within and of the forest (Nelson and Hossack 2003). The Miatta Baka survived off the forest but also supplemented their dietary intake and material goods through the trade of forest products and religious “mystical forces and powers” with the nearby Bantu tribe. The relationship between Baka and Bantu was known as Lothi and brought many resources and harmony to both groups (Nelson and Hossack 2003).

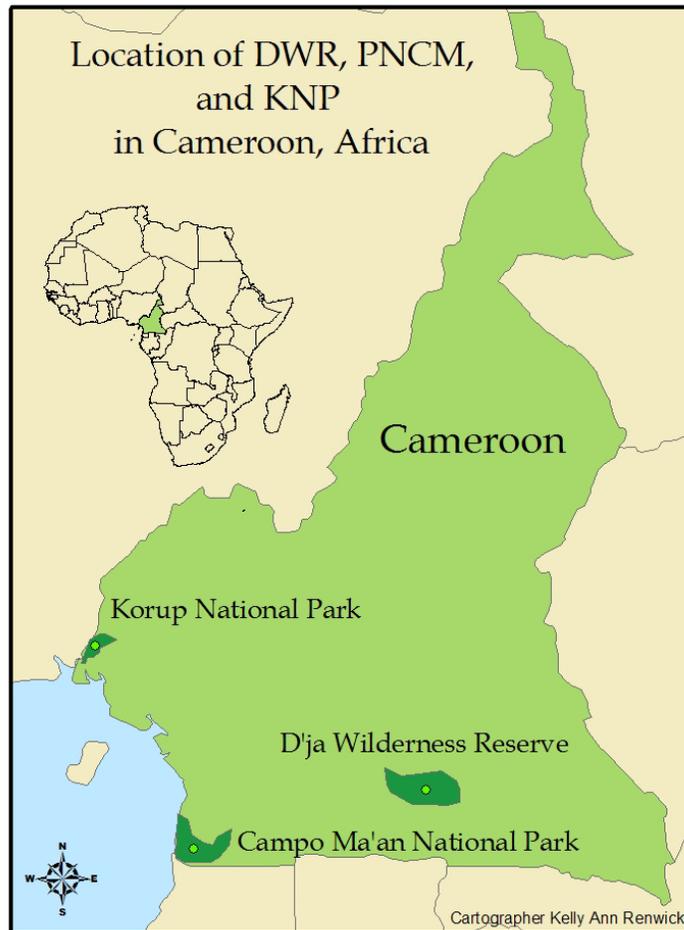


Figure 4.7. Location of D'ja Wilderness Reserve and Campo Ma'an National Park, Cameroon.

According to the Miatta Baka there was no consultation by the DWR policy makers before creating the reserve and later restricting forest access; rather, the Miatta Baka found themselves subject to arrest for customary practices on their traditional land (Nelson and Hossack 2003). The repercussions of forest eviction and loss of land rights has had a dramatic affect on the lives of the Miatta Baka. The first effects of eviction were felt through the change in their diet, primarily the loss of

protein; this was followed by the loss of mobility and freedom within the forest reducing access to important forest products, and loss of their cultural identity and traditions (Venant 2008; Nelson and Hossack 2003).

### **Bagyeli**

The Bagyeli (fig. 4.8) are another former forest dwelling pygmy tribe in Cameroon. They were evicted in order to form the Campo Ma'an National Park (PNCM) (fig. 4.7) in the 1990s. The park was first created in 1932; however, the Bagyeli were not affected by its inception until policy changes occurred in the mid-1990s (Nelson and Hossack 2003). The Bagyeli, like the Batwa and the Baka, were traditionally a hunter-gatherer people who were the region's first inhabitants (Nelson and Hossack 2003). Until their eviction the Bagyeli subsisted entirely off of the forest, from which they acquired food, medicines, and other forest materials necessary for comfort and life. On occasion when the Bagyeli had a surplus of meat or other materials they, like the Miatta Baka, traded with their Bantu neighbors for supplies (Nelson and Hossack 2003).



Figure 4.8. Members of a Bagyeli Tribe (IMFN 2008).

Following the eviction of 10,000 Bagyeli, and a further 200,000+ Bantus and Bebilis (First Peoples Worldwide 2007), the Bagyeli were forced into permanent settlements and faced abusive repercussions by park guards when they tried to access PNCM (Nelson and Hossack 2003). Restricted access to the park has affected the Bagyeli in the same manner as the Batwa and the Baka; their diet has undergone significant changes with the loss of access to their traditional foods and they have lost access to important medicinal plants. One of the biggest fears, according to the Bagyeli, is the loss of their cultural identity and loss of their knowledge of the forest (Nelson and Hossack 2003).

## REMOTE SENSING

In order to understand whether conservation evictions of pygmy tribes actually contributed to forest health and to determine if ITP forest conservation partnerships as a viable alternative to conservation evictions in Africa was a significant subject for research, I used satellite imagery change detection analysis pre- and post- eviction in three protected areas in Uganda. The results suggest that the forest dwelling ITPs in these three study areas in Uganda did not adversely affect the vegetative biomass in their region prior to eviction.

The three locations in Uganda - Bwindi Impenetrable National Park (BINP), Mgahinga Gorilla National Park (MGNP), and Echuya Forest Reserve (EFR) - served as ideal locations to conduct change detection analysis because of their history of ITP eviction and because satellite data pre- and post- eviction was available. I collected satellite imagery of BINP from 1984, seven years prior to eviction, and 2001, ten years following eviction. I collected satellite imagery of MGNP and EFR from 1987, four years prior to eviction, and 2001, ten years following eviction. As discussed in the methods chapter, I used five study areas within each park to contain pixel analysis inside the park and to avoid pixel values (PVs) under cloud cover.

The five study areas in BINP had a combined 23,161 pixels out of 104,467 that were lesser than the -51 PV user-specified thresholds indicating a decrease in

vegetation, and 313 pixels out of 104,467 were greater than the 51 PV user-specified thresholds indicating an increase in vegetation (Appendix C). Total results for BINP was a 22% average decrease in vegetation density and a 0.2% average increase in vegetation density (Appendix C). The decreased and increased PVs for BINP are shown in the Surface Profile and Change Image Histogram (Appendix C).

The five study areas in MGNP had a combined 241 pixels out of 31,072 pixels that were lesser than the -51 PV user-specified thresholds indicating a decrease in vegetation and 161 pixels out of 31,072 pixels that were greater than the 51 PV user-specified thresholds indicating an increase in vegetation (Appendix C). Total results for MGNP was a 0.7% average decrease in vegetation and a 2% average increase in vegetation density (Appendix C). The decreased and increased PVs for MGNP are shown in the Surface Profile and Change Image Histogram (Appendix C).

The five study areas in EFR had 0 pixels out of 24,095 pixels that were lesser or greater than the pixel value thresholds showing no decrease or increase in vegetation density (Appendix C). The decreased and increased PV's for EFR are shown in the Surface Profile and Change Image Histogram (Appendix C).

The total 22% decrease in vegetation following Batwa eviction from BINP suggests that the presence of the Batwa in the park did not impact the level of vegetation density. The slight increase, 2%, in vegetation following Batwa eviction from MGNP suggests that the presence of the Batwa in the park did not significantly

impact the level of vegetation density. The lack of change in vegetation following Batwa eviction from EFR suggests that the presence of the Batwa in the park did not impact the level of vegetation density.

This preliminary data only refers to the impact of the Batwa on changes in vegetation density in three locations in Uganda and requires further study to determine the impact of other forest dwelling ITPs on vegetation density in forests in Africa. In addition, this change detection analysis does not consider the type of vegetation, how that vegetation has evolved in the presence of the Batwa, or the impact the Batwa have on animal species. In situ analysis is necessary to address these issues. However, this preliminary change detection analysis indicated to me that forest dwelling ITPs may have the capacity to live sustainably, corroborating the historical record. In addition, the similarities in the lifestyles and life choices between the Baka and Bagyeli tribes profiled in this chapter and the Batwa suggests a high probability that these forest dwelling pygmy tribes also make sustainable choices when acquiring resources within their forests. Therefore, pursuing research on forest conservation partnerships in these regions of Africa is a worthwhile endeavor to conserve forests, maintain ITP land rights, and avoid the repercussions of conservation evictions.

## CONCLUSION

The forest conservation evictions of pygmy populations profiled in this chapter are a drop in the bucket of the conservation evictions that occur around the world. As discussed in the literature review, world-wide conservation evictions and subsequent conservation refugees number well into the tens of millions. The subsequent effect of refugees on world resources is not isolated. The environmental degradation of millions of people gathering resources unsustainably has become a global problem. Environmental problems do not remain isolated and invariably reach out through the web of ecosystems to affect all regions on the planet. In addition, the poverty in which conservation evictees find themselves becomes a problem for virtually every society in the world. While social webs are not as tangible as the physical web of ecosystems, they are still intricately tied as the world becomes more globalized. For these reasons the myriad of problems associated with conservation evictions must be considered by everyone. In addition, the change detection analysis in this study indicates that not all forest dwelling ITPs need to be evicted to ensure forest health. On the basis of sustainability only, this important data provides evidence that some forest dwelling ITPs may be suitable to enter into forest conservation partnerships.

In order to determine if forest conservation partnerships in Africa are a viable alternative to conservation evictions on the basis of the indicators of success from

forest conservation partnerships in Latin America, the following chapter outlines comprehensive case studies of these partnerships, seeking patterns and indicators of success.

## CHAPTER 5

### FOREST CONSERVATION PARTNERSHIPS IN LATIN AMERICA: CASE STUDIES

#### INTRODUCTION

The goal of this research, as previously stated, is to determine the viability of forest conservation partnerships as an alternative to forest dwelling ITP conservation evictions in Africa. In order to do so it was necessary for me to identify patterns and characteristics of success within established forest conservation partnerships. The apparent lack of these partnerships in Africa led me to expand my scope to other regions. I discovered that the best documented cases of forest dwelling ITPs working with conservation NGOs and/or national government conservation agencies were found in Latin America. The goals of conservation agencies and forest dwelling ITPs differ; while ITPs want to gain land rights, protect their forests from outside encroachers, and maintain their cultural identities, conservation agencies place priority on forest conservation for environmental reasons. Regardless of the differences, both groups are united in their goal to conserve forests.

This chapter comprises five comprehensive studies of well documented cases of forest conservation partnerships in Latin America. In addition to available

documentation, selection was based on forest dwelling ITPs, as defined in the literature review, who are involved in forest conservation partnerships, as well as locations that climatically reflect the African conservation evictions profiled in the previous chapter. The forest conservation partnerships in this research include indigenous protected areas (IPAs), indigenous community conserved areas (ICCAs), co-managed areas, and a top-down management approach. The case studies include partnerships from Brazil, Panama, Colombia, Bolivia, and Honduras.

## INDIGENOUS CONSERVATION AND FOREST CONSERVATION PARTNERSHIPS IN LATIN AMERICA

### **Indigenous Protected Areas: The Kayapó and the Kuna**

Indigenous protected areas, as discussed in chapter 2, are lands historically belonging to “traditional owners” which they voluntarily protect through an agreement with their national government (Esposito 2008). IPAs are required to meet conservation standards set up by the international community and, in addition to occupancy by the traditional owners, traditional owners must actively manage the resources of their land and support their livelihood through sustainable methods (Esposito 2008).

#### Kayapó: Brazil

The Kayapó are indigenous South American Indians who inhabit the Amazon rainforest region of Brazil. In the states of Para and Mato Grosso (fig. 5.1) there are

approximately 15 Kayapó villages with a population between 100 and 1,000 per village on 11 million+ hectares of their own land (Schwartzman and Zimmerman 2005; Zimmerman et al. 2001; Peres and Zimmerman 2001). This is a considerable change in their status considering 30 years ago a third of the current population was living in the same forests which were then owned by Brazil (Schwartzman and Zimmerman 2005).



Figure 5.1. 11 Million+ Hectares of Kayapó Territory in Brazil (IBAMA 1998).

In the late 1970s and 1980s the Kayapó began to reinvent their traditional warring culture in response to an onslaught of incursions into their territory from miners, loggers, and ranchers (Schwartzman and Zimmerman 2005). Traditional Kayapó territory was facing the “frontlines” of deforestation and resource exploitation (Zimmerman 2009; Zimmerman 2006; Schwartzman and Zimmerman 2005). The arc of deforestation (fig. 5.2) was rapidly encroaching on Kayapó territory and they chose to act quickly and aggressively (Schwartzman and Zimmerman 2005).



Figure 5.2. The “Arc of Deforestation” Encroaching on Kayapó land (IBAMA 1998).

The Kayapó defended their land militantly; they commandeered airstrips and river crossings, they took hostages, and they killed people who attempted to settle, log, or mine resources on their land (Zimmerman 2009; Zimmerman 2006; Schwartzman and Zimmerman 2005; Daniels 2002; Zimmerman et al. 2001). It soon became well known among foreign companies that they entered Kayapó territory at their own risk.

The Kayapó ventured into Brazil's cities in full traditional dress (fig. 5.3) to protest and demand their rights. The demands of the Kayapó and the spectacle they created soon grabbed the attention of international media and the international community (Zimmerman 2009; Zimmerman 2006). Under the scrutiny of the international lens and the militant behavior of the Kayapó, the Brazilian government responded with changes in their constitution. The Constitution of Brazil in 1988 gave indigenous peoples the legal rights to occupy their native lands as well as to maintain their traditional social, cultural, and religious beliefs (Dowie 2009; Zimmerman 2009; Schwartzman and Zimmerman 2005). While this was a real coup for the Kayapó, their story and their fight is not over. In 1992, in order to prevent the construction of the Belo Monte Dam, a World Bank and Brazilian government hydroelectric project in the Xingu Valley upstream of Kayapó territory, the Kayapó once again ventured into the streets to protest. Their demonstrations again gained

international attention and virtually embarrassed the World Bank causing them to withdraw the project and funding (Zimmerman 2009; Zimmerman 2006).



Figure 5.3. Kayapó Protest in Altamira, Brazil against the Belo Monte Hydroelectric Dam (Cunningham 2008).

There is a darker side to the Kayapó story. During the late 1980s and into the 1990s the Kayapó chiefs sold illegal mahogany concessions to a select group of logging companies (Schwartzman and Zimmerman 2005; Daniels 2002; Zimmerman et al. 2001). According to Zimmerman (2009) the Kayapó role began naively when they were approached about logging a “few” mahogany trees. Unfamiliar with the logging devastation and deforestation ongoing in the Amazon, the Kayapó chiefs did not see the harm in “selling some trees” (Zimmerman 2009). Once the Kayapó leaders realized that the logging practices occurring under their logging concessions

were adversely affecting their environment, they had already become accustomed to and reliant on material possessions they acquired with the proceeds, including cars, homes, and planes (Zimmerman 2009). When the Kayapó communities began to realize the effects of logging they demanded their chiefs cease selling logging concessions (Zimmerman 2009; Zimmerman 2006). In the late 1990s the logging concessions had stopped. However, the Kayapó had become habituated to generating income and their egalitarian social structure had become disrupted making it difficult for them to return to their old lifestyle.

The Kayapó addressed these problems by initiating a conservation and development project with Conservation International-Brazil (CI-Brazil) (Schwartzman and Zimmerman 2005; Daniels 2002). The primary goal of establishing a relationship with CI-Brazil was to find an economic alternative to mahogany concessions (Schwartzman and Zimmerman 2005). Together the Kayapó and CI-Brazil created the Kayapó Centre for Ecological Studies (Schwartzman and Zimmerman 2005; Daniels 2002; Zimmerman et al. 2001). The joint project now generates income for the Kayapó through researcher user fees and employment for the Kayapó in administrative and technical duties (Schwartzman and Zimmerman 2005; Zimmerman et al. 2001).

The story still does not end there. Following the announcement of renewed interest in the Belo Monte hydroelectric dam project in 2008 the Kayapó emerged to

protest once again (Phillips 2010; Cunningham 2008). The Kayapó petitioned the president of Brazil to cease work on the dam and protested in the streets of Altamira, Brazil. The Kayapó who joined in the protest are the second generation to fight against the dam project and have claimed to fight to the death to stop the project (Cunningham 2008). Claiming pressure from foreign mining companies and the responsibility to develop a sustainable energy source, the Brazilian government declared they would begin construction in 2015 (Phillips 2010). The outcome of this conflict remains to be seen.

The story of the Kayapó demonstrates how self-determination and confidence within tribal communities can bolster their chances for success, even in the face of large corporations and national governments. While the nature of the Kayapó was one that demanded respect and equality, their success could not have been accomplished without an infrastructure within the Brazilian government that allowed for indigenous rights. The Constitution of Brazil of 1988 paved the way for the Kayapó to ascend Arnstein's (1969) conceptual framework of public participation placing them on the top rung of "citizen power", citizen control, and to legally lay claim to their land; without the constitution in place it is doubtful the Kayapó would have been able to protect their land (Zimmerman 2009; Dowie 2009).

## Kuna: Panama

The Kuna are an ancient tribe of Mesoamerican Indians who currently inhabit the rainforest and coastal regions of Panama and have been living in this region for hundreds of years (Dowie 2009; Chapin 2000). The Kuna case demonstrates an example of an IPA but one which was fraught with problems as will be discussed below. The success of the Kuna is not in the establishment of their IPA but in the lessons learned in the process. The knowledge and experience gained through their work with international NGOs and political organizations has allowed the Kuna to conserve their forests and remain on their land without assistance. For this reason, and the abundance of information in the literature, the Kuna were selected for a comprehensive case study as an example of a forest conservation partnership.

Following independence from Colombia in 1903, the Panama government quickly moved to westernize the Kuna by dispensing with traditional Kuna rituals and requiring the Kuna to wear western style clothes. The new Panamanian government posted police forces in Kuna territory to enforce these new laws (Chapin 2000; Chapin 1997). In 1925 the Kuna led an uprising with support from the U.S. government against Panamanian police forces and supporters of the new regime. The Kuna were successful and signed a treaty pledging their support to Panama as long as the Panamanian government did not interfere in Kuna society and did not post forces in their territory (Chapin 2000; Chapin 1997). In 1938 the

Kuna were granted legal custody of 60,000 hectares of their rainforest, allowing them to establish the Kuna Yala Comarca<sup>5</sup> (fig 5.4), and in 1953 the Kuna gained sovereignty and were granted autonomy in their customs and politics (Chapin 2000; Chapin 1997).

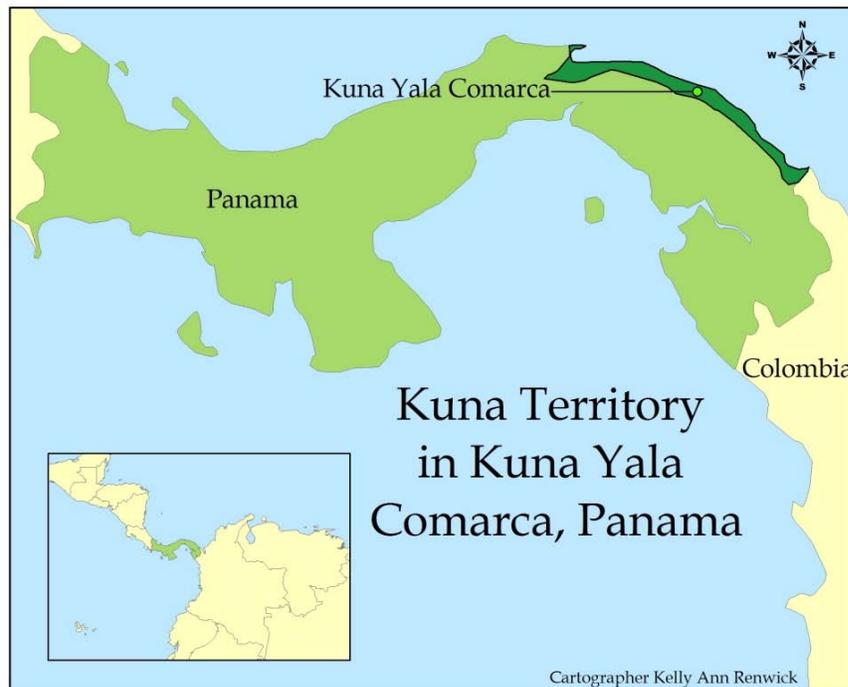


Figure 5.4 Kuna Yala Comarca in Panama.

These acts set legal precedent for ITPs in Central and South America but did not prevent non-indigenous settlers from moving in to Kuna territory. In the 1960s the Kuna began noticing significant alterations to their land due to cattle ranchers and non-indigenous colonists creating settlements along and within their borders

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<sup>5</sup> A Comarca is an autonomous territory inhabited by indigenous populations. The name Kuna Yala means land of the Kuna (Chapin 1997).

(Chapin 1997). Colonists continued invading Kuna land throughout the 1960s and in the 1970s their settlements began to include slash and burn agriculture, clear cutting for livestock, and land investments (Chapin 1997). The situation became exacerbated along the southern border because the Kuna did not have any communities in that vicinity to protect the region. By the time the Kuna realized the extent of colonist invasion settlements were well established into their territory (Chapin 1997). The Kuna were intent on protecting their land yet had no method to physically enforce their border. In addition, despite maintaining the legal title to their land, no one had actually surveyed and demarcated Kuna borders, blurring the defensible territories for both Kuna and colonizers (Chapin 1997). Matters were made worse by Panama's "social use of land" policy (Chapin 1997). This traditional policy allows idle land to be claimed by any individual or individuals who will use the land productively. Since the Kuna did not actively use their land in the southern regions the colonizers settling there had a foundation, albeit a shaky one, for their property claims (Chapin 1997).

In response, the Kuna began to establish "social use of the land" themselves. The first attempt occurred in the south in 1975 by one Kuna man who set up a camp and began a small agricultural plot. While his enthusiasm spurred on other Kuna members, the camp became labor intensive, and following a series of obstacles there was little to show for their work (Chapin 1997). A next attempt to protect their

borders was the initiative to develop their land as a conservation area (Daniels 2002; Chapin 2000; Chapin 1997). In 1981 the Kuna, who had already established the Union of Kuna Workers (UTK), later renamed the Asociación de Empleados Kuna's, approached international conservation organizations for support. In 1983 the World Wildlife Fund, the Inter-American Foundation, the Smithsonian Tropical Research Institution in Panama, Centro Agronomico Tropical de Investigacion y Ensenanza (CATIE), and the UTK formed Proyecto de Estudio para el Manejo de Areas Silvestres de Kuna (PEMASKY) in the southern region of Kuna territory and designated it as the Nusagandi Park (Daniels 2002; Chapin 2000; Chapin 1997; Stevens 1997).

The Kuna saw PEMASKY as an opportunity to protect their land from encroaching colonizers. The researchers from support organizations saw PEMASKY as an opportunity to study an area rich in biodiversity and to be some of the first few to do so (Daniels 2002; Chapin 2000; Chapin 1997). PEMASKY began with a great deal of enthusiasm: 23 members of the Kuna received employment through the PEMASKY project, including six border guards and seven members of a technical team. Funds were received early in the project to build a basic infrastructure and administrative offices, to provide courses for Kuna employees through CATIE, to attend conferences, and to produce a newsletter for their community (Chapin 2000; Chapin 1997). The PEMASKY project was the first time Latin American indigenous

peoples set out to protect their forest and it garnered significant international attention and became a shining example of conservationists and ITPs working together (Daniels 2002; Chapin 2000; Chapin 1997). PEMASKY received many awards, documentary film makers visited the area, and conferences were held to share the knowledge of this experience (Chapin 2000; Chapin 1997).

In 1987 things began to fall apart and PEMASKY was deemed a failure: the project ran out of funds, relationships with international organizations dissolved, CATIE advisors left the project, and most of the staff was laid off (Daniels 2002; Chapin 2000; Chapin 1997). In addition, there were several conflicts between the Kuna and CATIE. CATIE approached PEMASKY more like an NGO. In the 1980s NGOs were a new phenomenon and no one knew exactly what to expect out of them, yet CATIE and other PEMASKY supporters began to form what resembled an NGO by today's standards (Chapin 2009; Chapin 1997). CATIE was responsible to financial donors first and local communities last and focused more on writing reports for their donors. The CATIE officials had offices in Panama City and hosted visiting financial donors in the city; they actually spent very little time in the park. Members of CATIE put together a project plan for PEMASKY yet did not consult the Kuna. CATIE and associated conservation organizations did not want the project to become political and feared that strengthening the Kuna through their role in generating the plan and prioritizing their issues would bring politics to the project

(Chapin 2009). CATIE treated their plan like a blueprint and held to it tenaciously. The most important issue for the Kuna was the demarcation of their borders, but CATIE placed this low on their list and showed little flexibility toward Kuna priorities (Chapin 2009).

The Kuna, on the other hand, were thrust into a responsibility for which they were not prepared (Chapin 2009). The Kuna, specifically the UTK, were the ones ultimately responsible for PEMASKY and its funds and yet had no involvement or knowledge of PEMASKY's daily activities. They ran it more like a labor union than an NGO; they saw what was needed for their communities and what was not and felt responsibility to their communities first and financial donors second (Chapin 1997). The Kuna sought to provide a healthy lifestyle for their people through the protection of their lands and resources (Chapin 2009; Chapin 1997). The dichotomy of the two approaches of CATIE and the Kuna succeeded in completely pulling PEMASKY apart.

According to Chapin (2000; 1997) the PEMASKY experience ultimately benefitted the Kuna by laying the foundation for future projects and equipping the Kuna with the tools necessary to protect their land. Despite the failure of PEMASKY, the Kuna had a very important indoctrination into lessons of conservation and sustainability (Chapin 2000). While PEMASKY folded, Kuna members picked up where PEMASKY left off and created their own conservation organizations to

continue with PEMASKY's work (Chapin 2000; Chapin 1997). Kuna members continued their education in environmental issues and sustainable agriculture which gave them the tools to continue conserving their native lands (Chapin 2000; Chapin 1997). The Kuna became quite savvy about conservation issues between the 1980s and today in regards to conservation policies, mining policies, logging policies, and border protection. Today the Kuna are firmly rooted on the top rung of Arnstein's (1969) ladder of citizen participation, citizen control, and simply will not allow anyone into their lands, including conservation organizations (Chapin 2009). As described by Kuna member Geodiso Castillo, "where there are forests there are indigenous people, and where there are indigenous people there are forests" (Stevens 1997), and the Kuna intend to keep it that way.

### **Indigenous Community Conserved Area: The Ingano**

As stated in chapter 2, indigenous community conserved areas (ICCAs) are natural ecosystems without an overwhelming human presence, that have important and/or high levels of biodiversity, and are voluntarily and actively conserved by an indigenous community reliant on the ecosystem's resources (Pathak 2006; Pathak et al. 2004). ICCAs can be initiated solely by a community or with the help of conservation NGOs to procure government and/or financial support. ICCAs differ from IPAs in that the indigenous community must be in the role of a primary player (Pathak 2006).

### Ingano: Colombia

The Ingano of Caquetá, Colombia played an integral role in establishing Alto Fragua Indiwasi National Park in 2002 (fig. 5.5) in order to protect their land from non-indigenous settlers and resource exploitation (Botero 2005). The Ingano, as with most indigenous Indian tribes in Latin America, faced discrimination from the government and were not granted the same rights as Colombian citizens including the right to own land and the right to vote (Botero 2005). The ability of the Ingano to protect their own land was only possible following changes in the Colombian constitution granting indigenous populations the same basic rights as Colombian citizens (Pedraza 2010). The Ingano were selected for a comprehensive case study because they are well represented in the literature and demonstrate a successful example of an ICCA.



Figure 5.5. Ingano Established Alto Fragua Indiwasi National Park in Caquetá, Colombia.

Colombia first began conservation efforts in 1959 with the establishment of a national parks policy; however, the park policy lacked regulations until the 1970s (Botero 2005). The institution of park regulations and policies did not allow for public participation and once established, did not recognize relationships between conservation and economic development; rather, the two issues were lacking collaboration and treated as separate entities (Botero 2005). Regulations decreed human activity within these parks illegal and disrupted the economy of indigenous and local populations that overlapped with parks (Botero 2005). In 1991 the National Constitution approved public participation policies regarding environmental issues

and in a separate policy the Colombian Constitution recognized the legitimacy of indigenous populations and their cultural and social values and customs (Botero 2005). A requirement under the Colombian Constitution's indigenous rights policy was for indigenous populations to create a development plan for their future role in Colombia (Botero 2005).

Despite the Colombian government acknowledging the legitimacy of indigenous populations, the Ingano were facing a bio-cultural crisis. After centuries of inhabiting southern Colombia, the Ingano faced non-indigenous colonization, deforestation, and the increasing prevalence of coca plantations for cocaine production, all of which threatened their resources, viable land, and their traditional lifestyle (Botero 2005). In response the Ingano sought to secure land tenure rights for their traditional lands in order to prevent encroaching settlers and to implement their development plan requested through the Colombian Constitution (Botero 2005). The Ingano referred to their development plan as their "Plan de Vida" or life plan (Botero 2005). They formed the Tandachiridu Inganokuna Association (TIA) in 1998 which adopted their Plan de Vida. It included a long term vision for their forests as sacred landscape and the protection of it as part of their ancestral heritage (Botero 2005). In 2002 the Colombian government approved a policy of public participation targeting conservation issues, which allowed for dialogue between the Ingano and the Colombian government. It was this dialogue that opened the door

for a partnership between the Ingano and the Colombian government and the subsequent creation of the Alto Fragua Indiwasi National Park (Borrini-Feyerabend et al. 2007; Botero 2005).

The TIA later initiated and partnered with an NGO, the Amazon Conservation Team (ACT), to develop the Alto Fragua Indiwasi National Park in 2002. The development of the park provided a means for the Ingano to implement their Plan de Vida (Borrini-Feyerabend et al. 2007; ACT 2005; Botero 2005). The Ingano were the primary actors in the design and management of this project and ACT helped to recruit, train, and compensate 20 members of the Ingano and to give them the skills to become successful land managers and to protect the park (Borrini-Feyerabend et al. 2007; ACT 2005). ACT also facilitated discussions between the Colombian National Parks Service and the TIA to become joint administrators of the park (ACT 2005). In addition, representatives from the TIA and the Colombian National Parks Service formed an intercultural committee dedicated to decision making, problem solving, and avoiding conflicts between the Ingano and the Colombian government (Botero 2005). The United States Agency for International Development also provided funding to support the role of the Ingano in decision making processes and as managers of the park (ACT 2005). Alto Fragua Indiwasi National Park has proved thus far to be a successful example of an ITP ICCA (Borrini-Feyerabend et al. 2007) and places them on the first rung of citizen power,

partnership, as outlined by Arnstein's (1969) conceptual framework of public participation.

### **Co-Managed Protected Area: The Guarani Izoceños**

ITP co-managed protected areas are regions designated by government but responsibility, accountability, and decision making are shared between the government and ITPs (Beltrán 2000).

#### Guarani Izoceños: Bolivia

The Kaa-ya Iya del Gran Chaco National Park (KIGC) in eastern Bolivia (fig. 5.6) was created in 1995 for three reasons. First it was meant to benefit the Guarani Izoceños, a particular tribe of the Guarani people, following their demands that their native lands be recognized as an indigenous territory. Second, the Guarani Izoceños hoped to block expanding settlements and non-indigenous agriculture. Finally, all the parties wanted to construct a development model of conservation and sustainability (Borrini-Feyerabend, Kothari, and Oviedo 2004; Beltrán 2000). The Guarani Izoceños are included in this study as a forest conservation partnership because of their success in securing the management of their traditional lands.

Historically, the Guarani inhabited their traditional territory for hundreds of years, well before the arrival of European colonizers approximately 500 years ago (Beltrán 2000). The Europeans treated the indigenous populations as second class citizens lacking even basic rights (Beltrán 2000). In the early 20<sup>th</sup> century isolated populations

of Guarani tribes engaged in uprisings against non-indigenous settlers on traditional Guarani land (Beltrán 2000). In the 1940s indigenous populations in Bolivia established unions and hosted conferences concerning their lack of rights and the dismissal of their claims for their traditional territories (Beltrán 2000). In 1953 the first changes in indigenous policy in Bolivia came about with the Agrarian Reform Laws. The goals of the Agrarian Reform Laws were to assimilate Indian cultures into westernized cultures and reduce Indian use of agriculture thus decreasing their need and dependence for land (Beltrán 2000). While this was not what the Guarani's and other tribes wanted, they did receive citizenship and voting rights with this new policy. However, they still faced political and social discrimination (Beltrán 2000).



Figure 5.6. Kaa-Iya del Gran Chaco: a Co-Managed Region Protecting Guarani Territory.

In the 1980s there were radical changes in the Bolivian government. The government moved from being sympathetic to ITPs to repealing agreements with them concerning their land and social programs. In response, some indigenous populations mobilized and organized themselves into political units (Beltrán 2000). The Guarani Izoceño's formed the Capitanía del Alto y Bajo Izozog (CABI), a tribal political authority, and demanded to be heard by the Bolivian government in regards to control of their land and equal rights (Beltrán 2000). In 1990 CABI was

legally recognized as a political organization and in 1993 the new Agrarian Reform Law recognized the multi-ethnic and multi-cultural aspects of Bolivia and legally allowed for ITP ownership of their traditional lands (Beltrán 2000). In 1995 CABI joined with Bolivia's Ministry of Sustainable Development and Planning to establish and jointly manage KIGC as a national park for an initial period of ten years. Together they formed a plan to implement the following three goals (Beltrán 2000):

- ∞ All KIGC activities are within Bolivia's environmental institutional framework and within the KIGC management and operational plans;
- ∞ All KIGC activities must include the park wardens and community representatives;
- ∞ All KIGC activities must enhance the quality of life and development of local communities.

A year later, CABI partnered with the following organizations to further develop and implement a management plan for the park: Wildlife Conservation Society, members of the National Protected Areas Service, local municipalities, and representatives from three other ITP organizations (Beltrán 2000). The plan includes the following primary programs (Beltrán 2000):

- ∞ Operational Program: Demarcating the borders of KIGC, constructing administrative and management infrastructure, visitor and research infrastructure, and strategically located camping areas;
- ∞ Surveillance Program: A team of wardens responsible for surveillance of designated areas within the park, field research, and public relations;
- ∞ Natural Resources Management Program: Community based mapping program for future research;
- ∞ Public Use Program: Identifying areas for tourism;
- ∞ Regional Projection and Co-operational Program: Partnering with other protected areas within Latin America to share resources and information.

The culmination of this plan resulted in a successful example of a forest conservation partnership allowing for conservation organizations to attain their goal of conservation programs and allowing for the Guarani Izoceños to remain on and maintain their land through a co-managed partnership.

Indigenous co-management seems to be successful for the WCS. The goal of the WCS was to conserve regions of biodiversity and they have benefitted through their partnership with the Guarani Izoceños by teaching them how to collect and assess data within their forests. The Guarani have always understood the forest and the plants and animals within it and have protected their resources through sustainable fishing and hunting practices (Beltrán 2000). However, working with the

WCS has given the Guarani Izoceños a greater capacity to contribute to research and to contribute to biodiversity conservation. The WCS placed control of data collected within the hands of the Guarani Izoceños and if they so choose the Guarani Izoceños can withhold collected data thus strengthening their role in their community (Beltrán 2000) and progressing upward through Arnstein's (1969) conceptual framework of public participation placing them on the first rung of "citizen power", partnership.

### **Top-Down Management Approach: The Miskito**

Top-down management approaches in forest conservation generally consist of decision making following data analysis, and decision makers typically lack a close proximity to proposed conservation areas (Zahler 2003). Organizations that use top-down approaches generally have the capacity to make rapid progress through funding, resources, and connections but lack first-hand knowledge of local environments and culture (Zahler 2003).

It should be noted, however, that a top-down management approach in forest conservation is not a true partnership and generally does not include forest dwelling ITPs in the decision making process. However, among the comprehensive case studies of forest conservation partnerships, the Miskito demonstrate an example of forest dwelling ITPs working with governmental and non-governmental forest conservation agencies. In this case, the Miskito were allowed to remain on protected

land while non-ITP inhabitants were evicted and faced strict regulations regarding the use of resources. While this approach is not a true forest conservation partnership there exist characteristics of one.

### Miskito: Honduras

The Miskito, including the Pech, Tawahka, and Garifuna tribes, currently reside in the Rio Platano and Tawahka Asangni Biosphere Reserves in the Mosquitia Rain Forest Corridor in Honduras and Nicaragua. The Miskito within the Rio Platano in Honduras (fig. 5.7) represent the largest population of these four indigenous groups and have greater representation in available literature. The Miskito were selected as a forest conservation partnership because their role in the Rio Platano Biosphere Reserve (RPBR) demonstrates an example of a top-down management approach to conservation that has allowed them to remain on and protect their traditional lands from the encroachment of non-indigenous settlements. The top-down management approach, as described in chapter 2, generally allows for rapid progress through funding, resources, and connections. However, because decision makers are not local representatives, they lack the knowledge of local environments and culture and consist instead of individuals analyzing data and making decisions without the benefit of coming from or being in the vicinity of proposed conservation areas. The case of the Miskito is no different and decisions made by outside organizations have contributed to problems that are discussed

below. However, many of these problems also have been overcome and the project has contributed to the conservation of Miskito land, allowed them to remain on their traditional lands, and indoctrinated them with the knowledge and experience to continue protecting their land.



Figure 5.7. The Rio Platano Biosphere Reserve: A Top-Down Approach to Conserving Bio-Cultural Diversity.

The Miskito tribes have inhabited the forest and coastal regions of Honduras and Nicaragua for hundreds of years and have used sustainable land practices to maintain forest cover and forest health throughout this time (Herlihy 1997). The indigenous populations of this region faced threats to their forests when the Pan-

American Highway was constructed between North America and Panama in the 1960s (Herlihy 1997). The construction of the highway increased the infrastructure surrounding the traditional lands of several ITPs and paved a path for colonizers to settle undisturbed forests. Further, new roads and infrastructure also allowed loggers and miners into these regions (Herlihy 2009; Herlihy 1997). The Central American state governments of the area became concerned that valuable forest land was being degraded so they established conservation reserves accountable for nine percent of the land in Central America (Herlihy 1997). In the 1970s, because the Rio Platano region maintained significant biodiversity and was regarded as a valued forest, it became a focus for protection by the Honduran government and international conservation NGOs. In 1980 Honduras established the region as a protected area, prohibiting resource acquisition and non-indigenous populations (Herlihy 2009). However, the local indigenous populations were not consulted during this process (WRM 2003; TED 1997) despite the fact that the Miskito initiated dialogue with the Honduran government over this issue beginning in 1976 (Herlihy 1997).

Following the establishment of the Rio Platano as a protected area, non-indigenous settlers continued to colonize Miskito territory. In response to this encroachment the Miskito formed the Mosquitia Asla Takanka, the Unity of the Mosquitia (MASTA), the first indigenous political organization in Honduras, and

joined with Mosquitia Pawisa Apiska, the Development of Mosquitia's Land Legalization Program (MOPAWI), in order to gain legal recognition of indigenous lands (Herlihy 1997). MOPAWI is a Honduran Christian non-profit organization dedicated to acting as an advocate organization for the indigenous populations of the Mosquitia region since the late 1980s. They also work to help the ITPs in this region understand the issues surrounding land tenure and their rights (Herlihy 1997). The Miskito signed a formal declaration requesting the Honduran government to legalize indigenous lands and continued their fight for land tenure rights by forming a land vigilance committee (Herlihy 1997). Land vigilance committees began in the early 1990s at the behest of Miskito leaders, and have formed in many communities in the Rio Platano region. They monitor land and land use with a watchful eye for non-indigenous users (Hayes 2009; Herlihy 1997).

In 1995, in response to continued non-indigenous settlements and deforestation in the Rio Platano region, the Honduras Ministry of Environment sought technical assistance to evaluate the Rio Platano (Ohnesorge, Patry, and Salas 2007). The International Union for Conservation of Nature and the United Nations Educational, Scientific, and Cultural Organization made a bio-cultural inventory of the region and discovered that, despite its protected status, it had become over run with non-indigenous settlers, Ladinos, who had engaged in physical conflict with the Miskitos and in severe instances had killed Miskitos (Herlihy 2009). The

Honduran government, with assistance from international governments and NGOs, put together a team which included Herlihy (2009) to develop a management plan to protect the region's biodiversity including indigenous cultures (Herlihy 1997). This resulted in the Rio Platano Biosphere Reserve (RPBR).

The RPBR followed the model of the United Nations Man and the Biosphere Program (fig. 5.8): A "nucleus" area used occasionally for research, ecotourism, and traditional and cultural purposes by indigenous populations but without human settlements; a "cultural zone" for indigenous settlements and indigenous subsistence use only; and a "buffer zone" also for indigenous settlements and subsistence use but also for agricultural activity provided it does not alter the shape of the ecosystem (Herlihy 2009; Herlihy 1997). The Ladinos residing in the nucleus, approximately 50 – 100 families, were resettled outside the park and all involved stakeholders in the RPBR made efforts to halt the deforestation occurring in the zones (Herlihy 2009). The Miskitos participated in mapping the region and in establishing regulations within the reserve, including establishing the boundaries of each zone (Herlihy 2009). In addition, the Ladinos and the Miskitos were able to reach peace agreements (Herlihy 2009).

The RPBR received placement on the World Heritage Site in Danger List in 1996 based on the degree of deforestation in the reserve and the reduction in quality of life for indigenous populations (Herlihy 2009; WRM 2003; TED 1997). The World

Heritage Site in Danger List allowed the RPBR to maintain a high profile and high priority and allowed it to receive financial and technical support from the United Nations for greater protection against settlers and resource acquisition (Herlihy 2009).

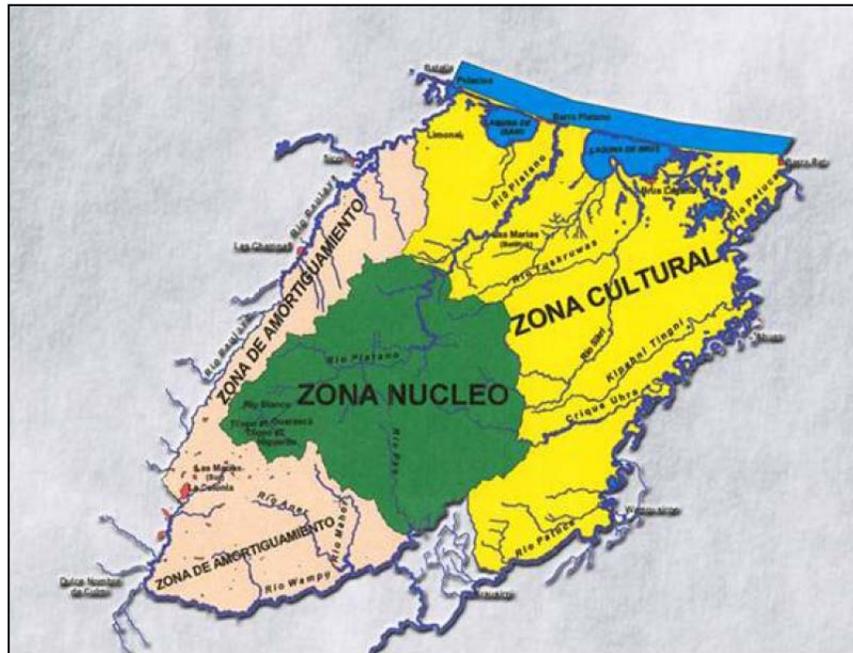


Figure 5.8. The Rio Platano Biosphere Reserve Zones: Nucleus (Zona Nucleo), Cultural Zone (Zona Cultural), and a Buffer Zone (Zona de Amortiguamiento) (Ohnesorge, Patry, and Salas 2007).

Through the establishment of the RPBR, the Miskitos gained a great deal of ground in protecting their territory and were included in developing the bio-cultural inventory. However, the RPBR continues to be owned by the Honduran government leaving the Miskitos in a vulnerable position should the status of the reserve ever

change (Herlihy 2009). The role the Miskito played in the development of the RPBR and their tentative position within the RPBR places the Miskito on the center rung of “tokenism” on Arnstein’s (1969) ladder of citizen participation, consultation. The Miskitos and other groups continue to fight for their land rights. MASTA, MOPAWI, land vigilance committees, and local indigenous groups have partnered with the World Wildlife Fund, the Canadian International Development Agency, and the VIDA Foundation for the Moroccan Forestry Project in order to continue protection of the rain forest in the Mosquitia corridor and to gain land tenure rights (TED 1997). As of 2007 the RPBR is off the danger list, but Herlihy (2009) cautions that the danger list provided protection for the RPBR by providing a higher profile and keeping the RPBR at the forefront of conservationist organizations.

## CONCLUSION

A great deal has been published regarding forest conservation partnerships in Latin America. These sources, primarily secondary data and media coverage, allowed me to construct comprehensive case studies of established indigenous partnerships. However, as discussed previously, discrepancies occurred in the literature in each of the above cases that required a detailed textual analysis and corroboration of data using expert interviews. Each case study demonstrates a different set of circumstances in which the traditional forests of ITPs have been conserved and protected from development, resource acquisition, and/or non-

indigenous colonization. As described in the case studies each indigenous group has had varying degrees of participation within the establishment and continued protection of their land. These levels of participation correlate with the upper rungs of Arnstein's ladder of citizen participation, with the exception of the Miskito whom I have placed on the center rungs, and will be discussed in further detail in the following chapter. While the degree of ITP participation varies and the national government policies toward ITPs also varies, there are unifying patterns and characteristics implicated in the success of these forest conservation partnerships. The following chapter analyzes and discusses these patterns and characteristics and theorizes about the viability of these types of forest dwelling ITP forest conservation partnerships as an alternative to conservation evictions in Africa.

## CHAPTER 6

### CONCLUSIONS

The issue of forest conservation requiring the evictions of forest dwelling indigenous and tribal populations (ITPs) in central and east Africa has become exceedingly controversial. World deforestation rates and the importance of forests make it vital that global populations take extreme actions to protect remaining forests. However, conserving forests at the expense of evicting ITPs and the subsequent addition of conservation refugees appears to exacerbate environmental and social issues.

The forest dwelling ITPs in central and east Africa are primarily pygmies and are considered by many to be the first inhabitants of these regions. Given the melting pot that much of the developed world has become, it is momentous that descendants of the Earth's original people still exist and live in much the same way as their ancestors. Pygmy populations in central and east Africa, as well as forest dwelling ITPs around the world, are not just relics from the past; they also contain knowledge unique to the world at large. The knowledge of forest dwelling populations in Africa, Latin America, and the world over can be applied to

medicinal and health purposes, important forest resources and sustainable methods of acquisition, and as guides for alternative ways to co-exist with the forest. As these populations splinter and disappear so does the knowledge they contain. The irony of forest conservation evictions is that the forests that are so highly valued as to place them under protection have evolved that way while co-existing with forest dwelling ITPs.

Not all forest dwelling ITPs face evictions when confronted with the need to conserve and protect forests. This is demonstrated by examples of forest dwelling ITP forest conservation partnerships in Latin America. In these cases ITPs have formed partnerships with conservation non-governmental organizations (NGOs) and/or government conservation agencies in order to protect forests as well as their multi-cultural heritage. This method of forest conservation is well documented and at first glance appears as an ideal solution to the issue of conservation evictions. However, Latin American legislative policies toward ITPs differ from those in other regions, particularly in Africa. According to Chapin (2009) and Zimmerman (2009) national government policies toward ITPs in Latin America have had a checkered past but are also the most progressive. For this reason forest dwelling ITPs in Latin America have had a great deal of success in forming forest conservation partnerships.

The goal of this research was to determine the viability of forest conservation partnerships as an alternative to forest dwelling ITP conservation evictions in Africa. Through analyzing established conservation partnerships in Latin America I identified indicators of success in order to compare and apply them to the context of forest dwelling ITPs in Africa who have faced, or currently face, conservation evictions.

#### INDICATORS OF SUCCESS

The indicators of successful forest conservation partnerships in Latin America were determined based on patterns in the characteristics of ITPs who gained and maintained land rights and/or legally protected their land. As described in the methods chapter, I created categories of these indicators and constructed a table (6.1) that organizes evidence from each case study into the appropriate category. I noted the patterns and frequency of evidence in each category and selected the following indicators:

- ∞ Indigenous rights and indigenous land rights policies
  - These primarily include government-based land rights policies that provide ITPs the title, sovereignty, and/or autonomy to their land and the right to practice their customs and beliefs on their land

- ∞ Support from conservation NGOs
  - This indicator can include NGOs initiating support to conserve ITP traditional lands and/or ITPs securing NGO support to conserve their own traditional lands
- ∞ Support from national governments
  - This indicator can include national governments initiating support to conserve ITP traditional lands and/or ITPs securing government support to conserve their own traditional lands
- ∞ Degree of self-determination and self-organization
  - This indicator is generally represented by a history of pride and self-assurance within ITP societies that lead them to fight for their land rights and/or socio-political rights and can be exhibited by one or more of the following actions:
    - Formation of unions/organizations
    - Hosting and participating in land rights conferences
    - Physical protection and/or social use of their land
- ∞ Border protection by ITPs
  - This indicator is generally represented by the physical protection of borders and can be exhibited by one or both of the following actions:

- Physical presence and/or social use of the land at borders
- Armed presence at border.

I followed this by creating a timeline (Appendix D) of each case study in order to further explore the patterns and indicators I discovered. In addition, I substantiated my conclusion about these indicators of success during interviews.

<b>ITP</b>	<b>Indigenous Rights Policies</b>	<b>NGO supported</b>	<b>Government supported</b>	<b>Self-determination</b>	<b>Border protection</b>
Kayapó	Yes	Yes	No	Yes	Yes
Kuna	Yes	Yes	No	Yes	Yes
Ingano	Yes	Yes	Yes	Yes	-
Guarani	Yes	Yes	Yes	Yes	-
Miskito	No	Yes	Yes	Yes	-

Table 6.1. Indicators of Success among Forest Dwelling ITP Forest Conservation Partnerships ('-' indicates no available data).

In the five cases studied, indigenous rights policies are one of the strongest indicators of success in forest conservation partnerships. The lack of formalized indigenous rights prevents ITPs from making demands of their government, protecting their land from encroachment, and remaining on their land if poised for eviction. National governments in regions that do not support indigenous rights do not provide the forums or take the responsibility to listen to ITP organizations. Indigenous land rights provide a legal framework for ITPs to lay claims to their traditional land. Although the Miskito do not have legal claims to their land, their

collaboration with governmental and NGO forest conservation agencies allowed them to remain on protected land while non-ITP inhabitants were evicted and faced strict regulations regarding the use of resources. While this approach is not a true forest conservation partnership, as stated previously, it shows characteristics of one.

Support from NGOs and/or government agencies are equal in importance in these five areas to indigenous rights policies in establishing ITP forest conservation partnerships. Support from NGOs offer forest dwelling ITPs, most of whom have little dealings in structured society, liaisons to properly communicate wants and needs. In addition, conservation NGOs provide the economic support and experience in establishing and maintaining protected areas.

Support from government agencies can offer forest dwelling ITPs with a legal framework with which to lay claim to their own lands and protect their borders. Government agencies can also provide economic support and experience in establishing and maintaining protected areas; however, this differs from country to country and is less dependable than NGO support.

Self-determination, including self-organization, appears to be a significant indicator of success given that ITPs in five out of five cases demonstrate this characteristic. It is intuitive to suppose that if one does not ask for help one will not receive it. However, ITPs which demonstrate self-determination and drive in protecting their land and culture increase the possibility they will be acknowledged

by national governments, thus increasing the possibility they can act rather than be acted upon.

Border protection does not appear vital in establishing conservation areas given that only two out of five cases have literature demonstrating this characteristic. However, border protection plays a significant role because it contributes to reducing non-indigenous encroachment by maintaining a watchful eye and allowing ITPs to act quickly if and when their boundaries are breached. In addition, when extreme acts occur, such as the Kayapó's response to encroachment, ITP demands quickly come to the forefront of media and international attention.

Not every indicator was met by each ITP in the Latin American case studies; however, each ITP, with the exception of the Miskito, met four out of the five indicators. The Miskito met three out of the five indicators. The following section discusses each type of partnership and how each case study demonstrates indicators of success. Analysis of these case studies addresses the applicability of forest conservation partnerships as a viable alternative to forest dwelling ITP conservation evictions in Africa

## ANALYSIS OF LATIN AMERICAN CASE STUDIES

### **Indigenous Protected Areas: The Kayapó and the Kuna**

#### Kayapó: Brazil

The Kayapó in the Para and Mato Grosso regions of Brazil are an example of a strong ITP who actively fight for their rights, even to the extreme. They are well documented by both researchers and the media following their public protests in the 1980s and currently own and maintain 11 million+ hectares of their traditional land. The Kayapó established an indigenous protected area (IPA) primarily through their own efforts but also formed a forest conservation partnership with an NGO to increase their conservation success and to generate an income.

The Kayapó demonstrate four of the five indicators of success that have led to a successful IPA: 1. indigenous rights policies, 2. support from conservation NGOs, 3. self-determination, and 4. border protection, but not government support. Based on the history of Kayapó forest conservation efforts and the interview with Zimmerman (2009), their success can be based on three primary attributes: indigenous rights policies, self-determination, and border protection; the key being indigenous rights policies. In the 1980s the Constitution of Brazil granted indigenous populations the right to occupy their native lands and practice traditional customs. This allowed the Kayapó to make legal decisions about the management and development decisions for their land and gave them a legitimate forum to be heard.

The degree of power the Kayapó maintain on their lands places them on the top rung of Arnstein's (1969) ladder of citizen participation (pg. 29), citizen control.

The self-determination of the Kayapó stems largely from their warring culture and their role as warriors; this contributed significantly to their conservation success (Dowie 2009; Zimmerman 2009). The extreme action of the Kayapó against outsiders and their public protests made it very apparent to the Brazilian government that they demanded respect, demanded to be heard, and expected to be treated as equals (Zimmerman 2009). It was this same self-determination<sup>6</sup> that led the Kayapó to aggressively protect their borders thus increasing their success (Zimmerman 2009).

The support from Conservation International-Brazil (CI-Brazil) contributed significantly to the Kayapó's conservation of their land. CI-Brazil primarily helped to transition the Kayapó from mahogany logging concessions to creating the Kayapó Centre for Ecological Studies. This partnership increased the Kayapó's knowledge of forest conservation and also allowed them to generate an income (Zimmerman 2009).

The Kayapó did not directly benefit from national government support in establishing a forest conservation partnership; this precluded government support

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<sup>6</sup> According to Zimmerman (2009) Brazil's indigenous rights policies may have been directly linked to protests and actions of the Kayapó and the international attention they garnered. There is no direct evidence of this in the literature used in this research and requires further exploration as to the capacity of ITPs influencing government policy.

as an indicator of success. However, without the Brazilian government establishing indigenous rights policies it is doubtful they would be in the position they are today (Zimmerman 2009).

### Kuna: Panama

The Kuna are a good example of an ITP that successfully established a forest conservation partnership that allowed them to conserve their traditional land. As discussed in the case studies, they had a series of conflicts with the organizations they formed partnerships with but eventually they established effective conservation strategies.

Like the Kayapó, the Kuna demonstrate four of the five indicators for success that led to a successful IPA: 1. indigenous rights policies, 2. support from conservation NGOs, 3. self-determination, and 4. border protection, but not government support. Again like the Kayapó, Panama's indigenous rights policies were integral in the establishment of the Kuna's IPA. The sovereignty and autonomy granted to the Kuna in the 1950s paved the way for them to take the initiative and successfully stop the encroachment of their land (Chapin 2009). The degree of power the Kuna maintain on their land, like the Kayapó, places them on the top rung of Arnstein's (1969) ladder of citizen participation (pg. 29), citizen control.

The support of NGOs also played a significant role in establishing the Kuna IPA. The Kuna secured support from four international conservation organizations

to create the Proyecto de Estudio para el Manejo de Areas Silvestres de Kuna (PEMASKY). As discussed in the case studies, PEMASKY turned out to be a disaster for the Kuna and upon the dissolution of PEMASKY they carried forth with their conservation efforts. Due to the failure of PEMASKY, NGO support may not, at first glance, appear to be an indicator of success. However, the experience resultant from their partnership led to the Kuna's ultimate conservation success and their ability to protect their land solely on their own (Chapin 2009).

The Kuna showed a great deal of self-determination in protecting their land and their culture. First in 1925, the Kuna rose against the Panamanian government following violations of their political and societal rights. They resisted in the government's attempt to westernize the tribe and eventually gained land rights.<sup>7</sup> The Kuna again acted following the encroachment on their land by non-indigenous settlers. Members of the Kuna moved to protect their borders by first establishing a government-recognized "social use" of their land and then later by initiating the development of their land as a protected area through a partnership with international NGOs. The Kuna's self-determination contributed greatly to their conservation efforts.

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<sup>7</sup> Based on the possibility of a link between Kayapó protests followed by Brazil's indigenous rights policies it is open to speculation whether the Kuna contributed to securing indigenous land rights policies following their uprising. This requires further exploration on the subject.

Border protection by the Kuna did not play as great a role in Kuna success as the previous indicators, but it did establish their intent and their chance to keep a close eye on less inhabited Kuna regions. The Kuna did not protect their borders as militantly as the Kayapó but rather utilized the land to stake claim.

The Kuna did not initiate nor did they receive government support. However, as with the Kayapó, the role of the Panamanian government establishing indigenous rights policies ultimately allowed the Kuna to take initiatives that became successful.

### **Indigenous Community Conserved Area: The Ingano**

#### Ingano: Colombia

Ingano conservation efforts have been less high profile as the Kayapó and the Kuna but have been equally successful with the creation and management of the Alto Fragua Indiwasi National Park. The Ingano demonstrate four of the five indicators for success that led to a successful ICCA: 1. indigenous rights policies, 2. support from conservation NGOs, 3. Support from the Colombian National Parks Service, and 4. self-determination, but not border protection.

As discussed in the case study, the Colombia political constitution recognized the legitimacy of indigenous populations in 1991, thus allowing indigenous populations the right to create their own development plan. They developed their “Plan de Vida” in 1998 and were able to institute it in 2002. According to Pedraza

(2010), the Colombia legislature on ITP rights is one of the most advanced in Latin America and has provided autonomy to thousands of ITPs who currently maintain one third of Colombia's national territory. The recognition and a progressive attitude toward ITP rights was integral to establishing the Ingano's ICCA and equally so in forming a partnership with the Colombian government. The role of the Ingano in the Indiwasi Alto Fragua National Park places them on the lowest rung of the top three rungs of Arnstein's (1969) ladder of citizen participation (pg. 29), partnership.

Support from conservation NGOs was also critical in the Ingano establishing an ICCA. The Ingano initially sought support from the Amazon Conservation Team (ACT) to help implement their "Plan de Vida". ACT functioned to recruit, train, and compensate 20 members of the Ingano and taught them the skills to become successful land managers and conservationists. In addition, ACT took on the role of liaison between the Ingano and the Colombian National Parks Service to form a partnership and co-manage the Alto Fragua Indiwasi National Park.

Support by the Colombian government played a key role in the Ingano's ICCA. Co-managing the national park with the Colombia National Parks Service allowed them to gain valuable knowledge in managing the park and in conservation practices.

The self-determination of the Ingano was demonstrated in their establishment of the Tandachiridu Inganokuna Association, a formal organization to represent the Ingano, and the development of their “Plan de Vida”. The ultimate goal of the Ingano was to stop non-indigenous settlers from encroaching on their lands. They successfully did this through their initiation of a partnership with ACT and work with the National Park Service. Their initiative throughout each process denotes self-determination as an indicator of success.

### **Co-Managed Protected Area: The Guarani Izoceños**

#### Guarani Izoceños: Bolivia

The Guarani Izoceños are a strong example of a forest conservation partnership through their efforts in maintaining and co-managing the Kaa-ya Iya del Gran Chaco National Park (KIGC). They demonstrate four out of the five indicators of success: 1. indigenous rights policies, 2. support from conservation NGOs, 3. support from the Bolivian government, and 4. self-determination, but not border protection. As with the previous examples, the institution of indigenous rights policies played an integral role in providing the Guarani Izoceños the capacity to co-manage the KIGC.

The Bolivian government acknowledged indigenous rights through two rounds of agrarian reforms, first in 1953, and later in 1993 to include the recognition of the multi-ethnic and multi-cultural aspects of ITPs. It was these acts that gave the

Guarani Izoceños the capacity to form the Capitanía del Alto y Bajo Izoceño (CABI), a political authority for the Guarani Izoceños that provided them an opportunity to demand control of their land and equal rights.

Support from conservation NGOs also played a significant role. The Guarani Izoceños partnered with the Wildlife Conservation Society, members of the National Protected Areas Service, local municipalities, and representatives from three other ITP organizations to form KIGC's management committee. The support of these organizations assisted in reducing the pressure of managing the park.

Support from the Bolivian government is also a significant indicator of success. The partnership with the Bolivian Ministry of Sustainable Development and Planning was the initial stage in establishing KIGC. The Guarani Izoceños gained government support for the first ten years of KIGC's existence and the knowledge and experience of creating a development plan and jointly managing the park. The role of the Guarani Izoceños in the co-management of the KIGC places them on the lowest rung of the top three rungs of Arnstein's (1969) ladder of citizen participation (pg. 29), partnership.

The Guarani Izoceños demonstrated a great deal of self-determination in protecting their land and culture. Early in the 20<sup>th</sup> century the Ingano rose up against non-indigenous settlers and later mobilized into unions. They hosted conferences and fought for their political and societal rights. Their determination is again

demonstrated in the creation of CABI<sup>8</sup> and establishing forest conservation partnerships with NGOs. It is doubtful the Guarani Izoceños would have been as successful had they not demonstrated this quality.

### **Top-Down Approach: The Miskito**

#### Miskito: Honduras

The case study of the Miskito represents a different type of forest conservation partnership and is not, in fact, a true partnership. The top-down management approach of the Rio Platano Biosphere Reserve (RPBR) places the primary management decisions in the hands of the Honduran government and international conservation NGOs. However, the Miskito were selected as a case study because of their role as participants in mapping the RPBR region and in establishing regulations within the reserve, including establishing the boundaries of the three zones within the reserve. In addition, in this top-down management approach, the Miskito have reached their ultimate goal and been allowed to remain on their traditional lands free from the encroachment of non-indigenous settlements.

The Miskito demonstrate three of the five indicators of success: 1. support from conservation NGOs, 2. support from the Honduran government, and 3. self-determination, but not indigenous rights policies or border protection. There are

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<sup>8</sup> The formation of CABI and its recognition as a political unit prior to the 1993 agrarian reforms may be further indication of an ITP organization influencing government policy. As with the Kayapó and the Kuna, this requires further exploration.

currently no indigenous cultural or land rights policies in place in Honduras; subsequently the Honduran government maintains ownership of Miskito lands (Herlihy 2009). Support from both NGOs and the Honduran government was vital to the Miskito's goal of protecting their land.

Support from conservation NGOs ultimately allowed the Miskitos to remain on their land without encroachment from outsiders. Following an initial bio-cultural inventory of the Rio Platano region, conservation NGOs deemed it necessary to place the region on the World Heritage Site in Danger List and increase conservation efforts. This resulted in the establishment of the RPBR and Miskito participation.

The Honduran government initially began conservation efforts in the 1970s and 1980s in the Rio Platano region; however, the Miskito were not consulted or supported during this time. The continued encroachment by non-indigenous settlers, logging, and resource exploitation led the Honduran government to seek the help of conservation NGOs, thus opening a dialogue between the Honduran government and the Miskito leading to government support of the Miskitos within the RPBR. The lack of ITP rights in Honduras precludes the Miskitos from ranking on Arnstein's (1969) top three rungs of the ladder of citizen participation (pg. 29); however, the role of the Miskito in establishing the RPBR places them on the fifth rung, consultation. While this places them in the second category on Arnstein's

ladder, degree of tokenism, it has a great deal more control than the lowest rungs: non-participation.

The self-determination of the Miskito is a significant indicator of success. Beginning in the 1970s the Miskito tried to create dialogue with the Honduran government to gain control of their traditional lands but without success. They maintained their determination forming their own political unit and joining an indigenous land rights organization. While the Miskito did not gain the political or social rights they had hoped for, they did receive exclusive rights as the only population to inhabit the land and strict regulations were set in place to prevent development or resource acquisition on their land. The self-determination of the Miskito made them difficult to ignore and likely contributed to their inclusion as participants in mapping the RPBR and their role in establishing regulations. The Miskito continue to fight for land rights within several organizations; the results of this continued self-determination remains to be seen.

#### FOREST CONSERVATION PARTNERSHIPS: APPLICATIONS IN AFRICA

ITP rights are virtually non-existent in African countries. In fact, many forest dwelling ITPs are considered by non-indigenous populations to be ignorant and more like animals than people (Lewis 2000). For this reason these ITPs have had no voice in protecting their land or their rights despite occupying their land for

hundreds, sometimes thousands of years. The forceful evictions for the creation of protected forests have resulted in physical, mental, and social violations.

The repercussions of conservation evictions are not just felt by the ITPs directly affected but by global communities as well. ITPs forced into outside communities and cultures more often than not contribute to the degradation of natural resources, much like the effects of global refugees. The poverty in which these conservation refugees find themselves combined with an unsustainable lifestyle becomes a global issue as each region on Earth feels the effects of increasing populations and limited resources. For these reasons it is important to find an alternative to limit these negative effects.

The results of analyzing the case studies from Latin America suggest that ITP forest conservation partnerships are not viable alternatives for forest dwelling ITP conservation evictions in Africa. Primarily the lack of indigenous cultural and land rights in Africa precludes these forest dwelling ITPs from making demands or working with national or local governments (Chapin 2009; Nienaber 2009; Lewis 2000). In addition, the rampant corruption in many African governments supports resource acquisition and development above conservation (Chapin 2009; Nienaber 2009). The recent history of colonization, marginalization, and violence that African forest dwelling ITPs have experienced has decreased their capacity for self-determination and self-organization thus reducing their ability to protect their

borders (Chapin 2009; Nienaber 2009). The only indicator of success that is present within African countries is the support of conservation NGOs. However, the NGOs that have successfully established protected areas have done so without consulting the ITPs living in these areas (Nienaber 2009). In addition, some NGOs have been involved, directly or indirectly, with ITP conservation evictions, as exemplified by the evictions of seven tribes from the Omo National Park in Ethiopia by the African Parks Foundation (APF) (Nienaber 2009; NSCR 2008; Brockington and Igoe 2006). As presented in chapter 2 (pg. 19), the APF claimed that they did not want to get involved with local government matters and put a clause in the park agreement that they would not take over management of the park until all tribe members were resettled (Nienaber 2009; NSCR 2008; Brockington and Igoe 2006). It is unlikely that the presence of conservation NGOs in Africa, without other indicators of success, will succeed in establishing ITP forest conservation partnerships.

#### DIRECTION FOR FURTHER RESEARCH

The methods used in this research have served to provide preliminary findings on the issue of forest dwelling ITP conservation and have been appropriate at a master's level of academic research. However, further research needs to be conducted if the disconnect between forest conservation and conservation evictions will ever be resolved. It is my intention to continue work on this subject at the doctoral level. Specifically, I am interested in further exploration of the capacity of

forest dwelling ITPs to influence government policy. As previously noted, Brazil's indigenous rights policies may have been directly linked to protests and actions of the Kayapó and the international attention they garnered. In addition, it is open to speculation whether the Kuna contributed to securing indigenous land rights policies following their uprising and whether the formation of the Guarani Izoceños Capitania del Alto y Bajo Izozog and its recognition as a political unit prior to the 1993 led to agrarian reforms. There is no direct evidence of this in the literature used in this research. However, this pattern of self-determination exhibited by forest dwelling ITPs in Latin America prior to indigenous rights policies may be an indication that self-determination among forest dwelling ITPs in Africa is the first step in gaining indigenous rights policies and subsequent forest conservation partnerships.

## ACRONYMS

ACT - Amazon Conservation Team  
APF - African Parks Foundation  
BINP - Bwindi Impenetrable National Park  
CABI - Capitanía del Alto y Bajo Izozog  
CATIE - Centro Agronómico Tropical de Investigación y Enseñanza  
CCA - Community Conserved Area  
CI-Brazil - Conservation International-Brazil  
DWR - Dja Wildlife Reserve  
DRC - Democratic Republic of the Congo  
EFR - Echuya Forest Reserve  
ETM - Enhanced Thematic Mapper  
ICCA - Indigenous and Community Conserved Areas  
IDP - Internally Displaced Person  
ILO - International Labour Organization  
IPA - Indigenous Protected Areas  
ITP - Indigenous and Tribal Populations  
IUCN - International Union for Conservation of Nature  
KIGC - Kaa-ya Iya del Gran Chaco National Park  
KNP - Korup National Park  
MASTA - Mosquitia Asla Takanka  
MGNP - Mgahinga Gorilla National Park  
MOPAWI - Development of Mosquitia  
NDVI - Normalized Difference Vegetation Index  
NGO - Non-Governmental Organization  
PEMASKY - The Proyecto de Estudio para el Manejo de Áreas Silvestres de Kuna  
PNM - Campo Ma'an National Park  
PV - Pixel Values  
RPBR - Rio Platano Biosphere Reserve  
SMNP - Smokey Mountain National Park  
TIA - Tandachiridu Inganokuna Association  
TM - Thematic Mapper  
UN - United Nations  
UTK - Union of Kuna Workers  
VR - Voluntary Resettlement  
WCS - Wildlife Conservation Society

WWF – World Wildlife Fund

## BIBLIOGRAPHY

- Amazon Conservation Team (ACT) – Columbia Program. 2005. *Sustainable Development for Columbian Indigenous Communities*. Final Report. United States Agency for International Development.
- Aitken, Stuart and Gill Valentine. 2006. *Approaches to Human Geography*. London: Sage Publications.
- Arnstein, Sherry R. 1969. A Ladder of Citizen Participation. *Journal of the American Institute of Planners*. 35(4):216-224.
- Beltrán, Javier. 2000. *Indigenous and Traditional Peoples and Protected Areas: Principles, Guidelines, and Case Studies*. IUCN: Gland, Switzerland and WWF International: Gland, Switzerland.
- Bennett, Katy. 2002. Interviews and Focus Groups. In *Doing Cultural Geography*. Ed. Pamela Shurmer-Smith, 151-162. London: Sage Publications Ltd.
- Blomley, Tom. 2003. *Natural Resource Conflict Management: The Case of Bwindi Impenetrable and Mgahinga Gorilla National Parks, Southwestern Uganda*. Uganda: Care International.
- Borrini-Feyerabend, Grazia, Michel Pimbert, M. Taghi Farvar, Ashish Kothari and Yves Renard. 2007. A Point of Departure. In *Sharing Power: A Global Guide to Collaborative Management of Natural Resources*. Switzerland: IIED and IUCN.
- Borrini-Feyerabend, Grazia, Ashish Kothari, and Gonzalo Oviedo. 2004. *Indigenous and Local Communities and Protected Areas: Toward Equity and Enhanced Conservation*. IUCN: Gland, Switzerland.
- Botero, Eduardo Uribe. 2005. The Policy for the Social Participation in Conservation: Case Study. *Documentos Cedes*. By the Universidad De Los Andes-Cedes.

- Bower, Bruce. 2009. African Pygmies May Be Older Than Thought. *Science News*.  
[http://www.sciencenews.org/view/generic/id/42666/title/African\\_pygmies\\_may\\_be\\_older\\_than\\_thought](http://www.sciencenews.org/view/generic/id/42666/title/African_pygmies_may_be_older_than_thought). (Accessed March 5, 2009).
- Brockington, Dan and Jim Igoe. 2006. Eviction for Conservation: A Global Overview. *Conservation and Society*. 4(3):424-470.
- Brockington, Dan, Jim Igoe, and Kai Schmidt-Soltau. 2006. Conservation, Human Rights, and Poverty Reduction. *Conservation Biology*. 20(1):250-252.
- Brockington, Dan and Kai Schmidt-Soltau. 2004. The Social and Environmental impacts of Wilderness and Development. *Oryx*. 38(2):140-142.
- Brown, Tim. 2002. Extensive Methods: Using Secondary Data. In *Doing Cultural Geography*. Ed. Pamela Shurmer-Smith, 101-110. London: Sage Publications.
- Cernea, Michael. 1997. The Risks and Reconstruction Model for Resettling Displaced Populations. *World Development*. 25(10):1569-1587.
- Chapin, Mac. 2009. Telephone Interview by Author. Boone, NC. November 9.
- Chapin, Mac. 2000. *Defending Kuna Yala: PEMASKY, The Study Project for the Management of the Wildlands of Kuna Yala, Panama*. A case study for *Shifting Power: Decentralization and biodiversity conservation*. Washington, D.C.: Biodiversity Support Program.
- Chapin, Mac. 1997. *Defending Kuna Yala: The Proyecto de Estudio para el Manejo de las Areas Silvestres de Kuna Yala (PEMASKY)*. 48pgs. July.
- Colchester, Marcus. 1997. Salvaging Nature: Indigenous Peoples and Protected Areas. In *Social Change and Conservation: Environmental Politics and Impacts of National Parks and Protected Areas*. Eds. Krishna B. Ghimire and Michael P. Pimbert, 97-130. London: Earthscan Publications Limited.
- Cunningham, Patrick. 2008. Amazon Indians Lead Battle against Power Giant's Plan to Flood Rainforest. *The Independent*.  
<http://www.independent.co.uk/environment/climate-change/amazon-indians-lead-battle-against-power-giants-plan-to-flood-rainforest-832865.html>. (Accessed March 8, 2010).

- Daniels, Amy E. 2002. Indigenous peoples and Neotropical Forest Conservation: Impacts of Protected Area Systems on Traditional Cultures. *Macalester Environmental Review*.  
<http://www.macalester.edu/environmentalstudies/macenvreview/indigenouspeoples.pdf> (Accessed March 5, 2009).
- Denevan, William M. 1992. The Pristine Myth: The Landscape of the Americas in 1492. *Annals of the Association of American Geographers*. 82(3):369-385.
- Destro-Bisol, Giovanni, Valentina Coia, Ilaria Boschi, Fabio Verginelli, Alessandra Caglià, Vincenzo Pascali, Gabriella Spedini, and Francesc Calafell. 2004. The Analysis of Variation of mtDNA Hypervariable Region 1 Suggests That Eastern and Western Pygmies Diverged before the Bantu Expansion. *The American Naturalist*. 163(2):212-226.
- Dey, Chandana. 1997. Women, Forest Products and Protected Areas: A Case Study of Jaldapara Wildlife Sanctuary, West Bengal, India. In *Social Change and Conservation: Environmental Politics and Impacts of National Parks and Protected Areas*. Eds. Krishna B. Ghimire and Michael P. Pimbert, 97-130. London: Earthscan Publications Limited.
- Dowie, Mark. 2006. Conservation Refugees: When Protecting Nature Means Kicking People Out. *Seedling*. January:6-12.
- Dowie, Mark. 2009. *Conservation Refugees: The Hundred Year Conflict between Global Conservation and Native Peoples*. Cambridge: MIT Press.
- Durning, Alan Thein. 1993. Supporting Indigenous Peoples. In *State of the World 1993*. Ed. Linda Starke, 80-100. New York: W.W. Norton and Company.
- Ekinsmyth, Carol. 2002. Feminist Methodology. In *Doing Cultural Geography*. Ed. Pamela Shurmer-Smith, 177-185. London: Sage Publications Ltd.
- Environment News Service (ENS). 2006. Democratic Republic of Congo Entrusts Two Reserves to Communities. <http://www.ens-newswire.com/ens/apr2006/2006-04-10-01.asp>. (Accessed September 3, 2009).

- Esposito, Anthony. 2008. First Indigenous Protected Area on CYP Leads the Way. *The Wilderness Society*.  
<file:///F:/Thesis/Research/Research%20Protected%20Areas/CYP-lead-the-way%20printed.htm>. (Accessed September 1, 2009).
- First Peoples Worldwide. 2007. *Background on Global Conservation Evictions*.  
[http://uniqueorn.com/firstpeople/pdfs/Evictions\\_and\\_WorksCitedforWeb3-8-07.pdf](http://uniqueorn.com/firstpeople/pdfs/Evictions_and_WorksCitedforWeb3-8-07.pdf). (Accessed November 11, 2008).
- Food and Agriculture Organization of the United Nations (FAO). 2007. Forests Facts and Figures. <http://www.fao.org/forestry/home/en/>. (Accessed June 18, 2009).
- Food and Agriculture Organization of the United Nations (FAO). 2006. Country Statistics: Highest Rate of Deforestation.  
<http://www.fao.org/askfao/topicsList.do?mainAreaId=20266&topicAreaId=20298>. (Accessed February 20, 2010).
- Forest Peoples Programme. 2007. *Forced Removal of the Diaguita Indigenous People From Tucumán Province, Argentina*.  
[http://www.forestpeoples.org/documents/s\\_c\\_america/argentina\\_diaguitas\\_forced\\_removal\\_mar07\\_eng.shtml](http://www.forestpeoples.org/documents/s_c_america/argentina_diaguitas_forced_removal_mar07_eng.shtml). (Accessed March 3, 2009).
- Fourshey, Catherine Cymone. 2004. Batwa Peoples Thrive in Central Africa. In *Great Events from World History: The Ancient World: Prehistory – 476 C.E. Volume 1*. Pasadena, California: Salem Press.
- Fraser, Evan D.G., Andrew J. Dougill, Warren E. Mabee, Mark Reed, and Patrick McAlpine. 2006. Bottom Up and Top Down: Analysis of Participatory Processes for Sustainability Indicator Identification as a Pathway to Community Empowerment and Sustainable Environmental Management. *Journal of Environmental Management*. 78:114-127.
- Galetti, Mauro. 2001. Indians within Conservation Units: Lessons from the Atlantic Forest. *Conservation Biology*. 15(3): 798-799.
- Geisler, Charles and Ragendra De Sousa. 2001. From Refuge to Refugee: The African Case. *Public Administration and Development*. 21:159-170.

- GFMC. 1998. Global Fire Monitoring Center. [http://www.fire.uni-freiburg.de/current/archive/br/1998/11/br\\_161198\\_2.gif](http://www.fire.uni-freiburg.de/current/archive/br/1998/11/br_161198_2.gif). (Accessed December 2, 2009).
- Hayes, Tanya M. (2009). A Challenge for Environmental Governance: Institutional Change in a Traditional Common-Property Forest System. *Policy Sciences*. 43:1(27-48).
- Herlihy, Peter H. 2009. Telephone Interview by Author. Boone, N.C. December 3.
- Herlihy, Peter H. 1997. Indigenous Peoples and Biosphere Reserve Conservation in the Mosquitia Rain Forest Corridor, Honduras. In *Conservation through Cultural Survival: Indigenous Peoples and Protected Areas*. Ed. Stan Stevens, 99-129. Washington D.C.: Island Press.
- IBAMA. 1998. Arc of Deforestation in Brazil. [http://www.fire.uni-freiburg.de/current/archive/br/1998/11/br\\_161198\\_2.gif](http://www.fire.uni-freiburg.de/current/archive/br/1998/11/br_161198_2.gif). (Accessed May 17, 2010).
- IMFN. 2008. Indigenous Peoples Involvement. International Model Forest Network. [http://www.imfn.net/userfiles/web-pygmeesbagyeli\\_0016\\_web\\_2%281%29.jpg](http://www.imfn.net/userfiles/web-pygmeesbagyeli_0016_web_2%281%29.jpg). (Accessed December 1, 2009).
- International Labour Organization. 2009. *Indigenous and Tribal Peoples*. <http://www.ilo.org/indigenous/Conventions/no107/lang--en/index.htm>. (Accessed March 2, 2009).
- International Organization for Migration. 2009. *Migration, Climate Change, and the Environment*. Geneva, Switzerland: IOM.
- IPS. 2009. Inter Press Service News Agency. [http://ipsnews.net/pictures/20091004\\_CameroonBakaFores\\_HighRes.jpg](http://ipsnews.net/pictures/20091004_CameroonBakaFores_HighRes.jpg). (Accessed December 1, 2009).
- IUCN. 2009. Bio-Cultural Diversity and Indigenous Peoples Journey. [http://www.iucn.org/congress\\_08/forum/journeys/biocultural/](http://www.iucn.org/congress_08/forum/journeys/biocultural/). (Accessed November 30, 2009).
- IUCN and WWF. 1999. Principles and Guidelines on Indigenous and Traditional Peoples and Protected Areas. Joint Policy Statement.

- Jackson, Dorothy. 2006. *The Health Situation of Women and Children in Central African Pygmy Peoples*. Forest Peoples Programme.  
[http://www.forestpeoples.org/documents/africa/c\\_af\\_pygmy\\_health\\_may06\\_eng.shtml](http://www.forestpeoples.org/documents/africa/c_af_pygmy_health_may06_eng.shtml) (Accessed November 29, 2008).
- Jacobsen, Karen. 1997. Refugees' Environmental Impact: The Effect of Patterns of Settlement. *Journal of Refugee Studies*. 10(1):19-36.
- Jensen, John R. 2005. Digital Change Detection. In *Introductory Digital Image Processing A Remote Sensing Perspective*, 467-494. 3<sup>rd</sup> ed. Upper Saddle River, NJ: Pearson Prentice Hall.
- Kerr, Jeremy T. and Marsha Ostrovsky. 2003. From Space to Species: Ecological Applications for Remote Sensing. *Trends in Ecology and Evolution*. 18(6):299-305.
- Lambin, Eric F. 1999. Monitoring Forest Degradation in Tropical Regions by Remote Sensing: Some Methodological Issues. *Global Ecology and Biogeography*. 8:191-198.
- Lewis, Jerome. 2000. The Batwa Pygmies of the Great Lakes Region. *Minority Rights Group International*. June Report.
- Lu Holt, Flora. 2005. The Catch-22 of Conservation: Indigenous Peoples, Biologists, and Cultural Change. *Human Ecology*. 33(2):199-215.
- Mas, J.F. 1999. Monitoring Land-cover Changes: A Comparison of Change Detection Techniques. *International Journal of Remote Sensing*. 20(1):139-152.
- McCorkel, Jill A. and Kristen Myers. 2003. What Difference Does Difference Make? Position and Privilege in the Field. *Qualitative Sociology*. 26(2):199-231.
- Middled. 2007. Learn to Live in the Middle West.  
[http://1.bp.blogspot.com/\\_kWcZHWPXE0U/RuyDSWjBIMI/AAAAAAAAAAH8/WpJnasU0OZM/s400/PYGMIES.JPG](http://1.bp.blogspot.com/_kWcZHWPXE0U/RuyDSWjBIMI/AAAAAAAAAAH8/WpJnasU0OZM/s400/PYGMIES.JPG). (Accessed December 1, 2009).
- Migliano, Andrea Bamberg, Lucio Vinicius, and Marta Mirazón Lahr. 2007. Life history trade-offs explain the evolution of human pygmies. *Proceedings of the National Academy of Sciences of the United States of America*. 104(51):20216-20219.

- Mongabay. 2010. Tropical Rainforests. <http://rainforests.mongabay.com/0901.htm>. (Accessed January 15, 2010).
- Myers, Norman. 2001. Environmental Refugees: A Growing Phenomenon of the 21<sup>st</sup> Century. *Philosophical Transactions: Biological Sciences*. 357(1420):609-613.
- Myers, Norman. 1997. Environmental Refugees. *Population and Environment: A Journal of Interdisciplinary Studies*. 19(2):167-182.
- NASA. 2008. GeoBrain. Remote Sensing Downloads. <http://geobrain.laits.gmu.edu:81/GeoDataDownload/>. (Accessed December 4, 2008).
- National Park Service. 2006. *Great Smokey Mountains*. <http://www.nps.gov/grsm/historyculture/people.htm> (Accessed February 16, 2009).
- Native Solutions to Conservation Refugees (NSCR). 2008. Seven Tribes Threatened by Ethiopian National Park. <http://conservationrefugees.org/>. (Accessed October 25, 2009).
- Negi, Chandra S. and Sunil Nautiyal. 2003. Indigenous Peoples, Biological Diversity, and Protected Area Management – Policy Framework towards Resolving Conflicts. *International Journal of Sustainable Development and World Ecology*. 10:169-179.
- Nelson, John and Lindsay Hossack, eds. 2003. *Indigenous Peoples and Protected Areas in Africa*. Moreton-in-Marsh, UK: Forest Peoples Programme.
- Neudecker, Greg. 2006. Grass Roots Conservation. Government Innovators Network. <http://www.innovations.harvard.edu/awards.html?id=39701>. (Accessed October 25, 2009).
- Nienaber, Georgianne. 2009. Telephone Interview by Author. Boone, NC. October 23.
- Ohnesorge, Bettina, Marc Patry, and Alberto Salas. 2007. State of Conservation of the Río Platano Biosphere Reserve and World Heritage Site, Honduras, Central America. Mission Report to UNESCO.

- Ortiz, Rosario. 2004. *Towards Better Practice in Protected Areas and Technology Transfer*. Presented at the Seventh Conference of Parties United Nations Convention on Biological Diversity in Kuala Lumpur, Malaysia.
- Pathak, Neema, Seema Bhatt, Tasneem B, Ashish Kothari, and Grazia Borrini-Feyerabend. 2004. *Community Conserved Areas: A Bold Frontier for Conservation*. Briefing Note. Iran: CENESTA.
- Pathak, Neema. 2006. Lessons Learnt in the Establishment and Management of Protected Areas by Indigenous and Local Communities in South Asia. India: Environment Research and Action Group.
- Pavlovskaya, Marianna and Kevin St. Martin. 2007. Feminism and GIS: From a Missing Object to a Mapping Subject. *Geography Compass*. 1(3):583-606.
- Pedraza, Carolina Amaya. 2010. Interview by Author. Boone, NC. March 14.
- Peres, Carlos A. and Barbara Zimmerman. 2001. Perils in Parks or Parks in Peril? Reconciling Conservation in Amazonian Reserves with and without Use. *Conservation Biology*. 15(3):793-797.
- Petit, C., T. Scudder, and E. Lambin. 2001. Quantifying Processes of Land-cover Change by Remote Sensing: Resettlement and Rapid Land-cover Changes in South-eastern Zambia. *International Journal of Remote Sensing*. 22(17):3435-3456.
- Phillips, Tom. 2010. Brazil to Build Controversial Belo Monte Hydroelectric Dam in Amazon Rainforest. *Guardian.co.uk*.  
<http://www.guardian.co.uk/environment/2010/feb/02/brazil-amazon-rainforest-hydroelectric-dam>. (Accessed March 8, 2010).
- Reed, Sarah. 2007. Environmental Refugees Worldwide. Climate Institute.  
<http://www.climate.org/topics/environmental-security/index.html>. (Accessed October 21, 2009).
- Sader, S.A., T. Sever, J.C. Smoot, and M. Richards. 1994. Forest Change Estimates for the Northern Peten Region of Guatemala – 1986-1990. *Human Ecology*. 22(3):317-332.

- Schmidt-Soltau, Kai and Dan Brockington. 2007. Protected Areas and Resettlement: What Scope for Voluntary Relocation. *World Development*. 35(12):2182-2202.
- Shurmer-Smith, Pamela, ed. 2002. *Doing Cultural Geography*. London: Sage Publications Ltd.
- Schwartzman, Stephen and Barbara Zimmerman. 2005. Conservation Alliances with Indigenous Peoples of the Amazon. *Conservation Biology*. 19(3):721-727.
- Schweitzer, Peter P., Megan Biesele, and Robert K. Hitchcock. 2000. *Hunters and Gatherers in the Modern World: Conflict, Resistance, and Self-Determination*. Oxford: Berghahn Books.
- Stevens, Stan, ed. 1997. *Conservation through Cultural Survival: Indigenous Peoples and Protected Areas*. Washington D.C.: Island Press.
- Stock, Jocelyn and Andy Rothen. 1998. The Choice: Doomsday or Arbor Day. <http://www.umich.edu/~gs265/society/deforestation.htm>. (Accessed January 15, 2010).
- Trade Environment Database (TED) Case Studies. 1997. Honduras and Deforestation. <http://www1.american.edu/TED/honduras.htm>. (Accessed October 1, 2009).
- Tumushabe, Godber and Eunice Musiime. 2006. Living on the Margins of Life: The Plight of the Batwa Communities of South Western Uganda. *ACODE Policy Research Series*. (17): i-52.
- UNEP. 2003. Convention on Biological Diversity. Ninth Meeting, Montreal, CA. November 10-14.
- UNFPA. 2009. United Nations Population Fund. <http://www.unfpa.org/public/>. (Accessed June 19, 2009).
- UNHCR. 2008. *Statistical Yearbook 2007: Trends in Displacement, Protection, and Solutions*. Geneva, Switzerland: UNCHR.
- UNHCR. 2000. *Refugees and Others of Concern to UNHCR: 1999 Statistical Overview*. Geneva, Switzerland: UNHCR.

- U.S. Census Bureau. 2009. U.S. and World Population Clocks.  
<http://www.census.gov/main/www/popclock.html>. (Accessed June 19, 2009).
- Venant, Messe. 2008. Cameroon: Securing Indigenous Peoples' Rights in Conservation: Reviewing and Promoting Progress in Cameroon. England and Wales: Forest Peoples Programme.
- West, Paige and Dan Brockington. 2006. An Anthropological Perspective on Some Unexpected Consequences of Protected Areas. *Conservation Biology*. 20(3) 609-616.
- West, Paige, James Igoe, and Dan Brockington. 2006. Parks and People: The Social Impact of Protected Areas. *Annual Review of Anthropology*. 35:251-77.
- Westman, Walter E., Laurence L. Strong, and Bruce A. Wilcox. 1989. Tropical Deforestation and Species Endangerment: The Role of Remote Sensing. *Landscape Ecology*. 3(2):97-109.
- Wilkinson, Ray. 2002. The Environment – A Critical Time. *Refugees*. (127):4-13.
- Wilson, Emily Hofhine and Steven A. Sader. 2002. Detection of Harvest Type Using Multiple Dates of Landsat TM Imagery. *Remote Sensing of Environment*. 80:385-396.
- World Rainforest Movement. 2003. Honduras: Rio Platano Reserve Questioned.  
<http://www.wrm.org.uy/bulletin/73/Honduras.html>. (Accessed October 1, 2009).
- Yin, Robert K. 2003. *Case Study Research: Design and Methods*. 3<sup>rd</sup> ed. Thousand Oaks, CA.: Sage Publications.
- Zahler, Peter. 2003. Top-Down Meets Bottom-Up: Conservation in a Post-Conflict World. *Conservation Magazine*. 4(1).
- Zimmerman, Barbara. 2009. Telephone Interview by Author. Boone, NC. October 21.
- Zimmerman, Barbara. 2006. Interview by Carl Grossman. Free Speech TV.

Zimmerman, B., C.A. Peres, J.R. Malcolm, and T. Turner. 2001. Conservation and Development Alliances with the Kayapó of South-Eastern Amazonia, a Tropical Forest Indigenous People. *Environmental Conservation*. 28(1):10-22.

## APPENDIX A

Demands of Indigenous and Tribal Population Organizations in Respect to Protected Areas Established on their Terrestrial, Coastal/Marine, and Freshwater Domains (IUCN and WWF 1999)

- Effectively protect those domains, as well as the people and cultures they contain, from external threats, and in particular reinforce traditionally protected areas
- Recognize indigenous and other traditional peoples' rights to their lands, territories, waters, coastal seas, and other resources
- Recognize their rights to control and co-manage these resources within protected areas
- Allow participation of traditional institutions in co-management arrangements within their terrestrial, coastal/marine and freshwater domains
- Recognize the rights of indigenous and other traditional peoples to determine their own development priorities - as long as these priorities are compatible with protected area objectives
- Be declared only at their initiative, and/or with their free and prior informed consent

- Incorporate sustainable use of natural resources using methods that maintain the integrity of the ecosystem and that have been used traditionally by indigenous peoples.

## APPENDIX B

IUCN System of Protected Area Management Categories (IUCN and WWF 1999)

The six management categories are defined by the primary management objective.

**I. Protected area managed mainly for I(a) science or I(b) wilderness protection.** Areas of land and/or sea possessing some outstanding or representative ecosystems, geological or physiological features and/or species, available primarily for scientific research and/or environmental monitoring; or large areas of unmodified or slightly modified land, and/or sea, retaining their natural character and influence, without permanent or significant habitation, which are protected and managed so as to preserve their natural condition (Strict Nature Reserve/Wilderness area).

**II. Protected area managed mainly for ecosystem conservation and recreation.** Natural areas of land and/or sea, designated to (a) protect the ecological integrity of one or more ecosystems for this and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area and (c) provide a foundation for spiritual, scientific, educational, recreational and visitor

opportunities, all of which must be environmentally and culturally compatible (National Park).

**III. Protected area managed mainly for conservation of specific features.** Areas containing one, or more, specific natural or natural/cultural feature which is of outstanding or unique value because of its inherent rarity, representative or aesthetic qualities or cultural significance (Natural Monument).

**IV. Protected area managed mainly for conservation through management intervention.** Areas of land and/or sea subject to active intervention for management purposes so as to ensure the maintenance of habitats and/or to meet the requirements of specific species (Habitat/Species Management Area).

**V. Protected area managed mainly for landscape/seascape conservation and recreation.** Areas of land, with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, cultural and/or ecological value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance and evolution of such an area (Protected Landscape/Seascape).

**VI. Protected area managed mainly for the sustainable use of natural ecosystems.** Areas containing predominantly unmodified natural systems, managed to ensure long-term protection and maintenance of biological diversity, while

providing at the same time a sustainable flow of natural products and services to meet community needs (Managed Resource Protected Area).

## APPENDIX C

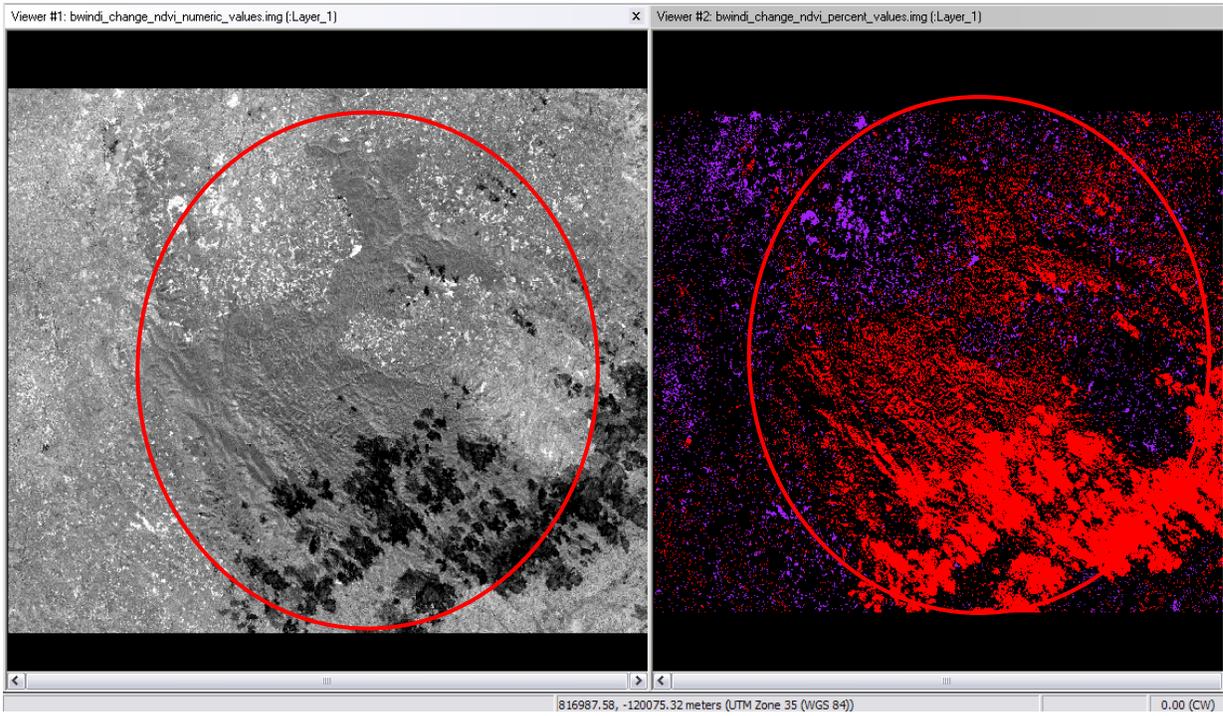
### Remote Sensing Results

Protected Area	Decreased Pixels lesser than -51 PV	Increased Pixels greater than 51 PV
Bwindi	23,161/ 104,467	313/ 104,467
Mgahinga	241/ 31,072	161/ 31,072
Echuya	0/ 24,095	0/ 24,095
Total decreased and increased pixels for BINP, MGNP, and EFR.		

BINP Study Areas	Percent Decrease in Pixel Values	Percent Increase in Pixel Values
1	14	0.5
2	16	0
3	23	0.3
4	34	0.3
5	16	0
Average	22	0.2
Percent PV decrease and increase within the five study areas of BINP.		

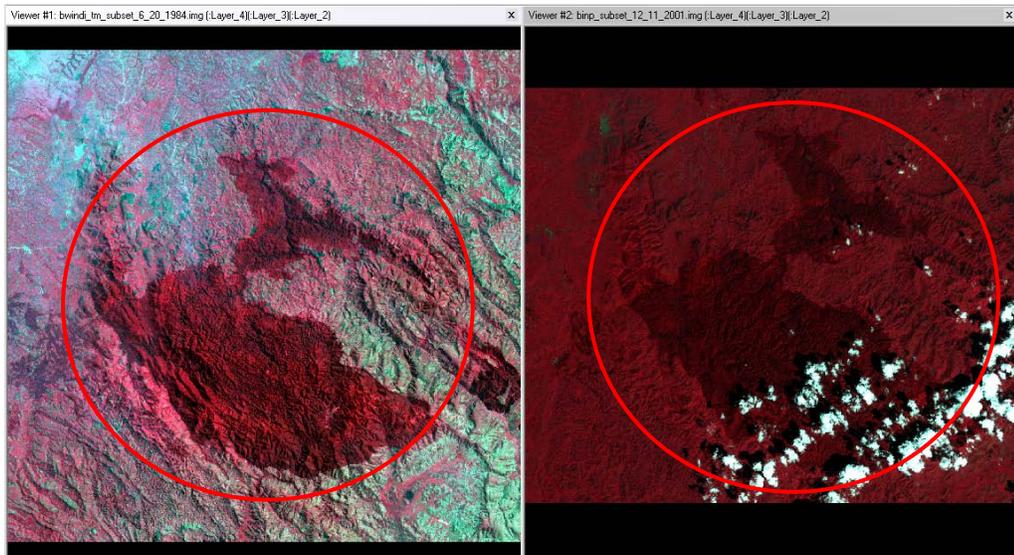
MGNP Study Areas	Percent Decrease in Pixel Values	Percent Increase in Pixel Values
1	0	9
2	1	0
3	0.5	0.6
4	1.2	0.1
5	0.7	0
Average	0.7	2
Percent PV decrease and increase within the five study areas of MGNP.		

# NDVI change detection analysis pre- and post- Batwa eviction in BINP



Numeric values of change detection

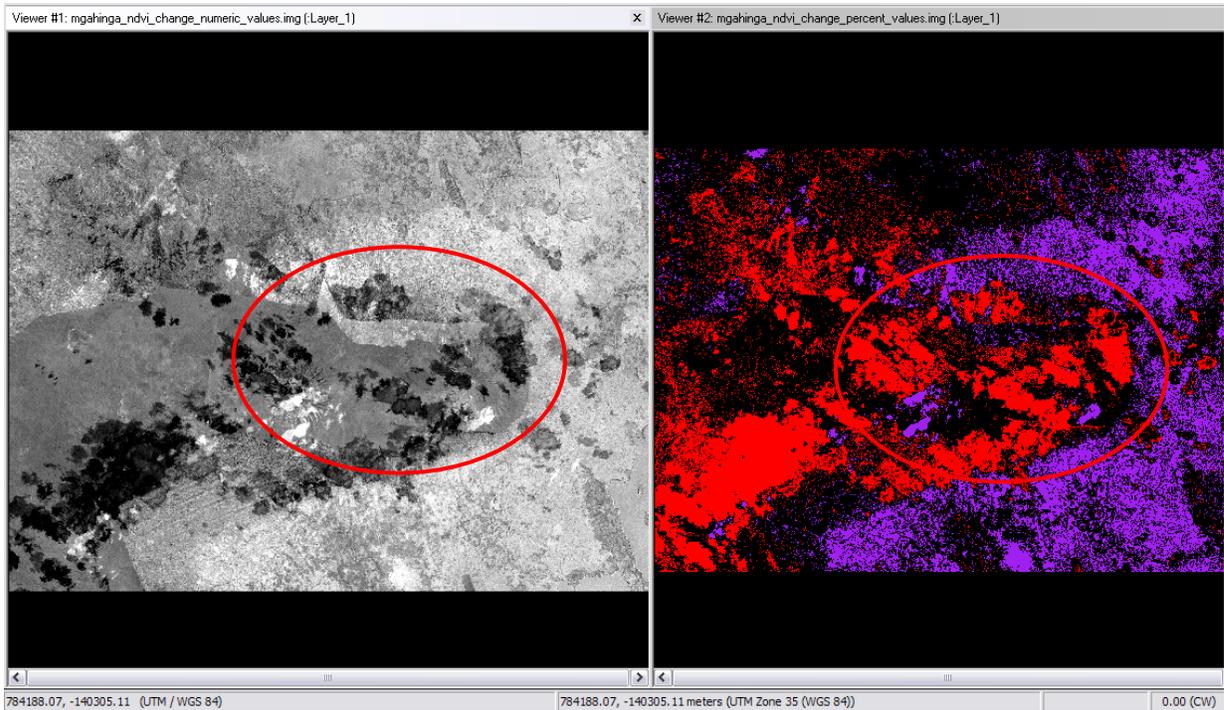
Percent values of change Detection



NDVI image of BINP pre-Batwa eviction (1984)

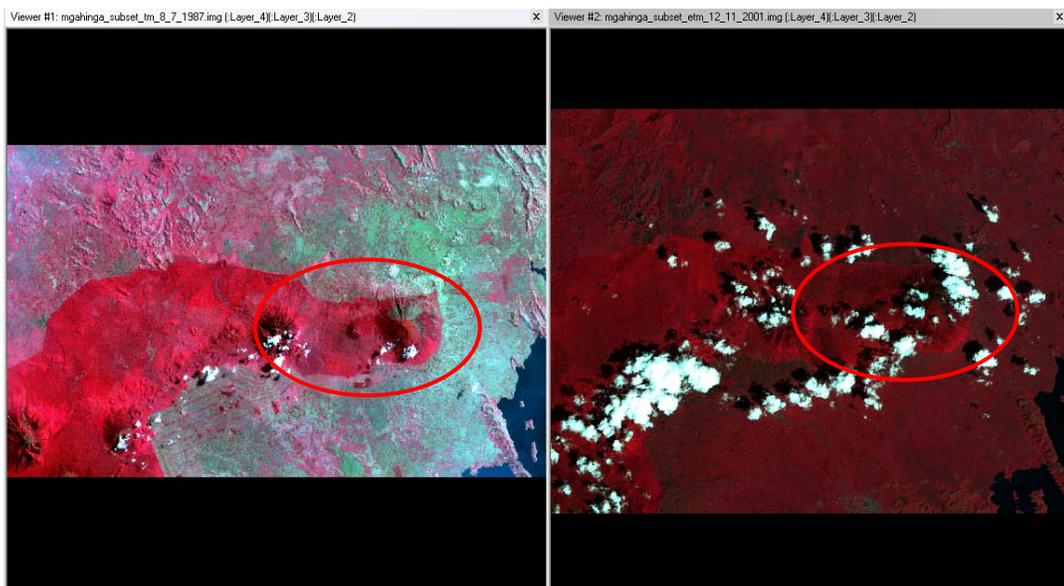
NDVI image of BINP post-Batwa eviction (2001)

## NDVI change detection analysis pre- and post- Batwa eviction in MGNP



Numeric values of change detection.

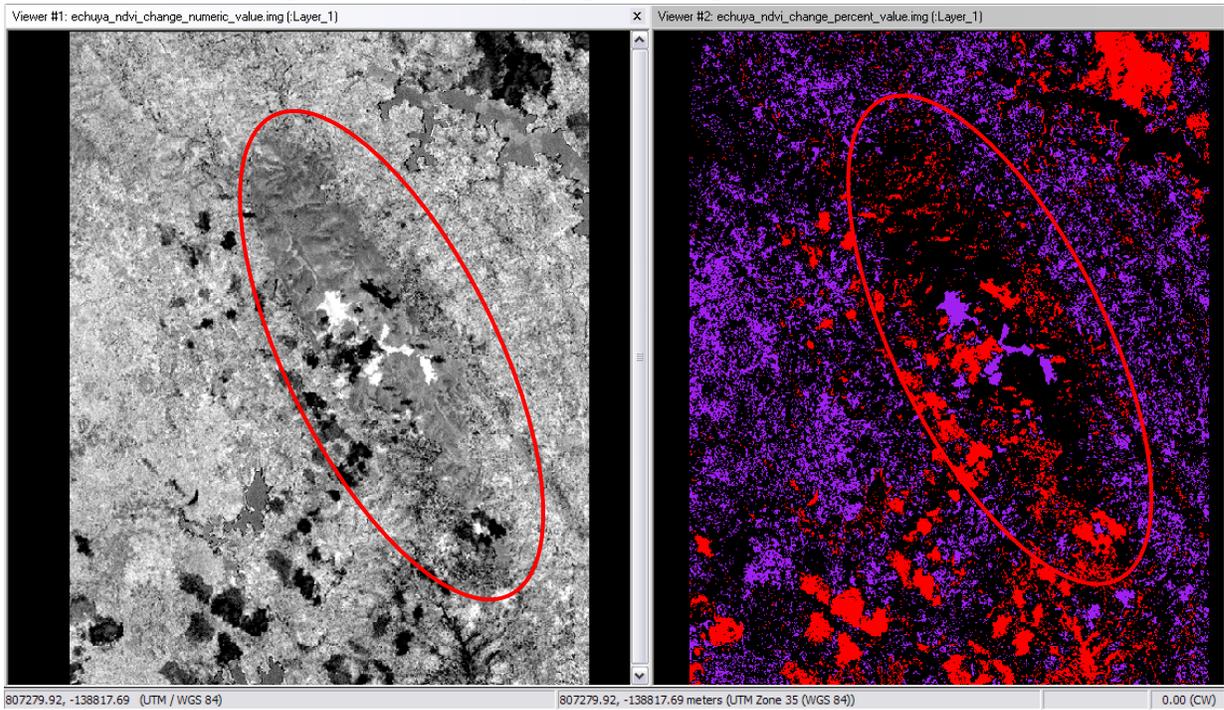
Percent values of change detection.



NDVI image of MGNP pre- Batwa eviction (1987).

NDVI image of MGNP post- Batwa eviction (2001).

# NDVI change detection analysis pre- and post- Batwa eviction in EFR



Numeric values of change detection.

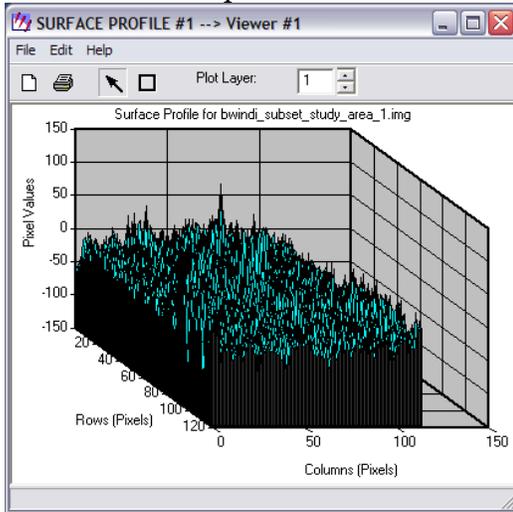
Percent values of change detection.



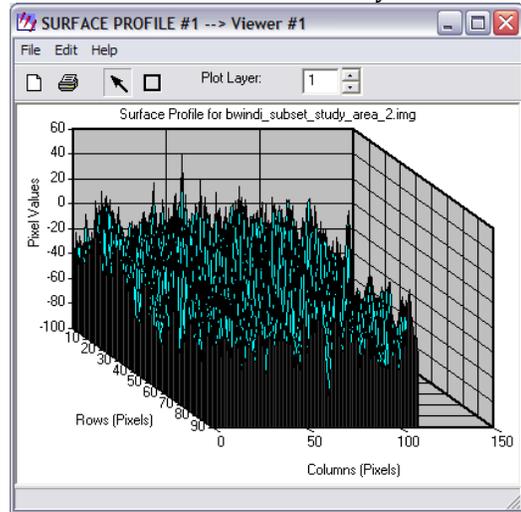
NDVI image of EFR pre- Batwa eviction (1987).

NDVI image of EFR post- Batwa eviction (2001).

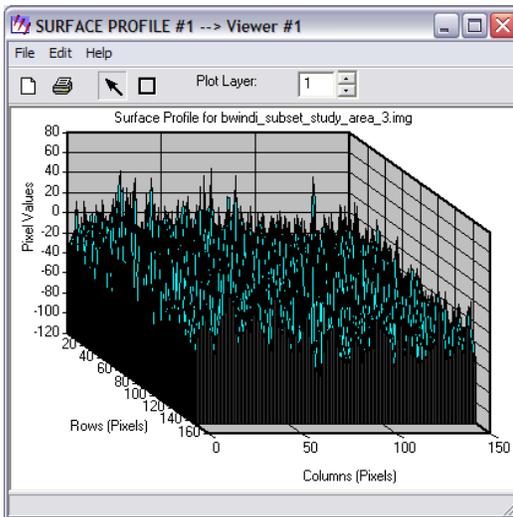
The surface profile of decreased and increased PV's for BINP study areas



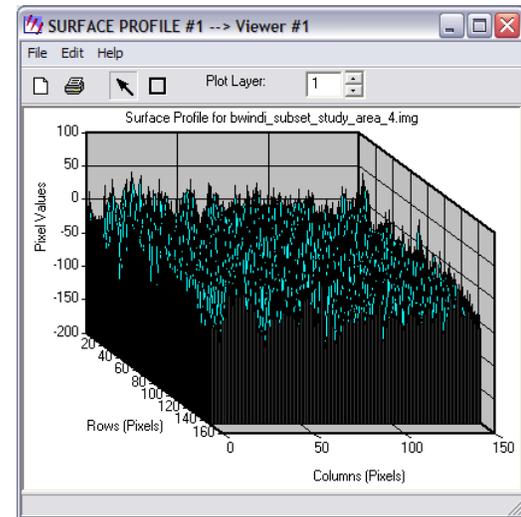
Study area 1.



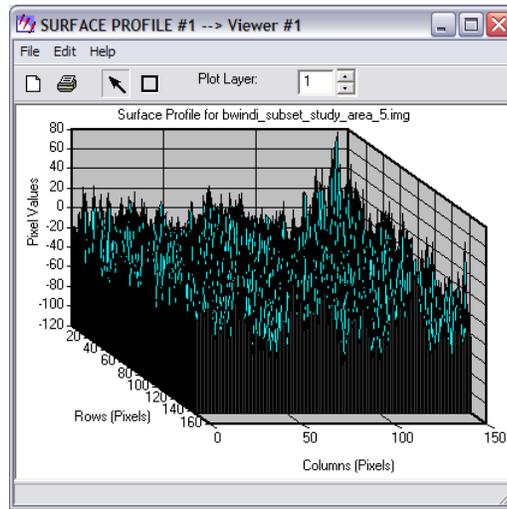
Study area 2.



Study area 3.

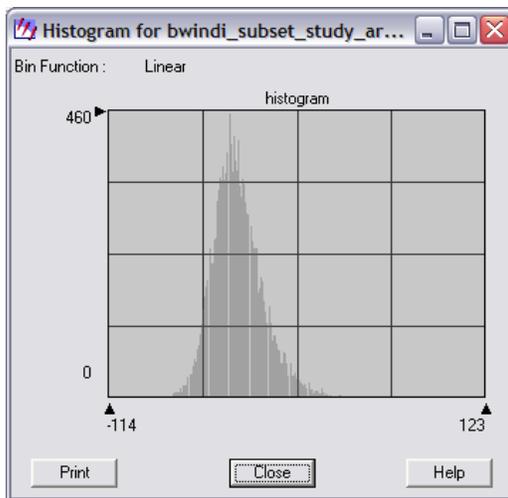


Study area 4.

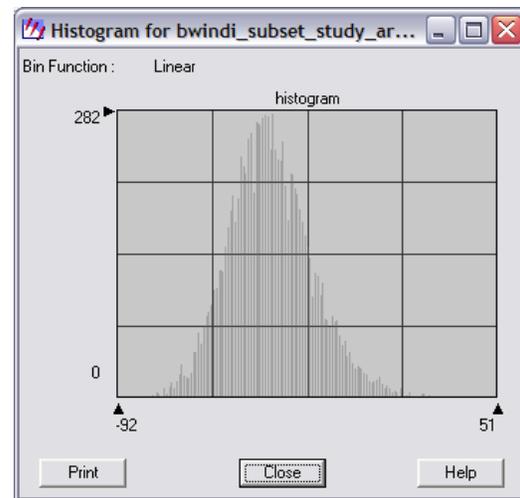


Study area 5.

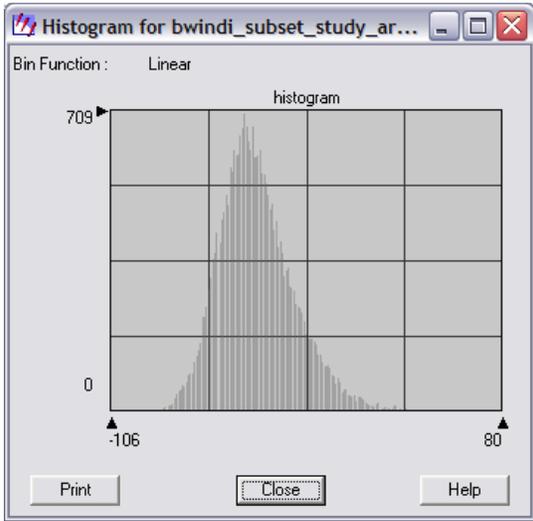
The change image histogram of decreased and increased PV's for BINP study areas



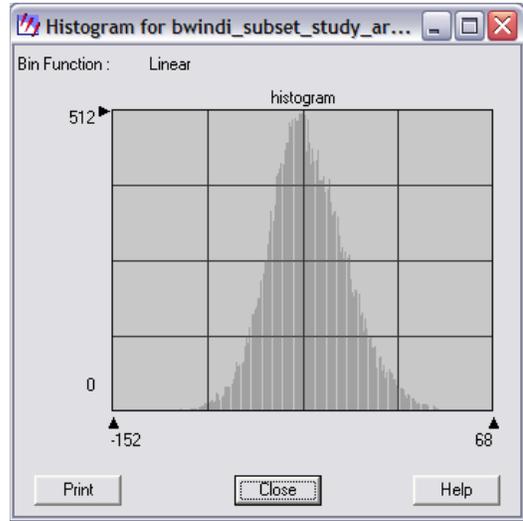
Study area 1.



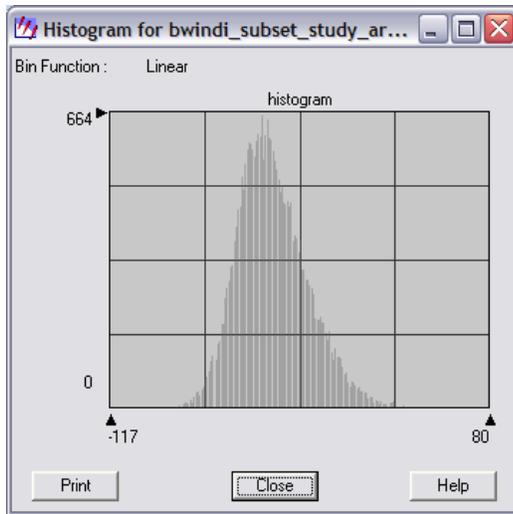
Study area 2.



Study area 3.

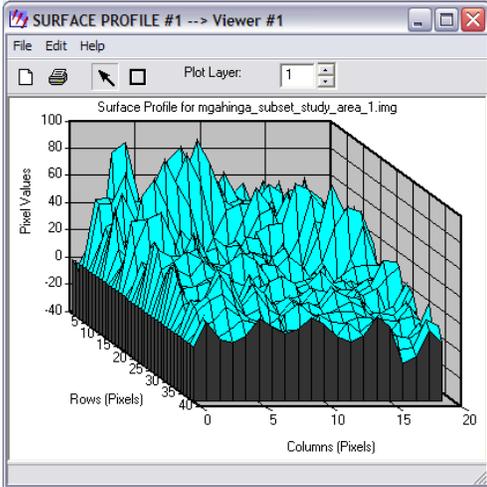


Study area 4.

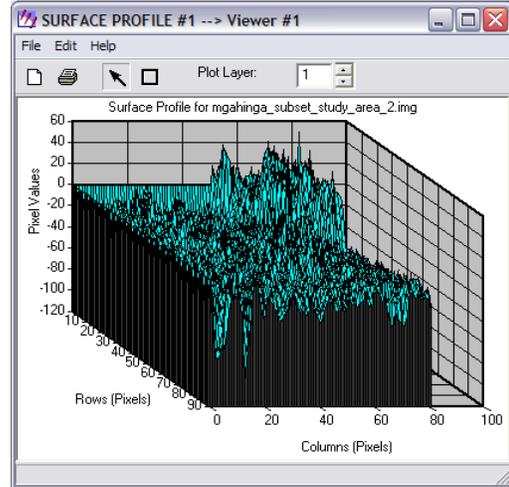


Study area 5.

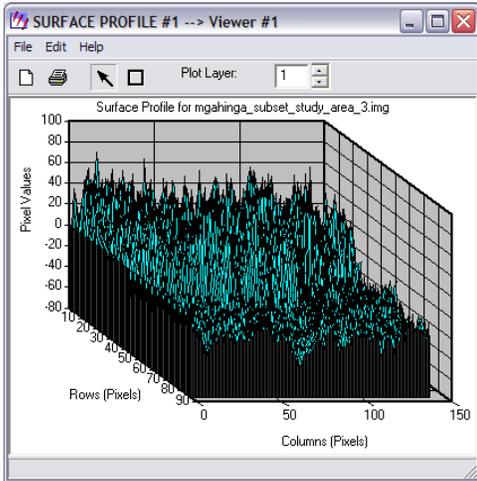
The surface profile of decreased and increased PV's for MGNP study areas



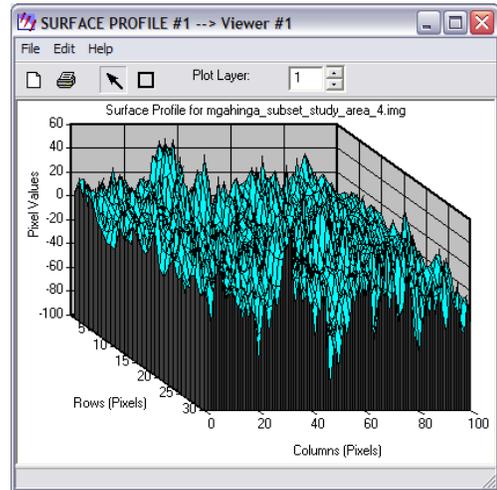
Study area 1.



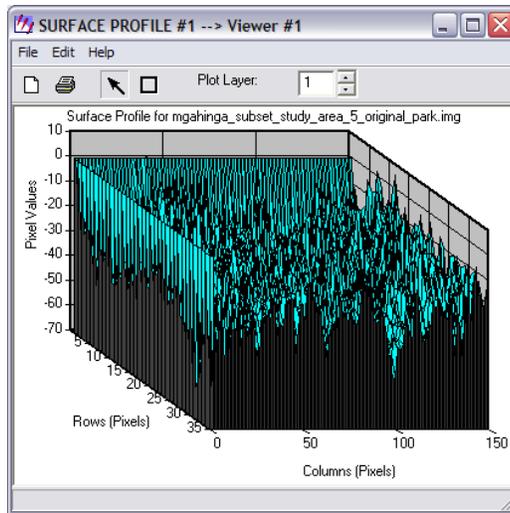
Study area 2.



Study area 3.

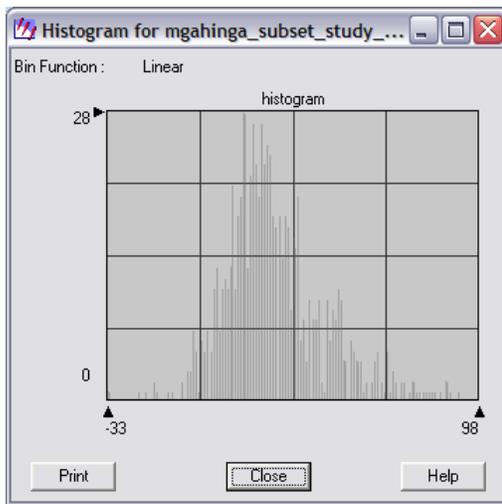


Study area 4.

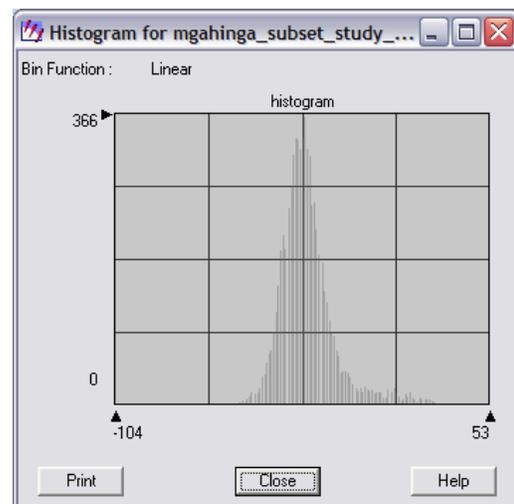


Study area 5.

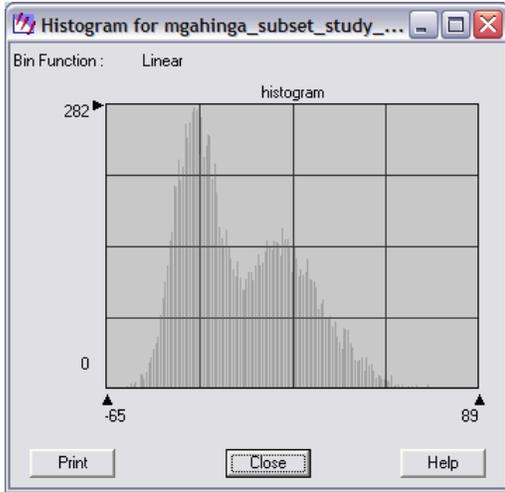
The change image histogram of decreased and increased PV's for MGNP study areas



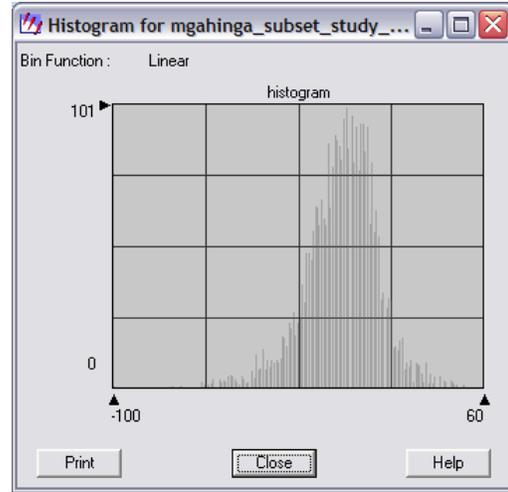
Study area 1.



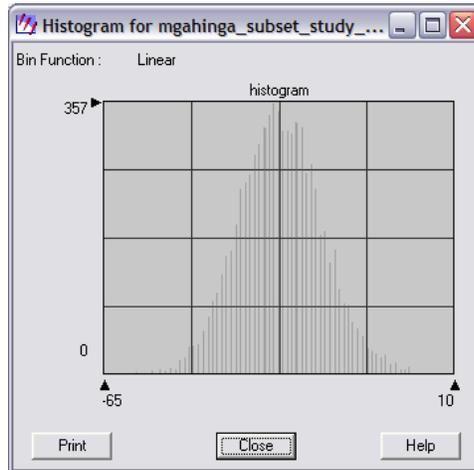
Study area 2.



Study area 3.

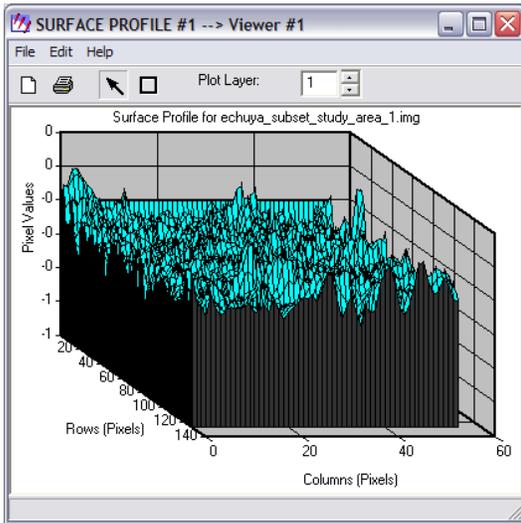


Study area 4.

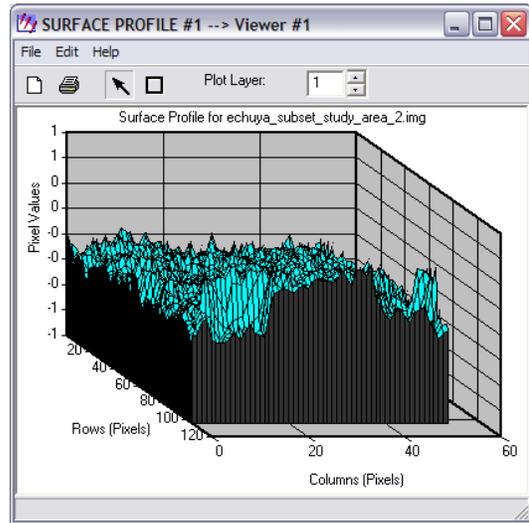


Study area 5.

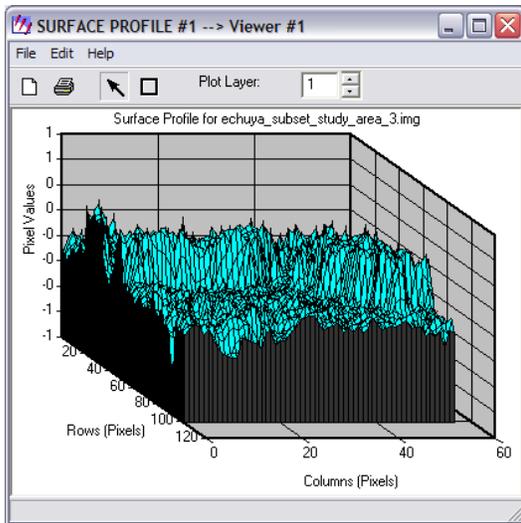
The surface profile of decreased and increased PV's for EFR study areas



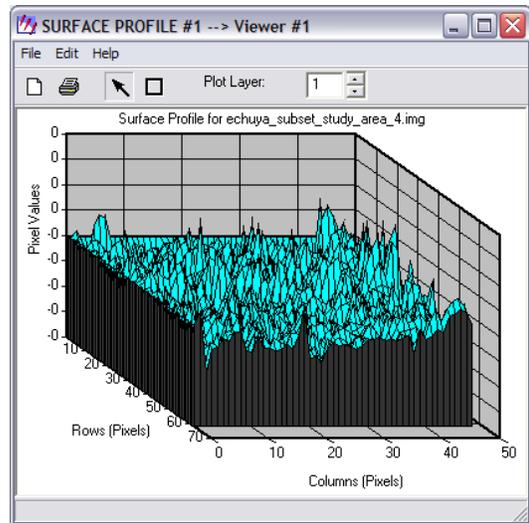
Study area 1.



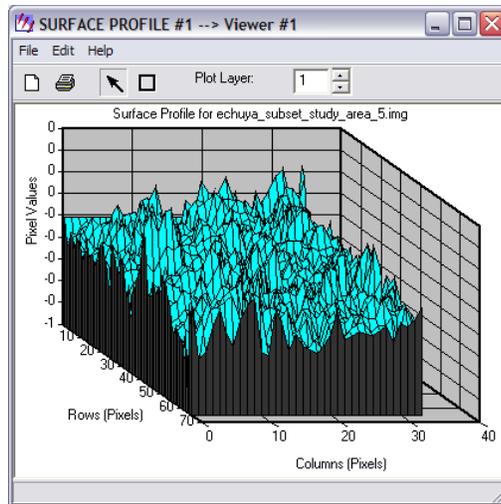
Study area 2.



Study area 3.

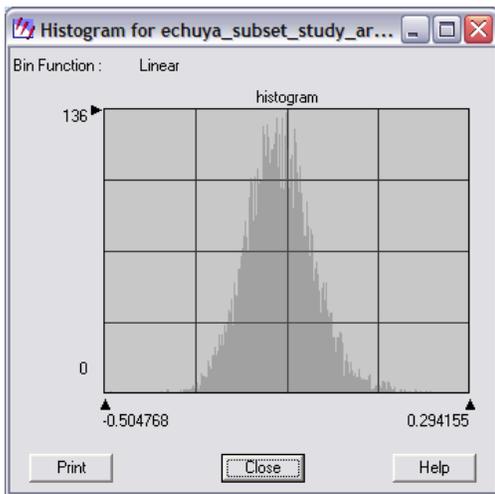


Study area 4.

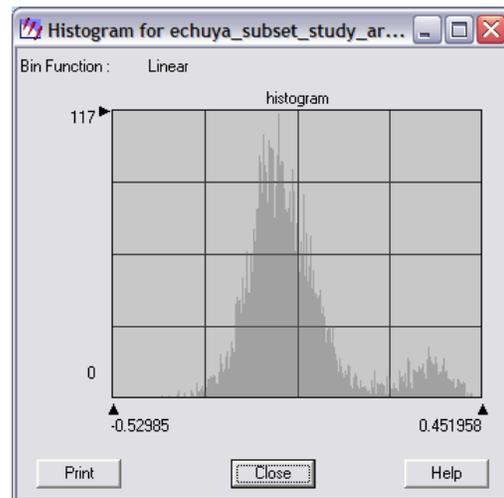


Study area 5.

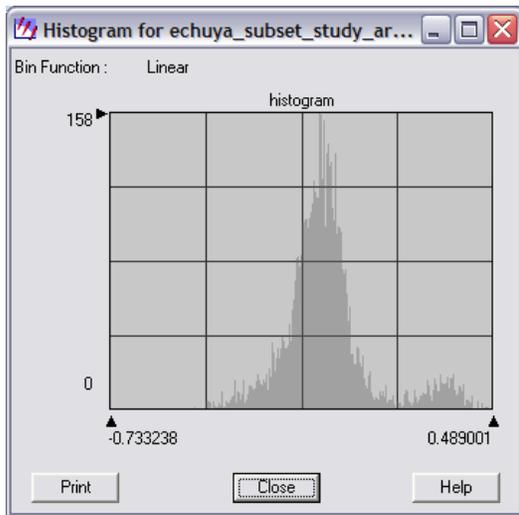
The change image histogram of decreased and increased PV's for EFR study areas



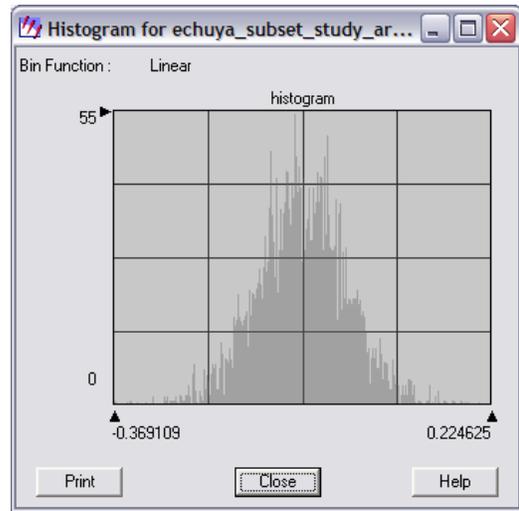
Study area 1.



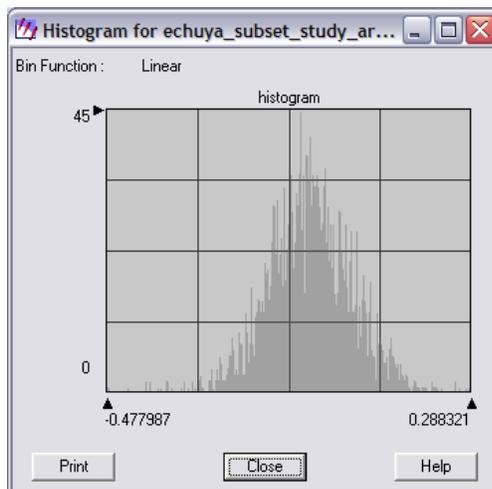
Study area 2.



Study area 3.



Study area 4.



Study area 5.

## APPENDIX D

### Timeline of Comprehensive Case Studies of Established ITP Forest Conservation Partnerships

Name	1920-29	1930-39	1940-49	1950-59	1960-69	1970-79	1980-89	1990-99	2000 - Today
<b><i>Kayapó</i> Brazil</b>						Warring culture reinvented, borders protected militantly	urban protests, indigenous rights included in Brazil's constitution, illegal Mahogany concessions sold to international businesses	Belo Monte Dam protest, World Bank withdraws funds from dam project, illegal Mahogany concessions stopped, partnership with CI-Brazil	Kayapó own and maintain 11 million ha of land
<b><i>Kuna</i> Panama</b>	uprising against government	legal custody of 60,000 ha of rain forest		Sovereignty and autonomy granted	Colonization alterations of the land become significant	Colonization continues into Kuna land, first Kuna attempt to make social use of the land	Kuna initiate conservation effort with NGO's, PEMASKY established, PEMASKY folds		Kuna refuse access to their land, including NGO's
<b><i>Ingano</i> Colombia</b>				Colombia establishes a national park policy		National park regulations established		National constitution established a public participation policy in environmental issues, political constitution acknowledges indigenous rights, Ingano adopt "Plan de Vida"	Public participation policy approved in conservation issues, Ingano partner with ACT, Alto Fragua Indiwasi park is established, Ingano are primary players in the parks management

Name	1920-29	1930-39	1940-49	1950-59	1960-69	1970-79	1980-89	1990-99	2000 - Today
<b>Guarani Bolivia</b>	uprising against non-indigenous settlers		ITP's begin unions and hold conference over the lack of their rights	Agrarian reform laws first enacted			CABI is formed	CABI is legally recognized as a political unit, agrarian reform laws recognize the multi-ethnic and multi-cultural aspects of Bolivia, KIGC is established, CABI partners with more organizations	Guarani are active co-managers of KIGC
<b>Miskito Honduras</b>					Pan-American highway is constructed	Rio Platano is conceived, RENARE and the U.S. Peace Corp make a natural and cultural inventory of the region, the Miskito attempt to establish a dialogue with the government	Rio Platano is established as a protected area, MASTA is formed and joins MOPAWI, MASTA signs a formal declaration requesting legalization of their land	RPBR is established following a bio-cultural inventory, RPBR is placed on UNESCO's danger list	Rio Platano is removed from the danger list

## BIOGRAPHICAL INFORMATION

Kelly Ann Renwick was born in Ontario, Canada, on March 10, 1970; but spent her childhood in Grenada in the West Indies. She moved to Chapel Hill, NC at the age of nine. She received a Bachelor of Arts in English from High Point University in 1992 and a Bachelor of Science in Biology from Appalachian State University in 2004. In 2005 she gave birth to her fraternal twin daughters, Naia Isabella Crum Renwick and Cerelia Sophia Crum Renwick. Ms. Renwick currently teaches world regional geography courses at Catawba Valley Community College and Appalachian State University and first year seminar courses at Appalachian State University.